



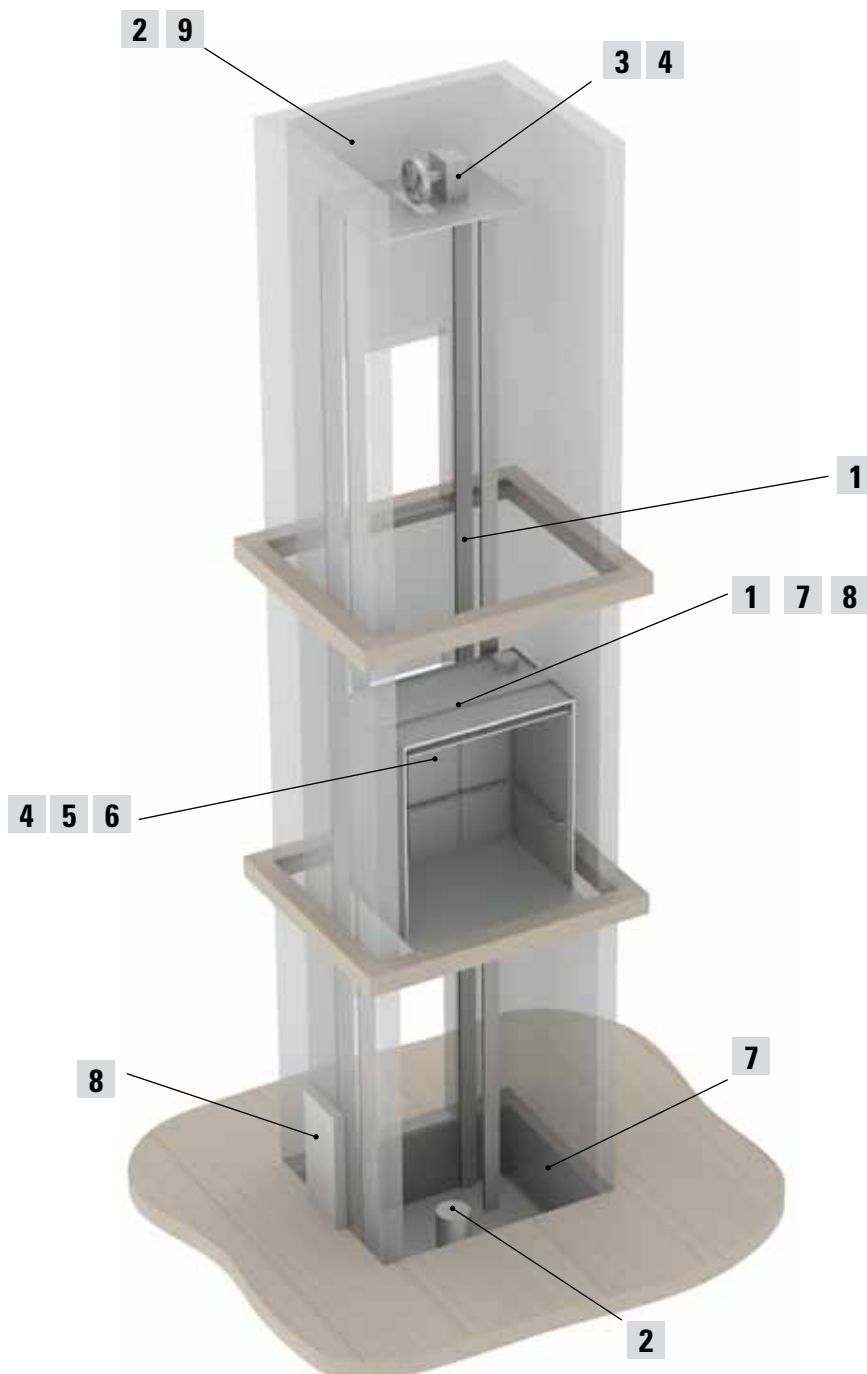
## Presentation



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.

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 Position switches**



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**1B Position switches**



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**2 Switches with manual reset**



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**3 Switches for over-speed devices with manual reset**



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**4 Switches with electrical reset**



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**5 Door switches**



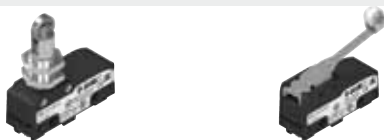
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**6 Operator switches**



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**7A EL AC Lift control stations**



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**7B EL AN Lift control stations**



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**8 Automatic floor levelling op. devices**



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**9 Signalling switches**



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## 180 PASSIONATE PROFESSIONALS

It is people, with their professionalism and dedication that make a great company. This profound conviction has always guided Pizzato Elettrica in their choice of employees and collaborators. Today, Giuseppe and Marco Pizzato lead a tireless team providing the fastest and most efficient response to the demands of the market. This team has grown 60% since the year 2000 and has achieved a considerable increase in business in all the countries where Pizzato Elettrica is present.

The various strategic sectors of the business are headed by professionals with significant experience and expertise. Many of



these people have developed over years with the company. Others are experts in their specific field and have integrated personal experience with the Pizzato Elettrica ethos to extend the company's capability and knowledge.

From the design office to the technical assistance department, from managers to workers, every employee believes in the company and its future. Pizzato Elettrica employees all give the best of themselves secure in the knowledge they are the fundamental elements of a highly valuable enterprise.







## 100% MADE IN ITALY

An entrepreneurial company such as Pizzato Elettrica, which has grown day after day thanks to the “culture of doing” of a family that benefited from approaching its work with tenacity, intelligence and far-sightedness, has its foundations in a system of solid and deeply-shared values. The pillars that form the basis of the company’s work have remained constant and constitute Pizzato Elettrica’s fundamental guiding principles.

- **TERRITORIAL ROOTS.** Pizzato Elettrica is a successful example of the ripe entrepreneurship that characterises the North-East of Italy and Veneto in particular, an area that is tellingly referred to as “Italy’s locomotive”. The territory is highly productive in every sector, from agriculture to high technology, and makes a fundamental contribution to the generation of Italian wealth; where 100 is the average per capita value added produced at the national level, the figure here has consistently been between 110 and 135. The productivity rate is among the highest in Europe and originates from a tradition of diffuse and markedly export-oriented entrepreneurship.

- **ORIENTATION TO EXCELLENCE.** Innovation and development: this company philosophy is at the heart of the operations and product quality assessments that Pizzato Elettrica performs in a 360 degree manner, and is also manifest in the heightened propensity for research and innovation that characterises its design work. Every product development in Pizzato Elettrica is born with the aim of bringing a secure, reliable and innovative choice to the market: those using Pizzato Elettrica products do so in the certainty that they are of certified quality as fruits of a process that is scrupulously controlled at every stage.

- **ATTENTION TO THE CLIENT.** In order to be successful, a product must respond to the specific needs of those who will use it: quality alone is not enough. Market developments must be carefully monitored so that one can understand, in advance, which new applications will prove truly useful. This is why Pizzato Elettrica has always cultivated close synergies with the companies that choose it as a supplier, using this continuous dialogue to identify the potential developments of its product range so as to render it highly flexible, complete and able to offer optimal solutions to diverse needs.





## 1984: AN ENTREPRENEURIAL STORY BEGINS

16 November 1984. This is the date that marks the beginning of a long entrepreneurial story: the story of a family that was able to build a company and allow it to grow consistently, one step at a time, to reach important results, guided by a profound work ethic and a marked spirit of initiative.

- 80s. The company was initially called Pizzato, owned by the Pizzato B. & C. general partnership with headquarters in Marostica. It was immediately able to assert itself on the market thanks to the quality of its products. In the short space of 4 years, the firm had already developed to the point of making a fundamental upgrade: on 18 April 1988, it became Ltd. company and was re-named Pizzato Elettrica, a brand shortly destined to become renowned and appreciated nationwide. During the same year, its first company-owned plant, geared towards mechanical processing, was built. By the end of the decade, thanks to the development of quality products and the experience built on the Italian market, Pizzato Elettrica turned to the international market: in 1989, the commercialisation of products was extended to the USA.

- 90s. The range of products continued to be upgraded and specialised with the introduction of new machinery and the growing input of technology. In 1994, Pizzato Elettrica introduced its first line of prewired switches with immediate success. 1996 and 1997 were important years in the development of safety devices, a sector that became strategic when new European directives on working environments were introduced. Pizzato Elettrica immediately became an Italian leader in this regard, thanks to its evolved safety switches and switches with solenoid. Meanwhile (1995), its second plant, geared towards the moulding of plastic materials, was also born. The brand was now ready to approach the new frontiers of the international market: South Africa in 1995 and Australia in 1997.

As a confirmation of its innovative spirit, Pizzato Elettrica was among the first companies to believe in the strong potential of the Web, presenting itself online with a well-constructed and multi-functional site as early as 1996. This exciting, constant growth culminated in 1998 with the construction of the third plant, dedicated to the assembly department.

- 00s. The new millennium heralded the search for quality certifications: the ISO 9002 was achieved in April 2000, followed by the ISO 9001 achieved in November 2002. In the meanwhile, technological evolution continued: in 2000, the design studio began using CAD 3D systems. This allowed new avant garde product models to be developed, such as safety modules (2002) and switches conforming to the European ATEX directives (2005), laid out for equipment operating in potentially explosive environments.

In 2006, the HP switch, the result of an innovative engineering design project combining safety and style in a single product, was introduced to the market. The Palladio line was selected by the judging panel of the "Innovation&Design Award 2007" as one of the industrial products most distinguished by its unique design and technological innovativeness.

In 2007, the company extended its range of products for machine safety, introducing two new series of magnetic safety sensors, suitable for the monitoring of protections and repairs.

The initial months of 2009 have witnessed the introduction of the new prewired modular switches NA-NB-NF series.

In 2010 Pizzato Elettrica introduced the new EROUND line control and signalling devices, therefore remarkably widening its offer within the man-machine interface sector.

In 2012, the company integrates its offering in the machine safety field, thanks to the ST series sensors with RFID technology and to the programmable safety modules of the GEMNIS CS MP series.

In 2013 were introduced the new safety switches in stainless steel HX series.

More recently were presented new RFID safety switches with lock NG series. Furthermore the programmable multifunction safety modules from the Gemnis series have been updated to version 11, with the introduction of new functions and better performance in terms of hardware and software. At the same time software Gemnis Studio was also updated, a graphic development environment for the creation, simulation and debug of programs suitable to be entered in the modules belonging to the Gemnis line.



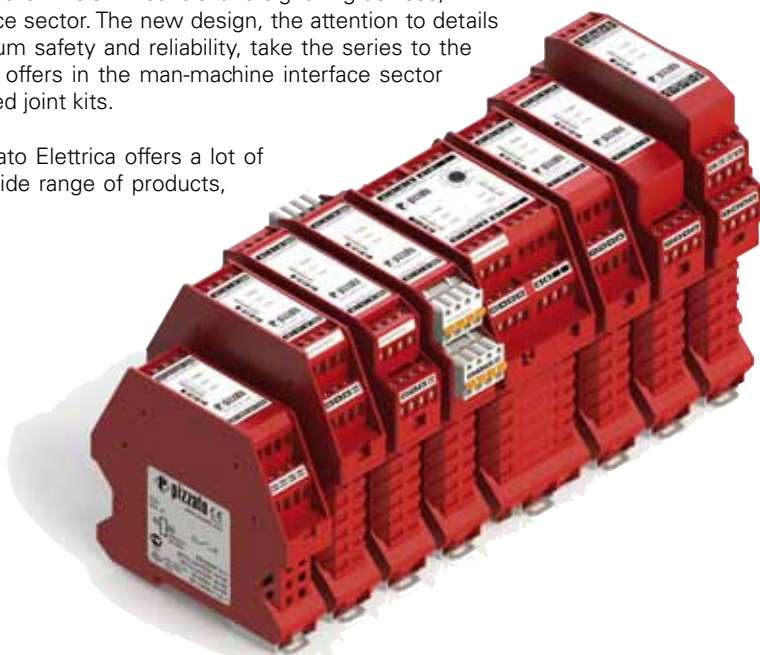
## 59,000,000 PARTS SOLD WORLDWIDE

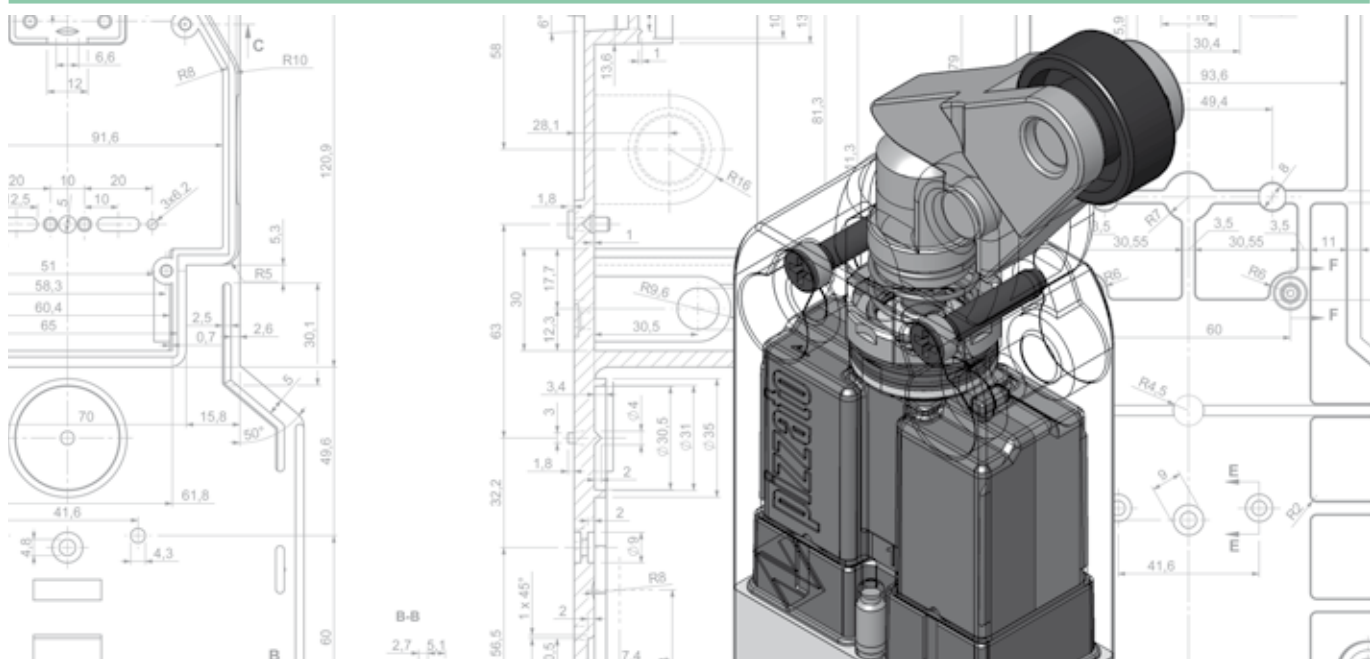
Pizzato Elettrica's product catalogue contains around 7,000 items, with over 1,000 special codes developed for devices personalised according to clients' specific needs.

Pizzato Elettrica devices can be grouped, according to typology, into 3 main macro-categories:

- **POSITION SWITCHES.** They are installed daily on any type of industrial machinery with applications in the wood, metal, plastic, elevator, automotive, naval etc. sectors. In order to be used in a such wide variety of sectors and countries, Pizzato Elettrica position switches are made to be assembled in a lot of configurations thanks to the various body shapes, dozens of contact blocks, hundreds of actuators and materials, forces, assembling versions. The product range that Pizzato Elettrica can offer in the field of position switches is one of the widest in the world. Moreover, the use of high quality materials, high reliability technologies as twin bridge contact blocks and the protection degree IP67, make this range of position switches one of the most technologically evolved. Furthermore since 2005 Pizzato Elettrica has also started to produce versions of its switches with specific features for some sectors as follows: switches with ATEX homologations and switches for high temperature.
- **SAFETY DEVICES.** The company Pizzato Elettrica has been one of the first Italian companies developing dedicated items for this sector, creating and patenting dozens of innovative products, so becoming one of the main European manufacturers of safety devices. The wide range of specific products for machine safety completely designed and assembled in our company premises in Marostica (VI), has been widened by the introduction of coded magnetic sensors, switches with solenoid provided with anti-panic release device, hinged safety switches and new safety handles. New products have recently been introduced, including ST series safety sensors with RFID technology, HX series hinge-shaped safety switches in stainless steel, NG Series RFID safety switches with block and P-KUBE 2 safety handles.
- **MAN-MACHINE INTERFACE.** Thanks to the introduction of the EROUND control and signalling devices, Pizzato Elettrica widens its offer in the man-machine interface sector. The new design, the attention to details and the elegance of the product combined with its maximum safety and reliability, take the series to the forefront of the market. The wide range that our Company offers in the man-machine interface sector includes single and modular footswitches with many patented joint kits.

In order to satisfy its customers' needs and requests, Pizzato Elettrica offers a lot of accessories purposely designed not only to complete its wide range of products, but also to help their installations on machineries.





## 140 NEW PROJECTS COMPLETED

There's a key word in the development of latest-generation devices: Mechatronics. This new science has grown in recent years, reaching some of the most important research centres, both national and international, right here in Veneto. It is based on the fusion of the principles of Mechanics with those of Electronics in the design of instruments that guarantee great precision, high performance, versatility and constant improvement.

This is why, in recent years, all new models have indeed been created following careful Mechatronics studies, undertaken directly by the highly specialised technicians and engineers that form part of the R&D department.

The evolution of Pizzato Elettrica's product lines thus proceeds on a double platform: on one side, there are the internally-researched innovative materials and technologies; on the other, the particular needs that emerge from continuous dialogue with big competitors and, above all, clients.

Indeed, requests for specific personalisations of a product are quite common: Pizzato Elettrica's duty is to respond to these needs as best it can, guaranteeing maximum flexibility and openness with regards to 'custom made' projects too.







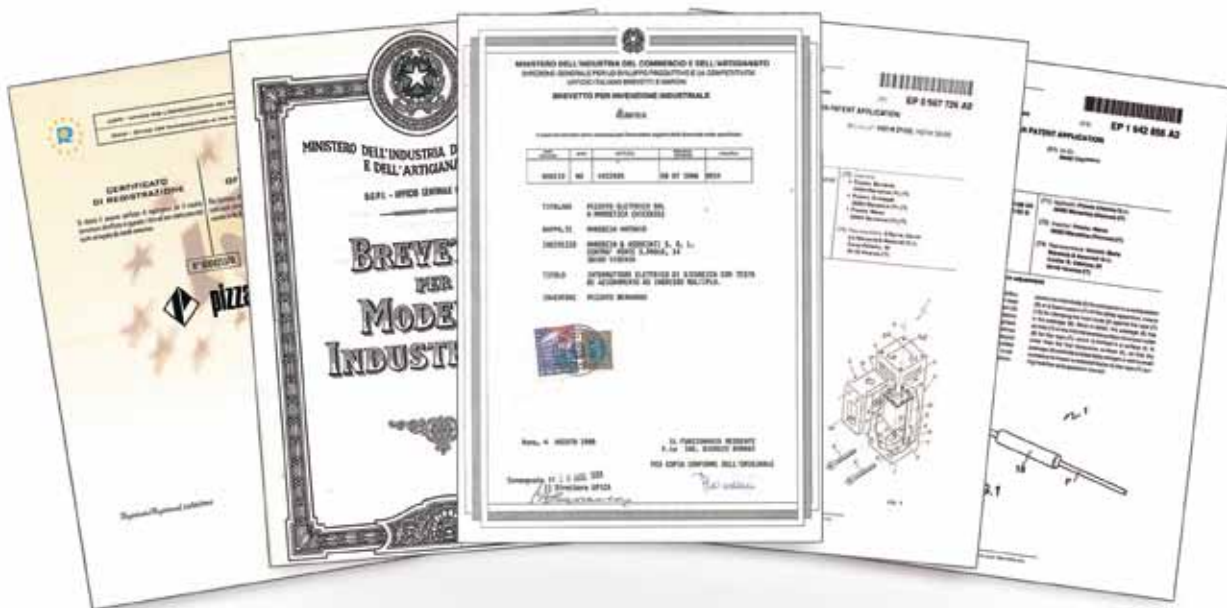
## 10 MILLION CERTIFIED PRODUCT CODES

A simple brand isn't enough: the company is aiming for the Pizzato Elettrica brand to be widely recognised as a synonym for absolute quality and certainty.

A result that has been reached and consolidated over the years, updating and expanding the series of certifications obtained from the most important Italian and international control organs. Product quality is assessed by five accredited external bodies: IMQ, UL, CCC, EZU and TÜV. These bodies lay out high technical and qualitative standards for the company to achieve and maintain, verified yearly with seven different inspections: these are performed, without prior notice, by qualified inspectors, who extract samples of products and materials destined for sale from plants, or from the market directly, to subject them to apposite tests.

- **CE MARK.** All Pizzato Elettrica products bear the CE mark, in concordance with the European Directives.
- **ISO 9001 CERTIFICATION.** The company's production system conforms with national UNI EN ISO 9001 and international ISO 9001 standards. The certification covers all of the company's plants and their production and managerial activities: entry checks, technical, purchasing and commercial department activities, manufacturing operations assessments, final pre-shipping product tests and checks, equipment reviews and the management of the metrological lab.
- **CERTIFICATION OF COMPANY QUALITY SYSTEMS.** Pizzato Elettrica has obtained the certificate of compliance with the UNI EN ISO 9000 regulations in force in Italy and abroad. It is issued by a recognised independent body that guarantees the quality and reliability of the service offered to clients worldwide.
- **CSQ, CISQ AND IQNET.** The CSQ system is part of the CISQ (Italian Certification of Quality Systems) federation, which consists of the primary certification bodies operating in Italy and its various product sectors. CISQ is the Italian representative within IQNet, the biggest international Quality Systems and Company Management certification network, which is adhered to by 25 certification organs in as many countries.



