Selection diagram

**ACTUATORS**

- **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.

**CONTACT BLOCKS**

- **CONTACT BLOCKS**
  - 1NO+1NC 2NC 3NC 1NO+1NC 1NO+2NC 1NO+2NC 2NC 4NC 3NC
  - 1NO+1NC 1NO+1NC 1NC 2NC 1NC 1NO 2NC 1NO

- **SOLENOID SUPPLY VOLTAGE**
  - 24V AC/DC
  - 120V AC
  - 230V AC
  - 12V DC

- **CONDUIT ENTRIES**
  - Threaded conduit entries
  - M20 (standard)

- **K95**
  - 12 poles from bottom

- **K96**
  - 12 poles from right

- **K97**
  - 12 poles from left

**PRODUCTS**

- **ACCESSORY SOLD SEPARATELY**

**WORKING PRINCIPLE**

- **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

- **WITH M23 METAL CONNECTOR**
  - Assembled and wired

- **WITH K95**
  - 12 poles from bottom

- **WITH K96**
  - 12 poles from right

- **WITH K97**
  - 12 poles from left
Code structure

**Integrated contact blocks**

<table>
<thead>
<tr>
<th>Article</th>
<th>Solenoid operated</th>
<th>Actuator operated</th>
</tr>
</thead>
<tbody>
<tr>
<td>60A</td>
<td>1NO+1NC</td>
<td>1NO+1NC</td>
</tr>
<tr>
<td>60B</td>
<td>2NC</td>
<td>1NO+1NC</td>
</tr>
<tr>
<td>60C</td>
<td>3NC</td>
<td>1NC</td>
</tr>
<tr>
<td>60D</td>
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<tr>
<td>60E</td>
<td>1NO+2NC</td>
<td>1NC</td>
</tr>
<tr>
<td>60F</td>
<td>1NO+2NC</td>
<td>1NO</td>
</tr>
<tr>
<td>60G</td>
<td>2NC</td>
<td>2NC</td>
</tr>
<tr>
<td>60H</td>
<td>4NC</td>
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<tr>
<td>60I</td>
<td>3NC</td>
<td>1NO</td>
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<td>60P</td>
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<td>3NC</td>
</tr>
<tr>
<td>60R</td>
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</tr>
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<td>60S</td>
<td>1NC</td>
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<tr>
<td>60T</td>
<td>1NC</td>
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<tr>
<td>60U</td>
<td>/</td>
<td>4NC</td>
</tr>
<tr>
<td>60V</td>
<td>2NC</td>
<td>2NO</td>
</tr>
</tbody>
</table>

**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**

<table>
<thead>
<tr>
<th>Code</th>
<th>Voltage Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>24 Vac/DC (-10% ... +25%)</td>
</tr>
<tr>
<td>1</td>
<td>120 Vac (-15% ... +10%)</td>
</tr>
<tr>
<td>2</td>
<td>230 Vac (-15% ... +10%)</td>
</tr>
<tr>
<td>3</td>
<td>12 Vdc (-15% ... +20%)</td>
</tr>
</tbody>
</table>

**Options**

- **K95**: with M23 metal connector assembled and wired, 12 poles from bottom
- **K96**: with M23 metal connector assembled and wired, 12 poles from right
- **K97**: with M23 metal connector assembled and wired, 12 poles from left

**Contacts type**

- **silver contacts (standard)**
- **silver contacts gold plated 1 µm**

**Actuators**

- **without actuator**
- **F20**: with straight actuator
- **F21**: with right-angled actuator
- **F22**: with actuator with rubber mountings
- **F28**: with universal actuator

**Releas 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

**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

**Attention!** The feasibility of a code number does not mean the effective availability of a product. Please contact our sales office.
Safety switches with solenoid and separate actuator

**Main features**
- Actuator holding force 2500 N
- 10 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

**Housing**
Metal housing, coated with baked epoxy powder.
Three conduit entries M20
Protection degree: IP67 according to EN 60529 (electrical contacts)

**General data**
- Safety parameters: see page 6/32
- Ambient temperature: from -25°C to +60°C
- Max operating frequency: 600 operations cycles/hour
- Mechanical endurance: 1 million of operations cycles
- 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 6/1-6/10

**Cross section of the conductors (flexible copper wire)**
- Contact blocks: min. 1 x 0,34 mm² (1 x AWG 22)
- Contact blocks: max. 2 x 1,5 mm² (2 x AWG 16)

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

**In conformity with requirements requested by:**
- Positive contact opening in conformity with standards: IEC 60947-5-1, EN 60947-5-1, VDE 0660-206.

