pizzato elettrica

Lift Devices



2007
2008

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Lift Devices

6 Switches for floor levelling operation - FR, FX series
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61 Contact blocks: travel diagrams and actuation speed
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New products 2007

New microswitches MK series

page 40

- High reliability electrical contacts
- IP65 versions
- Positive opening versions
- New terminal covers



New door switches DS series

page 36

- Safety switches with double interruption and positive opening
- Internal or external contacts versions
- Possibility of application with the cable side close to the wall



New reset device W3

page 22

- Reset device and contacts simultaneous tripping
- Reset device and actuator independently rotatable



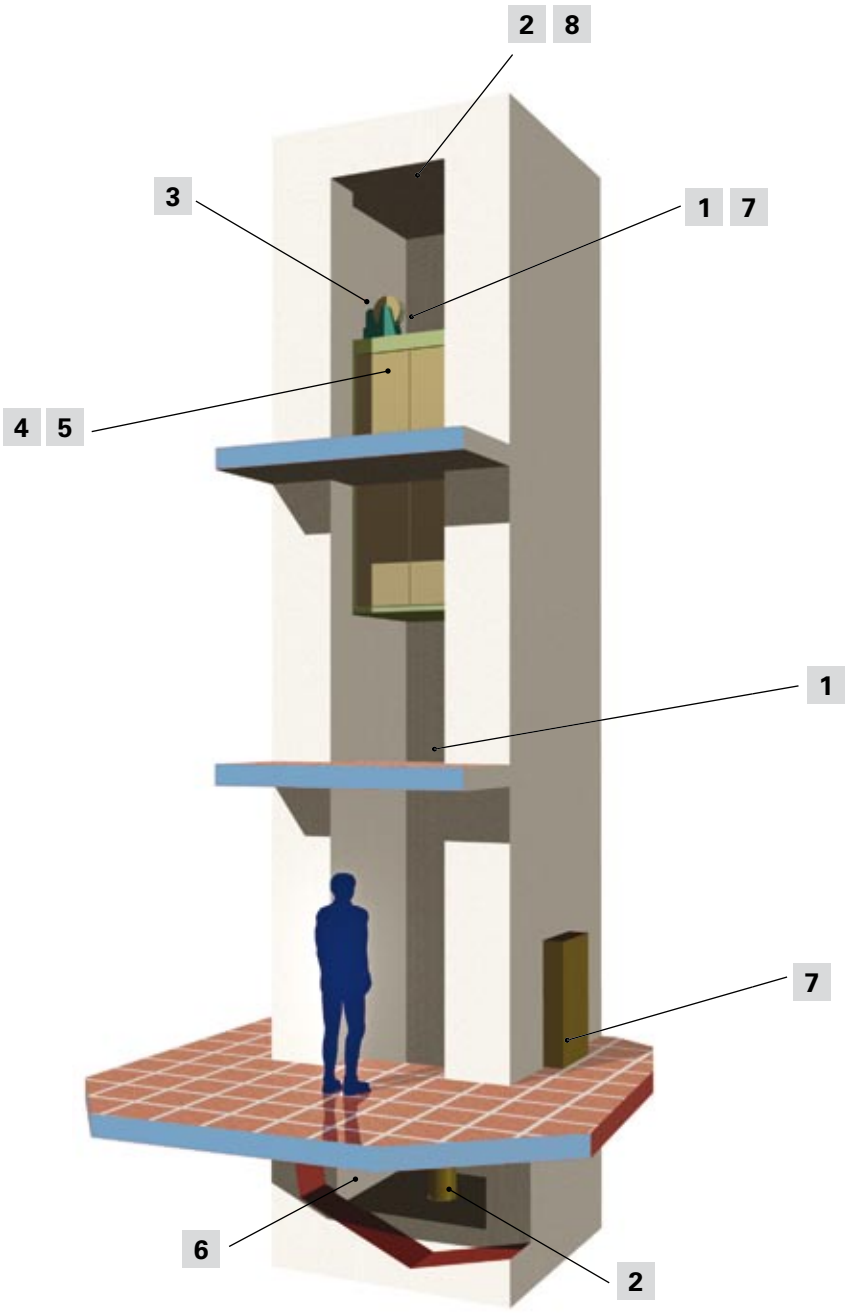
Presentation



Pizzato Elettrica position switches are used since many years in lift sector, due to their reliability and quality/price ratio. Some of the items presented here have been selected by the most important multinationals lift companies as first choice products and therefore used worldwide. The range of traditional position switches which could be used in the lift sector is very wide and therefore on next pages there are indicated only some Pizzato Elettrica products, selected from the ones which are usually used in this sector. The company in any case is able to offer other types of switches or special versions to satisfy customer requirements.

Pizzato Elettrica has also developed some products specifically for the lift sector, like switches for over-speed devices or automatic floor levelling operation devices.
This year in the catalogue also the door contacts and an new reset system for over travel control switches have been added.

All the products shown in this catalogue are produced completely by the company Pizzato Elettrica with the passion for the quality which distinguish the company.



1a Switches for floor levelling operation page 6



1b Switches for floor levelling operation page 14



2 Switches with reset for over travels page 22



3 Safety switches for over-speed devices page 30



4 Door switches page 36/38



5 Operator switches page 40



6 Pit emergency stop devices page 48



7 Automatic floor levelling op. devices page 54



8 Signalling switches page 56



Company Profile

Pizzato Elettrica company was established in the year 1984 in Marostica (VI) - Italy and it is now one of the most important European companies manufacturing position switches, microswitches, foot switches and safety devices. As a dynamic company focused on the market development, since its beginning it has experienced a constant growth, achieving a leading position in the Italian and European markets. Since all the products are designed and assembled internally, the company is able to satisfy the specific requirements of its customers at any time.



New site







The production of Pizzato Elettrica is developed in 4 plants with a covered production area of more than 8000 m², employing more than 120 people.

The company owns many national and European patents and focuses on maintaining high quality standards for its products. The quality is certified by the marks IMQ, UL, CCC, which appear in most of its products. Pizzato Elettrica has achieved the UNI EN ISO 9001:2000 certification, which guarantees the quality of production.

- 6000 items in the catalog
- 4 production plants
- Certification UNI EN ISO 9001:2000 (Vision 2000)
- Quality marks IMQ, UL, CCC

Production

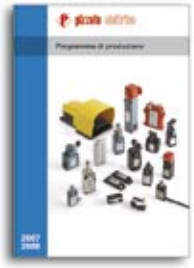
Pizzato Elettrica's products range offers more than 6000 standard articles and 1000 special items created on specific requirements of the customer.



Documentation



General Catalog 2007/2008
available languages:



Production Program
available languages:



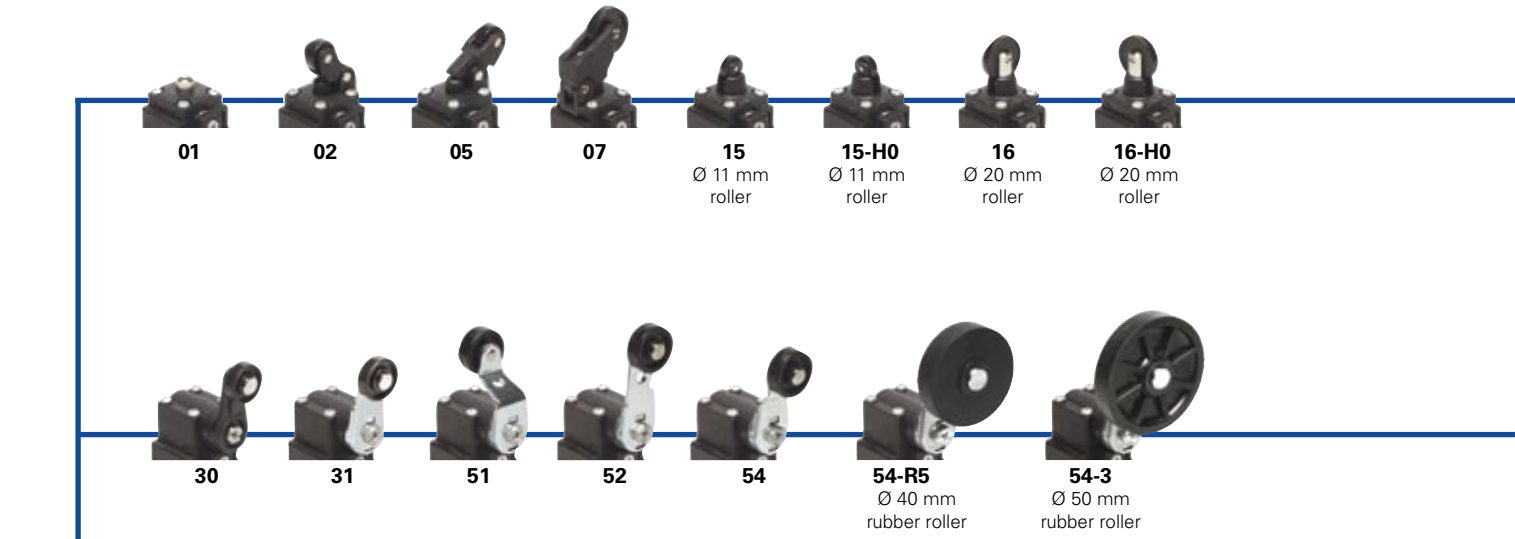
CD-ROM
available languages:



www.pizzato.it
www.pizzato.com

- general catalog on line PDF format
- search engine for product code
- download 2D CAD drawings, DXF format
- download documentations
- cross reference

Selection diagram



ACTUATORS



FR **FX**

CONTACT BLOCKS



6 1NO+1NC slow action

7 1NO+1NC slow action overlapped

9 2NC slow action

16 2NC slow action independent

PLATES



P11	Fixing plate (FR series)
P31	Fixing plate (FX series)

CONDUIT ENTRY



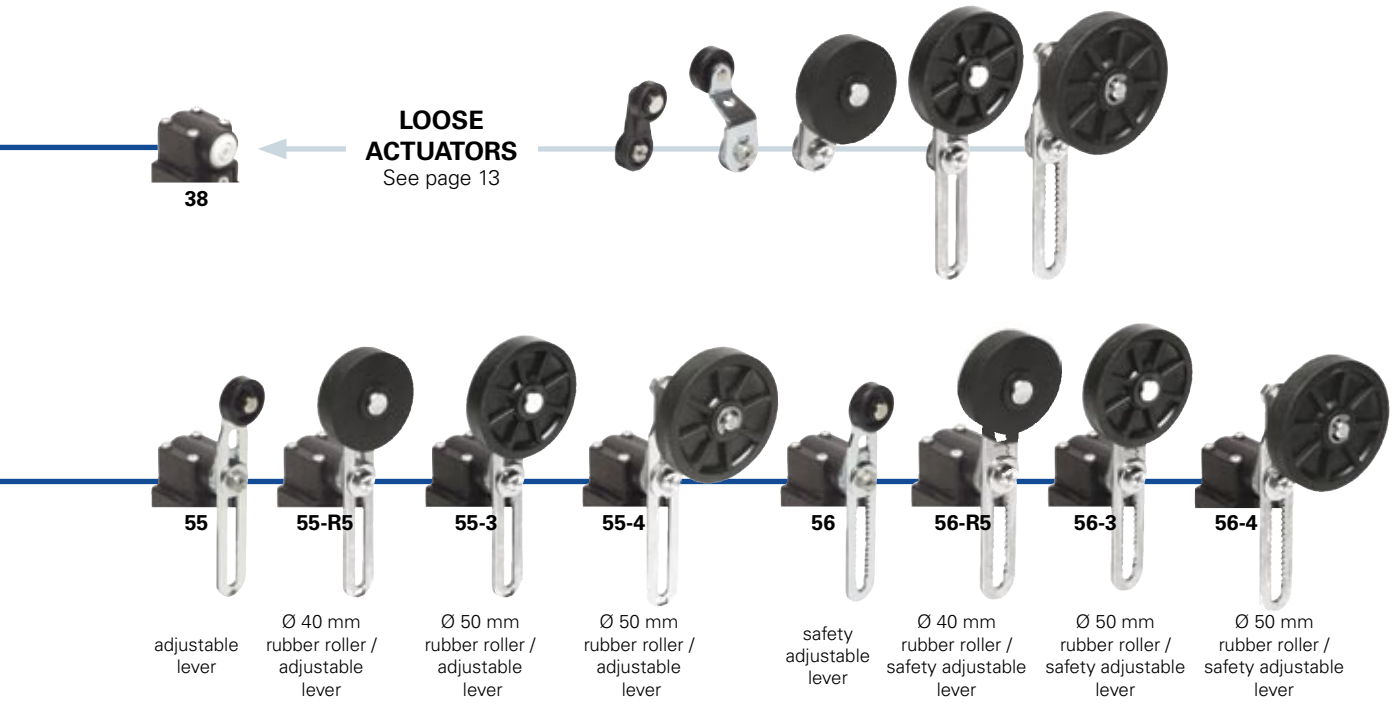
THREADED CONDUIT ENTRY

WITH PRE-INSTALLED CABLE GLAND

Versions with pre-installed cable glands or connectors available. For further information please contact the technical office

product option

accessory sold separately



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

FR 654-3GM2P11

Housing

FR	polymer housing, one conduit entry
FX	polymer housing, two conduit entries

Contact blocks

6	1NO+1NC, slow action
7	1NO+1NC, slow action overlapped
9	2NC, slow action
16	2NC, slow action indipendent

Actuators

01	short plunger
02	roller lever
05	offset roller lever
...	.....

Suffix

	no suffix (standard)
3	with Ø 50 mm rubber roller
4	with Ø 50 mm overhanging rubber roller

Contacts type

	silver contacts (standard)
G	silver contacts gold plated 1 µm

Threaded conduit entry

	PG 13,5 (standard)
A	PG 11
M1	M16x1,5
M2	M20x1,5

Fixing plate

	without fixing plate (standard)
P11	supplied with fixing plate VF SFP1
P31	supplied with fixing plate VF SFP3

Ø 40 mm rubber roller

	no roller (standard)
R5	with Ø 40 mm rubber roller



Main data

- Polymer housing, with one or two conduit entries
- Protection degree IP67
- External stainless steel parts versions
- M12 assembled connector versions
- Silver contacts gold plated versions

Markings and quality marks:

Approval IMQ:	EG610
Approval UL:	E131787
Approval CCC:	2007010305230013
Approval EZU:	1010151

Technical data

Housing

Made of glass-reinforced polymer, self-extinguishing, shock-proof thermoplastic resin and with double insulation ⧈
FR series one threaded conduit entry
FX series two threaded conduit entries
Protection degree: IP67

General data

Ambient temperature: from -25°C to +80°C
Version for operation in ambient temperature from -40°C to +80° C on request
Max operating frequency: 3600 operations cycles[1]/hour
Mechanical endurance: 20 million operations cycles[1]
Assembling position: any
(1) One operation cycle means two movements, one to close and one to open contacts, as foreseen by IEC 947-5-1 standard.

Cross section of the conductors (flexible copper wire)

Contact blocks 6, 7, 9, 16:	min.	1 x 0,5 mm²	(1 x AWG 20)
	max.	2 x 2,5 mm²	(2 x AWG 14)

In conformity with standards:
IEC 60947-5-1, EN 60947-5-1, EN 50047, IEC 60204-1, EN 60204-1, EN 1088, EN ISO 12100-1, EN ISO 12100-2, IEC 529, EN 60529, EN 81-1, EN 81-2, NFC 63-140, VDE 0660-200, VDE 0113, CENELEC EN 50013.
Approvals:
IEC 60947-5-1, UL 508, GB14048.5-2001

In conformity with requirements requested by:
Low Voltage Directive 2006/95/EC, Machinery Directive 2006/42/EC and Electromagnetic Compatibility 2004/108/EC.
Positive contact opening in conformity with standards:
IEC 60947-5-1, EN 60947-5-1, VDE 0660-206.

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: 11-12, 21-22 or 31-32) as stated in the **standard CEI EN 60947-5-1, encl. K, par. 2**. The switch must be actuated with **at least up to the positive opening travel** shown in the travels diagrams on page 61. The switch must be actuated **at least with the positive opening force**, shown in brackets, underneath each article, near the value of the min. force.

Electrical data

Thermal current (Ith):	10 A
Rated insulation voltage (Ui):	500 VAC 600 VDC
Protection against short circuits:	fuse 10 A 500 V type aM
Pollution degree:	3

Utilization categories

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

Ue (V)	250	400	500
Ie (A)	6	4	1

Direct current: DC13

Ue (V)	24	125	250
Ie (A)	6	1,1	0,4

Data type approved by IMQ and EZU

Rated insulation voltage (Ui): 500 VAC
Thermal current (Ith): 10 A
Protection against short circuits: fuse 10 A 500 V type aM
Protection degree: IP67
MV terminals (screw clamps)
Pollution degree 3
Utilization category: AC15
Operation voltage (Ue): 400 VAC (50 Hz)
Operation current (Ie): 3 A
Forms of the contact element: Zb, Y+Y
Positive opening of contacts on contact block 6, 7, 9, 16
In conformity with standards: EN60947-1, EN 60947-5-1 and subsequent modifications and completions, fundamental requirements of the Low Voltage Directive 73/23 EEC and subsequent modifications and completions.

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

Data type approved by UL

Utilization categories Q300 (69 VA, 125-250 VDC)
A600 (720 VA, 120-600 VAC)
Data of the housing type 1, 4X (indoor use only), 12, 13
In conformity with standard: UL 508
For all contact blocks use 60 or 75 °C copper (Cu) conductor and wire size 12-14 AWG. Terminal tightening torque of 7,1 Lb-In.

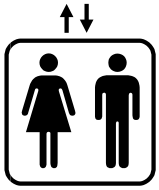
Please contact our technical service for the list of type approved products.

Data type approved by CSA

Utilization categories Q300 (69 VA, 125-250 VDC)
A600 (720 VA, 120-600 VAC)
Data of the housing type 1, 4X (indoor use only), 12, 13
In conformity with standard: CSA C22-2 nr.14

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

EN 81 standard



On the following pages a selection of Pizzato Elettrica products which are used typically in the lift sector and in accordance with the standard EN81 is introduced.

Protection degree IP67



All the Pizzato Elettrica position switches have been updated to protection degree IP67.

Safety lever LE56



The adjustable lever code 56 (and variants) is supplied with an indentation which blocks the lever slipping in case of fixing screw release.

Rubber rollers



Different actuators with rubber rollers are available. The client can choose the most suitable product depending on lift speed in order to reduce the noise inside the cabin.

Conduit entries

Switches with conduit entries in several directions are available, for applications also in restricted spaces.





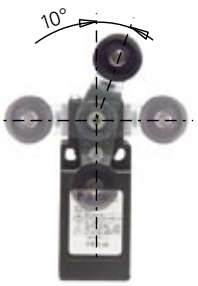
Adaptive plates



Adaptive plates provided with long slots for the adjustment of the actuating point, developed for compatibility with old products.
Every plate has a double couple of switch fixing holes, one for standard switches and the other one for switches with reset device. In this way the actuator will always have the same actuating point.

Adjustable levers

In switches with revolving lever it is possible to adjust the lever with 10° steps for the whole 360° range. The positive movement transmission is always guaranteed thanks to the particular geometrical coupling between the lever and the revolving shaft as prescribed for safety applications by the German standard BG-GS-ET-15.



Overturning levers

It's possible to fasten the lever on switches on straight or reverse side, maintaining the positive coupling.
In this way it is possible to obtain two different work plans of the lever.



Rotating heads

In all switches, it is possible to rotate the head in 90° steps.

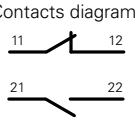


Working operation of contact block 16 with independent contacts

The contact block 16 has two NC contacts**, both with positive opening** activated independently according to the lever turning direction.

Lever turned to left

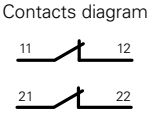
Contacts diagram





Lever not turned

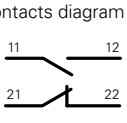
Contacts diagram





Lever turned to right

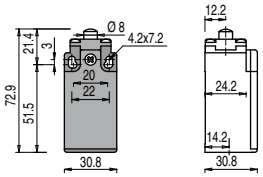
Contacts diagram

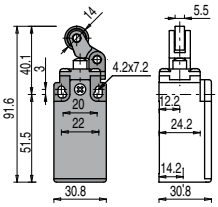


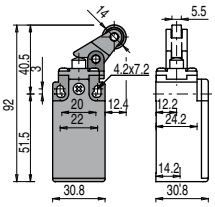


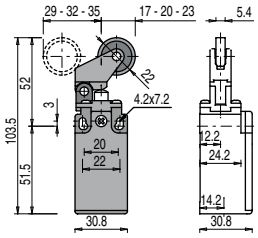
Contacts type:

L = slow action
LO = slow action overlapped
LI = slow action independent

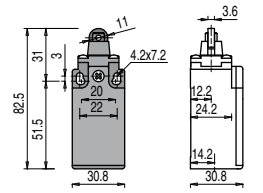


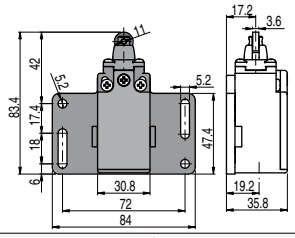


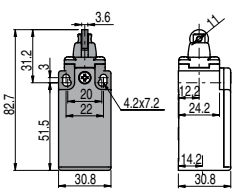


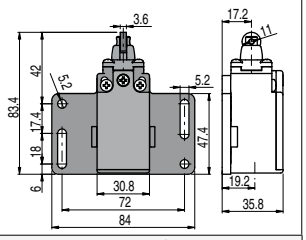


Contact blocks								
6	L	FR 601	1NO+1NC	FR 602	1NO+1NC	FR 605	1NO+1NC	FR 607	1NO+1NC
7	LO	FR 701	1NO+1NC	FR 702	1NO+1NC	FR 705	1NO+1NC	FR 707	1NO+1NC
9	L	FR 901	2NC	FR 902	2NC	FR 905	2NC	FR 907	2NC
16	LI								
Max speed		page 62 - type 4		page 62 - type 4		page 62 - type 3		page 62 - type 3	
Min. force		8 N (25 N ⊕)		6 N (25 N ⊕)		6 N (25 N ⊕)		4 N (25 N ⊕)	
Travel diagrams		page 61 - group 1a		page 61 - group 1a		page 61 - group 2a		page 61 - group 3a	

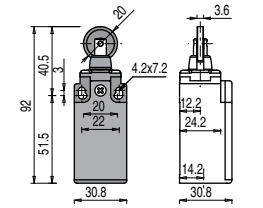


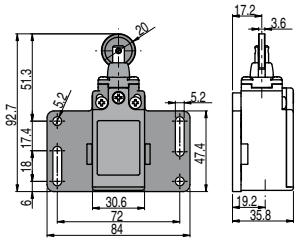


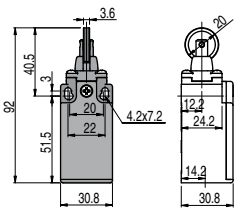


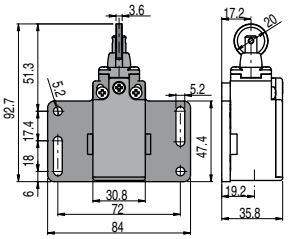


Contact blocks								
6	L	FR 615	1NO+1NC	FR 615-P11	1NO+1NC	FR 615-H0	1NO+1NC	FR 615-H0P11	1NO+1NC
7	LO	FR 715	1NO+1NC	FR 715-P11	1NO+1NC	FR 715-H0	1NO+1NC	FR 715-H0P11	1NO+1NC
9	L	FR 915	2NC	FR 915-P11	2NC	FR 915-H0	2NC	FR 915-H0P11	2NC
16	LI								
Max speed		page 62 - type 2		page 62 - type 2		page 62 - type 2		page 62 - type 2	
Min. force		8 N (25 N ⊕)		8 N (25 N ⊕)		8 N (25 N ⊕)		8 N (25 N ⊕)	
Travel diagrams		page 61 - group 1a		page 61 - group 1a		page 61 - group 1a		page 61 - group 1a	









Contact blocks								
6	L	FR 616	1NO+1NC	FR 616-P11	1NO+1NC	FR 616-H0	1NO+1NC	FR 616-H0P11	1NO+1NC
7	LO	FR 716	1NO+1NC	FR 716-P11	1NO+1NC	FR 716-H0	1NO+1NC	FR 716-H0P11	1NO+1NC
9	L	FR 916	2NC	FR 916-P11	2NC	FR 916-H0	2NC	FR 916-H0P11	2NC
16	LI								
Max speed		page 62 - type 2		page 62 - type 2		page 62 - type 2		page 62 - type 2	
Min. force		8 N (25 N ⊕)		8 N (25 N ⊕)		8 N (25 N ⊕)		8 N (25 N ⊕)	
Travel diagrams		page 61 - group 1a		page 61 - group 1a		page 61 - group 1a		page 61 - group 1a	

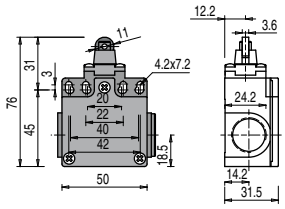
Accessories See page 58

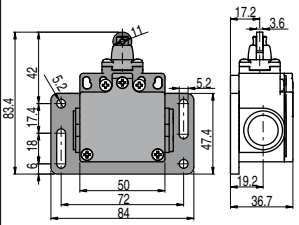
Items with code on the **green** background are available in stock

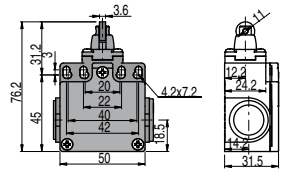
All measures in the drawings are in mm

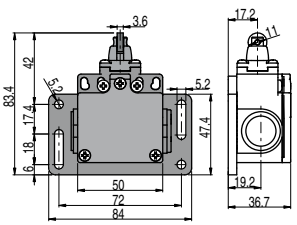
Contacts type:

