Safety handles **P-KUBE**

Description

To apply safety switches on machinery guards it is necessary to confront with practical issues relating to ease of installation, precise mechanical movements of the guard, the occurrence of critical environmental conditions. Moreover, frequently the guards are used by clumsy operators and in some cases even by persons not qualified or not familiar with the operative principles of machineries.

These problems become important when the guard is a door to a protected area. The physical dimensions of this type of guard and the related construction tolerances cause problems of alignment with the consequent risk of damage to the security devices. The possibility that one or more operators access physically within the protected zone introduces further problems of management and the analysis of the risks of the machine must forecast situations such as accidental trapping of an operator within the danger zone, sometimes even unauthorized operators as employees cleaners.

From its experience in this field, Pizzato Elettrica has created an innovative safety handle called P-KUBE with all the characteristics necessary to decrease the risks for the machinery manufacturers, make life simpler for the installers and make easier and more intuitive the operations for the operators getting in and out of the area.

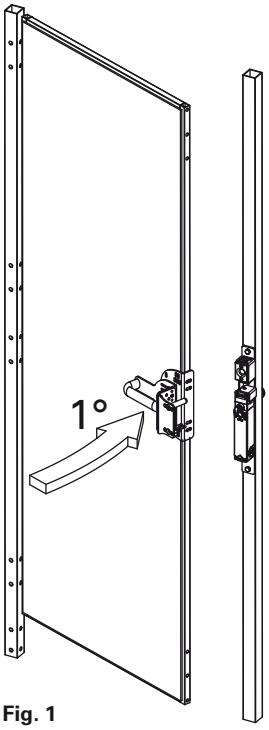


Fig. 1

The basic principle of this series of products provides a system of centering and mechanical stopping along the direction of movement of the door (Fig. 1).
This way the operator is allowed to go in and out of the danger area with simple and natural movements. Especially in the case of staff trapped, with people taken by panic or not instructed, to avoid complex movements to escape the danger zone greatly reduces the likelihood of accidents. The centering device is extremely sturdy and can also be used for heavy applications or in presence of inattentive staff.

These handles are designed for use with equally sturdy switches, capable of withstanding the heaviest axial loads, such as FG series switches with solenoid with holding force up to 2800 N or FD series metal switches. The safety handle mounted in combination with a FG or FD series switch, creates an integrated system of guards closure with the relative access control to dangerous areas, which prevents the restart of the machine in case of protection open.
Some versions are provided with a "lock-out" device to block the door in open position and to prevent an unexpected restart of the system when a maintenance man enter the area.
Thanks to their adjustable structure the handles can be applied to different types of doors or barriers: swing or sliding, right or left and on different profiles.

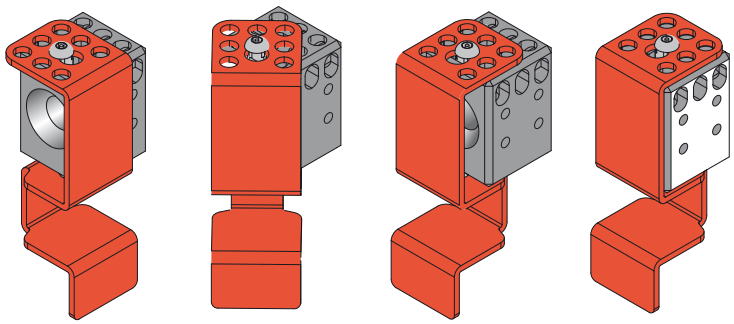
The handle is supplied with all the components ready to be fixed at the correct mechanical distances by means of anti-tampering screws. The installer should only assemble the parts according to the application, set the chosen switch (provided separately) and make centering adjustments.

Main features

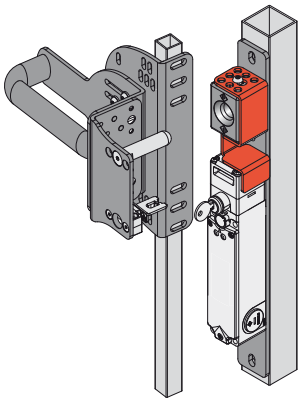
- Easy functioning. To open or close the door there are no specific sequences needed but only intuitive actions
- Handle provided with a self-centering sturdy metal pin in order to have the alignment between the jamb and the door. This device works also as a mechanical door stop.
- Possibility to assemble it on swing and sliding doors.
- Possibility to adjust the handle on 3 different axis through slotted brackets.
- Easy installation.
- Optional Lock-out device with padlocks to avoid the unwanted or accidental closing of the protection by the insertion of the actuator in the switch.
- In case of door blocked by a FG series switch provided with a release push button, you can open it in a single operation even if under strain (panic situation).
- Sturdy painted brackets (thickness of 4 and 5 mm), stainless steel components.
- Compatible with FD series safety switches with separate actuator and with FG series safety switches with solenoid.

LOCK OUT (patent pending)

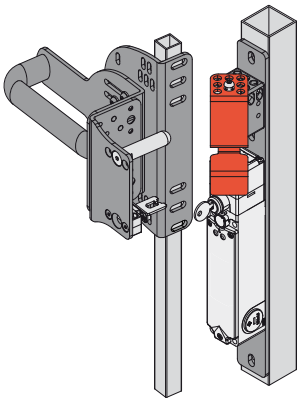
By means of one single operation, the “lock-out” device can close both the centring hole and the slot for the actuator fitted in the switch, therefore making it impossible for the door to be closed mechanically and for the switch contacts to be switched electrically.
The “lock-out” device translates the red cover in such a way that the holes found in the cover do not coincide with the holes found in the underlying metal block. This makes it impossible for the device to be padlocked in its open position. Hole diameter for padlocks 6.4 mm.



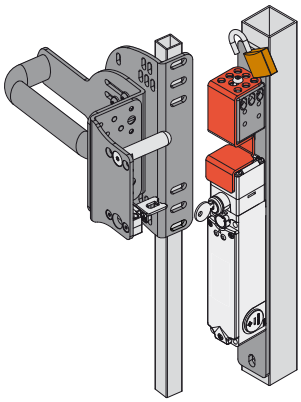
Working principle of the LOCK OUT device



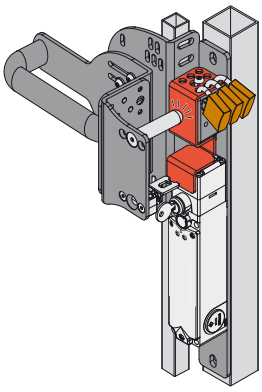
Lock-out device open
Safety switch accessible



Closing of lock-out device

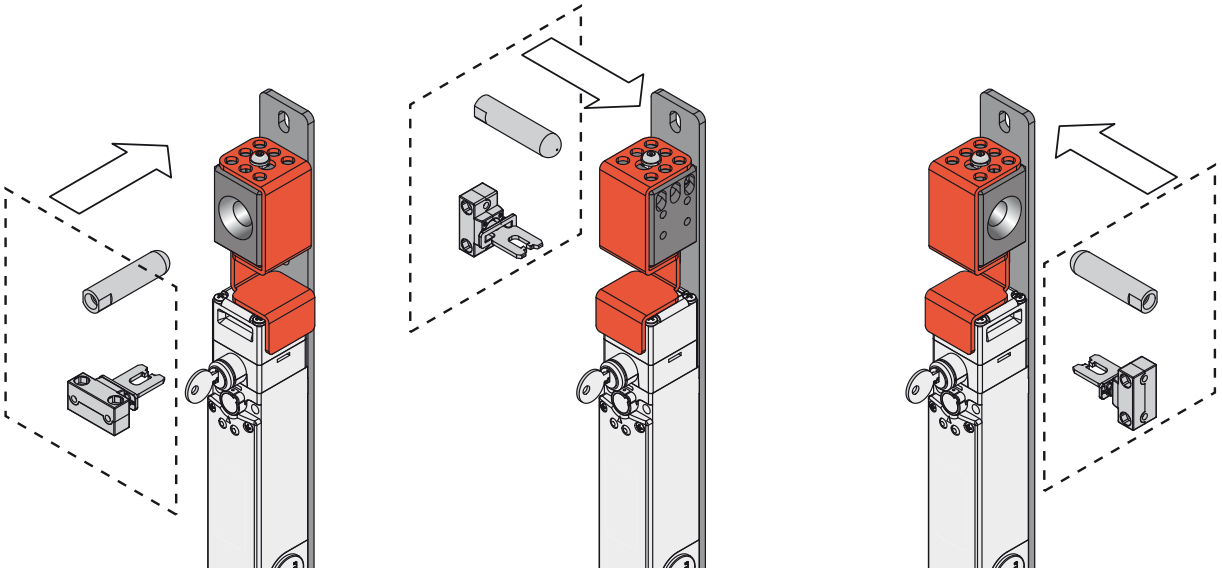


Lock-out device closed
Insertion of padlock



Lock-out device locked
Padlock locked
Safety switch not accessible

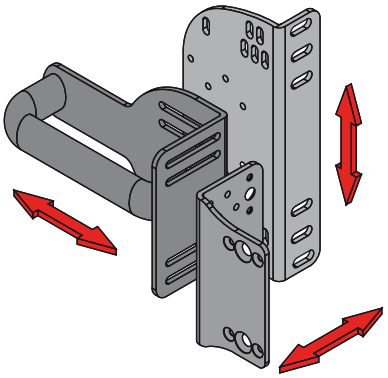
Turnable centering block

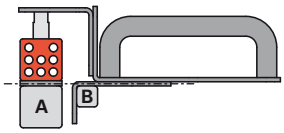


The symmetrical shape of the Lock-out device allows it to be applied on swing and sliding doors, both right and left, not altering either its centering function nor the possibility to apply one or more padlocks

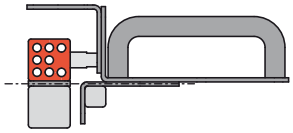
Adaptability and installation on different profiles

The slots on the three brackets applied on the door allow independent adjustments on 3 axis, in order to provide an extremely easy assembling without any modification on the protection structure. The adjustments allow to apply the handle on door profiles of different dimensions, from 40x40 mm to 60x60 mm **(A)** on posts and from 20x20 mm to 40x40 mm **(B)** on the door. The brackets are joined between them through anti-tampering screws.
Thanks to its vertical design, the bracket containing the safety switch and the Lock-out device doesn't stick out more than the posts.

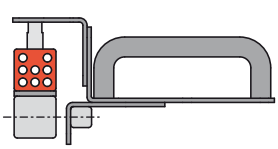




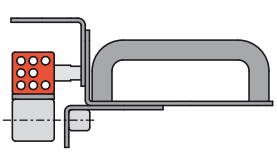
Swing door and jamb frontally aligned



Sliding door and jamb frontally aligned



Swing door and jamb axially aligned



Sliding door and jamb axially aligned

Code structure

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

VF AP-P11A-200P

LOCK OUT device	
1	LOCK OUT device
0	centering block only
2	LOCK OUT device with 100 N holding force

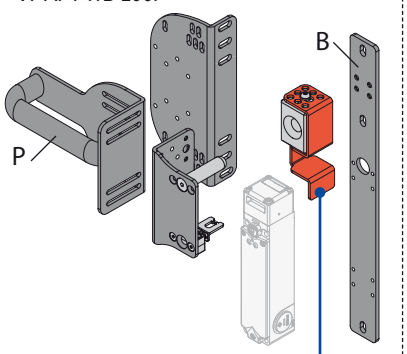
Handle	
P	plastic handle
M	metal handle

Brackets for installation purposes	
A	FD ••••
B	FG ••••••••
Z	without plate (B) for brackets FG
Y	without plate (A) for brackets FD

Plate configuration	
200	configuration with adjustable "L" plate for door profiles
201	configuration with adjustable plain plate for door profiles
202	configuration without adjustable plate for door profiles

Note: the handle is supplied complete with switch actuator and fixing screws for the handle, the switch, the actuator, and between the plates.

VF AP-P11B-200P



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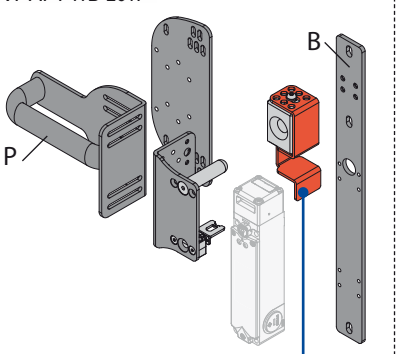
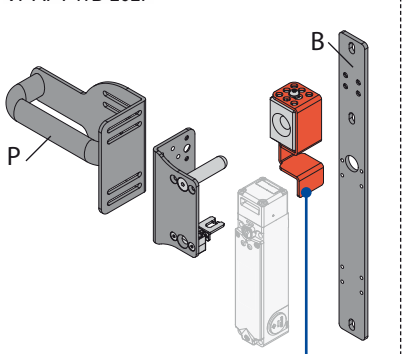
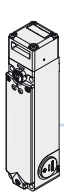


VF AP-P11B-202P

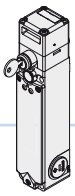




FG •••D1D••

Safety switch with solenoid and separate actuator

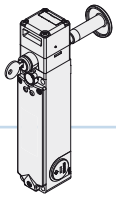
page 93



FG •••D5D••

Safety switch with solenoid and separate actuator. With key release

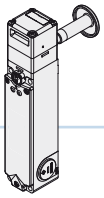
page 93



FG •••D6D••

Safety switch with solenoid and separate actuator. With key release and emergency release button

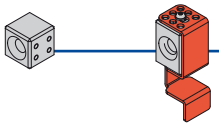
page 93



FG •••D7D••

Safety switch with solenoid and separate actuator. With emergency release button

page 93



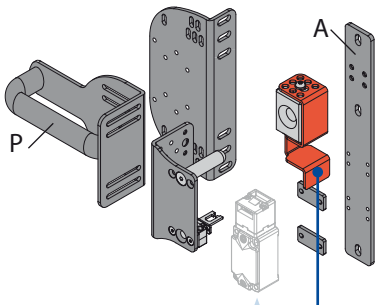
0

Centering block only

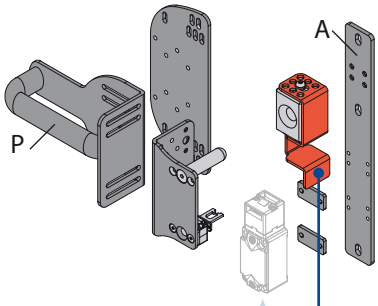
1

With LOCK OUT device

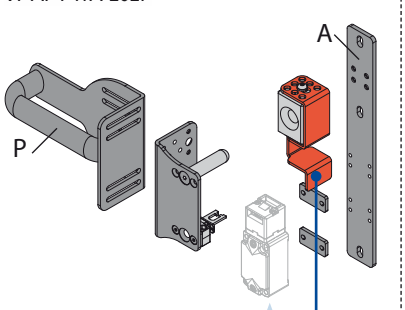
VF AP-P11A-200P

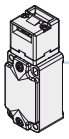


VF AP-P11A-201P



VF AP-P11A-202P

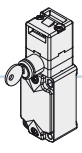




FD •93-M2

Safety switch with separate actuator

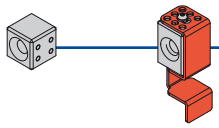
page 17



FD •99-M2

Safety switch with separate actuator and key release

page 135



0

Centering block only

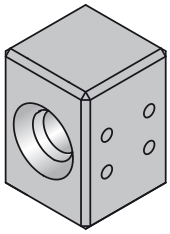
1

With LOCK OUT device

product options

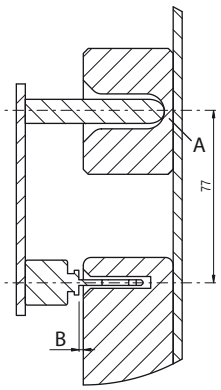
accessory sold separately

Sturdiness and simplicity



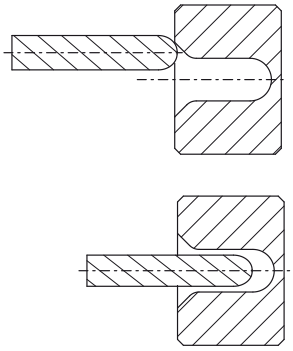
Its special design and materials allow the safety handle to be used in heavy applications or with sturdy wide-ranging (700 mm minimum) protections. In particular:
- 4 and 5 mm sturdy painted brackets.
- Stainless steel single body centering block
- Stainless steel centering pin with a large diameter.
- Actuator maximum holding force equal to 2500N (versions with FG switches).
- Stainless steel anti-tampering bolts and screws and elastic washers (safety inserts excluded, see page 147).

Mechanical stop



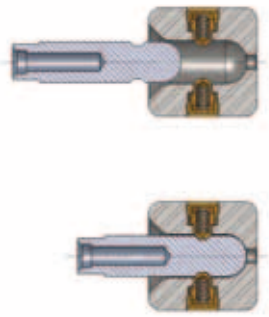
When the door closes the metal pin goes to the bottom of the centering block (A) before the actuator hits the housing of the switch, leaving a distance of security (B), thus avoiding any damage.
The metal pin only hits surfaces which transmit the shock to the structure but not to the switch, regardless of whether the lock-out device is open or closed.

Centering



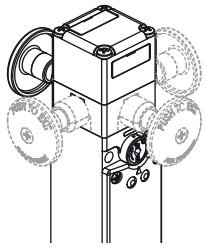
The centering of the pin on the block, both made of stainless steel, forces the alignment between actuator and switch, ensuring a proper insertion without risk of collisions.
It allows to safely realign the protection to the frame, even with heavy misalignment.

Holding force 100 N



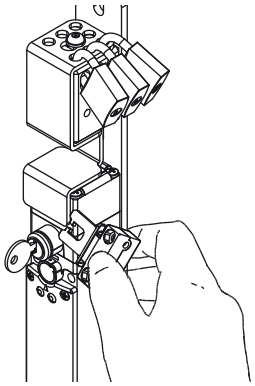
A version of the lock-out device with a holding force equal to 100 N is available on request. This new optional function keeps the handle in its limit-stop closed position, and makes it necessary to exert a moderately energetic pull to open the door. Ideal for all those applications where several doors are unlocked simultaneously, but only one is actually opened, this device keeps all the unlocked doors in position, preventing them from being opened by any vibration or gusts of wind. Machine restarting will therefore be very quick, since it will no longer be necessary to reposition to their limit stop the unlocked doors which may have been inadvertently opened.

Emergency release button (FG series)



For FG series switches with actuator lock is available an emergency push button which, oriented towards the inside of the machinery, allows the exit of the operator accidentally trapped, even in case of total blackout.
Pushing the button, it will be actuated the same function of the auxiliary release device. To reset the switch, just return the button to its initial position.
The emergency button can be rotated, is available with different lengths and it is fixed to the switch by a screw, so to allow the installation of the switch inside or outside the guards.

Bypassing with single actuators not possible

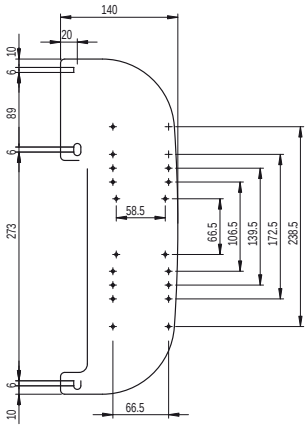


Once operated and locked the lock-out device, the actuator entry of the switch is no longer accessible.
An operator who has a second separate actuator can not by-pass the device block and operate the switch.

Shaped plate

Article	Description
VF AP-C001	Lateral shaped plate for button panel

The shaped plate can be applied under the switch fixing plate. It can be fitted at the right or at the left, it is supplied with holes and used to fasten the boxes for Pizzato Elettrica EROUND push-button panels by means of commercial self-threading screws. See ES series on page 105 of the Pizzato Elettrica general catalogue HMI.



Safety inserts kit

Kit with 3 pcs hexagonal ¼" safety inserts. Connection DIN 3126, C 6.35. Hexagonal impression with hole.
The P-Kube safety handle is provided with tamper-proof screws. Use of the 3 safety inserts of the kit is compulsory.

Article composition **VF AP-K01**

Qty	Description	⊙	Length
1	Hexagonal 1/4" insert ⬡ for M5 screws	3 mm	25 mm
1	Hexagonal 1/4" insert ⬡ for M6 screws	4 mm	25 mm
1	Hexagonal 1/4" insert ⬡ for M8 screws	5 mm	25 mm

Adhesive labels for emergency release button

Polycarbonate yellow adhesive, rectangular 300x32 mm, red writing. Applied on the internal part of the jamb it helps finding the emergency release button.

