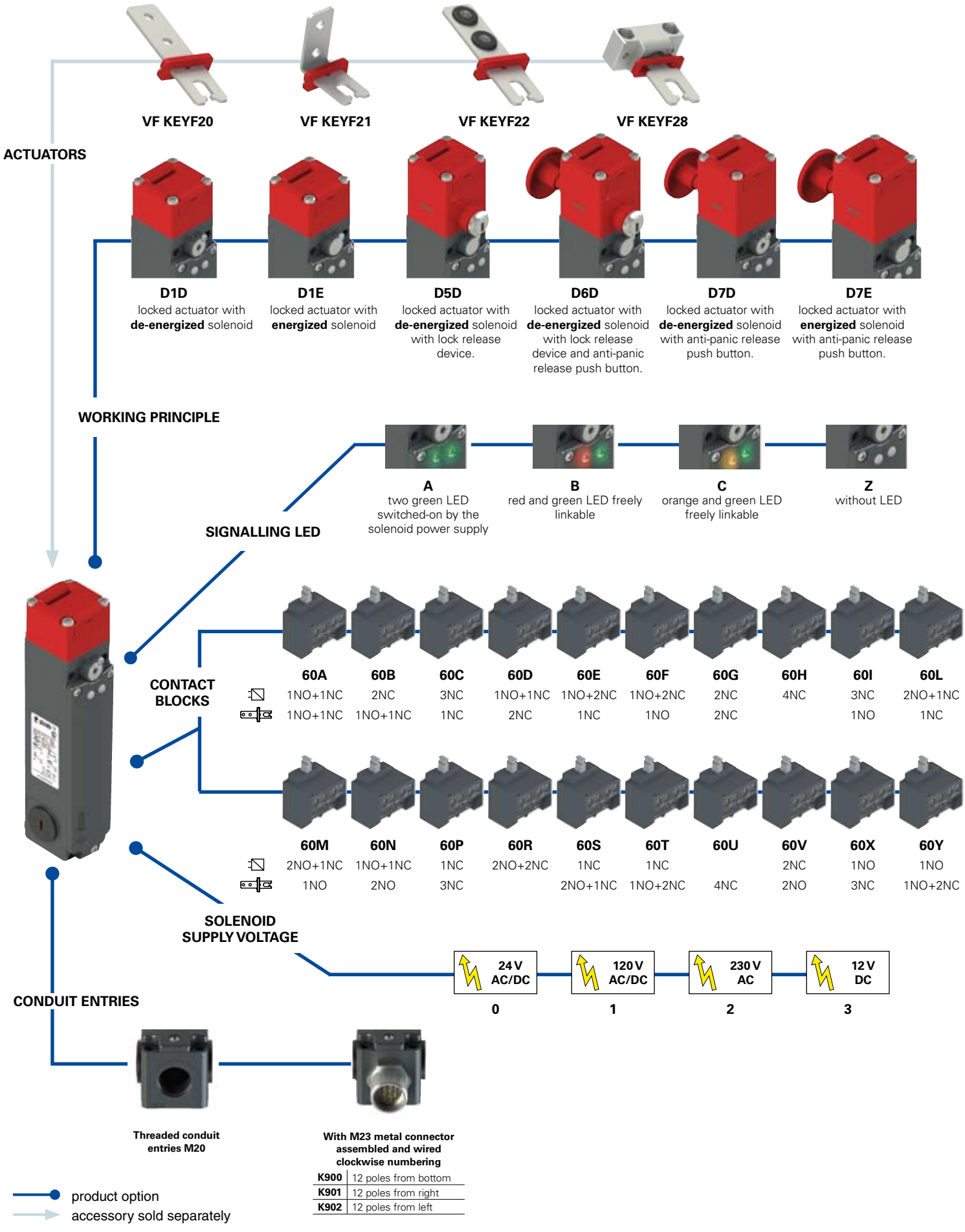
Selection diagram



Code structure

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

article: **FG 60AD1D0A** — options: **-LP30F20GK900**

Integrated contact blocks

	Solenoid operated	Actuator operated
60A	1NO+1NC	1NO+1NC
60B	2NC	1NO+1NC
60C	3NC	1NC
60D	1NO+1NC	2NC
60E	1NO+2NC	1NC
60F	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	1NC+2NO
60T	1NC	2NC+1NO
60U	/	4NC
60V	2NC	2NO
60X	1NO	3NC
60Y	1NO	1NO+2NC

Working principle

D1D	locked actuator with de-energized solenoid
D1E	locked actuator with energized solenoid
D5D	locked actuator with de-energized solenoid. With lock release device.
D6D	locked actuator with de-energized solenoid. With lock release device and anti-panic release push button.
D7D	locked actuator with de-energized solenoid. With anti-panic release push button.
D7E	locked actuator with energized solenoid. With anti-panic release push button.

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%)

Signalling LED

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

Release button length

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

Actuators

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

Contacts type

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

Preinstalled connectors

	no connectors (standard)
K900	with M23 metal connector assembled and wired, 12 poles from bottom
K901	with M23 metal connector assembled and wired, 12 poles from right
K902	with M23 metal connector assembled and wired, 12 poles from left

Safety switches **with solenoid and separate actuator**

Main features

- Actuator holding force 2500 N
- 20 contact blocks with 4 contacts
- Metal housing, three conduit entries M20
- Protection degree IP67
- Version with lock release device and emergency release push button
- 4 stainless steel actuators
- Rotating head and devices and not detachable
- Signalling LED
- Working with energized or de-energized solenoid

Markings and quality marks:

Approval IMQ:	CA02.03848
Approval UL:	E131787
Approval CCC:	2013010305602309
Approval GOST:	POCC IT.AB24.B04512

Technical data

Housing

Metal housing, coated with baked epoxy powder.
Three conduit entries M20

Protection degree:	IP67 according to EN 60529 with cable gland having equal or higher protection degree (electrical contacts)

General data

For safety applications up to SIL 3 / PL e

Safety parameters:	see page 7/34
Ambient temperature:	from -25°C to +60°C
Max actuation frequency:	600 operations cycles[1]/hour
Mechanical endurance:	1 million of operations cycles[1]
Max actuating speed:	0,5 m/s
Min. actuating speed:	1 mm/s
Max holding force:	2500 N
Maximum force before the breaking in accordance with GS-ET-19:	2800 N
Maximum holding force in accordance with GS-ET-19:	2150 N
Max backlash of the actuator:	4,5 mm
Actuator extraction force:	30 N
Driving torque for installation:	see pages 7/1-7/12

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

Cross section of the conductors (flexible copper wire)

Contact blocks:	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 1088, EN ISO 12100-1, EN ISO 12100-2, IEC 60529, EN 60529, EN 61000-6-2, EN 61000-6-3, NFC 63-140, VDE 0660-200, VDE 0113, BG-GS-ET-15.
Approvals:
IEC 60947-5-1, UL 508.

