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1 INFORMATION ON THIS DOCUMENT

1.1 Function

The present instruction manual provides information on installation, connection and safe use for the following articles: **FG ••••••••**

1.2 Target audience

The operations described in this instruction manual must be carried out by qualified personnel only, who are fully capable of understanding them, and with the technical qualifications required for operating the machines and plants in which the safety devices are to be installed.

1.3 Application field

These instructions apply exclusively to the products listed in paragraph Function, and their accessories.

1.4 Original instructions

The Italian language version is the original set of instructions for the device. Versions provided in other languages are translations of the original instructions.

2 SYMBOLS USED

This symbol indicates any relevant additional information

Attention: Any failure to observe this warning note can cause damage or malfunction, including possible loss of the safety function.

3 DESCRIPTION

3.1 Device description

The safety device described in this manual is defined as a coded, type-2 mechanical interlocking device with lock acc. to EN ISO 14119.

The safety switches with solenoid and separate actuator to which these usage instructions refer are safety devices designed and implemented for the control of gates, guards, enclosures, and doors in general, which are installed to protect dangerous parts of machines with or without inertia.

3.2 Intended use of the device

- The device described in these operating instructions is designed to be applied on industrial machines (as defined in the Machinery Directive) for state monitoring of movable guards.
- The direct sale of this device to the public is prohibited. Installation and use must be carried out by qualified personnel only.
- The use of the device for purposes other than those specified in this manual is prohibited.
- Any use other than as expressly specified in this manual shall be considered unintended by the manufacturer.
- Also considered unintended use:

a) using the device after having made structural, technical, or electrical modifications to it;
b) using the product in a field of application other than as described in paragraph TECHNICAL DATA.

4 INSTALLATION INSTRUCTIONS

Attention: Installing a protective device is not sufficient to ensure operator safety or compliance with machine safety standards or directives**.** Before installing a protective device, perform a specific risk analysis in accordance with the key health and safety requirements in the Machinery Directive. The manufacturer guarantees only the safe functioning of the product to which this instruction manual refers, and not the functional safety of the entire machine or entire plant.

4.1 Selection of the actuator type

Attention: Since the device is activated using an actuator with a low level of coding, the additional specifications given in Std. EN ISO 14119:2013 paragraph 7.2 must be applied during the installation.

Attention: Any other actuators present in the same place where the device has been installed must be segregated and kept under strict control in order to avoid any bypassing of the safety device. If new actuators are fitted, the original actuators must be disposed of or rendered inoperable.

4.2 Selection of the working principle

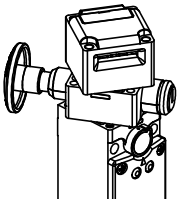
Attention: The device is available with two working principles:
1) Working principle D for versions FG •••D•D••: locked actuator with de-energised solenoid (spring lock, release with activation of inputs A1/A2);
2) Working principle E for versions FG •••D•E••: locked actuator with energised solenoid (lock with activation of A1/A2 inputs, spring release).

Working principle D (spring lock) maintains the actuator lock even if the machine is disconnected from the power supply. Therefore if the machine has dangerous movements with inertia, inaccessibility to dangerous parts (actuator locked) is ensured, even in the event of a sudden power failure. If the machine structure allows a person to enter the danger area with the whole body and possibly end up being stuck inside the machine, the switch must be provided with an escape release button, in order to allow the trapped person to get out even in case of power failure.

Working principle E (lock with activation of A1/A2 inputs) keeps the actuator lock only when the machine is connected to the power supply. Therefore, before choosing this working principle, carefully evaluate all dangers deriving from sudden power failure with a consequent possible immediate actuator release.
The choice between working principles D and E must always be made following a risk analysis of the specific application**.**

In case of machines without inertia, i.e. with dangerous elements being immediately blocked as soon as the guard is opened, for which a device with lock has been chosen merely to safeguard the production process, the first or the the second working principle can both be used indifferently.

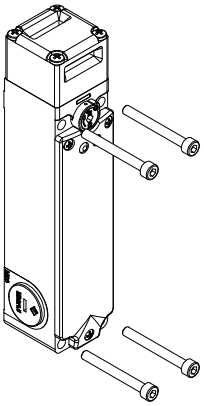
4.3 Fixing of the device



Before fixing the device, it is possible, if necessary, to adjust the position of the head and the release device (if present) in order to turn the device to the position best suited to the application. Completely remove the 4 screws from the head to turn either the head or the release device independently of each other in steps of 90°.

Attention: Once adjustment is complete, re-tighten the head screws with a torque between 0.8 and 1.2 Nm.

The switch head has two actuator inputs: one perpendicular, and the other parallel to the device body. Once the actuator input direction has been selected, the unused input hole must be sealed, using the appropriate cap supplied. It is possible to use one single hole at a time, with one single actuator.



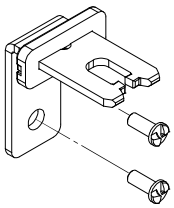
Attention: Always affix the device with 4 M5 screws with resistance class 8.8 or higher, and flat seating heads**.** Install the screws with medium resistance thread lock, and a number of threads engaged equal to or greater than the screw diameter. The device must never be fixed with less than 4 screws. The tightening torque of the four M5 screws must be between 2 and 3 Nm

It is advisable to install the device in the top part of the door, in order to prevent any dirt or work residues from getting inside the hole where the actuator is to be introduced. In order to avoid device bypassing it is advisable to fix the device body to the machine frame so that it cannot be removed.

4.4 Fixing the actuator to the guard

Attention: As required by EN ISO 14119, the actuator must be fixed immovably to the door frame.
Please make sure to use only the actuator provided with the switch or use one of the following actuators: VF KEYF20, VF KEYF21, VF KEYF22, VF KEYF28. The use of any other actuator does not guarantee the safety of the system.