Article	Description and language	
VF AP-A1AGR01	PREMERE PER USCIRE	ita
VF AP-A1AGR02	PUSH TO EXIT	eng
VF AP-A1AGR04	ZUM OFFNEN DRUCKEN	deu
VF AP-A1AGR05	POUSSER POUR SORTIR	fra
VF AP-A1AGR06	PULSAR PARA SALIR	spa
VF AP-A1AGR07	НАЖАТЬ ДЛЯ ВЫХОДА	rus
VF AP-A1AGR08	NACISNĄĆ ABY WYJŚĆ	pol
VF AP-A1AGR09	PRESSIONAR PARA SAIR	por

Complete housings for shaped plate

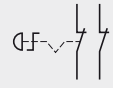
ES AC32010

Description	Features			Diagram
Button - 1NO E2 1PU2R421L35 Contacts 1x E2 CF10G2V1	flush, spring-return, green			
	pos. 2 /	pos. 3 1NO	pos. 1 /	
Button - 1NC E2 1PU2S321L1 Contacts 1x E2 CF01G2V1	projecting, spring-return, red			
	pos. 2 /	pos. 3 1NC ⊖	pos. 1 /	

ES AC32043

Description	Features			Diagram
Indicator light E2 1ILA210 LED unit E2 LF1A2V1	white White LED, 12 … 30 Vac/dc			
Button - 1NO E2 1PU2R4210 Contacts 1x E2 CF10G2V1	flush, spring-return, green			
	pos. 2 /	pos. 3 1NO	pos. 1 /	

ES AC33047

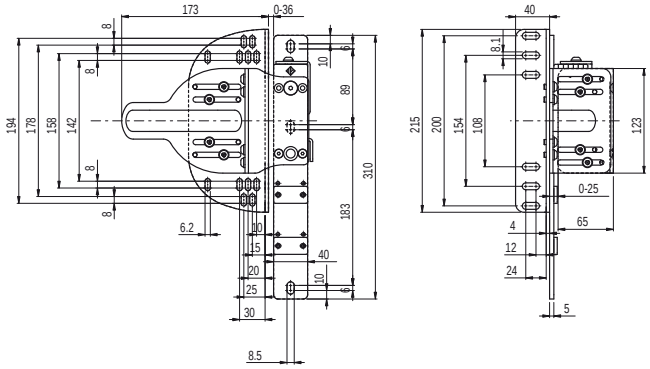
Description	Features			Diagram
Illuminated button - 1NO E2 1PL2R2210 LED unit E2 LF1A2V1 Contacts 1x E2 CP10G2V1	flush, spring-return, white White LED, 12 … 30 Vac/dc			
	pos. 2 /	pos. 3 LED	pos. 1 1NO	
Illuminated button - 1NO E2 1PL2R5210 LED unit E2 LF1A2V1 Contacts 1x E2 CP10G2V1	flush, spring-return, yellow White LED, 12 … 30 Vac/dc			
	pos. 2 /	pos. 3 LED	pos. 1 1NO	
Emergency button Ø 40 mm- 2NC E2 1PERZ4531 Contacts 2x E2 CF01G2V1	rotary release, Ø 40 mm, red			
	pos. 2 1NC ⊖	pos. 3 /	pos. 1 1NC ⊖	

Accessories See page 287

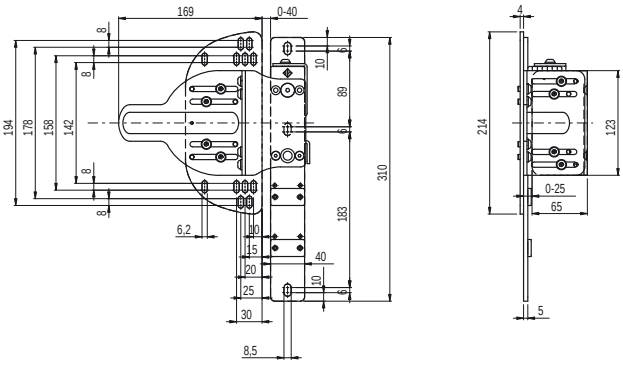
Dimensional drawings

All measures in the drawings are in mm

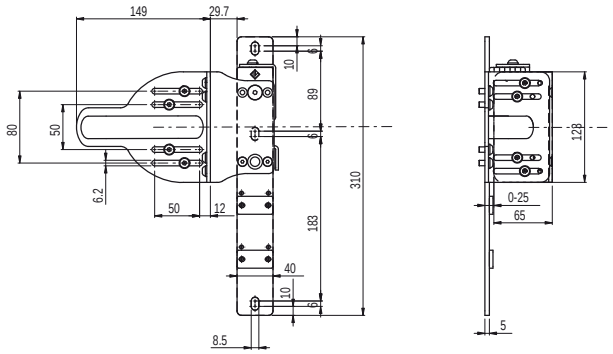
Safety handle VF AP-P1•A-200•



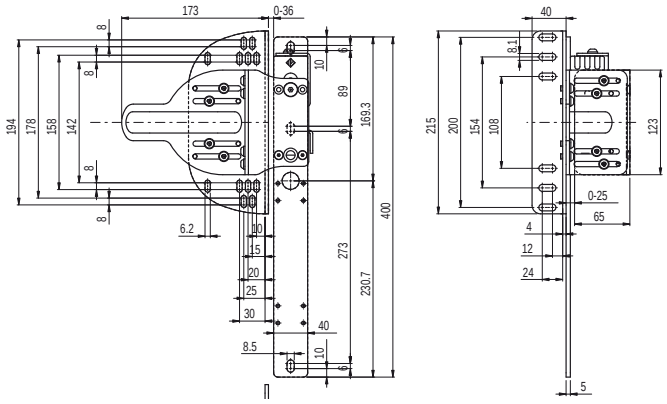
Safety handle VF AP-P1•A-201•



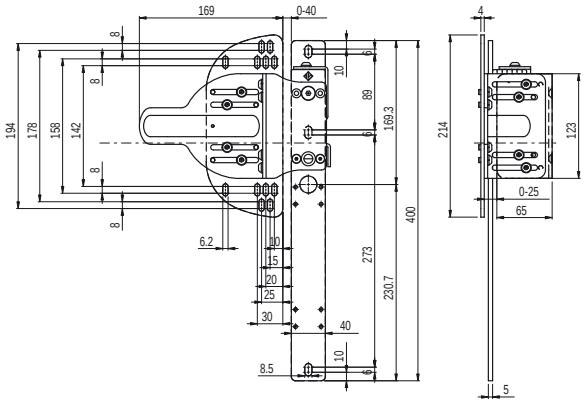
Safety handle VF AP-P1•A-202•



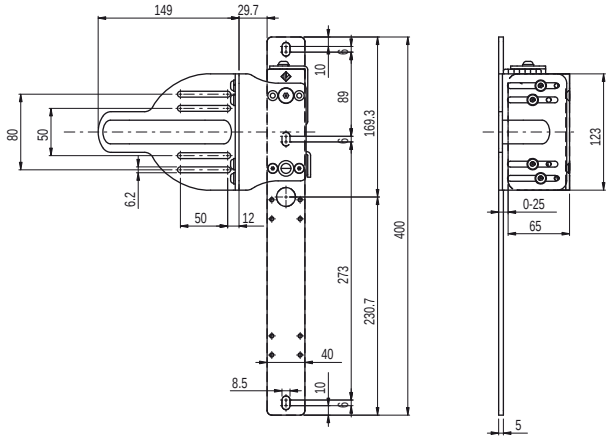
Safety handle VF AP-P1•B-200•



Safety handle VF AP-P1•B-201•



Safety handle VF AP-P1•B-202•



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

Safety handle **VF AP-S**

Description

To apply safety switches on machinery guards we must confront with practical issues relating to ease of installation, precise mechanical movements of the guard, the occurrence of critical environmental conditions. Moreover, frequently the guards are used by clumsy operators and in some cases even by persons not qualified or not familiar with the operative principles of machineries.
These problems become important when the guard is a door to a protected area. The physical dimensions of this type of guard and the related construction tolerances cause problems of alignment with the consequent risk of damage to the security devices.
The new safety handle VF AP-S arises from Pizzato Elettrica twenty-five-year experience in safety sector.
This integrated closing device can be applied on guards or protections of perimetric safety barriers, where it is required control on access to dangerous areas of a machinery or plant.

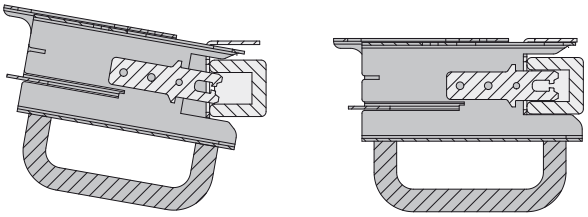
The new safety handle VF AP-S unlike other products on the market, combines its own characteristics of compactness and lightness deriving from its sliding movement, with its sturdiness, this last one being a characteristic present in superior models which, though, are heavier, bigger and structurally more complex.

Structure

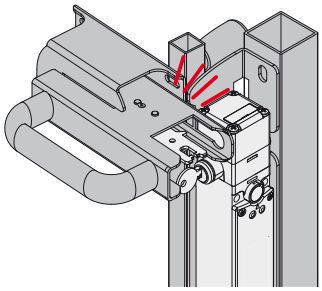
The light and compact VF AP-S handle has a metallic structure, galvanized and painted, and a plastic or aluminium handle ergonomically studied to give a more comfortable hold and to ease the use of the handle itself.
The absence of screws and detachable components prevent any tampering.

Centering

The "C" shape of the handle final part allows the device centering in case of misalignment between guard and frame. This way there is the best alignment between switch and actuator preventing any damage due to possible collisions.



Actuator and switch protection

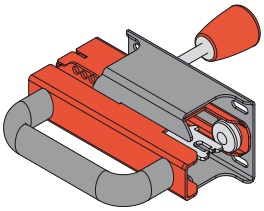


The structure of the handle and of the switch fixing bracket allows the positioning of both the switch and the actuator safe from dangerous collisions. Impacts due to wrong operation are completely discharged on the handle structure.

Handle lock positions

There is a snapping device which keeps the handle locked in two positions: when it is open, in order to increase the actuator holding force and when it's retracted to avoid unwanted opening due to machinery vibrations.

Internal lever for emergency opening

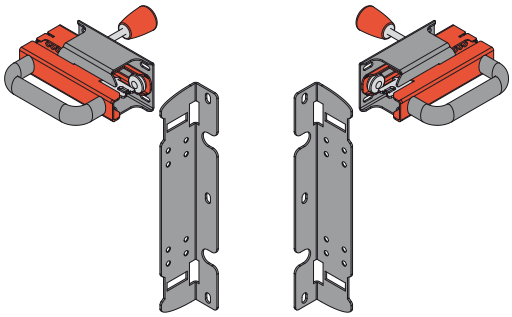


Optional lever for emergency opening from inside: it allows the exit of staff accidentally trapped inside the dangerous area. Only to be combined with switches without lock (e.g. FD •93-M2) or with emergency release button (e.g. FG •••D6D••).

Accessories See page 287

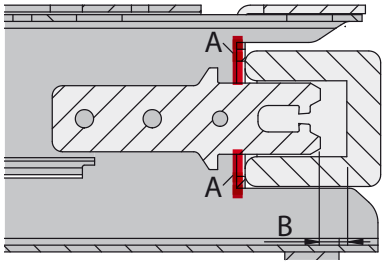
Flexibility during installation

The symmetrical design allows the application on swing and sliding doors with right or left closing, no adjustment needed.
The slotted brackets and the wide actuator extraction travel (60 mm) allow to assemble and adjust the device on different profiles.



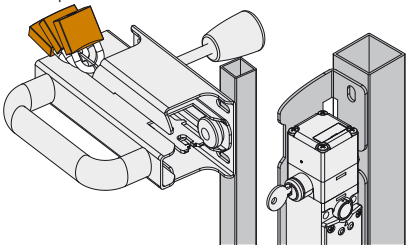
Mechanical stop

When closing the door there is a mechanical stop (A) whose function is to avoid possible impacts between actuator and switch leaving a safety distance (B) between these two elements and the switch housing.



Padlocking option

It is possible to apply up to 6 padlocks whose function is to prevent the door mechanical closing and consequently the casual switching of the contacts.
Hole diameter for padlocks 7 mm.



Code structure

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

VF AP-S13BP-200

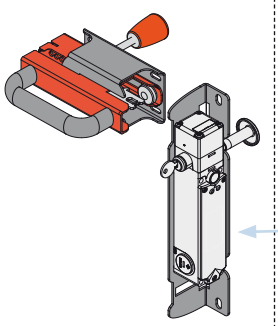
Brackets for installation purposes	
A	FD ••••
B	FG ••••••••

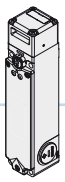
Internal lever for emergency opening	
P	internal lever for emergency opening
Z	without internal lever for emergency opening

Plate configuration	
001	without plate with aluminium handle
002	without plate with plastic handle
200	with plate for FG: with screwed aluminium handle
201	with plate for FD: with screwed aluminium handle
300	with plate for FG: with screwed plastic handle
301	with plate for FD: with screwed plastic handle

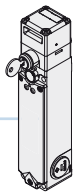
Note: the handle is supplied complete with switch actuator and fixing screws to affix the switch to the plate.

VF AP-S13BP-300

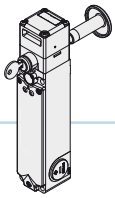




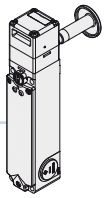
FG •••D1D••
Safety switch with solenoid and separate actuator
page 93



FG •••D5D••
Safety switch with solenoid and separate actuator.
With key release
page 93

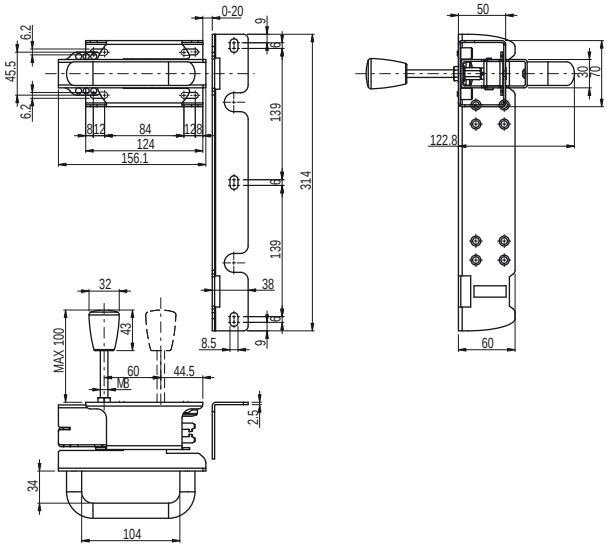


FG •••D6D••
Safety switch with solenoid and separate actuator.
With key release and emergency release button
page 93

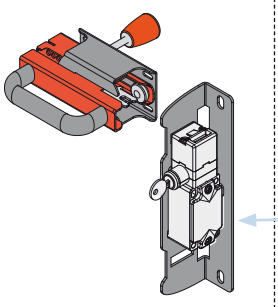


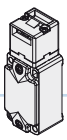
FG •••D7D••
Safety switch with solenoid and separate actuator.
With emergency release button
page 93

Safety handle **VF AP-S13BP-300**

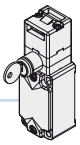


VF AP-S13AP-301



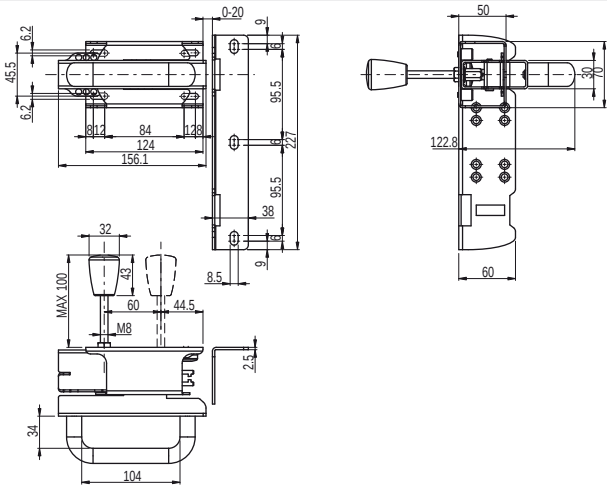


FD •93-M2
Safety switch with separate actuator
page 17



FD •99-M2
Safety switch with separate actuator and key release
page 135

Safety handle **VF AP-S13AP-301**



Safety switches FD and FG series

Safety switch with separate actuator
FD series

Main features
- Metal housing, one conduit entry
- Protection degree IP67
- 9 contact blocks available
- Versions with assembled M12 connector
- Versions with gold-plated silver contacts

Safety switch with solenoid and separate actuator **FG series**

Main features
- Actuator holding force 2800 N
- 30 contact blocks with 4 contacts
- Metal housing, three conduit entries M20
- Protection degree IP67
- Versions with key release and emergency release button
- Signalling LED
- Operation with energised or de-energised solenoid

Safety handles **P-KUBE 2**

Description

This integrated closing device can be applied on guards or protections of perimetric safety barriers, where it is required control on access to dangerous areas of a machinery or plant.
The new safety handle P-KUBE 2, which is installed in combination with the RFID safety switch with NG series block, provides an integrated locking system of the protections with related access control to dangerous areas; this new combination makes it possible to obtain, with a single device, an access control function with the maximum PL e safety level according to EN 13849-1 or SIL 3 according to EN 62061.

Maximum safety with a single device

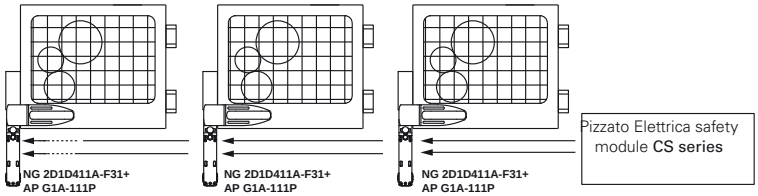
PL e + SIL 3

Constructed with redundant electronic technology, the NG series switches in combination with the P-KUBE 2 handle make it possible to create circuits having maximum PL e and SIL 3 safety levels by installing just one device on the protection. This avoids expensive wiring on the field and allows quicker installation. Inside the panel, the two electronic safety outputs must be connected to a safety module with OSSD inputs or to a safety PLC.

Connection of several switches in series

PL e + SIL 3

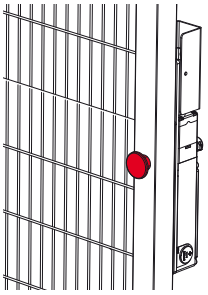
One of the most relevant features of the NG in combination with the P-KUBE 2 handle line is the optional connection in series of several switches, up to a maximum number of 32 devices, while maintaining the maximum PL e safety level prescribed by the EN 13849-1 standard and the SIL 3 safety level according to the EN 62061 standard.
This connection method is permitted in safety systems which, at the end of the chain, feature a safety module evaluating the outputs of last NG switch.
The fact that the PL e safety level can be maintained even with 32 switches connected in series indicates the presence of an extremely safe structure inside each individual device.



RFID actuators with high coding level

The NG series features an electronic system based on RFID technology to detect the actuator. This system gives a different coding to each actuator and makes it impossible to tamper with a device by using another actuator belonging to the same series. The actuators may have millions of different coding combinations, and are therefore classified as actuators with a high coding level, according to EN ISO 14119.

Emergency release button



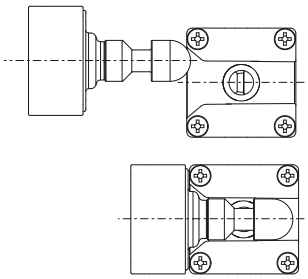
The release button, oriented towards inside the machinery, allows the exit of the operator accidentally trapped also in case of possible black-out and in any other state of operation. To reset the switch, just return the button to its initial position.
The anti-panic button can be freely lengthened by means of appropriate extensions, so that it can also be mounted on very thick uprights (see accessories).

High protection degree

IP69K
IP67

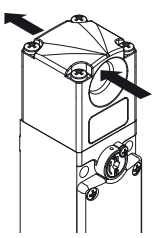
The NG series switches by Pizzato Elettrica, besides having an IP67 protection degree, have passed the test proving their IP69K protection degree according to the prescriptions established by the ISO 20653 standard.
Therefore they are suitable for use in machineries subjected to intense washing with high pressure and high temperature water jets and for any condition or environment where a particular attention for cleanness and hygiene is required, such as in food or pharmaceutical industry.

Centering



The switch is provided with a wide centering inlet for the actuator pin. Such solution makes it easier to align the actuator with the hole found in the head during the fitting stage. Moreover, this solution drastically reduces any probable collisions between the actuator and the switch, also allowing it to be fitted on inaccurate doors.