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

Solenoid

Solenoid duty cycle:	100% ED
Solenoid protection 12 V:	fuse 1 A type gG
Solenoid protection 24 V:	fuse 0,5 A type gG
Solenoid protection 120 V:	fuse 315 mA, delayed type
Solenoid protection 230 V:	fuse 315 mA, delayed type
Solenoid power:	9 VA

⚠ If not expressly indicated in this chapter, for the right installation and the correct utilization of all articles see requirements indicated from page 7/1 to page 7/12.

Electrical data

without connector	Thermal current (Ith):	10 A
	Rated insulation voltage (Ui):	400Vac 300 Vdc
	Rated impulse withstand voltage (U_{imp}):	6 kV
	Conditional shot circuit current:	1000 A according to EN 60947-5-1
	Protection against short circuits:	fuse 10 A 500 V type aM
	Pollution degree:	3
with 12 poles M23 connector	Thermal current (Ith):	8 A
	Rated insulation voltage (Ui):	250 Vac 300 Vdc
	Protection against short circuits:	fuse 8 A 500 V type gG
	Pollution degree:	3

Utilization categories

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

Ue (V)	120	250	400
Ie (A)	6	5	3

Direct current: DC13

Ue (V)	24	125	250
Ie (A)	3	0,7	0,4

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

Ue (V)	120	250
Ie (A)	6	5

Direct current: DC13

Ue (V)	24	125	250
Ie (A)	3	0,7	0,4

Data type approved by IMQ

Rated insulation voltage (Ui): 400 Vac
Thermal current (Ith): 10
Rated impulse withstand voltage (U_{imp}): 6 kV
Protection against short circuits: fuse 10 A 500 V type gG
Protection degree: IP67
MV terminals (screw clamps)
Pollution degree 3
Utilization category: AC15
Operation voltage (Ue): 400 Vac (50 Hz)
Operation current (Ie): 3 A
Forms of the contact element: 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 contact block 60A, 60B, 60C, 60D, 60E, 60F, 60G, 60H, 60I, 60L, 60M, 60N, 60P, 60R, 60S, 60T, 60U, 60V, 60X, 60Y

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

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

Data type approved by UL

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

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

In conformity with standard: UL 508

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

Limits of utilization

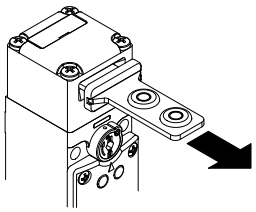
Do not use where dust and dirt may penetrate in any way into the head and deposit there, in particular where metal dust, concrete or chemicals are spread.
Do not use where explosive or inflammable gas is present.
Use Atex products in environments with explosion hazard (see page 2/137).

Safety switches **with solenoid and separate actuator**

Description

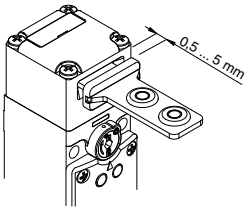
These switches are used on machines where the hazardous conditions remain for a while, even after the machines have been switched off, for example because of mechanical inertia of pulleys, saw disks, parts under pressure or with high temperatures. They can also be used when it is necessary to control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

Actuator holding force



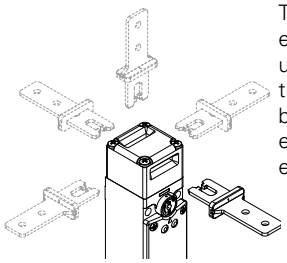
The strong interlocking system guarantees a maximum actuator holding force of 2500 N.

Actuating regulation zone



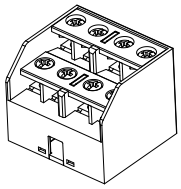
This switch has a wide backlash of the actuator into the head (4,5 mm) to avoid that door gaskets keep in traction the actuator on the solenoid. With closed door, check that the actuator doesn't knock straight against the head of the switch; it must be in the adjustment zone (0,5…5 mm)

Rotating heads and devices



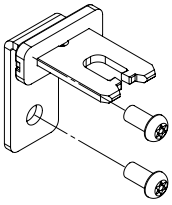
The head can be quickly rotated on each of the 4 sides of the switch by unfastening the four fixing screws. Also the lock release device and the release button can be rotated in 90° steps; this enables the switch to assume 32 different configurations.

4 poles contact block



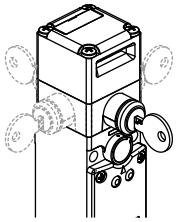
Innovative 4 poles contact block, available in different contacts configurations to monitor the actuator or the solenoid (patented). The contact block is supplied with no-loosing screws and self-lifting plates

Safety screws for actuators



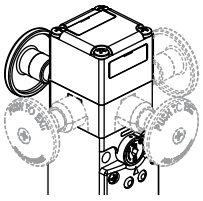
These new screws have tamper-resistant Torx buttonheads.
Devices fixed with this kind of screws cannot be removed or tampered by common tools.
See accessories page 6/5.

Release device with rotating lock



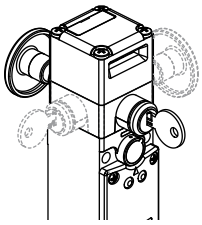
The auxiliary release device with rotating lock is used to allow the maintenance or the entry into the machinery to authorized personnel only. Rotating the key, will make the same action of the solenoid, that is move solenoid contacts and release the actuator. The device can be rotated allowing the installation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

Emergency release push button



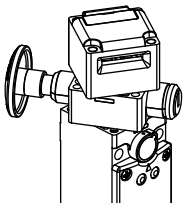
This device is used when the safety switch controls hazardous areas where operators may physically enter with all their body. The release button, oriented towards inside the machinery, allows the exit of the operator accidentally trapped also in case of possible black-out. Pushing the button, it will be actuated the same function of the auxiliary release device. To reset the switch, restore the button to the initial position. The emergency button can be rotated, 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.