L = slow action
LO = slow action overlapped
LI = slow action independent

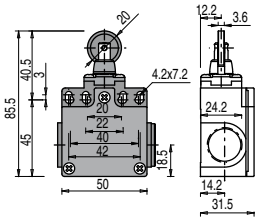


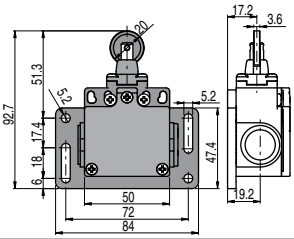


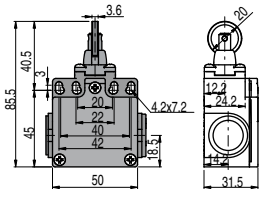


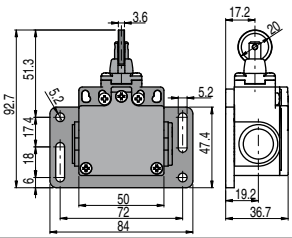


Contact blocks					
6	L	FX 615 → 1NO+1NC	FX 615-P31 → 1NO+1NC	FX 615-H0 → 1NO+1NC	FX 615-H0P31 → 1NO+1NC
7	LO	FX 715 → 1NO+1NC	FX 715-P31 → 1NO+1NC	FX 715-H0 → 1NO+1NC	FX 715-H0P31 → 1NO+1NC
9	L	FX 915 → 2NC	FX 915-P31 → 2NC	FX 915-H0 → 2NC	FX 915-H0P31 → 2NC
16	LI				
Max speed		page 62 - type 2	page 62 - type 2	page 62 - type 2	page 62 - type 2
Min. force		8 N (25 N →)	8 N (25 N →)	8 N (25 N →)	8 N (25 N →)
Travel diagrams		page 61 - group 1a	page 61 - group 1a	page 61 - group 1a	page 61 - group 1a

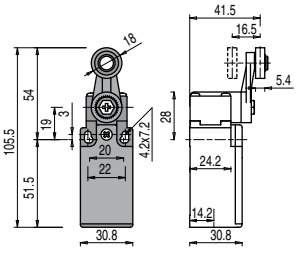


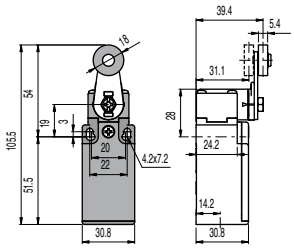


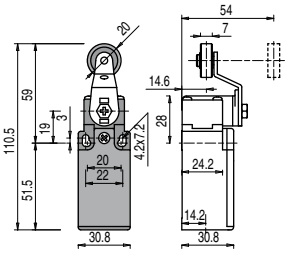


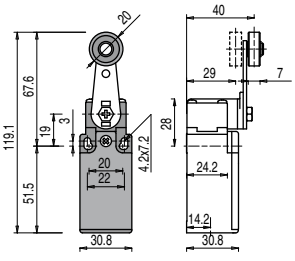


Contact blocks					
6	L	FX 616 → 1NO+1NC	FX 616-P31 → 1NO+1NC	FX 616-H0 → 1NO+1NC	FX 616-H0P31 → 1NO+1NC
7	LO	FX 716 → 1NO+1NC	FX 716-P31 → 1NO+1NC	FX 716-H0 → 1NO+1NC	FX 716-H0P31 → 1NO+1NC
9	L	FX 916 → 2NC	FX 916-P31 → 2NC	FX 916-H0 → 2NC	FX 916-H0P31 → 2NC
16	LI				
Max speed		page 62 - type 2	page 62 - type 2	page 62 - type 2	page 62 - type 2
Min. force		8 N (25 N →)	8 N (25 N →)	8 N (25 N →)	8 N (25 N →)
Travel diagrams		page 61 - group 1a	page 61 - group 1a	page 61 - group 1a	page 61 - group 1a









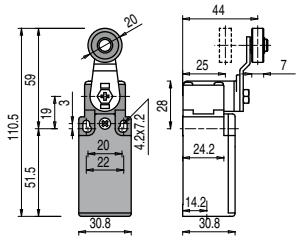
Contact blocks					
6	L	FR 630 → 1NO+1NC	FR 631 → 1NO+1NC	FR 651 → 1NO+1NC	FR 652 → 1NO+1NC
7	LO	FR 730 → 1NO+1NC	FR 731 → 1NO+1NC	FR 751 → 1NO+1NC	FR 752 → 1NO+1NC
9	L	FR 930 → 2NC	FR 931 → 2NC	FR 951 → 2NC	FR 952 → 2NC
16	LI	FR 1630 → 2NC	FR 1631 → 2NC	FR 1651 → 2NC	FR 1652 → 2NC
Max speed		page 62 - type 1	page 62 - type 1	page 62 - type 1	page 62 - type 1
Min. force		0,1 Nm (0,25 Nm →)	0,1 Nm (0,25 Nm →)	0,1 Nm (0,25 Nm →)	0,1 Nm (0,25 Nm →)
Travel diagrams		page 61 - group 4a	page 61 - group 4a	page 61 - group 4a	page 61 - group 4a

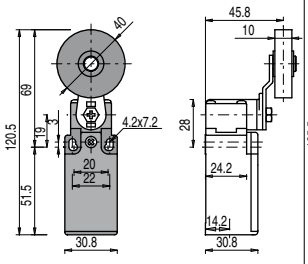
Accessories See page 58

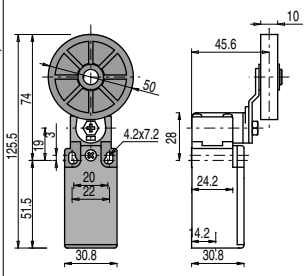
Items with code on the **green** background are available in stock

Contacts type:

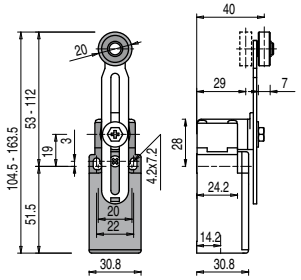
L = slow action
LO = slow action overlapped
LI = slow action independent

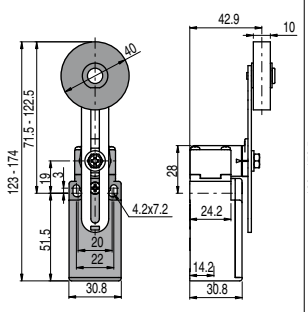


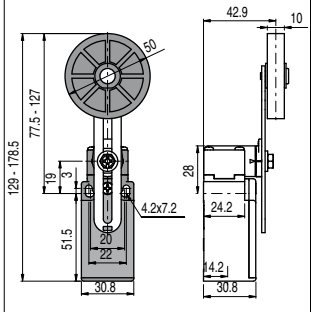


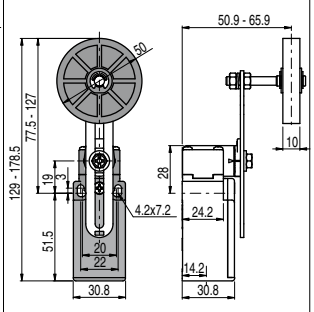


Contact blocks					
6	L	FR 654 → 1NO+1NC	FR 654-R5 → 1NO+1NC	FR 654-3 → 1NO+1NC	
7	LO	FR 754 → 1NO+1NC	FR 754-R5 → 1NO+1NC	FR 754-3 → 1NO+1NC	
9	L	FR 954 → 2NC	FR 954-R5 → 2NC	FR 954-3 → 2NC	
16	LI	FR 1654 → 2NC	FR 1654-R5 → 2NC	FR 1654-3 → 2NC	
Max speed		page 62 - type 1	page 62 - type 1	page 62 - type 1	
Min. force		0,1 Nm (0,25 Nm →)	0,1 Nm (0,25 Nm →)	0,1 Nm (0,25 Nm →)	
Travel diagrams		page 61 - group 4a	page 61 - group 4a	page 61 - group 4a	

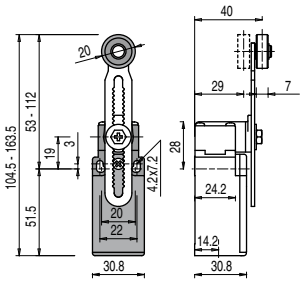


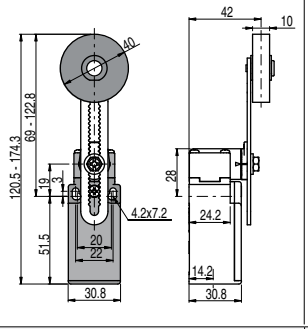


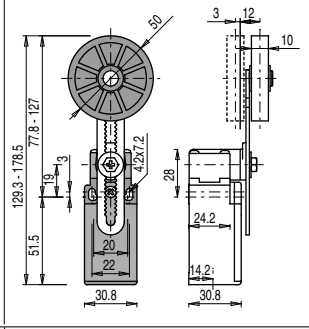


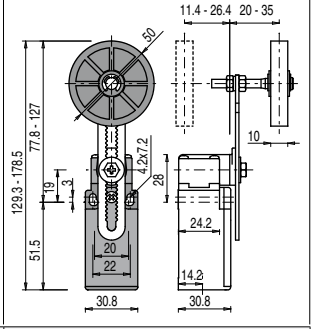


Contact blocks					
6	L	FR 655 → (1) 1NO+1NC	FR 655-R5 → (1) 1NO+1NC	FR 655-3 → (1) 1NO+1NC	FR 655-4 → (1) 1NO+1NC
7	LO	FR 755 → (1) 1NO+1NC	FR 755-R5 → (1) 1NO+1NC	FR 755-3 → (1) 1NO+1NC	FR 755-4 → (1) 1NO+1NC
9	L	FR 955 → (1) 2NC	FR 955-R5 → (1) 2NC	FR 955-3 → (1) 2NC	FR 955-4 → (1) 2NC
16	LI	FR 1655 → (1) 2NC	FR 1655-R5 → (1) 2NC	FR 1655-3 → (1) 2NC	FR 1655-4 → (1) 2NC
Max speed		page 62 - type 1	page 62 - type 1	page 62 - type 1	page 62 - type 1
Min. force		0,1 Nm (0,25 Nm →)	0,1 Nm (0,25 Nm →)	0,1 Nm (0,25 Nm →)	0,1 Nm (0,25 Nm →)
Travel diagrams		page 61 - group 4a	page 61 - group 4a	page 61 - group 4a	page 61 - group 4a









Contact blocks					
6	L	FR 656 → 1NO+1NC	FR 656-R5 → 1NO+1NC	FR 656-3 → 1NO+1NC	FR 656-4 → 1NO+1NC
7	LO	FR 756 → 1NO+1NC	FR 756-R5 → 1NO+1NC	FR 756-3 → 1NO+1NC	FR 756-4 → 1NO+1NC
9	L	FR 956 → 2NC	FR 956-R5 → 2NC	FR 956-3 → 2NC	FR 956-4 → 2NC
16	LI	FR 1656 → 2NC	FR 1656-R5 → 2NC	FR 1656-3 → 2NC	FR 1656-4 → 2NC
Max speed		page 62 - type 1	page 62 - type 1	page 62 - type 1	page 62 - type 1
Min. force		0,1 Nm (0,25 Nm →)	0,1 Nm (0,25 Nm →)	0,1 Nm (0,25 Nm →)	0,1 Nm (0,25 Nm →)
Travel diagrams		page 61 - group 4a	page 61 - group 4a	page 61 - group 4a	page 61 - group 4a

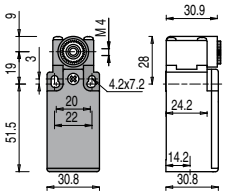
Accessories See page 58

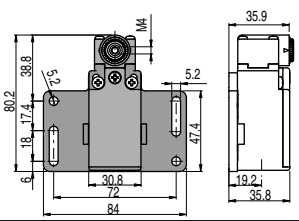
Items with code on the **green** background are available in stock

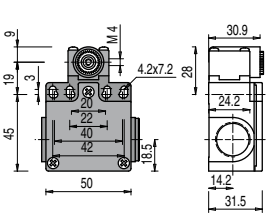
(1) Positive opening only with lever adjusted on the max.

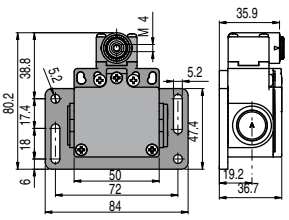
Contacts type:

L = slow action
LO = slow action overlapped
LI = slow action independent









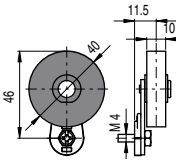
Contact blocks					
6	L	FR 638 → 1NO+1NC	FR 638-P11 → 1NO+1NC	FX 638 → 1NO+1NC	FX 638-P31 → 1NO+1NC
7	LO	FR 738 → 1NO+1NC	FR 738-P11 → 1NO+1NC	FX 738 → 1NO+1NC	FX 738-P31 → 1NO+1NC
9	L	FR 938 → 2NC	FR 938-P11 → 2NC	FX 938 → 2NC	FX 938-P31 → 2NC
16	LI	FR 1638 → 2NC	FR 1638-P11 → 2NC	FX 1638 → 2NC	FX 1638-P31 → 2NC
Max speed		page 62 - type 1	page 62 - type 1	page 62 - type 1	page 62 - type 1
Min. force		0,1 Nm (0,25 Nm →)	0,1 Nm (0,25 Nm →)	0,1 Nm (0,25 Nm →)	0,1 Nm (0,25 Nm →)
Travel diagrams		page 61 - group 4a	page 61 - group 4a	page 61 - group 4a	page 61 - group 4a

Special loose actuators

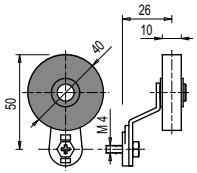
10 pcs pack

IMPORTANT: These loose actuators can be used with items of series FR, FX only

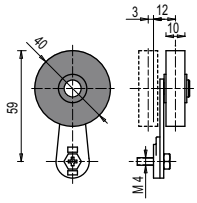
Ø 40 mm rubber rollers



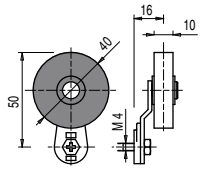
VF LE31-R5 → (4)



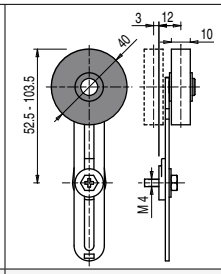
VF LE51-R5 → (4)



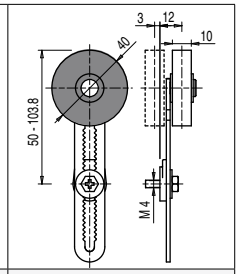
VF LE52-R5 →



VF LE54-R5 → (4)

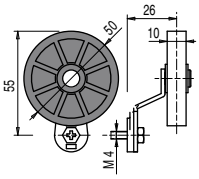


VF LE55-R5 → (1)

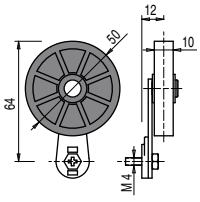


VF LE56-R5 →

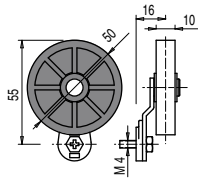
Ø 50 mm rubber rollers



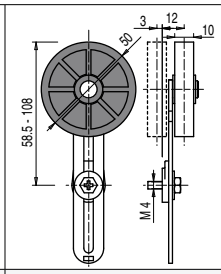
VF LE51-3 → (4)



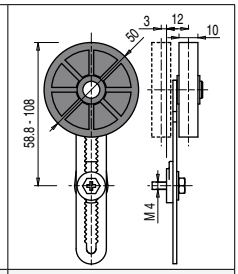
VF LE52-3 → (4)



VF LE54-3 → (4)

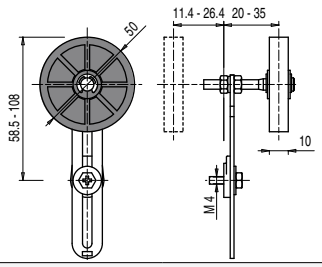


VF LE55-3 → (1)

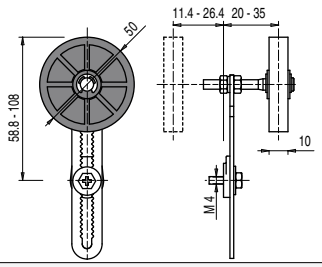


VF LE56-3 →

Ø 50 mm overhanging rubber rollers

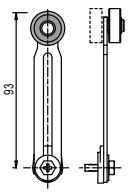


VF LE55-4 → (1)



VF LE56-4 →

- Only orders for multiple quantities of the packs are accepted.
- (1) Actuator VF LE55 suits to safety applications only if adjusted to its max length, as you can see in figure beside. If you need an adjustable lever for safety applications, use the adjustable safety lever VF LE56.
- (4) The actuator cannot be oriented to inside direction because it will mechanically interfere with the switch head.



Accessories See page 58

Items with code on the **green** background are available in stock

Selection diagram



01 **02** **05** **15**

stainless steel roller lever
external rubber gasket



51 **52** **31** **31-R5** **31-3**

31-R5 Ø 40 mm rubber roller

31-3 Ø 50 mm rubber roller

ACTUATORS



CONTACT BLOCKS



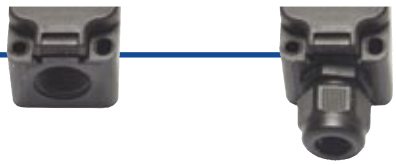
6 1NO+1NC slow action

7 1NO+1NC slow action overlapped

9 2NC slow action

16 2NC slow action independent

CONDUIT ENTRY

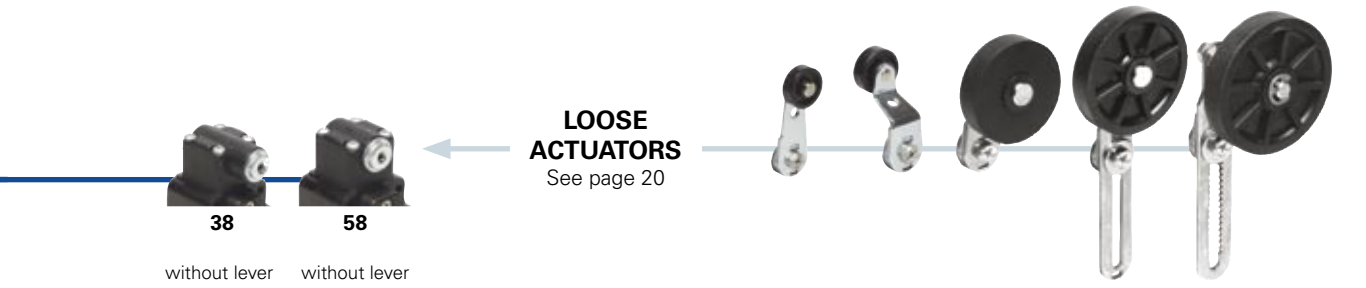


THREADED CONDUIT ENTRY

WITH PRE-INSTALLED CABLE GLAND

Versions with pre-installed cable glands or connectors available. For further information please contact the technical office

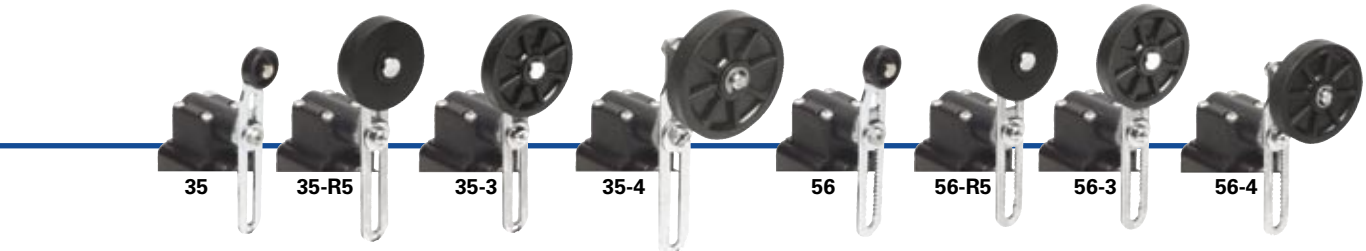
product option
accessory sold separately



38 without lever

58 without lever

LOOSE ACTUATORS
See page 20



35 adjustable lever

35-R5 Ø 40 mm rubber roller / adjustable lever

35-3 Ø 50 mm rubber roller / adjustable lever

35-4 Ø 50 mm rubber roller / adjustable lever

56 safety adjustable lever

56-R5 Ø 40 mm rubber roller / safety adjustable lever

56-3 Ø 50 mm rubber roller / safety adjustable lever

56-4 Ø 50 mm rubber roller / safety adjustable lever

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

FP 631-3GM2

Housing

FP	polymer housing, one conduit entry

Contact blocks

6	1NO+1NC, slow action
7	1NO+1NC, slow action overlapped
9	2NC, slow action
16	2NC, slow action indipendent

Actuators

01	short plunger
02	roller lever
05	offset roller lever
...	.....

Suffix

	no suffix (standard)
3	with Ø 50 mm rubber roller
4	with Ø 50 mm overhanging rubber roller

Contacts type

	silver contacts (standard)
G	silver contacts gold plated 1 µm

Threaded conduit entry

	PG 13,5 (standard)
M2	M20x1,5

Ø 40 mm rubber roller

	no roller (standard)
R5	with Ø 40 mm rubber roller



Main data

- Polymer housing, one conduit entry
- Protection degree IP67
- External stainless steel parts versions
- M12 assembled connector versions
- Silver contacts gold plated versions

Markings and quality marks:

Approval IMQ:	EG606
Approval UL:	E131787
Approval CCC:	2007010305230014
Approval EZU:	1010151

Technical data

Housing

Made of glass-reinforced polymer, self-extinguishing, shock-proof thermoplastic resin and with double insulation ⧈
One threaded conduit entry
Protection degree: IP67

General data

Ambient temperature: from -25°C to +80°C
Version for operation in ambient temperature from -40°C to +80° C on request
Max operating frequency: 3600 operations cycles[1]/hour
Mechanical endurance: 20 million operations cycles[1]
Assembling position: any
(1) One operation cycle means two movements, one to close and one to open contacts, as foreseen by IEC 947-5-1 standard.

Cross section of the conductors (flexible copper wire)

Contact blocks 6, 7, 9, 16:	min.	1 x 0,5 mm²	(1 x AWG 20)
	max.	2 x 2,5 mm²	(2 x AWG 14)

In conformity with standards:
IEC 60947-5-1, EN 60947-5-1, EN 50041, IEC 60204-1, EN 60204-1, EN 1088, EN ISO 12100-1, EN ISO 12100-2, IEC 529, EN 60529, EN 81-1, EN 81-2, NFC 63-140, VDE 0660-200, VDE 0113, CENELEC EN 50013.
Approvals:
IEC 60947-5-1, UL 508, GB14048.5-2001

In conformity with requirements requested by:
Low Voltage Directive 2006/95/EC, Machinery Directive 2006/42/EC and Electromagnetic Compatibility 2004/108/EC.
Positive contact opening in conformity with standards:
IEC 60947-5-1, EN 60947-5-1, VDE 0660-206.

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: 11-12, 21-22 or 31-32) as stated in the **standard CEI EN 60947-5-1, encl. K, par. 2**. The switch must be actuated with **at least up to the positive opening travel** shown in the travels diagrams on page 61. The switch must be actuated **at least with the positive opening force**, shown in brackets, underneath each article, near the value of the min. force.

Electrical data

Thermal current (Ith):	10 A
Rated insulation voltage (Ui):	500 VAC 600 VDC
Protection against short circuits:	fuse 10 A 500 V type aM
Pollution degree:	3

Utilization categories

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

Ue (V)	250	400	500
Ie (A)	6	4	1

Direct current: DC13

Ue (V)	24	125	250
Ie (A)	6	1,1	0,4

Data type approved by IMQ and EZU

Rated insulation voltage (Ui): 500 VAC
Thermal current (Ith): 10 A
Protection against short circuits: fuse 10 A 500 V type aM
Protection degree: IP67
MV terminals (screw clamps)
Pollution degree 3
Utilization category: AC15
Operation voltage (Ue): 400 VAC (50 Hz)
Operation current (Ie): 3 A
Forms of the contact element: Zb, Y+Y
Positive opening of contacts on contact block 6, 7, 9, 16
In conformity with standards: EN60947-1, EN 60947-5-1 and subsequent modifications and completions, fundamental requirements of the Low Voltage Directive 73/23 EEC and subsequent modifications and completions.

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

Data type approved by UL

Utilization categories Q300 (69 VA, 125-250 VDC)
A600 (720 VA, 120-600 VAC)
Data of the housing type 1, 4X (indoor use only), 12, 13
In conformity with standard: UL 508
For all contact blocks except 2 and 3 use 60 or 75 °C copper (Cu) conductor and wire size 12-14 AWG. Terminal tightening torque of 7,1 Lb-In.
For contact blocks 2 and 3 use 60 or 75 °C copper (Cu) conductor and wire size 14 AWG. Terminal tightening torque of 12 Lb-In.

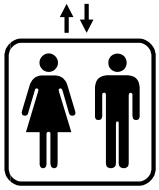
Please contact our technical service for the list of type approved products.

Data type approved by CSA

Utilization categories Q300 (69 VA, 125-250 VDC)
A600 (720 VA, 120-600 VAC)
Data of the housing type 1, 4X (indoor use only), 12, 13
In conformity with standard: CSA C22-2 nr.14

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

EN 81 standard



On the following pages a selection of Pizzato Elettrica products which are used typically in the lift sector and in accordance with the standard EN81 is introduced.

Rubber rollers



Different actuators with rubber rollers are available. The client can choose the most suitable product depending on lift speed in order to reduce the noise inside the cabin.

Safety lever L56



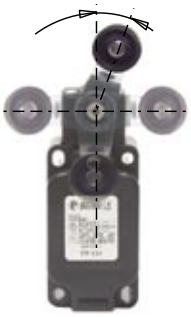
The adjustable lever code 56 (and variants) is supplied with an indentation which blocks the lever slipping in case of fixing screw release.

Protection degree IP67

All the Pizzato Elettrica position switches have been updated to protection degree IP67.

Adjustable levers

In switches with revolving lever it is possible to adjust the lever with 10° steps for the whole 360° range. The positive movement transmission is always guaranteed thanks to the particular geometrical coupling between the lever and the revolving shaft as prescribed for safety applications by the German standard BG-GS-ET-15.



Overturning levers

It's possible to fasten the lever on switches on straight or reverse side, maintaining the positive coupling.
In this way it is possible to obtain two different work plans of the lever.



Rotating heads

In all switches, it is possible to rotate the head in 90° steps.

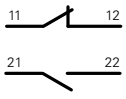


Working operation of contact block 16 with independent contacts

The contact block 16 has two NC contacts**, both with positive opening** activated independently according to the lever turning direction.