Dustproof



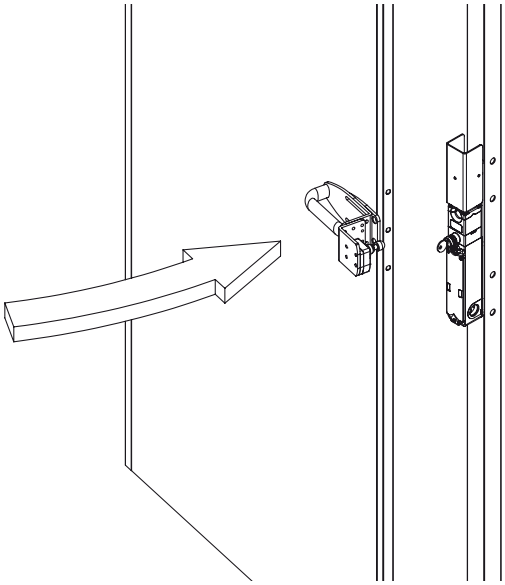
The switch is provided with a through hole for inserting the actuator and, thanks to this peculiarity, any dust which may go inside the actuator hole can always come out of the opposite side instead of being left there. Moreover, the lock pin is provided with an external diaphragm gasket which makes it suitable for any environment where dust is present.

Six LEDs for immediate diagnosis

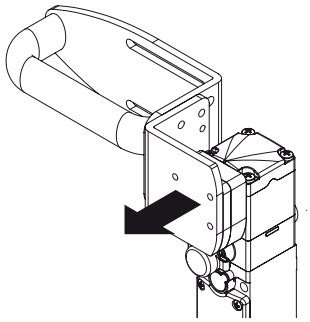
As the LEDs have been designed for quick immediate diagnosis, the status of each input and output is highlighted by one specific LED. This makes it possible to quickly identify the interruption points in the safe chain, which device is released, which door is opened and any errors inside the device. All that in a straightforward way without needing to decode complex blinking sequences.

Easy functioning

No specific action sequences are required to open or close the door, but just one opening/closing movement.
In case of door blocked by a handle provided with a release button, you can open it in a single operation even if under strain (panic situation).

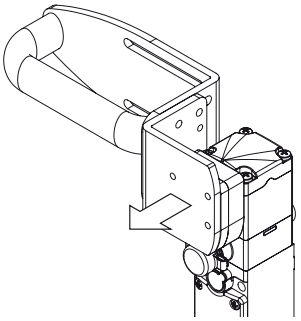


Holding force of the locked actuator



7500 N The sturdy interlocking system guarantees the actuator a maximum holding force F_{Zh} of 7500 N. This is one of the highest values available on the market today, making this device suitable for severe heavy-duty applications.

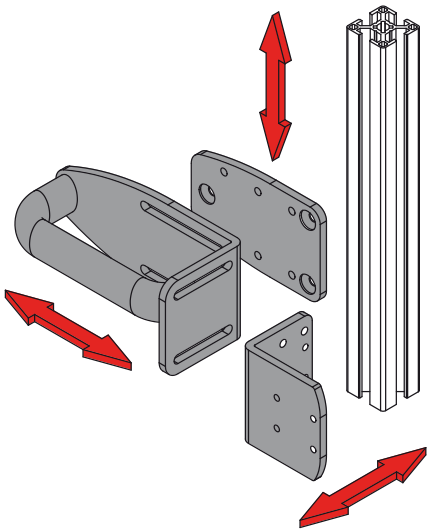
Holding force of the unlocked actuator

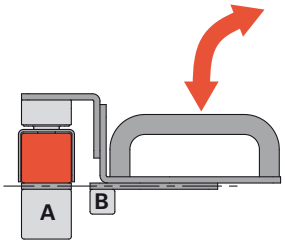


The inside of each switch features a device which holds the actuator in its closed position. Ideal for all those applications where several doors are unlocked simultaneously, but only one is actually opened. The device keeps all the unlocked doors in their position with a retaining force of 30 N~, stopping any vibrations or gusts of wind from opening them.

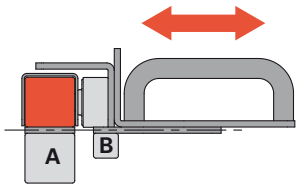
Sturdiness and easy installation

The handle has been manufactured with 5 mm thick brackets in painted steel. The slots found in the brackets enable independent adjustments, so as to guarantee extremely easy mounting, without needing to modify the existing protection structure.
The adjustments make it possible to apply the handle on aluminium profiles or steel frame having various dimensions, from 40x40 mm to 80x80 mm for the frame jamb **(A)** and from 20x20 mm to 40x40 mm for the door **(B).**
Mounting can be carried out indifferently on swing doors and sliding doors, either right-handed or left-handed.
The handle is supplied with all the components ready to be fixed at the correct distances by means of anti-tampering screws. The installer should only assemble the parts according to the application, set the chosen switch (provided separately) and make centering adjustments.

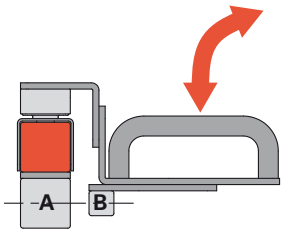




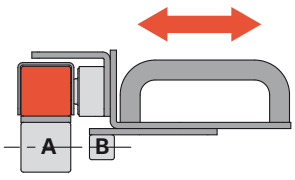
Swing door and jamb frontally aligned



Sliding door and jamb frontally aligned



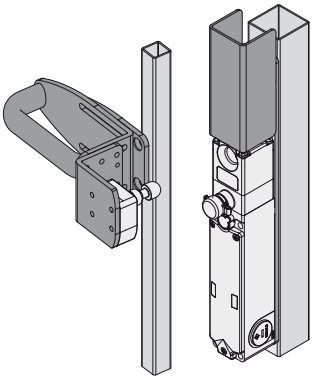
Swing door and jamb axially aligned



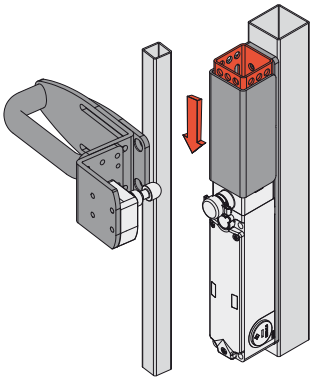
Sliding door and jamb axially aligned

Error-proof padlockable option

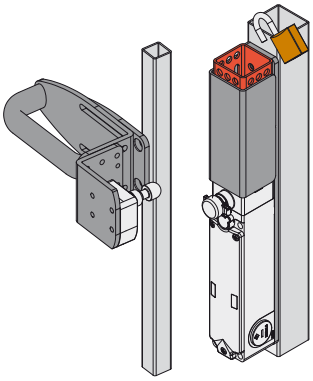
The lock-out device is activated by means of a simple vertical sliding action; such movement makes the padlock holes only accessible in a fully screened position, so as to exclude incorrect fitting of the padlocks. The padlock hole diameter is 7 mm and up to 9 padlocks can be fitted. Screening on 3 sides allows the lock-out device to be used, without any adaptation, on swing and sliding doors, either right or left-handed, also thanks to the fact that the switch head can be quickly rotated on all four sides by turning the fixing screws.



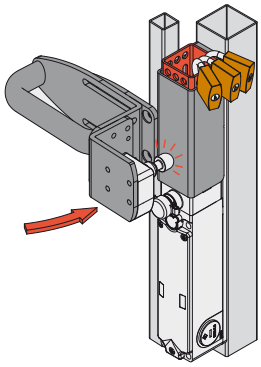
Lock-out device open.
Safety switch accessible.



Closing of lock-out device.



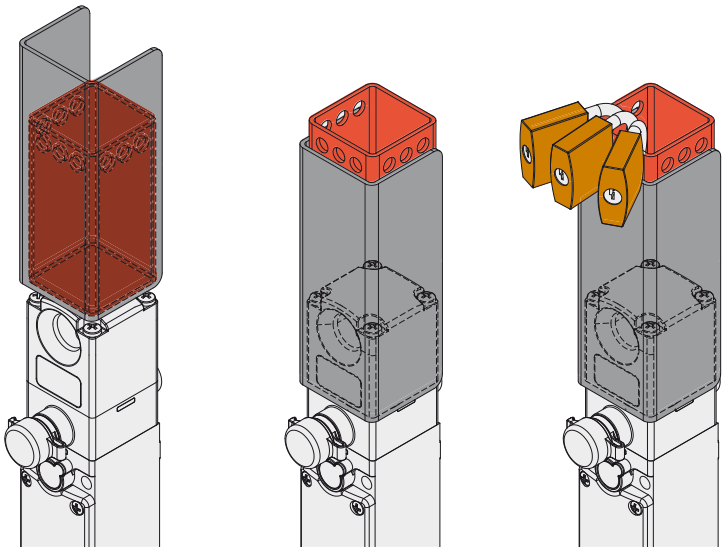
Lock-out device closed.
Insertion of padlock.



Lock-out device locked.
Padlock locked.
Safety switch not accessible.

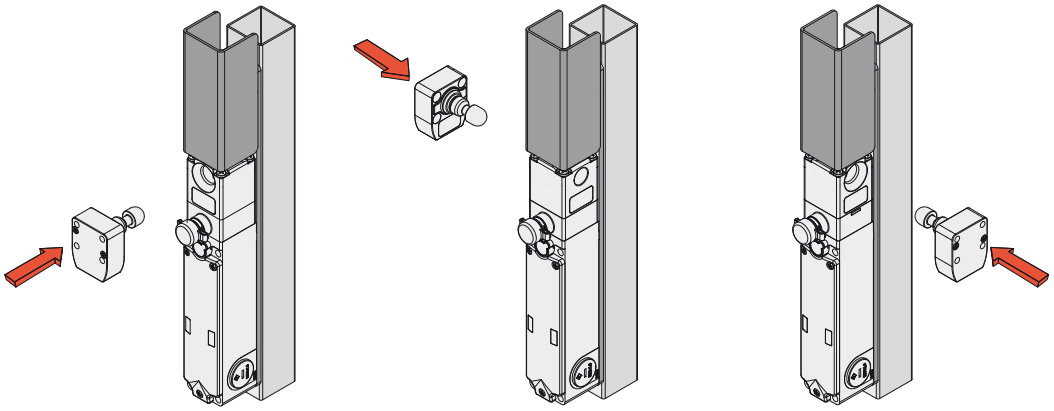
LOCK OUT: maximum safety with just one movement

With one single operation, the lock-out device can close the centring hole found in the NG switch as well as screen the RFID recognition system, therefore locking both mechanical door closing and electrical switch commutation, and consequently preventing any accidental closing of the guard.



Turning of the head

Screening on 3 sides allows the lock-out device to be used, without any adaptation, on swing and sliding doors, either right or left-handed.



Code structure

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

AP G1A-111P

LOCK OUT device	
1	LOCK OUT device
0	without LOCK OUT device

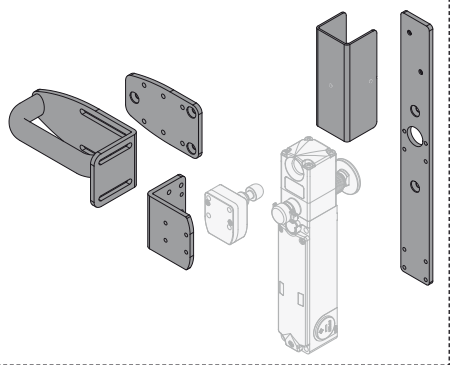
Handle	
P	plastic handle
M	metal handle
Z	without handle

Fixing on frame	
A	long plate
B	short plate
Z	without plate

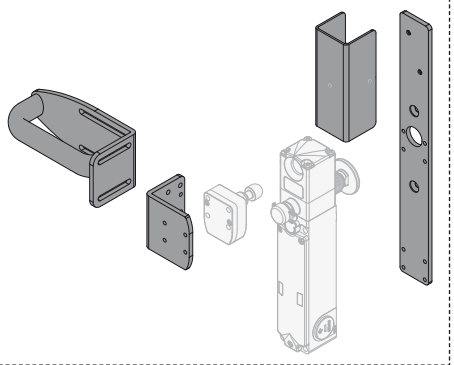
Configuration of plates on doors	
111	configuration with 3 adjustable plates
011	configuration with 2 adjustable plates
200	configuration with 1 fixed plate

Note: the handle is supplied complete with fixing screws for the handle, the switch, and between the plates.
For certain applications the LOCK OUT device is available separately: item AP G1Z-000Z.

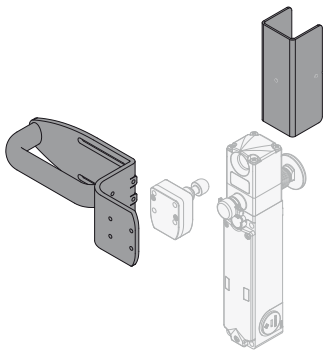
AP G1A-111P



AP G1A-011P

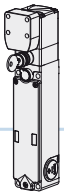


AP G1Z-200P



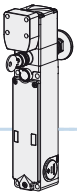
NG 2D1D411A-F31

Safety switch with lock, complete with separate actuator.



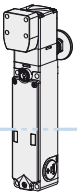
NG 2D5D411A-F31

Safety switch with lock, complete with separate actuator.
With key release



NG 2D6D411A-F31

Safety switch with lock, complete with separate actuator. With key release and emergency release button

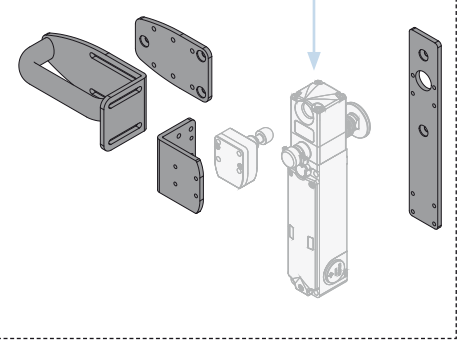


NG 2D7D411A-F31

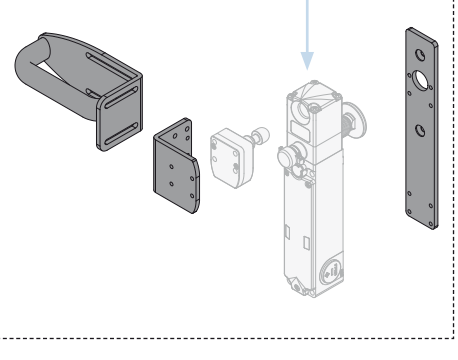
Safety switch with lock, complete with separate actuator.
With emergency release button

The NG series safety switch is also available in other versions. For further information see page 117.

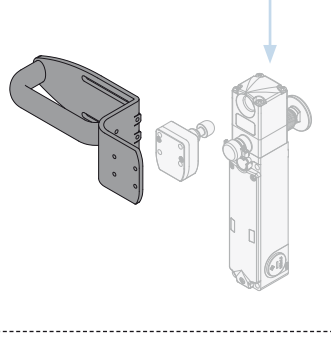
AP G0B-111P



AP G0B-011P



AP G0Z-200P

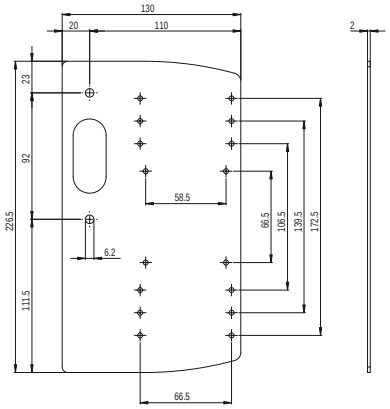


accessory sold separately

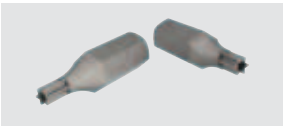
Shaped plate

Article	Description
AP A001	Lateral shaped plate for button panel

The shaped plate can be applied under the switch fixing plate. It can be fitted at the right or at the left, it is supplied with holes and used to fasten the boxes for Pizzato Elettrica EROUND push-button panels by means of commercial self-threading screws.



Safety screws bits



Bits for safety screws with pin with ¼" hexagonal connection

Article	Description
VF VAIT1T25	Bits for M5 screws with Torx T25 fitting
VF VAIT1T30	Bits for M6 screws with Torx T30 fitting

Adhesive labels for emergency release button

Polycarbonate yellow adhesive, rectangular 300x32 mm, red writing. Applied on the internal part of the jamb it helps finding the emergency release button.

Article	Description and language	
VF AP-A1AGR01	PREMERE PER USCIRE	ita
VF AP-A1AGR02	PUSH TO EXIT	eng
VF AP-A1AGR04	ZUM OFFNEN DRUCKEN	deu
VF AP-A1AGR05	POUSSER POUR SORTIR	fra
VF AP-A1AGR06	PULSAR PARA SALIR	spa
VF AP-A1AGR07	НАЖАТЬ ДЛЯ ВЫХОДА	rus
VF AP-A1AGR08	NACISNĄĆ ABY WYJŚĆ	pol
VF AP-A1AGR09	PRESSIONAR PARA SAIR	por

Complete housings for shaped plate

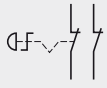
ES AC32010

Description	Features			Diagram
Button - 1NO E2 1PU2R421L35 Contacts 1x E2 CF10G2V1	flush, spring-return, green			
	pos. 2 /	pos. 3 1NO	pos. 1 /	
Button - 1NC E2 1PU2S321L1 Contacts 1x E2 CF01G2V1	projecting, spring-return, red			
	pos. 2 /	pos. 3 1NC ⊖	pos. 1 /	

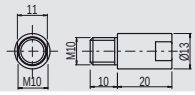
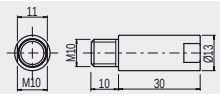
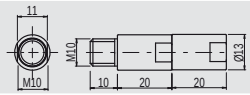
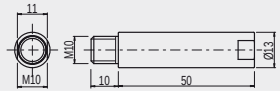
ES AC32043

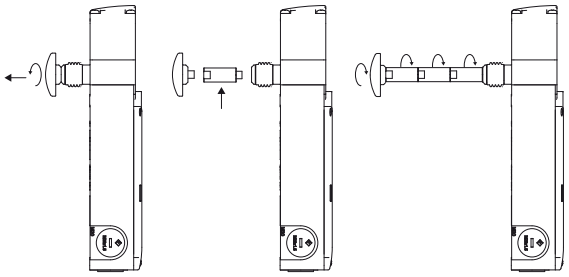
Description	Features			Diagram
Indicator light E2 1ILA210 LED unit E2 LF1A2V1	white White LED, 12 … 30 Vac/dc			
Button - 1NO E2 1PU2R4210 Contacts 1x E2 CF10G2V1	flush, spring-return, green			
	pos. 2 /	pos. 3 1NO	pos. 1 /	

ES AC33047

Description	Features			Diagram
Illuminated button - 1NO E2 1PL2R2210	flush, spring-return, white			
LED unit E2 LF1A2V1	White LED, 12 … 30 Vac/dc			
Contacts 1x E2 CP10G2V1	pos. 2 /	pos. 3 LED	pos. 1 1NO	
Illuminated button - 1NO E2 1PL2R5210	flush, spring-return, yellow			
LED unit E2 LF1A2V1	White LED, 12 … 30 Vac/dc			
Contacts 1x E2 CP10G2V1	pos. 2 /	pos. 3 LED	pos. 1 1NO	
Emergency button Ø 40 mm- 2NC E2 1PERZ4531	rotary release, Ø 40 mm, red			
Contacts 2x E2 CF01G2V1	pos. 2 1NC ⊖	pos. 3 /	pos. 1 1NC ⊖	

Extensions for release button

Article	Description	Drawing
VN NG-LP30	Metal extension for release button. For max. wall thickness of 30 mm	
VN NG-LP40	Metal extension for release button. For max. wall thickness of 40 mm	
VN NG-LP50	Metal extension for release button. For max. wall thickness of 50 mm	
VN NG-LP60	Metal extension for release button. For max. wall thickness of 60 mm	

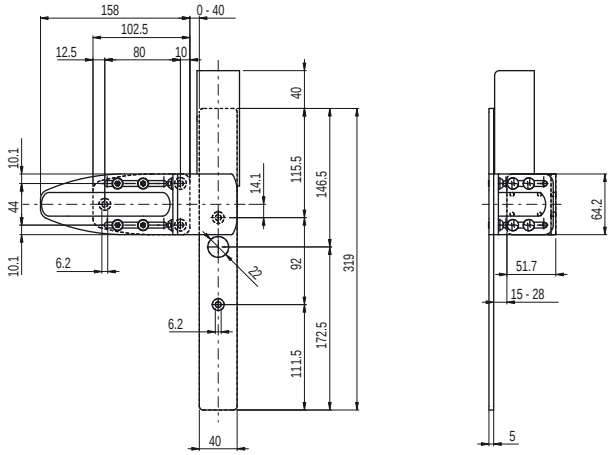


Metal extensions can be combined together until the required length is obtained. Do not exceed an overall length of 500 mm between the release button and the switch.