Lock release device and emergency push 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 is possible to activate the button and unlock the switch. To reset the switch is necessary to restore lock and button to their initial position.

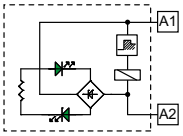
Not detachable head and devices



The head and the release devices can be rotated but they are not detachable to each other. In such a way the switch is safer because the installer do not have to worry about the assembly of various components and there is a lower probability of damages (loss of small parts, dirt penetration, etc.)

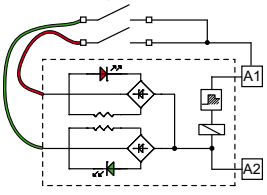
Signalling LED type A

In the version with signalling LED type A, two green LED 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 control the different states of the switch.



Description

Working conditions

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

state A: with the actuator inserted and blocked by the solenoid

state B: with the actuator inserted but not blocked

state C: with the actuator extracted

All or some of these states may be controlled through the positive opening 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

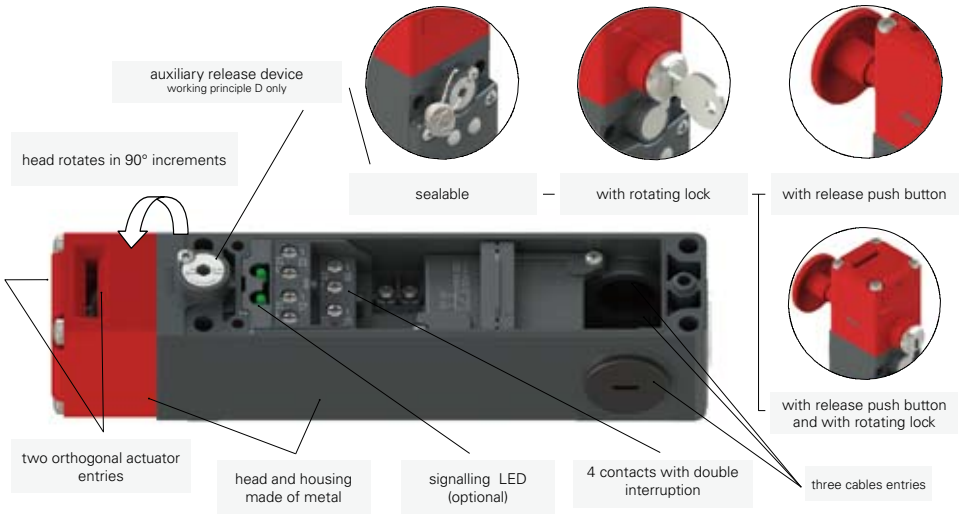
It is also possible to choose between two working principles for the actuator locking:

- **Working principle D**: Actuator blocked with de-energized solenoid. Actuator release is obtained by power supply to the solenoid (see example of working cycle steps).
- **Working principle E:** Actuator blocked with energized solenoid. The unlock 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.

Product versatility

This series of products includes many technical solutions that results in easier installation and working:

- Four different types of stainless steel actuators, suitable to be fixed in several positions and with insertion radius arc equal to or over 80 mm.
- Swinging head, in 90° steps, with two actuator entries for easy installation of the switch. Heads D5, D6 and D7 are provided with release devices that can be rotated independently to the actuator entry side. All parts of heads are rotating but not detachable from the body, in order to avoid any tampering or wrong assembling during the installation.
- To extract the inserted but not blocked actuator, a 30 N force is necessary, that avoids the guard opening because of vibrations or impacts.
- Extremely heavy mechanical system of actuator locking, able to support traction forces up to 2500 N.
- When actuator is locked, it can still move a little (4,5 mm), to avoid that door gaskets keep in traction the actuator on the solenoid.
- Housing with three conduit entries for an easier installation or connection in series.
- Electronic control of the power supply. This technical solution resolves the problems that may derive from not stable power supply (machine distance from main transformers, tension variation between night/day hours), allowing also a low solenoid power consumption and consequently enlarging the working temperatures range of the switch.



- No-loosing screws contact blocks, fingers protection, contacts with double interruption, high contact reliability.
- Version with signalling LED connected to the power supply or freely linked by the installer. LED are externally visible through the housing cover.

Release device

Versions with D working principle are supplied with a sealable auxiliary release device used by technicians during the installation or to access the machine in case of black-out.

Head D1:
- The auxiliary release device is actuated by screwing to the end the safety dowel and rotating the device by 180°.
- The arrow on the switch cover indicates the auxiliary release device state. After the actuator release, put in the start position and reposition the safety dowel.
- To avoid improper use of the auxiliary release device during the usual machine working cycle, it has to be sealed with some drops of paint or by lead sealing.

Head D5: The auxiliary release device is composed of a lock with double key supplied on issue.