Lever turned to left

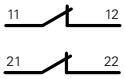
Contacts diagram





Lever not turned

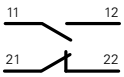
Contacts diagram





Lever turned to right

Contacts diagram

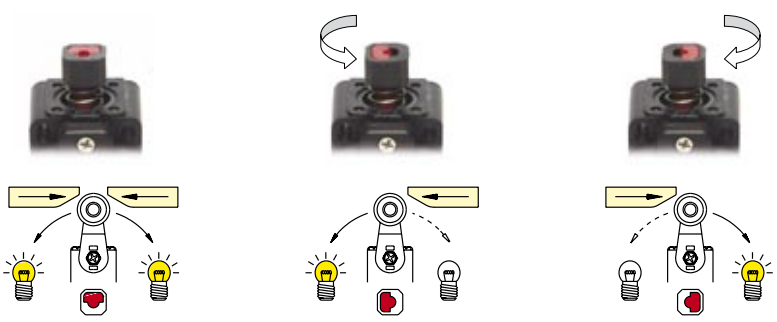




Unidirectional heads

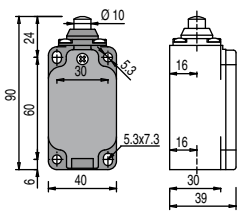
In the switches with revolving lever, it is possible to select the directional operation by removing the four screws of the head and revolving the internal piston (contact block 16 excluded).

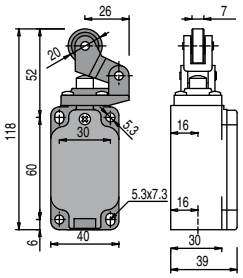


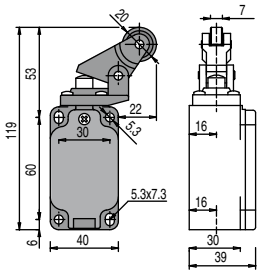


Contacts type:

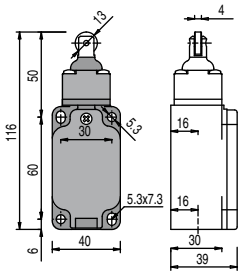
L = slow action
LO = slow action overlapped
LI = slow action independent



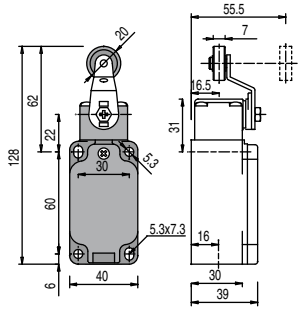


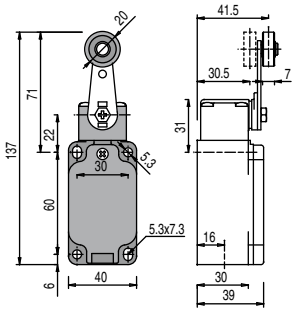


With external rubber gasket



Contact blocks							
6	L	FP 601	1NO+1NC	FP 602	1NO+1NC	FP 605	1NO+1NC	FP 615	1NO+1NC
7	LO	FP 701	1NO+1NC	FP 702	1NO+1NC	FP 705	1NO+1NC	FP 715	1NO+1NC
9	L	FP 901	2NC	FP 902	2NC	FP 905	2NC	FP 915	2NC
16	LI								
Max speed		page 62 - type 4		page 62 - type 4		page 62 - type 3		page 62 - type 2	
Min. force		8 N (25 N ⊖)		6 N (25 N ⊖)		6 N (25 N ⊖)		11 N (25 N ⊖)	
Travel diagrams		page 61 - group 1b		page 61 - group 1b		page 61 - group 2b		page 61 - group 1b	





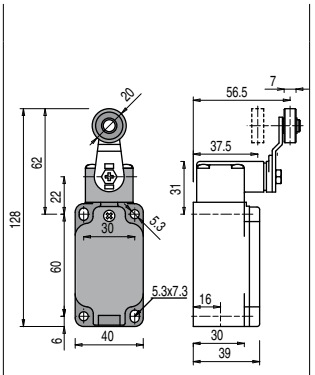
Contact blocks							
6	L	FP 651	1NO+1NC	FP 652	1NO+1NC		
7	LO	FP 751	1NO+1NC	FP 752	1NO+1NC		
9	L	FP 951	2NC	FP 952	2NC		
16	LI						
Max speed		page 62 - type 1		page 62 - type 1			
Min. force		0,1 Nm (0,25 Nm ⊖)		0,1 Nm (0,25 Nm ⊖)			
Travel diagrams		page 61 - group 3b		page 61 - group 3b			

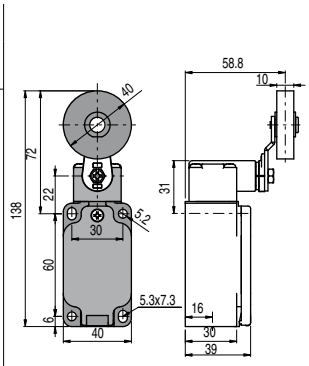
Accessories See page 58

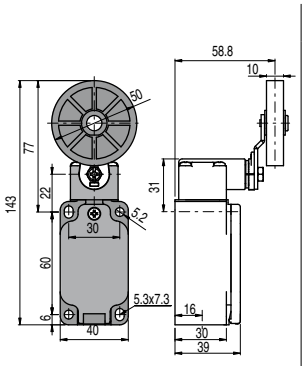
All measures in the drawings are in mm

Contacts type:

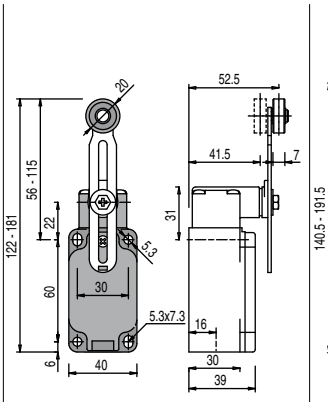
L = slow action
LO = slow action overlapped
LI = slow action independent

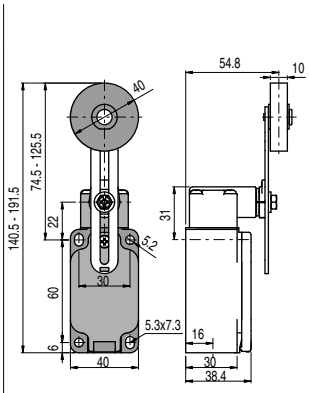


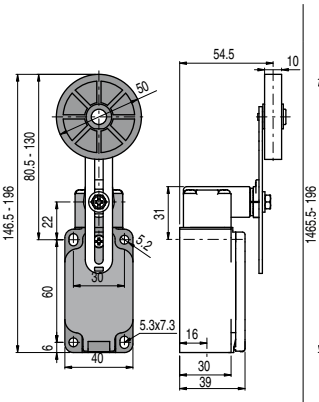


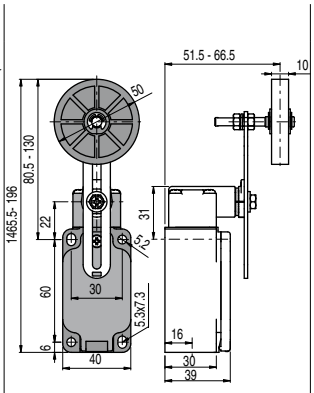


Contact blocks					
6	L	FP 631 ⇒ 1NO+1NC	FP 631-R5 ⇒ 1NO+1NC	FP 631-3 ⇒ 1NO+1NC	
7	LO	FP 731 ⇒ 1NO+1NC	FP 731-R5 ⇒ 1NO+1NC	FP 731-3 ⇒ 1NO+1NC	
9	L	FP 931 ⇒ 2NC	FP 931-R5 ⇒ 2NC	FP 931-3 ⇒ 2NC	
16	LI	FP 1631 ⇒ 2NC	FP 1631-R5 ⇒ 2NC	FP 1631-3 ⇒ 2NC	
Max speed		page 62 - type 1	page 62 - type 1	page 62 - type 1	
Min. force		0,15 Nm (0,25 Nm ⇒)	0,15 Nm (0,25 Nm ⇒)	0,15 Nm (0,25 Nm ⇒)	
Travel diagrams		page 61 - group 3b	page 61 - group 3b	page 61 - group 3b	

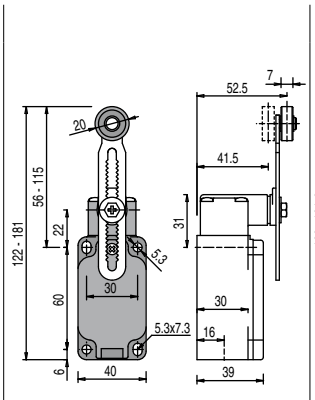


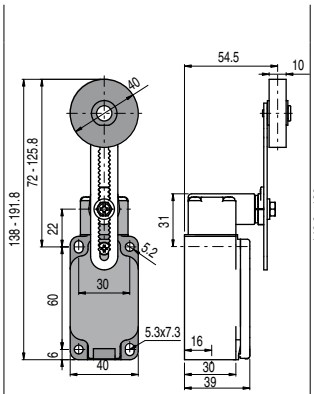


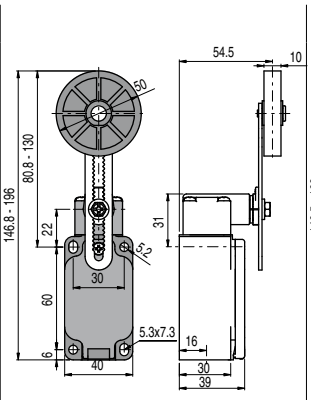


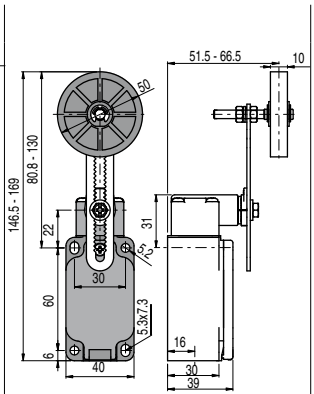


Contact blocks					
6	L	FP 635 ⇒ (1) 1NO+1NC	FP 635-R5 ⇒ (1) 1NO+1NC	FP 635-3 ⇒ (1) 1NO+1NC	FP 635-4 ⇒ (1) 1NO+1NC
7	LO	FP 735 ⇒ (1) 1NO+1NC	FP 735-R5 ⇒ (1) 1NO+1NC	FP 735-3 ⇒ (1) 1NO+1NC	FP 735-4 ⇒ (1) 1NO+1NC
9	L	FP 935 ⇒ (1) 2NC	FP 935-R5 ⇒ (1) 2NC	FP 935-3 ⇒ (1) 2NC	FP 935-4 ⇒ (1) 2NC
16	LI	FP 1635 ⇒ (1) 2NC	FP 1635-R5 ⇒ (1) 2NC	FP 1635-3 ⇒ (1) 2NC	FP 1635-4 ⇒ (1) 2NC
Max speed		page 62 - type 1	page 62 - type 1	page 62 - type 1	page 62 - type 1
Min. force		0,15 Nm (0,25 Nm ⇒)	0,15 Nm (0,25 Nm ⇒)	0,15 Nm (0,25 Nm ⇒)	0,15 Nm (0,25 Nm ⇒)
Travel diagrams		page 61 - group 3b	page 61 - group 3b	page 61 - group 3b	page 61 - group 3b









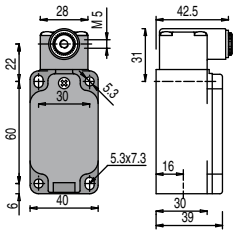
Contact blocks					
6	L	FP 656 ⇒ 1NO+1NC	FP 656-R5 ⇒ 1NO+1NC	FP 656-3 ⇒ 1NO+1NC	FP 656-4 ⇒ 1NO+1NC
7	LO	FP 756 ⇒ 1NO+1NC	FP 756-R5 ⇒ 1NO+1NC	FP 756-3 ⇒ 1NO+1NC	FP 756-4 ⇒ 1NO+1NC
9	L	FP 956 ⇒ 2NC	FP 956-R5 ⇒ 2NC	FP 956-3 ⇒ 2NC	FP 956-4 ⇒ 2NC
16	LI	FP 1656 ⇒ 2NC	FP 1656-R5 ⇒ 2NC	FP 1656-3 ⇒ 2NC	FP 1656-4 ⇒ 2NC
Max speed		page 62 - type 1	page 62 - type 1	page 62 - type 1	page 62 - type 1
Min. force		0,15 Nm (0,25 Nm ⇒)	0,15 Nm (0,25 Nm ⇒)	0,15 Nm (0,25 Nm ⇒)	0,15 Nm (0,25 Nm ⇒)
Travel diagrams		page 61 - group 3b	page 61 - group 3b	page 61 - group 3b	page 61 - group 3b

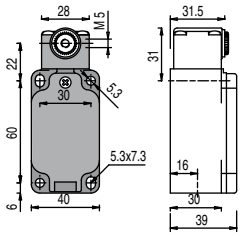
Accessories See page 58

(1) Positive opening only with lever adjusted on the max.

Contacts type:

L = slow action
LO = slow action overlapped
LI = slow action independent





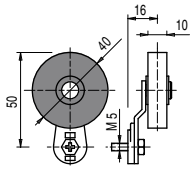
Contact blocks							
6	L	FP 638	1NO+1NC	FP 658	1NO+1NC		
7	LO	FP 738	1NO+1NC	FP 758	1NO+1NC		
9	L	FP 938	2NC	FP 958	2NC		
16	LI	FP 1638	2NC				
Max speed		page 62 - type 1		page 62 - type 1			
Min. force		0,15 Nm (0,25 Nm)		0,1 Nm (0,25 Nm)			
Travel diagrams		page 61 - group 3b		page 61 - group 3b			

Special loose actuators

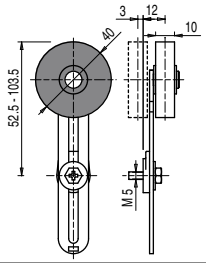
10 pcs pack

IMPORTANT: These loose actuators can be used with items of series FD, FP, FL, FC only

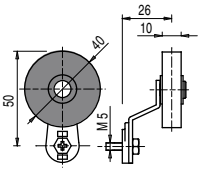
Ø 40 mm rubber rollers



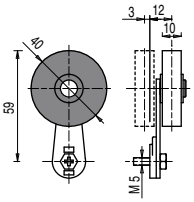
VF L31-R5 (4)



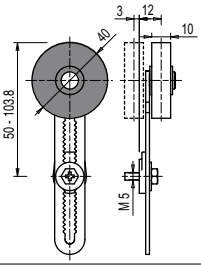
VF L35-R5 (1) (3)



VF L51-R5 (4)

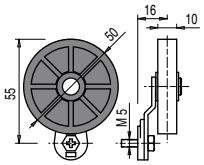


VF L52-R5

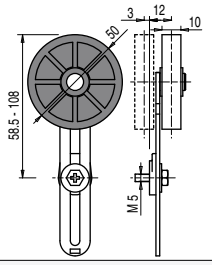


VF L56-R5 (3)

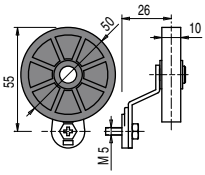
Ø 50 mm rubber rollers



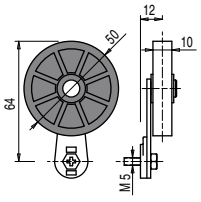
VF L31-3 (4)



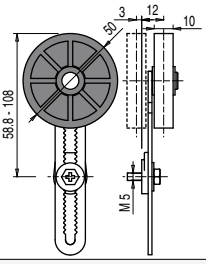
VF L35-3 (1) (3)



VF L51-3 (4)

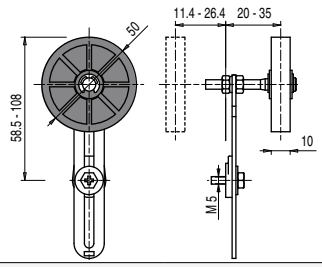


VF L52-3 (4)

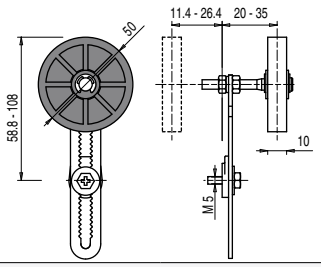


VF L56-3 (3)

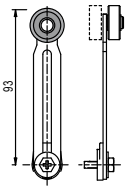
Ø 50 mm overhanging rubber rollers



VF L35-4 (1) (3)



VF L56-4 (3)

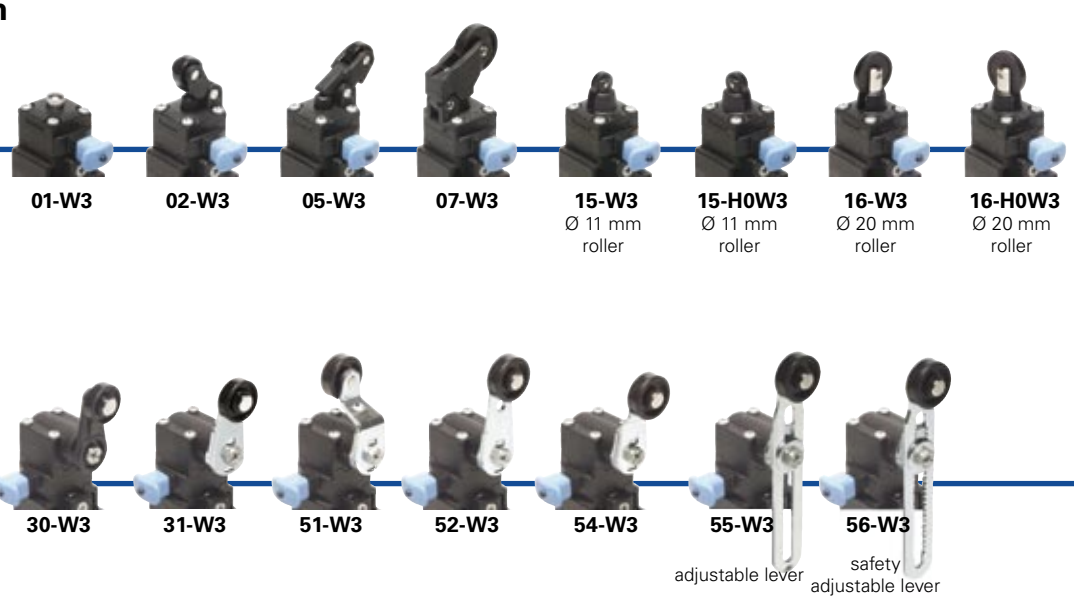


- Only orders for multiple quantities of the packs are accepted.
- (1) Actuator VF L35 suits to safety applications only if adjusted to its max length, as you can see in figure beside. If you need an adjustable lever for safety applications, use the adjustable safety lever VF L56.
- (3) If it is installed with switch FP •58 (e.g. FP 558, FP 658..), the actuator can mechanically interfere with the housing of the switch. The interference could happen or not according to the actuator and the head fixing position.
- (4) The actuator cannot be oriented to inside direction because it will mechanically interfere with the switch head.

Accessories See page 58

Notes

Selection diagram



ACTUATORS



FR **FX**

CONTACT BLOCKS



6 1NO+1NC slow action

9 2NC slow action

20 1NO+2NC slow action

PLATES



P12	Fixing plate (FR series)
P32	Fixing plate (FX series)

CONDUIT ENTRY



THREADED CONDUIT ENTRY

WITH PRE-INSTALLED CABLE GLAND

Versions with pre-installed cable glands or connectors available. For further information please contact the technical office

product option

accessory sold separately



38-W3

without lever

LOOSE ACTUATORS

See page 29

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

FR 654-3W3GM2P12

Housing

FR	polymer housing, one conduit entry
FX	polymer housing, two conduit entries

Contact blocks

6	1NO+1NC, slow action
9	2NC, slow action
20	1NO+2NC, slow action

Actuators

01	short plunger
02	roller lever
05	offset roller lever
...	.....

Suffix

	no suffix (standard)
3	with Ø 50 mm rubber roller
4	with Ø 50 mm overhanging rubber roller

Reset hooking

	no reset hooking (standard)
W3	simultaneous reset hooking

Contacts type

	silver contacts (standard)
G	silver contacts gold plated 1 µm

Threaded conduit entry

	PG 13,5 (standard)
A	PG 11
M1	M16x1,5
M2	M20x1,5

Fixing plate

	without fixing plate (standard)
P12	supplied with fixing plate VF SFP1
P32	supplied with fixing plate VF SFP3

Ø 40 mm rubber roller

	no roller (standard)
R5	with Ø 40 mm rubber roller



Main data

- Polymer housing, with one or two conduit entries
- Protection degree IP67
- External stainless steel parts versions
- M12 assembled connector versions
- Silver contacts gold plated versions

Markings and quality marks:

Approval IMQ:	EG610
Approval UL:	E131787
Approval CCC:	2007010305230013
Approval EZU:	1010151

Technical data

Housing

Made of glass-reinforced polymer, self-extinguishing, shock-proof thermoplastic resin and with double insulation ⧈
FR series one threaded conduit entry
FX series two threaded conduit entries
Protection degree: IP67

General data

Ambient temperature: from -25°C to +80°C
Version for operation in ambient temperature from -40°C to +80° C on request
Max operating frequency: 3600 operations cycles[1]/hour
Mechanical endurance: 20 million operations cycles[1]
Assembling position: any
(1) One operation cycle means two movements, one to close and one to open contacts, as foreseen by IEC 947-5-1 standard.

Cross section of the conductors (flexible copper wire)

Contact blocks 6, 9, 20:	min.	1 x 0,5 mm²	(1 x AWG 20)
	max.	2 x 2,5 mm²	(2 x AWG 14)

In conformity with standards:
IEC 60947-5-1, EN 60947-5-1, EN 50047, IEC 60204-1, EN 60204-1, EN 1088, EN ISO 12100-1, EN ISO 12100-2, IEC 529, EN 60529, EN 81-1, EN 81-2, NFC 63-140, VDE 0660-200, VDE 0113, CENELEC EN 50013.
Approvals:
IEC 60947-5-1, UL 508, GB14048.5-2001

In conformity with requirements requested by:
Low Voltage Directive 2006/95/EC, Machinery Directive 2006/42/EC and Electromagnetic Compatibility 2004/108/EC.
Positive contact opening in conformity with standards:
IEC 60947-5-1, EN 60947-5-1, VDE 0660-206.

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: 11-12, 21-22 or 31-32) as stated in the **standard CEI EN 60947-5-1, encl. K, par. 2**. The switch must be actuated with **at least up to the positive opening travel** shown in the travels diagrams on page 61. The switch must be actuated **at least with the positive opening force**, shown in brackets, underneath each article, near the value of the min. force.

Electrical data

Thermal current (Ith):	10 A
Rated insulation voltage (Ui):	500 VAC 600 VDC
	400 VAC for contacts block 20
Protection against short circuits:	fuse 10 A 500 V type aM
Pollution degree:	3

Utilization categories

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

Ue (V)	250	400	500
Ie (A)	6	4	1

Direct current: DC13

Ue (V)	24	125	250
Ie (A)	6	1,1	0,4

Data type approved by IMQ and EZU

Rated insulation voltage (Ui): 500 VAC
400 VAC for contacts block 20
Thermal current (Ith): 10 A
Protection against short circuits: fuse 10 A 500 V type aM
Protection degree: IP67
MV terminals (screw clamps)
Pollution degree 3
Utilization category: AC15
Operation voltage (Ue): 400 VAC (50 Hz)
Operation current (Ie): 3 A
Forms of the contact element: Zb, Y+Y, Y+Y+X
Positive opening of contacts on contact block 6, 9, 20
In conformity with standards: EN60947-1, EN 60947-5-1 and subsequent modifications and completions, fundamental requirements of the Low Voltage Directive 73/23 EEC and subsequent modifications and completions.

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

Data type approved by UL

Utilization categories Q300 (69 VA, 125-250 VDC)
A600 (720 VA, 120-600 VAC)
Data of the housing type 1, 4X (indoor use only), 12, 13
In conformity with standard: UL 508
For all contact blocks use 60 or 75 °C copper (Cu) conductor and wire size 12-14 AWG. Terminal tightening torque of 7,1 Lb-In.

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

Data type approved by CSA

Utilization categories Q300 (69 VA, 125-250 VDC)
A600 (720 VA, 120-600 VAC)
Data of the housing type 1, 4X (indoor use only), 12, 13
In conformity with standard: CSA C22-2 nr.14

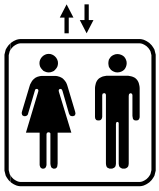
Please contact our technical service for the list of type approved products.

New product 2007 - W3 simultaneous reset devices



Pizzato Elettrica has developed and patented an innovative reset device that can be applied on the overwhelming majority of position switches. By activating the switch this device forces the simultaneous electrical contacts tripping and the reset system hooking. Therefore contact blocks with snap action are no more necessary and will not occur anymore problems caused by small differences between reset button hooking and contacts opening. Moreover, the new device can be rotated independently from the above actuator, making the product highly flexible in the positioning. The reset is obtained by pulling back the blue button, as prescribed by standards, to avoid that unwanted objects could reset it accidentally.

EN 81 standard



On the following pages a selection of Pizzato Elettrica products which are used typically in the lift sector and in accordance with the standard EN81 is introduced.

Protection degree IP67



All the Pizzato Elettrica position switches have been updated to protection degree IP67.

Safety lever LE56



The adjustable lever code 56 (and variants) is supplied with an indentation which blocks the lever slipping in case of fixing screw release.

Rubber rollers



Different actuators with rubber rollers are available. The client can choose the most suitable product depending on lift speed in order to reduce the noise inside the cabin.

Conduit entries

Switches with conduit entries in several directions are available, for applications also in restricted spaces.





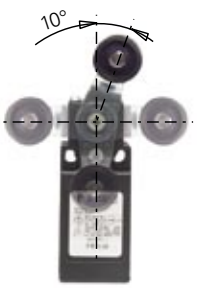
Adaptive plates



Adaptive plates provided with long slots for the adjustment of the actuating point, developed for compatibility with old products.
Every plate has a double couple of switch fixing holes, one for standard switches and the other one for switches with reset device. In this way the actuator will always have the same actuating point.

Adjustable levers

In switches with revolving lever it is possible to adjust the lever with 10° steps for the whole 360° range. The positive movement transmission is always guaranteed thanks to the particular geometrical coupling between the lever and the revolving shaft as prescribed for safety applications by the German standard BG-GS-ET-15.



Overturning levers

It's possible to fasten the lever on switches on straight or reverse side, maintaining the positive coupling.
In this way it is possible to obtain two different work plans of the lever.