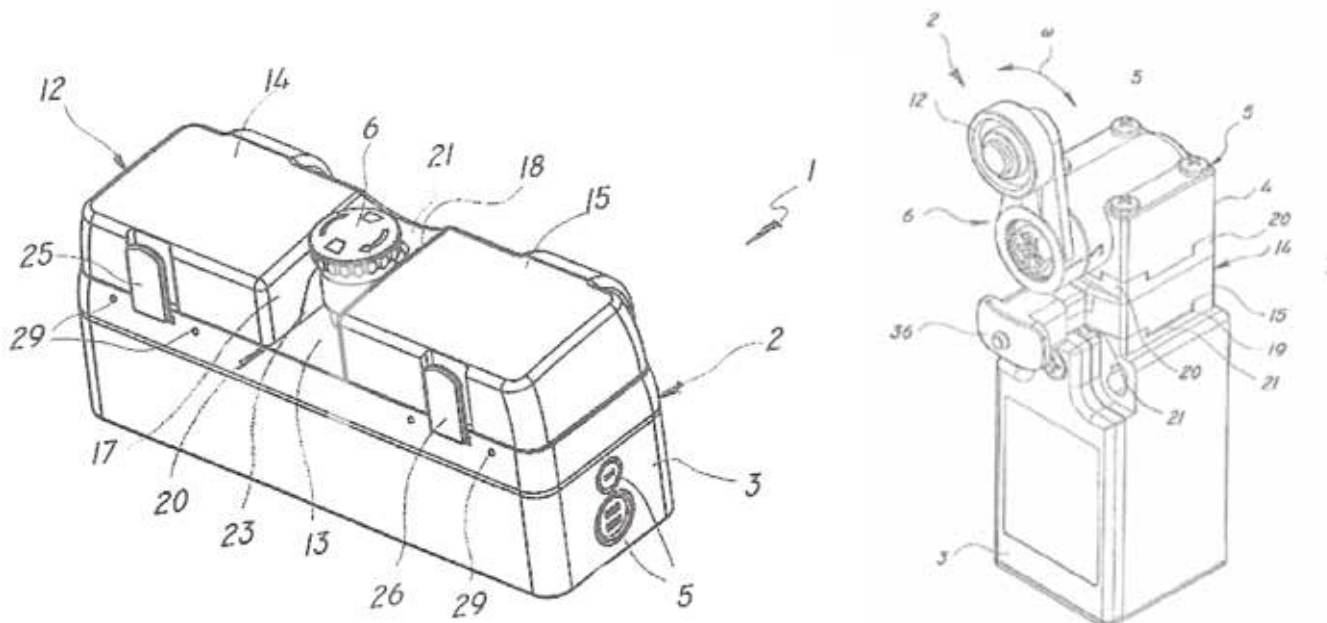


## 140 REGISTERED PATENTS

The fact that Pizzato Elettrica has, over 30 years, been able to take on a leadership role at the European level is also a result of continuous research and innovation, which its labs and internal design studios undertake on a daily basis.

This is a strategic sector that is exploited to the maximum thanks to a constant process of innovation: indeed, this undoubtedly represents the most important value added. This is why, on average, Pizzato Elettrica develops 3 innovative projects to be covered by international patents each year: a route that the company has been following since its birth, immediately understanding the importance of registering and protecting ideas in order to approach the market with the added strength of being truly 'different' from its competitors.

The company's ideas are what have distinguished it and allowed it to come to occupy a highly important market position, through the tens of patents that have been developed and registered. An ever evolving know-how that is renewed daily, as demonstrated, for example, by the more recent innovations introduced in the safety device sector. This field is due to change significantly in the coming years through profound technological developments: a path that Pizzato Elettrica once again intends to take before time, outlining new principles destined to respond to the international market trends of the future.





## 20,800 HOURS DEDICATED TO RESEARCH PER YEAR

Behind every new product lies a careful research and design process that aims to find technologically advanced solutions that can improve the device.

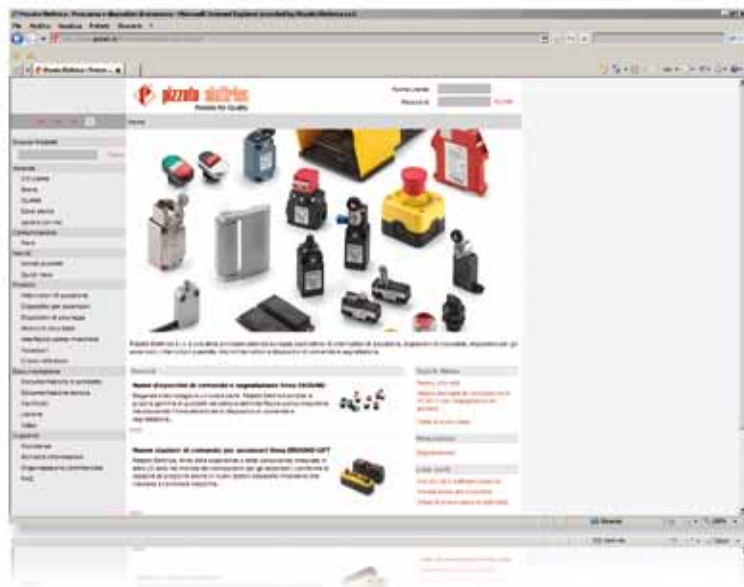
This evolution would not have been possible if Pizzato Elettrica hadn't acquired increasingly well-adapted instruments over time, thus keeping pace with the latest technological frontiers. In this sense, the number of computers used daily within the company is particularly significant: an average of almost one computer per employee (workers included!) represents an exhaustive index of a highly computerised company.

The design effort utilises the most evolved 3D CAD software; the efficiency of the Electrical and Mechanical labs, which operate in strict synergy, allows for immediate assessments to be undertaken for the development and perfection of every functional aspect of the prototypes.

The switches undergo the most thorough of checks, which evaluate their efficiency in extreme conditions too: this ensures that Pizzato Elettrica's clients will have access to a genuinely safe, reliable product.

Measurements are taken using over 200 precision tools, which allow for every single component and every characteristic of the finished products to be evaluated: from measures of humidity and temperature to weight and force, to electrical levels, flammability, mechanical duration, magnetic characteristics, microscopic surveys, the level of IP protection and EMC electromagnetic compatibility.





## 1,000 TECHNICAL SUPPORT ANSWERS PER MONTH

Pizzato Elettrica sees itself as a company that is as attentive to customers needs as it is to the development of its products.

This is why significant resources have always been dedicated to the development of the technical assistance service, giving the company the role of a highly qualified technological partner that is able to fully support technicians and designers.

Pizzato Elettrica offices can be contacted by telephone from Monday to Friday and offer both information and advice relating to the choice of products, the technical characteristics and the correct installation, ensuring to the customers a direct technical assistance service.

### WWW.PIZZATO.COM

Pizzato Elettrica was one of the first Italian firms of its sector to believe in Internet, developing a web site since 1996.

Pizzato Elettrica website, renewed in its graphics and contents and now available in four languages (Italian, English, French and German), is full of data, technical information and news on products and services supplied by our company.

- General Catalog in PDF format
- Certificates, brochures and leaflets of new products
- Research engine code
- List of new products
- Form to require technical and commercial information
- Article cross reference
- Frequently asked questions (FAQ)
- Company profile
- List of trade fairs
- Download 2D CAD drawings in DXF format
- Download 3D CAD drawings in STEP format
- Download Pizzato Elettrica libraries for the SISTEMA software
- Video section with installation examples
- Section dedicated to Machine Safety, explanations of standards and prescriptions for product operation.
- Quick News section, with all the latest news on products and services by Pizzato Elettrica
- Newsletter





## MORE THAN 40 MEETINGS ORGANISED EACH YEAR

### MEETINGS

Pizzato Elettrica, in addition to offering a qualified technical assistance, sees itself as dynamic company attentive to customers needs organising several meetings and training courses, with a particular focus on machinery safety standards.

### EXHIBITIONS

Pizzato Elettrica regularly participates to many trade fairs in Italy and abroad, presenting in this way to the market the products, the latest news, etc.

### MULTILINGUAL DOCUMENTATION

Pizzato Elettrica provides to its customers a wide range of technical documentation available in several languages: Italian, English, German, French, Turkish, etc.

From the general catalogue to the detailed brochures, from leaflets of new products to price lists and CD-ROM, Pizzato Elettrica customers can find in a quick and exact way all the information concerning products, the technical characteristics and functionality, the proper installation, application examples, etc.





## 66,000 PACKAGES SHIPPED PER YEAR

In order to be able to bring its products to distributors and clients operating all over the world, Pizzato Elettrica's guiding principles are speed and efficiency.

These objectives informed the company's creation of a computerised merchandise transfer system, which is managed automatically by an appositely developed company software that is geared towards specific operational needs.

Over 66,000 parcels are sorted by the logistic center each year: a significant volume of merchandise reflecting the needs of an evermore rapid and competitive market.

All shipments and transfers are traced via a barcode system that can immediately identify the contents of any parcel. A pre-arranged system that is easily modulated: this flexibility has also proved key in providing a quick response to particularly urgent shipment requests.

One of the strong points of the company's relations with the commercial network is the provision of guaranteed direct assistance in 6 languages: Italian, English, French, German, Spanish and Chinese. A service that confirms the quality and attention paid by Pizzato Elettrica to its clients worldwide.






## TECHNICAL AND COMMERCIAL SERVICE



### TECHNICAL OFFICE

Pizzato Elettrica technical offices provide a direct technical and qualified assistance in Italian and English, helping in this way the customers to choose the suitable product for their own application explaining the characteristics and the correct installation.

Office hours: from Monday to Friday  
08.00-12.00 / 14.00-18.00 CET  
Phone: +39.0424.470.930  
Fax: +39.0424.470.955  
E-mail: tech@pizzato.com

Spoken languages:  | 



### SALES OFFICES

Among the strengths in the company relationship with the commercial network, the direct assistance guaranteed in 6 languages: Italian, English, French, German, Spanish and Chinese. A service that confirms Pizzato Elettrica quality and attention to customers needs from around the world.

Office hours: from Monday to Friday  
08.00-12.00 / 14.00-18.00 CET  
Phone: +39.0424.470.930  
Fax: +39.0424.470.955  
E-mail: info@pizzato.com

Spoken languages:  |  |  |  |  | 



## Safety modules CS AR-91 and CS AR-93

- Safety modules for lift automatic floor levelling operation according to EN 81
- Choice between automatic start, manual start or monitored start
- Output contacts: 3 NO safety contacts and 1 NC auxiliary contact (CS AR 91)  
2 NO safety contacts (CS AR 93)
- Supply voltage 24 Vac/dc
- Brief power failure insensitiveness

► 107



## Single self-monitored contact blocks E2 C series

- Ideal for emergency pushbuttons. With the opening of the electrical circuit, it automatically detects the detachment of the contact block from its fixing adapter or the fixing adapter from the actuating device
- Gold plated contacts version
- Positive opening NC contacts according to IEC 60947-5-1
- Terminals IP20 according to IEC 60529

► 100



## Introduction to new standards EN 81-20 and EN 81-50

- Pizzato Elettrica products dedicated to the lift sector are updated in accordance with standards EN 81-20 and EN 81-50
- LASER markings according to EN 81-20: LASER markings for control stations EL AC and EL AN series are now enriched with symbols according to new standard EN 81-20; control stations can also be customized with indications, symbols and customer logos
- All switches are in compliance with the requirements set by the new standards on safety contacts.

► 67



## Quadruple pushbuttons E2 PQ series

- Protection degree IP67
- Version with projecting pushbuttons
- Possibility of customization with symbols
- High mechanical endurance

► 102





## Door switches with positive opening DS A series

- Version with reduced actuation force
- Seven different actuators available
- Self-tapping screw

► 51



## Illuminated devices

### Illuminated disc VE DL series

- High visibility
- Protection degree IP67
- Compact design
- Indelible laser marking
- Customizing possibility

► 101



### Monolithic illuminated indicator

- Fully integrated indicator light in monolithic body
- Protection degree IP67
- 3 power supply: 12 ... 30 Vac/dc, 120 Vac, 230 Vac
- Optional customization with symbols

► 103



## Accessories

### USB socket

- Two data transfer speeds
- Protection degree IP67
- Version with socket/socket
- Version with socket/cable/male connector

### RJ45 socket

- RJ45 connectors
- Protection degree IP67
- Version with socket/socket
- Version with socket/cable/male connector

### DIN rail adapter VE AD series:

- Adapter with Ø22 hole for front fixing on DIN rail of control and signalling devices EROUND series
- Patented fastening system which allows a fast removal of the upper part of the adapter, so as to facilitate the installation and replacement of devices
- Panel and base fixing contact blocks for fast wiring
- Sturdy structure made of shockproof technopolymer

► 103

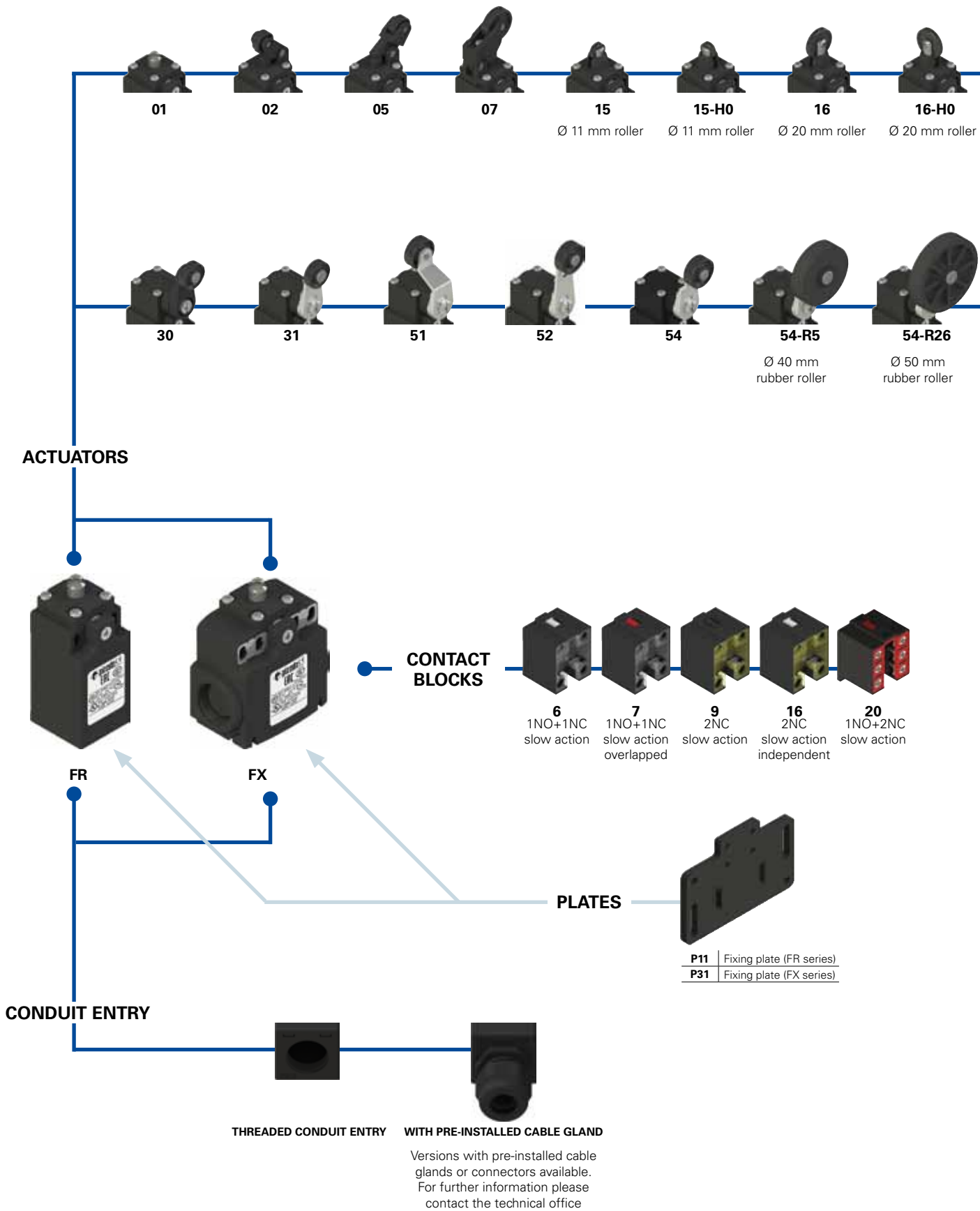


## Cam switches EH series

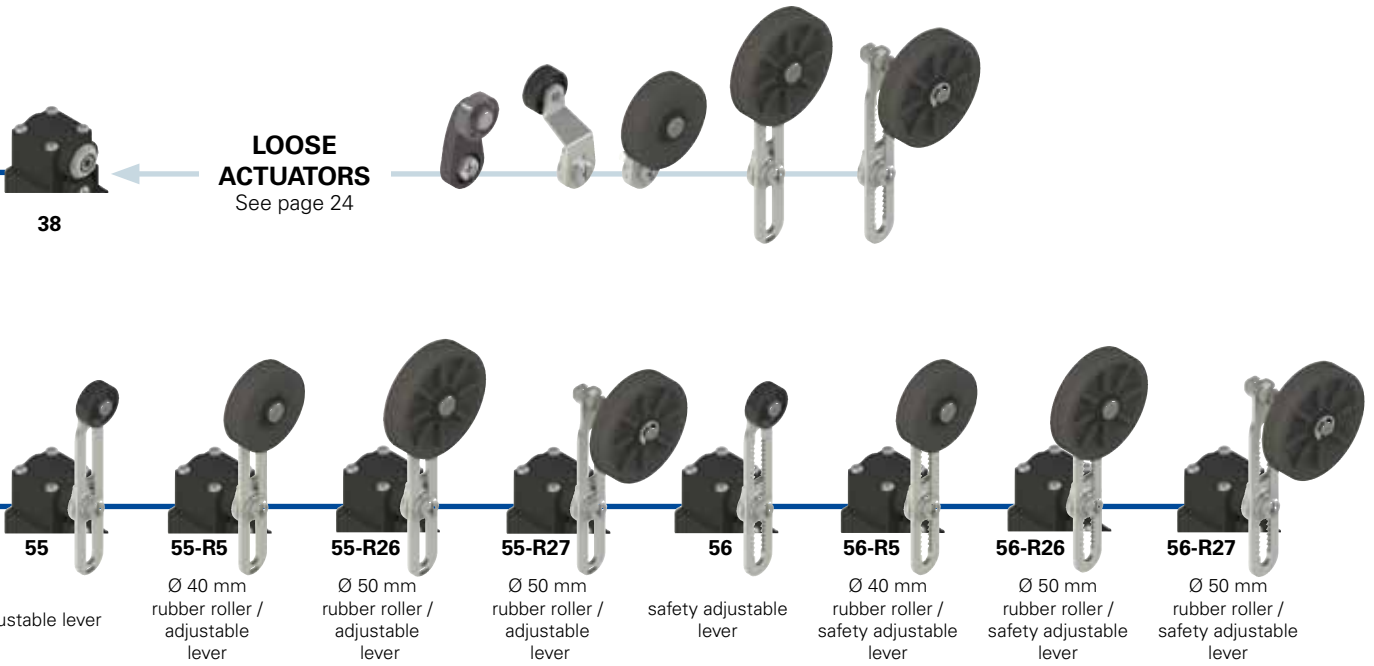
- Rotary cam switches for application on specific configurations of the enclosure covers EL AC and EL AN series
- Versions with two and three stay-put positions
- Protection degree IP65
- Wide ergonomic actuation knob with protection guard
- Thermal current 16A
- Versions up to 8 contacts
- Possibility to configure the contact diagrams according to customer requirements

► 101

### Selection diagram



—● 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      option      options  
**FR 655-GM2P11R26**

Housing	
<b>FR</b>	polymer housing, one conduit entry
<b>FX</b>	polymer housing, two conduit entries

Contact blocks	
<b>6</b>	1NO+1NC, slow action
<b>7</b>	1NO+1NC, slow action overlapped
<b>9</b>	2NC, slow action
<b>16</b>	2NC, slow action independent
<b>20</b>	1NO+2NC, slow action

Actuators	
<b>01</b>	short plunger
<b>02</b>	roller lever
<b>05</b>	offset roller lever
...	.....

Contacts type	
	silver contacts (standard)
<b>G</b>	silver contacts gold plated 1 µm

Rollers	
	standard roller
<b>R5</b>	with Ø 40 mm rubber roller
<b>R26</b>	with Ø 50 mm rubber roller
<b>R27</b>	with Ø 50 mm overhanging rubber roller

Fixing plate	
	without fixing plate (standard)
<b>P11</b>	supplied with fixing plate VF SFP1
<b>P31</b>	supplied with fixing plate VF SFP3

Threaded conduit entry	
<b>M2</b>	M20x1.5 (standard) PG 13.5
<b>A</b>	PG 11
<b>M1</b>	M16x1.5



### 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 IMQ-UNI:	in progress
Approval UL:	E131787
Approval CCC:	2007010305230013
Approval ECU:	101015
Approval EAC:	RU C-IT DM94.B.01024

### Technical data

#### Housing

Made of glass-reinforced polymer, self-extinguishing, shock-proof thermoplastic resin and with double insulation □

FR series one threaded conduit entry:	M20x1.5 (standard)
FX series two threaded conduit entries:	M20x1.5 (standard)
Protection degree:	IP67 according to EN 60529 with cable gland having equal or higher protection degree

#### General data

Ambient temperature:	-25°C ... +80°C
Version for operation in ambient temperature from -40°C to +80°C on request	
Max operating frequency:	3600 operations cycles <sup>1</sup> /hour
Mechanical endurance:	20 million operations cycles <sup>1</sup>
Assembling position:	any
Driving torque for installation:	see page 123
<small>(1) One operation cycle means two movements, one to close and one to open contacts, as foreseen by EN 60947-5-1 standard.</small>	

#### Cross section of the conductors (flexible copper wire)

Contact blocks 20:	min.	1 x 0.34 mm <sup>2</sup>	(1 x AWG 22)
	max.	2 x 1.5 mm <sup>2</sup>	(2 x AWG 16)
Contact blocks 6, 7, 9, 16:	min.	1 x 0.5 mm <sup>2</sup>	(1 x AWG 20)
	max.	2 x 2.5 mm <sup>2</sup>	(2 x AWG 14)

#### In conformity with standards:

IEC 60947-5-1, EN 60947-5-1, EN 60947-1, EN 50047, IEC 60204-1, EN 60204-1, EN 1088, EN ISO 12100-1, EN ISO 12100-2, EN 60529, EN 60529, EN 81-20, EN 81-50, NFC 63-140, VDE 0660-200, VDE 0113.