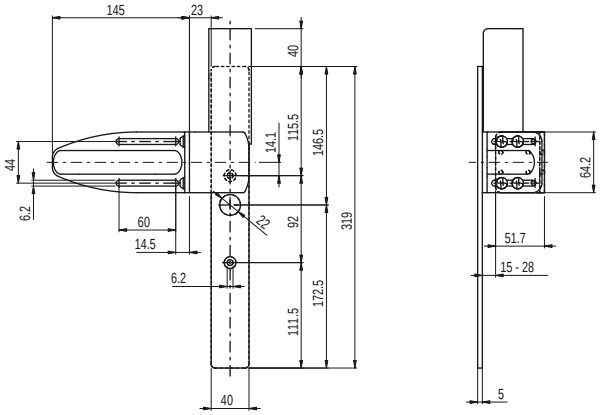
Dimensional drawings

All measures in the drawings are in mm

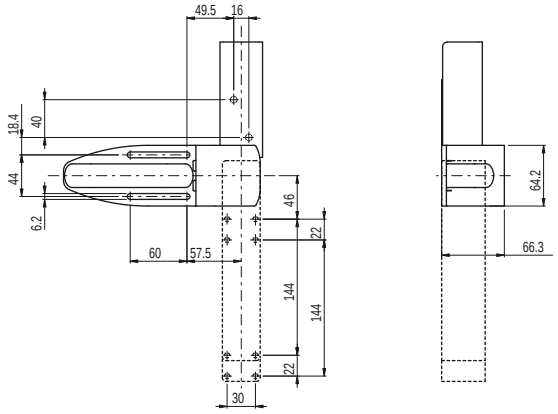
Safety handle AP G1A-111•



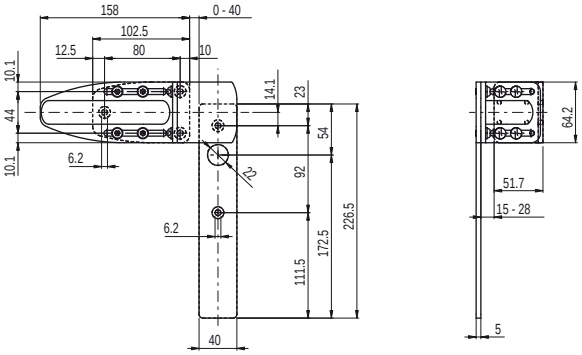
Safety handle AP G1A-011•



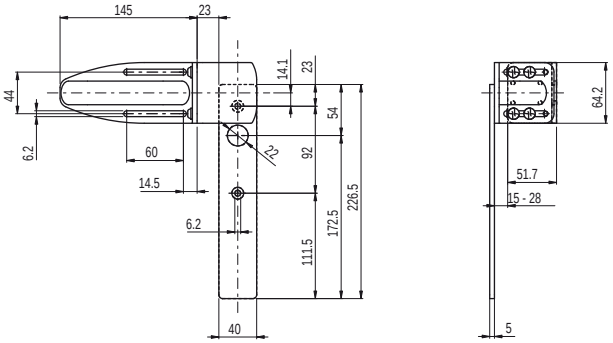
Safety handle AP G1Z-200•



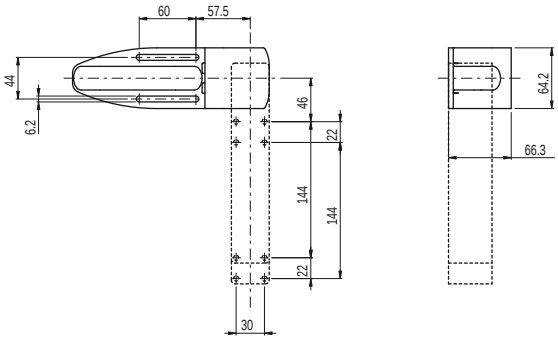
Safety handle AP G0B-111•



Safety handle AP G0B-011•



Safety handle AP G0Z-200•



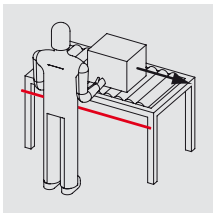
Items with code on **green** background are stock items

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

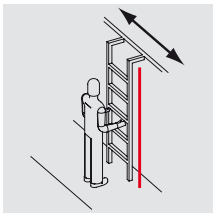
Introduction to **rope** safety switches

Description

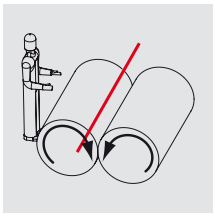
Pizzato Elettrica rope switches are the result of thirty years of experience and cooperation with the major industrial machine constructors. The range of products cover almost all industrial and many niche applications offering solutions for emergency stop as well as general start/stop commands. Emergency stop rope switches have been the first products to introduce in a small size, with patented solutions, the approval EN ISO 13850. Pizzato Elettrica offers also some accessories that have been designed and produced for safe and lasting utilisation, even under difficult environment conditions. Among the latest news we indicate the rope tightening and locking system type FAST (patented). These accessories have been designed to be easy to install as well as aesthetically pleasant for utilisation on machines of the last generation.



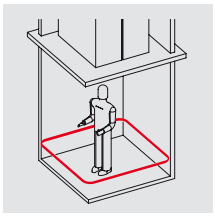
Conveyors



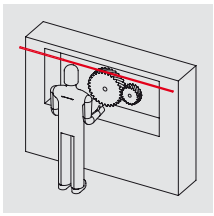
Moving stairs



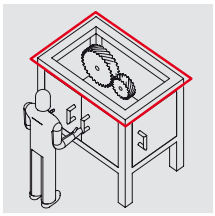
Benders



Lift compartment



Long bay machinery



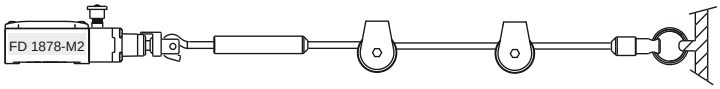
Complete perimeter protection

Rope switches are used to give different types of command:

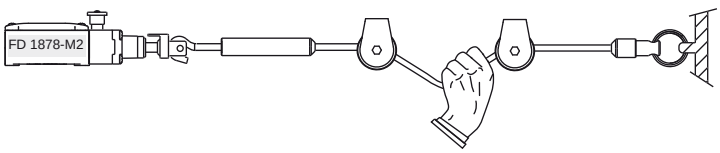
- **For stop commands** rope switches with positive contact opening are used, where the rope is tensioned in an intermediate position, so that even the control of its incidental breaking is possible.
- **For emergency stop** rope switches with positive contact opening in conformity with EN ISO 13850 are used, where the mechanical reset system that opens the contacts is independent from the rope actuating speed, regardless whether the rope is actuated or loosening. With this type of switch the reset system has to be restored by hand after each intervention.

	Prescriptions	Colours	How to install:
Stop commands  example: FD 1879-M2	Positive contact opening is required ⊖.	Black is the colour suggested by standards for stop operations.	 It is suggested to put the rope in tension, so it will be possible to notice its breaking or loosening.
Emergency stops  example: FD 1878-M2	Positive contact opening is required ⊖. Conformity to EN ISO 13850 is required.	For emergency stops red rope is compulsory. A yellow background is recommended (see function indicator).	 It is mandatory to put the rope in tension, so it will be possible to notice its breaking or loosening.

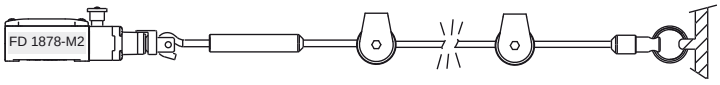
Detection of pulled or cut rope



Rope correctly mounted and in resting position, electric contacts closed.



Rope pulled by operator, electric contacts open.



Rope cut, electric contacts open.

New accessories for rope locking and tightening, FAST system

Pizzato Elettrica has designed and patented accessories specifically for faster installation of the rope of safety switches and to obtain an aesthetically more pleasant system.
The new accessories, in comparison with the traditional fixing system through carpentry material, have the following advantages:

- The installation is faster because only one screw is used for the fastening of every rope extremity, and the parts are prepared to ease the installation. Some practical tests have pointed out that the installation time is halved, reason for which it is named FAST.
- The system is aesthetically pleasant, because thread parts (which sometimes tear operators' dresses) and the rope extremities, usually fixed by heat-shrinkable sheath or adhesive tape, have been hidden.
- The rope is fixed without folds, thus reducing the rope stabilisation time and the possible re-calibrations of the rope tightening.

The system has been tested for correct function only if used with steel ropes of high quality like the ones Pizzato Elettrica usually supplies. See page 175.

Rope function indicator

These function indicators help in the visualization of the rope and its emergency function highlighting its presence as recommended by the standard EN ISO 13850 chap. 4.5.1 and 4.4.5.
They are fixed on the rope through screws and thanks to their handle-shape make the operation easier. The indicators can be supplied with different texts in several languages.

Indicator lights

Sometimes it is useful to have a visible local signal to identify when or which rope switch has been actuated. The Pizzato Elettrica signal lamps have been created for this requirement, and they have been designed to be directly fixed on the treaded entries of the switches These light indicators are sturdy, have IP67 protection degree and accept any BA9 electric bulb connection with power up to 3 W. The light indicators are decomposable in two parts for bulb replacement without removing the lamp holder from the switch, and their inner part can rotate in such a way that it can be wired without any risk of kinking the wires. Three different semitransparent or transparent cover colours are available.

The possibility to have rope switches with 3 pole contacts allows the building of plants where each switch has two NC contacts with positive opening for the safety chain, and one NO contact for the light indicator.

Safety springs

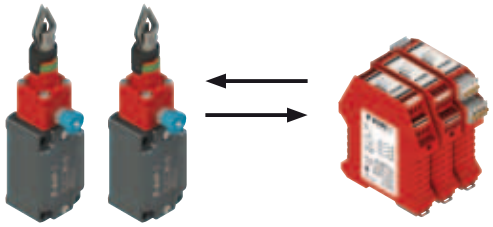
Some rope safety switch applications require ropes with particularly long rope lengths. With day/night changes of temperature, the ropes are lengthened or shortened in proportion to the rope length, to the change of temperature and to the coefficient of expansion of the steel. The changes of the rope length do not have linear repercussions on the switch, because the very long ropes are regularly sustained by supports that modify the linearity of the system. As the safety switches have to be installed stretching the rope inside the working area of the switch, it is possible that for particularly long ropes or particularly high changes of temperature there will be the unwanted activation of the switch. To reduce the effect of the changes of the temperature, it is possible to install a safety spring at the opposite extremity of the switch, so the rope elongation is equally divided between the two devices. The safety spring has been made to have an elastic coefficient equal to the spring inside the switch. The safety spring has also a stop ring that, in case of emergency actuation, let the rope traction to work only on the switch. See page 175.

Pulleys for rope in stainless steel

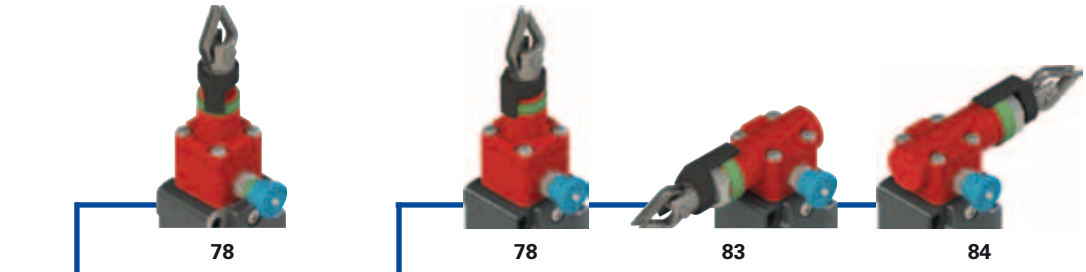
The pulleys in stainless steel are used in applications where the rope is too long, to support its length or bend its route. Two sturdy pulleys have been designed to avoid the deformation and allow the rope to remain in its seat also when it's activated energetically. The angular pulley has been designed with a particular shape and with a slotted fixing hole to make the installation easier and to maintain the rope to a correct distance from guard edges.

Safety modules

The rope safety switches and the mushroom-head push buttons inserted in the emergency chains can be connected with the Pizzato Elettrica safety modules in order to obtain safety circuits up to PL e in accordance with EN ISO 13849. Safety modules with instantaneous and delayed contacts are available for the realization of emergency circuits type 0 (immediate stop) or type 1 (monitored stop).

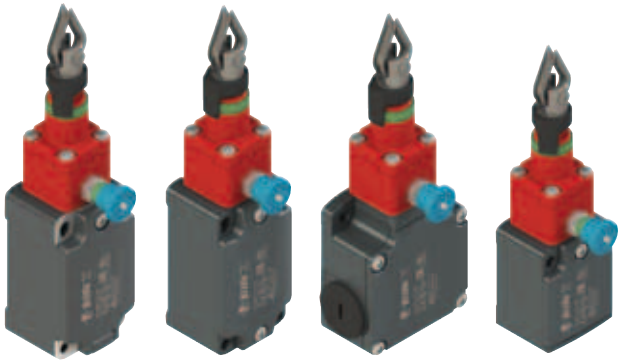


Selection diagram

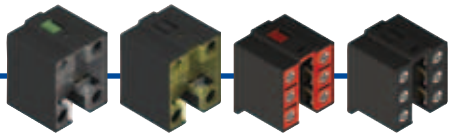


ACTUATORS

ACTUATORS



CONTACT BLOCKS

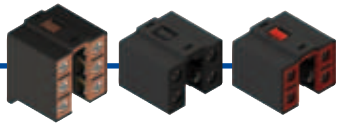


18 1NO+1NC, slow action

9 2NC slow action

20 1NO+2NC, slow action

21 3NC slow action



22 2NO+1NC, slow action

33 1NO+1NC, slow action

34 2NC slow action

CONDUIT ENTRIES

Threaded conduit entries (standard)

With cable gland

With M12 plastic connector

With M12 metal connector

product option

accessory sold separately

Code structure

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

article | options | options

FD 1878-E7GM2K50T6

Housing

FD	metal, one conduit entry
FL	metal, three conduit entries
FP	technopolymer, one conduit entry

Contact blocks

18	1NO+1NC, slow action
9	2NC, slow action
20	1NO+2NC, slow action
21	3NC, slow action
22	2NO+1NC, slow action
33	1NO+1NC, slow action
34	2NC, slow action

Actuating head

78	longitudinal head
83	left transversal head (FD-FL housing only)
84	right transversal head (FD-FL housing only)

Actuating force

	standard
E7	initial 20 N...final 40 N (only head 78)
E9	initial 13 N...final 75 N (only head 83-84)

Contact type

	silver contacts (standard)
G	silver contacts with 1 µm gold coating

Threaded conduit entry

M2	M20x1.5 (standard)
	PG 13.5

Pre-installed cable glands or connectors

	without cable gland or connector (standard)
K23	cable gland for cables Ø 6…Ø 12 mm
...	.....
K50	M12 metal connector, 5 poles
...	.....

Please contact our technical service for the complete list of possible combinations.

Ambient temperature

	-25°C … +80°C (standard)
T6	-40°C … +80°C

article | options | options

FC 3378-E7GM2K50T6

Housing

FC	metal, one conduit entry

Contact blocks

33	1NO+1NC, slow action
34	2NC, slow action

Actuating head

78	longitudinal head
83	left transversal head
84	right transversal head

Actuating force

	standard
E7	initial 20 N...final 40 N (only head 78)
E9	initial 13 N...final 75 N (only head 83-84)

Contact type

	silver contacts (standard)
G	silver contacts with 1 µm gold coating

Threaded conduit entry

M2	M20x1.5 (standard)
	PG 11

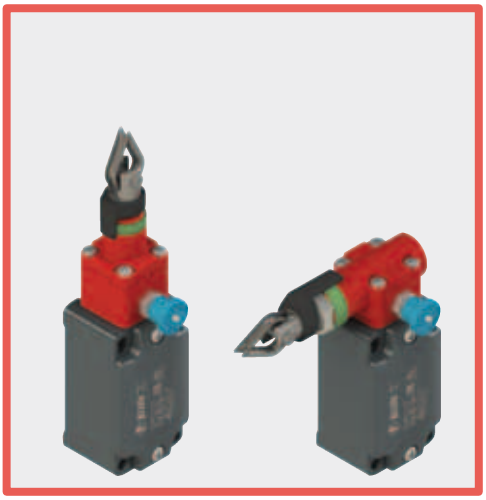
Pre-installed cable glands or connectors

	without cable gland (standard)
K23	cable gland for cables Ø 6…Ø 12 mm
K50	M12 metal connector, 5 poles

Ambient temperature

	-25°C … +80°C (standard)
T6	-40°C … +80°C

Safety **rope switch with reset** for emergency stop



Main features

- Metal or plastic housing, from one to three conduit entries
- Protection degree IP67
- In conformity with EN ISO 13850
- 7 contact blocks available
- Versions with vertical or horizontal actuation
- Versions with assembled M12 connector
- Versions with gold-plated silver contacts

Markings and quality marks:

IMQ approval: EG605
UL approval: E131787
CCC approval: 2007010305230000 (FD-FL-FC series)
2007010305230014 (FP series)
EAC approval: RU C-IT ДМ94.B.01024

Technical data

Housing

FP series housing made of glass fiber reinforced technopolymer, self-extinguishing, shock-proof and with double insulation: ⧈
FD, FL and FC series: metal housing, baked powder coating.
FD, FP, FC series: one threaded conduit entry: M20x1.5 (standard)
FL series - three threaded conduit entries: M20x1.5 (standard)
Protection degree: IP67 acc. to EN 60529 with cable gland of equal or higher protection degree

General data

For safety applications up to:	SIL 3 acc. to EN 62061 PL e acc. to EN ISO 13849-1
Safety parameters:	
B_{10d}:	2,000,000 for NC contacts
Service life:	20 years
Ambient temperature:	-25°C … +80°C
Max. actuation frequency:	1 cycle / 6 s
Mechanical endurance:	1 million operating cycles[1]
Max. actuation speed:	0.5 m/s
Min. actuation speed:	1 mm/s
Tightening torques for installation:	see pages 297-308

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

Max. cable cross section (flexible copper strands)

Contact blocks 20, 21, 22, 33, 34:	min.	1 x 0.34 mm²	(1 x AWG 22)
	max.	2 x 1.5 mm²	(2 x AWG 16)
Contact blocks 18, 9:	min.	1 x 0.5 mm²	(1 x AWG 20)
	max.	2 x 2.5 mm²	(2 x AWG 14)

In conformity with standards:
IEC 60947-5-1, EN 60947-5-1, EN 60947-1, IEC 60204-1, EN 60204-1, EN ISO 14119, EN ISO 12100, IEC 60529, EN 60529, EN ISO 13850, EN 418, UL 508, CSA 22.2 No.14 .
Approvals:
IEC 60947-5-1, UL 508, CSA 22.2 No.14 , GB14048.5-2001.

In conformity with the requirements of:
Low Voltage Directive 2006/95/EC, Machinery Directive 2006/42/EC and EMC Directive 2004/122/EC.
Positive contact opening in conformity with standards:
IEC 60947-5-1, EN 60947-5-1.

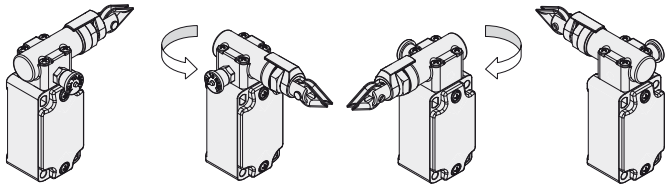
⚠ **If not expressly indicated in this chapter, for correct installation and utilization of all articles see chapter utilization requirements from page 297 to page 308.**

	Electrical data		Utilization category
without connector	Thermal current (Ith):	10 A	Alternating current: AC15 (50÷60 Hz)
	Rated insulation voltage (Ui):	500 Vac 600 Vdc 400 Vac 500 Vdc (contact blocks 20, 21, 22, 33, 34)	Ue (V) 250 400 500 Ie (A) 6 4 1
	Rated impulse withstand voltage (U_{imp}):	6 kV 4 kV (contact blocks 20, 21, 22, 33, 34)	Direct current: DC13
	Conditional short circuit current:	1000 A acc. to EN 60947-5-1	Ue (V) 24 125 250 Ie (A) 6 1.1 0.4
	Protection against short circuits:	type aM fuse 10 A 500 V	
	Pollution degree:	3	
with M12 connector 4 and 5 poles	Thermal current (Ith):	4 A	Alternating current: AC15 (50÷60 Hz)
	Rated insulation voltage (Ui):	250 Vac 300 Vdc	Ue (V) 24 120 250 Ie (A) 4 4 4
	Protection against short circuits:	type gG fuse 4 A 500 V	Direct current: DC13
	Pollution degree:	3	Ue (V) 24 125 250 Ie (A) 4 1.1 0.4
with M12 connector 8 poles	Thermal current (Ith):	2 A	Alternating current: AC15 (50÷60 Hz)
	Rated insulation voltage (Ui):	30 Vac 36 Vdc	Ue (V) 24 Ie (A) 2
	Protection against short circuits:	type gG fuse 2 A 500 V	Direct current: DC13
	Pollution degree:	3	Ue (V) 24 Ie (A) 2

Description

These rope operated safety switches are installed on machines or conveyor belts, to activate the emergency stop of the machine on every hand intervention on the rope, from any point. They allow cost savings on machines of medium-large size, where normally many emergency stop push buttons can be replaced by one single switch. Provided with **self-control function**, they constantly check their correct operation, signalling with the opening of the contacts an eventual loosening or breaking of the rope. These safety switches keep the contacts open after their activation, even if the rope is left free, until they are reset.