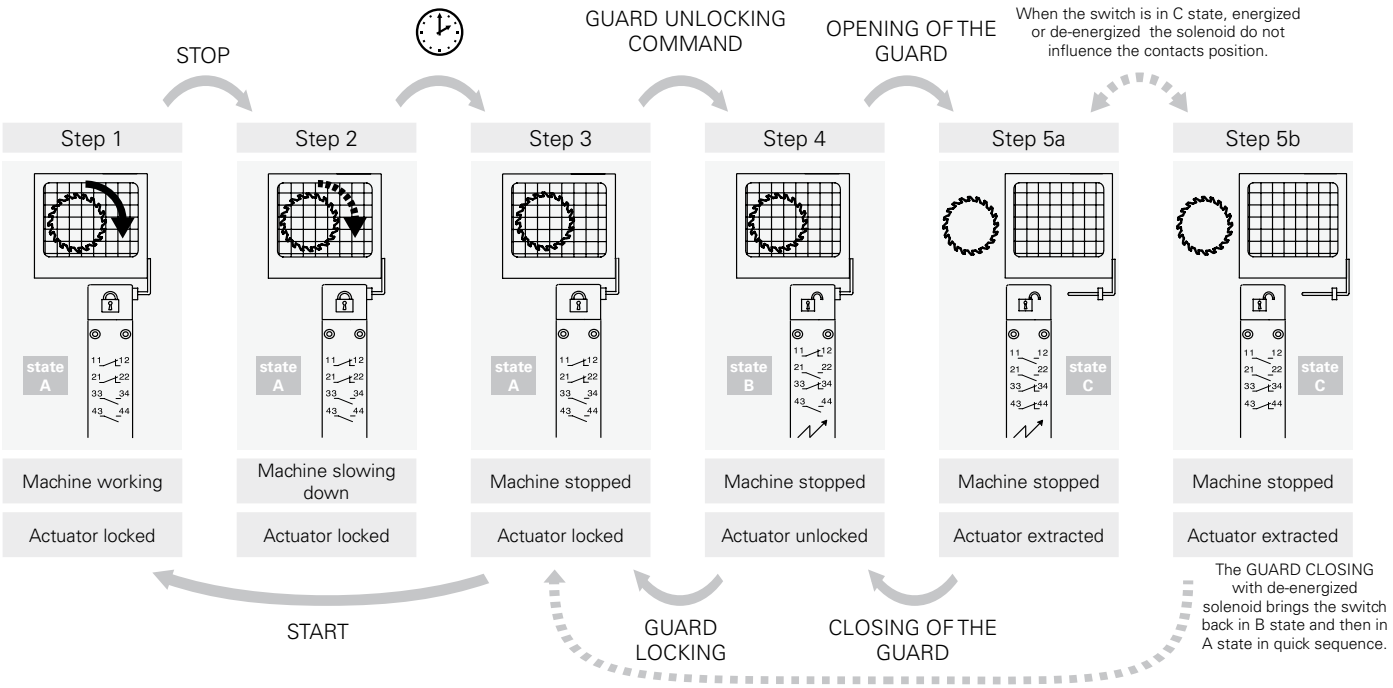
Head D7: The auxiliary release device is composed of a mushroom-head push button with no panic functions. This device must be rotated towards the inner and dangerous side of the machine so that an operator entrapped could activate it, release the switch and go out of the area. To restore the switch, reset the push button. This device cannot be used for functions of emergency stop of the machine.

Head D6: This head has contemporaneously functions of heads D5 and D7. The release occurs always, any of two devices is activated (push button or lock).

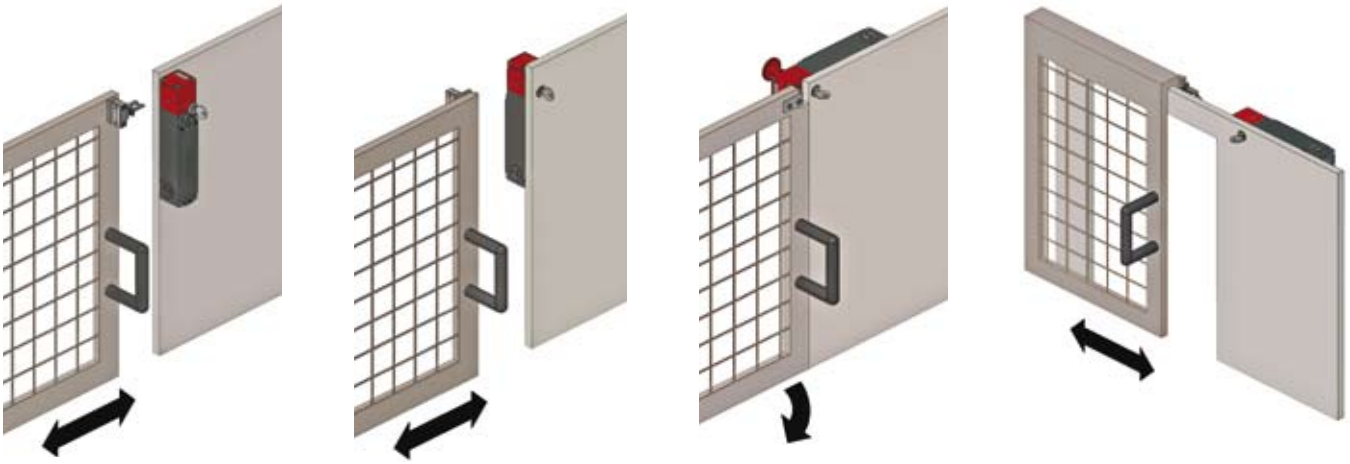
Gate monitoring

These switches alone cannot protect operators or maintenance men where they may physically enter with all their body in the hazardous area, because an involuntary 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 foresee a system to avoid that risk, as for example the pad lockable device to lock the actuator entry, item VF KB2 at page 4/86 or a safety handle with padlocks as for example VF AP-P11B-200P (page 4/109).

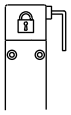
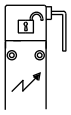
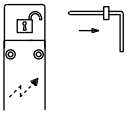
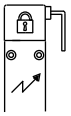
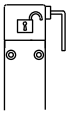
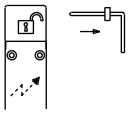
Example of working cycle steps with FG 60AD1D0A-F21 (switch with working principle D)



Application examples on machinery guards



Contacts position in switch states

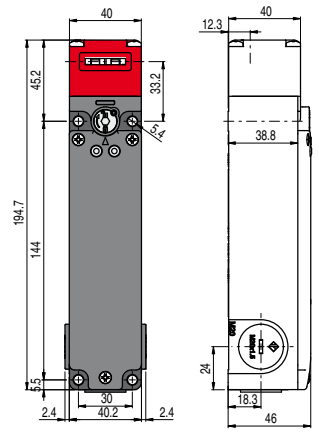
	Working principle D locked actuator with de-energized solenoid			Working principle E locked actuator with energized solenoid		
Operation state	state A	state B	state C	state A	state B	state C
Actuator	Inserted and locked	Inserted and unlocked	Extracted	Inserted and locked	Inserted and unlocked	Extracted
Solenoid	De-energized	Energized	-	Energized	De-energized	-
						