#### 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 EMC Directive 2004/108/EC.

#### Positive contact opening in conformity with standards:

IEC 60947-5-1, EN 60947-5-1, EN 60947-1, 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 ISO 14119, par. 5.4**. The switch must be actuated with **at least up to the positive opening travel** shown in the travels diagrams on page 123. 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 (I <sub>th</sub> ):	10 A
Rated insulation voltage (U <sub>i</sub> ):	500 Vac 600 Vdc 400 Vac 500 Vdc for contacts block 20
Rated impulse withstand voltage (U <sub>imp</sub> ):	6 kV 4 kV for contact blocks 20
Conditional short circuit current:	1000 A according to EN 60947-5-1
Protection against short circuits:	fuse 10 A 500 V type aM
Pollution degree:	3

### Utilization categories

Alternate current: AC15 (50...60 Hz)			
U <sub>e</sub> (V)	250	400	500
I <sub>e</sub> (A)	6	4	1
Direct current: DC13			
U <sub>e</sub> (V)	24	125	250
I <sub>e</sub> (A)	6	1.1	0.4

### Data type approved by IMQ, CCC and EZU

Rated insulation voltage (U <sub>i</sub> ):	500 Vac 400 Vac for contacts block 20
Thermal current (I <sub>th</sub> ):	10 A
Protection against short circuits:	fuse 10 A 500 V type aM
Rated impulse withstand voltage (U <sub>imp</sub> ):	6 kV 4 kV for contacts block 20
Protection degree:	IP67
MV terminals (screw clamps)	
Pollution degree	3
Utilization category:	AC15
Operation voltage (U <sub>e</sub> ):	400 Vac (50 Hz)
Operation current (I <sub>e</sub> ):	3 A
Forms of the contact element:	Zb, Y+Y, Y+Y+X
Positive opening of contacts on contact block	6, 7, 9, 16, 20

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

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

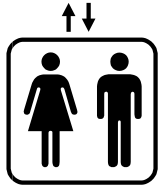
### Data type approved by UL

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
For all contact blocks use 60 or 75 °C copper (Cu) conductor and wire size No. 12-14 AWG. Terminal tightening torque of 7.1 lb in (0.8 Nm).	
In conformity with standard:	UL 508

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



**EN 81-20 standard**



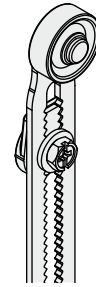
- Safety contacts according to EN 60947-5-1, encl. K.
- Protection degree higher than IP4x.
- Mechanical endurance higher than 10<sup>6</sup> cycles.

**Protection degree IP 67**

**IP67**

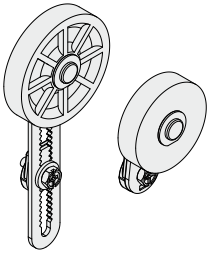
These series switches are all IP 67 rated.

**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.

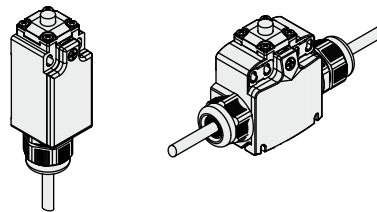
**Rubber rollers**



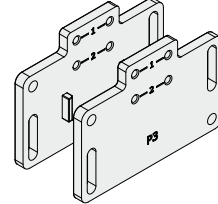
Different actuators with rubber rollers are available. The client can choose the most suitable product depending on lift speed in order to reduce the noise inside the cabin.

**Conduit entries**

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



**Adaptive plates**

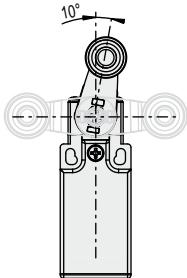


Adaptive plates provided with long slots for the adjustment of the actuating point, developed for compatibility with old products.

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.

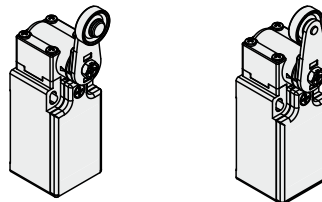
**Adjustable levers**

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.



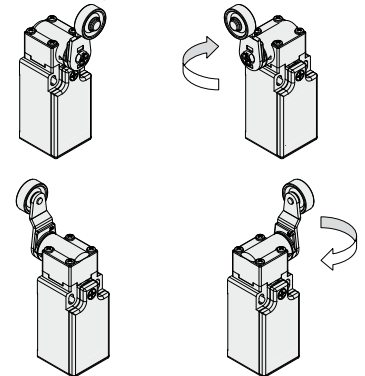
**Overturning levers**

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**

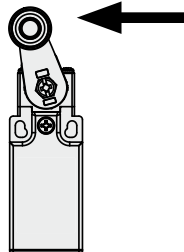
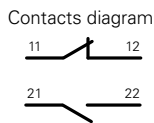
In all switches, it is possible to rotate the head in 90° steps.



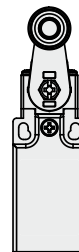
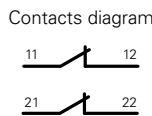
**Working operation of contact block 16 with independent contacts**

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

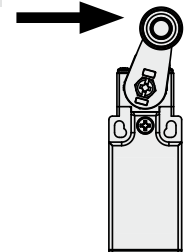
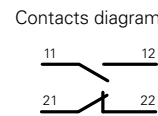
Lever turned to left



Lever not turned



Lever turned to right



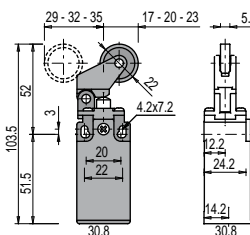
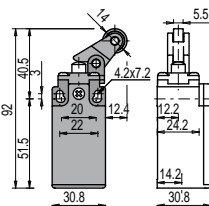
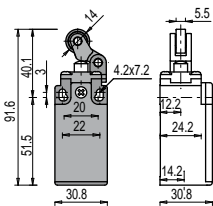
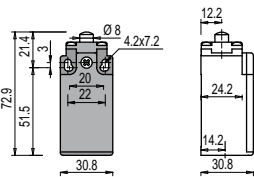
**Extended temperature range**

**-40°C**

This range of switches is also available in a special version with an ambient operating temperature range of -40°C to +80°C. This is particularly useful for applications in cold stores, sterilisers and other low temperature environments. The materials used in the production of these switches maintain the standard operating parameters even over this temperature range, further increasing application possibilities.

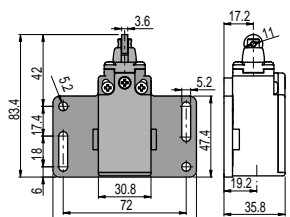
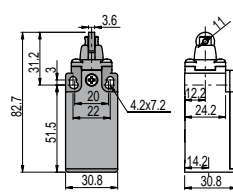
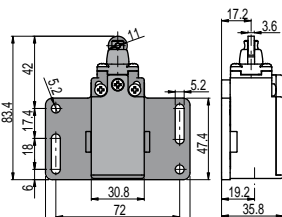
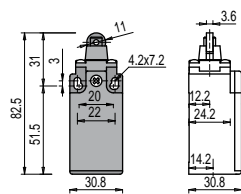
Contacts type:

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



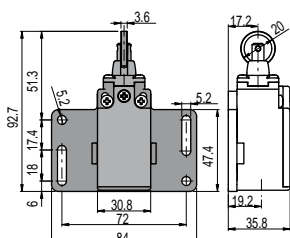
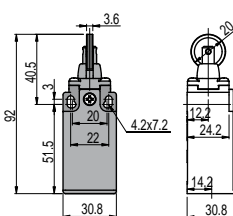
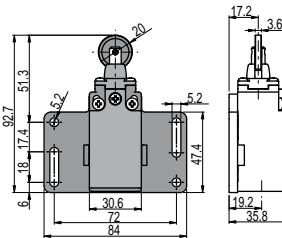
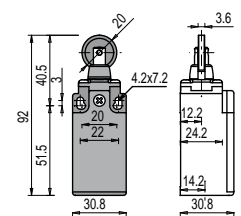
Contact blocks

6	<b>L</b>	<b>FR 601-M2</b> $\rightarrow$ 1NO+1NC	<b>FR 602-M2</b> $\rightarrow$ 1NO+1NC	<b>FR 605-M2</b> $\rightarrow$ 1NO+1NC	<b>FR 607-M2</b> $\rightarrow$ 1NO+1NC
7	<b>LO</b>	<b>FR 701-M2</b> $\rightarrow$ 1NO+1NC	<b>FR 702-M2</b> $\rightarrow$ 1NO+1NC	<b>FR 705-M2</b> $\rightarrow$ 1NO+1NC	<b>FR 707-M2</b> $\rightarrow$ 1NO+1NC
9	<b>L</b>	<b>FR 901-M2</b> $\rightarrow$ 2NC	<b>FR 902-M2</b> $\rightarrow$ 2NC	<b>FR 905-M2</b> $\rightarrow$ 2NC	<b>FR 907-M2</b> $\rightarrow$ 2NC
16	<b>LI</b>				
20	<b>L</b>	<b>FR 2001-M2</b> $\rightarrow$ 1NO+2NC	<b>FR 2002-M2</b> $\rightarrow$ 1NO+2NC	<b>FR 2005-M2</b> $\rightarrow$ 1NO+2NC	<b>FR 2007-M2</b> $\rightarrow$ 1NO+2NC
Max speed		page 123 - type 4	page 123 - type 3	page 123 - type 3	page 123 - type 3
Min. force		8 N (25 N $\rightarrow$ )	6 N (25 N $\rightarrow$ )	6 N (25 N $\rightarrow$ )	4 N (25 N $\rightarrow$ )
Travel diagrams		page 124 - group 1a	page 124 - group 2a	page 124 - group 2a	page 124 - group 3a



Contact blocks

6	<b>L</b>	<b>FR 615-M2</b> $\rightarrow$ 1NO+1NC	<b>FR 615-M2P11</b> $\rightarrow$ 1NO+1NC	<b>FR 615-H0M2</b> $\rightarrow$ 1NO+1NC	<b>FR 615-H0M2P11</b> $\rightarrow$ 1NO+1NC
7	<b>LO</b>	<b>FR 715-M2</b> $\rightarrow$ 1NO+1NC	<b>FR 715-M2P11</b> $\rightarrow$ 1NO+1NC	<b>FR 715-H0M2</b> $\rightarrow$ 1NO+1NC	<b>FR 715-H0M2P11</b> $\rightarrow$ 1NO+1NC
9	<b>L</b>	<b>FR 915-M2</b> $\rightarrow$ 2NC	<b>FR 915-M2P11</b> $\rightarrow$ 2NC	<b>FR 915-H0M2</b> $\rightarrow$ 2NC	<b>FR 915-H0M2P11</b> $\rightarrow$ 2NC
16	<b>LI</b>				
20	<b>L</b>	<b>FR 2015-M2</b> $\rightarrow$ 1NO+2NC	<b>FR 2015-M2P11</b> $\rightarrow$ 1NO+2NC	<b>FR 2015-H0M2</b> $\rightarrow$ 1NO+2NC	<b>FR 2015-H0M2P11</b> $\rightarrow$ 1NO+2NC
Max speed		page 123 - type 2	page 123 - type 2	page 123 - type 2	page 123 - type 2
Min. force		8 N (25 N $\rightarrow$ )	8 N (25 N $\rightarrow$ )	8 N (25 N $\rightarrow$ )	8 N (25 N $\rightarrow$ )
Travel diagrams		page 124 - group 1a	page 124 - group 1a	page 124 - group 1a	page 124 - group 1a



Contact blocks

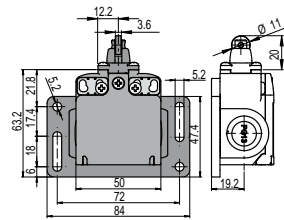
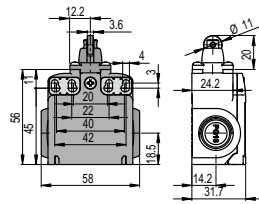
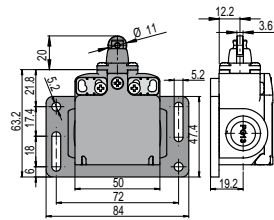
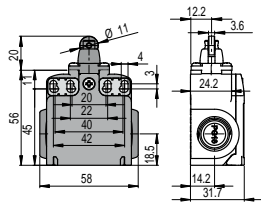
6	<b>L</b>	<b>FR 616-M2</b> $\rightarrow$ 1NO+1NC	<b>FR 616-M2P11</b> $\rightarrow$ 1NO+1NC	<b>FR 616-H0M2</b> $\rightarrow$ 1NO+1NC	<b>FR 616-H0M2P11</b> $\rightarrow$ 1NO+1NC
7	<b>LO</b>	<b>FR 716-M2</b> $\rightarrow$ 1NO+1NC	<b>FR 716-M2P11</b> $\rightarrow$ 1NO+1NC	<b>FR 716-H0M2</b> $\rightarrow$ 1NO+1NC	<b>FR 716-H0M2P11</b> $\rightarrow$ 1NO+1NC
9	<b>L</b>	<b>FR 916-M2</b> $\rightarrow$ 2NC	<b>FR 916-M2P11</b> $\rightarrow$ 2NC	<b>FR 916-H0M2</b> $\rightarrow$ 2NC	<b>FR 916-H0M2P11</b> $\rightarrow$ 2NC
16	<b>LI</b>				
20	<b>L</b>	<b>FR 2016-M2</b> $\rightarrow$ 1NO+2NC	<b>FR 2016-M2P11</b> $\rightarrow$ 1NO+2NC	<b>FR 2016-H0M2</b> $\rightarrow$ 1NO+2NC	<b>FR 2016-H0M2P11</b> $\rightarrow$ 1NO+2NC
Max speed		page 123 - type 2	page 123 - type 2	page 123 - type 2	page 123 - type 2
Min. force		8 N (25 N $\rightarrow$ )	8 N (25 N $\rightarrow$ )	8 N (25 N $\rightarrow$ )	8 N (25 N $\rightarrow$ )
Travel diagrams		page 124 - group 1a	page 124 - group 1a	page 124 - group 1a	page 124 - group 1a

**Accessories** See page 119

All measures in the drawings are in mm

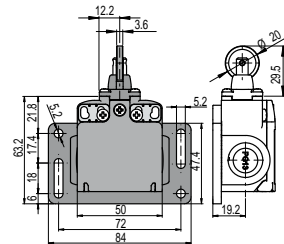
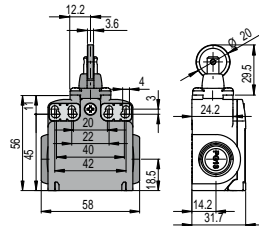
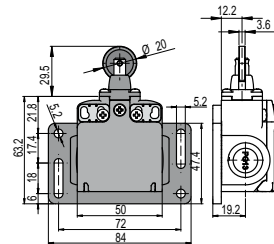
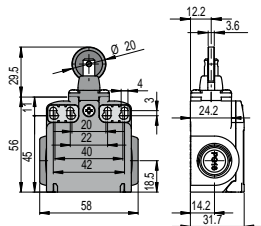
Contacts type:

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



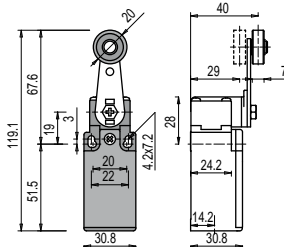
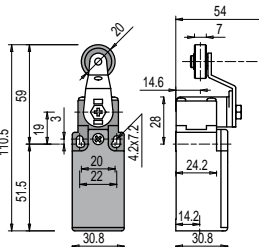
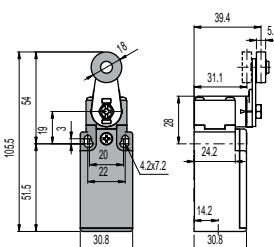
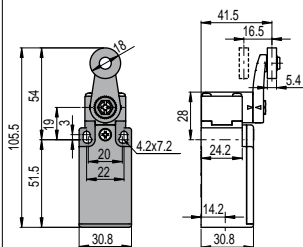
Contact blocks

6	<b>L</b>	<b>FX 615-M2</b> → 1NO+1NC	<b>FX 615-M2P31</b> → 1NO+1NC	<b>FX 615-H0M2</b> → 1NO+1NC	<b>FX 615-H0M2P31</b> → 1NO+1NC
7	<b>LO</b>	<b>FX 715-M2</b> → 1NO+1NC	<b>FX 715-M2P31</b> → 1NO+1NC	<b>FX 715-H0M2</b> → 1NO+1NC	<b>FX 715-H0M2P31</b> → 1NO+1NC
9	<b>L</b>	<b>FX 915-M2</b> → 2NC	<b>FX 915-M2P31</b> → 2NC	<b>FX 915-H0M2</b> → 2NC	<b>FX 915-H0M2P31</b> → 2NC
16	<b>LI</b>				
20	<b>L</b>	<b>FX 2015-M2</b> → 1NO+2NC	<b>FX 2015-M2P31</b> → 1NO+2NC	<b>FX 2015-H0M2</b> → 1NO+2NC	<b>FX 2015-H0M2P31</b> → 1NO+2NC
Max speed		page 123 - type 2	page 123 - type 2	page 123 - type 2	page 123 - type 2
Min. force		8 N (25 N →)	8 N (25 N →)	8 N (25 N →)	8 N (25 N →)
Travel diagrams		page 124 - group 1a	page 124 - group 1a	page 124 - group 1a	page 124 - group 1a



Contact blocks

6	<b>L</b>	<b>FX 616-M2</b> → 1NO+1NC	<b>FX 616-M2P31</b> → 1NO+1NC	<b>FX 616-H0M2</b> → 1NO+1NC	<b>FX 616-H0M2P31</b> → 1NO+1NC
7	<b>LO</b>	<b>FX 716-M2</b> → 1NO+1NC	<b>FX 716-M2P31</b> → 1NO+1NC	<b>FX 716-H0M2</b> → 1NO+1NC	<b>FX 716-H0M2P31</b> → 1NO+1NC
9	<b>L</b>	<b>FX 916-M2</b> → 2NC	<b>FX 916-M2P31</b> → 2NC	<b>FX 916-H0M2</b> → 2NC	<b>FX 916-H0M2P31</b> → 2NC
16	<b>LI</b>				
20	<b>L</b>	<b>FX 2016-M2</b> → 1NO+2NC	<b>FX 2016-M2P31</b> → 1NO+2NC	<b>FX 2016-H0M2</b> → 1NO+2NC	<b>FX 2016-H0M2P31</b> → 1NO+2NC
Max speed		page 123 - type 2	page 123 - type 2	page 123 - type 2	page 123 - type 2
Min. force		8 N (25 N →)	8 N (25 N →)	8 N (25 N →)	8 N (25 N →)
Travel diagrams		page 124 - group 1a	page 124 - group 1a	page 124 - group 1a	page 124 - group 1a



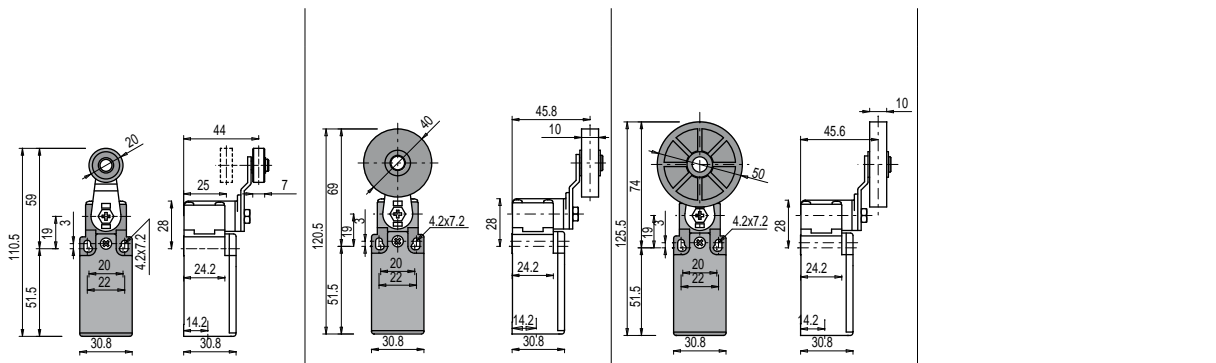
Contact blocks

6	<b>L</b>	<b>FR 630-M2</b> → 1NO+1NC	<b>FR 631-M2</b> → 1NO+1NC	<b>FR 651-M2</b> → 1NO+1NC	<b>FR 652-M2</b> → 1NO+1NC
7	<b>LO</b>	<b>FR 730-M2</b> → 1NO+1NC	<b>FR 731-M2</b> → 1NO+1NC	<b>FR 751-M2</b> → 1NO+1NC	<b>FR 752-M2</b> → 1NO+1NC
9	<b>L</b>	<b>FR 930-M2</b> → 2NC	<b>FR 931-M2</b> → 2NC	<b>FR 951-M2</b> → 2NC	<b>FR 952-M2</b> → 2NC
16	<b>LI</b>	<b>FR 1630-M2</b> → 2NC	<b>FR 1631-M2</b> → 2NC	<b>FR 1651-M2</b> → 2NC	<b>FR 1652-M2</b> → 2NC
20	<b>L</b>	<b>FR 2030-M2</b> → 1NO+2NC	<b>FR 2031-M2</b> → 1NO+2NC	<b>FR 2051-M2</b> → 1NO+2NC	<b>FR 2052-M2</b> → 1NO+2NC
Max speed		page 123 - type 1	page 123 - type 1	page 123 - type 1	page 123 - type 1
Min. force		0.06 Nm (0.25 Nm →)	0.06 Nm (0.25 Nm →)	0.06 Nm (0.25 Nm →)	0.06 Nm (0.25 Nm →)
Travel diagrams		page 124 - group 4a	page 124 - group 4a	page 124 - group 4a	page 124 - group 4a

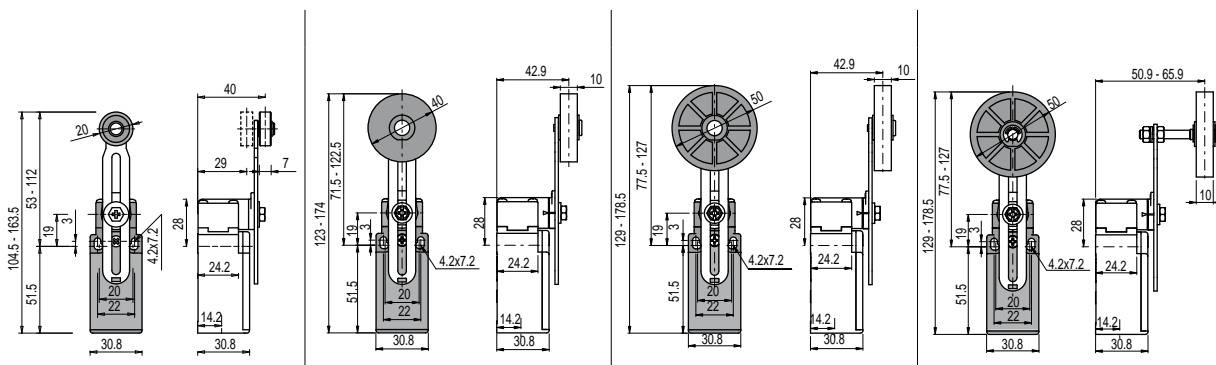
Items with code on the green background are available in stock