Orientable heads



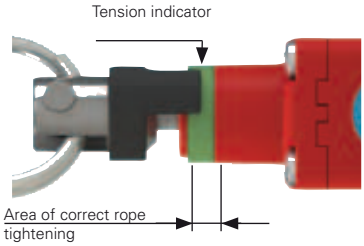
Removing the four fastening screws, in all switches, it is possible to rotate the head in 90° steps.

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.
They can be used for applications in cold stores, sterilisers and other devices with low temperature environments. Special materials that have been used to realize these versions, maintain unchanged their features also in these conditions, widening the installation possibilities.

Adjustment point indicator of the rope



All switches are provided with a green ring that shows the area of the correct tightening of the rope. The installer has only to tighten the rope until the black indicator will be in the middle of the green area. In this position it is possible to reset the switch, pulling the blue button, and to close the electrical safety contacts.
If a traction (or loosening) of the rope it is high enough to permit the black indicator to go outside the correct tension area, the safety contacts are opened and the reset device is triggered.

Laser engraving

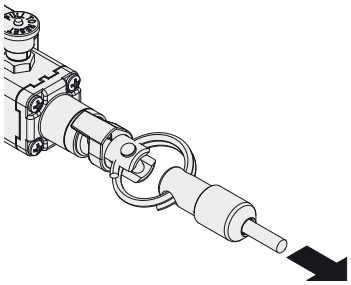
All devices are indelibly marked with a dedicated laser system that allows the marking to be also suitable for extreme environments. This system that does not use labels, prevents the loss of plate data and the marking is more resistant over time.

Protection degree IP67

IP67

These devices are designed to be used in the toughest environmental conditions and they pass the IP67 immersion test acc. to IEC 60529.
They can therefore be used in all environments where the maximum protection of the housing is required.

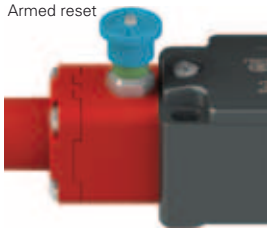
Reduced actuating force



These switches can be supplied with reduced hardness internal springs on request. This makes it possible to reduce the physical effort required to actuate the switch, whilst maintaining the actuating stroke of the electrical contacts unchanged. Particularly suitable for spans of reduced dimensions, they must always be matched to the suspension of the rope pulley.

Indicator for the state of the reset

Armed reset



Released reset

If the rope stretching indicator is in the correct operation area, it is possible to close the electric safety contacts pulling the blue reset button. The green ring signal allows to know the reset condition quickly.

Characteristics approved by IMQ

Rated insulation voltage (Ui): 500 Vac
400 Vac (for contact blocks 20, 21, 22, 33, 34)
Conventional free air thermal current (Ith): 10 A
Protection against short circuits: type aM fuse 10 A 500 V
Rated impulse withstand voltage (U_{imp}): 6 kV
4 kV (for contact blocks 20, 21, 22, 33, 34)
Protection degree of the housing: IP67
MV terminals (screw terminals)
Pollution degree 3
Utilization category: AC15
Operating voltage (Ue): 400 Vac (50 Hz)
Operating current (Ie): 3 A
Forms of the contact element: Zb, Y+Y, Y+Y+X, Y+Y+Y, Y+X+X
Positive opening of contacts on contact blocks 18, 9, 20, 21, 22, 33, 34

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

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

Characteristics approved by UL

Utilization categories Q300 (69 VA, 125 … 250 Vdc)
A600 (720 VA, 120 … 600 Vac)
Data of housing type 1, 4X "indoor use only", 12, 13
For all contact blocks use 60 or 75 °C copper (Cu) conductor, rigid or flexible, wire size AWG 12-14. Terminal tightening torque of 7.1 lb in (0.8 Nm).

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

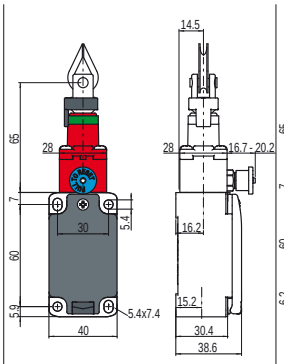
Please contact our technical service for the list of approved products.

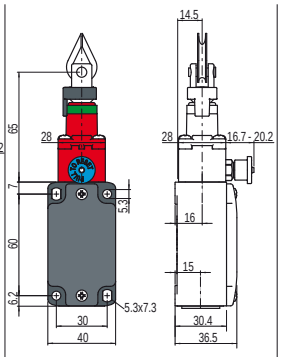
Dimensional drawings

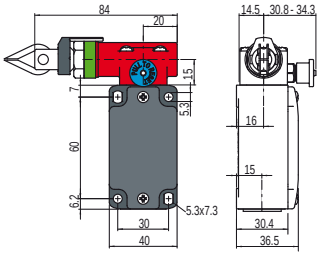
All measures in the drawings are in mm

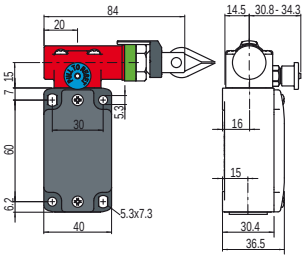
Contact type:

L = slow action



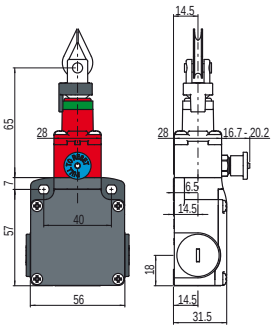


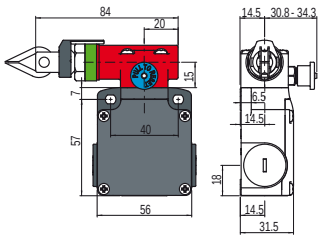


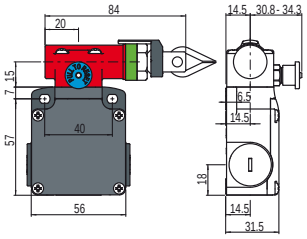


Contact blocks

18	L	FP 1878-M2 → 1NO+1NC	FD 1878-M2 → 1NO+1NC	FD 1883-M2 → 1NO+1NC	FD 1884-M2 → 1NO+1NC
9	L	FP 978-M2 → 2NC	FD 978-M2 → 2NC	FD 983-M2 → 2NC	FD 984-M2 → 2NC
20	L	FP 2078-M2 → 1NO+2NC	FD 2078-M2 → 1NO+2NC	FD 2083-M2 → 1NO+2NC	FD 2084-M2 → 1NO+2NC
21	L	FP 2178-M2 → 3NC	FD 2178-M2 → 3NC	FD 2183-M2 → 3NC	FD 2184-M2 → 3NC
22	L	FP 2278-M2 → 2NO+1NC	FD 2278-M2 → 2NO+1NC	FD 2283-M2 → 2NO+1NC	FD 2284-M2 → 2NO+1NC
33	L	FP 3378-M2 → 1NO+1NC	FD 3378-M2 → 1NO+1NC	FD 3383-M2 → 1NO+1NC	FD 3384-M2 → 1NO+1NC
34	L	FP 3478-M2 → 2NC	FD 3478-M2 → 2NC	FD 3483-M2 → 2NC	FD 3484-M2 → 2NC
Min. force		Initial 63 N...final 83 N (90 N →)	Initial 63 N...final 83 N (90 N →)	Initial 147 N...final 235 N (250 N →)	Initial 147 N...final 235 N (250 N →)
Travel diagrams		page 164 - group 1	page 164 - group 1	page 164 - group 2	page 164 - group 2







Contact blocks

18	L	FL 1878-M2 → 1NO+1NC	FL 1883-M2 → 1NO+1NC	FL 1884-M2 → 1NO+1NC
9	L	FL 978-M2 → 2NC	FL 983-M2 → 2NC	FL 984-M2 → 2NC
20	L	FL 2078-M2 → 1NO+2NC	FL 2083-M2 → 1NO+2NC	FL 2084-M2 → 1NO+2NC
21	L	FL 2178-M2 → 3NC	FL 2183-M2 → 3NC	FL 2184-M2 → 3NC
22	L	FL 2278-M2 → 2NO+1NC	FL 2283-M2 → 2NO+1NC	FL 2284-M2 → 2NO+1NC
33	L	FL 3378-M2 → 1NO+1NC	FL 3383-M2 → 1NO+1NC	FL 3384-M2 → 1NO+1NC
34	L	FL 3478-M2 → 2NC	FL 3483-M2 → 2NC	FL 3484-M2 → 2NC
Min. force		Initial 63 N...final 83 N (90 N →)	Initial 147 N...final 235 N (250 N →)	Initial 147 N...final 235 N (250 N →)
Travel diagrams		page 164 - group 1	page 164 - group 2	page 164 - group 2

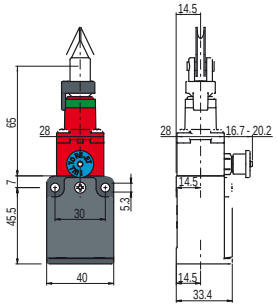
Items with code on **green** background are stock items

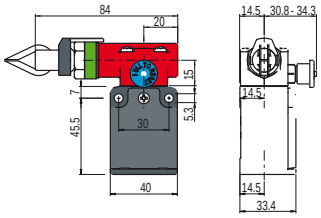
Accessories See page 287

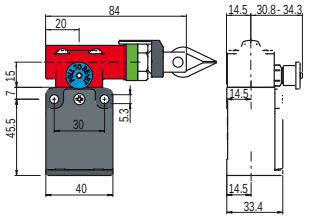
→ The 2D and 3D files are available at **www.pizzato.com**

Contact type:

L = slow action



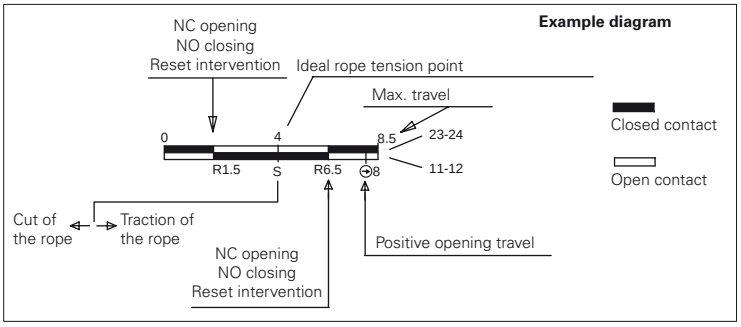




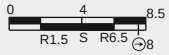
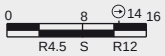
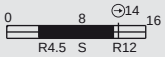
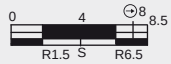
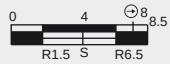
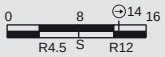
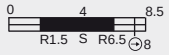
Contact blocks			
33 L	FC 3378-M2 ⊕ 1NO+1NC	FC 3383-M2 ⊕ 1NO+1NC	FC 3384-M2 ⊕ 1NO+1NC
34 L	FC 3478-M2 ⊕ 2NC	FC 3483-M2 ⊕ 2NC	FC 3484-M2 ⊕ 2NC
Min. force	Initial 63 N...final 83 N (90 N ⊕)	Initial 147 N...final 235 N (250 N ⊕)	Initial 147 N...final 235 N (250 N ⊕)
Travel diagrams	page 164 - group 1	page 164 - group 2	page 164 - group 2

How to read travel diagrams

All measures in the diagrams are in mm



Travel diagrams table

Contact blocks	Group 1	Group 2
18 1NO+1NC			
9 2NC			
20 1NO+2NC			
21 3NC			
22 2NO+1NC			
33 1NC+1NO			
34 2NC			

IMPORTANT:
In **safety applications**, actuate the switch **at least up to the positive opening travel** shown in the travel diagrams with symbol ⊕. Operate the switch **at least with the positive opening force**, indicated between brackets below each article, aside the minimum force value.

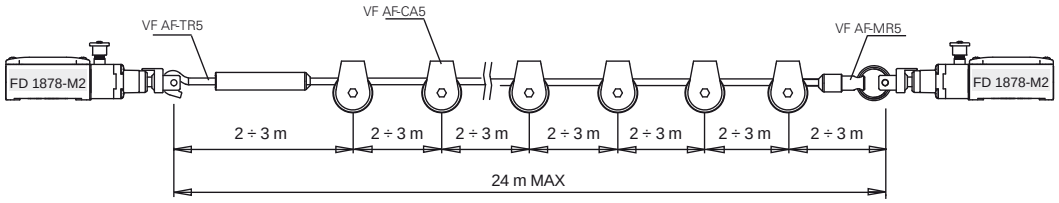
Accessories See page 287

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

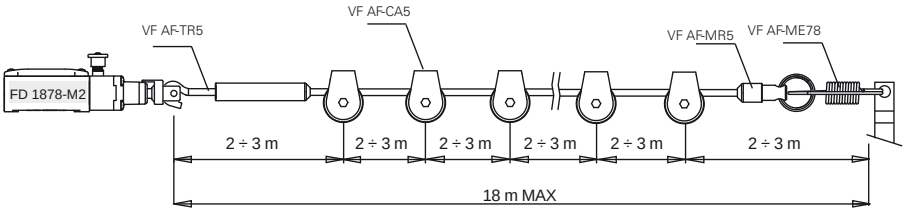
Safety **rope switch with reset** for emergency stop

Application examples and max. rope length for switches with longitudinal head

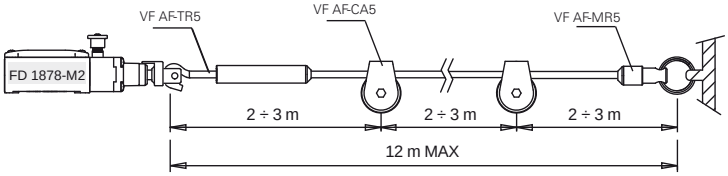
Example A



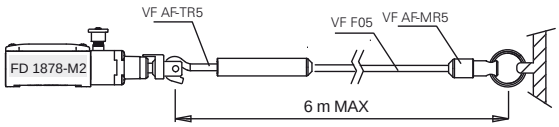
Example B



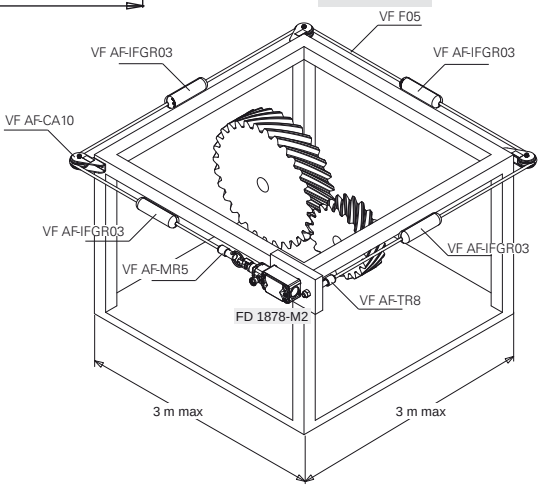
Example C



Example D

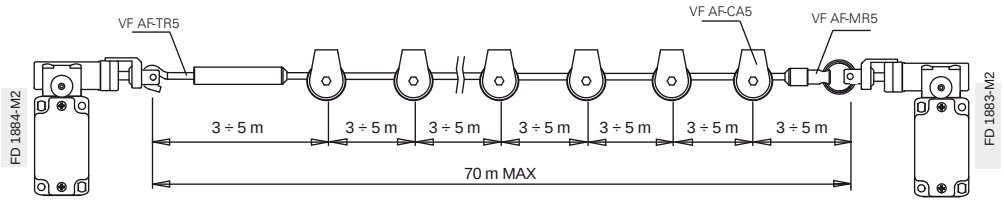


Example E

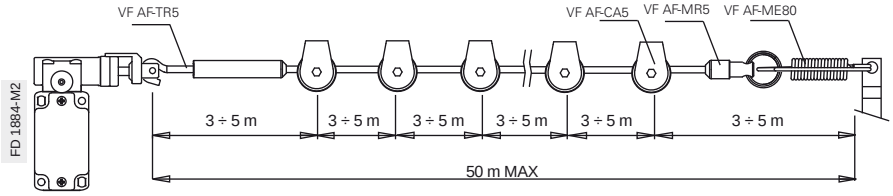


Application examples and max. rope length for switches with transversal head

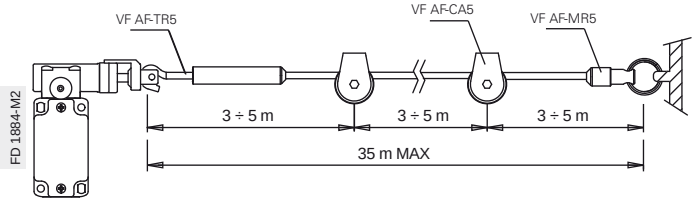
Example F



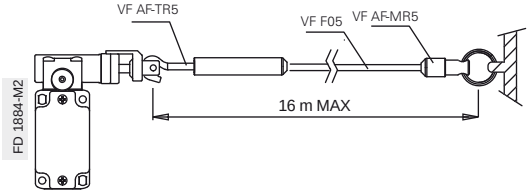
Example G



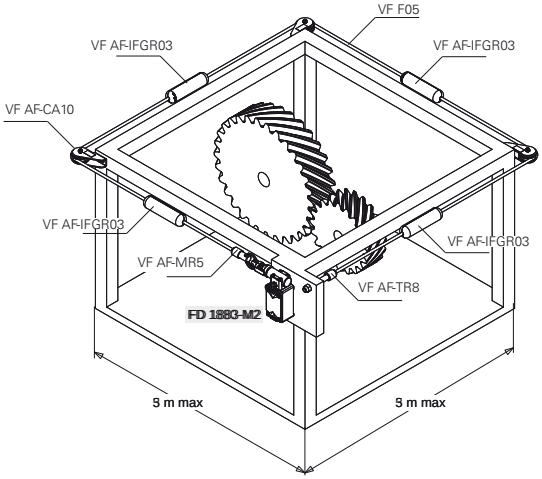
Example H



Example I

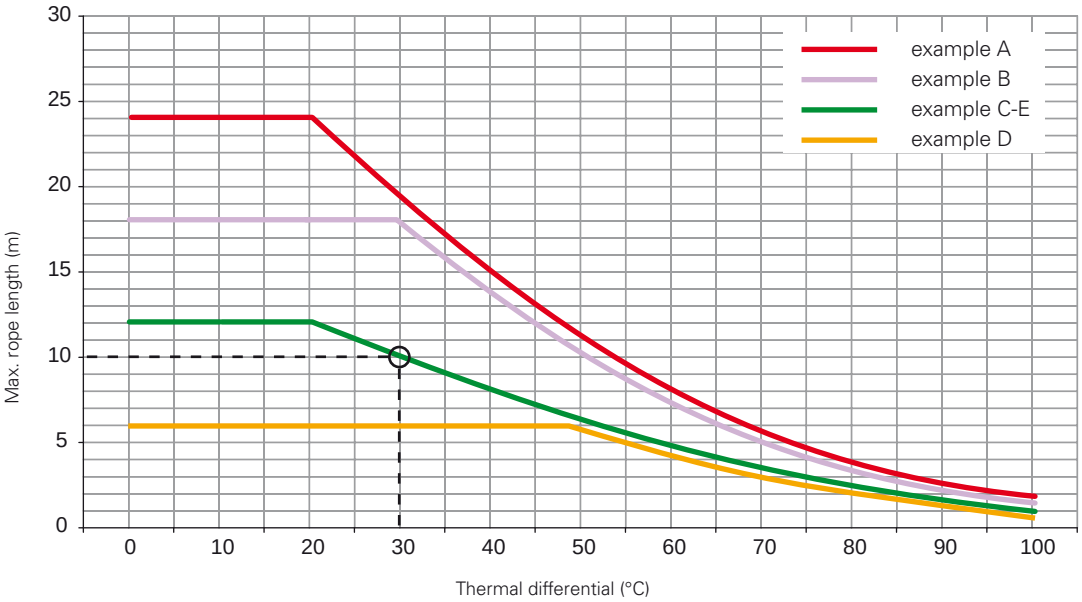


Example J



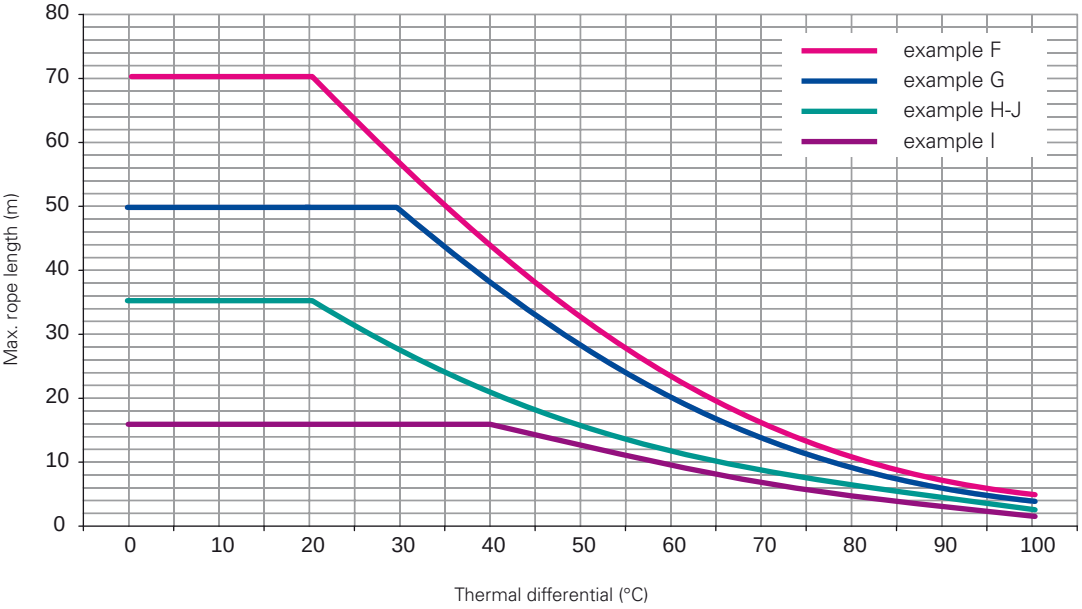
Max. rope length

Max. rope length for switches with longitudinal head



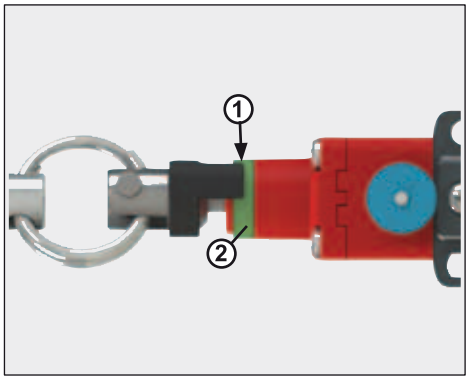
In the diagram, the suggested max. rope lengths with regard to changes of temperature (thermal differential) to which the switch is expected to be exposed in the working area are indicated. For instance, for an installation acc. to example C which expects a thermal differential of 30°C, a max. rope length of 10 meters is suggested.