**Utilization categories**
- Alternate current: AC15 (50...60 Hz)
- Rated insulation voltage (Ue): 120 250 400
- Protection against short circuits: fuse 1 A type gG

**Electrical data**
- Thermal current (ITH): 10 A
- Rated insulation voltage (Ue): 400 Vac 300 Vdc
- Protection against short circuits: 1000 A according to EN 60947-5-1
- Pollution degree: fuse 10 A 500 V type gG

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

**Cross section of the conductors (flexible copper wire)**
- Contact blocks: min. 1 x 0,34 mm² (1 x AWG 22)
- Contact blocks: max. 2 x 1,5 mm² (2 x AWG 16)

**Utilization categories**
- Alternate current: AC15 (50...60 Hz)
- Rated insulation voltage (Ue): 120 250 400
- Protection against short circuits: fuse 1 A type gG

**Approvals:**
- IEC 60947-5-1, UL 508

**Markings and quality marks:**
- Approval IMQ: CA02.03848
- Approval UL: E131787
### Data type approved by IMQ

- Rated insulation voltage (Ui): 400 Vac
- Thermal current (ith): 10 A
- Protection against short circuits: fuse 10 A 500 V type aM
- Protection degree: IP67
- MV terminals (screw clamps)
- Pollution degree 3
- Utilization category: AC15
- Operation voltage (Ue): 400 Vac (50 Hz)
- Operation current (Ie): 3 A
- Forms of the contact element: 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, 60J, 60K, 60L, 60M, 60N, 60O, 60P, 60Q, 60R, 60S, 60T, 60U, 60V

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

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

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.

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 acted 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 (.partition S) are switched in the transition between the state A and state B, while the electric contacts marked with the symbol of the actuator (partition 3) 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 result 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.
- Electronic control of the power supply, which allow a wide tolerance on supply voltage. 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.
- Product versatility

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°.
- **Head D5**: The auxiliary release device is composed of a lock with double key supplied on issue.
- **Head D6**: The auxiliary release device is composed of a lock with double key supplied on issue.

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 4/70 or a safety handle with padlocks as for example VF AP-P11B-200P (page 4/93).
**Example of working cycle steps with FG 60AD1D0A-F21 (switch with working principle D)**

<table>
<thead>
<tr>
<th>Step</th>
<th>Machine</th>
<th>Actuator</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>working</td>
<td>locked</td>
</tr>
<tr>
<td>2</td>
<td>slowing down</td>
<td>locked</td>
</tr>
<tr>
<td>3</td>
<td>stopped</td>
<td>unlocked</td>
</tr>
<tr>
<td>4</td>
<td>stopped</td>
<td>locked</td>
</tr>
<tr>
<td>5a</td>
<td>stopped</td>
<td>extracted</td>
</tr>
<tr>
<td>5b</td>
<td>stopped</td>
<td>extracted</td>
</tr>
</tbody>
</table>

Application examples on machinery guards

The GUARD CLOSING with de-energized solenoid brings the switch back in B state and then in A state in quick sequence.
### Contacts position in switch states

#### Working principle D
locked actuator with de-energized solenoid

<table>
<thead>
<tr>
<th>Actuator state</th>
<th>FG 60s****</th>
<th>FG 60h****</th>
<th>FG 60c****</th>
<th>FG 60l****</th>
</tr>
</thead>
<tbody>
<tr>
<td>1NO+1NC controlled by the solenoid</td>
<td>2A</td>
<td>3B</td>
<td>4C</td>
<td>5D</td>
</tr>
<tr>
<td>1NO+1NC controlled by the actuator</td>
<td>2B</td>
<td>3C</td>
<td>4D</td>
<td>5E</td>
</tr>
<tr>
<td>2NO+1NC controlled by the solenoid</td>
<td>2A</td>
<td>3B</td>
<td>4C</td>
<td>5D</td>
</tr>
<tr>
<td>2NO+1NC controlled by the actuator</td>
<td>2B</td>
<td>3C</td>
<td>4D</td>
<td>5E</td>
</tr>
<tr>
<td>1NO controlled by the actuator</td>
<td>2B</td>
<td>3C</td>
<td>4D</td>
<td>5E</td>
</tr>
<tr>
<td>1NC controlled by the actuator</td>
<td>2B</td>
<td>3C</td>
<td>4D</td>
<td>5E</td>
</tr>
<tr>
<td>3NC controlled by the actuator</td>
<td>2B</td>
<td>3C</td>
<td>4D</td>
<td>5E</td>
</tr>
</tbody>
</table>