Rotating heads

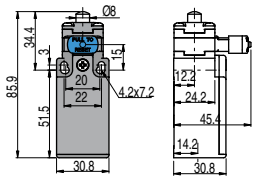
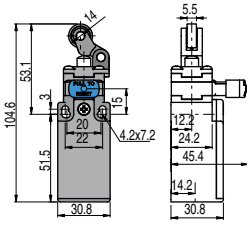
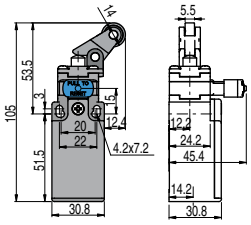
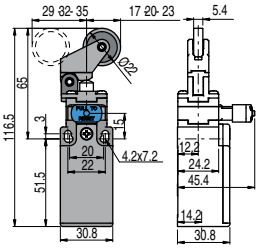
In all switches, it is possible to rotate the head in 90° steps.



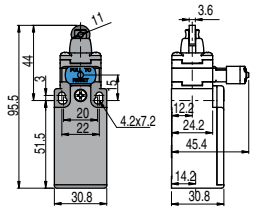
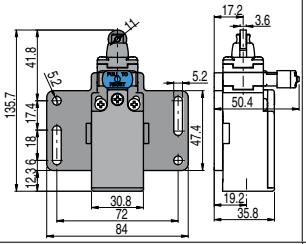
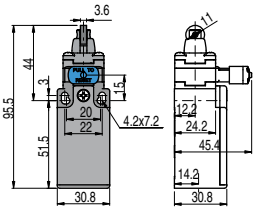
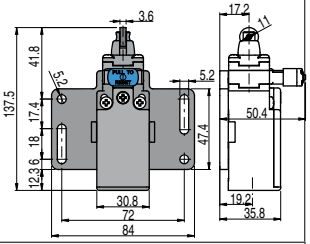
Contacts type:

L = slow action

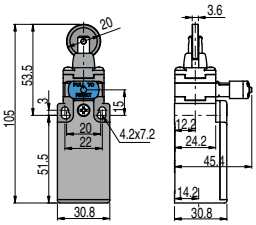
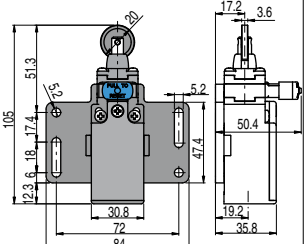
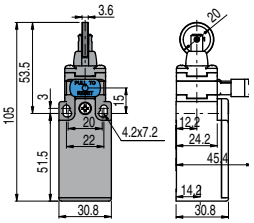
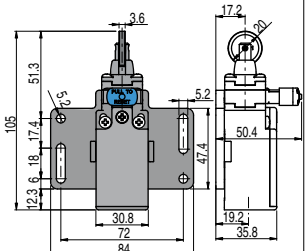
Contact blocks

					
6	L	FR 601-W3 → 1NO+1NC	FR 602-W3 → 1NO+1NC	FR 605-W3 → 1NO+1NC	FR 607-W3 → 1NO+1NC
9	L	FR 901-W3 → 2NC	FR 902-W3 → 2NC	FR 905-W3 → 2NC	FR 907-W3 → 2NC
20	L	FR 2001-W3 → 1NO+2NC	FR 2002-W3 → 1NO+2NC	FR 2005-W3 → 1NO+2NC	FR 2007-W3 → 1NO+2NC
Max speed		page 62 - type 4	page 62 - type 4	page 62 - type 3	page 62 - type 3
Min. force		8 N (25 N →)	6 N (25 N →)	6 N (25 N →)	4 N (25 N →)
Travel diagrams		page 61 - group 1c	page 61 - group 1c	page 61 - group 2c	page 61 - group 3c

Contact blocks

					
6	L	FR 615-W3 → 1NO+1NC	FR 615-W3P12 → 1NO+1NC	FR 615-W3H0 → 1NO+1NC	FR 615-W3H0P12 → 1NO+1NC
9	L	FR 915-W3 → 2NC	FR 915-W3P12 → 2NC	FR 915-W3H0 → 2NC	FR 915-W3H0P12 → 2NC
20	L	FR 2015-W3 → 1NO+2NC	FR 2015-W3P12 → 1NO+2NC	FR 2015-W3H0 → 1NO+2NC	FR 2015-W3H0P12 → 1NO+2NC
Max speed		page 62 - type 2	page 62 - type 2	page 62 - type 2	page 62 - type 2
Min. force		8 N (25 N →)	8 N (25 N →)	8 N (25 N →)	8 N (25 N →)
Travel diagrams		page 61 - group 1c	page 61 - group 1c	page 61 - group 1c	page 61 - group 1c

Contact blocks

					
6	L	FR 616-W3 → 1NO+1NC	FR 616-W3P12 → 1NO+1NC	FR 616-W3H0 → 1NO+1NC	FR 616-W3H0P12 → 1NO+1NC
9	L	FR 916-W3 → 2NC	FR 916-W3P12 → 2NC	FR 916-W3H0 → 2NC	FR 916-W3H0P12 → 2NC
20	L	FR 2016-W3 → 1NO+2NC	FR 2016-W3P12 → 1NO+2NC	FR 2016-W3H0 → 1NO+2NC	FR 2016-W3H0P12 → 1NO+2NC
Max speed		page 62 - type 2	page 62 - type 2	page 62 - type 2	page 62 - type 2
Min. force		8 N (25 N →)	8 N (25 N →)	8 N (25 N →)	8 N (25 N →)
Travel diagrams		page 61 - group 1c	page 61 - group 1c	page 61 - group 1c	page 61 - group 1c

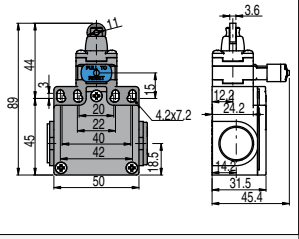
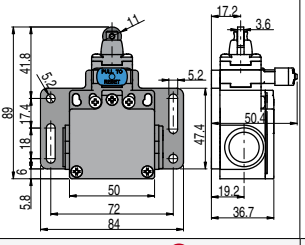
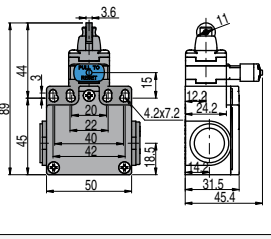
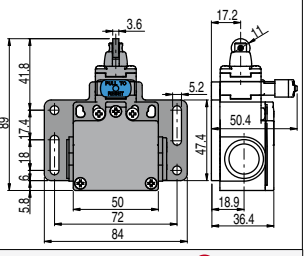
Accessories See page 58

All measures in the drawings are in mm

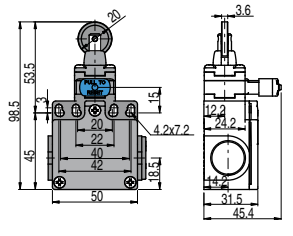
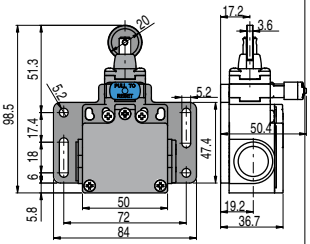
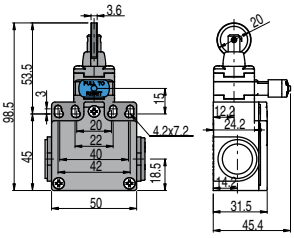
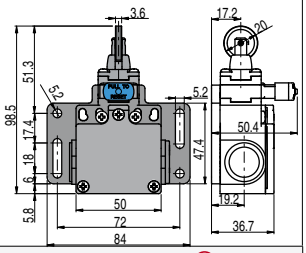
Contacts type:

L = slow action

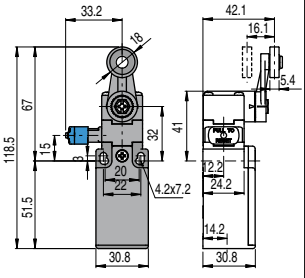
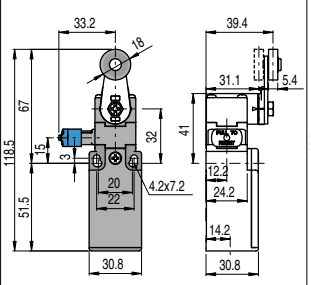
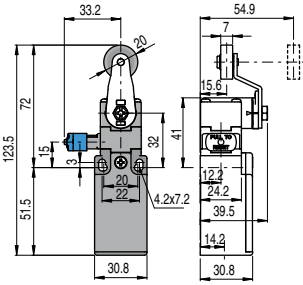
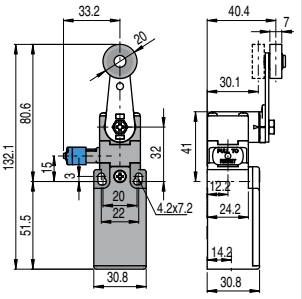
Contact blocks

					
6	L	FX 615-W3 → 1NO+1NC	FX 615-W3P32 → 1NO+1NC	FX 615-W3H0 → 1NO+1NC	FX 615-W3H0P32 → 1NO+1NC
9	L	FX 915-W3 → 2NC	FX 915-W3P32 → 2NC	FX 915-W3H0 → 2NC	FX 915-W3H0P32 → 2NC
20	L	FX 2015-W3 → 1NO+2NC	FX 2015-W3P32 → 1NO+2NC	FX 2015-W3H0 → 1NO+2NC	FX 2015-W3H0P32 → 1NO+2NC
Max speed		page 62 - type 2	page 62 - type 2	page 62 - type 2	page 62 - type 2
Min. force		8 N (25 N →)	8 N (25 N →)	8 N (25 N →)	8 N (25 N →)
Travel diagrams		page 61 - group 1c	page 61 - group 1c	page 61 - group 1c	page 61 - group 1c

Contact blocks

					
6	L	FX 616-W3 → 1NO+1NC	FX 616-W3P32 → 1NO+1NC	FX 616-W3H0 → 1NO+1NC	FX 616-W3H0P32 → 1NO+1NC
9	L	FX 916-W3 → 2NC	FX 916-W3P32 → 2NC	FX 916-W3H0 → 2NC	FX 916-W3H0P32 → 2NC
20	L	FX 2016-W3 → 1NO+2NC	FX 2016-W3P32 → 1NO+2NC	FX 2016-W3H0 → 1NO+2NC	FX 2016-W3H0P32 → 1NO+2NC
Max speed		page 62 - type 2	page 62 - type 2	page 62 - type 2	page 62 - type 2
Min. force		8 N (25 N →)	8 N (25 N →)	8 N (25 N →)	8 N (25 N →)
Travel diagrams		page 61 - group 1c	page 61 - group 1c	page 61 - group 1c	page 61 - group 1c

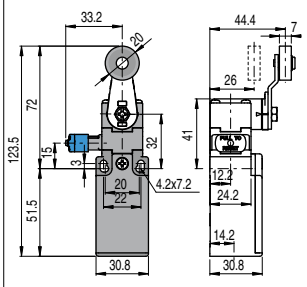
Contact blocks

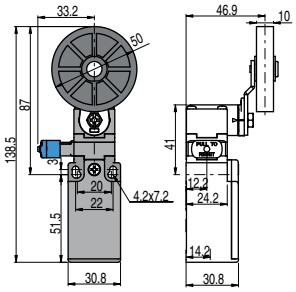
					
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9	L	FR 930-W3 → 2NC	FR 931-W3 → 2NC	FR 951-W3 → 2NC	FR 952-W3 → 2NC
20	L	FR 2030-W3 → 1NO+2NC	FR 2031-W3 → 1NO+2NC	FR 2051-W3 → 1NO+2NC	FR 2052-W3 → 1NO+2NC
Max speed		page 62 - type 1	page 62 - type 1	page 62 - type 1	page 62 - type 1
Min. force		0,1 Nm (0,25 Nm →)	0,1 Nm (0,25 Nm →)	0,1 Nm (0,25 Nm →)	0,1 Nm (0,25 Nm →)
Travel diagrams		page 61 - group 4c	page 61 - group 4c	page 61 - group 4c	page 61 - group 4c

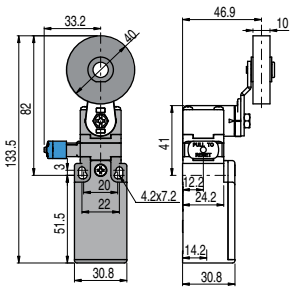
Accessories See page 58

Contacts type:

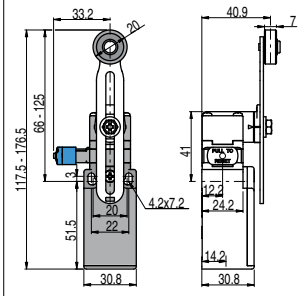
L = slow action

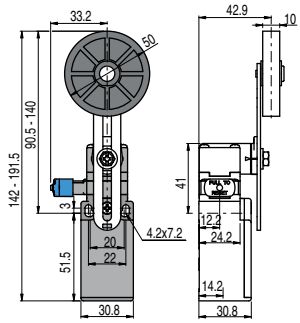


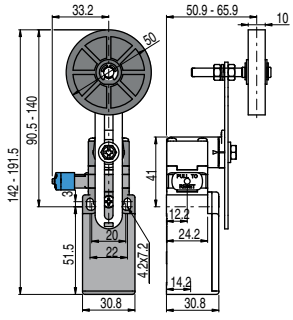


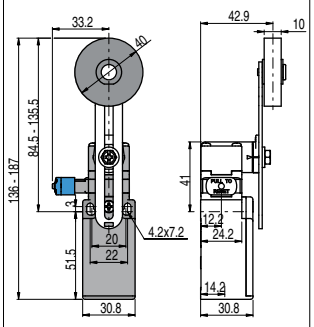


Contact blocks							
6	L	FR 654-W3	1NO+1NC	FR 654-3W3	1NO+1NC	FR 654-R5W3	1NO+1NC
9	L	FR 954-W3	2NC	FR 954-3W3	2NC	FR 954-R5W3	2NC
20	L	FR 2054-W3	1NO+2NC	FR 2054-3W3	1NO+2NC	FR 2054-R5W3	1NO+2NC
Max speed		page 62 - type 1		page 62 - type 1		page 62 - type 1	
Min. force		0,1 Nm (0,25 Nm)		0,1 Nm (0,25 Nm)		0,1 Nm (0,25 Nm)	
Travel diagrams		page 61 - group 4c		page 61 - group 4c		page 61 - group 4c	

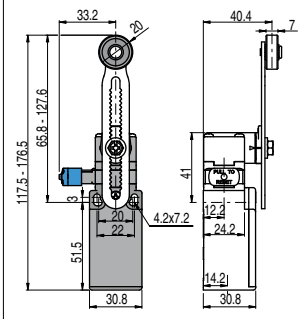


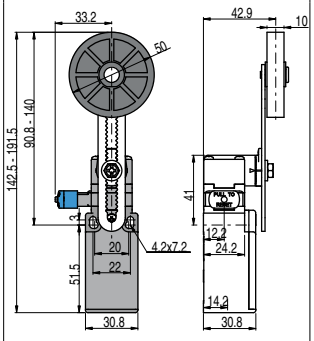


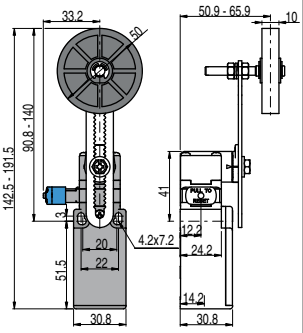


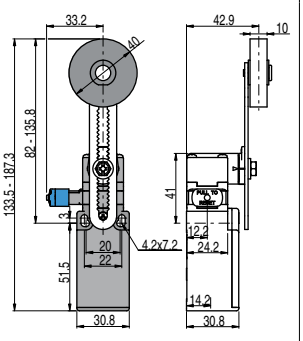


Contact blocks							
6	L	FR 655-W3	(1) 1NO+1NC	FR 655-3W3	(1) 1NO+1NC	FR 655-4W3	(1) 1NO+1NC	FR 655-R5W3	(1) 1NO+1NC
9	L	FR 955-W3	(1) 2NC	FR 955-3W3	(1) 2NC	FR 955-4W3	(1) 2NC	FR 955-R5W3	(1) 2NC
20	L	FR 2055-W3	(1) 1NO+1NC	FR 2055-3W3	(1) 1NO+2NC	FR 2055-4W3	(1) 1NO+2NC	FR 2055-R5W3	(1) 1NO+2NC
Max speed		page 62 - type 1		page 62 - type 1		page 62 - type 1		page 62 - type 1	
Min. force		0,1 Nm (0,25 Nm)		0,1 Nm (0,25 Nm)		0,1 Nm (0,25 Nm)		0,1 Nm (0,25 Nm)	
Travel diagrams		page 61 - group 4c		page 61 - group 4c		page 61 - group 4c		page 61 - group 4c	







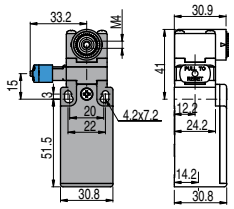
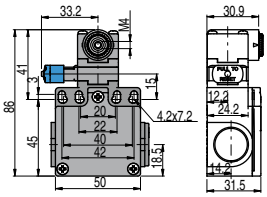


Contact blocks							
6	L	FR 656-W3	1NO+1NC	FR 656-3W3	1NO+1NC	FR 656-4W3	1NO+1NC	FR 656-R5W3	1NO+1NC
9	L	FR 956-W3	2NC	FR 956-3W3	2NC	FR 956-4W3	2NC	FR 956-R5W3	2NC
20	L	FR 2056-W3	1NO+2NC	FR 2056-3W3	1NO+2NC	FR 2056-4W3	1NO+2NC	FR 2056-R5W3	1NO+2NC
Max speed		page 62 - type 1		page 62 - type 1		page 62 - type 1		page 62 - type 1	
Min. force		0,1 Nm (0,25 Nm)		0,1 Nm (0,25 Nm)		0,1 Nm (0,25 Nm)		0,1 Nm (0,25 Nm)	
Travel diagrams		page 61 - group 4c		page 61 - group 4c		page 61 - group 4c		page 61 - group 4c	

Accessories See page 58

(1) Positive opening only with lever adjusted on the max.

Position switches (reset hooking) with revolving lever without actuator

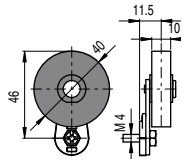
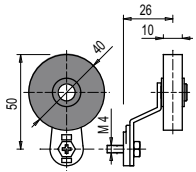
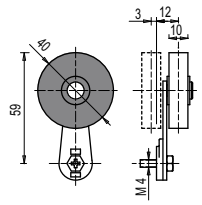
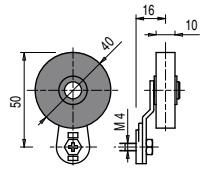
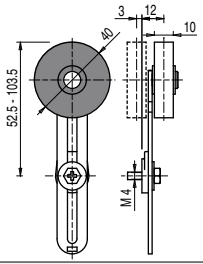
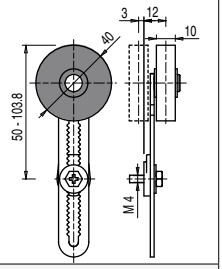
Contact blocks					
					
6	L	FR 638-W3 → 1NO+1NC	FX 638-W3 → 1NO+1NC		
9	L	FR 938-W3 → 2NC	FX 938-W3 → 2NC		
20	L	FR 2038-W3 → 1NO+2NC	FX 2038-W3 → 1NO+2NC		
Max speed		page 62 - type 1	page 62 - type 1		
Min. force		0,1 Nm (0,25 Nm →)	0,1 Nm (0,25 Nm →)		
Travel diagrams		page 61 - group 4c	page 61 - group 4c		

Special loose actuators

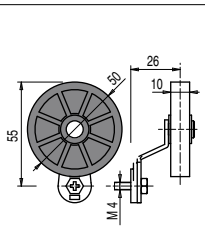
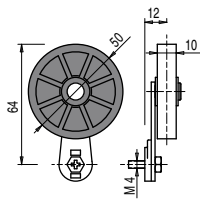
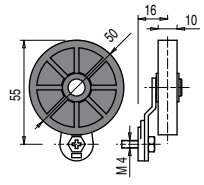
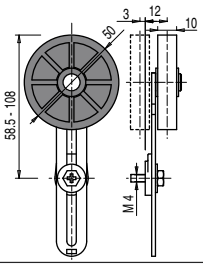
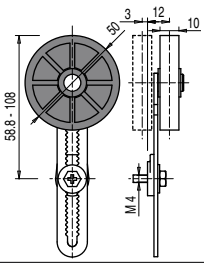
10 pcs pack

IMPORTANT: These loose actuators can be used with items of series FR, FX only

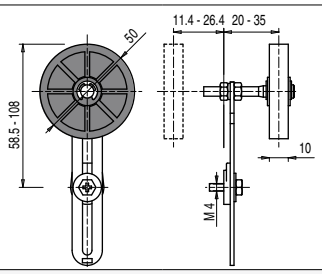
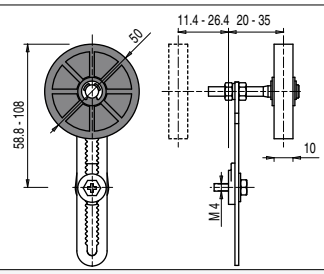
Ø 40 mm rubber rollers

					
VF LE31-R5 → (4)	VF LE51-R5 → (4)	VF LE52-R5 →	VF LE54-R5 → (4)	VF LE55-R5 → (1)	VF LE56-R5 →

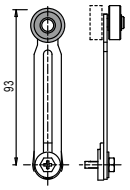
Ø 50 mm rubber rollers

					
	VF LE51-3 → (4)	VF LE52-3 → (4)	VF LE54-3 → (4)	VF LE55-3 → (1)	VF LE56-3 →

Ø 50 mm overhanging rubber rollers

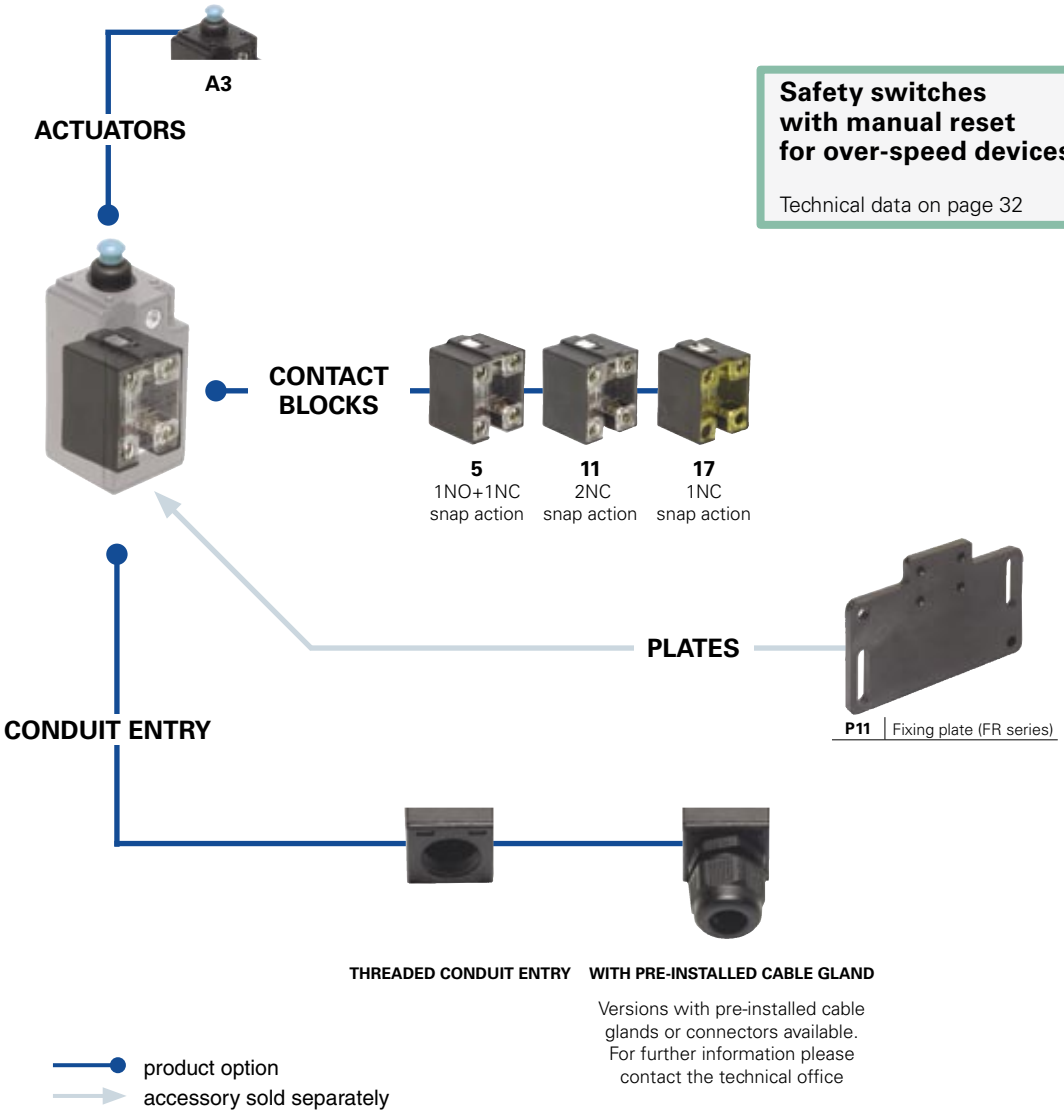
			
	VF LE55-4 → (1)	VF LE56-4 →	

- Only orders for multiple quantities of the packs are accepted.
- (1) Actuator VF LE55 suits to safety applications only if adjusted to its max length, as you can see in figure beside. If you need an adjustable lever for safety applications, use the adjustable safety lever VF LE56.
- (4) The actuator cannot be oriented to inside direction because it will mechanically interfere with the switch head.



Accessories See page 58

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

FR 5A3-GM2P11

Housing

FR	polymer housing, one conduit entry

Fixing plate

	without fixing plate (standard)
P11	with fixing plate VF SFP1

Contact blocks

5	1NO+1NC, snap action
11	2NC, snap action
17	1NC, snap action

Threaded conduit entry

	PG 13,5 (standard)
A	PG 11
M1	M16x1,5
M2	M20x1,5

Actuators

A3	short plunger

Contacts type

	silver contacts (standard)
G	silver contacts gold plated 1 µm



Safety switches with rotating reset device and manual reset for over-speed devices

Technical data on page 24

Code structure

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

article: **FR 602-W3** | options: **GM2P12**

Housing

FR	polymer housing, one conduit entry
FX	polymer housing, two conduit entries

Contact blocks

6	1NO+1NC, slow action
9	2NC, slow action
20	1NO+2NC, slow action

Actuators

01	short plunger
02	roller lever
15	roller plunger
...	.....