Contacts type:

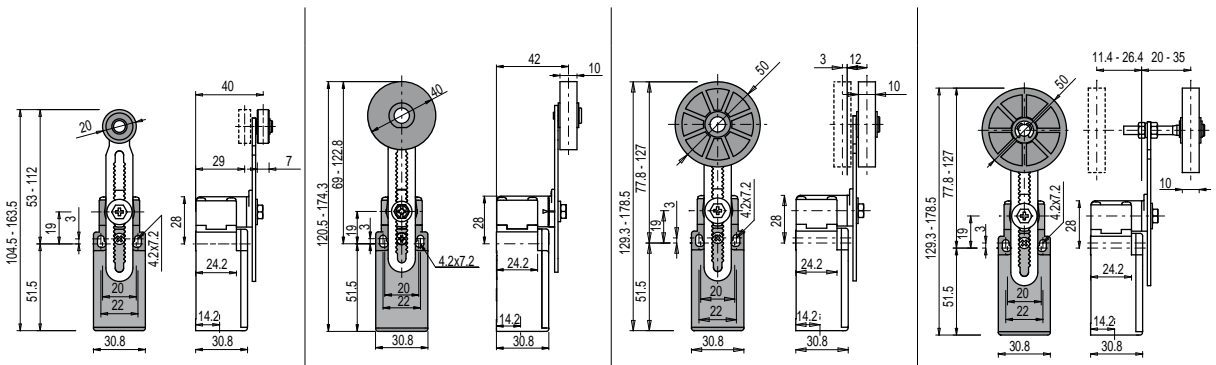
- L** = slow action
- LO** = slow action overlapped
- LI** = slow action independent



6	<b>L</b>	FR 654-M2	⊕ 1NO+1NC	FR 654-M2R5	⊕ 1NO+1NC	FR 654-M2R26	⊕ 1NO+1NC
7	<b>LO</b>	FR 754-M2	⊕ 1NO+1NC	FR 754-M2R5	⊕ 1NO+1NC	FR 754-M2R26	⊕ 1NO+1NC
9	<b>L</b>	FR 954-M2	⊕ 2NC	FR 954-M2R5	⊕ 2NC	FR 954-M2R26	⊕ 2NC
16	<b>LI</b>	FR 1654-M2	⊕ 2NC	FR 1654-M2R5	⊕ 2NC	FR 1654-M2R26	⊕ 2NC
20	<b>L</b>	FR 2054-M2	⊕ 1NO+2NC	FR 2054-M2R5	⊕ 1NO+2NC	FR 2054-M2R26	⊕ 1NO+2NC
Max speed		page 123 - type 1		page 123 - type 1		page 123 - type 1	
Min. force		0.06 Nm (0.25 Nm ⊕)		0.06 Nm (0.25 Nm ⊕)		0.06 Nm (0.25 Nm ⊕)	
Travel diagrams		page 124 - group 4a		page 124 - group 4a		page 124 - group 4a	



6	<b>L</b>	FR 655-M2	⊕ (*) 1NO+1NC	FR 655-M2R5	⊕ (*) 1NO+1NC	FR 655-M2R26	⊕ (*) 1NO+1NC	FR 655-M2R27	⊕ (*) 1NO+1NC
7	<b>LO</b>	FR 755-M2	⊕ (*) 1NO+1NC	FR 755-M2R5	⊕ (*) 1NO+1NC	FR 755-M2R26	⊕ (*) 1NO+1NC	FR 755-M2R27	⊕ (*) 1NO+1NC
9	<b>L</b>	FR 955-M2	⊕ (*) 2NC	FR 955-M2R5	⊕ (*) 2NC	FR 955-M2R26	⊕ (*) 2NC	FR 955-M2R27	⊕ (*) 2NC
16	<b>LI</b>	FR 1655-M2	⊕ (*) 2NC	FR 1655-M2R5	⊕ (*) 2NC	FR 1655-M2R26	⊕ (*) 2NC	FR 1655-M2R27	⊕ (*) 2NC
20	<b>L</b>	FR 2055-M2	⊕ (*) 1NO+2NC	FR 2055-M2R5	⊕ (*) 1NO+2NC	FR 2055-M2R26	⊕ (*) 1NO+2NC	FR 2055-M2R27	⊕ (*) 1NO+2NC
Max speed		page 123 - type 1		page 123 - type 1		page 123 - type 1		page 123 - type 1	
Min. force		0.06 Nm (0.25 Nm ⊕)		0.06 Nm (0.25 Nm ⊕)		0.06 Nm (0.25 Nm ⊕)		0.06 Nm (0.25 Nm ⊕)	
Travel diagrams		page 124 - group 4a		page 124 - group 4a		page 124 - group 4a		page 124 - group 4a	



6	<b>L</b>	FR 656-M2	⊕ 1NO+1NC	FR 656-M2R5	⊕ 1NO+1NC	FR 656-M2R26	⊕ 1NO+1NC	FR 656-M2R27	⊕ 1NO+1NC
7	<b>LO</b>	FR 756-M2	⊕ 1NO+1NC	FR 756-M2R5	⊕ 1NO+1NC	FR 756-M2R26	⊕ 1NO+1NC	FR 756-M2R27	⊕ 1NO+1NC
9	<b>L</b>	FR 956-M2	⊕ 2NC	FR 956-M2R5	⊕ 2NC	FR 956-M2R26	⊕ 2NC	FR 956-M2R27	⊕ 2NC
16	<b>LI</b>	FR 1656-M2	⊕ 2NC	FR 1656-M2R5	⊕ 2NC	FR 1656-M2R26	⊕ 2NC	FR 1656-M2R27	⊕ 2NC
20	<b>L</b>	FR 2056-M2	⊕ 1NO+2NC	FR 2056-M2R5	⊕ 1NO+2NC	FR 2056-M2R26	⊕ 1NO+2NC	FR 2056-M2R27	⊕ 1NO+2NC
Max speed		page 123 - type 1		page 123 - type 1		page 123 - type 1		page 123 - type 1	
Min. force		0.06 Nm (0.25 Nm ⊕)		0.06 Nm (0.25 Nm ⊕)		0.06 Nm (0.25 Nm ⊕)		0.06 Nm (0.25 Nm ⊕)	
Travel diagrams		page 124 - group 4a		page 124 - group 4a		page 124 - group 4a		page 124 - group 4a	

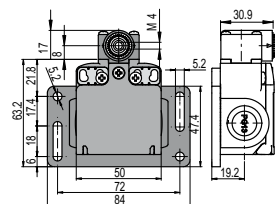
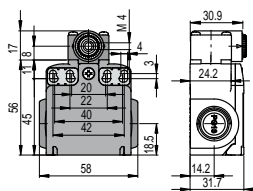
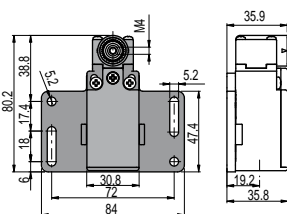
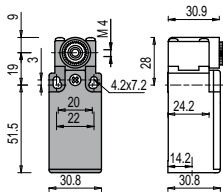
Accessories See page 119

(\*) Positive opening only with lever adjusted on the max.  
**23**



Contacts type:

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



Contact blocks

6	<b>L</b>	FR 638-M2	➔ 1NO+1NC	FR 638-M2P11	➔ 1NO+1NC	FX 638-M2	➔ 1NO+1NC	FX 638-M2P31	➔ 1NO+1NC
7	<b>LO</b>	FR 738-M2	➔ 1NO+1NC	FR 738-M2P11	➔ 1NO+1NC	FX 738-M2	➔ 1NO+1NC	FX 738-M2P31	➔ 1NO+1NC
9	<b>L</b>	FR 938-M2	➔ 2NC	FR 938-M2P11	➔ 2NC	FX 938-M2	➔ 2NC	FX 938-M2P31	➔ 2NC
16	<b>LI</b>	FR 1638-M2	➔ 2NC	FR 1638-M2P11	➔ 2NC	FX 1638-M2	➔ 2NC	FX 1638-M2P31	➔ 2NC
20	<b>L</b>	FR 2038-M2	➔ 1NO+2NC	FR 2038-M2P11	➔ 1NO+2NC	FX 2038-M2	➔ 1NO+2NC	FX 2038-M2P31	➔ 1NO+2NC
Max speed		page 123 - type 1		page 123 - type 1		page 123 - type 1		page 123 - type 1	
Min. force		0.06 Nm (0.25 Nm ➔)		0.06 Nm (0.25 Nm ➔)		0.06 Nm (0.25 Nm ➔)		0.06 Nm (0.25 Nm ➔)	
Travel diagrams		page 124 - group 4a		page 124 - group 4a		page 124 - group 4a		page 124 - group 4a	

**IMPORTANT**

For safety applications: join only switches and actuators marked with symbol ➔.

**Special loose actuators**

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

Ø 40 mm rubber rollers

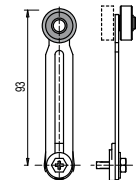
VF LE31-R5 ➔ (4)	VF LE51-R5 ➔ (4)	VF LE52-R5 ➔	VF LE54-R5 ➔ (4)	VF LE55-R5 ➔ (1)	VF LE56-R5 ➔

Ø 50 mm rubber rollers

VF LE51-R26 ➔ (4)	VF LE52-R26 ➔ (4)	VF LE54-R26 ➔ (4)	VF LE55-R26 ➔ (1)	VF LE56-R26 ➔

Ø 50 mm overhanging rubber rollers

VF LE55-R27 ➔ (1)	VF LE56-R27 ➔

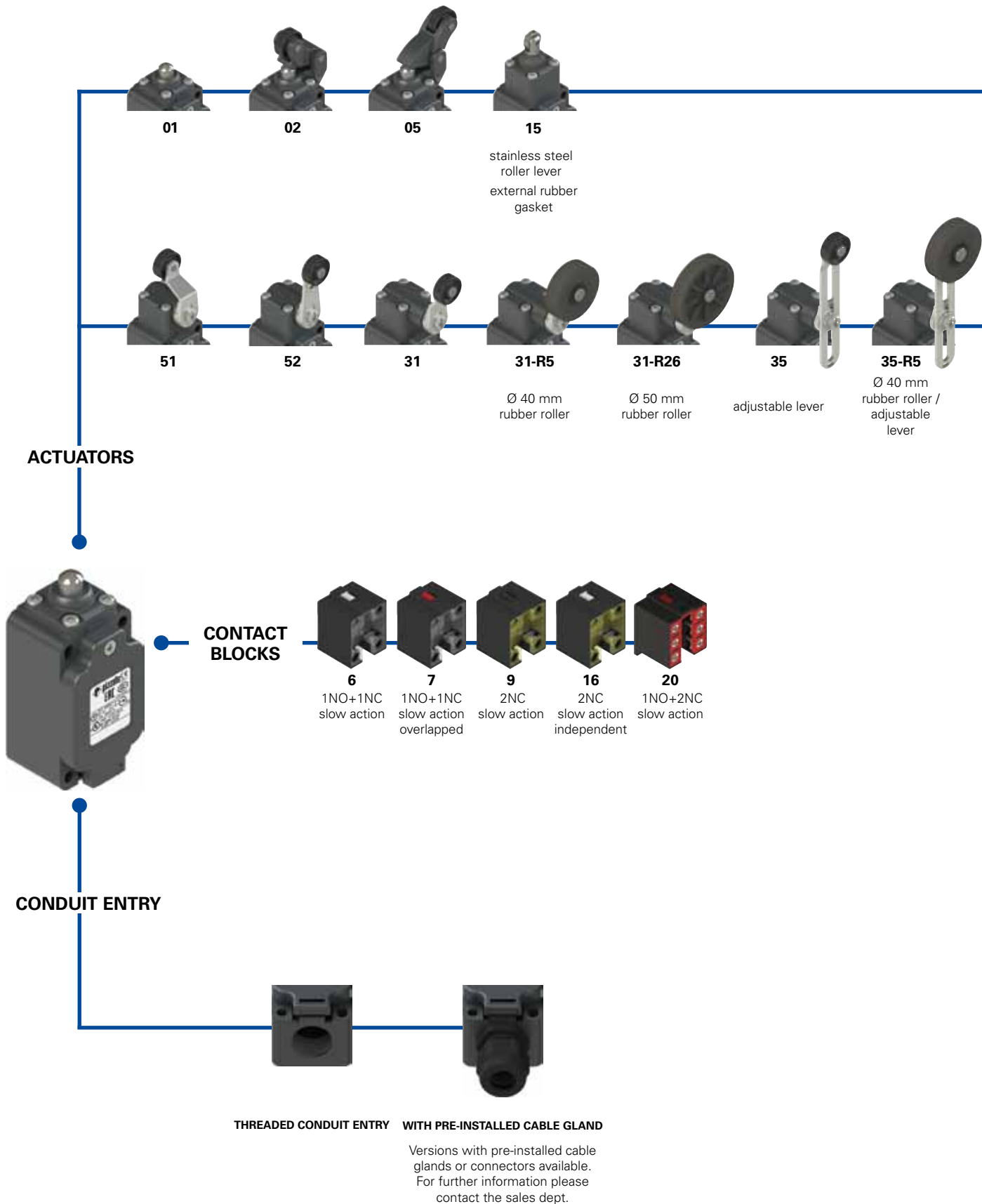


- Only orders for multiple quantities of the packs are accepted.
- (1) Actuator VF LE55 suits to safety applications only if adjusted to its max length, as you can see in figure beside. If you need an adjustable lever for safety applications, use the adjustable safety lever VF LE56.
- (4) The actuator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

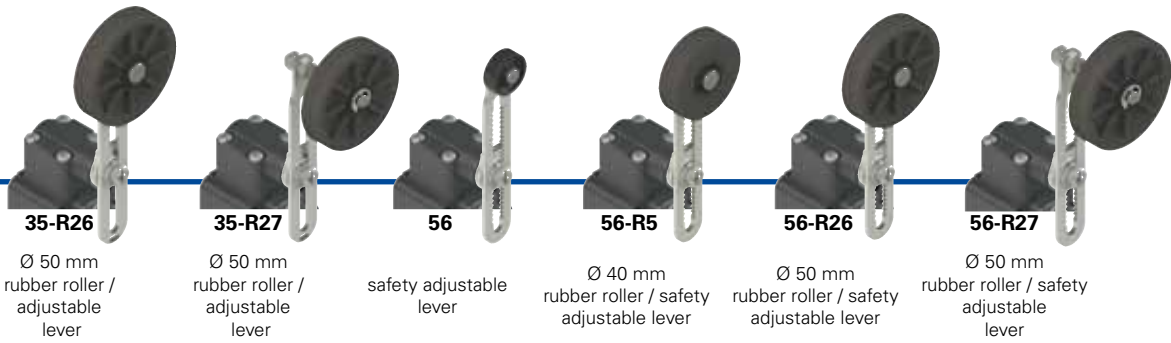
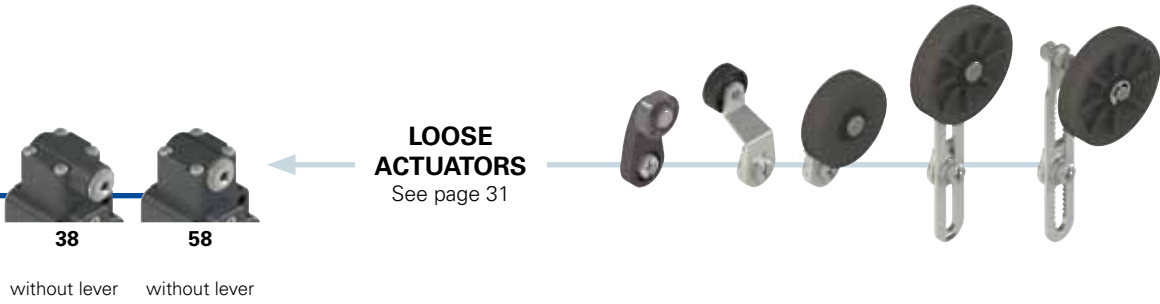
Items with code on the green background are available in stock

➔ 2D and 3D files available on [www.pizzato.com](http://www.pizzato.com)

### Selection diagram



—●— 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      option      options  
**FP 635-GM2R26**

Housing	
<b>FP</b>	polymer housing, one conduit entry

Contact blocks	
<b>6</b>	1NO+1NC, slow action
<b>7</b>	1NO+1NC, slow action overlapped
<b>9</b>	2NC, slow action
<b>16</b>	2NC, slow action independent
<b>20</b>	1NO+2NC, slow action

Actuators	
<b>01</b>	short plunger
<b>02</b>	roller lever
<b>05</b>	offset roller lever
...	.....

Rollers	
	standard roller
<b>R5</b>	with Ø 40 mm rubber roller
<b>R26</b>	with Ø 50 mm rubber roller
<b>R27</b>	with Ø 50 mm overhanging rubber roller

Threaded conduit entry	
<b>M2</b>	M20x1.5 (standard)
	PG 13.5

Contacts type	
	silver contacts (standard)
<b>G</b>	silver contacts gold plated 1 µm



### 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 IMQ-UNI:	in progress
Approval UL:	E131787
Approval CCC:	2007010305230014
Approval EZU:	1010151
Approval EAC:	RU C-IT DM94.B.01024

### Technical data

#### Housing

Made of glass-reinforced polymer, self-extinguishing, shock-proof thermoplastic resin and with double insulation

One threaded conduit entry:

M20x1.5 (standard)

Protection degree:

IP67 according to EN 60529 with cable gland having equal or higher protection degree

#### General data

Ambient temperature: -25°C ... +80°C

Version for operation in ambient temperature from -R270°C to +80° C on request

Max operating frequency: 3600 operations cycles<sup>1</sup>/hour

Mechanical endurance: 20 million operations cycles<sup>1</sup>

Assembling position: any

Driving torque for installation: see page 125

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

#### Cross section of the conductors (flexible copper wire)

Contact blocks 20:	min.	1 x 0.34 mm <sup>2</sup>	(1 x AWG 22)
	max.	2 x 1.5 mm <sup>2</sup>	(2 x AWG 16)
Contact blocks 6, 7, 9, 16:	min.	1 x 0.5 mm <sup>2</sup>	(1 x AWG 20)
	max.	2 x 2.5 mm <sup>2</sup>	(2 x AWG 14)

#### In conformity with standards:

IEC 60947-5-1, EN 60947-5-1, EN 60947-1, EN 50041, IEC 60204-1, EN 60204-1, EN 1088, EN ISO 12100-1, EN ISO 12100-2, EN 60529, EN 60529, EN 81-20, EN 81-50, NFC 63-140, VDE 0660-200, VDE 0113.

#### 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 EMC Directive 2004/108/EC.

#### Positive contact opening in conformity with standards:

IEC 60947-5-1, EN 60947-5-1, EN 60947-1, 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 ISO 14119, par. 5.4**. The switch must be actuated with **at least up to the positive opening travel** shown in the travels diagrams on page 125. 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 (I <sub>th</sub> ):	10 A
Rated insulation voltage (U <sub>i</sub> ):	500 Vac 600 Vdc 400 Vac 500 Vdc for contacts block 20
Rated impulse withstand voltage (U <sub>imp</sub> ):	6 kV 4 kV for contact blocks 20
Conditional short circuit current:	1000 A according to EN 60947-5-1
Protection against short circuits:	fuse 10 A 500 V type aM
Pollution degree:	3

### Utilization categories

Alternate current: AC15 (50...60 Hz)			
U <sub>e</sub> (V)	250	400	500
I <sub>e</sub> (A)	6	4	1
Direct current: DC13			
U <sub>e</sub> (V)	24	125	250
I <sub>e</sub> (A)	6	1.1	0.4

### Data type approved by IMQ, CCC and EZU

Rated insulation voltage (U <sub>i</sub> ):	500 Vac 400 Vac for contacts block 20
Thermal current (I <sub>th</sub> ):	10 A
Protection against short circuits:	fuse 10 A 500 V type aM
Rated impulse withstand voltage (U <sub>imp</sub> ):	6 kV 4 kV for contacts block 20
Protection degree:	IP67
MV terminals (screw clamps)	
Pollution degree	3
Utilization category:	AC15
Operation voltage (U <sub>e</sub> ):	400 Vac (50 Hz)
Operation current (I <sub>e</sub> ):	3 A
Forms of the contact element:	Zb, Y+Y, Y+Y+X
Positive opening of contacts on contact block	6, 7, 9, 16, 20

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

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

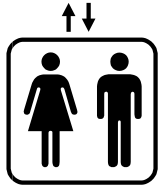
### Data type approved by UL

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
For all contact blocks use 60 or 75 °C copper (Cu) conductor and wire size No. 12-14 AWG. Terminal tightening torque of 7.1 lb in (0.8 Nm).	
In conformity with standard:	UL 508

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

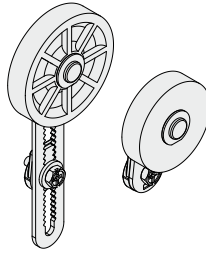


**EN 81-20 standard**



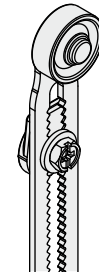
- Safety contacts according to EN 60947-5-1, encl. K.
- Protection degree higher than IP4x.
- Mechanical endurance higher than 10<sup>6</sup> cycles.

**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 IP 67**

**IP67**

These series switches are all IP 67 rated.

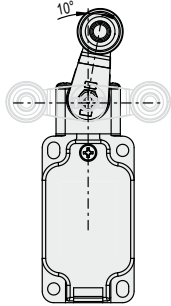
**Extended temperature range**

**-40°C**

This range of switches is also available in a special version with an ambient operating temperature range of -40°C to +80°C. This is particularly useful for applications in cold stores, sterilisers and other low temperature environments.

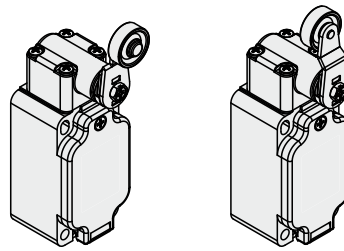
**Adjustable levers**

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.