Max. rope length for switches with transversal head

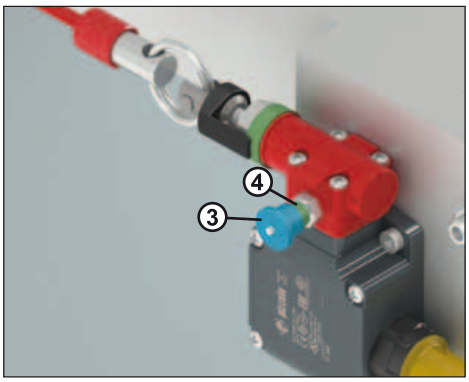


Important: The above data are guaranteed only using original rope and accessories. See page 175.

Adjustment of the operating point

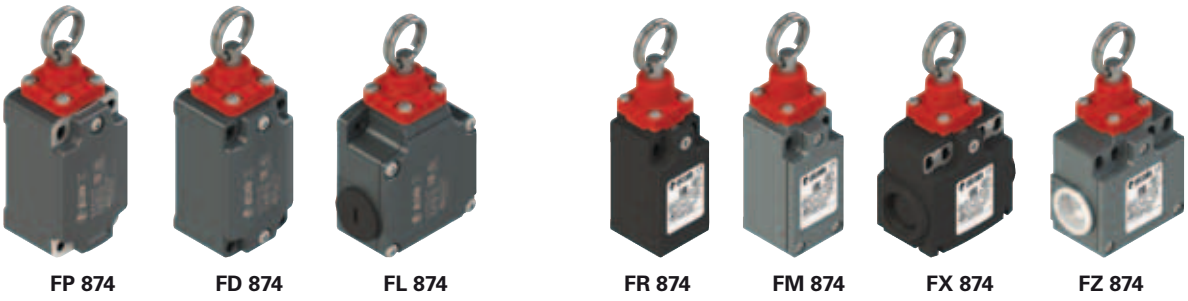


Tighten the rope connected to the switch, until the end of the indicator (1) reaches about the middle of the green ring (2).



Pull the knob (3) in order to close the safety contacts inside the switch. Below the knob a green ring (4) will be disclosed.

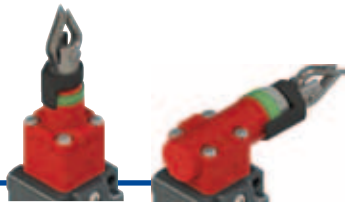
Selection diagram



FP 874 FD 874 FL 874 FR 874 FM 874 FX 874 FZ 874

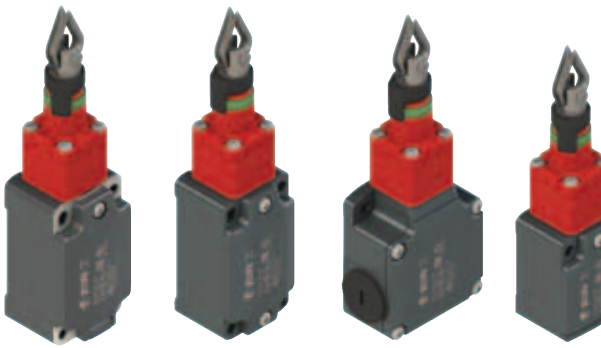
79

ACTUATORS



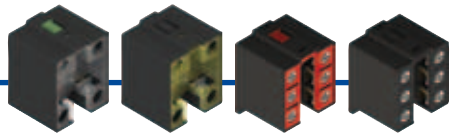
79 80

ACTUATORS



FP FD FL FC

CONTACT BLOCKS

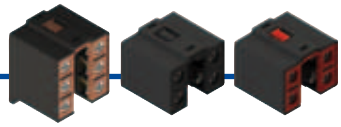


18 1NO+1NC, slow action

9 2NC slow action

20 1NO+2NC, slow action

21 3NC slow action



22 2NO+1NC, slow action

33 1NO+1NC, slow action

34 2NC slow action

CONDUIT ENTRIES

Threaded conduit entries (standard)

With cable gland

With M12 plastic connector

With M12 metal connector

product option

accessory sold separately

Code structure

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

article | options | options

FD 1879-E7GM2K50T6

Housing

FD	metal, one conduit entry
FL	metal, three conduit entries
FP	technopolymer, one conduit entry

Contact blocks

18	1NO+1NC, slow action
9	2NC, slow action
20	1NO+2NC, slow action
21	3NC, slow action
22	2NO+1NC, slow action
33	1NO+1NC, slow action
34	2NC, slow action

Actuating head

79	longitudinal head
80	transversal head (FD-FL housing only)

Actuating force

	standard
E7	initial 20 N...final 40 N (only head 79)
E9	initial 13 N...final 75 N (only head 80)

Contact type

	silver contacts (standard)
G	silver contacts with 1 µm gold coating

Threaded conduit entry

M2	M20x1.5 (standard)
	PG 13.5

Pre-installed cable glands or connectors

	without cable gland or connector (standard)
K23	cable gland for cables Ø 6...Ø 12 mm
...	.....
K50	M12 metal connector, 5 poles
...	.....

Please contact our technical service for the complete list of possible combinations.

Ambient temperature

	-25°C ... +80°C (standard)
T6	-40°C ... +80°C

article | options | options

FC 3379-E7GM2K50T6

Housing

FC	metal, one conduit entry

Contact blocks

33	1NO+1NC, slow action
34	2NC, slow action

Actuating head

79	longitudinal head
80	transversal head

Actuating force

	standard
E7	initial 20 N...final 40 N (only head 79)
E9	initial 13 N...final 75 N (only head 80)

Contact type

	silver contacts (standard)
G	silver contacts with 1 µm gold coating

Threaded conduit entry

M2	M20x1.5 (standard)
	PG 11

Pre-installed cable glands

	without cable gland (standard)
K23	cable gland for cables Ø 6...Ø 12 mm
K50	M12 metal connector, 5 poles

Ambient temperature

	-25°C ... +80°C (standard)
T6	-40°C ... +80°C

article | options | options

FD 874-E7GM2K50T6

Housing

FD	metal, one conduit entry
FL	metal, three conduit entries
FP	technopolymer, one conduit entry
FR	technopolymer, one conduit entry
FM	metal, one conduit entry
FX	technopolymer, two conduit entries
FZ	metal, two conduit entries

Actuating force

	standard
E7	initial 20 N...final 40 N

Contact type

	silver contacts (standard)
G	silver contacts with 1 µm gold coating

Threaded conduit entry

M2	M20x1.5 (standard)
M1	M16x1.5 (FR-FX housing only)
	PG 13.5
A	PG 11 (FR-FX housing only)

Pre-installed cable glands or connectors

	without cable gland or connector (standard)
K23	cable gland for cables Ø 6...Ø 12 mm
...	.....
K50	M12 metal connector, 5 poles
...	.....

Please contact our technical service for the complete list of possible combinations.

Ambient temperature

	-25°C ... +80°C (standard)
T6	-40°C ... +80°C

Safety **rope switch with reset** for simple stop

Main features

- Metal or plastic housing, from one to three conduit entries
- Protection degree IP67
- 7 contact blocks available
- Versions with vertical or horizontal actuation
- Versions with assembled M12 connector
- Versions with gold-plated silver contacts

Markings and quality marks:

IMQ approval: EG605 (FD-FL-FP-FC series)
EG610 (FR-FX series)
EG609 (FM-FZ series)
UL approval: E131787
CCC approval: 2007010305230000 (FD-FL-FC series)
2007010305230014 (FP series)
2007010305230013 (FR-FX series)
2007010305229998 (FM-FZ series)
EAC approval: RU C-IT ДМ94.B.01024

Technical data

Housing

FP, FR, FX series housing made of glass fiber reinforced technopolymer, self-extinguishing, shock-proof and with double insulation: ⧈
FD, FL, FC, FM, FZ series: metal housing, baked powder coating.
FD, FP, FC, FR, FM series - one threaded conduit entry: M20x1.5 (standard)
FX series - two knock-out threaded conduit entries: M20x1.5 (standard)
FZ series - two threaded conduit entries: M20x1.5 (standard)
FL series - three threaded conduit entries: M20x1.5 (standard)
Protection degree: IP67 acc. to EN 60529 with cable gland having equal or higher protection degree

General data

For safety applications up to:	SIL 3 acc. to EN 62061 PL e acc. to EN ISO 13849-1
Safety parameters:	
B_{10d}:	2,000,000 for NC contacts
Service life:	20 years
Ambient temperature:	-25°C … +80°C
Max. actuation frequency:	1 cycle / 6 s
Mechanical endurance:	1 million operating cycles[1]
Max. actuation speed:	0.5 m/s
Min. actuation speed:	1 mm/s
Tightening torques for installation:	see pages 297-308

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

Cable cross section (flexible copper strands)

Contact blocks 20, 21, 22, 33, 34:	min.	1 x 0.34 mm²	(1 x AWG 22)
	max.	2 x 1.5 mm²	(2 x AWG 16)
Contact blocks 18, 8, 9:	min.	1 x 0.5 mm²	(1 x AWG 20)
	max.	2 x 2.5 mm²	(2 x AWG 14)

In conformity with standards:
IEC 60947-5-1, EN 60947-5-1, EN 60947-1, IEC 60204-1, EN 60204-1, EN ISO 14119, EN ISO 12100, IEC 60529, EN 60529, UL 508, CSA 22.2 No.14.
Approvals:
IEC 60947-5-1, UL 508, CSA 22.2 No.14 , GB14048.5-2001.

In conformity with the requirements of:
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.

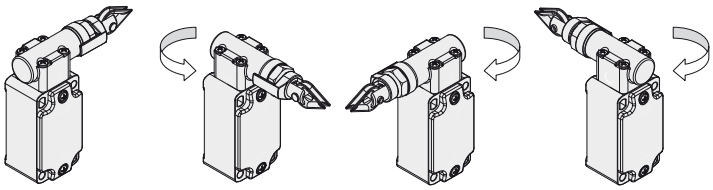
⚠ **If not expressly indicated in this chapter, for correct installation and utilization of all articles see chapter utilization requirements from page 297 to page 308.**

	Electrical data		Utilization category
without connector	Thermal current (Ith):	10 A	Alternating current: AC15 (50÷60 Hz)
	Rated insulation voltage (Ui):	500 Vac 600 Vdc 400 Vac 500 Vdc (contact blocks 20, 21, 22, 33, 34)	Ue (V) 250 400 500 Ie (A) 6 4 1
	Rated impulse withstand voltage (U_{imp}):	6 kV 4 kV (contact blocks 20, 21, 22, 33, 34)	Direct current: DC13
	Conditional short circuit current:	1000 A acc. to EN 60947-5-1	Ue (V) 24 125 250 Ie (A) 6 1.1 0.4
	Protection against short circuits:	type aM fuse 10 A 500 V	
	Pollution degree:	3	
with M12 connector 4 and 5 poles	Thermal current (Ith):	4 A	Alternating current: AC15 (50÷60 Hz)
	Rated insulation voltage (Ui):	250 Vac 300 Vdc	Ue (V) 24 120 250 Ie (A) 4 4 4
	Protection against short circuits:	type gG fuse 4 A 500 V	Direct current: DC13
	Pollution degree:	3	Ue (V) 24 125 250 Ie (A) 4 1.1 0.4
with M12 connector 8 poles	Thermal current (Ith):	2 A	Alternating current: AC15 (50÷60 Hz)
	Rated insulation voltage (Ui):	30 Vac 36 Vdc	Ue (V) 24 Ie (A) 2
	Protection against short circuits:	type gG fuse 2 A 500 V	Direct current: DC13
	Pollution degree:	3	Ue (V) 24 Ie (A) 2

Description

These rope operated safety switches are installed on machines or conveyor belts, to activate the simple stop of the machine on every hand intervention on the rope, from any point.
Provided with **self-control function**, they constantly check their correct operation, signalling with the opening of the contacts an eventual loosening or breaking of the rope.

Orientable heads



Removing the four fastening screws, in all switches, it is possible to rotate the head in 90° steps.

Protection degree IP67

IP67

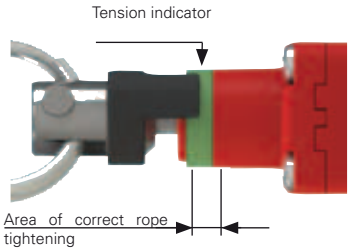
These devices are designed to be used in the toughest environmental conditions and they pass the IP67 immersion test acc. to IEC 60529.
They can therefore be used in all environments where the maximum protection of the housing is required.

Extended temperature range

-40°C

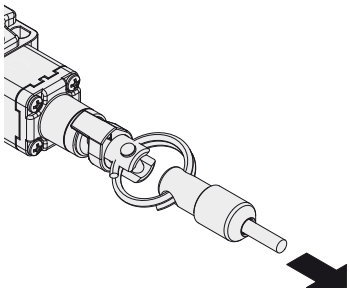
This range of switches is also available in a special version with an ambient operating temperature range of -40°C to +80°C.
They can be used for applications in cold stores, sterilisers and other devices with low temperature environments. Special materials that have been used to realize these versions, maintain unchanged their features also in these conditions, widening the installation possibilities.

Adjustment point indicator of the rope



The switches (head 79 and 80) are provided with a green ring that shows the area of the correct tightening of the rope. The installer has only to tighten the rope until the black indicator will be in the middle of the green area. If a traction (or loosening) of the rope it is high enough to permit the black indicator to go outside the correct tension area, the safety contacts will open.

Actuating forces



These switches can be supplied with reduced hardness internal springs on request. This makes it possible to reduce the physical effort required to actuate the switch, whilst maintaining the actuating stroke of the electrical contacts unchanged. Particularly suitable for spans of reduced dimensions, they must always be matched to the suspension of the rope pulley.

Characteristics approved by IMQ

Rated insulation voltage (Ui): 500 Vac
400 Vac (for contact blocks 20, 21, 22, 33, 34)
Conventional free air thermal current (Ith): 10 A
Protection against short circuits: type aM fuse 10 A 500 V
Rated impulse withstand voltage (U_{imp}): 6 kV
4 kV (for contact blocks 20, 21, 22, 33, 34)
Protection degree of the housing: IP67
MV terminals (screw terminals)
Pollution degree 3
Utilization category: AC15
Operating voltage (Ue): 400 Vac (50 Hz)
Operating current (Ie): 3 A
Forms of the contact element: Zb, Y+Y, Y+Y+X, Y+Y+Y, Y+X+X
Positive opening of contacts on contact blocks 18, 8, 9, 20, 21, 22, 33, 34

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

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

Characteristics approved by UL

Utilization categories Q300 (69 VA, 125 ... 250 Vdc)
A600 (720 VA, 120 ... 600 Vac)
Data of housing type 1, 4X "indoor use only", 12, 13
For all contact blocks use 60 or 75 °C copper (Cu) conductor, rigid or flexible, wire size AWG 12-14. Terminal tightening torque of 7.1 lb in (0.8 Nm).

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

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

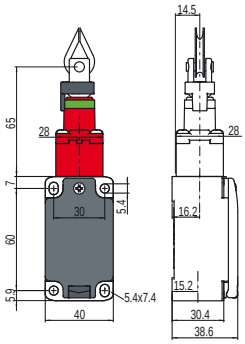
Safety **rope switch with reset** for simple stop

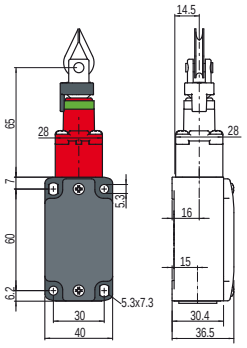
Dimensional drawings

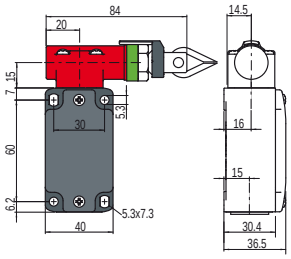
All measures in the drawings are in mm

Contact type:

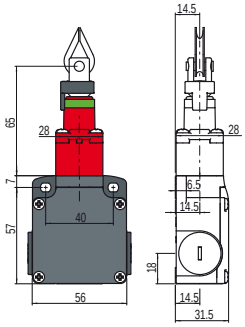
L = slow action

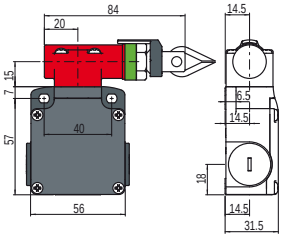


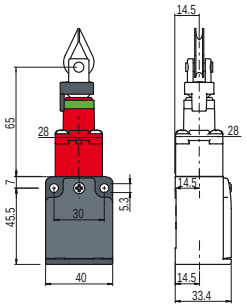


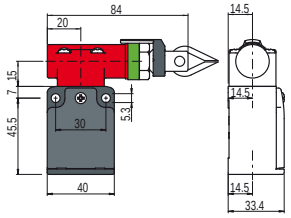


Contact blocks					
18	L	FP 1879-M2 → 1NO+1NC		FD 1879-M2 → 1NO+1NC	FD 1880-M2 → 1NO+1NC
9	L	FP 979-M2 → 2NC		FD 979-M2 → 2NC	FD 980-M2 → 2NC
20	L	FP 2079-M2 → 1NO+2NC		FD 2079-M2 → 1NO+2NC	FD 2080-M2 → 1NO+2NC
21	L	FP 2179-M2 → 3NC		FD 2179-M2 → 3NC	FD 2180-M2 → 3NC
22	L	FP 2279-M2 → 2NO+1NC		FD 2279-M2 → 2NO+1NC	FD 2280-M2 → 2NO+1NC
33	L	FP 3379-M2 → 1NO+1NC		FD 3379-M2 → 1NO+1NC	FD 3380-M2 → 1NO+1NC
34	L	FP 3479-M2 → 2NC		FD 3479-M2 → 2NC	FD 3480-M2 → 2NC
Min. force		Initial 63 N...final 83 N (90 N →)		Initial 63 N...final 83 N (90 N →)	Initial 147 N...final 235 N (250 N →)
Travel diagrams		page 172 - group 1		page 172 - group 1	page 172 - group 2





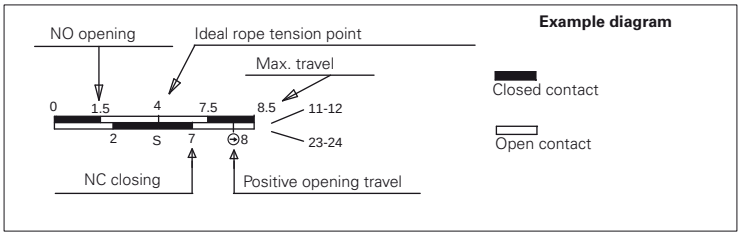




Contact blocks					
18	L	FL 1879-M2 → 1NO+1NC	FL 1880-M2 → 1NO+1NC		
9	L	FL 979-M2 → 2NC	FL 980-M2 → 2NC		
20	L	FL 2079-M2 → 1NO+2NC	FL 2080-M2 → 1NO+2NC		
21	L	FL 2179-M2 → 3NC	FL 2180-M2 → 3NC		
22	L	FL 2279-M2 → 2NO+1NC	FL 2280-M2 → 2NO+1NC		
33	L	FL 3379-M2 → 1NO+1NC	FL 3380-M2 → 1NO+1NC	FC 3379-M2 → 1NO+1NC	FC 3380-M2 → 1NO+1NC
34	L	FL 3479-M2 → 2NC	FL 3480-M2 → 2NC	FC 3479-M2 → 2NC	FC 3480-M2 → 2NC
Min. force		Initial 63 N...final 83 N (90 N →)	Initial 147 N...final 235 N (250 N →)	Initial 63 N...final 83 N (90 N →)	Initial 147 N...final 235 N (250 N →)
Travel diagrams		page 172 - group 1	page 172 - group 2	page 172 - group 1	page 172 - group 2

How to read travel diagrams

All measures in the diagrams are in mm



IMPORTANT:
In **safety applications**, actuate the switch **at least up to the positive opening travel** shown in the travel diagrams with symbol →. Operate the switch **at least with the positive opening force**, indicated between brackets below each article, aside the minimum force value.