Reset hooking

W3	simultaneous reset hooking

Contacts type

	silver contacts (standard)
G	silver contacts gold plated 1 µm

Threaded conduit entry

	PG 13,5 (standard)
A	PG 11
M1	M16x1,5
M2	M20x1,5

Fixing plate

	without fixing plate (standard)
P12	supplied with fixing plate VF SFP1
P32	supplied with fixing plate VF SFP3



Safety switches with electrical reset for over-speed devices

Technical data on page 34

Code structure

article: **FT 1101E230** | options: **M2**

Housing

FT	polymer housing, three conduit entries

Contact block

11	2NC, snap action
17	1NC, snap action

Working principle

E	Reset through electrical impulse

Solenoid supply voltage

230	230 VAC (-15% ... +10%) solenoid duty cycle 5% ED

Other supply voltages on request

Threaded conduit entry

	PG 13,5 (standard)
M2	M20x1,5



Main features
Safety switch designed for over-speed governors where a high sensibility and a low actuating force are required.
Operation: the actuator of the switch has to be pressed up to the tripping point. Then the actuator snaps to the end of the travel, up to 6 mm.

Markings and quality marks:

Approval IMQ:	EG610
Approval UL:	E131787
Approval CCC:	2007010305230013
Approval EZU:	1010151

Technical data

Housing
Made of glass-reinforced polymer, self-extinguishing, shock-proof thermoplastic resin and with double insulation ⧈
One threaded conduit entry
Protection degree: IP67

General data

Ambient temperature:	from -25°C to +80°C

Version for operation in ambient temperature from -40°C to +80° C on request

Max operating frequency:	3600 operations cycles[1]/hour
Mechanical endurance:	1 million operations cycles[1]
Assembling position:	any

(1) One operation cycle means two movements, one to close and one to open contacts, as foreseen by IEC 947-5-1 standard.

Cross section of the conductors (flexible copper wire)

Contact blocks 5, 11, 17:	min.	1 x 0,5 mm²	(1 x AWG 20)
	max.	2 x 2,5 mm²	(2 x AWG 14)

In conformity with standards:
IEC 60947-5-1, EN 60947-5-1, EN 50047, IEC 60204-1, EN 60204-1, EN 1088, EN ISO 12100-1, EN ISO 12100-2, IEC 529, EN 60529, EN 81-1, EN 81-2, NFC 63-140, VDE 0660-200, VDE 0113, CENELEC EN 50013.
Approvals:
IEC 60947-5-1, UL 508, GB14048.5-2001

In conformity with requirements requested by:
Low Voltage Directive 2006/95/EC, Machinery Directive 2006/42/EC and Electromagnetic Compatibility 2004/108/EC.
Positive contact opening in conformity with standards:
IEC 60947-5-1, EN 60947-5-1, VDE 0660-206.

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: 11-12, 21-22 or 31-32) as stated in the **standard CEI EN 60947-5-1, encl. K, par. 2**. The switch must be actuated with **at least up to the positive opening travel** shown in the travels diagrams on page 33. The switch must be actuated **at least with the positive opening force**, shown in brackets, underneath each article, near the value of the min. force.

Electrical data

Thermal current (Ith):	10 A
Rated insulation voltage (Ui):	500 VAC 600 VDC
Protection against short circuits:	fuse 10 A 500 V type aM
Pollution degree:	3

Utilization categories

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

Ue (V)	250	400	500
Ie (A)	6	4	1

Direct current: DC13

Ue (V)	24	125	250
Ie (A)	6	1,1	0,4

Data type approved by IMQ and EZU

Rated insulation voltage (Ui): 500 VAC
Thermal current (Ith): 10 A
Protection against short circuits: fuse 10 A 500 V type aM
Protection degree: IP67
MV terminals (screw clamps)
Pollution degree 3
Utilization category: AC15
Operation voltage (Ue): 400 VAC (50 Hz)
Operation current (Ie): 3 A
Forms of the contact element: Zb, Y+Y, Y
Positive opening of contacts on contact block 5, 11, 17
In conformity with standards: EN60947-1, EN 60947-5-1 and subsequent modifications and completions, fundamental requirements of the Low Voltage Directive 73/23 EEC and subsequent modifications and completions.

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

Data type approved by UL

Utilization categories Q300 (69 VA, 125-250 VDC)
A600 (720 VA, 120-600 VAC)
Data of the housing type 1, 4X (indoor use only), 12, 13
In conformity with standard: UL 508
For all contact blocks use 60 or 75 °C copper (Cu) conductor and wire size 12-14 AWG. Terminal tightening torque of 7,1 Lb-In.

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

Data type approved by CSA

Utilization categories Q300 (69 VA, 125-250 VDC)
A600 (720 VA, 120-600 VAC)
Data of the housing type 1, 4X (indoor use only), 12, 13
In conformity with standard: CSA C22-2 nr.14

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

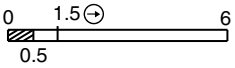
Protection degree IP67



All the Pizzato Elettrica position switches have been updated to protection degree IP67.

Contact block 17 (FR 17A3)

Pizzato Elettrica has developed an innovative contact block, designed to offer a very short pre-travel and low actuating forces, as requested in modern over-speed devices.



Code structure

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

article: **FR 5A3** — options: **-GM2P11**

Housing

FR	polymer housing, one conduit entry

Contact blocks

5	1NO+1NC, snap action
11	2NC, snap action
17	1NC, snap action

Actuators

A3	short plunger

Fixing plate

	without fixing plate (standard)
P11	with fixing plate VF SFP1

Threaded conduit entry

	PG 13,5 (standard)
A	PG 11
M1	M16x1,5
M2	M20x1,5

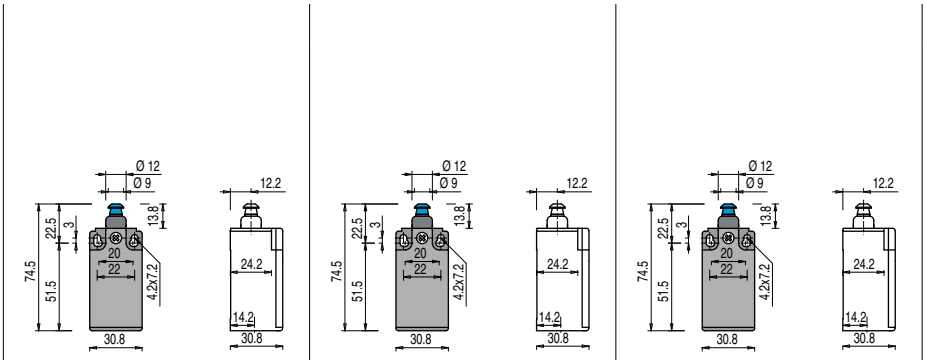
Contacts type

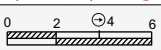
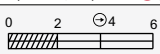
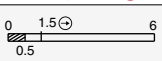
	silver contacts (standard)
G	silver contacts gold plated 1 µm

Dimensional drawings

Contacts type:

R = snap action



Contact blocks		FR 5A3	FR 11A3	FR 17A3
5	R	FR 5A3 → 1NO+1NC		
11	R		FR 11A3 → 2NC	
17	R			FR 17A3 → 1NC
Max speed		0,5 m/s	0,5 m/s	0,5 m/s
Min. force		3,5 N (18,5 N →)	3,5 N (18,5 N →)	2 N (17 N →)
Travels diagrams				

Accessories See page 58



Main features
Safety switch designed for over-speed governors where a high sensibility and a low actuating force are required.
Operation: the actuator of the switch has to be pressed up to the tripping point. Then the actuator snaps to the end of the travel, up to 6 mm.
The reset is obtained by powering for a short time the solenoid installed inside the switch.

Markings and quality marks:

CE

Technical data

Housing
Made of glass-reinforced polymer, self-extinguishing, shock-proof thermoplastic resin and with double insulation ⧈
Three threaded conduit entries
Protection degree: IP66

General data

Ambient temperature:	from -25°C to +60°C
Max operating frequency:	171 operations cycles[1]/hour
Mechanical endurance:	100.000 operations cycles[1]
Assembling position:	any

(1) One operation cycle means two movements, one to close and one to open contacts, as foreseen by IEC 947-5-1 standard.

Cross section of the conductors (flexible copper wire)

Contact blocks 11, 17:	min.	1 x 0,5 mm²	(1 x AWG 20)
	max.	2 x 2,5 mm²	(2 x AWG 14)

Solenoid

Supply voltage:	230 VAC (-15% ... +10%)
Solenoid duty cycle:	5% ED
Steady-state solenoid power:	100 VA
Solenoid protection:	fuse 2 A
Power supply time:	1 s max
Time without power supply:	20 s min

In conformity with standards:
IEC 60947-5-1, EN 60947-5-1, IEC 60204-1, EN 60204-1, EN 1088, EN ISO 12100-1, EN ISO 12100-2, IEC 529, EN 60529, EN 61000-6-2, EN 61000-6-3, NFC 63-140, VDE 0660-200, VDE 0113, CENELEC EN 50013, BG-GS-ET-15.
Approvals:
IEC 60947-5-1, UL 508, GB14048.5-2001

In conformity with requirements requested by:
Low Voltage Directive 2006/95/EC, Machinery Directive 2006/42/EC and Electromagnetic Compatibility 2004/108/EC.
Positive contact opening in conformity with standards:
IEC 60947-5-1, EN 60947-5-1, VDE 0660-206.

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: 11-12, 21-22 or 31-32) as stated in the **standard CEI EN 60947-5-1, encl. K, par. 2**. The switch must be actuated with **at least up to the positive opening travel** shown in the travels diagrams on page 35. The switch must be actuated **at least with the positive opening force**, shown in brackets, underneath each article, near the value of the min. force.

Electrical data

Thermal current (Ith):	10 A
Rated insulation voltage (Ui):	500 VAC 600 VDC
Protection against short circuits:	fuse 10 A 500 V type aM
Pollution degree:	3

Utilization categories

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

Ue (V)	250	400	500
Ie (A)	6	4	1

Direct current: DC13

Ue (V)	24	125	250
Ie (A)	6	1,1	0,4

Code structure

article options

FT 1101E230-M2

Housing
- **FT** polymer housing, three conduit entries

Contact block
- **11** 2NC, snap action
- **17** 1NC, snap action

Working principle
- **E** Reset through electrical impulse

Solenoid supply voltage
- **230** 230 VAC (-15% ... +10%) solenoid duty cycle 5% ED

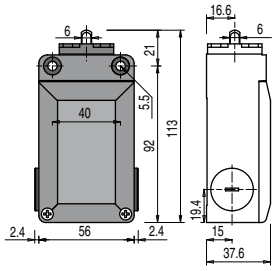
Other supply voltages on request

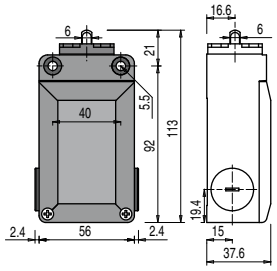
Threaded conduit entry
- PG 13,5 (standard)
- **M2** M20x1,5

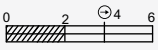
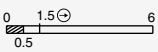
Dimensional drawings

Contacts type

R = snap action





Contact block			
11	R	FT 1101E230 → 2NC	
17	R		FT 1701E230 → 1NC
Max speed		0,5 m/s	0,5 m/s
Min. force		3,5 N (18,5 N →)	2 N (17 N →)
Travels diagrams			

Accessories See page 58



New product 2007

Main data

- Housing made of glass-reinforced polymer, self-extinguishing
- Self-cleaning contacts made of solid silver
- Possibility of application with the cable side close to the wall
- Supplied with M4 retained fixing screws with elastic washer
- Screw terminals with possibility to connect 2 wires to each terminal
- Protection degree from IP00 to IP20
- Transparent cover

Markings and quality marks:

CE

Approval UL: requested

Technical data

Description

Safety switches with double interruption and positive opening. Suitable for the control of automatic lift doors.

Housing

Made of glass-reinforced polymer, self-extinguishing, shock-proof thermoplastic resin

Protection degree:	IP00 (DS AA5••)
	IP20 (DS AA1••)

General data

Ambient temperature:	from -30°C to +80°C (humidity ≤ 95%, without condensation)
Max operating frequency:	3600 operations cycles[1]/hour
Mechanical endurance:	5 millions of operations cycles[1]
Max actuating speed:	0,5 m/s
Min. actuating speed:	1 mm/s
Max actuating force	2 N

(1) One operation cycle means two movements, one to close and one to open contacts, as foreseen by IEC 947-5-1 standard.

Cross section of the conductors (flexible copper wire)

min.	1 x 0,5 mm²	(1 x AWG 20)
max.	1 x 2,5 mm²	(1 x AWG 14)

In conformity with standards:

IEC 60947-5-1, EN 60947-5-1, IEC 529, EN 60529, EN 81-1, EN 81-2

In conformity with requirements requested by:

Low Voltage Directive 2006/95/EC, Machinery Directive 2006/42/EC and Electromagnetic Compatibility 2004/108/EC.

Positive contact opening in conformity with standards:

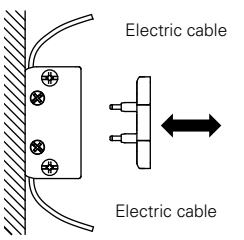
IEC 60947-5-1, EN 60947-5-1, VDE 0660-206.

Electrical data		Utilization categories		
Thermal current (Ith):	4 A	Alternate current: AC15 (50...60 Hz)		
Rated insulation voltage (Ui):	500 VAC	Ue (V)	120	240
Rated operational voltage (Ue):	230 VAC 200 VDC*	Ie (A)	3	3
Rated operational current (Ie):	2 A*	Direct current: DC13		
Protection against short circuits:	fuse 4 A 500 V type gG	Ue (V)	125	250
Pollution degree:	3	Ie (A)	0,55	0,27

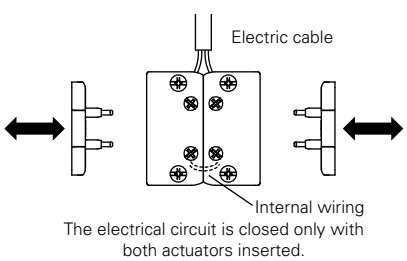
* In conformity with standards EN 81-1, EN 81-2.

Application examples

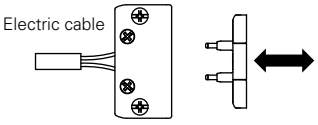
These devices have several cable outputs to allow installation also in restricted spaces, for example:



Door switches close to the wall installation



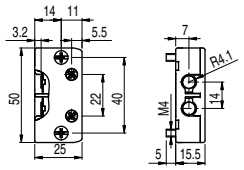
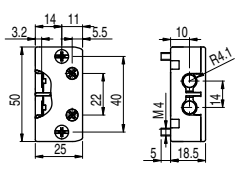
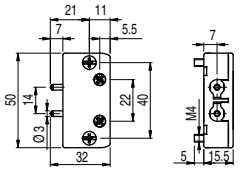
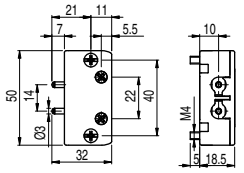
Door switches side by side installation



Back cable output

Dimensional drawings

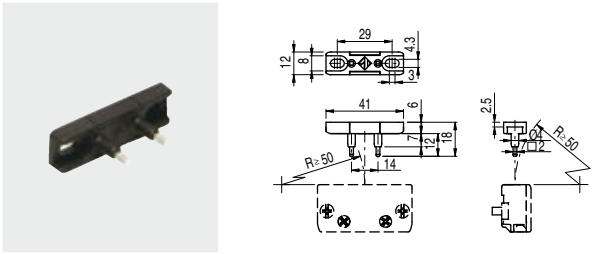
10 pcs packs

	Door switches with positive opening - internal contacts		Door switches with positive opening - external contacts	
	Switch without actuator	Switch without actuator	Switch without actuator	Switch without actuator
				
Slow action contacts	DS AA1VA 1NC	DS AE1VA 1NC	DS AA5VA 1NC	DS AE5VA 1NC
Max actuating travel	8 mm	8 mm	8 mm	8 mm

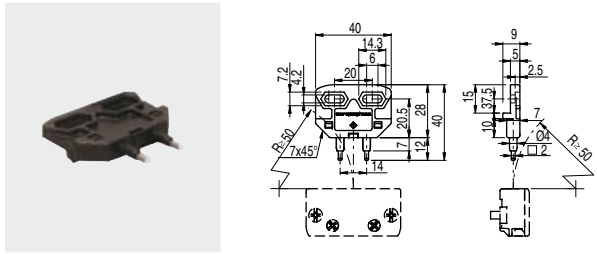
Actuators for door switches with internal contacts (DS A•1VA)

10 pcs packs

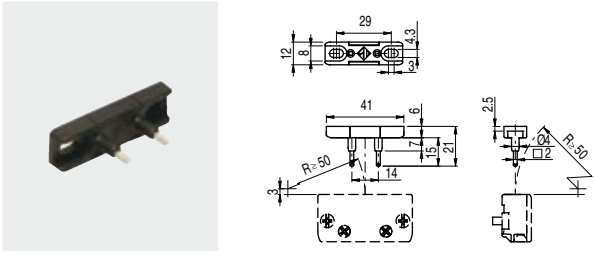
Article	Description
DS KA1A	Straight actuator



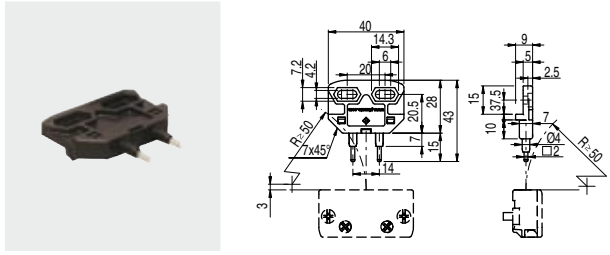
Article	Description
DS KB1A	Right-angled actuator



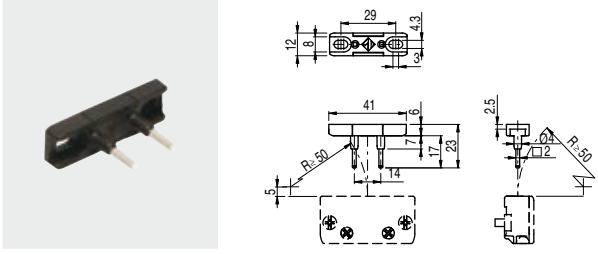
Article	Description
DS KA2A	Straight actuator



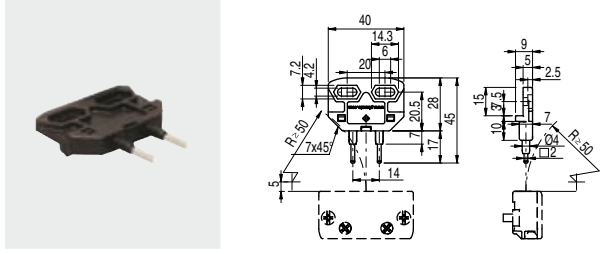
Article	Description
DS KB2A	Right-angled actuator



Article	Description
DS KA3A	Straight actuator



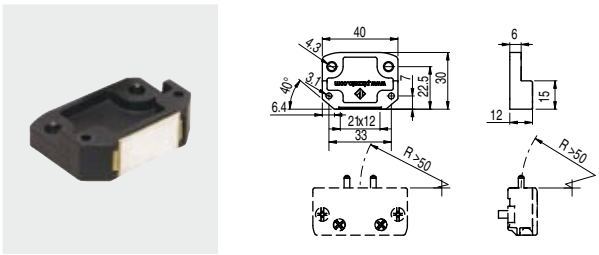
Article	Description
DS KB3A	Right-angled actuator



Actuators for door switches with external contacts (DS A•5VA)

10 pcs packs

Article	Description
DS KP5A	Plane actuator



Items with code on the **green** background are available in stock

All measures in the drawings are in mm



Patent pending

Main data

- Polymer housing, from one to three conduit entries
- Protection degree IP67
- 6 stainless steel actuators available
- M12 assembled connector versions
- Silver contacts gold plated versions

Markings and quality marks:

Approval IMQ:	EG610 (FR-FX-FK series)
Approval UL:	E131787
Approval CCC:	2007010305230013 (FR-FX-FK series)
Approval EZU:	1010151

Technical data

Housing

Made of glass-reinforced polymer, self-extinguishing, shock-proof thermoplastic resin and with double insulation ⧈
FR and FK series one conduit entry
FX series two conduit entries
FW series three knock out conduit entries

Protection degree:	IP67 (electrical contacts)

General data

Ambient temperature:	from -25°C to +80°C

Version for operation in ambient temperature from -40°C to +80° C on request

Max operating frequency:	3600 operations cycles[1]/hour
Mechanical endurance:	1 million of operations cycles[1]
Max actuating speed:	0,5 m/s
Min. actuating speed:	1 mm/s
Actuator extraction force	10 N

(1) One operation cycle means two movements, one to close and one to open contacts, as foreseen by IEC 947-5-1 standard.

Cross section of the conductors (flexible copper wire)

Contact blocks 33, 34:	min.	1 x 0,34 mm²	(1 x AWG 22)
	max.	2 x 1,5 mm²	(2 x AWG 16)
Contact blocks 6, 9:	min.	1 x 0,5 mm²	(1 x AWG 20)
	max.	2 x 2,5 mm²	(2 x AWG 14)

In conformity with standards:
IEC 60947-5-1, EN 60947-5-1, IEC 60204-1, EN 60204-1, EN 1088, EN ISO 12100-1, EN ISO 12100-2, IEC 529, EN 60529, NFC 63-140, VDE 0660-200, VDE 0113, CENELEC EN 50013, BG-GS-ET-15.
Approvals:
IEC 60947-5-1, UL 508, GB14048.5-2001

In conformity with requirements requested by:
Low Voltage Directive 2006/95/EC, Machinery Directive 2006/42/EC and Electromagnetic Compatibility 2004/108/EC.
Positive contact opening in conformity with standards:
IEC 60947-5-1, EN 60947-5-1, VDE 0660-206.

Electrical data

Thermal current (Ith):	10 A
Rated insulation voltage (Ui):	500 VAC 600 VDC 400 VAC for contact blocks 33, 34
Protection against short circuits:	fuse 10 A 500 V type aM
Pollution degree:	3

Utilization categories

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

Ue (V)	250	400	500
Ie (A)	6	4	1

Direct current: DC13

Ue (V)	24	125	250
Ie (A)	6	1,1	0,4

Data type approved by IMQ and EZU

Rated insulation voltage (Ui): 500 VAC
400 VAC for contact blocks 33, 34
Thermal current (Ith): 10 A
Protection against short circuits: fuse 10 A 500 V type aM
Protection degree: IP67
MV terminals (screw clamps)
Pollution degree 3
Utilization category: AC15
Operation voltage (Ue): 400 VAC (50 Hz)
Operation current (Ie): 3 A
Forms of the contact element: Zb, Y+Y
Positive opening of contacts on contact block 6, 9, 33, 34
In conformity with standards: EN60947-1, EN 60947-5-1 and subsequent modifications and completions, fundamental requirements of the Low Voltage Directive 73/23 EEC and subsequent modifications and completions.

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

Data type approved by UL

Utilization categories Q300 (69 VA, 125-250 VDC)
A600 (720 VA, 120-600 VAC)
Data of the housing type 1, 4X (indoor use only), 12, 13
In conformity with standard: UL 508
For all contact blocks use 60 or 75 °C copper (Cu) conductor and wire size 12-14 AWG. Terminal tightening torque of 7,1 Lb-In.