FG 60A••••• 1NO+1NC controlled by the solenoid 1NO+1NC 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 60B••••• 2NC controlled by the solenoid 1NO+1NC 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 60C••••• 3NC controlled by the solenoid 1NC 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 60D••••• 1NO+1NC controlled by the solenoid 2NC 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 60E••••• 1NO+2NC controlled by the solenoid 1NC 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 60F••••• 1NO+2NC controlled by the solenoid 1NO 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 31 32 43 44	11 12 21 22 31 32 43 44	11 12 21 22 31 32 43 44
FG 60G••••• 2NC controlled by the solenoid 2NC 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 60H••••• 4NC controlled by the solenoid	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 60I••••• 3NC controlled by the solenoid 1NO 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 60L••••• 2NO+1NC controlled by the solenoid 1NC 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 60M••••• 2NO+1NC controlled by the solenoid 1NO 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 60N••••• 1NO+1NC controlled by the solenoid 2NO 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 60P••••• 1NC controlled by the solenoid 3NC 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 60R••••• 2NO+2NC controlled by the solenoid	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 60S••••• 1NC controlled by the solenoid 2NO+1NC 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 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 31 32 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

Dimensional drawings

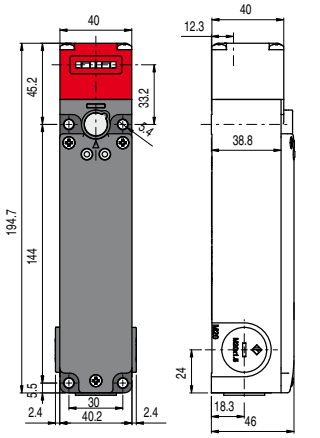
Contacts type:

L = slow action

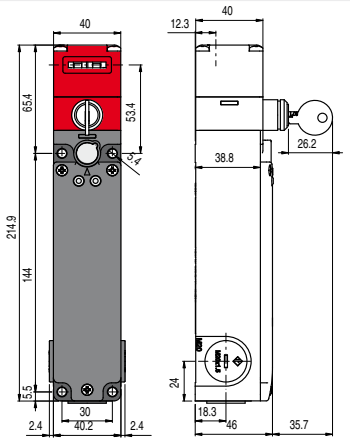
D working principle with sealable auxiliary release device, supplied without actuator



E working principle, supplied without actuator



D working principle with lock release device, supplied without actuator

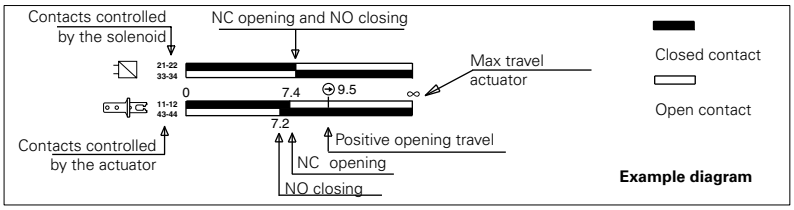


Contact blocks

		D working principle with sealable auxiliary release device, supplied without actuator			E working principle, supplied without actuator			D working principle with lock release device, supplied without actuator		
60A	L	FG 60AD1D0A	1NO+1NC	1NO+1NC	FG 60AD1E0A	1NO+1NC	1NO+1NC	FG 60AD5D0A	1NO+1NC	1NO+1NC
60B	L	FG 60BD1D0A	2NC	1NO+1NC	FG 60BD1E0A	2NC	1NO+1NC	FG 60BD5D0A	2NC	1NO+1NC
60C	L	FG 60CD1D0A	3NC	1NC	FG 60CD1E0A	3NC	1NC	FG 60CD5D0A	3NC	1NC
60D	L	FG 60DD1D0A	1NO+1NC	2NC	FG 60DD1E0A	1NO+1NC	2NC	FG 60DD5D0A	1NO+1NC	2NC
60E	L	FG 60ED1D0A	1NO+2NC	1NC	FG 60ED1E0A	1NO+2NC	1NC	FG 60ED5D0A	1NO+2NC	1NC
60F	L	FG 60FD1D0A	1NO+2NC	1NO	FG 60FD1E0A	1NO+2NC	1NO	FG 60FD5D0A	1NO+2NC	1NO
60G	L	FG 60GD1D0A	2NC	2NC	FG 60GD1E0A	2NC	2NC	FG 60GD5D0A	2NC	2NC
60H	L	FG 60HD1D0A	4NC	/	FG 60HD1E0A	4NC	/	FG 60HD5D0A	4NC	/
60I	L	FG 60ID1D0A	3NC	1NO	FG 60ID1E0A	3NC	1NO	FG 60ID5D0A	3NC	1NO
60L	L	FG 60LD1D0A	2NO+1NC	1NC	FG 60LD1E0A	2NO+1NC	1NC	FG 60LD5D0A	2NO+1NC	1NC
60M	L	FG 60MD1D0A	2NO+1NC	1NO	FG 60MD1E0A	2NO+1NC	1NO	FG 60MD5D0A	2NO+1NC	1NO
60N	L	FG 60ND1D0A	1NO+1NC	2NO	FG 60ND1E0A	1NO+1NC	2NO	FG 60ND5D0A	1NO+1NC	2NO
60P	L	FG 60PD1D0A	1NC	3NC	FG 60PD1E0A	1NC	3NC	FG 60PD5D0A	1NC	3NC
60R	L	FG 60RD1D0A	2NO+2NC	/	FG 60RD1E0A	2NO+2NC	/	FG 60RD5D0A	2NO+2NC	/
60S	L	FG 60SD1D0A	1NC	2NO+1NC	FG 60SD1E0A	1NC	2NO+1NC	FG 60SD5D0A	1NC	2NO+1NC
60T	L	FG 60TD1D0A	1NC	1NO+2NC	FG 60TD1E0A	1NC	1NO+2NC	FG 60TD5D0A	1NC	1NO+2NC
60U	L	FG 60UD1D0A		4NC	FG 60UD1E0A		4NC	FG 60UD5D0A		4NC
60V	L	FG 60VD1D0A	2NC	2NO	FG 60VD1E0A	2NC	2NO	FG 60VD5D0A	2NC	2NO
60X	L	FG 60XD1D0A	1NO	3NC	FG 60XD1E0A	1NO	3NC	FG 60XD5D0A	1NO	3NC
60Y	L	FG 60YD1D0A	1NO	1NO+2NC	FG 60YD1E0A	1NO	1NO+2NC	FG 60YD5D0A	1NO	1NO+2NC
Min. force		30 N (60 N ⊖)			30 N (60 N ⊖)			30 N (60 N ⊖)		
Travel diagrams		page 4/84 - group 1			page 4/84 - group 1			page 4/84 - group 1		