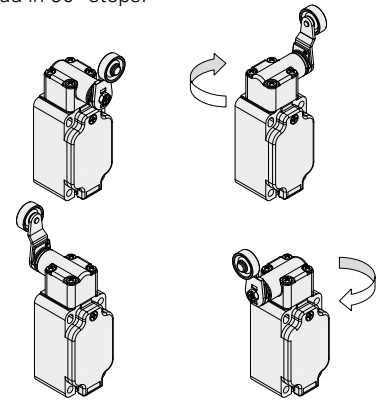
**Overturning levers**

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**

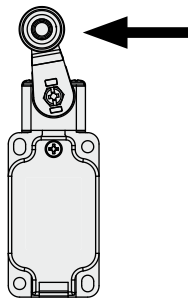
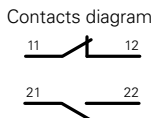
In all switches, it is possible to rotate the head in 90° steps.



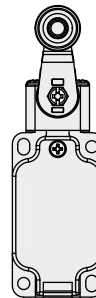
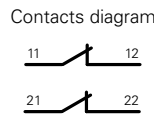
**Working operation of contact block 16 with independent contacts**

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

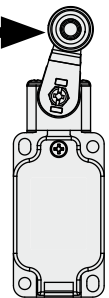
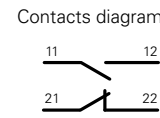
Lever turned to left



Lever not turned

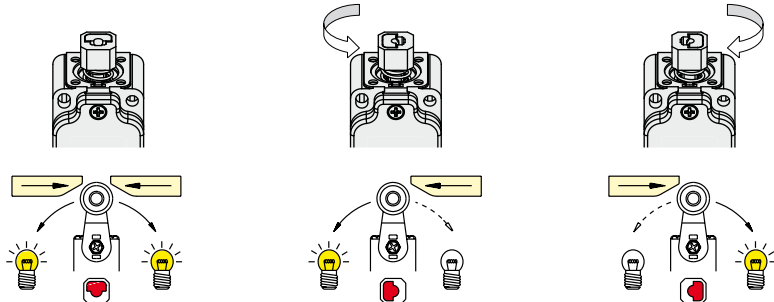
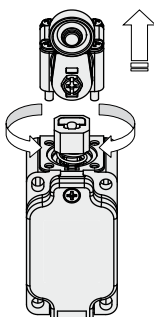


Lever turned to right






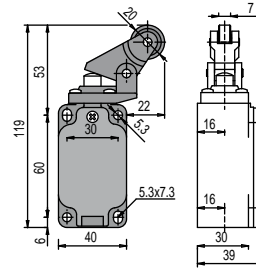
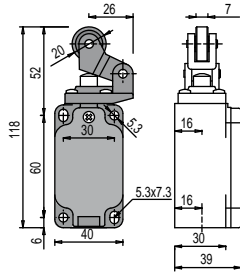
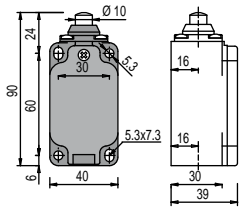
**Unidirectional heads**

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).

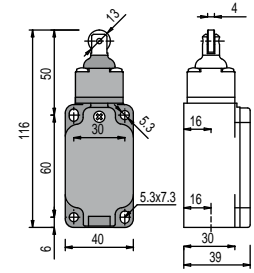


Contacts type:


























-  = slow action
-  = slow action overlapped
-  = slow action independent

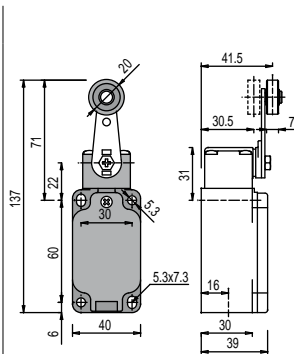
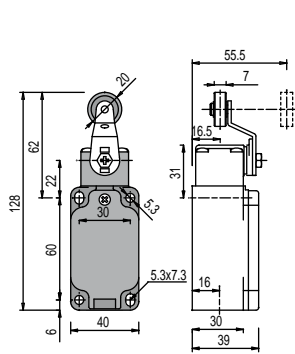


With external rubber gasket


















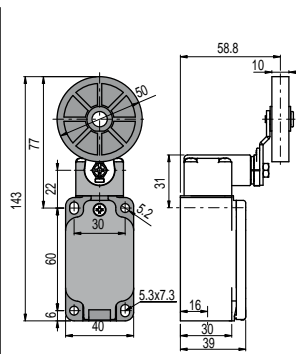
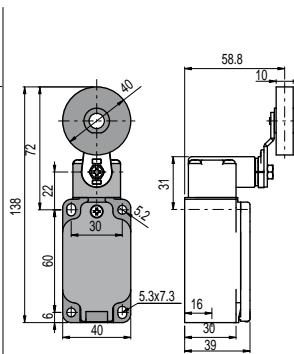
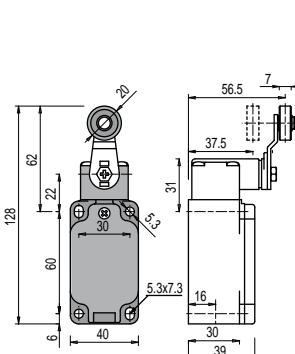
Contact blocks

6		FP 601-M2  1NO+1NC	FP 602-M2  1NO+1NC	FP 605-M2  1NO+1NC	FP 615-M2  1NO+1NC
7		FP 701-M2  1NO+1NC	FP 702-M2  1NO+1NC	FP 705-M2  1NO+1NC	FP 715-M2  1NO+1NC
9		FP 901-M2  2NC	FP 902-M2  2NC	FP 905-M2  2NC	FP 915-M2  2NC
16					
20		FP 2001-M2  1NO+2NC	FP 2002-M2  1NO+2NC	FP 2005-M2  1NO+2NC	FP 2015-M2  1NO+2NC
Max speed		page 125 - type 4	page 125 - type 3	page 125 - type 3	page 125 - type 2
Min. force		8 N (25 N  )	6 N (25 N  )	6 N (25 N  )	11 N (25 N  )
Travel diagrams		page 126 - group 1b	page 126 - group 2b	page 126 - group 2b	page 126 - group 1b


























Contact blocks

6		FP 651-M2  1NO+1NC	FP 652-M2  1NO+1NC		
7		FP 751-M2  1NO+1NC	FP 752-M2  1NO+1NC		
9		FP 951-M2  2NC	FP 952-M2  2NC		
16					
20		FP 2051-M2  1NO+2NC	FP 2052-M2  1NO+2NC		
Max speed		page 125 - type 1	page 125 - type 1		
Min. force		0.06 Nm (0.25 Nm  )	0.06 Nm (0.25 Nm  )		
Travel diagrams		page 126 - group 3b	page 126 - group 3b		



Contact blocks

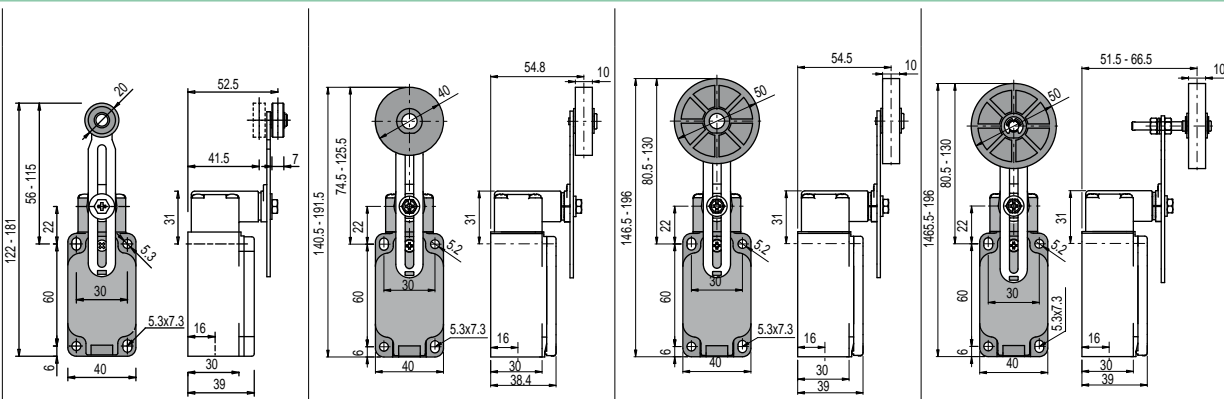
6		FP 631-M2  1NO+1NC	FP 631-M2R5  1NO+1NC	FP 631-M2R26  1NO+1NC	
7		FP 731-M2  1NO+1NC	FP 731-M2R5  1NO+1NC	FP 731-M2R26  1NO+1NC	
9		FP 931-M2  2NC	FP 931-M2R5  2NC	FP 931-M2R26  2NC	
16		FP 1631-M2  2NC	FP 1631-M2R5  2NC	FP 1631-M2R26  2NC	
20		FP 2031-M2  1NO+2NC	FP 2031-M2R5  1NO+2NC	FP 2031-M2R26  1NO+2NC	
Max speed		page 125 - type 1	page 125 - type 1	page 125 - 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 126 - group 3b	page 126 - group 3b	page 126 - group 3b	

**Accessories** See page 119

All measures in the drawings are in mm

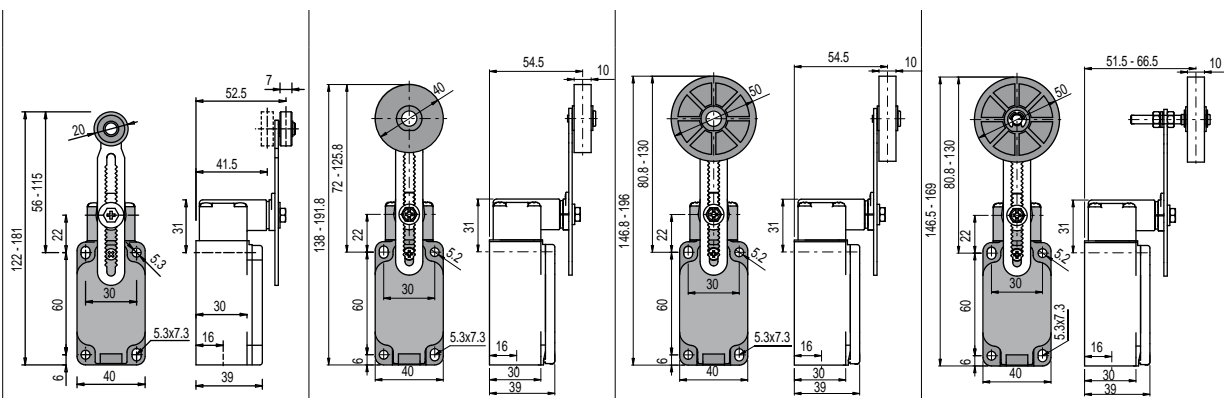
Contacts type:

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



Contact blocks

6	<b>L</b>	FP 635-M2	⊕ <sup>(1)</sup> 1NO+1NC	FP 635-M2R5	⊕ <sup>(1)</sup> 1NO+1NC	FP 635-M2R26	⊕ <sup>(1)</sup> 1NO+1NC	FP 635-M2R27	⊕ <sup>(1)</sup> 1NO+1NC
7	<b>LO</b>	FP 735-M2	⊕ <sup>(1)</sup> 1NO+1NC	FP 735-M2R5	⊕ <sup>(1)</sup> 1NO+1NC	FP 735-M2R26	⊕ <sup>(1)</sup> 1NO+1NC	FP 735-M2R27	⊕ <sup>(1)</sup> 1NO+1NC
9	<b>L</b>	FP 935-M2	⊕ <sup>(1)</sup> 2NC	FP 935-M2R5	⊕ <sup>(1)</sup> 2NC	FP 935-M2R26	⊕ <sup>(1)</sup> 2NC	FP 935-M2R27	⊕ <sup>(1)</sup> 2NC
16	<b>LI</b>	FP 1635-M2	⊕ <sup>(1)</sup> 2NC	FP 1635-M2R5	⊕ <sup>(1)</sup> 2NC	FP 1635-M2R26	⊕ <sup>(1)</sup> 2NC	FP 1635-M2R27	⊕ <sup>(1)</sup> 2NC
20	<b>L</b>	FP 2035-M2	⊕ <sup>(1)</sup> 1NO+2NC	FP 2035-M2R5	⊕ <sup>(1)</sup> 1NO+2NC	FP 2035-M2R26	⊕ <sup>(1)</sup> 1NO+2NC	FP 2035-M2R27	⊕ <sup>(1)</sup> 1NO+2NC
Max speed		page 125 - type 1		page 125 - type 1		page 125 - type 1		page 125 - 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 126 - group 3b		page 126 - group 3b		page 126 - group 3b		page 126 - group 3b	



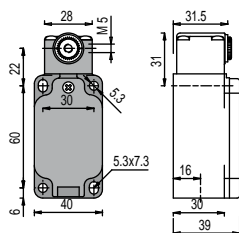
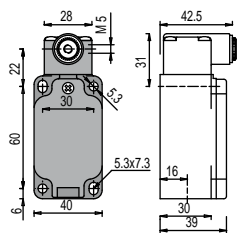
Contact blocks

6	<b>L</b>	FP 656-M2	⊕ <sup>(1)</sup> 1NO+1NC	FP 656-M2R5	⊕ <sup>(1)</sup> 1NO+1NC	FP 656-M2R26	⊕ <sup>(1)</sup> 1NO+1NC	FP 656-M2R27	⊕ <sup>(1)</sup> 1NO+1NC
7	<b>LO</b>	FP 756-M2	⊕ <sup>(1)</sup> 1NO+1NC	FP 756-M2R5	⊕ <sup>(1)</sup> 1NO+1NC	FP 756-M2R26	⊕ <sup>(1)</sup> 1NO+1NC	FP 756-M2R27	⊕ <sup>(1)</sup> 1NO+1NC
9	<b>L</b>	FP 956-M2	⊕ <sup>(1)</sup> 2NC	FP 956-M2R5	⊕ <sup>(1)</sup> 2NC	FP 956-M2R26	⊕ <sup>(1)</sup> 2NC	FP 956-M2R27	⊕ <sup>(1)</sup> 2NC
16	<b>LI</b>	FP 1656-M2	⊕ <sup>(1)</sup> 2NC	FP 1656-M2R5	⊕ <sup>(1)</sup> 2NC	FP 1656-M2R26	⊕ <sup>(1)</sup> 2NC	FP 1656-M2R27	⊕ <sup>(1)</sup> 2NC
20	<b>L</b>	FP 2056-M2	⊕ <sup>(1)</sup> 1NO+2NC	FP 2056-M2R5	⊕ <sup>(1)</sup> 1NO+2NC	FP 2056-M2R26	⊕ <sup>(1)</sup> 1NO+2NC	FP 2056-M2R27	⊕ <sup>(1)</sup> 1NO+2NC
Max speed		page 125 - type 1		page 125 - type 1		page 125 - type 1		page 125 - 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 126 - group 3b		page 126 - group 3b		page 126 - group 3b		page 126 - group 3b	

<sup>(1)</sup> Positive opening only with lever adjusted on the max.  
LIFT General Catalog

Contacts type:

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



### IMPORTANT

For safety applications: join only switches and actuators marked with symbol ⊕.

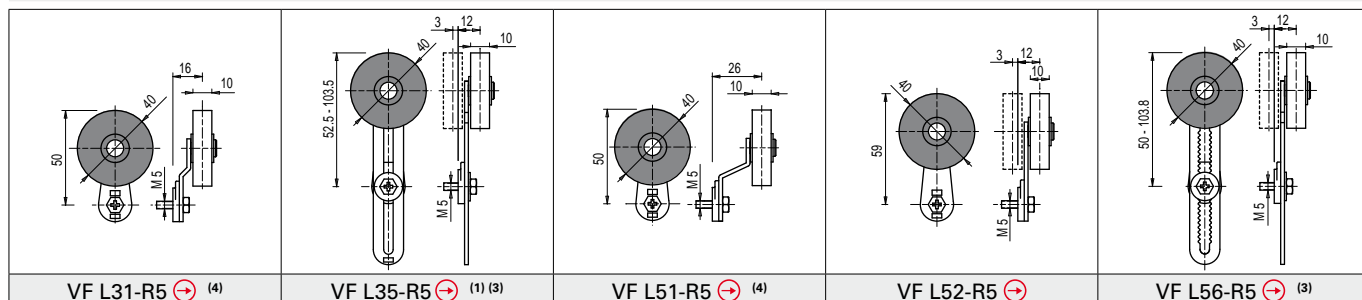
Contact blocks

6	<span style="border: 1px solid black; padding: 2px;">L</span>	FP 638-M2 ⊕	1NO+1NC	FP 658-M2 ⊖	1NO+1NC
7	<span style="border: 1px solid black; padding: 2px;">LO</span>	FP 738-M2 ⊕	1NO+1NC	FP 758-M2 ⊕	1NO+1NC
9	<span style="border: 1px solid black; padding: 2px;">L</span>	FP 938-M2 ⊕	2NC	FP 958-M2 ⊖	2NC
16	<span style="border: 1px solid black; padding: 2px;">LI</span>	FP 1638-M2 ⊕	2NC		
20	<span style="border: 1px solid black; padding: 2px;">L</span>	FP 2038-M2 ⊕	1NO+2NC	FP 2058-M2 ⊖	1NO+2NC
Max speed		page 125 - type 1		page 125 - type 1	
Min. force		0.1 Nm (0.25 Nm ⊖)		0.06 Nm (0.25 Nm ⊖)	
Travel diagrams		page 126 - group 3b		page 126 - group 3b	

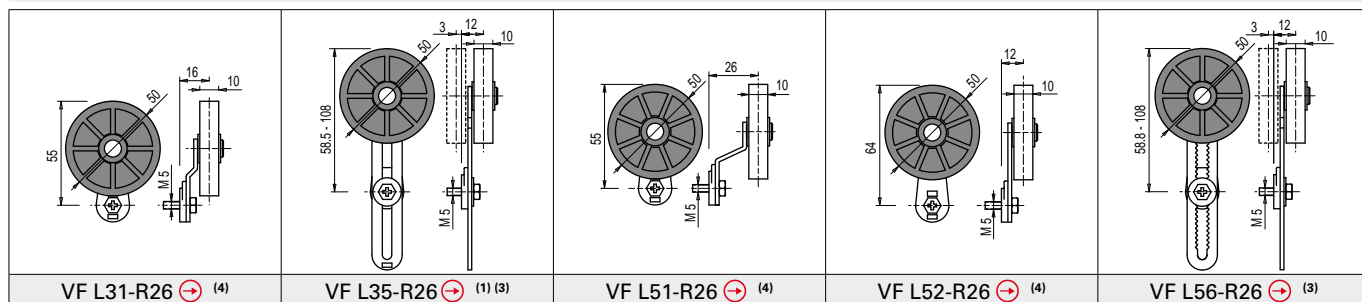
### Special loose actuators

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

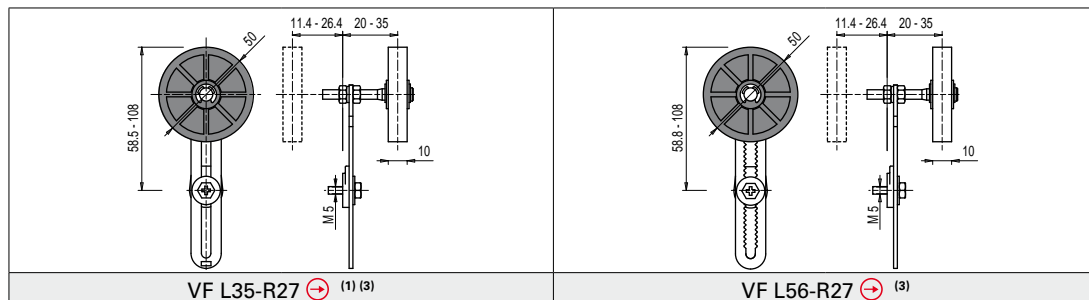
Ø 40 mm rubber rollers



Ø 50 mm rubber rollers



Ø 50 mm overhanging rubber rollers

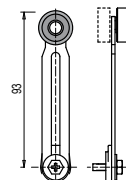


- Only orders for multiple quantities of the packs are accepted.

- (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.

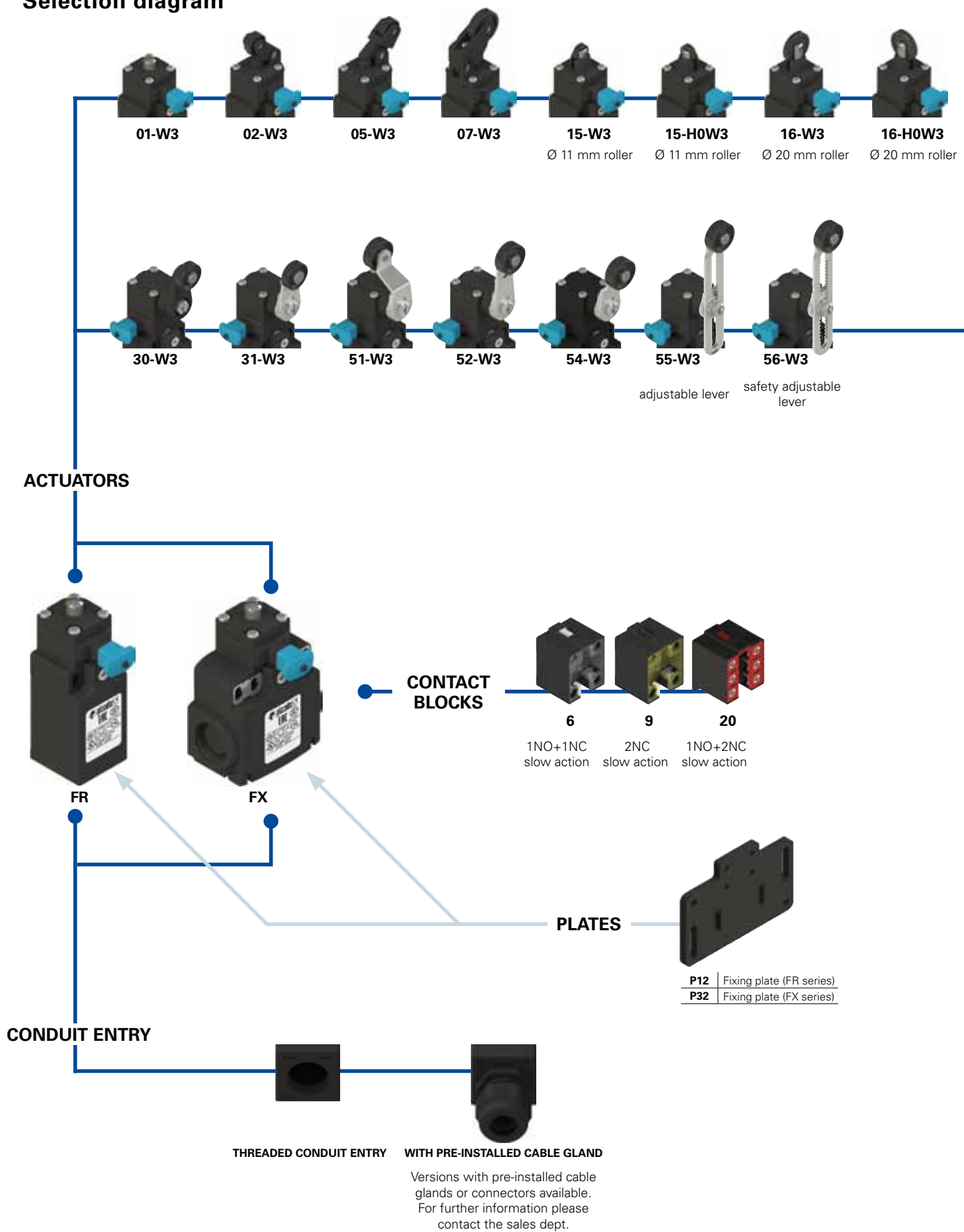


Accessories See page 119

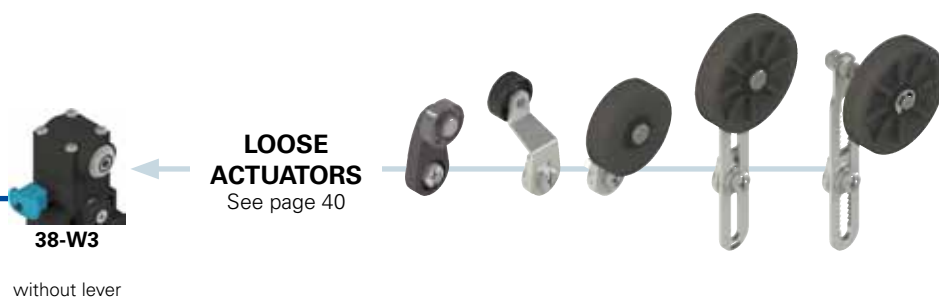




Selection diagram



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



**LOOSE ACTUATORS**  
See page 40

**38-W3**

without 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      option      options  
**FR 655-W3GM2P12R26**

**Housing**

<b>FR</b>	polymer housing, one conduit entry
<b>FX</b>	polymer housing, two conduit entries

**Contact blocks**

<b>6</b>	1NO+1NC, slow action
<b>9</b>	2NC, slow action
<b>20</b>	1NO+2NC, slow action

**Actuators**

<b>01</b>	short plunger
<b>02</b>	roller lever
<b>05</b>	offset roller lever
...	.....