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

Dimensional drawings

Contacts type:

L = slow action

Contact blocks		polymer housing Switch without actuator	polymer housing Switch without actuator	polymer housing Switch without actuator conduit entries thread M20x1,5	polymer housing Switch without actuator
6	L	FR 693 → 1NO+1NC	FX 693 → 1NO+1NC		
9	L	FR 993 → 2NC	FX 993 → 2NC		
33	L			FW 3392-M2 → 1NO+1NC	FK 3393 → 1NO+1NC
34	L			FW 3492-M2 → 2NC	FK 3493 → 2NC
Min. force		10 N (18 N →)	10 N (18 N →)	10 N (18 N →)	10 N (18 N →)
Travel diagrams		page 62 - group 1d	page 62 - group 1d	page 62 - group 1d	page 62 - group 1d

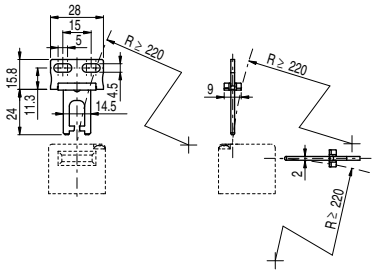
Actuators stainless steel

10 pcs packs

IMPORTANT: These actuators must be used with FR, FX, FK e FW (e.g. FR 693)

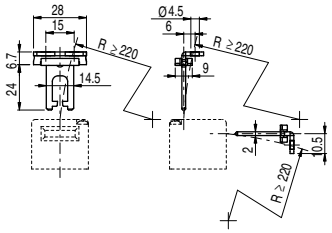
Article	Description
VF KEYD	Straight actuator





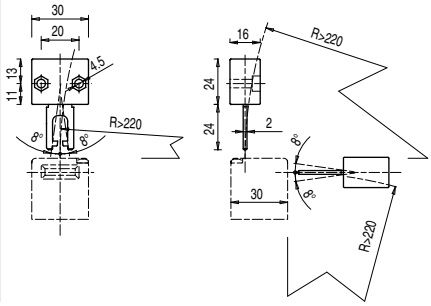
Article	Description
VF KEYD1	Right-angled actuator





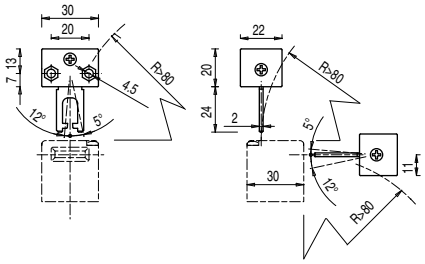
Article	Description
VF KEYD2	Jointed actuator





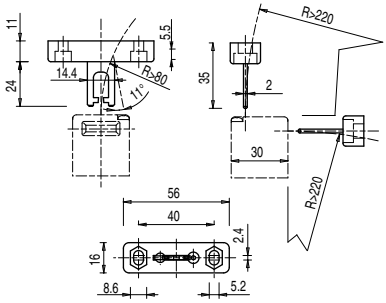
Article	Description
VF KEYD3	Jointed actuator adjustable in two directions





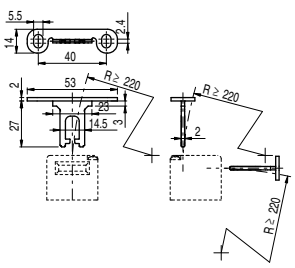
Article	Description
VF KEYD7	Jointed actuator adjustable in one direction





Article	Description
VF KEYD10	Shaped actuator



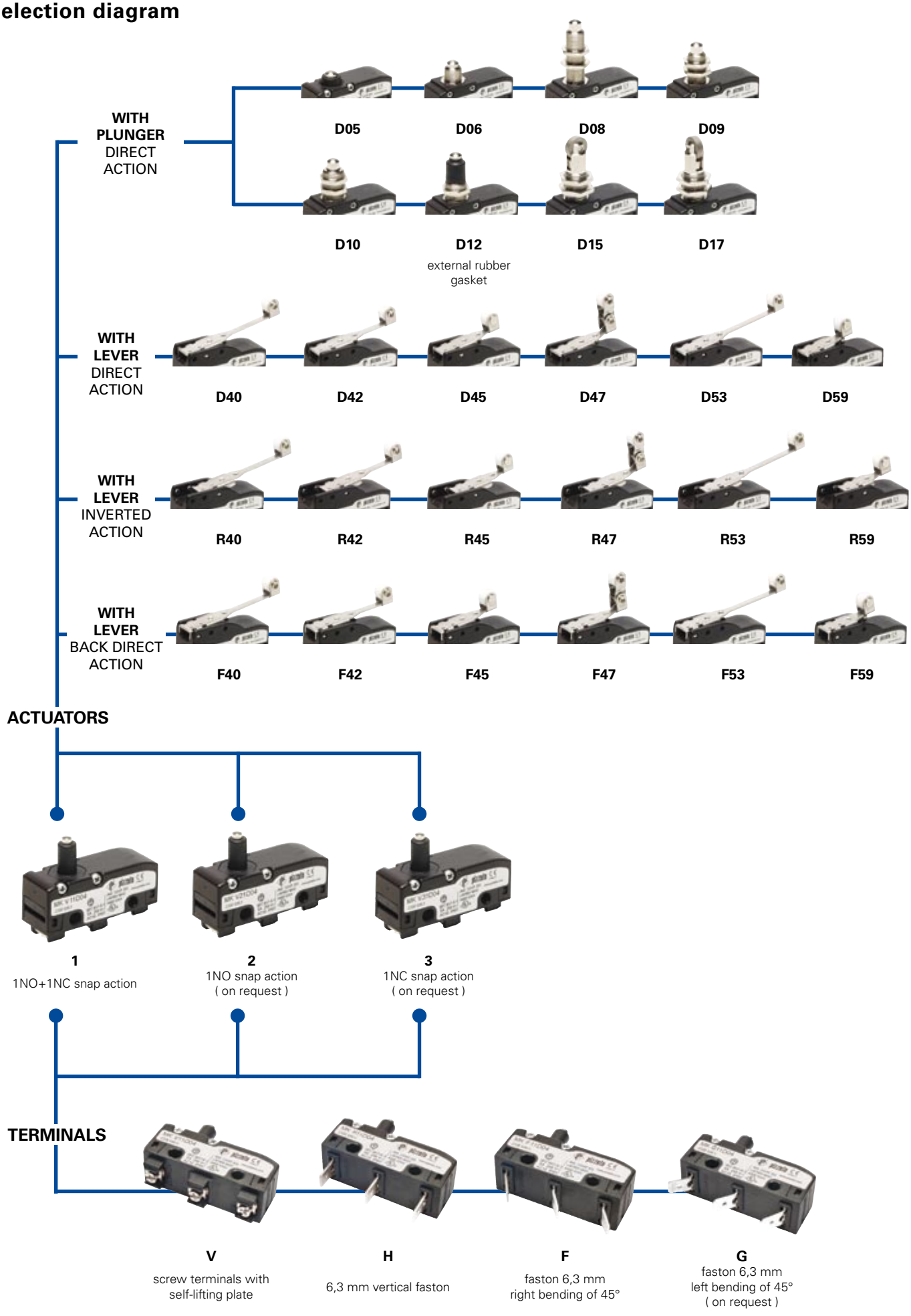


Accessories See page 58

Items with code on the **green** background are available in stock

All measures in the drawings are in mm

Selection diagram

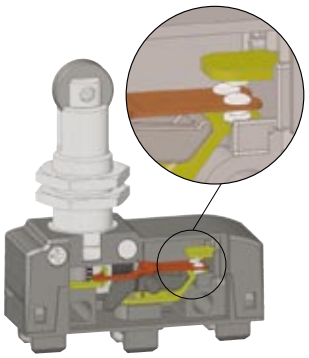


New product - Microswitches MK series



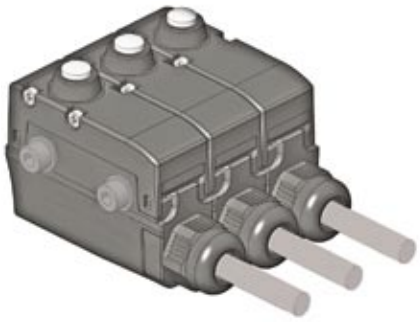
Microswitches of MK series have been developed in order to add new features to traditional and tested microswitches of Pizzato Elettrica (cross-reference at page 63). These new products have been designed with shapes and fixing perfectly interchangeable with the previous ones and with various additional functions useful to extend the applicatory field.

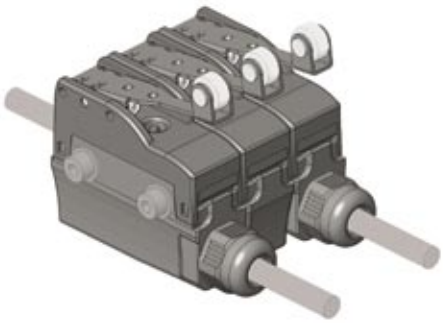
The main innovation of this series is the tripping mechanism evolved and modern, with qualitative features superior than solutions present on the market.
The electrical contact on new microswitch has been made with higher reliability technology, thanks to the double and redundant shape, and has the possibility to carry out operations with positive opening.
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.
Fastening terminals of conductors are more practical and allow the fixing of different diameter cables or the possibility to choice different bends of faston contacts. For high quantity it's possible to supply the microswitch only with the contact NO or NC, in order to minimize purchase costs.



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.
See page 47.





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

V	screw terminals with self-lifting plate
H	faston terminals
F	faston terminals, right bend 45°
G	faston terminals, left bend 45° (on request)

Contact block

1	1NO+1NC, snap action
2	1NO, snap action (on request)
3	1NC, snap action (on request)

Max protection degree

1	IP40 (with terminal cover)
2	IP65 (with terminal cover)

Actuation type

D	direct action
R	inverted action
F	back direct action

Actuator

01	with pin
02	with pin
03	with small push button
..	.....

Contacts type

	silver contacts (standard)
G	silver contacts gold plated 1 µm

Suffix

	no suffix (standard)
R16	Ø 9,5x4 mm metal roller (for actuator 40, 42 ,45 47, 53, 59)
R10	Ø 9,8x8,4 mm polymer roller (for actuator 40, 42 ,45, 53)

Ambient temperature

	-25°C ... +85°C (standard)
T6	-40°C ... +85°C



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

Technical data

Housing
Made of glass-reinforced polymer, self-extinguishing, shock-proof thermoplastic resin.

Protection degree:	IP20 (with protection VF C01 - VF C03) IP40 (with protection VF MKC•1• - VF C02) IP65 (with protection VF MKC•22 - VF MKC•23)

General data

Ambient temperature:	from -25°C to +85°C
Max operating frequency:	3600 operations cycles[1]/hour
Mechanical endurance:	10 million operations cycles[1]

(1) One operation cycle means two movements, one to close and one to open contacts, as foreseen by IEC 947-5-1 standard.

Cross section of the conductors (flexible copper wire)

MK series:	min.	1 x 0,34 mm²	(1 x AWG 22)
	max	2 x 1,5 mm²	(2 x AWG 16)

In conformity with standards:
IEC 60947-5-1, EN 60947-5-1, IEC 529, EN 60529.
Approvals:
UL 508

In conformity with requirements requested by:
Low Voltage Directive 2006/95/EC, Machinery Directive 2006/42/EC and Electromagnetic Compatibility 2004/108/EC.
Positive contact opening in conformity with standards:
IEC 60947-5-1, EN 60947-5-1, VDE 0660-206.

Markings and quality marks:

Approval UL: E131787

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 CEI EN 60947-5-1, encl. K, par. 2**. 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.

Electrical data

Thermal current (Ith):	16 A
Rated insulation voltage (Ui):	250 VAC 300 VDC
Protection against short circuits:	fuse 10 A 500 V type gG
Pollution degree:	3

Utilization categories

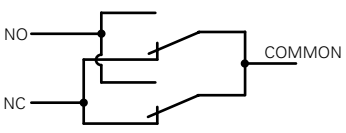
Alternate current: AC15 (50 ... 60 Hz)

Ue (V)	250		
Ie (A)	5		

Direct current: DC13

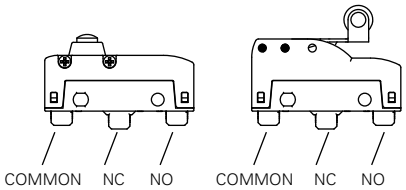
Ue (V)	24	125	250
Ie (A)	4	1,1	0,4

Wire diagram

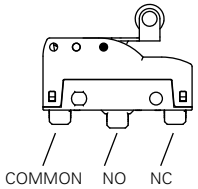


Contact with single interruption and double contacts

With direct and back direct action (D, F)

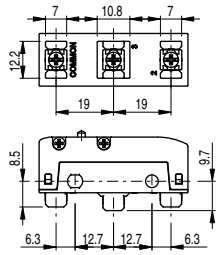


With inverted action (R)

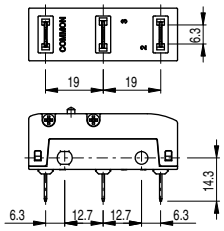


Terminals outline dimensions

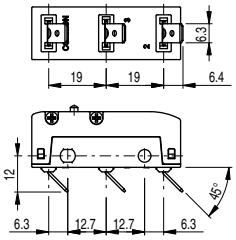
All measures in the drawings are in mm



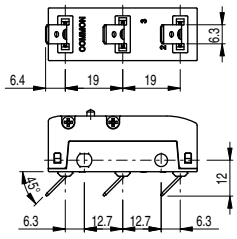
Screw terminals **V** with plate



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 installation requirements.
It is recommended to bend the faston with an angle not higher than 45° and to carry out this operation no more than 5 times.

Driving torques



Tighten the nut 1 with a driving torque **2** ... **3** Nm.
Tighten the screws 2 with a driving torque **0,5** ... **0,6** Nm.



Tighten the nut 3 M4 with a driving torque **0,8** ... **1,2** Nm, interposing a washer.
Attention: a driving torque higher that 1,2 Nm can cause the breaking of the microswitch.

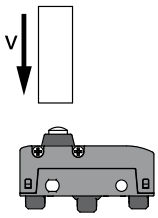


Tighten the screws 4 with a driving torque **0,6** ... **0,8** Nm.

Max and min. actuating speed

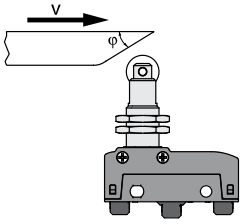
Type 1
Plunger

Vmax (m/s)	Vmin (mm/s)
0,5	0,05



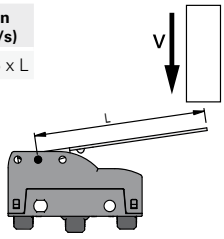
Type 2
Roller plunger

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



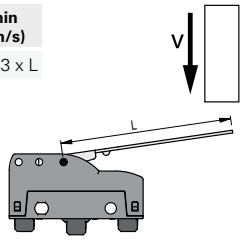
Type 3
Lever with direct action (D)

Vmax (m/s)	Vmin (mm/s)
0,03 x L	0,0166 x L



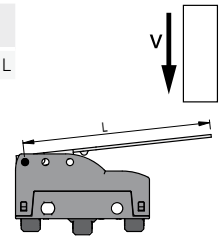
Type 4
Lever with inverted action (R)

Vmax (m/s)	Vmin (mm/s)
0,015 x L	0,0083 x L



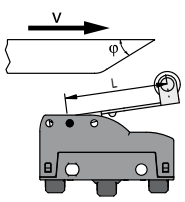
Type 5
Lever with back direct action (F)

Vmax (m/s)	Vmin (mm/s)
0,01 x L	0,0047 x L



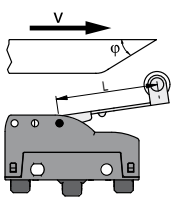
Type 6
Roller lever with direct action (D)

φ	Vmax (m/s)	Vmin (mm/s)
15°	0,1 x L	0,0664 x L
30°	0,05 x L	0,0332 x L
45°	0,03 x L	0,0166 x L



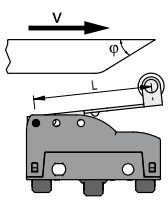
Type 7
Roller lever with inverted action (R)

φ	Vmax (m/s)	Vmin (mm/s)
15°	0,048 x L	0,0332 x L
30°	0,024 x L	0,0166 x L
45°	0,015 x L	0,0083 x L

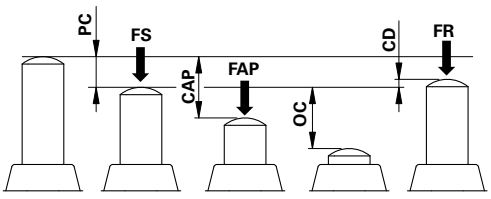


Type 8
Roller lever with back direct action (F)

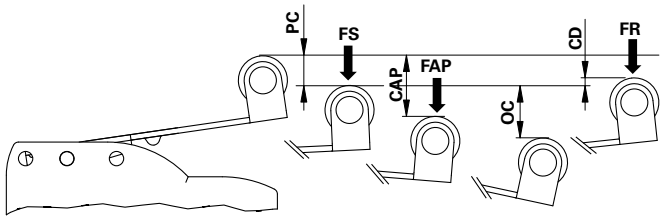
φ	Vmax (m/s)	Vmin (mm/s)
15°	0,032 x L	0,0188 x L
30°	0,016 x L	0,0094 x L
45°	0,01 x L	0,0047 x L



Legend



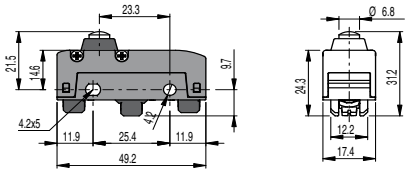
CD differential travel
PC pretravel
OC over-travel
CAP positive opening travel



FS operating force
FR releasing force
FAP positive opening force

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

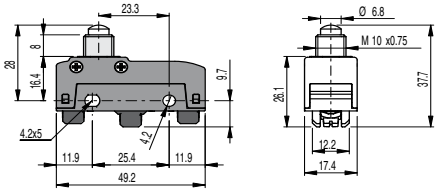
10 pcs packs



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		

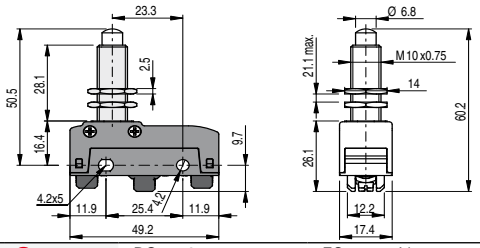
Max and min. speed page 43 - type 1



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		

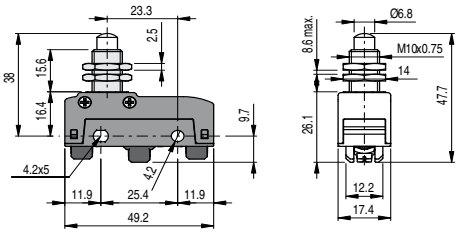
Max and min. speed page 43 - type 1



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		

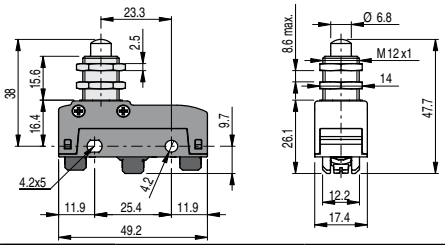
Max and min. speed page 43 - type 1



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		

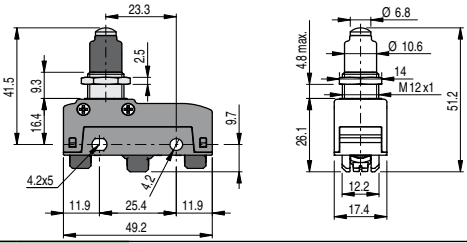
Max and min. speed page 43 - type 1



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		

Max and min. speed page 43 - type 1

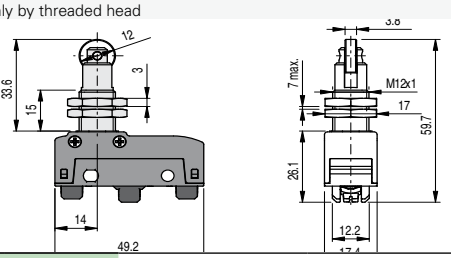


MK V11D12 1NO+1NC

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		

Max and min. speed page 43 - type 1

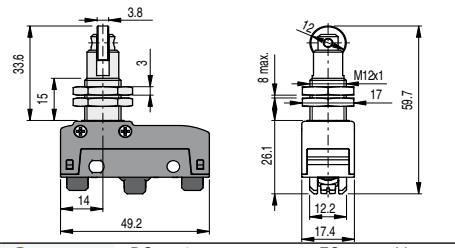
Fixed only by threaded head



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		

Max and min. speed page 43 - type 2

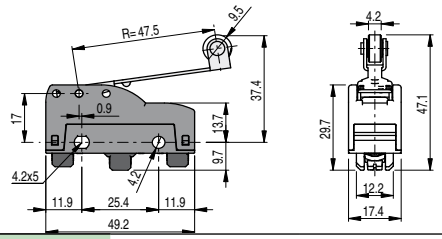


MK V11D17 1NO+1NC

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		

Max and min. speed page 43 - type 2

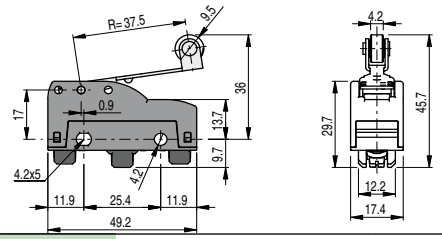
Items with code on the **green** background are available in stock



MK V11D40 1NO+1NC

PC	6,7 mm	FS	0,86 N
OC	7,8 mm	FR	0,66 N
CD	0,8 mm		

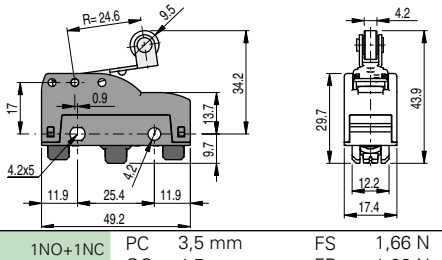
Max and min. speed page 43 - type 6



MK V11D42 1NO+1NC

PC	5,3 mm	FS	1,09 N
OC	5,7 mm	FR	0,84 N
CD	0,6 mm		

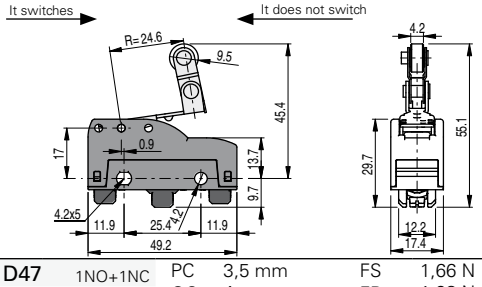
Max and min. speed page 43 - type 6



MK V11D45 1NO+1NC

PC	3,5 mm	FS	1,66 N
OC	4,5 mm	FR	1,28 N
CD	0,4 mm		

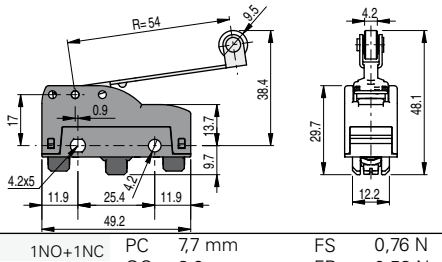
Max and min. speed page 43 - type 6



MK V11D47 1NO+1NC

PC	3,5 mm	FS	1,66 N
OC	4 mm	FR	1,28 N
CD	0,4 mm		

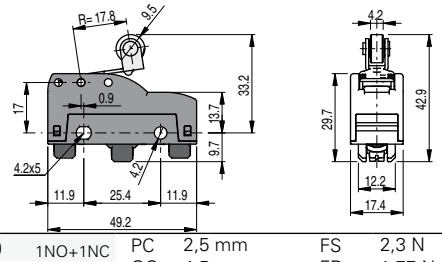
Max and min. speed page 43 - type 6



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 43 - type 6

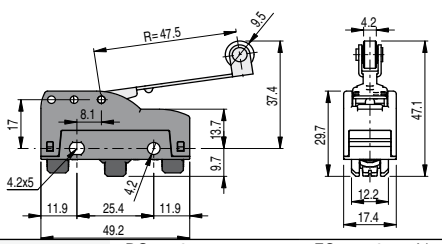


MK V11D59 1NO+1NC

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 43 - type 6

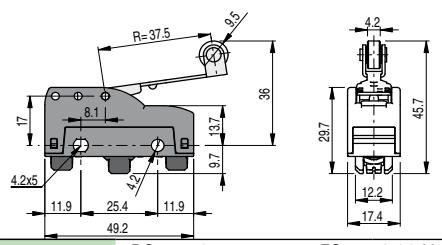
Microswitches with inverted action (All measures in the drawings are in mm)



MK V11R40 1NO+1NC

PC	6,7 mm	FS	0,77 N
OC	10,3 mm	FR	0,75 N
CD	0,4 mm		

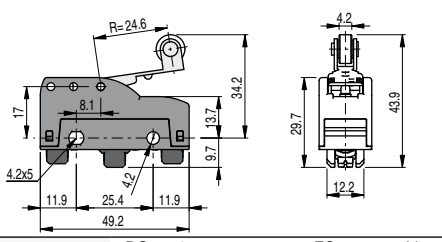
Max and min. speed page 43 - type 7



MK V11R42 1NO+1NC

PC	5,3 mm	FS	0,98 N
OC	8 mm	FR	0,95 N
CD	0,3 mm		

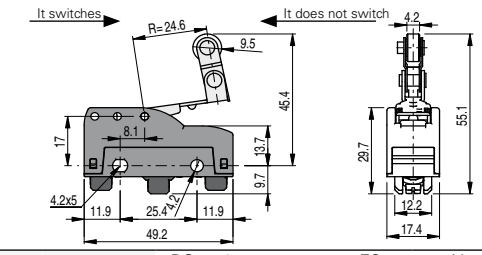
Max and min. speed page 43 - type 7



MK V11R45 1NO+1NC

PC	3,5 mm	FS	1,5 N
OC	5,4 mm	FR	1,45 N
CD	0,2 mm		

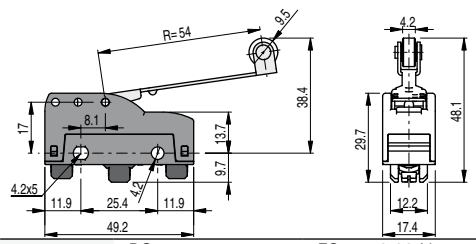
Max and min. speed page 43 - type 7



MK V11R47 1NO+1NC

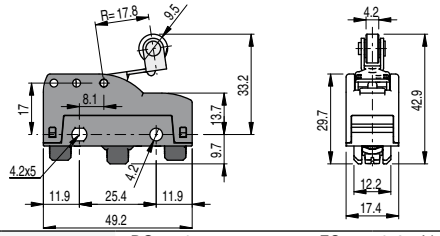
PC	3,5 mm	FS	1,5 N
OC	4,9 mm	FR	1,45 N
CD	0,2 mm		

Max and min. speed page 43 - type 7



MK V11R53 1NO+1NC PC 7,7 mm OC 11,7 mm CD 0,5 mm FS 0,68 N FR 0,66 N

Max and min. speed page 43 - type 7

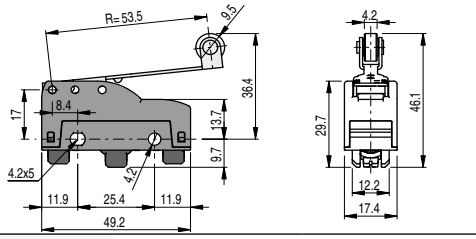


MK V11R59 1NO+1NC PC 2,5 mm OC 3,9 mm CD 0,2 mm FS 2,07 N FR 2 N

Max and min. speed page 43 - type 7

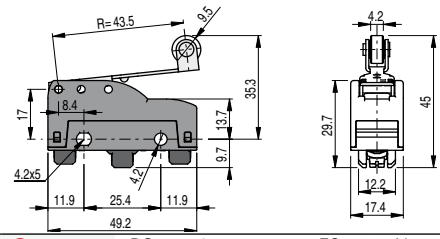
Microswitches with back direct action (All measures in the drawings are in mm)

10 pcs packs



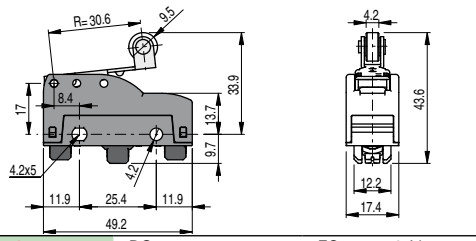
MK V11F40 1NO+1NC PC 2,4 mm OC 10,4 mm CD 0,25 mm FS 0,85 N FR 0,65 N

Max and min. speed page 43 - type 8



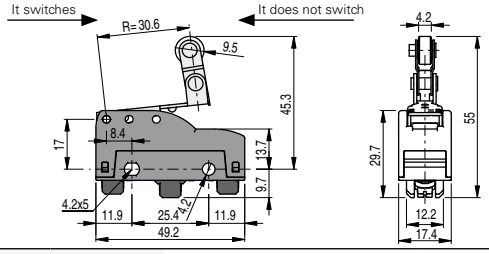
MK V11F42 ⊖ 1NO+1NC PC 1,6 mm OC 8,4 mm CD 0,2 mm CAP 9 mm FS 1 N FR 0,7 N FAP 4,9 N

Max and min. speed page 43 - type 8



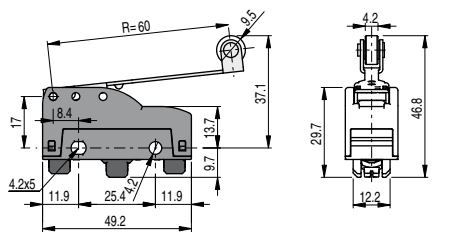
MK V11F45 ⊖ 1NO+1NC PC 1,1 mm OC 6,6 mm CD 0,1 mm CAP 6,3 mm FS 1,3 N FR 0,9 N FAP 6,9 N

Max and min. speed page 43 - type 8



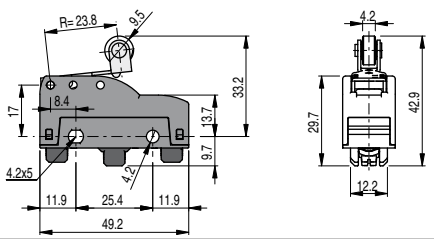
MK V11F47 ⊖ 1NO+1NC PC 1,1 mm OC 5,6 mm CD 0,1 mm CAP 6,3 mm FS 1,3 N FR 0,9 N FAP 6,9 N

Max and min. speed page 43 - 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 43 - 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

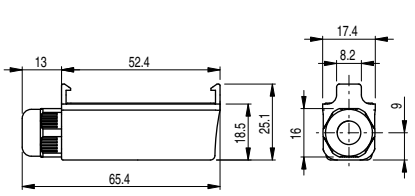
Max and min. speed page 43 - type 8

Items with code on the **green** background are available in stock

Protections (terminals covers)

10 pcs packs

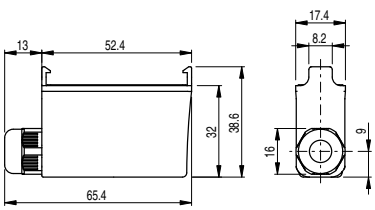




Protection terminal cover for screw terminals snap-in assembled and with wire trap cable gland. It allows the installation of more switches side by side.

