

Description

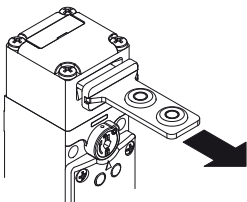


These switches are used on machines where the hazardous conditions remain for a while, even after the machines have been switched off, for example because of mechanical inertia of pulleys, saw disks, parts under pressure or with high temperatures. They can also be used when it is necessary to control machine guards allowing the opening of protections only under specific conditions.

The versions with solenoid actuated NC contacts are considered interlocks with locking in accordance with ISO 14119, and the product is marked on the side with the symbol shown.

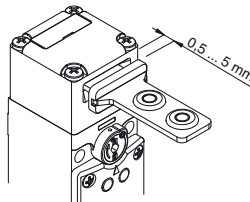


Holding force of the locked actuator



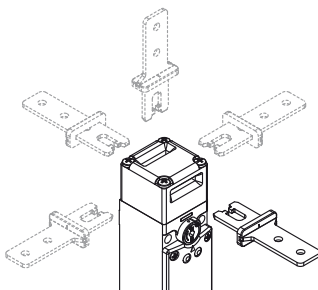
The strong interlocking system guarantees a maximum actuator holding force of $F_{1max} = 2800 \text{ N}$.

Wide-ranging actuator travel



The head of this switch is equipped with an actuator with a wide range of travel. In this way the guard can oscillate along the direction of insertion (4.5mm) without causing unwanted machine shutdowns. This extensive travel is available in all actuators, in order to ensure maximum device reliability.

Orientable heads and devices



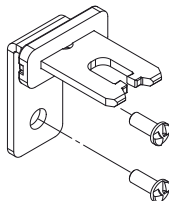
The head can be quickly oriented in four different directions after unscrewing the 4 fixing screws. Also the key release device and the release button can be rotated in 90° steps, thus obtaining as many as 32 different configurations with the same article.

Contact blocks with 4 contacts



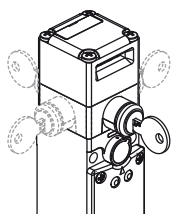
Innovative contact block with 4 contacts, available in different contact configurations to monitor the actuator or the solenoid (patented). The unit is supplied with captive screws and self-lifting plates. Removable finger protection for eyelet terminals. Highly reliable electric contacts with four support points and double interruption

Safety screws for actuators



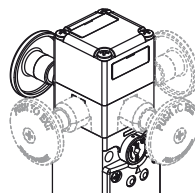
As required by EN ISO 14119, the actuator must be fixed immovably to the door frame. Pan head safety screws with one-way fitting are available for this purpose. With this screw type, the actuators cannot be removed or tampered with using common tools. See accessories on page 295.

Key release device with orientable lock



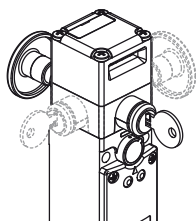
The auxiliary key release device is used to allow the maintenance or the entry into the machinery to authorized personnel only. Rotating the key, will make the same action of the solenoid, that is move solenoid contacts and release the actuator. The device can be rotated allowing the installation of the safety switch inside the machinery and making the release device accessible outside the protection. In this way, the switch is better protected against possible tampering and the external side/surface of the machinery remains smooth.

Emergency release button



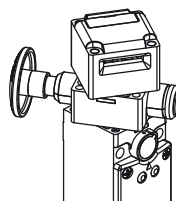
This device is used when the safety switch controls hazardous areas where operators may physically enter with all their body. The release button, oriented towards inside the machinery, allows the exit of the operator accidentally trapped also in case of possible black-out. Pushing the button, it will 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.

Key release device and emergency release button



This device performs the two above mentioned functions at the same time. Also in this case the device can be rotated and the release button can be ordered with different lengths. The activation of the button has the priority on the lock, that is with the closed lock it is still possible to press the button and release the switch. To reset the switch it is necessary to bring lock and button to their initial position.

Not detachable heads and devices



The head and the release device can be adjusted but cannot be detached from each other. This makes the switch more secure since the installer does not need to worry about how to assemble the various pieces, and the switch is less likely to become damaged (small parts being lost, dirt getting in etc.)



Signalling LED type A

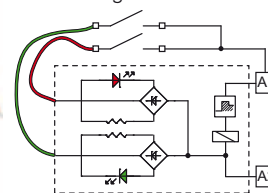


In the version with signalling LED type A, two green LEDs are switched-on directly by the solenoid power supply. Wiring is not necessary.

Signalling LED type B



In the version with signalling LED type B, two LED connection wires are available, one green and one red. Through suitable connections to the contact block, it is possible to see the different states of the switch from the exterior.



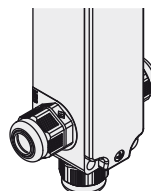
Protection degree IP67

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.

Three conduit entries



The switch is equipped with three cable entries in different directions. This allows its application in series connections or in narrow places.

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.

Sealable auxiliary release device



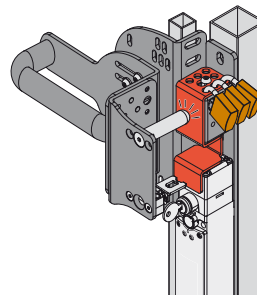
Versions with working principle D are supplied with a sealable auxiliary release device used by technicians during the installation or to access the machine in case of black-out. The auxiliary release device acts on the switch exactly as if the solenoid was energised, actuating therefore also the corresponding electrical contacts. Can only be actuated with a couple of tools, this ensures adequate resistance to tampering. If required it can be sealed by means of the hole provided.

Laser engraving



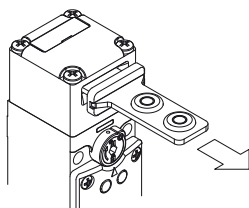
All the FG series switches are indelibly marked with a dedicated laser system that allows the marking to be also suitable for extreme environments. This system that does not use labels, prevents the loss of plate data and the marking is more resistant over time.