**Reset hooking**

<b>W3</b>	simultaneous reset (standard)
<b>W4</b>	simultaneous reset with increased force

**Rollers**

	standard roller
<b>R5</b>	with Ø 40 mm rubber roller
<b>R26</b>	with Ø 50 mm rubber roller
<b>R27</b>	with Ø 50 mm overhanging rubber roller

**Fixing plate**

	without fixing plate (standard)
<b>P12</b>	supplied with fixing plate VF SFP1
<b>P32</b>	supplied with fixing plate VF SFP3

**Threaded conduit entry**

<b>M2</b>	M20x1.5 (standard)
	PG 13.5
<b>A</b>	PG 11
<b>M1</b>	M16x1.5

**Contacts type**

	silver contacts (standard)
<b>G</b>	silver contacts gold plated 1 µm



### 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 IMQ-UNI:	in progress
Approval UL:	E131787
Approval CCC:	2007010305230013
Approval EZU:	1010151
Approval EAC:	RU C-IT ДМ94.В.01024

### Technical data

#### Housing

Made of glass-reinforced polymer, self-extinguishing, shock-proof thermoplastic resin and with double insulation □

FR series one threaded conduit entry:	M20x1.5 (standard)
FX series two threaded conduit entries:	M20x1.5 (standard)
Protection degree:	IP67 according to EN 60529 with cable gland having equal or higher protection degree

#### General data

Ambient temperature:	-25°C ... +80°C
Version for operation in ambient temperature from -R270°C to +80° C on request	
Max operating frequency:	3600 operations cycles/hour
Mechanical endurance:	1 million operations cycles <sup>1</sup>
Assembling position:	any
Driving torque for installation:	see page 123
(1) One operation cycle means two movements, one to close and one to open contacts, as foreseen by EN 60947-5-1 standard.	

#### Cross section of the conductors (flexible copper wire)

Contact blocks 20:	min.	1 x 0.34 mm <sup>2</sup>	(1 x AWG 22)
	max.	2 x 1.5 mm <sup>2</sup>	(2 x AWG 16)
Contact blocks 6, 9:	min.	1 x 0.5 mm <sup>2</sup>	(1 x AWG 20)
	max.	2 x 2.5 mm <sup>2</sup>	(2 x AWG 14)

#### In conformity with standards:

IEC 60947-5-1, EN 60947-5-1, EN 60947-1, EN 50047, IEC 60204-1, EN 60204-1, EN 1088, EN ISO 12100-1, EN ISO 12100-2, EN 60529, EN 60529, EN 81-20, EN 81-50, NFC 63-140, VDE 0660-200, VDE 0113.

#### 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 EMC Directive 2004/108/EC.

#### Positive contact opening in conformity with standards:

IEC 60947-5-1, EN 60947-5-1, EN 60947-1, 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-R262) as stated in the **standard ISO 14119, par. 5.4**. The switch must be actuated with **at least up to the positive opening travel** shown in the travels diagrams on page 123. 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 (I <sub>th</sub> ):	10 A
Rated insulation voltage (U <sub>i</sub> ):	500 Vac 600 Vdc 400 Vac 500 Vdc for contacts block 20
Rated impulse withstand voltage (U <sub>imp</sub> ):	6 kV 4 kV for contact blocks 20
Conditional short circuit current:	1000 A according to EN 60947-5-1
Protection against short circuits:	fuse 10 A 500 V type aM
Pollution degree:	3

### Utilization categories

Alternate current: AC15 (50...60 Hz)			
U <sub>e</sub> (V)	250	400	500
I <sub>e</sub> (A)	6	4	1
Direct current: DC13			
U <sub>e</sub> (V)	24	125	250
I <sub>e</sub> (A)	6	1.1	0.4

### Data type approved by IMQ, CCC and EZU

Rated insulation voltage (U <sub>i</sub> ):	500 Vac 400 Vac for contacts block 20
Thermal current (I <sub>th</sub> ):	10 A
Protection against short circuits:	fuse 10 A 500 V type aM
Rated impulse withstand voltage (U <sub>imp</sub> ):	6 kV 4 kV for contacts block 20
Protection degree:	IP67
MV terminals (screw clamps)	
Pollution degree	3
Utilization category:	AC15
Operation voltage (U <sub>e</sub> ):	400 Vac (50 Hz)
Operation current (I <sub>e</sub> ):	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: EN 60947-1, EN 60947-5-1, fundamental requirements of the Low Voltage Directive 2006/95/CE.

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

### Data type approved by UL

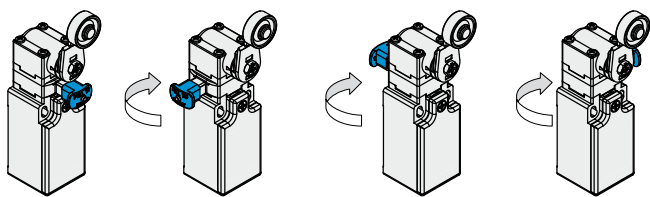
Utilization categories	Q300 (69 VA, 125-250 Vdc) A600 (720 VA, 120-600 Vac)
Data of the housing type	1, 4X "indoor use only"; 12, 13
For all contact blocks use 60 or 75 °C copper (Cu) conductor and wire size No. 12-14 AWG. Terminal tightening torque of 7.1 lb in (0.8 Nm).	
In conformity with standard:	UL 508

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



### Rotating reset device

The 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.

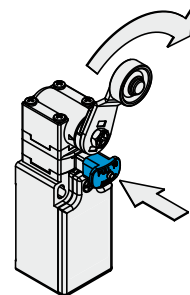


### W3 simultaneous reset device

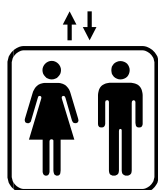
Pizzato Elettrica has developed and patented an innovative reset device.

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.



### EN 81-20 standard



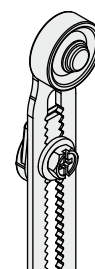
- Safety contacts according to EN 60947-5-1, encl. K.
- Protection degree higher than IP4x.
- Mechanical endurance higher than 10<sup>6</sup> cycles.

### Protection degree IP67

# IP67

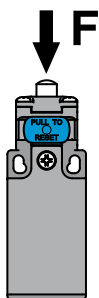
These series switches are all IP 67 rated.

### 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.

### Increased actuating force

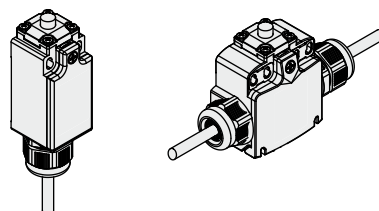


The switch can be supplied with an increased actuating force (option W4); ideal for applications with vibrations.

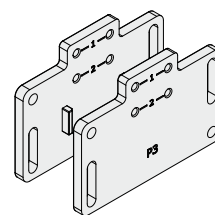
Actuator	Force
01, 14, 15, 16	7 N
02, 05	6 N
07	3.5 N
30 ... 56	0.08 Nm

### Conduit entries

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



### Adaptive plates

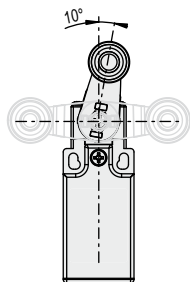


Adaptive plates provided with long slots for the adjustment of the actuating point, developed for compatibility with old products.

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

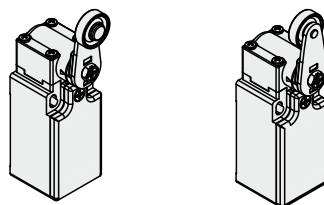
In switches with revolving lever it is possible to adjust the lever with 10° steps for the whole 360° range. The positive movement transmission is always guaranteed thanks to the particular geometrical coupling between the lever and the revolving shaft as prescribed for safety applications by the German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



### Overturning levers

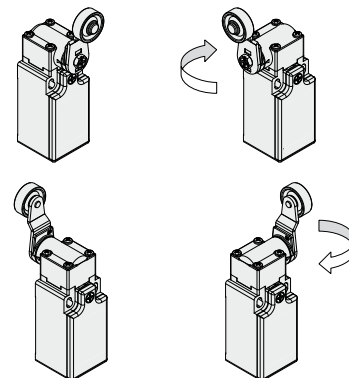
It's possible to fasten the lever on switches on straight or reverse side, maintaining the positive coupling.

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.



### Extended temperature range

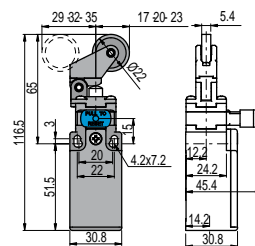
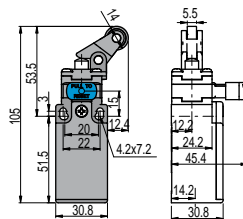
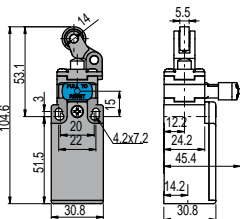
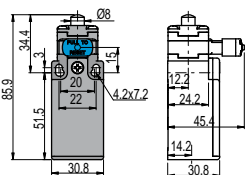
# -40°C

This range of switches is also available in a special version with an ambient operating temperature range of -40°C to +80°C. This is particularly useful for applications in cold stores, sterilisers and other low temperature environments. The materials used in the production of these switches maintain the standard operating parameters even over this temperature range, further increasing application possibilities.

## Switches with manual reset

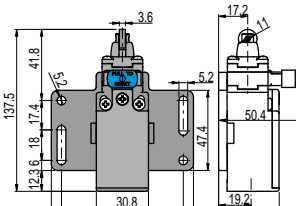
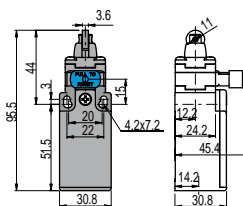
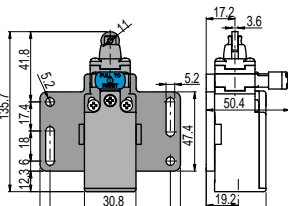
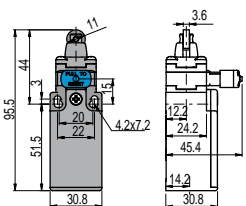
Contacts type:

**L** = slow action



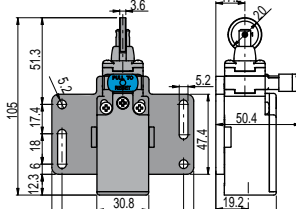
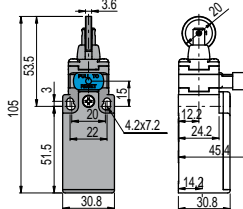
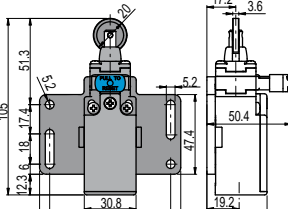
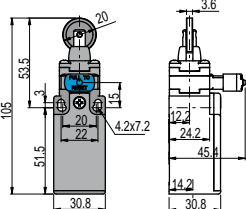
Contact blocks

6	<b>L</b>	FR 601-W3M2	➔ 1NO+1NC	FR 602-W3M2	➔ 1NO+1NC	FR 605-W3M2	➔ 1NO+1NC	FR 607-W3M2	➔ 1NO+1NC
9	<b>L</b>	FR 901-W3M2	➔ 2NC	FR 902-W3M2	➔ 2NC	FR 905-W3M2	➔ 2NC	FR 907-W3M2	➔ 2NC
20	<b>L</b>	FR 2001-W3M2	➔ 1NO+2NC	FR 2002-W3M2	➔ 1NO+2NC	FR 2005-W3M2	➔ 1NO+2NC	FR 2007-W3M2	➔ 1NO+2NC
Max speed		page 123 - type 4		page 123 - type 3		page 123 - type 3		page 123 - type 3	
Min. force		4.5 N (25 N ➔)		4 N (25 N ➔)		4 N (25 N ➔)		2.5 N (25 N ➔)	
Travel diagrams		page 124 - group 1c		page 124 - group 2c		page 124 - group 2c		page 124 - group 3c	



Contact blocks

6	<b>L</b>	FR 615-W3M2	➔ 1NO+1NC	FR 615-W3M2P12	➔ 1NO+1NC	FR 615-W3H0M2	➔ 1NO+1NC	FR 615-W3H0M2P12	➔ 1NO+1NC
9	<b>L</b>	FR 915-W3M2	➔ 2NC	FR 915-W3M2P12	➔ 2NC	FR 915-W3H0M2	➔ 2NC	FR 915-W3H0M2P12	➔ 2NC
20	<b>L</b>	FR 2015-W3M2	➔ 1NO+2NC	FR 2015-W3M2P12	➔ 1NO+2NC	FR 2015-W3H0M2	➔ 1NO+2NC	FR 2015-W3H0M2P12	➔ 1NO+2NC
Max speed		page 123 - type 2		page 123 - type 2		page 123 - type 2		page 123 - type 2	
Min. force		4.5 N (25 N ➔)		4.5 N (25 N ➔)		4.5 N (25 N ➔)		4.5 N (25 N ➔)	
Travel diagrams		page 124 - group 1c		page 124 - group 1c		page 124 - group 1c		page 124 - group 1c	



Contact blocks

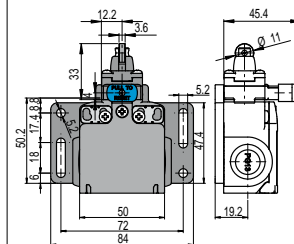
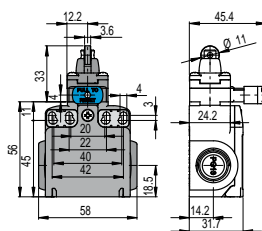
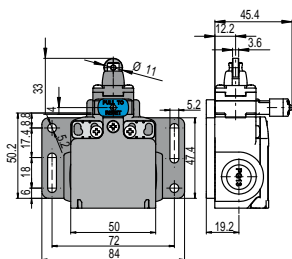
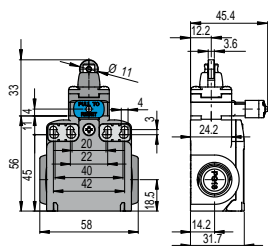
6	<b>L</b>	FR 616-W3M2	➔ 1NO+1NC	FR 616-W3M2P12	➔ 1NO+1NC	FR 616-W3H0M2	➔ 1NO+1NC	FR 616-W3H0M2P12	➔ 1NO+1NC
9	<b>L</b>	FR 916-W3M2	➔ 2NC	FR 916-W3M2P12	➔ 2NC	FR 916-W3H0M2	➔ 2NC	FR 916-W3H0M2P12	➔ 2NC
20	<b>L</b>	FR 2016-W3M2	➔ 1NO+2NC	FR 2016-W3M2P12	➔ 1NO+2NC	FR 2016-W3H0M2	➔ 1NO+2NC	FR 2016-W3H0M2P12	➔ 1NO+2NC
Max speed		page 123 - type 2		page 123 - type 2		page 123 - type 2		page 123 - type 2	
Min. force		4.5 N (25 N ➔)		4.5 N (25 N ➔)		4.5 N (25 N ➔)		4.5 N (25 N ➔)	
Travel diagrams		page 124 - group 1c		page 124 - group 1c		page 124 - group 1c		page 124 - group 1c	

**Accessories** See page 119

All measures in the drawings are in mm

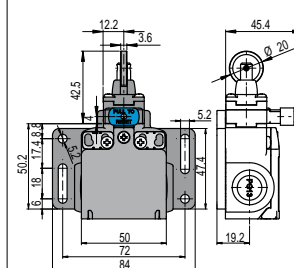
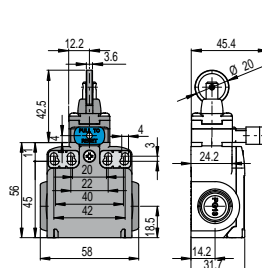
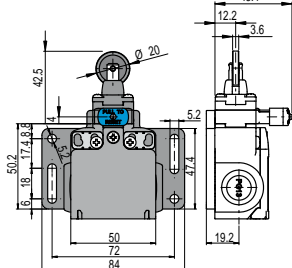
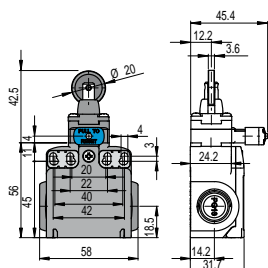
Contacts type:

**L** = slow action



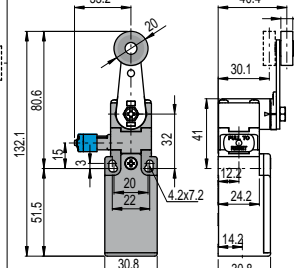
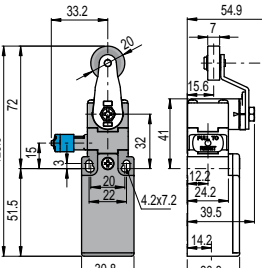
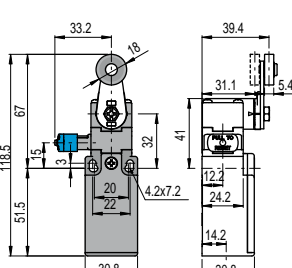
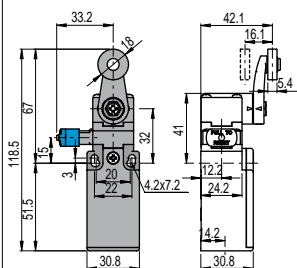
Contact blocks

6	<b>L</b>	<b>FX 615-W3M2</b> $\rightarrow$ 1NO+1NC	<b>FX 615-W3M2P32</b> $\rightarrow$ 1NO+1NC	<b>FX 615-W3H0M2</b> $\rightarrow$ 1NO+1NC	<b>FX 615-W3H0M2P32</b> $\rightarrow$ 1NO+1NC
9	<b>L</b>	<b>FX 915-W3M2</b> $\rightarrow$ 2NC	<b>FX 915-W3M2P32</b> $\rightarrow$ 2NC	<b>FX 915-W3H0M2</b> $\rightarrow$ 2NC	<b>FX 915-W3H0M2P32</b> $\rightarrow$ 2NC
20	<b>L</b>	<b>FX 2015-W3M2</b> $\rightarrow$ 1NO+2NC	<b>FX 2015-W3M2P32</b> $\rightarrow$ 1NO+2NC	<b>FX 2015-W3H0M2</b> $\rightarrow$ 1NO+2NC	<b>FX 2015-W3H0M2P32</b> $\rightarrow$ 1NO+2NC
Max speed		page 123 - type 2	page 123 - type 2	page 123 - type 2	page 123 - type 2
Min. force		4.5 N (25 N $\rightarrow$ )	4.5 N (25 N $\rightarrow$ )	4.5 N (25 N $\rightarrow$ )	4.5 N (25 N $\rightarrow$ )
Travel diagrams		page 124 - group 1c	page 124 - group 1c	page 124 - group 1c	page 124 - group 1c



Contact blocks

6	<b>L</b>	<b>FX 616-W3M2</b> $\rightarrow$ 1NO+1NC	<b>FX 616-W3M2P32</b> $\rightarrow$ 1NO+1NC	<b>FX 616-W3H0M2</b> $\rightarrow$ 1NO+1NC	<b>FX 616-W3H0M2P32</b> $\rightarrow$ 1NO+1NC
9	<b>L</b>	<b>FX 916-W3M2</b> $\rightarrow$ 2NC	<b>FX 916-W3M2P32</b> $\rightarrow$ 2NC	<b>FX 916-W3H0M2</b> $\rightarrow$ 2NC	<b>FX 916-W3H0M2P32</b> $\rightarrow$ 2NC
20	<b>L</b>	<b>FX 2016-W3M2</b> $\rightarrow$ 1NO+2NC	<b>FX 2016-W3M2P32</b> $\rightarrow$ 1NO+2NC	<b>FX 2016-W3H0M2</b> $\rightarrow$ 1NO+2NC	<b>FX 2016-W3H0M2P32</b> $\rightarrow$ 1NO+2NC
Max speed		page 123 - type 2	page 123 - type 2	page 123 - type 2	page 123 - type 2
Min. force		4.5 N (25 N $\rightarrow$ )	4.5 N (25 N $\rightarrow$ )	4.5 N (25 N $\rightarrow$ )	4.5 N (25 N $\rightarrow$ )
Travel diagrams		page 124 - group 1c	page 124 - group 1c	page 124 - group 1c	page 124 - group 1c