Article	Description	Protection degree
VF MKCV11	Protection terminal cover without gasket for multipolar cables from Ø 5 to Ø 7,5 mm	IP40
VF MKCV12	Protection terminal cover without gasket for multipolar cables from Ø 4 to Ø 7,5 mm	IP40
VF MKCV13	Protection terminal cover without gasket for multipolar cables from Ø 2 to Ø 5 mm	IP40
VF MKCV22	Protection terminal cover with gasket for multipolar cables from Ø 4 to Ø 7,5 mm	IP65
VF MKCV23	Protection terminal cover with gasket for multipolar cables from Ø 2 to Ø 5 mm	IP65

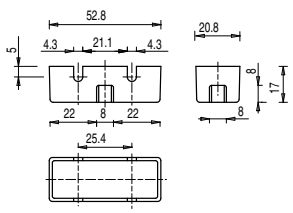




Protection terminal cover for vertical faston terminals snap-in assembled and with wire trap cable gland. It allows the installation of more switches side by side.

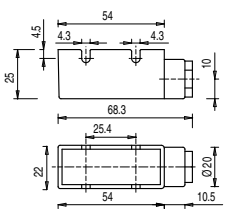
Article	Description	Protection degree
VF MKCH11	Protection terminal cover without gasket for multipolar cables from Ø 5 to Ø 7,5 mm	IP40
VF MKCH12	Protection terminal cover without gasket for multipolar cables from Ø 4 to Ø 7,5 mm	IP40
VF MKCH13	Protection terminal cover without gasket for multipolar cables from Ø 2 to Ø 5 mm	IP40
VF MKCH22	Protection terminal cover with gasket for multipolar cables from Ø 4 to Ø 7,5 mm	IP65
VF MKCH23	Protection terminal cover with gasket for multipolar cables from Ø 2 to Ø 5 mm	IP65





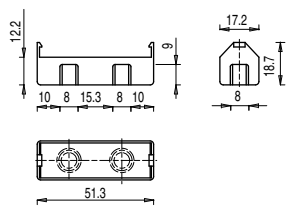
Article	Description	Protection degree
VF C01	Protection terminal cover for screw terminals	IP20





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



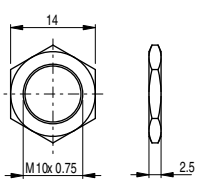


Article	Description	Protection degree
VF C03	Protection terminal cover for screw terminals snap-in assembled. It allows the installation of more switches side by side	IP20

Accessories

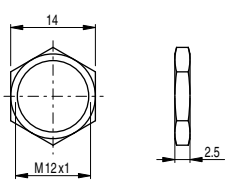
10 pcs packs





Article	Description
AC 83	Hexagonal threaded nut M10 x 0,75 for microswitches





Article	Description
AC 72	Hexagonal threaded nut M12 x 1 for microswitches

Items with code on the **green** background are available in stock



Markings:

CE

In conformity with requirements requested by:
Low Voltage Directive 2006/95/EC,
Machinery Directive 2006/42/EC and
Electromagnetic Compatibility 2004/108/EC.
Positive contact opening in conformity with standards:
IEC 60947-5-1, EN 60947-5-1, VDE 0660-206.

Technical data

Housing

Made of shock-proof technopolymer with double insulation ⧈
Complete with emergency stop push button
First lateral knock out conduit entry PG 13,5 / M20x1,5 / 1/2 NPT
Second lateral knock out conduit entry PG 11 / 3/8 NPT
Knock out conduit entry from bottom PG 13,5 / M20x1,5 / 1/2 NPT
Protection degree: IP65
Stainless steel fixing cap screws

Actuator

Ambient temperature:	from -25°C to +70°C
Mechanical endurance:	300.000 operations cycles

Cross section of the conductors (flexible copper wire)

Contact block:	min.	1 x 0,75 mm²	(1 x AWG 18)
	max.	1 x 2,5 mm²	(1 x AWG 14)

In conformity with standards:
IEC 60947-5-1, EN 60947-5-1, EN ISO 13850, EN 418, UL 508

Contacts
Double cutoff, positive opening NC contacts in conformity with IEC 947-5-1, terminals with retained screws system and self-lifting plates. Terminal clamps supplied unscrewed, with protection degree IP20. Made of self-extinguish material V0 according to UL 508.

Electrical data			Utilization categories					
without connectors	Thermal current (Ith):	16 A	Alternate current: AC15 (50÷60 Hz)					
	Rated insulation voltage (Ui):	500 VAC 600 VDC	Ue (V)	24	60	110	230	400	500
	Pollution degree:	3	Ie (A)	16	12	8	6	4,5	3
			Direct current: DC13						
			Ue (V)	24	48	60	110	220	
			Ie (A)	2	1,2	0,85	0,4	0,25	
with 4 poles M12 connectors	Thermal current (Ith):	4 A	Alternate current: AC15 (50÷60 Hz)						
	Rated insulation voltage (Ui):	250 VAC 300 VDC	Ue (V)	24	110	230			
	Pollution degree:	3	Ie (A)	4	4	4			
			Direct current: DC13						
			Ue (V)	24	110	220			
			Ie (A)	2	0,4	0,25			

Code structure

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

article: **CC 01AAB00AB** — options: **-K71**

Actuator

AAB	Ø 40 mm emergency stop mushroom head push button, EN ISO 13850 com-

Plate

00	no plate
01	Ø 60 mm yellow disk emergency stop

For the complete list of all combinations please contact our technical office.

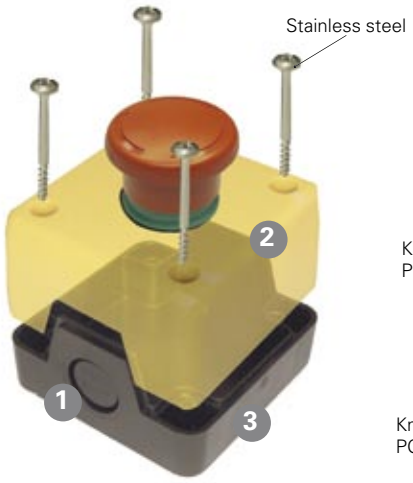
Contact diagram

AB	1NC
AC	2NC
AD	1NC+1NO

M12 assembled connector (see page 5/1)

	without connector (standard)
K71	M12 plastic connector with 4 poles

Conduit entries disposition





Knock out lateral conduit entry
PG 13,5 / M20x1,5 / 1/2 NPT



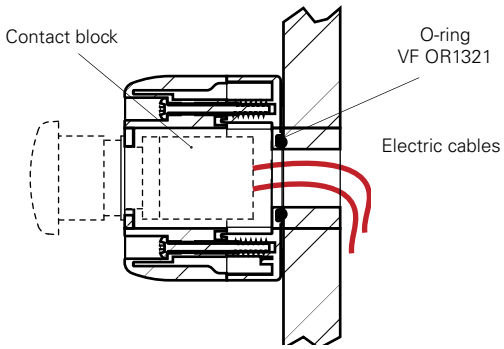
Knock out conduit entry from bottom
PG 13,5 / M20x1,5 / 1/2 NPT



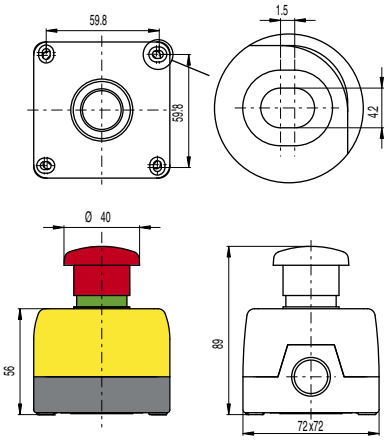
Knock out lateral conduit entry
PG 11 / 3/8 NPT

Knock out conduit entry from bottom

Using the bottom entry for wiring, it is possible to keep the protection degree IP65 using an O-ring (art. VF OR1321) placed in the seat as you can see in the image below.

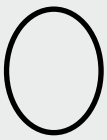


Dimensional drawings



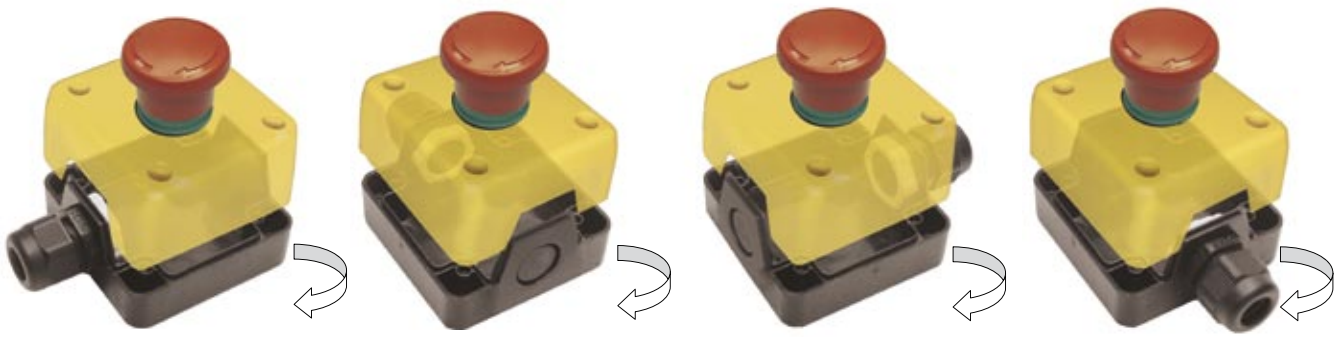
Accessories

Articles	Description
VF OR1321	Oil resistant rubber O-ring



Versatility

The boxes CC series have fixing holes designed in square form, in order to orient conduit entries towards the easier side for the installation. The double nick in the cap allows to install the push button in two orthogonal positions.
The symmetric cap allows to orient the conduit entries of the box towards the easier side without changing the button orientation on the cover.



All measures in the drawings are in mm



Main data

- Metal or polymer housing, from one to three conduit entries
- Protection degree IP67
- In conformity with EN ISO 13850
- Transversal head or longitudinal head versions
- M12 assembled connector versions
- Silver contacts gold plated versions
- Several accessories available

Markings and quality marks:

Approval IMQ:	EG605 (FD series) EG606 (FP series)
Approval UL:	E131787
Approval CCC:	2007010305230000 (FD series) 2007010305230014 (FP series)
Approval EZU:	1010151

Technical data

Housing

Housing type FP made of glass-reinforced polymer, self-extinguishing, shock-proof thermoplastic resin with double insulation ⧈
Housing type FD made of metal, coated with baked epoxy powder.
FD, FP series one conduit entry

Protection degree:	IP67

General data

Ambient temperature:	from -25°C to +80°C

Version for operation in ambient temperature from -40°C to +80° C on request

Max operating frequency:	1 operation cycles / 6 s
Mechanical endurance:	1 million of operations cycles[1]
Max actuating speed:	0,5 m/s
Min. actuating speed:	1 mm/s

(1) One operation cycle means two movements, one to close and one to open contacts, as foreseen by IEC 947-5-1 standard.

Cross section of the conductors (flexible copper wire)

Contact blocks 18, 9:	min.	1 x 0,5 mm^2	(1 x AWG 20)
	max.	2 x 2,5 mm^2	(2 x AWG 14)

In conformity with standards:
IEC 60947-5-1, EN 60947-5-1, IEC 60204-1, EN 60204-1, EN 1088, EN ISO 12100-1, EN ISO 12100-2, IEC 529, EN 60529, EN ISO 13850, EN 418, NFC 63-140, VDE 0660-200, VDE 0113, CENELEC EN 50013.
Approvals:
IEC 60947-5-1, UL 508, GB14048.5-2001

In conformity with requirements requested by:
Low Voltage Directive 2006/95/EC, Machinery Directive 2006/42/EC and Electromagnetic Compatibility 2004/108/EC.
Positive contact opening in conformity with standards:
IEC 60947-5-1, EN 60947-5-1, VDE 0660-206.

Electrical data

Thermal current (Ith):	10 A
Rated insulation voltage (Ui):	500 VAC 600 VDC
Protection against short circuits:	fuse 10 A 500 V type aM
Pollution degrees:	3

Utilization categories

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

Ue (V)	250	400	500
Ie (A)	6	4	1

Direct current: DC13

Ue (V)	24	125	250
Ie (A)	6	1,1	0,4

Data type approved by IMQ and EZU

Rated insulation voltage (Ui): 500 VAC
Thermal current (Ith): 10 A
Protection against short circuits: fuse 10 A 500 V type aM
Protection degree: IP67
MV terminals (screw clamps)
Pollution degrees 3
Utilization category: AC15
Operation voltage (Ue): 400 VAC (50 Hz)
Operation current (Ie): 3 A
Forms of the contact element: Zb, Y+Y
Positive opening of contacts on contact block 18, 9
In conformity with standards: EN60947-1, EN 60947-5-1 and subsequent modifications and completions, fundamental requirements of the Low Voltage Directive 73/23 EEC and subsequent modifications and completions.

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

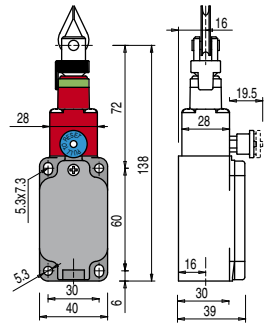
Data type approved by UL

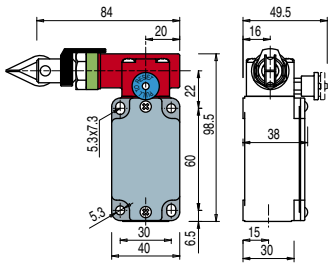
Utilization categories Q300 (69 VA, 125-250 VDC)
A600 (720 VA, 120-600 VAC)
Data of the housing type 1, 4X (indoor use only), 12, 13
In conformity with standard: UL 508
For all contact blocks use 60 or 75 °C copper (Cu) conductor and wire size 12-14 AWG. Terminal tightening torque of 7,1 Lb-In.

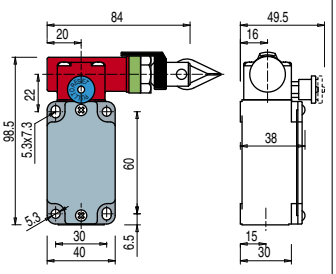
Please contact our technical service for the list of type approved products.

Contacts type:

L = slow action

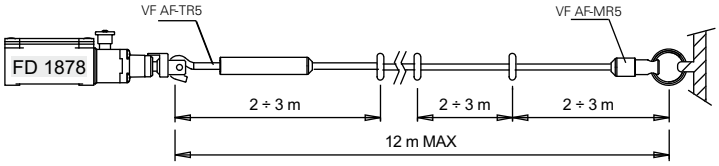




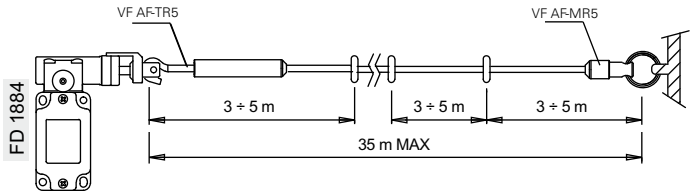


Contact blocks								
18	L	FP 1878	→	1NO+1NC	FD 1883	→	1NO+1NC	FD 1884	→	1NO+1NC
9	L	FP 978	→	2NC	FD 983	→	2NC	FD 984	→	2NC
Min. force		Initial 63 N...Final 83 N (90 N →)			Initial 147 N...Final 235 N (250 N →)			Initial 147 N...Final 235 N (250 N →)		
Travel diagrams		page 62 - group 1e			page 62 - group 2e			page 62 - group 2e		

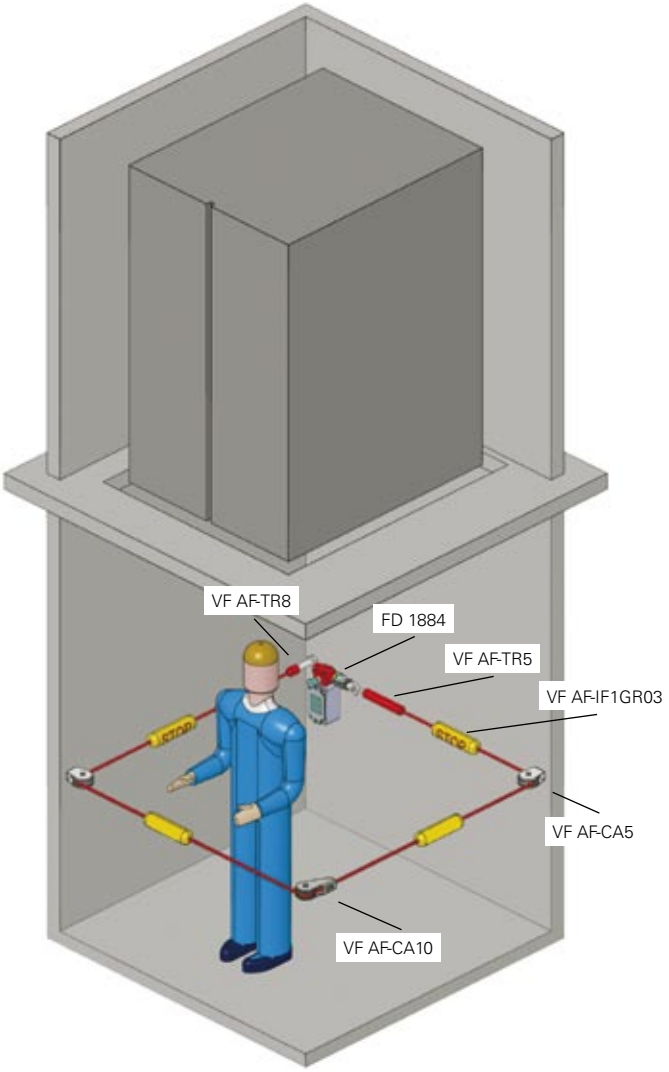
Max rope length for switches with longitudinal heads



Max rope length for switches with transversal heads



Application example



Accessories See page 58

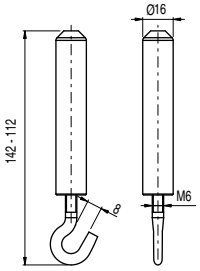
Items with code on the **green** background are available in stock

All measures in the drawings are in mm

Rope installation accessories, FAST line

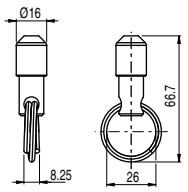
Article	Description
VF AF-TR5	Adjustable stay bolt





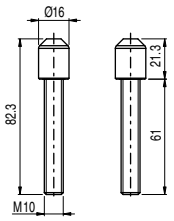
Article	Description
VF AF-MR5	End clamp





Article	Description
VF AF-TR8	Stay bolt

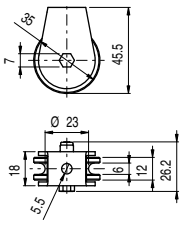




Pulleys

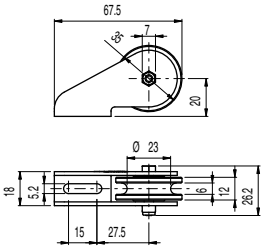
Article	Description
VF AF-CA5	Pulley





Article	Description
VF AF-CA10	Angular pulley

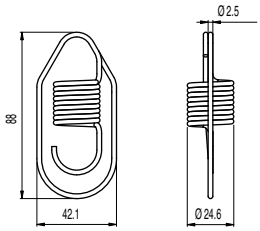




Safety spring

Article	Description
VF AF-ME78	Safety spring

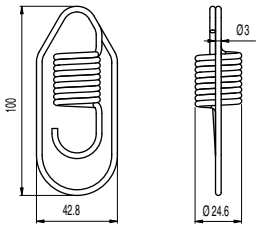




For longitudinal heads only. Example FD 1878

Article	Description
VF AF-ME80	Safety spring





For transversal heads only. Example FD 1883

Light indicator

Article	Description
VF ILI024GP	Yellow, 24 VAC/DC
VF ILI024RP	Red, 24 VAC/DC
VF ILI024VP	Green, 24 VAC/DC
VF ILI024TP	White, 24 VAC/DC
VF ILX000GP	Yellow, without lamp
VF ILX000RP	Red, without lamp
VF ILX000VP	Green, without lamp
VF ILX000TP	Transparent, without lamp



These light indicators are used for visualizing a change of the state of an electric contact inside the switch. They can be installed on switches by screwing them on one of the conduit entries not used for electric cables. Protection degree IP67

Function indicator

Article	Description
VF AF-IF1GR01	text "ARRESTO EMERGENZA"
VF AF-IF1GR02	text "EMERGENCY STOP"
VF AF-IF1GR03	text "STOP"
VF AF-IF1GR04	text "NOT - AUS"
VF AF-IF1GR05	text "ARRET D'URGENCE"
VF AF-IF1GR06	text "PARADA DE EMERGENCIA"



Rope function indicators recommended in accordance with the standard EN ISO 13850. (Patent pending).

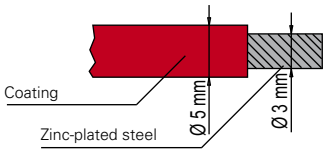
Items with code on the **green** background are available in stock

Rope and other accessories

Article	Description	Weight(Kg)
VF F05-100	100 m rope	5,1
VF F05-035	35 m rope	1,8
VF F05-020	20 m rope	1,0
VF F05-010	10 m rope	0,5



Ø 5 mm zinc-plated steel rope roll, coated with red plastic material.



The rope has been selected for long-term resistance against negligence and atmospheric agents.

Article	Description
VF F05-400	Rope



400 m board roll, zinc-plated steel rope Ø 5 mm, coated with red plastic material.

Weight 20,5 Kg.

Article	Description
VF F05-500B	Rope



500 m board roll, zinc-plated steel rope Ø 5 mm, coated with white plastic material.

Weight 25,6 Kg.

Article	Description
VF SB400	Rope dispenser



Support stand for board roll, it makes the uncoiling easy and practical without kinking the rope. Provided with a handle, it allows an easy transport of the coil without damage.

Article	Description
VF SFP2	Ceiling fixing plate



Metal fixing plate, designed to fix rope switches on ceiling.
The plate is provided with many fixing holes suitable for all switches series. It is supplied without screws.

Rope installation accessories kits, FAST line

Practical installation kits containing stay bolts and rope in the same package.