Access monitoring



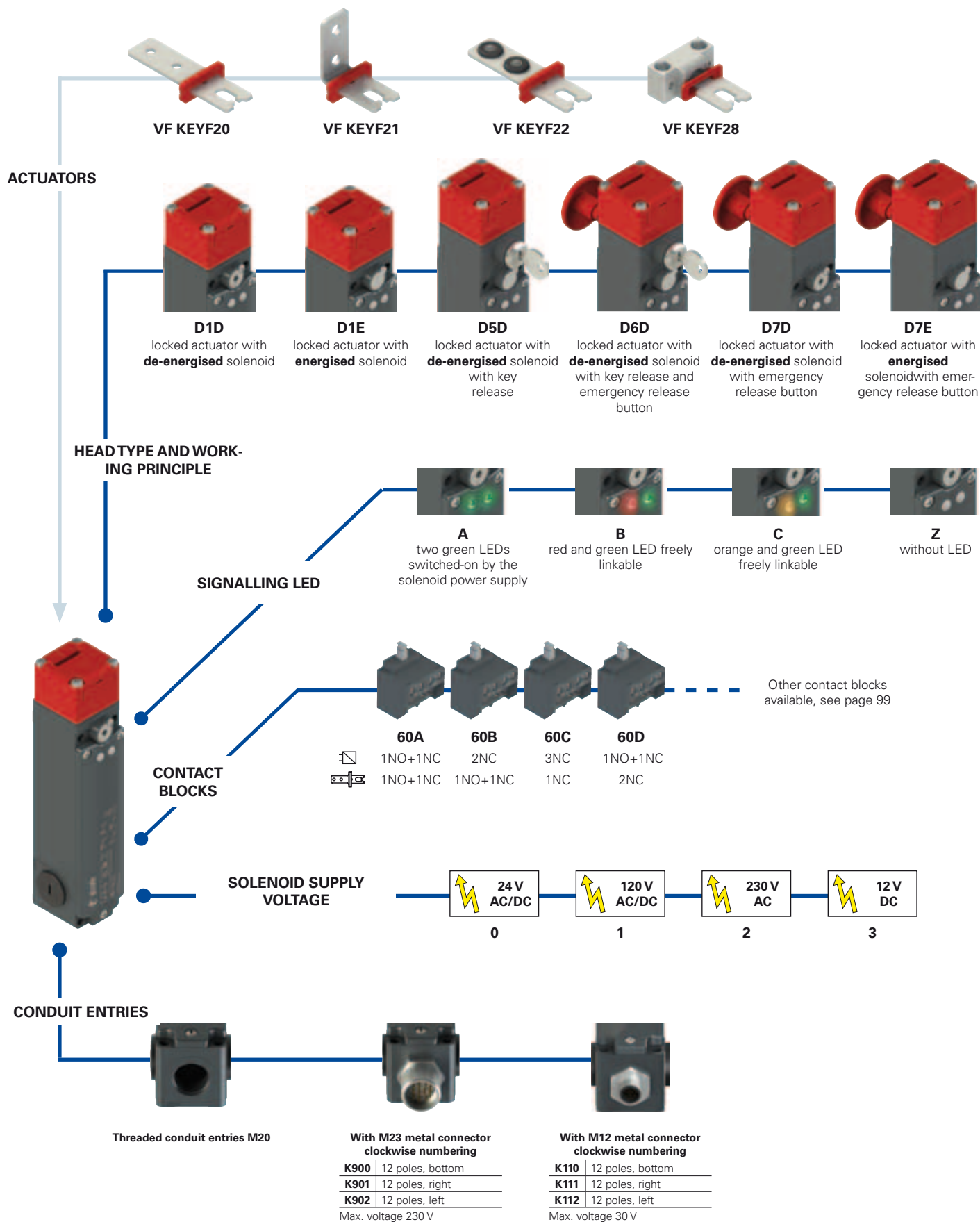
These switches alone cannot protect operators or maintenance men where they may physically enter with all their body in the hazardous area, because a voluntary closing of the protection behind them could allow the restart of the machine. If the authorization to the machine restart is completely granted by these switches, it must be foreseen a system to avoid that risk, as for example the pad lockable device to lock the actuator entry, item VF KB2 at page 104 or a safety handle with padlocks as for example VF AP-P11B-200P (page 143).

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.

Selection diagram





Code structure

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

article options

FG 60AD1D0A-LP30F20GK900T6

Contact blocks		
	Contacts activated by the solenoid	Contacts activated by the actuator
60A	1NO+1NC	1NO+1NC
60B	2NC	1NO+1NC
60C	3NC	1NC
60D	1NO+1NC	2NC
60E	1NO+2NC	1NC
60 F	1NO+2NC	1NO
60G	2NC	2NC
60H	4NC	/
60I	3NC	1NO
60L	2NO+1NC	1NC
60M	2NO+1NC	1NO
60N	1NO+1NC	2NO
60P	1NC	3NC
60R	2NO+2NC	/
60S	1NC	2NO+1NC
60T	1NC	1NO+2NC
60U	/	4NC
60 V	2NC	2NO
60X	1NO	3NC
60Y	1NO	1NO+2NC
61A	/	3NC+1NO
61B	/	2NC+2NO
61C	/	1NC+3NO
61D	1NC	3NO
61E	1NO	1NC+2NO
61G	2NO	1NC+1NO
61H	2NO	2NC
61M	3NO	1NC
61R	3NC+1NO	/
61S	1NC+3NO	/

Working principle	
D1D	locked actuator with de-energised solenoid
D1E	locked actuator with energised solenoid
D5D	locked actuator with de-energised solenoid. With key release
D6D	locked actuator with de-energised solenoid. With key release and emergency release button
D7D	locked actuator with de-energised solenoid. With emergency release button
D7E	locked actuator with energised solenoid. With emergency release button

Ambient temperature

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

Preinstalled connectors

	without connector (standard)
K900	M23 metal connector, 12 poles, bottom
...	...
K110	M12 metal connector, 12 poles, bottom
...	...