#### Working principle E
locked actuator with energized solenoid

<table>
<thead>
<tr>
<th>Actuator state</th>
<th>FG 60s****</th>
<th>FG 60h****</th>
<th>FG 60c****</th>
<th>FG 60l****</th>
</tr>
</thead>
<tbody>
<tr>
<td>1NO+1NC controlled by the solenoid</td>
<td>2A</td>
<td>3B</td>
<td>4C</td>
<td>5D</td>
</tr>
<tr>
<td>1NO+1NC controlled by the actuator</td>
<td>2B</td>
<td>3C</td>
<td>4D</td>
<td>5E</td>
</tr>
<tr>
<td>2NO+1NC controlled by the solenoid</td>
<td>2A</td>
<td>3B</td>
<td>4C</td>
<td>5D</td>
</tr>
<tr>
<td>2NO+1NC controlled by the actuator</td>
<td>2B</td>
<td>3C</td>
<td>4D</td>
<td>5E</td>
</tr>
<tr>
<td>1NO controlled by the actuator</td>
<td>2B</td>
<td>3C</td>
<td>4D</td>
<td>5E</td>
</tr>
<tr>
<td>1NC controlled by the actuator</td>
<td>2B</td>
<td>3C</td>
<td>4D</td>
<td>5E</td>
</tr>
<tr>
<td>3NC controlled by the actuator</td>
<td>2B</td>
<td>3C</td>
<td>4D</td>
<td>5E</td>
</tr>
</tbody>
</table>

**Diagram:**

- **FG 60s****:**
  - 1NO+1NC controlled by the solenoid
  - 1NO+1NC controlled by the actuator
  - 2NO+1NC controlled by the solenoid
  - 2NO+1NC controlled by the actuator
  - 1NO controlled by the actuator
  - 1NC controlled by the actuator
  - 3NC controlled by the actuator

- **FG 60h****:**
  - 1NO+1NC controlled by the solenoid
  - 1NO+1NC controlled by the actuator
  - 2NO+1NC controlled by the solenoid
  - 2NO+1NC controlled by the actuator
  - 1NO controlled by the actuator
  - 1NC controlled by the actuator
  - 3NC controlled by the actuator

- **FG 60c****:**
  - 1NO+1NC controlled by the solenoid
  - 1NO+1NC controlled by the actuator
  - 2NO+1NC controlled by the solenoid
  - 2NO+1NC controlled by the actuator
  - 1NO controlled by the actuator
  - 1NC controlled by the actuator
  - 3NC controlled by the actuator

- **FG 60l****:**
  - 1NO+1NC controlled by the solenoid
  - 1NO+1NC controlled by the actuator
  - 2NO+1NC controlled by the solenoid
  - 2NO+1NC controlled by the actuator
  - 1NO controlled by the actuator
  - 1NC controlled by the actuator
  - 3NC controlled by the actuator

**Legend:**

- **FG 60s****:**
  - 1NO+1NC
  - 1NO+1NC
  - 2NO+1NC
  - 2NO+1NC
  - 1NO
  - 1NC
  - 3NC
- **FG 60h****:**
  - 1NO+1NC
  - 1NO+1NC
  - 2NO+1NC
  - 2NO+1NC
  - 1NO
  - 1NC
  - 3NC
- **FG 60c****:**
  - 1NO+1NC
  - 1NO+1NC
  - 2NO+1NC
  - 2NO+1NC
  - 1NO
  - 1NC
  - 3NC
- **FG 60l****:**
  - 1NO+1NC
  - 1NO+1NC
  - 2NO+1NC
  - 2NO+1NC
  - 1NO
  - 1NC
  - 3NC

---

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**4D** Safety switches with solenoid and separate actuator