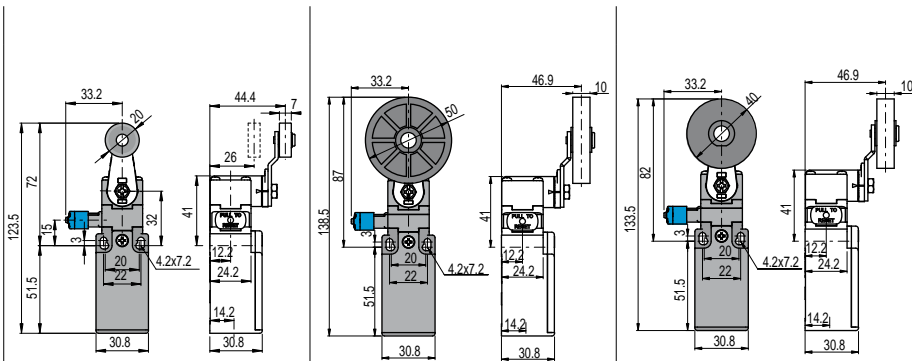


Contact blocks

6	<b>L</b>	<b>FR 630-W3M2</b> $\rightarrow$ 1NO+1NC	<b>FR 631-W3M2</b> $\rightarrow$ 1NO+1NC	<b>FR 651-W3M2</b> $\rightarrow$ 1NO+1NC	<b>FR 652-W3M2</b> $\rightarrow$ 1NO+1NC
9	<b>L</b>	<b>FR 930-W3M2</b> $\rightarrow$ 2NC	<b>FR 931-W3M2</b> $\rightarrow$ 2NC	<b>FR 951-W3M2</b> $\rightarrow$ 2NC	<b>FR 952-W3M2</b> $\rightarrow$ 2NC
20	<b>L</b>	<b>FR 2030-W3M2</b> $\rightarrow$ 1NO+2NC	<b>FR 2031-W3M2</b> $\rightarrow$ 1NO+2NC	<b>FR 2051-W3M2</b> $\rightarrow$ 1NO+2NC	<b>FR 2052-W3M2</b> $\rightarrow$ 1NO+2NC
Max speed		page 123 - type 1	page 123 - type 1	page 123 - type 1	page 123 - type 1
Min. force		0.07 Nm (0.25 Nm $\rightarrow$ )	0.07 Nm (0.25 Nm $\rightarrow$ )	0.07 Nm (0.25 Nm $\rightarrow$ )	0.07 Nm (0.25 Nm $\rightarrow$ )
Travel diagrams		page 124 - group 4c	page 124 - group 4c	page 124 - group 4c	page 124 - group 4c

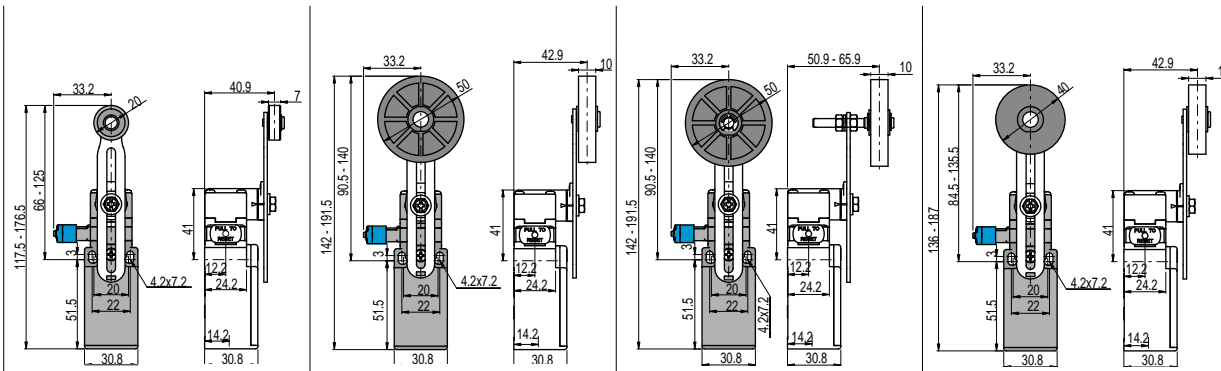
Contacts type:

**L** = slow action



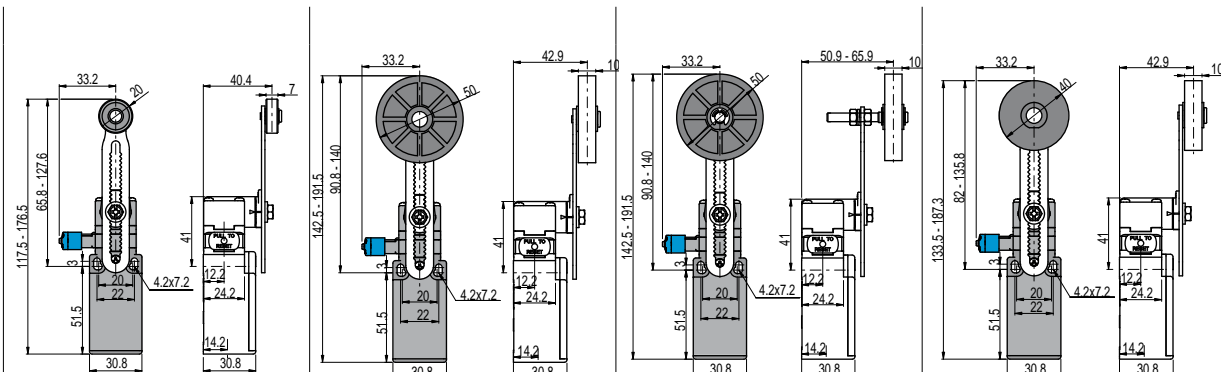
Contact blocks

6	<b>L</b>	FR 654-W3M2	➔ 1NO+1NC	FR 654-W3M2R26	➔ 1NO+1NC	FR 654-W3M2R5	➔ 1NO+1NC
9	<b>L</b>	FR 954-W3M2	➔ 2NC	FR 954-W3M2R26	➔ 2NC	FR 954-W3M2R5	➔ 2NC
20	<b>L</b>	FR 2054-W3M2	➔ 1NO+2NC	FR 2054-W3M2R26	➔ 1NO+2NC	FR 2054-W3M2R5	➔ 1NO+2NC
Max speed		page 123 - type 1		page 123 - type 1		page 123 - type 1	
Min. force		0.07 Nm (0.25 Nm ➔)		0.07 Nm (0.25 Nm ➔)		0.07 Nm (0.25 Nm ➔)	
Travel diagrams		page 124 - group 4c		page 124 - group 4c		page 124 - group 4c	



Contact blocks

6	<b>L</b>	FR 655-W3M2	➔ <sup>(1)</sup> 1NO+1NC	FR 655-W3M2R26	➔ <sup>(1)</sup> 1NO+1NC	FR 655-W3M2R27	➔ <sup>(1)</sup> 1NO+1NC	FR 655-W3M2R5	➔ <sup>(1)</sup> 1NO+1NC
9	<b>L</b>	FR 955-W3M2	➔ <sup>(1)</sup> 2NC	FR 955-W3M2R26	➔ <sup>(1)</sup> 2NC	FR 955-W3M2R27	➔ <sup>(1)</sup> 2NC	FR 955-W3M2R5	➔ <sup>(1)</sup> 2NC
20	<b>L</b>	FR 2055-W3M2	➔ <sup>(1)</sup> 1NO+1NC	FR 2055-W3M2R26	➔ <sup>(1)</sup> 1NO+2NC	FR 2055-W3M2R27	➔ <sup>(1)</sup> 1NO+2NC	FR 2055-W3M2R5	➔ <sup>(1)</sup> 1NO+2NC
Max speed		page 123 - type 1		page 123 - type 1		page 123 - type 1		page 123 - type 1	
Min. force		0.07 Nm (0.25 Nm ➔)		0.07 Nm (0.25 Nm ➔)		0.07 Nm (0.25 Nm ➔)		0.07 Nm (0.25 Nm ➔)	
Travel diagrams		page 124 - group 4c		page 124 - group 4c		page 124 - group 4c		page 124 - group 4c	



Contact blocks

6	<b>L</b>	FR 656-W3M2	➔ 1NO+1NC	FR 656-W3M2R26	➔ 1NO+1NC	FR 656-W3M2R27	➔ 1NO+1NC	FR 656-W3M2R5	➔ 1NO+1NC
9	<b>L</b>	FR 956-W3M2	➔ 2NC	FR 956-W3M2R26	➔ 2NC	FR 956-W3M2R27	➔ 2NC	FR 956-W3M2R5	➔ 2NC
20	<b>L</b>	FR 2056-W3M2	➔ 1NO+2NC	FR 2056-W3M2R26	➔ 1NO+2NC	FR 2056-W3M2R27	➔ 1NO+2NC	FR 2056-W3M2R5	➔ 1NO+2NC
Max speed		page 123 - type 1		page 123 - type 1		page 123 - type 1		page 123 - type 1	
Min. force		0.07 Nm (0.25 Nm ➔)		0.07 Nm (0.25 Nm ➔)		0.07 Nm (0.25 Nm ➔)		0.07 Nm (0.25 Nm ➔)	
Travel diagrams		page 124 - group 4c		page 124 - group 4c		page 124 - group 4c		page 124 - group 4c	

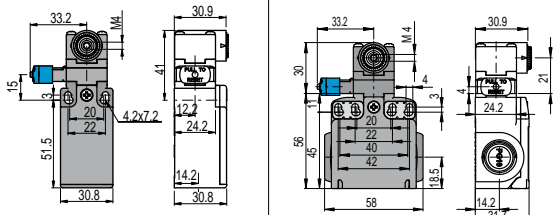
Accessories See page 119

<sup>(1)</sup> Positive opening only with lever adjusted on the max.

**Position switches (reset hooking) with revolving lever without actuator**

Contacts type:

**L** = slow action



**IMPORTANT**

**For safety applications:** join only switches and actuators marked with symbol ⊕.

Contact blocks

6	<b>L</b>	FR 638-W3M2 ⊕	1NO+1NC	FX 638-W3M2 ⊕	1NO+1NC		
9	<b>L</b>	FR 938-W3M2 ⊕	2NC	FX 938-W3M2 ⊕	2NC		
20	<b>L</b>	FR 2038-W3M2 ⊕	1NO+2NC	FX 2038-W3M2 ⊕	1NO+2NC		
Max speed		page 123 - type 1		page 123 - type 1			
Min. force		0.07 Nm (0.25 Nm ⊕)		0.07 Nm (0.25 Nm ⊕)			
Travel diagrams		page 124 - group 4c		page 124 - group 4c			

**Special loose actuators**

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

∅ 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 ⊕

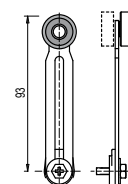
∅ 50 mm rubber rollers

VF LE51-R26 ⊕ (4)	VF LE52-R26 ⊕ (4)	VF LE54-R26 ⊕ (4)	VF LE55-R26 ⊕ (1)	VF LE56-R26 ⊕

∅ 50 mm overhanging rubber rollers

VF LE55-R27 ⊕ (1)	VF LE56-R27 ⊕

- 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.







### 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 end of travel.

### Markings and quality marks:



Approval IMQ:	EG610
Approval IMQ-UNI:	in progress
Approval UL:	E131787
Approval CCC:	2007010305230013
Approval EZU:	101015
Approval EAC:	RU C-IT DM94.B.01024

### Technical data

#### Housing

Made of glass-reinforced polymer, self-extinguishing, shock-proof thermoplastic resin and with double insulation  $\square$

One threaded conduit entry:	M20x1.5 (standard)
Protection degree:	IP67 according to EN 60529 with cable gland having equal or higher protection degree

#### General data

Ambient temperature:	-25°C ... +80°C
Version for operation in ambient temperature from -40°C to +80°C on request	
Max operating frequency:	3600 operations cycles <sup>1</sup> /hour
Mechanical endurance:	1 million operations cycles <sup>1</sup> (FR 5A3-M2 / FR 11A3-M2) 50.000 operations cycles <sup>1</sup> (FR 17A3-M2 / FR 19A3-M2)

Assembling position:

Driving torque for installation: see page 123

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

#### Cross section of the conductors (flexible copper wire)

Contact blocks 5, 11, 17:	min.	1 x 0.5 mm <sup>2</sup>	(1 x AWG 20)
	max.	2 x 2.5 mm <sup>2</sup>	(2 x AWG 14)

#### In conformity with standards:

IEC 60947-5-1, EN 60947-5-1, EN 60947-1, EN 50047, IEC 60204-1, EN 60204-1, EN 1088, EN ISO 12100-1, EN ISO 12100-2, EN 60529, EN 60529, EN 81-20, EN 81-50, NFC 63-140, VDE 0660-200, VDE 0113.

#### 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 EMC Directive 2004/108/EC.

#### Positive contact opening in conformity with standards:

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

### Installation for safety applications:

Use only switches marked with the symbol  $\ominus$ . 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 ISO 14119, par. 5.4**. The switch must be actuated with **at least up to the positive opening travel** shown in the travels diagrams on page 42. 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 (I <sub>th</sub> ):	10 A
Rated insulation voltage (U <sub>i</sub> ):	500 Vac 600 Vdc
	400 Vac 500 Vdc for contacts block 11
Rated impulse withstand voltage (U <sub>imp</sub> ):	6 kV
Conditional short circuit current:	1000 A according to EN 60947-5-1
Protection against short circuits:	fuse 10 A 500 V type aM
Pollution degree:	3

### Utilization categories

Alternate current: AC15 (50...60 Hz)			
U <sub>e</sub> (V)	250	400	500
I <sub>e</sub> (A)	6	4	1
Direct current: DC13			
U <sub>e</sub> (V)	24	125	250
I <sub>e</sub> (A)	6	1.1	0.4

### Data type approved by IMQ, CCC and EZU

Rated insulation voltage (U <sub>i</sub> ):	500 Vac
	400 Vac for contacts block 11
Thermal current (I <sub>th</sub> ):	10 A
Protection against short circuits:	fuse 10 A 500 V type aM
Rated impulse withstand voltage (U <sub>imp</sub> ):	6 kV
Protection degree:	IP67
MV terminals (screw clamps)	
Pollution degree	3
Utilization category:	AC15
Operation voltage (U <sub>e</sub> ):	400 Vac (50 Hz)
Operation current (I <sub>e</sub> ):	3 A
Forms of the contact element:	Zb, Y+Y, Y+Y+X
Positive opening of contacts on contact block	5, 11, 17, 19

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

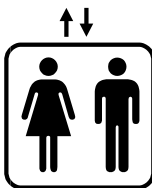
### Data type approved by UL

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
For all contact blocks use	60 or 75 °C copper (Cu) conductor and wire size No. 12-14 AWG. Terminal tightening torque of 7.1 lb in (0.8 Nm).
In conformity with standard:	UL 508

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

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

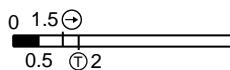
**EN 81-20 standard**



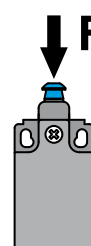
- Safety contacts according to EN 60947-5-1, encl. K.
- Protection degree higher than IP4x.
- All switches are in compliance with the requirements set by the new standards on safety contacts.

**Contact blocks 17 and 19**

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



**Increased actuating force**



The contact block 19 can be supplied on request with an increased actuating force 4 or 6 N, suitable for applications with strong vibrations.

**Protection degree IP 67**

**IP67**

These series switches are all IP 67 rated.

**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 options  
**FR 19A3-E26GM2P11**

<b>Housing</b> FR polymer housing, one conduit entry	<b>Fixing plate</b> without fixing plate (standard) P11 with fixing plate VF SFP1
<b>Contact blocks</b> 5 1NO+1NC, snap action 11 2NC, snap action 17 1NC, snap action 19 2NC, snap action	<b>Threaded conduit entry</b> M2 M20x1.5 (standard) PG 13.5 A PG 11 M1 M16x1.5
<b>Actuators</b> A3 short plunger	<b>Contacts type</b> silver contacts (standard) G silver contacts gold plated 1 μm
<b>Actuation force</b> standard actuation force E26 actuation force 4 N (19 N ⊕) (contact block 19 only) E27 actuation force 6 N (21 N ⊕) (contact block 19 only)	

**Dimensional drawings**

Contacts type:

**R** = snap action

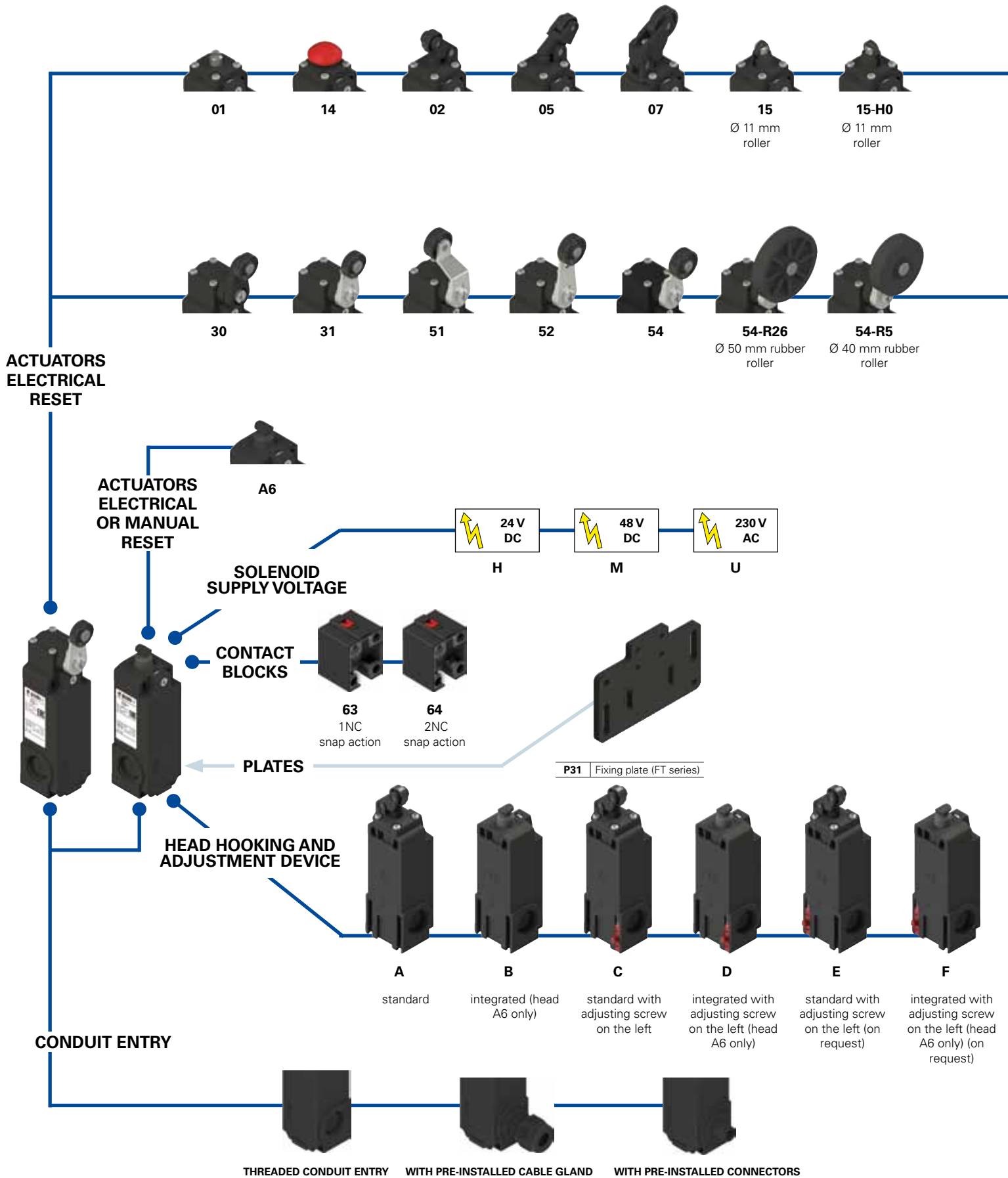
Contact blocks	FR 5A3-M2	FR 11A3-M2	FR 17A3-M2	FR 19A3-M2
5 <b>R</b>	FR 5A3-M2 ⊕ 1NO+1NC			
11 <b>R</b>		FR 11A3-M2 ⊕ 2NC		
17 <b>R</b>			FR 17A3-M2 ⊕ 1NC	
19 <b>R</b>				FR 19A3-M2 ⊕ 2NC
Max speed	0.5 m/s	0.5 m/s	0.5 m/s	0.5 m/s
Min. force	3.5 N (25 N ⊕)	3.5 N (25 N ⊕)	1.5 N (25 N ⊕)	2 N (25 N ⊕)
Travels diagrams	0 2 ⊕4 6	0 2 ⊕4 6	0 1.5 ⊕ 6 0.5 ⊕2	0 1.5 ⊕ 4.5 0.5 ⊕2

**Legend**

**Accessories** See page 119

■ Closed contact | □ Opened contact | ⊕40° Positive opening travel | ⊕ 2x2 mm contact opening travel according to EN81

Selection diagram



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

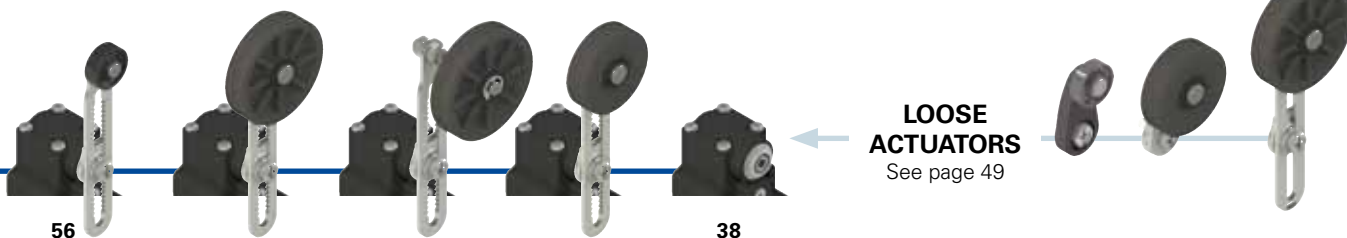


**16**  
Ø 20 mm  
roller

**16-H0**  
Ø 20 mm  
roller

**12**

**13**



**56**

**56-R26**

safety adjustable  
lever with Ø 50  
mm rubber roller

**56-R27**

safety adjustable  
lever with Ø 50  
mm overhanging  
rubber roller

**56-R5**

safety adjustable  
lever with Ø 40  
mm rubber roller

**38**

**LOOSE  
ACTUATORS**  
See page 49

## Code structure

article options  
**FT 2A6454AH-E27GP31R26**

### Housing

**FT** polymer housing, three conduit entries

### Head hooking and adjustment device

<b>A</b>	standard
<b>B</b>	integrated (actuator A6 only)
<b>C</b>	standard with adjusting screw on the left
<b>D</b>	integrated with adjusting screw on the left (actuator A6 only)
<b>E</b>	standard with adjusting screw on the left (on request)
<b>F</b>	integrated with adjusting screw on the left (actuator A6 only) (on request)

### Contact blocks

<b>63</b>	1NC, snap action
<b>64</b>	2NC, snap action

### Actuators

<b>A6</b>	plunger with manual reset
<b>01</b>	short plunger
<b>02</b>	roller lever
<b>05</b>	offset roller lever
...	.....