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

Contact type

	silver contacts (standard)
G	silvercontacts with 1µmgoldcoating

Actuators

	without actuator (standard)
F20	straight actuator VF KEYF20
F21	angled actuator VF KEYF21
F22	actuator with rubber mountings VF KEYF22
F28	universal actuator VF KEYF28

Release button length

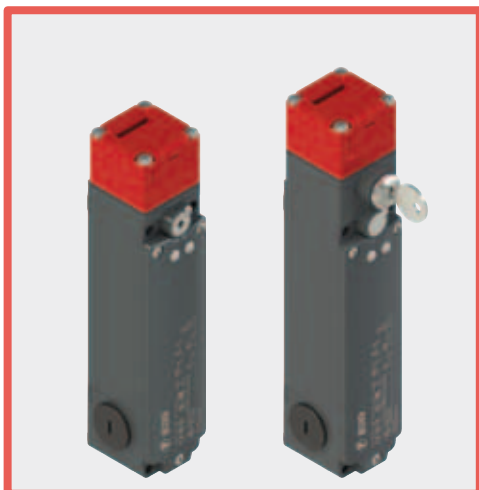
	for max. 15 mm wall thickness (standard)
LP30	for max. 30 mm wall thickness
LP40	for max. 40 mm wall thickness
LP60	for max. 60 mm wall thickness
LPRG	adjustable, for wall thickness from 60 mm to 500 mm

Signalling LED

A	two green LEDs switched-on by the solenoid power supply
B	red and green LED freely linkable
C	orange and green LED freely linkable
Z	without LED

Solenoid supply voltage

0	24 Vac/dc (-10% ... +10%)
1	120 Vac/dc (-15% ... +10%)
2	230 Vac (-15% ... +10%)
3	12 Vdc (-15% ... +20%)



Main features

- Actuator holding force F_{1max} : 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
- 4 stainless steel actuators
- Orientable head and devices, not detachable
- Signalling LED
- Operation with energised or de-energised solenoid

Markings and quality marks:



IMQ approval: CA02.03848
 UL approval: E131787
 CCC approval: 2013010305602309
 EAC approval: RU C-IT ДМ94.В.01024

Technical data

Housing

Metal head and housing, baked powder coating.
 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
 type 2 acc. to EN ISO 14119
 Low acc. to EN ISO 14119

Interlock with mechanical lock, coded:
 Coding level: Low acc. to EN ISO 14119

Safety parameters:
 B_{10d} : 5,000,000 for NC contacts
 Service life: 20 years
 Ambient temperature: -25°C ... +60°C
 Max. actuation frequency: 600 operating cycles¹/hour
 Mechanical endurance: 1 million operating cycles¹
 Max. actuation speed: 0.5 m/s
 Min. actuation speed: 1 mm/s
 Maximum force before breakage F_{1max} : 2800 N acc. to EN ISO 14119
 Max. holding force F_{zh} : 2150 N acc. to EN ISO 14119
 Maximum play of locked actuator: 4.5 mm
 Released actuator extraction force: 30 N
 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: min. 1 x 0.34 mm² (1 x AWG 22)
 max. 2 x 1.5 mm² (2 x AWG 16)

In conformity with standards:

IEC 60947-5-1, EN 60947-5-1, EN 60947-1, IEC 60204-1, EN 60204-1, EN ISO 14119, EN ISO 12100, IEC 60529, EN 60529, EN 61000-6-2, EN 61000-6-3, BG-GS-ET-15, UL 508, CSA 22.2 N. 14.

Approvals:

IEC 60947-5-1, UL 508, CSA 22.2 N. 14.

In conformity with the requirements of:

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

Positive contact opening in conformity with standards:

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

Solenoid

Duty cycle: 100% ED
 Solenoid protection 12 V: type gG fuse 1 A
 Solenoid protection 24 V: type gG fuse 0.5 A
 Solenoid protection 120 V: fuse 315 mA, delayed
 Solenoid protection 230 V: fuse 315 mA, delayed
 Solenoid consumption: 9 VA

⚠ 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 (I _{th}): Rated insulation voltage (U _i): Rated impulse withstand voltage (U _{imp}): Conditional short circuit current: Protection against short circuits: Pollution degree:	10 A 400 Vac 300 Vdc 6 kV 1000 A acc. to EN 60947-5-1 type gG fuse 10 A 500 V 3	Alternating current: AC15 (50÷60 Hz)			
			U _e (V)	I _e (A)		
			120	250	400	
			6	5	3	
			Direct current: DC13			
			U _e (V)	24	125	250
			I _e (A)	3	0.7	0.4

with M23 connector 12 poles	Thermal current (I _{th}): Rated insulation voltage (U _i): Protection against short circuits: Pollution degree:	8 A 250 Vac 300 Vdc type gG fuse 8 A 500 V 3	Alternating current: AC15 (50÷60 Hz)			
			U _e (V)	I _e (A)		
			120	250		
			6	5		
			Direct current: DC13			
			U _e (V)	24	125	250
			I _e (A)	3	0.7	0.4

with M12 connector 12 poles	Thermal current (I _{th}): Rated insulation voltage (U _i): Protection against short circuits: Pollution degree:	1.5 A 30 Vac 36 Vdc type gG fuse 1.5 A 3	Alternating current: AC15 (50÷60 Hz)		
			U _e (V)	I _e (A)	
			24		
			1.5		
			Direct current: DC13		
			U _e (V)	24	
			I _e (A)	1.5	



Characteristics approved by IMQ

Rated insulation voltage (Ui): 400 Vac
 Conventional free air thermal current (Ith): 10 A
 Protection against short circuits: type gG fuse 10 A, 500 V
 Rated impulse withstand voltage (U_{imp}): 6 kV
 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: X+X+X+X, Y+Y+Y+Y, X+Y+Y+Y, X+X+Y+Y, X+X+X+Y
 Positive opening of contacts on all contact blocks: 60A, 60B, 60C, 60D, 60E, 60F, 60G, 60H, 60I, 60L, 60M, 60N, 60P, 60R, 60S, 60T, 60U, 60V, 60X, 60Y, 61A, 61B, 61C, 61D, 61E, 61G, 61H, 61M, 61R, 61S

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: A300 (720 VA, 120 ... 300 Vac)
 Q300 (69 VA, 125 ... 250 Vdc)

Data of housing type 1, 4X "indoor use only"; 12, 13



In conformity with standard: UL508, CSA 22.2 N. 14

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

Working principle

The working principle of these safety switches allows three different working states:

- state A: with inserted and locked actuator
- state B: with inserted actuator, not locked
- state C: with extracted actuator