How to read travel diagrams

All measures in the diagrams are in mm



IMPORTANT:
NC contact has to be considered with inserted and locked actuator. **In safety applications** it is necessary to activate the switch **at least up to the positive opening point** indicated in the diagrams with the symbol ⊖. Operate the switch **at least with the positive opening force**, indicated between brackets, below each article, next the value of minimum force.

Accessories See page 6/1

All measures in the drawings are in mm

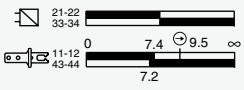
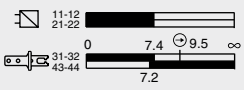
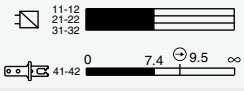
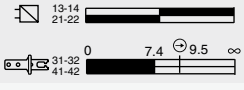
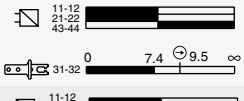
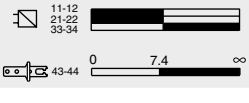
Contacts type:

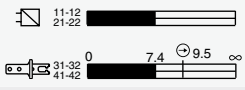
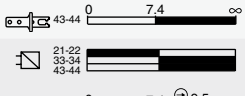
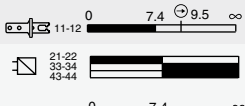
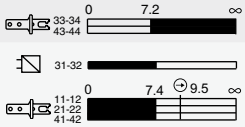
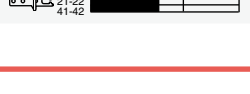
L = slow action

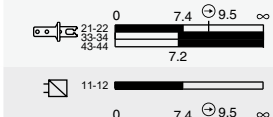
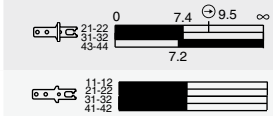
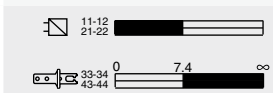
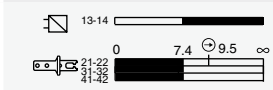
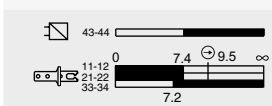
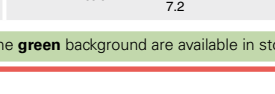
Contact blocks

		D working principle, with lock release device and release push button, supplied without actuator			D working principle, with release push button, supplied without actuator			E working principle, with release push button, supplied without actuator		
60A	L	FG 60AD6D0A	1NO+1NC	1NO+1NC	FG 60AD7D0A	1NO+1NC	1NO+1NC	FG 60AD7E0A	1NO+1NC	1NO+1NC
60B	L	FG 60BD6D0A	2NC	1NO+1NC	FG 60BD7D0A	2NC	1NO+1NC	FG 60BD7E0A	2NC	1NO+1NC
60C	L	FG 60CD6D0A	3NC	1NC	FG 60CD7D0A	3NC	1NC	FG 60CD7E0A	3NC	1NC
60D	L	FG 60DD6D0A	1NO+1NC	2NC	FG 60DD7D0A	1NO+1NC	2NC	FG 60DD7E0A	1NO+1NC	2NC
60E	L	FG 60ED6D0A	1NO+2NC	1NC	FG 60ED7D0A	1NO+2NC	1NC	FG 60ED7E0A	1NO+2NC	1NC
60F	L	FG 60FD6D0A	1NO+2NC	1NO	FG 60FD7D0A	1NO+2NC	1NO	FG 60FD7E0A	1NO+2NC	1NO
60G	L	FG 60GD6D0A	2NC	2NC	FG 60GD7D0A	2NC	2NC	FG 60GD7E0A	2NC	2NC
60H	L	FG 60HD6D0A	4NC	/	FG 60HD7D0A	4NC	/	FG 60HD7E0A	4NC	/
60I	L	FG 60ID6D0A	3NC	1NO	FG 60ID7D0A	3NC	1NO	FG 60ID7E0A	3NC	1NO
60L	L	FG 60LD6D0A	2NO+1NC	1NC	FG 60LD7D0A	2NO+1NC	1NC	FG 60LD7E0A	2NO+1NC	1NC
60M	L	FG 60MD6D0A	2NO+1NC	1NO	FG 60MD7D0A	2NO+1NC	1NO	FG 60MD7E0A	2NO+1NC	1NO
60N	L	FG 60ND6D0A	1NO+1NC	2NO	FG 60ND7D0A	1NO+1NC	2NO	FG 60ND7E0A	1NO+1NC	2NO
60P	L	FG 60PD6D0A	1NC	3NC	FG 60PD7D0A	1NC	3NC	FG 60PD7E0A	1NC	3NC
60R	L	FG 60RD6D0A	2NO+2NC	/	FG 60RD7D0A	2NO+2NC	/	FG 60RD7E0A	2NO+2NC	/
60S	L	FG 60SD6D0A	1NC	2NO+1NC	FG 60SD7D0A	1NC	2NO+1NC	FG 60SD7E0A	1NC	2NO+1NC
60T	L	FG 60TD6D0A	1NC	1NO+2NC	FG 60TD7D0A	1NC	1NO+2NC	FG 60TD7E0A	1NC	1NO+2NC
60U	L	FG 60UD6D0A		4NC	FG 60UD7D0A		4NC	FG 60UD7E0A		4NC
60V	L	FG 60VD6D0A	2NC	2NO	FG 60VD7D0A	2NC	2NO	FG 60VD7E0A	2NC	2NO
60X	L	FG 60XD6D0A	1NO	3NC	FG 60XD7D0A	1NO	3NC	FG 60XD7E0A	1NO	3NC
60Y	L	FG 60YD6D0A	1NO	1NO+2NC	FG 60YD7D0A	1NO	1NO+2NC	FG 60YD7E0A	1NO	1NO+2NC
Min. force		30 N (60 N ⊖)			30 N (60 N ⊖)			30 N (60 N ⊖)		
Travel diagrams		page 4/84 - group 1			page 4/84 - group 1			page 4/84 - group 1		