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

Accessories See page 287

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

Contact type:

L = slow action

Contact blocks					
8 L	FP 874-M2 → 1NC	FD 874-M2 → 1NC	FL 874-M2 → 1NC		
Min. force	Initial 63 N...final 83 N (90 N →)	Initial 63 N...final 83 N (90 N →)	Initial 63 N...final 83 N (90 N →)		
Travel diagrams	page 172 - group 3	page 172 - group 3	page 172 - group 3		

Contact blocks				
8 L	FR 874-M2 → 1NC	FM 874-M2 → 1NC	FX 874-M2 → 1NC	FZ 874-M2 → 1NC
Min. force	Initial 63 N...final 83 N (90 N →)	Initial 63 N...final 83 N (90 N →)	Initial 63 N...final 83 N (90 N →)	Initial 63 N...final 83 N (90 N →)
Travel diagrams	page 172 - group 3	page 172 - group 3	page 172 - group 3	page 172 - group 3

Travel diagrams table

Contact blocks		Group 1	Group 2	Group 3
18 1NO+1NC	11 23 / 12 24	0 1.5 4 7 8.5 / 1.1 S 7.4 →8	0 3.5 8 13 16 / 4 S 12.6 →14	
8 1NC	11 21 / 12 22			0 1 4 →8 8.5 / S 6.3
9 2NC	11 21 / 12 22	0 4 →8 8.5 / 1.4 S 7.2	0 8 →14.5 16 / 3.5 S 13	
20 1NO+2NC	11 21 33 / 12 22 34	0 1.5 4 7 →8 8.5 / 1.1 S 7.4	0 3.8 8 12.6 →14 16 / 3.5 S 13	
21 3NC	11 21 31 / 12 22 32	0 4 →8 8.5 / 1.5 S 7	0 3.5 8 12.6 →14 16 / S	
22 2NO+1NC	11 23 33 / 12 24 34	0 1.5 4 7 →8 8.5 / 1.1 S 7.4	0 3.8 8 12.6 →14 16 / 3.5 S 13	
33 1NC+1NO	13 21 / 14 22	0 1.5 4 7 8.5 / 1.1 S 7.4 →8	0 3.8 8 12.6 →14 16 / 3.5 S 13	
34 2NC	11 21 / 12 22	0 4 →8 8.5 / 1.5 S 7	0 3.8 8 12.6 →14 16 / S	

In the rest position (with rope correctly tightened) the two contacts of **contact block 8** are both closed and are activated respectively by tightening or loosening the rope. In order to use this contact block for safety applications it is necessary to connect the two contacts in series. For this reason, in the wiring diagrams the **contact block 8** is indicated as 1NC, whereas in travel diagrams both contacts are indicated.

11 21 / 12 22

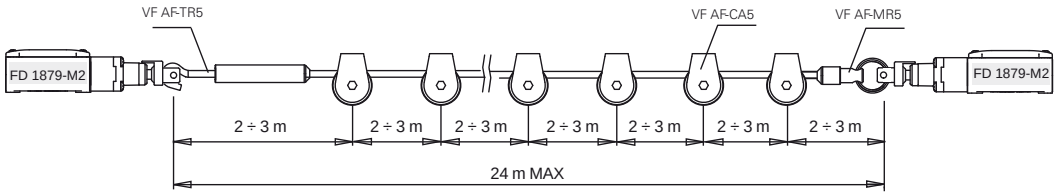
Accessories See page 287

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

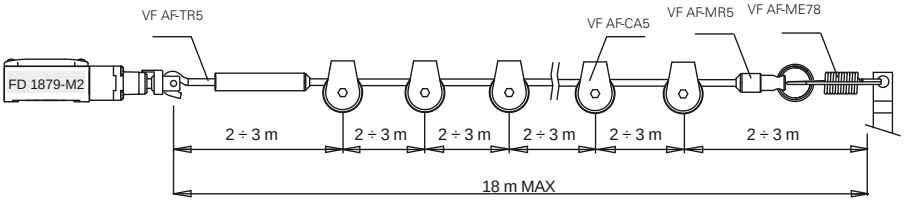
Safety **rope switch with reset** for simple stop

Application examples and max. rope length for switches with longitudinal head

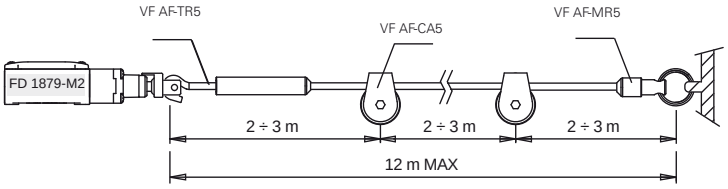
Example A



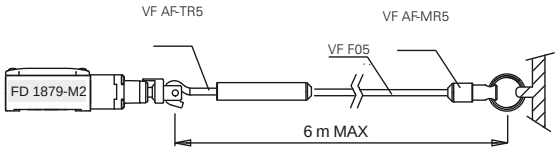
Example B



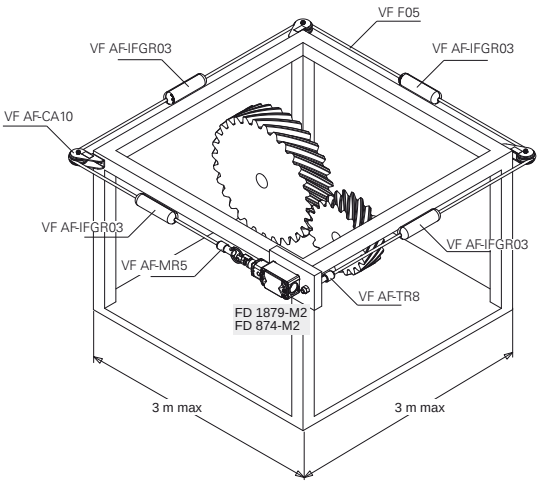
Example C



Example D

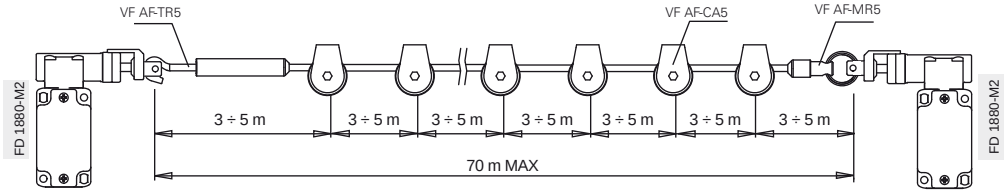


Example E

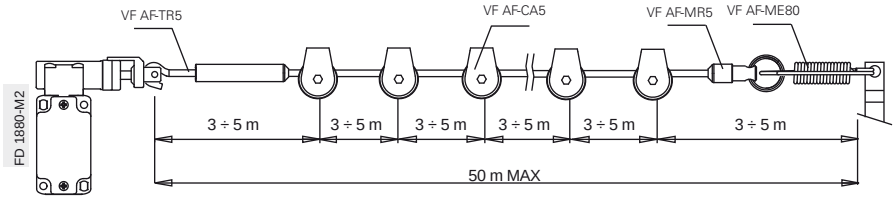


Application examples and max. rope length for switches with transversal head

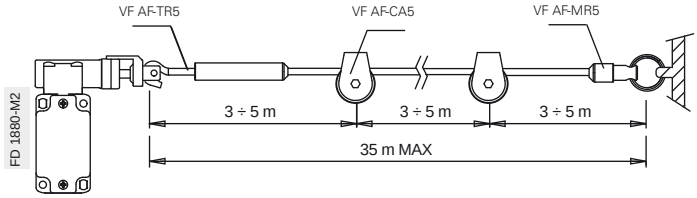
Example F



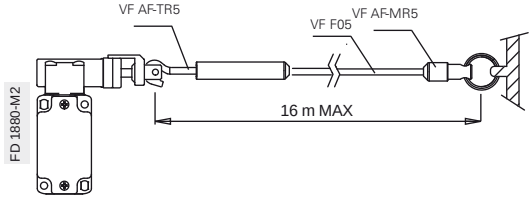
Example G



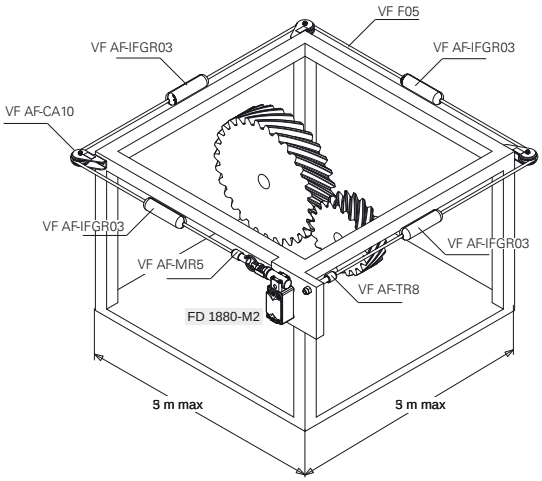
Example H



Example I

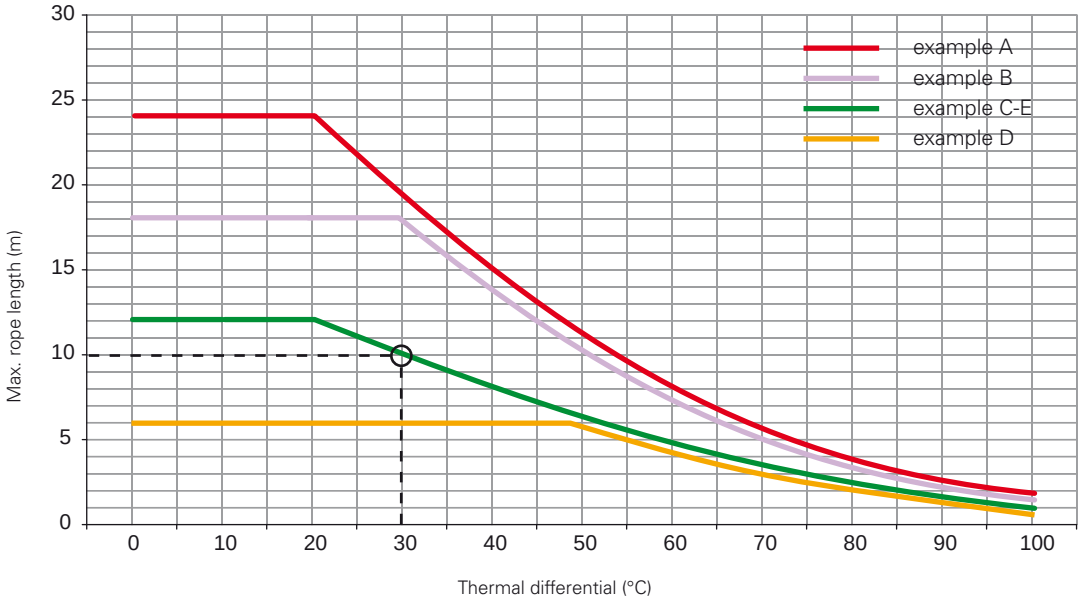


Example J



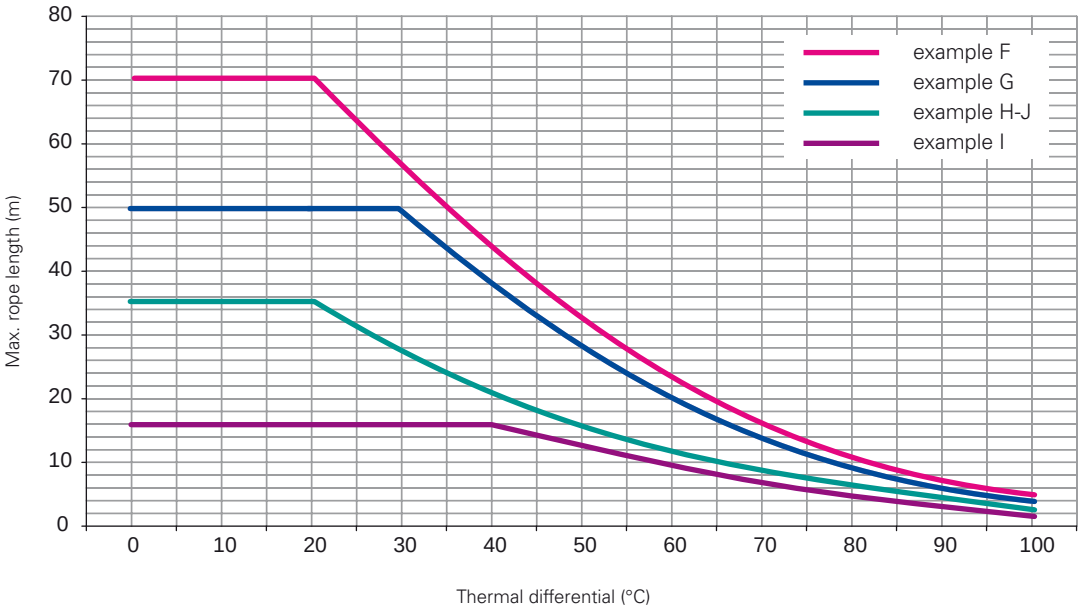
Max. rope length

Max. rope length for switches with longitudinal head



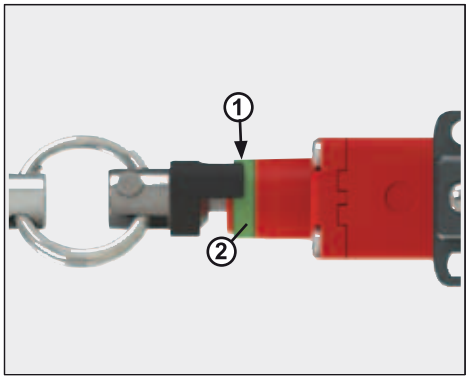
In the diagram, the suggested max. rope lengths with regard to changes of temperature (thermal differential) to which the switch is expected to be exposed in the working area are indicated. For instance, for an installation acc. to example C which expects a thermal differential of 30°C, a max. rope length of 10 meters is suggested.

Max. rope length for switches with transversal head

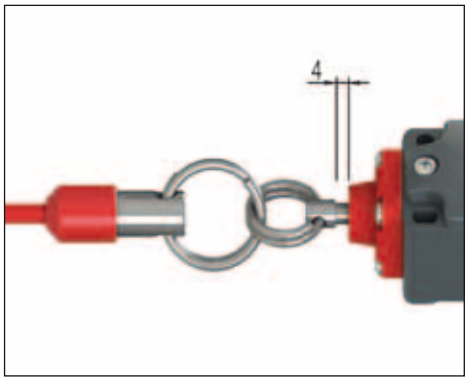


Important: The above data are guaranteed only using original rope and accessories. See page 175.

Adjustment of the operating point



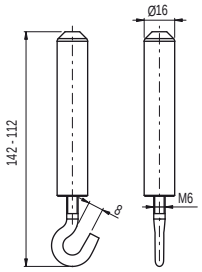
For switches with head 79 and 80: Tighten the rope connected to the switch, until the end of the indicator (1) reaches about the middle of the green ring (2).



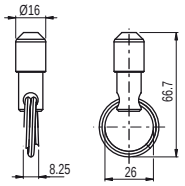
For switches with head 74: Tighten the rope connected to the switch until the thimble will be at about 4 mm from the head.

Rope installation accessories, FAST line

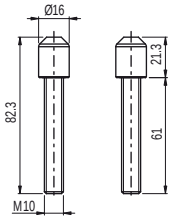
Article	Description
VF AF-TR5	Adjustable stay bolt



Article	Description
VF AF-MR5	End clamp

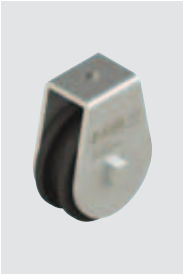


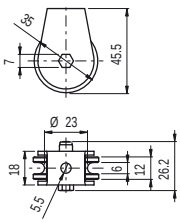
Article	Description
VF AF-TR8	Stay bolt



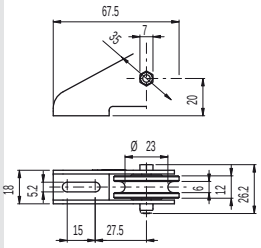
Pulley

Article	Description
VF AF-CA5	Stainless steel pulley



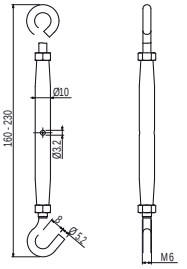


Article	Description
VF AF-CA10	Angular pulley, stainless steel



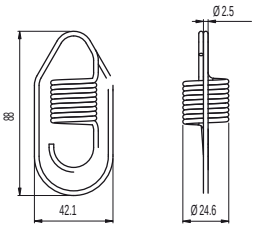
Accessories for rope installation

Article	Description
VF AF-TR2X	Stainless steel adjustable stay bolt



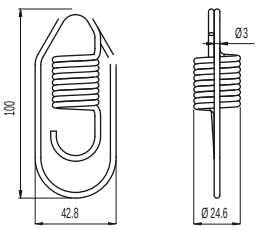
Safety springs

Article	Description
VF AF-ME78	Stainless steel safety spring



For switches with longitudinal head.

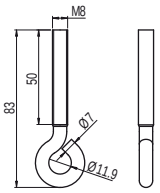
Article	Description
VF AF-ME80	Stainless steel safety spring



For switches with transversal head.

Accessories for rope installation

Article	Description
VFT870	Stay bolt



Indicator lights

Article	Description
VF ILI024GM	Yellow, 24 Vac/dc
VF ILI024RM	Red, 24 Vac/dc
VF ILI024VM	Green, 24 Vac/dc
VF ILI024WM	White, 24 Vac/dc
VF ILX000GM	Yellow, without bulb
VF ILX000RM	Red, without bulb
VF ILX000VM	Green, without bulb
VF ILX000WM	White, without bulb

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

Function indicators

Article	Description and language	
VF AF-IF1GR01	STOP EMERGENZA	ita
VF AF-IF1GR02	EMERGENCY STOP	eng
VF AF-IF1GR03	STOP	eng
VF AF-IF1GR04	NOT - AUS	deu
VF AF-IF1GR05	ARRET D'URGENCE	fra
VF AF-IF1GR06	PARADA DE EMERGENCIA	spa
VF AF-IF1GR07	NODSTOP	dan
VF AF-IF1GR08	STOP	eng

Rope function indicator in conformity with standard EN ISO 13850.