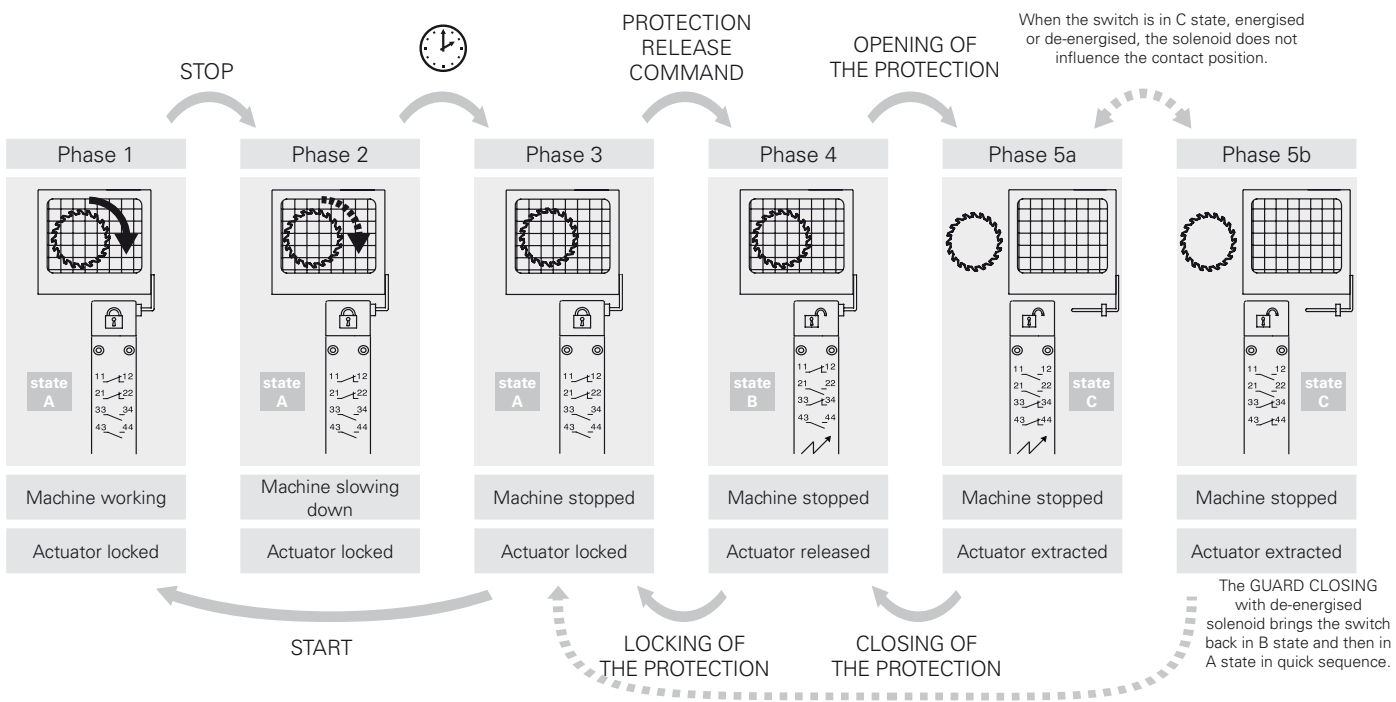
All or some of these states may be controlled through NO contacts or positive opening NC contacts of the internal contact block. In detail, contact blocks that have electric contacts marked with the symbol of the solenoid () are switched in the transition between the state A and state B, while the electric contacts marked with the symbol of the actuator () are switched between state B and state C:

Working principle

It is also possible to choose between two working principles for the actuator locking:

- Working principle D:** Actuator locked with de-energised solenoid. Actuator release is obtained by power supply to the solenoid (see example of working cycle steps).
- Working principle E:** Actuator locked with energised solenoid. The release of the actuator is obtained by power-off to the solenoid. It is advisable to use this version under special conditions because a blackout will allow the immediate opening of the protection.

Example of working cycle steps with FG 60AD1D0A-F21 (switch with working principle D)