### Dimensional drawings

<table>
<thead>
<tr>
<th>Contacts type:</th>
<th>Switch with D working principle with sealable auxiliary release device, supplied without actuator</th>
<th>Switch with E working principle, supplied without actuator</th>
<th>Switch with D working principle with lock release device, supplied without actuator</th>
</tr>
</thead>
<tbody>
<tr>
<td>60A</td>
<td>FG 60AD1D0A 1NO+1NC 1NO+1NC</td>
<td>FG 60AD1E0A 1NO+1NC 1NO+1NC</td>
<td>FG 60AD5D0A 1NO+1NC 1NO+1NC</td>
</tr>
<tr>
<td>60B</td>
<td>FG 60BD1D0A 2NC 1NO+1NC</td>
<td>FG 60BD1E0A 2NC 1NO+1NC</td>
<td>FG 60BD5D0A 2NC 1NO+1NC</td>
</tr>
<tr>
<td>60C</td>
<td>FG 60CD1D0A 3NC 1NC</td>
<td>FG 60CD1E0A 3NC 1NC</td>
<td>FG 60CD5D0A 3NC 1NC</td>
</tr>
<tr>
<td>60D</td>
<td>FG 60DD1D0A 1NO+1NC 2NC</td>
<td>FG 60DD1E0A 1NO+1NC 2NC</td>
<td>FG 60DD5D0A 1NO+1NC 2NC</td>
</tr>
<tr>
<td>60E</td>
<td>FG 60ED1D0A 1NO+2NC 1NC</td>
<td>FG 60ED1E0A 1NO+2NC 1NC</td>
<td>FG 60ED5D0A 1NO+2NC 1NC</td>
</tr>
<tr>
<td>60F</td>
<td>FG 60FD1D0A 1NO+2NC 1NO</td>
<td>FG 60FD1E0A 1NO+2NC 1NO</td>
<td>FG 60FD5D0A 1NO+2NC 1NO</td>
</tr>
<tr>
<td>60G</td>
<td>FG 60GD1D0A 2NC 2NC</td>
<td>FG 60GD1E0A 2NC 2NC</td>
<td>FG 60GD5D0A 2NC 2NC</td>
</tr>
<tr>
<td>60H</td>
<td>FG 60HD1D0A 4NC /</td>
<td>FG 60HD1E0A 4NC /</td>
<td>FG 60HD5D0A 4NC /</td>
</tr>
<tr>
<td>60I</td>
<td>FG 60ID1D0A 3NC 1NO</td>
<td>FG 60ID1E0A 3NC 1NO</td>
<td>FG 60ID5D0A 3NC 1NO</td>
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<tr>
<td>60L</td>
<td>FG 60LD1D0A 2NO+1NC 1NC</td>
<td>FG 60LD1E0A 2NO+1NC 1NC</td>
<td>FG 60LD5D0A 2NO+1NC 1NC</td>
</tr>
<tr>
<td>60M</td>
<td>FG 60MD1D0A 2NO+1NC 1NO</td>
<td>FG 60MD1E0A 2NO+1NC 1NO</td>
<td>FG 60MD5D0A 2NO+1NC 1NO</td>
</tr>
<tr>
<td>60N</td>
<td>FG 60ND1D0A 1NO+1NC 2NO</td>
<td>FG 60ND1E0A 1NO+1NC 2NO</td>
<td>FG 60ND5D0A 1NO+1NC 2NO</td>
</tr>
<tr>
<td>60P</td>
<td>FG 60PD1D0A 1NC 3NC</td>
<td>FG 60PD1E0A 1NC 3NC</td>
<td>FG 60PD5D0A 1NC 3NC</td>
</tr>
<tr>
<td>60R</td>
<td>FG 60RD1D0A 2NO+2NC /</td>
<td>FG 60RD1E0A 2NO+2NC /</td>
<td>FG 60RD5D0A 2NO+2NC /</td>
</tr>
<tr>
<td>60S</td>
<td>FG 60SD1D0A 1NC 2NO+1NC</td>
<td>FG 60SD1E0A 1NC 2NO+1NC</td>
<td>FG 60SD5D0A 1NC 2NO+1NC</td>
</tr>
<tr>
<td>60T</td>
<td>FG 60TD1D0A 1NC 1NO+2NC</td>
<td>FG 60TD1E0A 1NC 1NO+2NC</td>
<td>FG 60TD5D0A 1NC 1NO+2NC</td>
</tr>
<tr>
<td>60U</td>
<td>FG 60UD1D0A 4NC</td>
<td>FG 60UD1E0A 4NC</td>
<td>FG 60UD5D0A 4NC</td>
</tr>
<tr>
<td>60V</td>
<td>FG 60VD1D0A 2NC 2NO</td>
<td>FG 60VD1E0A 2NC 2NO</td>
<td>FG 60VD5D0A 2NC 2NO</td>
</tr>
</tbody>
</table>

**Contact blocks**

- **Min. force**
  - 30 N (60 N)

**Travel diagrams**

- page 4/68 - group 1

**How to read travel diagrams**

All measures in the diagrams are in mm.