Travel diagrams table

Contact blocks	Group 1
60A 2NO+2NC	
60B 1NO+3NC	
60C 4NC	
60D 1NO+3NC	
60E 1NO+3NC	
60F 2NO+2NC	

Contact blocks	Group 1
60G 4NC	
60H 4NC	
60I 1NO+3NC	
60L 1NO+3NC	
60M 3NO+1NC	
60N 3NO+1NC	
60P 4NC	

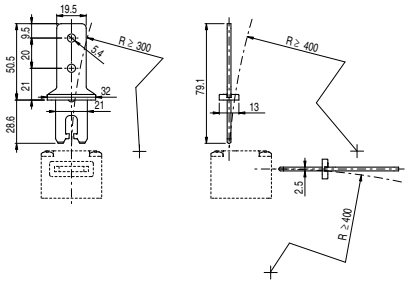
Contact blocks	Group 1
60R 2NO+2NC	
60S 2NO+2NC	
60T 1NO+3NC	
60U 4NC	
60V 2NO+2NC	
60X 1NO+3NC	
60Y 2NO+2NC	

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

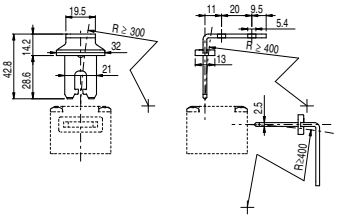
Stainless steel actuators

IMPORTANT: These actuators must be used with FG series only (e.g. FG 60AD1D0A).

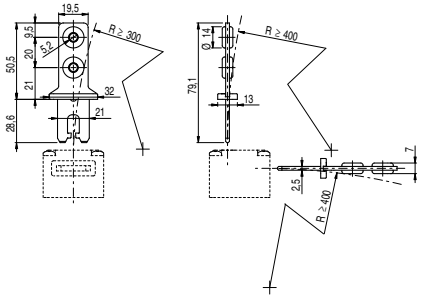
Article	Description
VF KEYF20	Straight actuator



Article	Description
VF KEYF21	Right-angled actuator



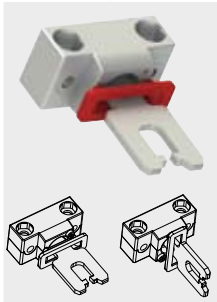
Article	Description
VF KEYF22	Actuator with rubber mountings

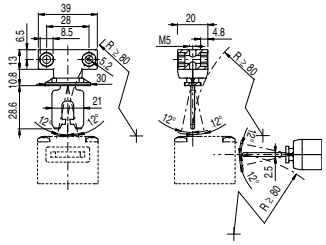


Universal actuator VF KEYF28

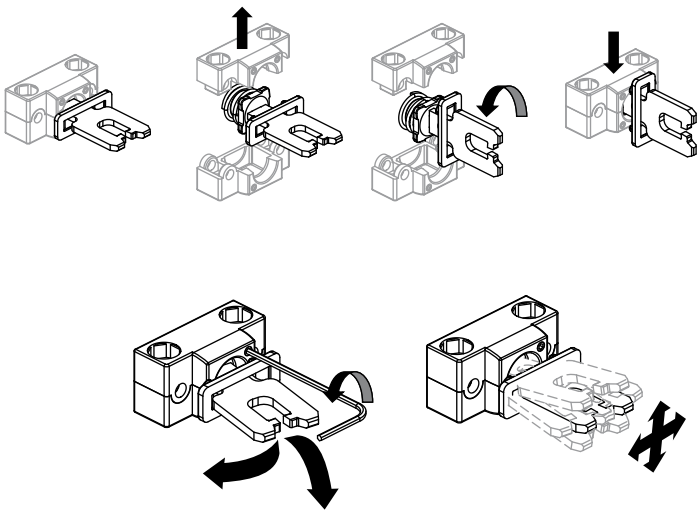
IMPORTANT: These actuators must be used with FG series only (e.g. FG 60AD1D0A).

Article	Description
VF KEYF28	Universal actuator

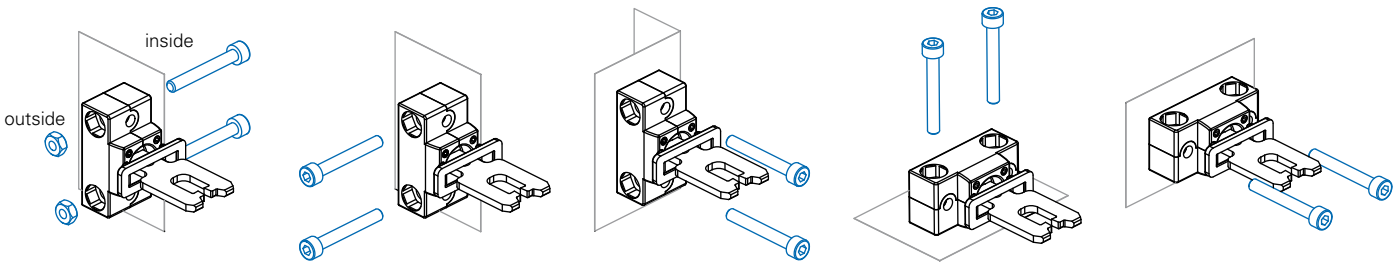




Joined and two directions adjustable actuator for doors with reduced dimensions.
The actuator has two couples of fixing holes and it is possible to rotate by 90° the actuator-working plan.



for inaccurate doors



Accessories See page 6/1

Accessories for sealing

Pliers, steel wire and lead seals used to seal the auxiliary release device.