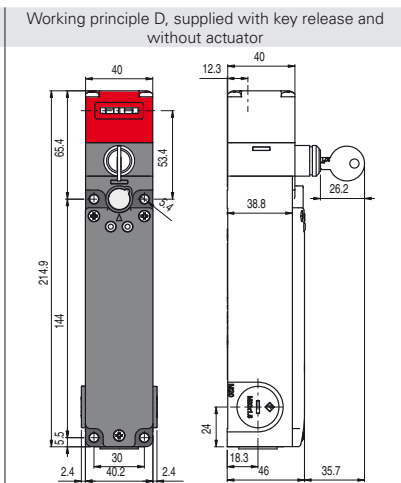
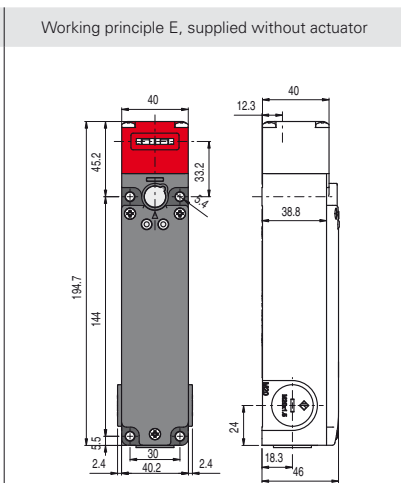
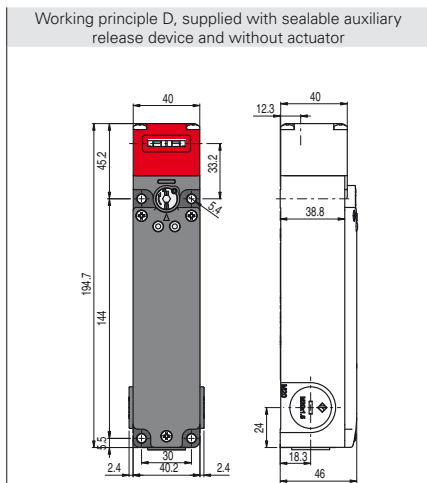
Operating state	Working principle D locked actuator with de-energised solenoid			Working principle E locked actuator with energised solenoid		
	state A	state B	state C	state A	state B	state C
	Inserted and locked De-energised	Inserted and released Energised	Extracted -	Inserted and locked Energised	Inserted and released De-energised	Extracted -
Actuator Solenoid 						
FG 60T 1NC controlled by the solenoid 1NO+2NC controlled by the actuator	11 12 21 22 31 32 43 44	11 12 21 22 31 32 43 44	11 12 21 22 31 32 43 44	11 12 21 22 31 32 43 44	11 12 21 22 31 32 43 44	11 12 21 22 31 32 43 44
FG 60U 4NC controlled by the actuator	11 12 21 22 31 32 41 42	11 12 21 22 31 32 41 42	11 12 21 22 31 32 41 42	11 12 21 22 31 32 41 42	11 12 21 22 31 32 41 42	11 12 21 22 31 32 41 42
FG 60V 2NC controlled by the solenoid 2NO controlled by the actuator	11 12 21 22 33 34 43 44	11 12 21 22 33 34 43 44	11 12 21 22 33 34 43 44	11 12 21 22 33 34 43 44	11 12 21 22 33 34 43 44	11 12 21 22 33 34 43 44
FG 60X 1NO controlled by the solenoid 3NC controlled by the actuator	13 14 21 22 31 32 41 42	13 14 21 22 31 32 41 42	13 14 21 22 31 32 41 42	13 14 21 22 31 32 41 42	13 14 21 22 31 32 41 42	13 14 21 22 31 32 41 42
FG 60Y 1NO controlled by the solenoid 1NO+2NC controlled by the actuator	11 12 21 22 33 34 43 44	11 12 21 22 33 34 43 44	11 12 21 22 33 34 43 44	11 12 21 22 33 34 43 44	11 12 21 22 33 34 43 44	11 12 21 22 33 34 43 44
FG 61A 1NO+3NC controlled by the actuator	11 12 21 22 31 32 43 44	11 12 21 22 31 32 43 44	11 12 21 22 31 32 43 44	11 12 21 22 31 32 43 44	11 12 21 22 31 32 43 44	11 12 21 22 31 32 43 44
FG 61B 2NO+2NC controlled by the actuator	11 12 21 22 33 34 43 44	11 12 21 22 33 34 43 44	11 12 21 22 33 34 43 44	11 12 21 22 33 34 43 44	11 12 21 22 33 34 43 44	11 12 21 22 33 34 43 44
FG 61C 3NO+1NC controlled by the actuator	13 14 21 22 33 34 43 44	13 14 21 22 33 34 43 44	13 14 21 22 33 34 43 44	13 14 21 22 33 34 43 44	13 14 21 22 33 34 43 44	13 14 21 22 33 34 43 44
FG 61D 1NC controlled by the solenoid 3NO controlled by the actuator	13 14 21 22 33 34 43 44	13 14 21 22 33 34 43 44	13 14 21 22 33 34 43 44	13 14 21 22 33 34 43 44	13 14 21 22 33 34 43 44	13 14 21 22 33 34 43 44
FG 61E 1NO controlled by the solenoid 2NO+1NC controlled by the actuator	13 14 21 22 33 34 43 44	13 14 21 22 33 34 43 44	13 14 21 22 33 34 43 44	13 14 21 22 33 34 43 44	13 14 21 22 33 34 43 44	13 14 21 22 33 34 43 44
FG 61G 2NO controlled by the solenoid 1NO+1NC controlled by the actuator	13 14 21 22 33 34 43 44	13 14 21 22 33 34 43 44	13 14 21 22 33 34 43 44	13 14 21 22 33 34 43 44	13 14 21 22 33 34 43 44	13 14 21 22 33 34 43 44
FG 61H 2NO controlled by the solenoid 2NC controlled by the actuator	11 12 21 22 31 32 43 44	11 12 21 22 31 32 43 44	11 12 21 22 31 32 43 44	11 12 21 22 31 32 43 44	11 12 21 22 31 32 43 44	11 12 21 22 31 32 43 44
FG 61M 3NO controlled by the solenoid 1NC controlled by the actuator	13 14 21 22 33 34 43 44	13 14 21 22 33 34 43 44	13 14 21 22 33 34 43 44	13 14 21 22 33 34 43 44	13 14 21 22 33 34 43 44	13 14 21 22 33 34 43 44
FG 61R 1NO+3NC controlled by the solenoid	11 12 21 22 31 32 43 44	11 12 21 22 31 32 43 44	11 12 21 22 31 32 43 44	11 12 21 22 31 32 43 44	11 12 21 22 31 32 43 44	11 12 21 22 31 32 43 44
FG 61S 3NO+1NC controlled by the solenoid	13 14 21 22 33 34 43 44	13 14 21 22 33 34 43 44	13 14 21 22 33 34 43 44	13 14 21 22 33 34 43 44	13 14 21 22 33 34 43 44	13 14 21 22 33 34 43 44

Dimensional drawings

All measures in the drawings are in mm

Contact type:
 = slow action

Contact blocks



60A	FG 60AD1D0A			1NO+1NC	1NO+1NC			1NO+1NC	1NO+1NC			1NO+1NC
60B	FG 60BD1D0A			2NC	1NO+1NC			2NC	1NO+1NC			2NC
60C	FG 60CD1D0A			3NC	1NC			3NC	1NC			3NC
60D	FG 60DD1D0A			1NO+1NC	2NC			1NO+1NC	2NC			1NO+1NC
60E	FG 60ED1D0A			1NO+2NC	1NC			1NO+2NC	1NC			1NO+2NC
60F	FG 60FD1D0A			1NO+2NC	1NO			1NO+2NC	1NO			1NO+2NC
60G	FG 60GD1D0A			2NC	2NC			2NC	2NC			2NC
60H	FG 60HD1D0A			4NC	/			4NC	/			4NC
60I	FG 60ID1D0A			3NC	1NO			3NC	1NO			3NC
60L	FG 60LD1D0A			2NO+1NC	1NC			2NO+1NC	1NC			2NO+1NC
60M	FG 60MD1D0A			2NO+1NC	1NO			2NO+1NC	1NO			2NO+1NC
60N	FG 60ND1D0A			1NO+1NC	2NO			1NO+1NC	2NO			1NO+1NC
60P	FG 60PD1D0A			1NC	3NC			1NC	3NC			1NC
60R	FG 60RD1D0A			2NO+2NC	/			2NO+2NC	/			2NO+2NC
60S	FG 60SD1D0A			1NC	2NO+1NC			1NC	2NO+1NC			1NC
60T	FG 60TD1D0A			1NC	1NO+2NC			1NC	1NO+2NC			1NC
60U	FG 60UD1D0A				4NC				4NC			
60V	FG 60VD1D0A			2NC	2NO			2NC	2NO			2NC
60X	FG 60XD1D0A			1NO	3NC			1NO	3NC			1NO
60Y	FG 60YD1D0A			1NO	1NO+2NC			1NO	1NO+2NC			1NO
61A	FG 61AD1D0A				3NC+1NO				3NC+1NO			
61B	FG 61BD1D0A				2NC+2NO				2NC+2NO			
61C	FG 61CD1D0A				1NC+3NO				1NC+3NO			
61D	FG 61DD1D0A			1NC	3NO			1NC	3NO			1NC
61E	FG 61ED1D0A			1NO	1NC+2NO			1NO	1NC+2NO			1NO
61G	FG 61GD1D0A			2NO	1NC+1NO			2NO	1NC+1NO			2NO
61H	FG 61HD1D0A			2NO	2NC			2NO	2NC			2NO
61M	FG 61MD1D0A			3NO	1NC			3NO	1NC			3NO
61R	FG 61RD1D0A			3NC+1NO				3NC+1NO				3NC+1NO
61S	FG 61SD1D0A			1NC+3NO				1NC+3NO				1NC+3NO
Min. force	30 N (60 N			30 N (60 N			30 N (60 N					
Travel diagrams	page 103 - group 1			page 103 - group 1			page 103 - group 1					