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

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

Ropes and other accessories

Article	Description	Weight (Kg)
VF F05-100	100 m rope	5,1
VF F05-035	35 m rope	1.8
VF F05-020	20 m rope	1.0
VF F05-010	10 m rope	0.5

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

Article	Description
VF F05-400	Rope

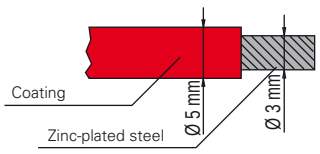
400 m board roll, zinc-plated steel rope Ø 5 mm, coated with red plastic material.

Weight 20.5 kg.

Article	Description
VF F05-500B	Rope

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

Weight 25.6 kg.



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

Article	Description
VF SB400	Rope dispenser

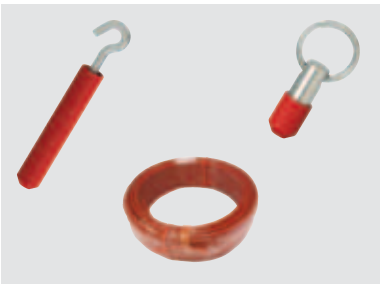
Support stand for board roll, it makes the uncoiling easy and practical without kinking the rope. Provided with a handle, it allows an easy transport of the coil without damage.

Article	Description
VF SFP2	Ceiling fixing plate

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

Rope installation accessory kits, FAST line

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



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

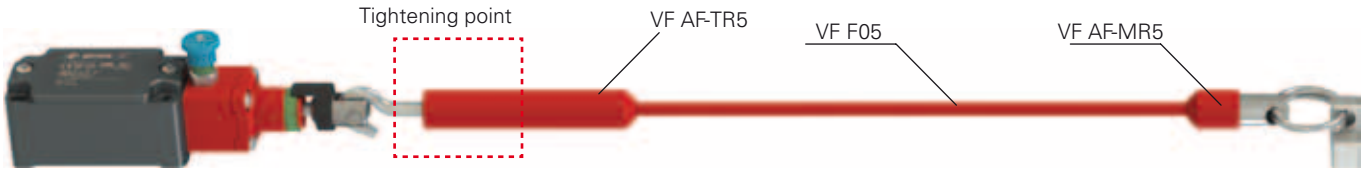
Article	Kit content	
VF AF-KM10R0	*1x* VF AF-MR5 *1x* VF AF-TR8 *1x* VF F05-010	10 m
VF AF-KM20R0	*1x* VF AF-MR5 *1x* VF AF-TR8 *1x* VF F05-020	20 m
VF AF-KM35R0	*1x* VF AF-MR5 *1x* VF AF-TR8 *1x* VF F05-035	35 m

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

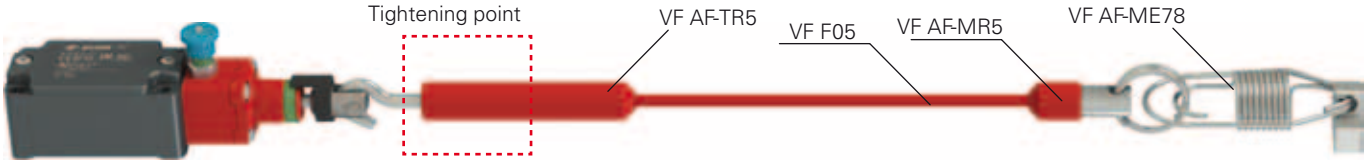
Items with code on **green** background are stock items

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

Combination examples



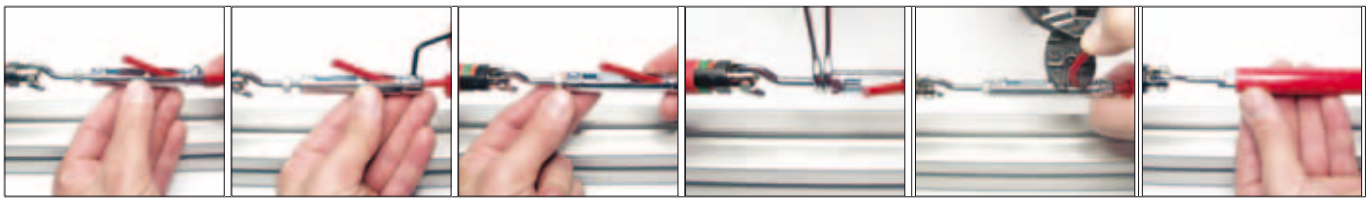
This combination of accessories is suitable for medium rope lengths, where the two rope ends are far away from each other.



This combination of accessories is suitable for medium-high rope lengths (thanks to VF AF-ME78 safety spring) and where the two rope ends are far away from each other.

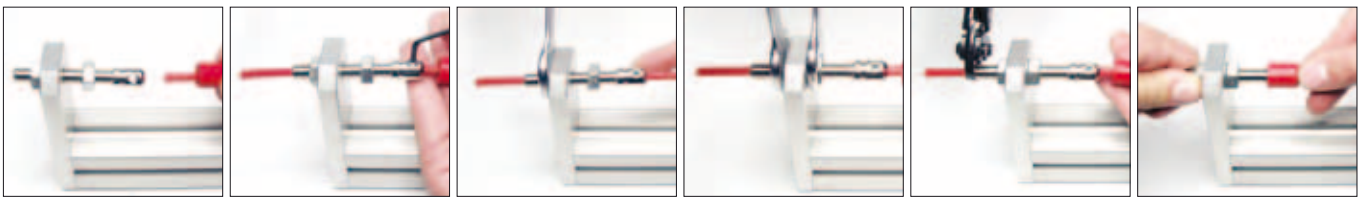
This combination of accessories is suitable for medium rope lengths or where the two rope ends are close to each other.

A Installation of the adjustable stay bolt VF AF-TR5



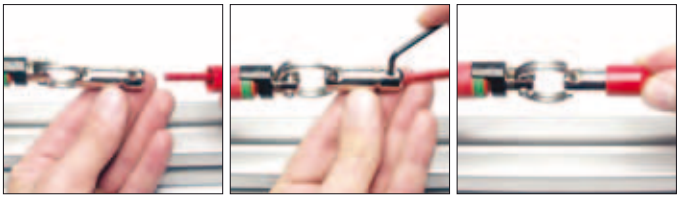
Rope insertion | Rope fixing | Rope tightening | Stay bolt blocking | Cutting of the rope in excess | Stay bolt covering

B Installation of the stay bolt VF AF-TR8



Rope insertion | Rope fixing | Rope tightening | Stay bolt blocking | Cutting of the rope in excess | Stay bolt covering

C Installation of the end clamp VF AF-MR5



Rope insertion | Rope fixing | Clamp covering

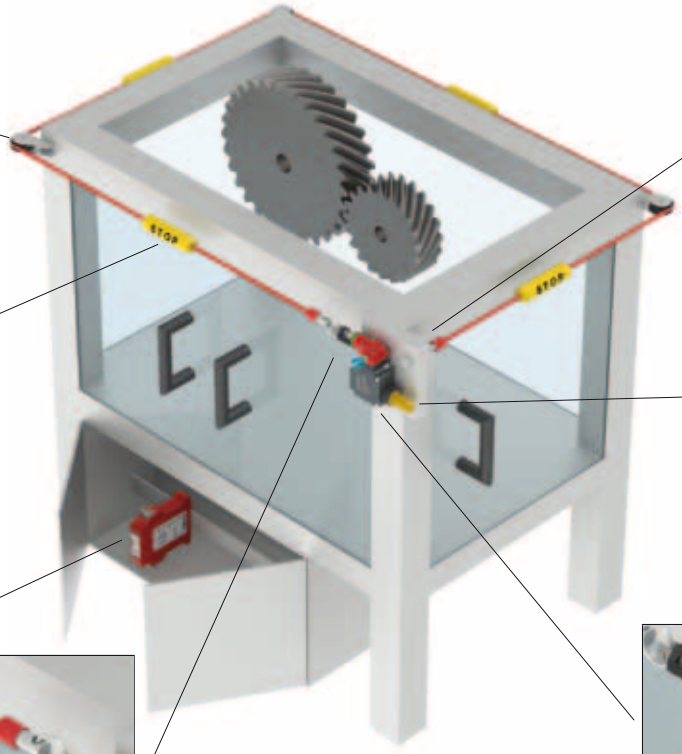
Application example: possibility of emergency stop along the whole perimeter of the machine. Rope supported by angular pulleys.

Angular pulley Article:
VF AF-CA10

Function indicator
Article: VF AF -IF1GR03

Safety module
Example:
CS AR-20V024

End clamp
Article: VF AF-MR5

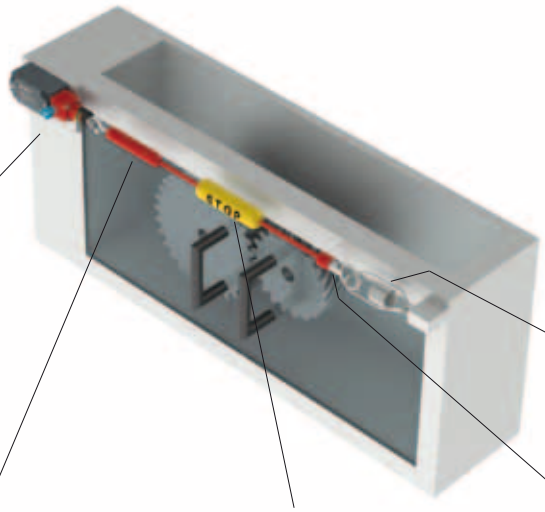


Stay bolt
Article: VF AF-TR8

Indicator light
Article: VF ILI024GP

Rope safety switch
Article: FL 1883-M2

Application example: availability of emergency stop along the frontal section of the machine.



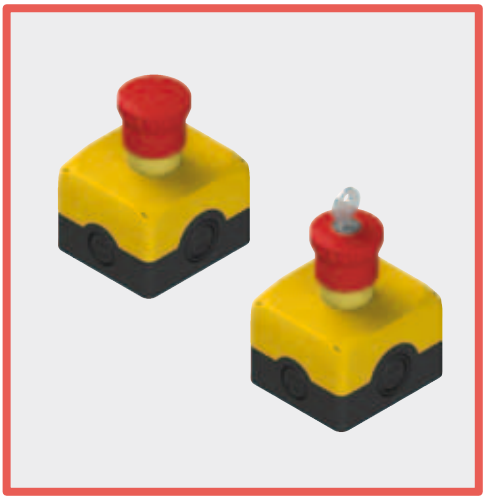
Rope safety switch
Article: FD 1878-M2

Adjustable stay bolt
Article: VF AF-TR5

Function indicator
Article: VF AF -IF1GR03

End clamp
Article: VF AF-MR5

Safety spring
Article: VF AF-ME78



Main features

- Protection degrees IP67 and IP69K
- Stainless steel captive screws
- 4 lateral cable inlets
- Comes with caps for screws

Markings and quality marks:

CE EAC

EAC approval: RU C-IT ДМ94.B.01024

Technical data

Housing

Material:	Self-extinguishing shock-proof polycarbonate with double insulation, UV resistant fibreglass reinforced, with increased shock resistance.
Screw material:	stainless steel

- 2 upper and lower inputs with knock out M20 - 1/2 NPT
- 2 side inputs with knock out M20 - 1/2 NPT - M25
- 2 base inputs with knock out M16

Emergency button

Mechanical endurance:	300,000 operating cycles[1]
Max. actuation frequency:	3600 operating cycles[1]/hour
Actuation travel:	4 mm (NO contact), 4 mm (NC contact)
Actuating force:	25 N
Actuating force at limit of travel:	Push-pull 18.5 N (without contacts) Rotary release 35 N (without contacts)
Maximum travel:	9 mm
Tightening torque of the fixing ring:	2 ... 2.5 Nm

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

General data

Protection degree:	IP67 acc. to IEC 60529 with cable gland having equal or higher protection degree IP69K acc. to ISO 20653 (only version without illuminated disc)
Ambient temperature:	-25 °C +80 °C
Tightening torque of the cover screws:	1 ... 1.4 Nm
Utilization requirements:	see page 124 of the general catalogue HMI.

In conformity with standards:
IEC 60947-1, IEC 60947-5-1, IEC 60204-1, EN 574, EN 60947-1, EN 60947-5-1, EN 60204-1, UL 508, CSA 22-2 N°14.

In conformity with the requirements of:
Low Voltage Directive 2006/95/EC
Machinery Directive 2006/42/EC
EMC Directive 2004/108/EC.

General data

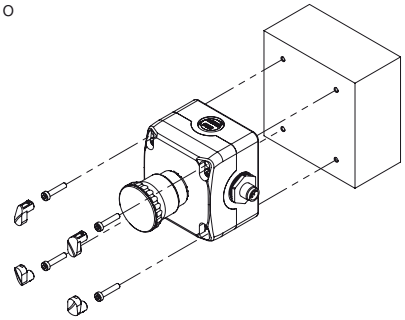
Protection degrees IP67 and IP69K

IP69K
IP67

These devices are designed to be used in the toughest environmental conditions and they pass the IP67 immersion test acc. to IEC 60529. They can therefore be used in all environments where the maximum protection of the housing is required. Special measures also allow devices to be used even in machines which are subjected to washing with high pressure warm water jets. In fact these devices pass the IP69K test according to ISO 20653, using jets of water to 100 atmospheres at a temperature of 80°C.

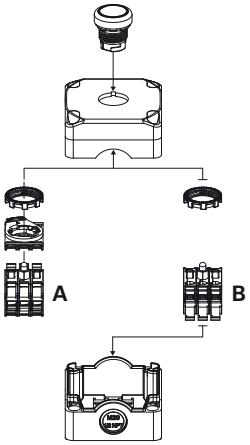
Fixing of EROUND housing

The new housings of the EROUND line by Pizzato Elettrica have 4 additional holes on the cover. The holes enable wall fixing from the outside by means of through insertion of the screws, without the need to open the cover to access the holes.



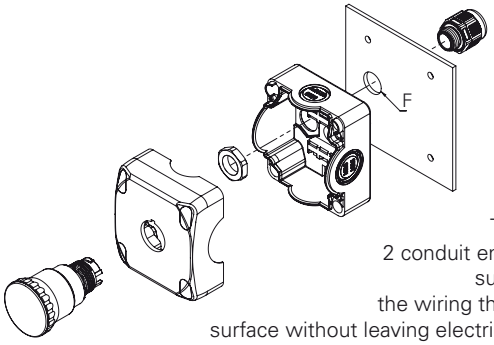
The wall fixing screws and the ones for closing the housing cover can be sealed with 4 caps (supplied with the housing). The caps not only give the housing a more pleasant look, but they also prevent the accumulation of dirt inside the recesses of the screws besides making tampering more difficult.
The external fixing of the housing is particularly suitable for already wired housings, because the whole installation is simplified: you can simply fix the housing and connect the connector that, thanks to the presence of cable inputs on the four sides of the housing, can be orientated in the preferred direction.

One housing, two solutions



The same housing can fit up to 3 contact blocks/LED units (E2 CP, E2 LP) for panel mounting by means of a mounting adapter (A) or up to 3 contact blocks/LED units (E2 CF, E2 LF) for attachment directly on the bottom of the housing (B).

Wiring through the lower surface



cable gland	F
M16	Ø 25
M20	Ø 28

The housings have 2 conduit entries on the lower surface. These allow the wiring through the support surface without leaving electrical cables in sight.

Complete units with housings with emergency buttons



Cover housing colour	Actuator design and colour	Contacts pos. 2	Contacts pos. 3	Contacts pos. 1	Emergency button Push-Pull	Emergency button rotary release	Emergency button key release
yellow RAL 1023	red	-	1NC ⊖	-	**ES AC31004** ES 31001 + E2 1PEPZ4531 + E2 CF01G2V1	**ES AC31003** ES 31001 + E2 1PERZ4531 + E2 CF01G2V1	**ES AC31022** ES 31001+ E2 1PEBZ4531 + E2 CF01G2V1
yellow RAL 1023	red	-	1NC ⊖ SELF-MONITORED	-	**ES AC31081** ES 31001 + E2 1PEPZ4531 + E2 CF01S2V1	**ES AC31082** ES 31001 + E2 1PERZ4531 + E2 CF01S2V1	**ES AC31083** ES 31001+ E2 1PEBZ4531 + E2 CF01S2V1
yellow RAL 1023	red	1NC ⊖	-	1NC ⊖	**ES AC31009** ES 31001 + E2 1PEPZ4531 + E2 CF01G2V1 + E2 CF01G2V1	**ES AC31005** ES 31001 + E2 1PERZ4531 + E2 CF01G2V1 + E2 CF01G2V1	**ES AC31023** ES 31001+ E2 1PEBZ4531 + E2 CF01G2V1 + E2 CF01G2V1
yellow RAL 1023	red	1NC ⊖	-	1NO	**ES AC31010** ES 31001 + E2 1PEPZ4531 + E2 CF01G2V1 + E2 CF10G2V1	**ES AC31006** ES 31001 + E2 1PERZ4531 + E2 CF01G2V1 + E2 CF10G2V1	**ES AC31011** ES 31001+ E2 1PEBZ4531 + E2 CF01G2V1 + E2 CF10G2V1
yellow RAL 1023	red	1NC ⊖	1NC ⊖	1NO	**ES AC31146** ES 31001 + E2 1PEPZ4531 + E2 CF01G2V1 + E2 CF01G2V1 + E2 CF10G2V1	**ES AC31021** ES 31001 + E2 1PERZ4531 + E2 CF01G2V1 + E2 CF01G2V1 + E2 CF10G2V1	**ES AC31024** ES 31001+ E2 1PEBZ4531 + E2 CF01G2V1 + E2 CF01G2V1 + E2 CF10G2V1

Other combinations on request.
The standard colour of the base in the above-mentioned codes is RAL 9005.
➔ For the characteristics of the contact blocks and LED units, refer to the respective chapters.



Cover housing colour	Actuator design and colour	Contacts pos. 2	Contacts pos. 3	Contacts pos. 1	Emergency button Push-pull Yellow illuminated disc, blinking Ø 60 mm, 24 Vac/dc	Emergency button rotary release Yellow illuminated disc, blinking Ø 60 mm, 24 Vac/dc	Emergency button key release Yellow illuminated disc, blinking Ø 60 mm, 24 Vac/dc
grey RAL 7035	red	1NO	1NC ⊖	LOCKING DI CONNEC-TION	**ES AC31430** ES 31000 + E2 1PEPZ4531 + VE DL1A5L13 + E2 CP10G2V1 + E2 CP01G2V1 + VE BC2PV1	**ES AC31433** ES 31000 + E2 1PERZ4531 + VE DL1A5L13 + E2 CP10G2V1 + E2 CP01G2V1 + VE BC2PV1	**ES AC31436** ES 31000 + E2 1PEBZ4531 + VE DL1A5L13 + E2 CP10G2V1 + E2 CP01G2V1 + VE BC2PV1
grey RAL 7035	red	1NO	1NC ⊖ SELF-MONITORED	LOCKING DI CONNEC-TION	**ES AC31431** ES 31000 + E2 1PEPZ4531 + VE DL1A5L13 + E2 CP10G2V1 + E2 CP01S2V1 + VE BC2PV1	**ES AC31434** ES 31000 + E2 1PERZ4531 + VE DL1A5L13 + E2 CP10G2V1 + E2 CP01S2V1 + VE BC2PV1	**ES AC31437** ES 31000 + E2 1PEBZ4531 + VE DL1A5L13 + E2 CP10G2V1 + E2 CP01S2V1 + VE BC2PV1
grey RAL 7035	red	1NO	2NC ⊖	LOCKING DI CONNEC-TION	**ES AC31432** ES 31000 + E2 1PEPZ4531 + VE DL1A5L13 + E2 CP10G2V1 + E2 CP02G2V1 + VE BC2PV1	**ES AC31435** ES 31000 + E2 1PERZ4531 + VE DL1A5L13 + E2 CP10G2V1 + E2 CP02G2V1 + VE BC2PV1	**ES AC31438** ES 31000 + E2 1PEBZ4531 + VE DL1A5L13 + E2 CP10G2V1 + E2 CP02G2V1 + VE BC2PV1

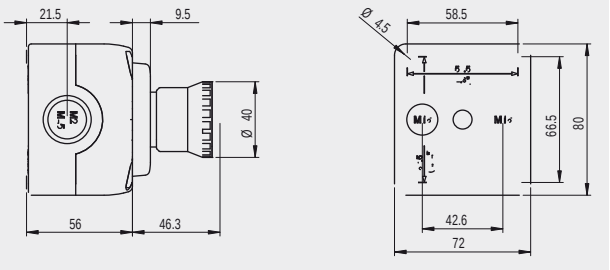
Other combinations on request.
The standard colour of the base in the above-mentioned codes is RAL 9005.
➔ For the characteristics of the contact blocks and LED units, refer to the respective chapters.

Spare caps

Article		Description
	VE TS35RA1	4 spare caps for cover of ES series housings. Colour: yellow
	VE TS39RA1	4 spare caps for cover of ES series housings. Colour: grey

Dimensions

All measures in the drawings are in mm



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

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