**Example diagram**

- **Max travel**
  - Closed contact
  - Open contact
  - Positive opening travel

**CONTACTS controlled by the actuator**

- **NC opening and NO closing**

**CONTACTS controlled by the actuator**

- **Max travel**

**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 5/1

All measures in the drawings are in mm
### Travel diagrams table

<table>
<thead>
<tr>
<th>Contact blocks</th>
<th>Group 1</th>
<th>Contact blocks</th>
<th>Group 1</th>
<th>Contact blocks</th>
<th>Group 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>60A 2NO+2NC</td>
<td><img src="image1" alt="Diagram" /></td>
<td>60G 4NC</td>
<td><img src="image2" alt="Diagram" /></td>
<td>60P 4NC</td>
<td><img src="image3" alt="Diagram" /></td>
</tr>
<tr>
<td>60B 1NO+3NC</td>
<td><img src="image4" alt="Diagram" /></td>
<td>60H 4NC</td>
<td><img src="image5" alt="Diagram" /></td>
<td>60R 2NO+2NC</td>
<td><img src="image6" alt="Diagram" /></td>
</tr>
<tr>
<td>60C 4NC</td>
<td><img src="image7" alt="Diagram" /></td>
<td>60I 1NO+3NC</td>
<td><img src="image8" alt="Diagram" /></td>
<td>60S 2NO+2NC</td>
<td><img src="image9" alt="Diagram" /></td>
</tr>
<tr>
<td>60D 1NO+3NC</td>
<td><img src="image10" alt="Diagram" /></td>
<td>60L 1NO+3NC</td>
<td><img src="image11" alt="Diagram" /></td>
<td>60T 1NO+3NC</td>
<td><img src="image12" alt="Diagram" /></td>
</tr>
<tr>
<td>60E 1NO+3NC</td>
<td><img src="image13" alt="Diagram" /></td>
<td>60M 3NO+1NC</td>
<td><img src="image14" alt="Diagram" /></td>
<td>60U 4NC</td>
<td><img src="image15" alt="Diagram" /></td>
</tr>
<tr>
<td>60F 2NO+2NC</td>
<td><img src="image16" alt="Diagram" /></td>
<td>60N 3NO+1NC</td>
<td><img src="image17" alt="Diagram" /></td>
<td>60V 2NO+2NC</td>
<td><img src="image18" alt="Diagram" /></td>
</tr>
</tbody>
</table>

*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)

<table>
<thead>
<tr>
<th>Article</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>VF KEYF20</td>
<td>Straight actuator</td>
</tr>
<tr>
<td>VF KEYF21</td>
<td>Right-angled actuator</td>
</tr>
<tr>
<td>VF KEYF22</td>
<td>Actuator with rubber mountings</td>
</tr>
</tbody>
</table>

**Universal actuator VF KEYF28**

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

<table>
<thead>
<tr>
<th>Article</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>VF KEYF28</td>
<td>Universal actuator</td>
</tr>
</tbody>
</table>

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 the actuator-working plan (see picture).
### Accessories for sealing

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

<table>
<thead>
<tr>
<th>Article</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>VF FSPB-200</td>
<td>Set of 200 lead seals</td>
</tr>
<tr>
<td>VF FSPB-10</td>
<td>Set of 10 lead seals</td>
</tr>
<tr>
<td>VF FSFI-400</td>
<td>400 m steel wire roll</td>
</tr>
<tr>
<td>VF FSFI-10</td>
<td>10 m steel wire roll</td>
</tr>
<tr>
<td>VF FSPZ</td>
<td>Plier without logo</td>
</tr>
</tbody>
</table>

### Accessories

<table>
<thead>
<tr>
<th>Article</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>VF KB2</td>
<td>Actuator entry locking device</td>
</tr>
<tr>
<td></td>
<td>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.</td>
</tr>
<tr>
<td>VF KLA371</td>
<td>Set of 2 locking keys</td>
</tr>
<tr>
<td></td>
<td>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.</td>
</tr>
</tbody>
</table>
Safety switches with solenoid and separate actuator

Other release button lengths

<table>
<thead>
<tr>
<th>Model</th>
<th>Wall Thickness Length</th>
</tr>
</thead>
<tbody>
<tr>
<td>LP30</td>
<td>from 15 to 30 mm</td>
</tr>
<tr>
<td>LP40</td>
<td>from 30 to 40 mm</td>
</tr>
<tr>
<td>LP60</td>
<td>from 40 to 60 mm</td>
</tr>
<tr>
<td>LPRG</td>
<td>60 ... 500 mm</td>
</tr>
</tbody>
</table>

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

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.