Legend: With positive opening according to EN 60947-5-1, interlock with lock monitoring in accordance with EN ISO 14119



Contact type:	Working principle D, supplied with key release, emergency release button, without actuator		Working principle D, supplied with emergency release button, without actuator		Working principle E, supplied with emergency release button, without actuator	
	= slow action					
Contact blocks						
60A	FG 60AD6D0A 1NO+1NC 1NO+1NC	FG 60AD7D0A 1NO+1NC 1NO+1NC	FG 60AD7E0A 1NO+1NC 1NO+1NC			
60B	FG 60BD6D0A 2NC 1NO+1NC	FG 60BD7D0A 2NC 1NO+1NC	FG 60BD7E0A 2NC 1NO+1NC			
60C	FG 60CD6D0A 3NC 1NC	FG 60CD7D0A 3NC 1NC	FG 60CD7E0A 3NC 1NC			
60D	FG 60DD6D0A 1NO+1NC 2NC	FG 60DD7D0A 1NO+1NC 2NC	FG 60DD7E0A 1NO+1NC 2NC			
60E	FG 60ED6D0A 1NO+2NC 1NC	FG 60ED7D0A 1NO+2NC 1NC	FG 60ED7E0A 1NO+2NC 1NC			
60F	FG 60FD6D0A 1NO+2NC 1NO	FG 60FD7D0A 1NO+2NC 1NO	FG 60FD7E0A 1NO+2NC 1NO			
60G	FG 60GD6D0A 2NC 2NC	FG 60GD7D0A 2NC 2NC	FG 60GD7E0A 2NC 2NC			
60H	FG 60HD6D0A 4NC /	FG 60HD7D0A 4NC /	FG 60HD7E0A 4NC /			
60I	FG 60ID6D0A 3NC 1NO	FG 60ID7D0A 3NC 1NO	FG 60ID7E0A 3NC 1NO			
60L	FG 60LD6D0A 2NO+1NC 1NC	FG 60LD7D0A 2NO+1NC 1NC	FG 60LD7E0A 2NO+1NC 1NC			
60M	FG 60MD6D0A 2NO+1NC 1NO	FG 60MD7D0A 2NO+1NC 1NO	FG 60MD7E0A 2NO+1NC 1NO			
60N	FG 60ND6D0A 1NO+1NC 2NO	FG 60ND7D0A 1NO+1NC 2NO	FG 60ND7E0A 1NO+1NC 2NO			
60P	FG 60PD6D0A 1NC 3NC	FG 60PD7D0A 1NC 3NC	FG 60PD7E0A 1NC 3NC			
60R	FG 60RD6D0A 2NO+2NC /	FG 60RD7D0A 2NO+2NC /	FG 60RD7E0A 2NO+2NC /			
60S	FG 60SD6D0A 1NC 2NO+1NC	FG 60SD7D0A 1NC 2NO+1NC	FG 60SD7E0A 1NC 2NO+1NC			
60T	FG 60TD6D0A 1NC 1NO+2NC	FG 60TD7D0A 1NC 1NO+2NC	FG 60TD7E0A 1NC 1NO+2NC			
60U	FG 60UD6D0A 4NC	FG 60UD7D0A 4NC	FG 60UD7E0A 4NC			
60V	FG 60VD6D0A 2NC 2NO	FG 60VD7D0A 2NC 2NO	FG 60VD7E0A 2NC 2NO			
60X	FG 60XD6D0A 1NO 3NC	FG 60XD7D0A 1NO 3NC	FG 60XD7E0A 1NO 3NC			
60Y	FG 60YD6D0A 1NO 1NO+2NC	FG 60YD7D0A 1NO 1NO+2NC	FG 60YD7E0A 1NO 1NO+2NC			
61A	FG 61AD6D0A 3NC+1NO	FG 61AD7D0A 3NC+1NO	FG 61AD7E0A 3NC+1NO			
61B	FG 61BD6D0A 2NC+2NO	FG 61BD7D0A 2NC+2NO	FG 61BD7E0A 2NC+2NO			
61C	FG 61CD6D0A 1NC+3NO	FG 61CD7D0A 1NC+3NO	FG 61CD7E0A 1NC+3NO			
61D	FG 61DD6D0A 1NC 3NO	FG 61DD7D0A 1NC 3NO	FG 61DD7E0A 1NC 3NO			
61E	FG 61ED6D0A 1NO 1NC+2NO	FG 61ED7D0A 1NO 1NC+2NO	FG 61ED7E0A 1NO 1NC+2NO			
61G	FG 61GD6D0A 2NO 1NC+1NO	FG 61GD7D0A 2NO 1NC+1NO	FG 61GD7E0A 2NO 1NC+1NO			
61H	FG 61HD6D0A 2NO 2NC	FG 61HD7D0A 2NO 2NC	FG 61HD7E0A 2NO 2NC			
61M	FG 61MD6D0A 3NO 1NC	FG 61MD7D0A 3NO 1NC	FG 61MD7E0A 3NO 1NC			
61R	FG 61RD6D0A 3NC+1NO	FG 61RD7D0A 3NC+1NO	FG 61RD7E0A 3NC+1NO			
61S	FG 61SD6D0A 1NC+3NO	FG 61SD7D0A 1NC+3NO	FG 61SD7E0A 1NC+3NO			
Min. force	30 N (60 N)		30 N (60 N)		30 N (60 N)	
Travel diagrams	page 103 - group 1		page 103 - group 1		page 103 - group 1	