Article	Description
VF FSPB-200	Set of 200 lead seals
VF FSPB-10	Set of 10 lead seals

Article	Description
VF FSFI-400	400 m steel wire roll
VF FSFI-10	10 m steel wire roll

Article	Description
VF FSPZ	Plier without logo

Accessories

Article	Description
VF KB2	Actuator entry locking device

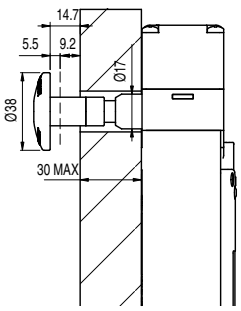
Padlockable device to lock the actuator entry in order to prevent from the accidental closing of the door behind operators while they are inside the machine. To be used only with FG series. Padlocks diameter holes 9 mm

Article	Description
VF KLA371	Set of 2 locking keys

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

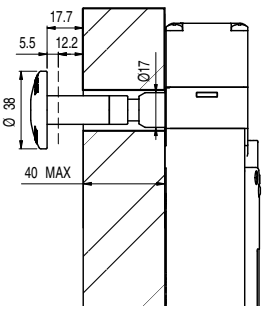
Items with code on the **green** background are available in stock

Other release button lengths



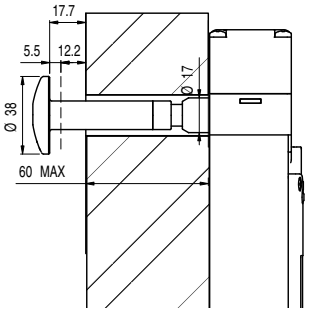
-LP30

Wall thickness length
from 15 to 30 mm



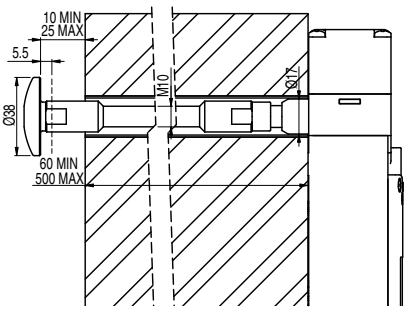
-LP40

Wall thickness length
from 30 to 40 mm



-LP60

Wall thickness length
from 40 to 60 mm



-LPRG

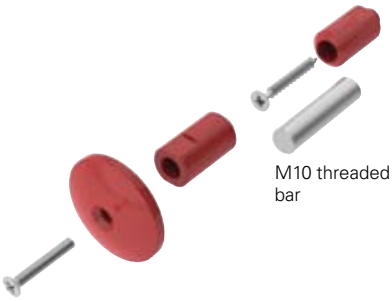
Wall thickness length
60 ... 500 mm

- Avoid torsion and bending on the release button bar.
- To guarantee the device correct operation, keep a distance of 10 to 25 mm between the wall and the release button.
- Keep clean the release push 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±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.
- To guarantee the device correct operation, keep a distance of 10 to 25 mm between the wall and the release button.
- Keep clean the release push 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 pushbutton

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



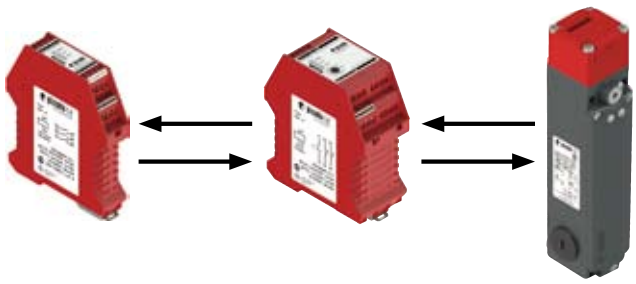
M10 threaded bar

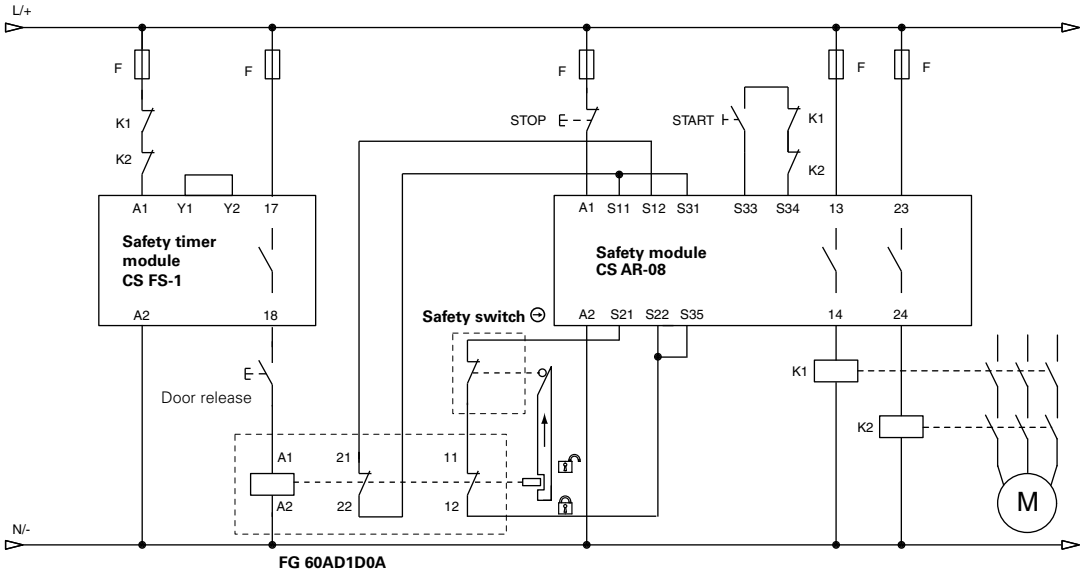
Article	Description
VF FG-LPRG	Metal release pushbutton from 60 to 500 mm, supplied with 2 supports and 2 screws, without M10 threaded bar

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. There are available safety modules with instantaneous or delayed contacts suitable for type 0 (immediate stop) or type 1 (monitored stop) emergency circuits.
Safety switches with solenoid series FG could be connected to safety modules in order to obtain safety circuits up to PLe in accordance with EN ISO 13849. For any technical information or wiring diagram please contact our technical staff.





FG 60AD1D0A