Article	Kit content	
VF AF-KT10M0	*1x* VF AF TR5 *1x* VF AF-MR5 *1x* VF F05-010	10 m
VF AF-KT20M0	*1x* VF AF-TR5 *1x* VF AF-MR5 *1x* VF F05-020	20 m
VF AF-KT35M0	*1x* VF AF-TR5 *1x* VF AF-MR5 *1x* VF F05-035	35 m



Article	Kit content	
VF AF-KM10R0	*1x* VF AF-MR5 *1x* VF AF-TR8 *1x* VF F05-010	10 m
VF AF-KM20R0	*1x* VF AF-MR5 *1x* VF AF-TR8 *1x* VF F05-020	20 m
VF AF-KM35R0	*1x* VF AF-MR5 *1x* VF AF-TR8 *1x* VF F05-035	35 m



Article	Kit content	
VF AF-KT10M7	*1x* VF AF-TR5 *1x* VF AF-MR5 *1x* VF F05-010 *1x* VF AF-ME78	10 m For longitudinal heads 78-79 only
VF AF-KT20M8	*1x* VF AF-TR5 *1x* VF AF-MR5 *1x* VF F05-020 *1x* VF AF-ME80	20 m For transversal heads 80-83-84 only
VF AF-KT35M8	*1x* VF AF-TR5 *1x* VF AF-MR5 *1x* VF F05-035 *1x* VF AF-ME80	35 m For transversal heads 80-83-84 only

Items with code on the **green** background are available in stock



Safety modules for the lift automatic floor levelling operations- according to EN 81

Main functions
- Choice between automatic start, manual start or monitored start
- Connection of the input channels to opposite potentials
- Small 22,5 mm housing
- Output contacts: 2 safety NO contacts
- Supply voltages: 24 VAC/DC

Utilization categories
Alternate current: AC15 (50...60 Hz)
Ue (V) 230
Ie (A) 3
Direct current: DC13
Ue (V) 24
Ie (A) 6

Markings, quality marks and certificates:

Approval IMQ: CE0051, IMQ certificate n° 340
Approval UL: E131787

Complying with the requirements requested by:
Low Voltage Directive 2006/95/EC,
Machinery Directive 2006/42/EC,
Electromagnetic Compatibility 2004/108/EC

Technical data

Housing
Made of polyamide PA 6.6 self-extinguishing, class V0 (UL94)

Protection degree:	IP40 (housing), IP20 (terminals)
Dimensions:	see page 55

General data

Safety category:	category 4 according to EN 954-1
Ambient temperature:	-25°C...+55°C
Mechanical endurance:	>10 millions of operations
Electrical endurance:	>100.000 operations
Pollution degree:	outside 3, inside 2
Rated impulse with stand voltage (Uimp):	4 KV
Rated insulation voltage (Ui):	250 V
Over-voltage category:	III
Weight:	0,2 Kg

Power supply

Rated operating voltage (Un):	24 VAC/DC; 50...60 Hz
Max residual ripple in DC:	10%
Supply voltage tolerance:	±15% of Un
Rated power consumption AC:	< 5 VA
Rated power consumption DC:	< 2 W

Control circuit

Protection against short circuits:	resistance PTC, Ih=0,5 A
Operating time of PTC:	intervention > 100 ms, reset > 3 s
Max input resistance:	≤ 25 Ω
Current for each input:	30 mA
Min. period of start impulse t_{MIN}:	100 ms
Operating time t_A:	50 ms
Releasing time t_{R1}:	20 ms
Releasing time in absence of power supply t_R:	70 ms
Simultaneity time t_C:	infinite

In conformity with standards:
IEC 204-1, EN 60204-1, EN 954, EN 81-1, EN 81-2, EN 12015, EN 12016, IEC 529, EN 60529, EN 61000-6-2, EN 61000-6-3, IEC 62326-1, IEC 60664-1, EN 60947-1, UL 508, CSA C22.2 n° 14-95

Output circuit

Output contacts:	2 safety NO contacts,
Contacts type:	forced guided contacts
Contacts material:	silver alloy, gold plated
Max switching voltage:	230/240 VAC; 300 VDC
Max switching current per contact:	6 A
Conventional free air thermal current Ith:	6 A
Contacts resistance:	≤ 100 mΩ
Contact protection fuse:	6 A

Code structure

CS AR-90V024

Kind of connection

V	screw terminals
M	connector with screw terminals
X	connector with spring terminals

Supply voltage

024	24 VAC/DC	±15%

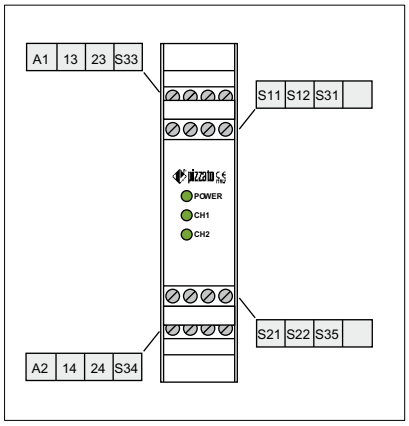
Data type approved by UL

Rated operating voltage (Un):	24 VAC/DC; 50...60 Hz
Rated power consumption AC:	< 5 VA
Rated power consumption DC:	< 2 W
Max switching voltage:	230 VAC
Max switching current per contact:	6 A
Utilization category	C300

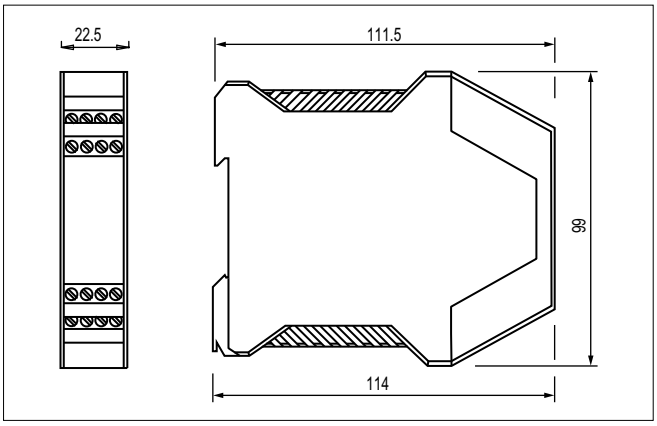
Notes:
- Use 60° or 75 °C copper (Cu) conductor and wire size 30-12 AWG.
- Terminal tightening torque of 5-7 Lb-In.
- Only for 24 VAC/DC version, supply from remote class 2 source or limited voltage and limited energy.

Safety module CS AR-90

Terminals layout



Dimensions

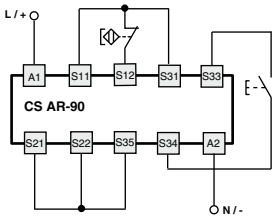


Inputs configuration

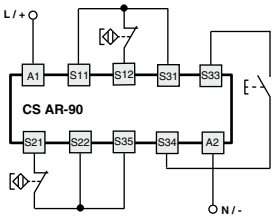
Emergency stop

Input configuration with magnetic sensors

1 channel

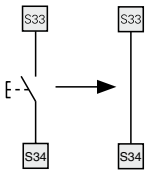


2 channels



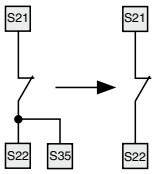
Automatic start

As regards the indicated diagrams, in order to activate the module with the automatic start, you have to bypass the start button between S33 and S34 terminals.



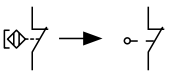
Monitored start

As regards the indicated diagrams, in order to activate the module with the monitored start, you have to remove the connection between S22 and S35 terminals.

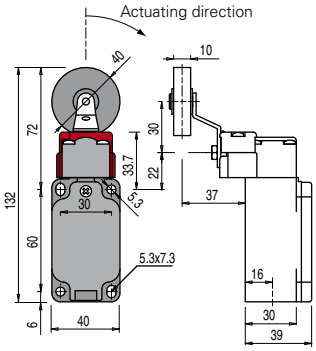


Electromechanical switches

The safety module can control both magnetic sensors and electromechanical switches, replacing the sensors contacts with switches contacts.

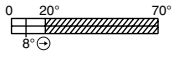


Safety position switches FP 945-S3



Article
FP 945-S3

Contacts
2NO



Description

Safety switch with rotating lever and rubber roller for unidirectional actuating towards right. Actuated by a suitable cam, it can be used for automatic floor levelling operations.
For further information please contact the technical office.



Main data

- Polymer housing, with one or two conduit entries
- Protection degree IP67
- External stainless steel parts versions
- M12 assembled connector versions
- Silver contacts gold plated versions

Markings and quality marks:

Approval IMQ: EG610
Approval UL: E131787
Approval CCC: 2007010305230013
Approval EZU: 1010151

Technical data

Housing
Made of glass-reinforced polymer, self-extinguishing, shock-proof thermoplastic resin and with double insulation ⧈
FR series one threaded conduit entry
FX series two threaded conduit entries
Protection degree: IP67

General data
Ambient temperature: from -25°C to +80°C
Version for operation in ambient temperature from -40°C to +80° C on request
Max operating frequency: 3600 operations cycles[1]/hour
Mechanical endurance: 20 million operations cycles[1]
Assembling position: any
(1) One operation cycle means two movements, one to close and one to open contacts, as foreseen by IEC 947-5-1 standard.

Cross section of the conductors (flexible copper wire)

Contact blocks 5, 9:	min.	1 x 0,5 mm²	(1 x AWG 20)
	max.	2 x 2,5 mm²	(2 x AWG 14)

In conformity with standards:
IEC 60947-5-1, EN 60947-5-1, EN 50047, IEC 60204-1, EN 60204-1, EN 1088, EN ISO 12100-1, EN ISO 12100-2, IEC 529, EN 60529, NFC 63-140, VDE 0660-200, VDE 0113, CENELEC EN 50013.
Approvals:
IEC 60947-5-1, UL 508, GB14048.5-2001

In conformity with requirements requested by:
Low Voltage Directive 2006/95/EC, Machinery Directive 2006/42/EC and Electromagnetic Compatibility 2004/108/EC.
Positive contact opening in conformity with standards:
IEC 60947-5-1, EN 60947-5-1, VDE 0660-206.

Electrical data

Thermal current (Ith):	10 A
Rated insulation voltage (Ui):	500 VAC 600 VDC
Protection against short circuits:	fuse 10 A 500 V type aM
Pollution degree:	3

Utilization categories

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

Ue (V)	250	400	500
Ie (A)	6	4	1

Direct current: DC13

Ue (V)	24	125	250
Ie (A)	6	1,1	0,4

Data type approved by IMQ and EZU

Rated insulation voltage (Ui): 500 VAC
Thermal current (Ith): 10 A
Protection against short circuits: fuse 10 A 500 V type aM
Protection degree: IP67
MV terminals (screw clamps)
Pollution degree 3
Utilization category: AC15
Operation voltage (Ue): 400 VAC (50 Hz)
Operation current (Ie): 3 A
Forms of the contact element: Zb, Y+Y
In conformity with standards: EN60947-1, EN 60947-5-1 and subsequent modifications and completions, fundamental requirements of the Low Voltage Directive 73/23 EEC and subsequent modifications and completions.

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

Data type approved by UL

Utilization categories Q300 (69 VA, 125-250 VDC)
A600 (720 VA, 120-600 VAC)
Data of the housing type 1, 4X (indoor use only), 12, 13
In conformity with standard: UL 508
For all contact blocks use 60 or 75 °C copper (Cu) conductor and wire size 12-14 AWG. Terminal tightening torque of 7,1 Lb-In.

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

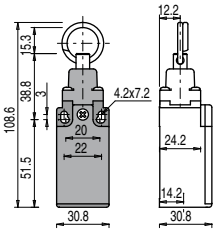
Data type approved by CSA

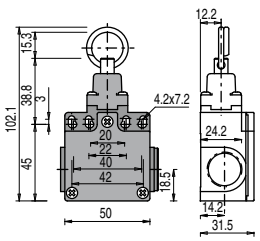
Utilization categories Q300 (69 VA, 125-250 VDC)
A600 (720 VA, 120-600 VAC)
Data of the housing type 1, 4X (indoor use only), 12, 13
In conformity with standard: CSA C22-2 nr.14

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

Contacts type:

R = snap action
L = slow action





Contact blocks					
5	R	FR 576	1NO+1NC	FX 576	1NO+1NC
9	L	FR 976	2NO	FX 976	2NO
Max speed		0,5 m/s		0,5 m/s	
Min. force		initial 20 N - final 40 N		initial 20 N - final 40 N	
Travel diagrams		page 61 - group 5a		page 61 - group 5a	

All measures in the drawings are in mm

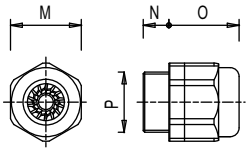
Wiretrap cable glands

10 pcs packs



The design of this cable gland improves the retention forces of the wires. Each type of cable gland accepts a wider range of cable diameters.

Technical data:
Body and nut material: halogen free polymer
Protection degree: IP67
Driving torque: from 3 to 4 Nm



Article	Description	⬡M	N	O	P
VF PAP13C6N	Cable glands PG 13,5 for Ø 6 to Ø 12 mm cables range	24	9	24	PG 13,5
VF PAM20C6N	Cable glands M20x1,5 for Ø 6 to Ø 12 mm cables range	24	9	24	M20x1,5
VF PAP13C3N	Cable glands PG 13,5 for Ø 3 to Ø 7 mm cables range	24	9	24	PG 13,5
VF PAM20C3N	Cable glands M20x1,5 for Ø 3 to Ø 7 mm cables range	24	9	24	M20x1,5
VF PAP11C5N	Cable glands PG 11 for Ø 5 to Ø 10 mm cables range	22	7,5	23	PG 11
VF PAM16C5N	Cable glands M16x1,5 for Ø 5 to Ø 10 mm cables range	22	7,5	23	M16x1,5
VF PAP11C3N	Cable glands PG 11 for Ø 3 to Ø 7 mm cables range	22	7,5	23	PG 11
VF PAM16C3N	Cable glands M16x1,5 for Ø 3 to Ø 7 mm cables range	22	7,5	23	M16x1,5

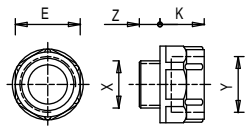
Thread adapters

100 pcs packs



With these adapters it is possible to offer to the customers the same product with different threaded cable entries, while only having to stock a single product and many kinds of adapters.

Technical data:
Body material: glass-reinforced polymer resin
Driving torque: from 3 to 4 Nm



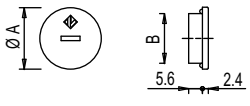
Article	Description	X	Y	Z	K	⬡E
VF ADPG13-PG11	Adapter from PG 13,5 to PG 11	PG 13,5	PG 11	9	12	22
VF ADPG13-M20	Adapter from PG 13,5 to M20x1,5	PG 13,5	M20x1,5	9	14	24
VF ADPG13-1/2NPT	Adapter from PG 13,5 to 1/2 NPT	PG 13,5	1/2 NPT	9	14	24
VF ADPG11-1/2NPT	Adapter from PG 11 to 1/2 NPT	PG 11	1/2 NPT	7	14	24
VF ADPG11-PG13	Adapter from PG 11 to PG 13,5	PG 11	PG 13,5	7	14	24
VF ADM20-1/2NPT	Adapter from M20 x 1,5 to 1/2 NPT	M20 x 1,5	1/2 NPT	9	14	24

Protection plugs

100 pcs packs



Technical data:
Body material: halogen free polymer
Protection degree: IP67
Driving torque: from 1,2 to 2 Nm



Article	Description	A	B
VF PTG13,5	Protection plug PG13,5	25	PG 13,5
VF PTM20	Protection plug M20x1,5	25	M20x1,5
VF PTG11	Protection plug PG11	23	PG 11
VF PTM16	Protection plug M16x1,5	23	M16x1,5

Items with code on the **green** background are available in stock

All measures in the drawings are in mm

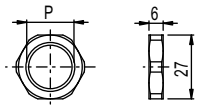
Plastic threaded nuts

100 pcs packs



Technical data:

Body material:	glass-reinforced polymer resin
Driving torque:	from 1,2 to 2 Nm



Article	Description	P
VF DFPP13	Plastic threaded nut PG13,5	PG 13,5
VF DFPM20	Plastic threaded nut M20x1,5	M20x1,5

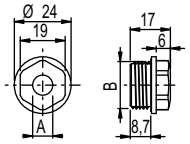
Chock plugs

100 pcs packs



Technical data:

Body material:	halogen free polymer
Protection degree:	IP40
Driving torque:	1 Nm



Article	Description	A	B
VF PFM20C8N	Chock plug for cable from Ø 8 to Ø 9 mm, threaded M20	7,5	M20x1,5

Plastic fixing plates



Fixing plate (complete with fastening screws) provided with long slots for the adjustment of the actuating point.
Every plate has a double couple of fixing holes, one for standard switches and the other one for switches with reset device. In this way the actuator will always have the same actuating point.

Article	Description
VF SFP1	Fixing plate (FR series)
VF SFP3	Fixing plate (FX series)

Metal fixing plates



Metal fixing plate, designed to fix rope switches on ceiling. The plate is provided with many fixing holes suitable for all switches series. It is supplied without screws.

Article	Description
VF SFP2	Fixing plates for ceiling installations

Items with code on the **green** background are available in stock

All measures in the drawings are in mm

Light indicators

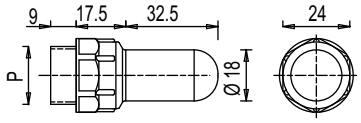
5 pcs packs



These light indicators are used for visualizing a change of the state of an electric contact inside the switch. They can be installed only on series FL, FX, FZ, FW, FG or FS by screwing them on one of the conduit entries not used for electric cables, and they can have many different functions: for example, combined with a rope switch (e.g. FL 1878) they can indicate (also in the distance) if the switch has been actuated. Otherwise, combined with safety switches with separate actuator (e.g. FL 693), they can indicate if the protection is closed correctly or not.
Combined with a safety switch with solenoid (FS or FG series), they can indicate if the protection is locked or unlocked. Combined with any switch of FL, FX, or FZ series they can be used to calibrate the actuator.
The light indicators are decomposable in two parts for bulb replacement without removing the lamp holder from the switch, and their inner part can rotate in such a way that it can be wired and screwed on the switch without any risk of kinking the wires.

Technical data:

Max operating voltage:	250 VAC/DC
Max lamp power:	3 W
Protection degree:	IP67
Lamp coupling:	BA9
Cable cross section:	min. 0,5 mm²
	max 1,5 mm²
Ambient temperature:	from -25°C to +40°C
Driving torque:	from 3 to 4 Nm





How to order

VF ILI024GP

Kind of lamp	
I	incandescence
X	without lamp

Supply voltage	
024	24 VAC/DC ±10%
110	110 VAC/DC ±10%
220	220 VAC/DC ±10%
000	without lamp

Threaded coupling (P)	
P	PG 13,5
M	M20 x 1,5

Lamp cover colour	
G	Yellow
R	Red
V	Green
T	Transparent

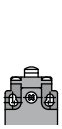
Items available in stock

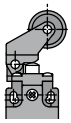
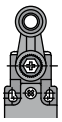
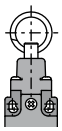
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VF ILI024VP
VF ILI024TP
VF ILX000GP
VF ILX000RP
VF ILX000VP
VF ILX000TP

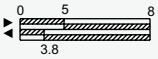
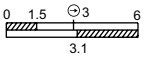
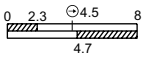
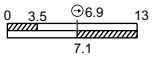
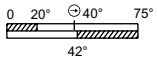
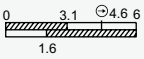
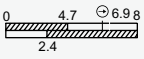
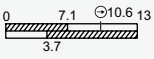
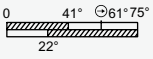
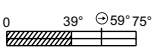
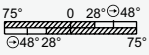
Items with code on the **green** background are available in stock

All measures in the drawings are in mm

Travel diagrams table: position switches for normal application FR - FX series

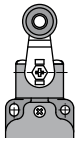


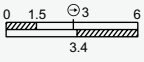
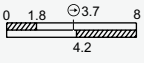
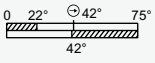
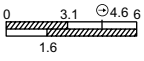
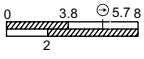
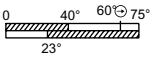
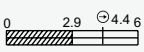
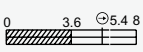
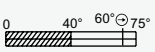
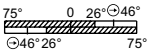




Contact block	Group 1a	Group 2a	Group 3a	Group 4a	Group 5a inverted contacts
5 1NO+1NC					
6 1NO+1NC					
7 1NO+1NC					
9 2NC					
16 2NC					

Travel diagrams table: position switches for heavy application FP series

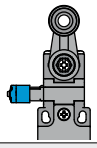


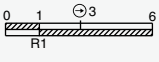
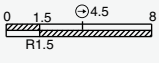
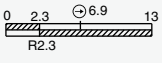


Contact block	Group 1b	Group 2b	Group 3b
6 1NO+1NC			
7 1NO+1NC			
9 2NC			
16 2NC			

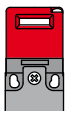
Travel diagrams table: position switches for normal application with reset W3, FR - FX series

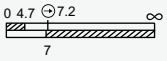
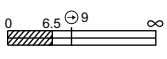
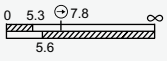


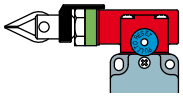
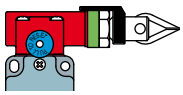
Contact block	Group 1c	Group 2c	Group 3c	Group 4c
6 1NO+1NC				
9 2NC				
20 1NO+2NC				

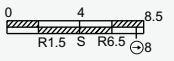
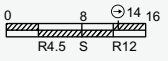
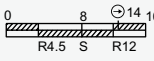
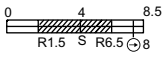
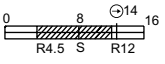
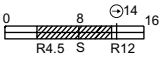
Travel diagrams table: switches with separate actuator FR - FX - FW -FK series



Contact block	Group 1d
6 1NO+1NC	
9 2NC	
33 1NO+1NC	
34 2NC	

Travel diagrams table: rope switches FD - FP series

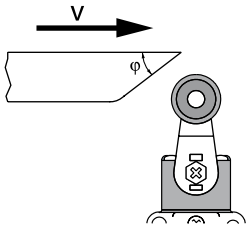




Contact block	Group 1e	Group 2e	Group 3e
18 1NO+1NC			
9 2NC			

Maximum and minimum actuation speed

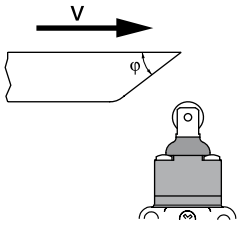
Type 1
Lever with roller

φ	Vmax (m/s)	Vmin (mm/s) L	Vmin (mm/s) R
15°	2,5	9	0,07
30°	1,5	8	
45°	1	7	
60°	0,75	7	



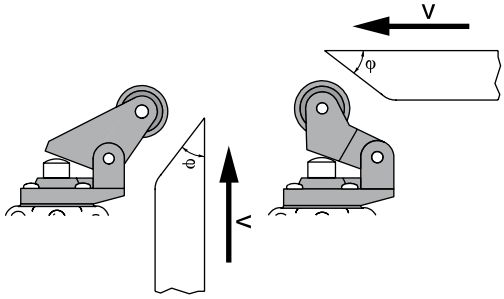
Type 2
Plunger with roller

φ	Vmax (m/s)	Vmin (mm/s) L	Vmin (mm/s) R
15°	1	4	0,04
30°	0,5	2	0,02
45°	0,3	1	0,01



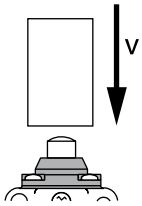
Type 3
Lever with roller

φ	Vmax (m/s)	Vmin (mm/s) L	Vmin (mm/s) R
15°	1	5	0,05
30°	0,5	2,5	0,025
45°	0,3	1,5	0,015



Type 4
Plunger

Vmax (m/s)	Vmin (mm/s) L	Vmin (mm/s) R
0,5	1	0,01



Contacts type:

R = snap action
L = slow action

Article	Page
CS AR-90	54
DS AA1VA	37
DS AA5VA	37
DS AE1VA	37
DS AE5VA	37
DS KA1A	37
DS KA2A	37
DS KB1A	37
DS KB3A	37
DS KP5A	37
FD 1883	51
FD 1884	51
FD 983	51
FD 984	51
FK 3393	39
FK 3493	39
FP 1631	19
FP 1631-3	19
FP 1631-R5	19
FP 1635	19
FP 1635-3	19
FP 1635-4	19
FP 1635-R5	19
FP 1638	20
FP 1656	19
FP 1656-3	19
FP 1656-4	19
FP 1656-R5	19
FP 1878	51
FP 601	18
FP 602	18
FP 605	18
FP 615	18
FP 631	19
FP 631-3	19
FP 631-R5	19
FP 635	19
FP 635-3	19
FP 635-4	19
FP 635-R5	19
FP 638	20
FP 651	18
FP 652	18
FP 656	19
FP 656-3	19
FP 656-4	19
FP 656-R5	19
FP 658	20
FP 701	18
FP 702	18
FP 705	18
FP 715	18
FP 731	19
FP 731-3	19
FP 731-R5	19
FP 735	19
FP 735-3	19
FP 735-4	19
FP 735-R5	19
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FP 978	51
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FR 2002-W3	26
FR 2005-W3	26
FR 2007-W3	26
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FR 2015-W3H0P12	26
FR 2015-W3P12	26
FR 2016-W3	26
FR 2016-W3H0	26
FR 2016-W3H0P12	26
FR 2016-W3P12	26
FR 2030-W3	27
FR 2031-W3	27
FR 2038-W3	29
FR 2051-W3	27
FR 2052-W3	27
FR 2054-3W3	28
FR 2054-R5	28
FR 2054-R5W3	28
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FR 2056-R5W3	28
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FR 576	56
FR 5A3	33
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FR 651	11
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FT 1701E230	35
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FW 3492-M2	39
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FX 2015-W3H0P32	27
FX 2015-W3P32	27
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FX 2016-W3H0	27
FX 2016-W3H0P32	27
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VF ADPG11-1/2NPT	58
VF ADPG11-PG13	58
VF ADPG13-1/2NPT	58
VF ADPG13-M20	58
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Cross-reference substituted articles

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MF 05	MK H11D05
MF 06	MK H11D06
MF 08	MK H11D08
MF 09	MK H11D09
MF 10	MK H11D10
MF 12	MK H11D12
MF 13	MK H11D13
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MF 17	MK H11D17
MF 20	MK H11D15
MF 30	MK H11D30
MF 32	MK H11D32
MF 35	MK H11D35
MF 37	MK H11D37
MF 40	MK H11D40
MF 42	MK H11D42
MF 45	MK H11D45
MF 47	MK H11D47
MF 49	MK H11D49
MF 50	MK H11R32
MF 52	MK H11R30
MF 53	MK H11R53
MF 54	MK H11R40
MF 55	MK H11R42
MF 57	MK H11R47
MF 58	MK H11R45
MF 59	MK H11R59
MF 60	MK H11R60

Old articles	New articles
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MM 02	MK V11D02
MM 03	MK V11D03
MM 04	MK V11D04
MM 05	MK V11D05
MM 06	MK V11D06
MM 08	MK V11D08
MM 09	MK V11D09
MM 10	MK V11D10
MM 12	MK V11D12
MM 13	MK V11D13
MM 15	MK V11D15
MM 17	MK V11D17
MM 20	MK V11D15
MM 30	MK V11D30
MM 32	MK V11D32
MM 35	MK V11D35
MM 37	MK V11D37
MM 40	MK V11D40
MM 42	MK V11D42
MM 45	MK V11D45
MM 47	MK V11D47
MM 49	MK V11D49
MM 50	MK V11R32
MM 52	MK V11R30
MM 53	MK V11R53
MM 54	MK V11R40
MM 55	MK V11R42
MM 57	MK V11R47
MM 58	MK V11R45
MM 59	MK V11R59
MM 60	MK V11R60

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MS 08	MK V11D08
MS 09	MK V11D09
MS 10	MK V11D10
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MS 54	MK V11R40
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MS 60	MK V11R60

Old articles	New articles
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MV 59	MK V11R59
MV 60	MK V11R60

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