Travel diagrams table

All measures in the drawings are in mm

60A 2NO+2NC		60M 3NO+1NC		61A 1NO+3NC	
60B 1NO+3NC		60N 3NO+1NC		61B 2NO+2NC	
60C 4NC		60P 4NC		61C 3NO+1NC	
60D 1NO+3NC		60R 2NO+2NC		61D 3NO+1NC	
60E 1NO+3NC		60S 2NO+2NC		61E 3NO+1NC	
60F 2NO+2NC		60T 1NO+3NC		61G 3NO+1NC	
60G 4NC		60U 4NC		61H 2NO+2NC	
60H 4NC		60V 2NO+2NC		61M 3NO+1NC	
60I 1NO+3NC		60X 1NO+3NC		61R 1NO+3NC	
60L 2NO+2NC		60Y 2NO+2NC		61S 3NO+1NC	

Legend:

- Closed contact
- Open contact
- Contacts activated by the actuator
- Contacts activated by the solenoid
- Positive opening travel

Stainless steel actuators

IMPORTANT: These actuators must be used with items of the FG series only (e.g. FG 60AD1D0A).
Low level of coding acc. to EN ISO 14119.

Article	Description
VF KEYF20	Straight actuator

Article	Description
VF KEYF21	Angled actuator

Article	Description
VF KEYF22	Actuator with rubber mountings

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

Accessories See page 287

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

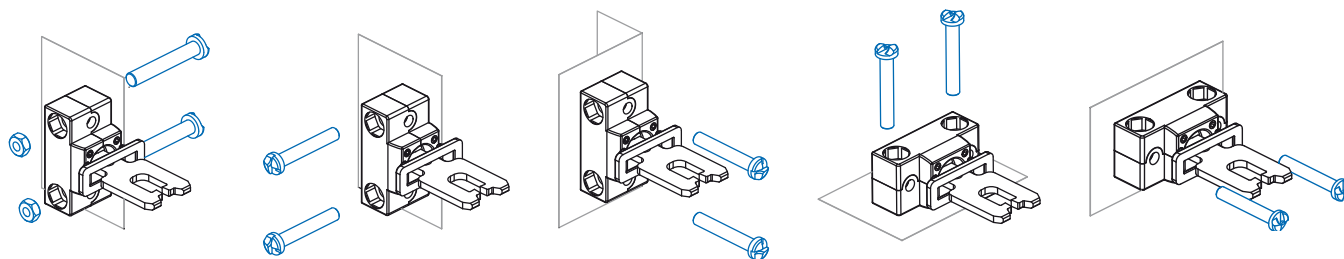
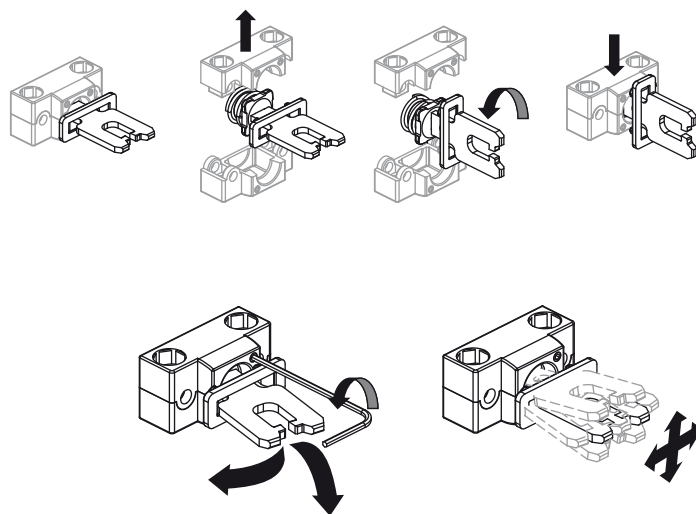


Universal actuator VF KEYF28

IMPORTANT: These actuators must be used with items of the FG series only (e.g. FG 60AD1D0A).
Low level of coding acc. to EN ISO 14119.

Article	Description
VF KEYF28	Universal actuator

Joined and two directions adjustable actuator for doors with reduced dimensions.
The actuator has two couples of fixing holes and it is possible to rotate by 90° the actuator-working plan.



Accessories for sealing



Pliers, steel wire and lead seals used to seal the auxiliary release device (versions D1D and D7D only).

Article	Description
VF FSPB-200	Pack of 200 lead seals
VF FSPB-10	Pack of 10 lead seals
Article	Description
VF FSFI-400	400 metre wire roll
VF FSFI-10	10 metre wire roll
Article	Description
VF FSPZ	Pliers without logo



Utilization limits

Do not use where dust and dirt may penetrate in any way into the head and deposit there, in particular where metal dust, concrete or chemicals are spread. Adhere to the EN ISO 14119 requirements regarding low level of coding for interlocks. Do not use in environments with the presence of explosive or flammable gas. In these cases, use ATEX products (check the specific Pizzato catalogue).

Accessories

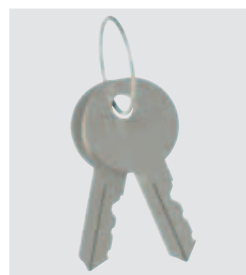
Article	Description
VF KB2	Actuator entry locking device

Padlockable device to lock the actuator entry (patented) in order to prevent the accidental closing of the door behind operators while they are inside the machine. To be used only with FG series switches (e.g. FG 60AD1D0A). Hole diameter for padlocks 9 mm.



Article	Description
VF KLA371	Set of two locking keys

Extra copy of the locking keys to be purchased if further keys are needed (standard supply 2 units). The keys of all switches have the same code. Other codes on request.