### Rollers

	standard roller
<b>R5</b>	with Ø 40 mm rubber roller
<b>R26</b>	with Ø 50 mm rubber roller
<b>R27</b>	with Ø 50 mm overhanging rubber roller

### Fixing plate

	without fixing plate (standard)
<b>P31</b>	supplied with fixing plate VF SFP3

### Contacts type

	silver contacts (standard)
<b>G</b>	silver contacts gold plated 1 µm

### Actuation force

<b>E27</b>	Standard actuating force
<b>E26</b>	Reduced actuating force
<b>E28</b>	Reduced actuating force (with K solenoid voltage only)

### Solenoid supply voltage

<b>H</b>	24 Vdc 4.2 A (100 W)
<b>M</b>	48 Vdc 2.1 A (100 W)
<b>U</b>	230 Vac 0.5 A (115 W)
<b>K</b>	48 Vdc 0.75 A (36 W)
<b>J</b>	24 Vdc 1.5 A (36 W)



### Main data

- Different actuating force versions
- Versions with adjusting screw
- Polymer housing, with one or two conduit entries
- Protection degree IP67

### Technical data

#### Housing

Made of glass-reinforced polymer, self-extinguishing, shock-proof thermoplastic resin and with double insulation  $\square$

Three threaded conduit entries: M20 x1.5 (standard)  
 Protection degree: IP67 according to EN 60529 with cable gland having equal or higher protection degree

#### General data

Ambient temperature: -25°C ... +50°C  
 Version for operation in ambient temperature from -40°C to +50°C on request  
 Mechanical endurance: 50,000 operations cycles  
 Assembling position: any  
 Driving torque for installation: see page 123  
 (1) One operation cycle means two movements, one to close and one to open contacts, as foreseen by EN 60947-5-1 standard.

#### Cross section of the conductors (flexible copper wire)

Contact blocks 63, 64: min. 1 x 0.34 mm<sup>2</sup> (1 x AWG 22)  
 max. 2 x 1.5 mm<sup>2</sup> (2 x AWG 16)

#### Solenoid

Rated operational voltage (U<sub>e</sub>) and current (I<sub>e</sub>): 24 Vdc ±10%; 4.2 A (100 W)  
 24 Vdc ±10%; 1.5 A (36 W)  
 48 Vdc ±10%; 2.1 A (100 W)  
 48 Vdc ±10%; 0.75 A (36 W)  
 230 Vac ±10%; 0.5 A (115 W)

Solenoid duty cycle: 3% ED  
 Solenoid protection 24 Vdc (4.2 A): fuse 5 A type F  
 Solenoid protection 24 Vdc (1.5 A): fuse 2 A type F  
 Solenoid protection 48 Vdc (2.1 A): fuse 2.5 A type F  
 Solenoid protection 48 Vdc (0.75 A): fuse 1 A type F  
 Solenoid protection 230 Vac (0.5 A): fuse 0.8 A, type F  
 Power supply time: min. 0.2 s, max 0.5 s  
 Time without power supply: min. 30 s  
 Max operating frequency: 118 operations cycles/hour

#### In conformity with standards:

EN 60947-5-1, IEC 60947-5-1, EN 81-20, EN 81-50

#### In conformity with requirements requested by:

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

#### Positive contact opening in conformity with standards:

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

### Markings and quality marks:



Approval EAC: RU C-IT ДМ94.В.01024

### Installation for safety applications:

Use only switches marked with the symbol  $\ominus$ . 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 ISO 14119, par. 5.4**. The switch must be actuated with **at least up to the positive opening travel** shown in the travels diagrams on page 123. 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 (I<sub>th</sub>): 10 A  
 Rated insulation voltage (U<sub>i</sub>): 500 Vac 600 Vdc  
 Rated impulse withstand voltage (U<sub>imp</sub>): 6 kV  
 Conditional short circuit current: 1000 A according to EN 60947-5-1  
 Protection against short circuits: fuse 10 A 500 V type aM  
 Pollution degree: 3

### Utilization categories

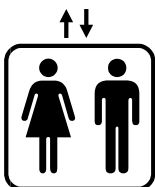
Alternate current: AC15 (50...60 Hz)  
 U<sub>e</sub> (V) 250 400 500  
 I<sub>e</sub> (A) 6 4 1  
 Direct current: DC13  
 U<sub>e</sub> (V) 24 125 250  
 I<sub>e</sub> (A) 6 1.1 0.4



## Introduction

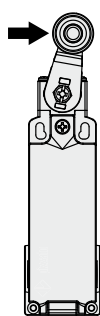
When the FT series safety switches with reset are operated they remain switched and they reset electrically through the integrated solenoid. Thanks to this feature it's possible to remote reset the switch without being physically near it. They are available with different actuators and are adapt to many applications, particularly to the lift, the over-speed governor and generally to the safety field. Some items can also be supplied with the manual reset.

### EN 81-20 standard



- Safety contacts according to EN 60947-5-1, encl. K.
- Protection degree higher than IP4x.
- All switches are in compliance with the requirements set by the new standards on safety contacts.

### Reduced actuating force -E26



On request FT series switches can be supplied with a reduced actuating force.

Actuator	Force
A6,	3.4 N (25 N ⊖)
01, 12, 13, 14, 15, 16	4.4 N (25 N ⊖)
02, 05	3.6 N (25 N ⊖)
07	2.1 N (25 N ⊖)
30, 31, 38, 51, 52, 54, 56	0.07 Nm (0.25 Nm ⊖)

### Protection degree IP 67

# IP67

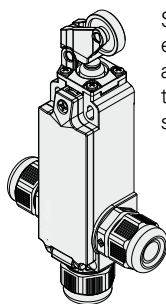
These series switches are all IP 67 rated.

### Safety lever LE56



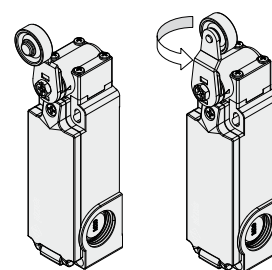
The adjustable lever code 56 (and variants) is supplied with an indentation which blocks the lever slipping in case of fixing screw release.

### Conduit entries



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

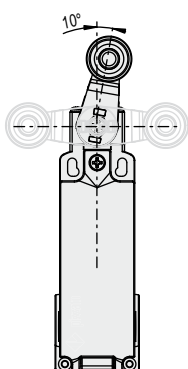
### Overturning levers



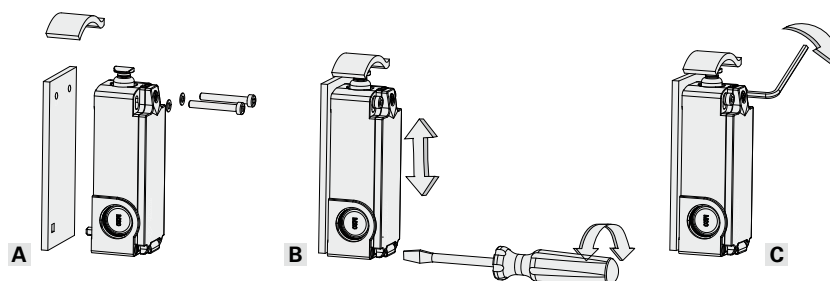
It's possible to fasten the lever on straight or reverse side, maintaining the positive coupling. In this way it is possible to obtain two different work plans of the lever.

### 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.



### Adjustment system version (C, D, E, F housing)



Pizzato Elettrica introduces a new integrated adjustment system designed purposely for applications on over-speed devices.

The system allows a fine and sensitive adjustment of the switch position along its vertical axis.

#### Characteristics:

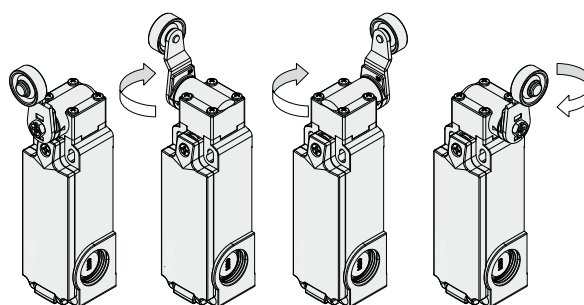
- Easy installation and adjustment
- Accurate vertical adjustment
- Wide adjustment travel (up to 4 mm)
- Unlosable components

#### Operation:

- Make a hole in the fixing plate to insert the adjusting pin on the back of the switch. Apply the switch to the over-speed device without blocking the two fixing screws.
- Adjust the switch position by the screw on the front.
- Finally lock the switch body to the over-speed device.

### Rotating heads

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

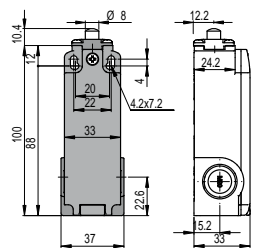
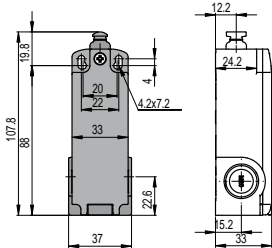


# Switches with electrical reset FT series

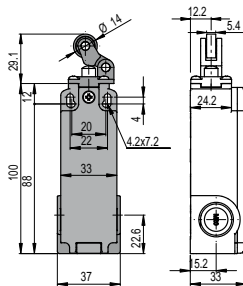
Contacts type:

**R** = snap action

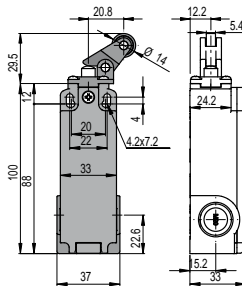
With external rubber gasket



With stainless steel roller on request

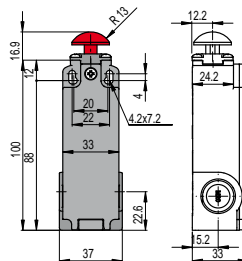
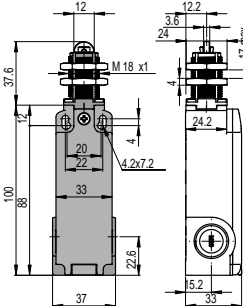
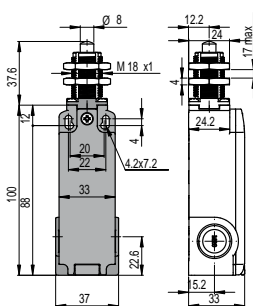
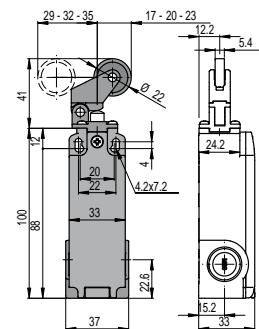


With stainless steel roller on request



Contact blocks

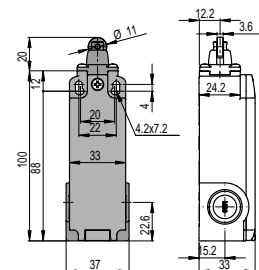
63	<b>R</b>	FT 2B63A6AH-E27	⊕ 1NC	FT 2A6301AH-E27	⊕ 1NC	FT 2A6302AH-E27	⊕ 1NC	FT 2A6305AH-E27	⊕ 1NC
64	<b>R</b>	FT 2B64A6AH-E27	⊕ 2NC	FT 2A6401AH-E27	⊕ 2NC	FT 2A6402AH-E27	⊕ 2NC	FT 2A6405AH-E27	⊕ 2NC
Max speed	page 123 - type 4			page 123 - type 4		page 123 - type 3		page 123 - type 3	
Min. force	5 N (25 N ⊕)			6 N (25 N ⊕)		5 N (25 N ⊕)		5 N (25 N ⊕)	
Travel diagrams	page 124 - group 1d			page 124 - group 2d		page 124 - group 3d		page 124 - group 3d	



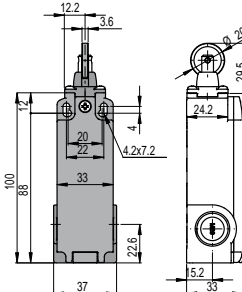
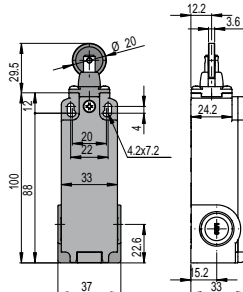
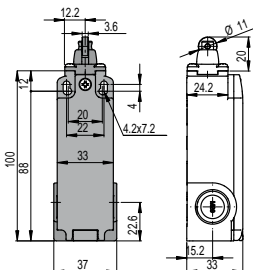
Contact blocks

63	<b>R</b>	FT 2A6307AH-E27	⊕ 1NC	FT 2A6312AH-E27	⊕ 1NC	FT 2A6313AH-E27	⊕ 1NC	FT 2A6314AH-E27	⊕ 1NC
64	<b>R</b>	FT 2A6407AH-E27	⊕ 2NC	FT 2A6412AH-E27	⊕ 2NC	FT 2A6413AH-E27	⊕ 2NC	FT 2A6414AH-E27	⊕ 2NC
Max speed	page 123 - type 2			page 123 - type 4		page 123 - type 2		page 123 - type 2	
Min. force	3 N (25 N ⊕)			6 N (25 N ⊕)		6 N (25 N ⊕)		6 N (25 N ⊕)	
Travel diagrams	page 124 - group 4d			page 124 - group 2d		page 124 - group 2d		page 124 - group 2d	

On request Ø 12 mm stainless steel roller



On request Ø 12 mm stainless steel roller



Contact blocks

63	<b>R</b>	FT 2A6315AH-E27	⊕ 1NC	FT 2A6315AH-E27H0	⊕ 1NC	FT 2A6316AH-E27	⊕ 1NC	FT 2A6316AH-E27H0	⊕ 1NC
64	<b>R</b>	FT 2A6415AH-E27	⊕ 2NC	FT 2A6415AH-E27H0	⊕ 2NC	FT 2A6416AH-E27	⊕ 2NC	FT 2A6416AH-E27H0	⊕ 2NC
Max speed	page 123 - type 2			page 123 - type 2		page 123 - type 2		page 123 - type 2	
Min. force	6 N (25 N ⊕)			6 N (25 N ⊕)		6 N (25 N ⊕)		6 N (25 N ⊕)	
Travel diagrams	page 124 - group 2d			page 124 - group 2d		page 124 - group 2d		page 124 - group 2d	

Accessories See page 119

All measures in the drawings are in mm

Contacts type:  
**R** = snap action

	With Ø 20 mm stainless steel roller on request	Other rollers available. See page 42	Other rollers available. See page 42	Other rollers available. See page 42
Contacts type:				
Contact blocks	63 <b>R</b> FT 2A6330AH-E27 1NC	FT 2A6331AH-E27 1NC	FT 2A6351AH-E27 1NC	FT 2A6352AH-E27 1NC
	64 <b>R</b> FT 2A6430AH-E27 2NC	FT 2A6431AH-E27 2NC	FT 2A6451AH-E27 2NC	FT 2A6452AH-E27 2NC
Max speed	page 123 - type 1	page 123 - type 1	page 123 - type 1	page 123 - type 1
Min. force	0.08 Nm (0.25 Nm $\rightarrow$ )	0.08 Nm (0.25 Nm $\rightarrow$ )	0.08 Nm (0.25 Nm $\rightarrow$ )	0.08 Nm (0.25 Nm $\rightarrow$ )
Travel diagrams	page 124 - group 5d	page 124 - group 5d	page 124 - group 5d	page 124 - group 5d

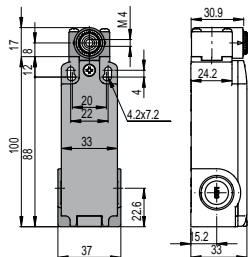
Contacts type:				
Contact blocks	63 <b>R</b> FT 2A6354AH-E27 1NC	FT 2A6354AH-E27R26 1NC	FT 2A6354AH-E27R5 1NC	
	64 <b>R</b> FT 2A6454AH-E27 2NC	FT 2A6454AH-E27R26 2NC	FT 2A6454AH-E27R5 2NC	
Max speed	page 123 - type 1	page 123 - type 1	page 123 - type 1	
Min. force	0.08 Nm (0.25 Nm $\rightarrow$ )	0.08 Nm (0.25 Nm $\rightarrow$ )	0.08 Nm (0.25 Nm $\rightarrow$ )	
Travel diagrams	page 124 - group 5d	page 124 - group 5d	page 124 - group 5d	

Contacts type:				
Contact blocks	63 <b>R</b> FT 2A6356AH-E27 1NC	FT 2A6356AH-E27R26 1NC	FT 2A6356AH-E27R27 1NC	FT 2A6356AH-E27R5 1NC
	64 <b>R</b> FT 2A6456AH-E27 2NC	FT 2A6456AH-E27R26 2NC	FT 2A6456AH-E27R27 2NC	FT 2A6456AH-E27R5 2NC
Max speed	page 123 - type 1	page 123 - type 1	page 123 - type 1	page 123 - type 1
Min. force	0.08 Nm (0.25 Nm $\rightarrow$ )	0.08 Nm (0.25 Nm $\rightarrow$ )	0.08 Nm (0.25 Nm $\rightarrow$ )	0.08 Nm (0.25 Nm $\rightarrow$ )
Travel diagrams	page 124 - group 5d	page 124 - group 5d	page 124 - group 5d	page 124 - group 5d

## Position switches with revolving lever without actuator

Contacts type:

[R] = snap action

**IMPORTANT**

**For safety applications:** join only switches and actuators marked with symbol ⊕.

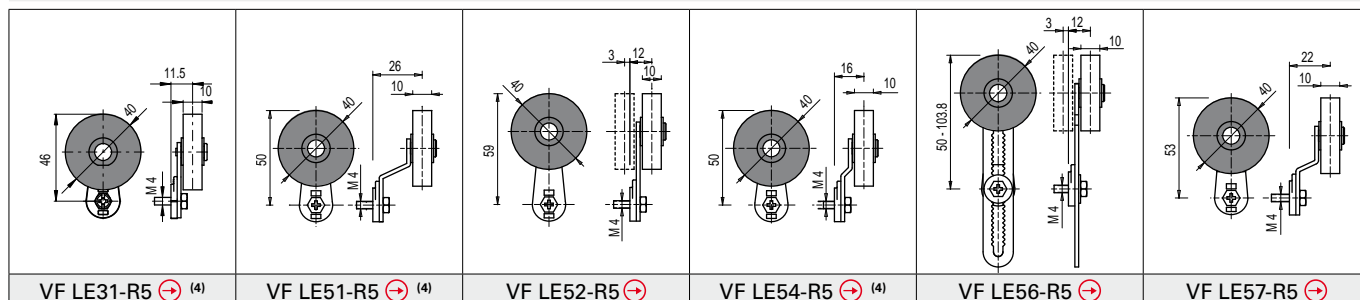
Contact blocks

63	[R]	FT 2A6338AH-E27	⊕ 1NC
64	[R]	FT 2A6438AH-E27	⊕ 2NC
Max speed	page 123 - type 2		
Min. force	0.08 Nm (0.25 Nm ⊕)		
Travel diagrams	page 124 - group 5d		

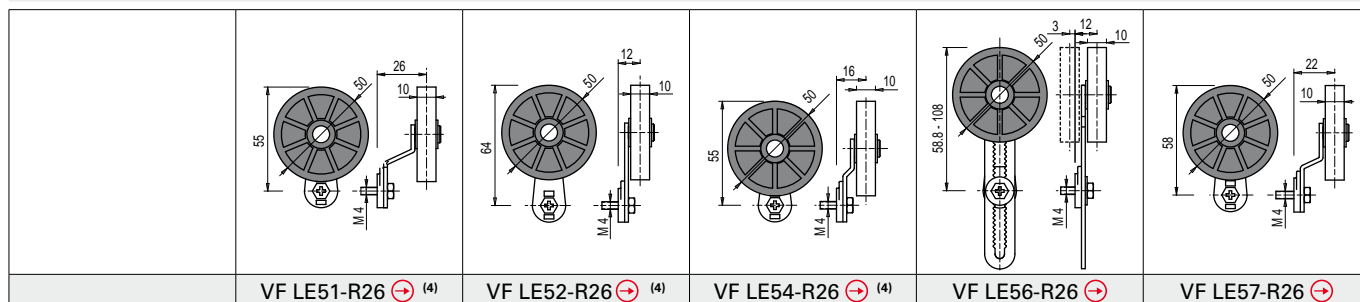
## Special loose actuators

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

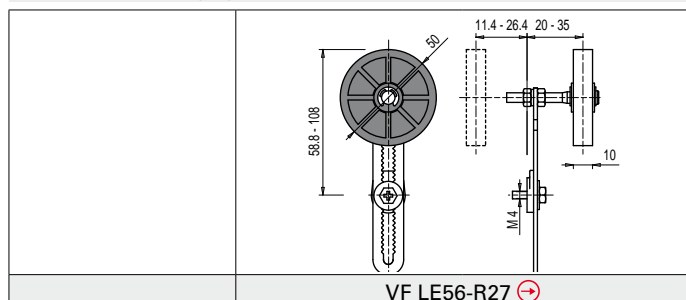
Ø 40 mm rubber rollers



Ø 50 mm rubber rollers



Ø 50 mm overhanging rubber rollers



- Only orders for multiple quantities of the packs are accepted.

- (4) The actuator cannot be oriented to inside direction because it will mechanically interfere with the switch head.