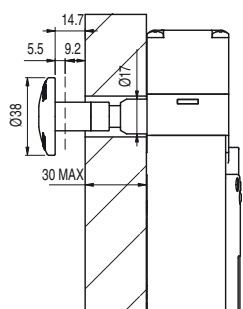


Items with code on **green** background are stock items

Accessories See page 287

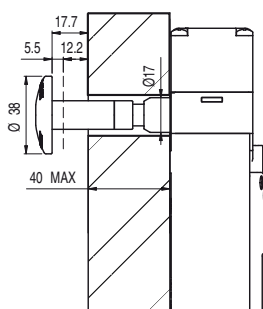
→ The 2D and 3D files are available at www.pizzato.com

Other release button lengths



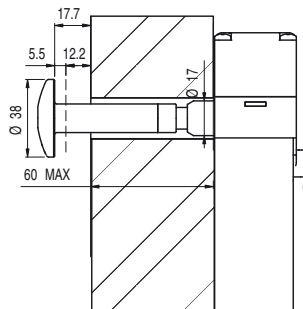
-LP30

For wall thickness
15 ... 30 mm



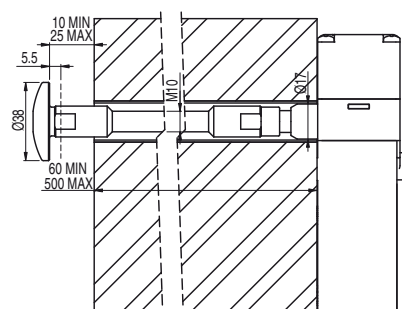
-LP40

For wall thickness
30 ... 40 mm



-LP60

For wall thickness
40 ... 60 mm



-LPRG

For wall thickness
60 ... 500 mm

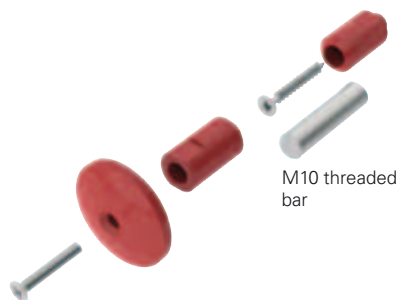
- Avoid torsion and bending on the release button bar.
- To guarantee the correct device operation, keep a distance of 10 to 25 mm between the wall and the release button.
- Keep clean the release button slipping area. The guide bushing or tube must be cleaned inside, since dirt or chemical products could compromise the device operation.
- Periodically check for correct device operation.

- Avoid torsion and bending on the release button bar.
- Use a bushing or a tube with $18 \pm 0,5$ mm diameter as a guide inside the wall.
- The M10 threaded bar has to be inserted into the guide in order to avoid its bending. The M10 threaded bar is not supplied with the device. Do not exceed an overall length of 500 mm between the release button and the switch.
- To guarantee the correct device operation, keep a distance of 10 to 25 mm between the wall and the release button.
- Keep clean the release button slipping area. The guide bushing or tube must be cleaned inside, since dirt or chemical products could compromise the device operation.
- Periodically check for correct device operation.

Release button



Article	Description
VF FG-LP15	Technopolymer release button for max. 15 mm wall thickness, supplied with screw
VF FG-LP30	Technopolymer release button for max. 30 mm wall thickness, supplied with screw
VF FG-LP40	Technopolymer release button for max. 40 mm wall thickness, supplied with screw
VF FG-LP60	Metal release button for max. 60 mm wall thickness, supplied with screw



M10 threaded bar

Article	Description
VF FG-LPRG	Metal release button for wall thickness from 60 to 500 mm, supplied with 2 supports and 2 screws, without M10 threaded bar.

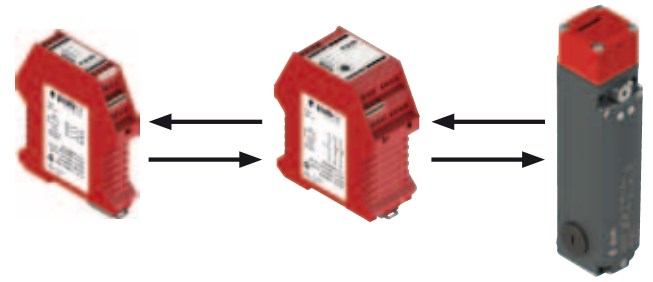
The M10 bar can be supplied in zinc-plated steel with 1 m length. Article: AC 8512.



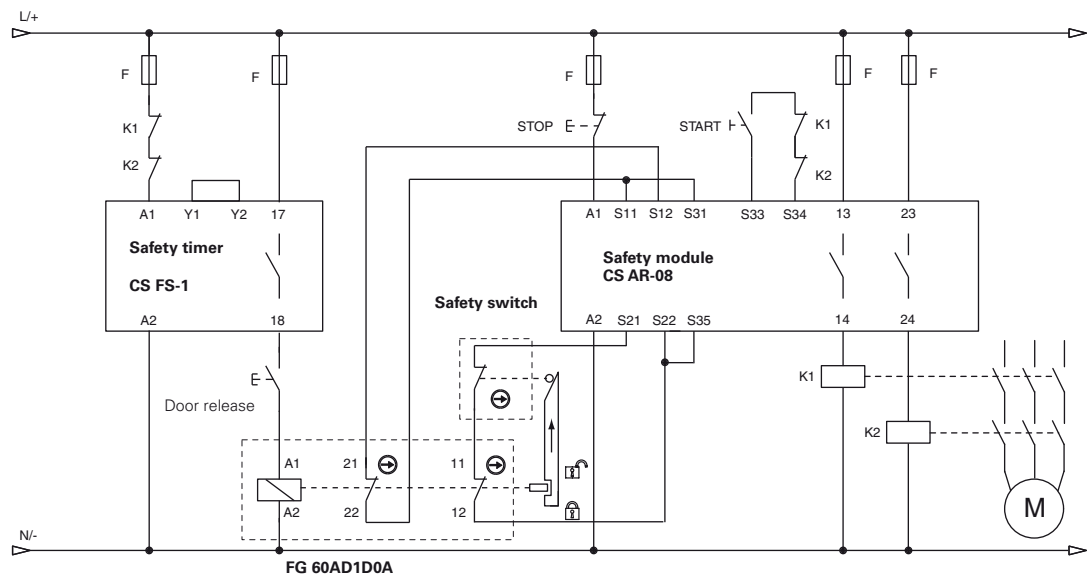
Safety modules

Pizzato Elettrica s.r.l. offers its customers a wide range of safety modules made considering the typical problems about the control of the safety switches and their real use conditions. Safety modules with instantaneous or delayed contacts are available for the realization of emergency circuits type 0 (immediate stop) or type 1 (monitored stop).

Safety switches with solenoid series FG can be connected to safety modules in order to obtain safety circuits up to PL e in accordance with EN ISO 13849. For any technical information or wiring diagram please contact the technical department.



Application example with safety timer



Application example with standstill monitor