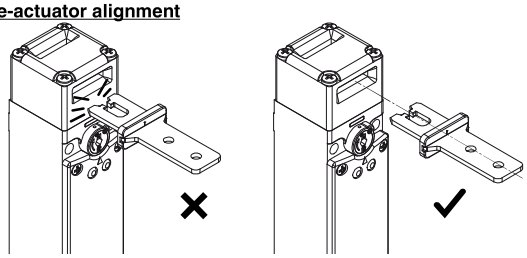
Install the actuator so that its edge does not protrude dangerously into the operator working area when the door is open.



Always affix the actuator with 2 M5 screws with resistance class 8.8 or higher, and flat seating heads. Install the screws with medium resistance thread lock, and a number of threads engaged equal to or greater than the screw diameter. The actuator must never be fixed with fewer than 2 screws**.** The tightening torque of the two M5 screws must be between 2 and 3 Nm.

For correct fixing, other means can also be used, such as rivets, non-removable security screws (one-way), or other equivalent fixing system, provided that it can ensure adequate fixing**.**

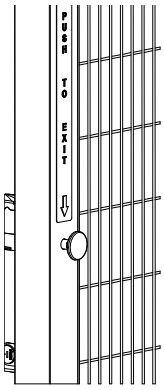
4.5 Device-actuator alignment



Attention: Although the device is designed to facilitate alignment between the device and its actuator, excessive misalignment could cause damage to it. Periodically check the correct alignment between the device and the respective actuator.
The actuator must not impact the inlet area on the switch, and must not be used as a centring device for the mobile guard.
In the event of application on hinged doors, check that the radius between the actuator axis and the axis of the hinge fitted to the door is greater than 400 mm where a VF KEYF20, VF KEYF21 or VF KEYF22 actuator is used, or above 80 mm where a

VF KEYF28 actuator is used.
Actuators VF KEYF20, VF KEYF21 and VF KEYF22 have a maximum clearance of 1 mm in the vertical and horizontal directions to the switch input hole. The VF KEYF28 actuator has a maximum clearance of 2 mm in the vertical and horizontal directions to the switch input hole.
Do not use a hammer for the adjustments, unscrew the screws and adjust the device manually, then tighten it in position.

4.6 Escape release button



Some of the device versions are equipped with a release button in order to allow any personnel accidentally trapped inside the machine to get out. This button, complying with the EN ISO 14119 standard, directly acts on the lock mechanism and immediately releases the actuator regardless of the state of the device.

ⓘ This escape release button unlocks the guard even if the device is not powered on.

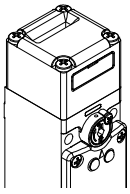
For correct installation of the escape release button, the following instructions are to be observed.
- The release button must be clearly visible from inside the machine.
- Button activation must be easy, immediate and independent from the machine operating status; to help you recognise the button and explain its function, identification stickers are available in various languages (contact the sales department for detailed information).
- For an operator standing outside the machine, it must be impossible to activate the release button when the door is closed.
- To guarantee correct operation and easy resetting, a distance ranging from 10 to 25 mm must be kept between the wall from where the button protrudes and the release button.
- The actuation path of the release button must always be kept clean. since dirt or chemical products could compromise the device operation.
- The personnel concerned must be adequately trained on correct button operation, so as to avoid any improper use (i.e. the button must not be used as a clothes-hook).
- The release button must not be used as a machine emergency stop.
- For installation on walls thicker than 15 mm, VF FG-LP30, VF FG-LP40, and VF FG-LP60 version release buttons are available for 30 mm, 40 mm, and 60 mm wall thicknesses respectively.
- For installation on walls thicker than 60 mm, the VF FG-LPRG version release button with adjustable length via an M10 threaded bar is available.

For correct installation of the extensions, the following instructions are to be observed:
- do not exceed an overall length of 500 mm between the release button and the device;
- always use medium resistance threadlocker adhesive on every threaded connection between button, extensions, and device;
- avoid twisting or bending the release button. Where necessary, use an appropriate sliding guide (pipe or bushing) with 18 ±0.5 mm internal diameter, if the button and its extensions have a length greater than 60 mm.

4.7 Auxiliary release with a tool or a lock

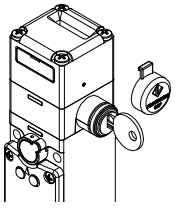
Some of the device versions are provided with an auxiliary release in order to allow an easy installation (release with a screwdriver) or the opening only to authorised personnel (lock release). Both these mechanical release devices act inside the device like the escape release button described previously. Therefore they also unlock the guard in case of power failure. These release devices may only be operated by a machine maintenance engineer who has received adequate training on the dangers deriving from their use.

4.7.1 Use of the auxiliary release with a tool



- Unscrew the locking screw with a PH1 cross-head screwdriver
- Turn the hexagonal-hole bush clockwise by 180°
- Do not force the bush beyond 180°
- To avoid any improper use of the auxiliary device with a tool, it is advisable to seal the device through the appropriate hole found in the upper part, or to seal the screw cross head with a few drops of paint.
- After each actuation, it is advisable to reseal the device.

4.7.2 Use of the auxiliary release with a lock



- Open the protection cap.
- Insert the key supplied with the switch and turn clockwise by 180°.
- Do not force the key beyond 180°.
- Each time after the key is extracted, close the rubber cap.
- The release key must only be available to the machine maintenance engineer and kept in a secluded place.
- The release key must not be available to the machine operator.
- Never leave the release key inserted in the device during normal machine operation.

ⓘ For particular applications, versions are available without any auxiliary release device.

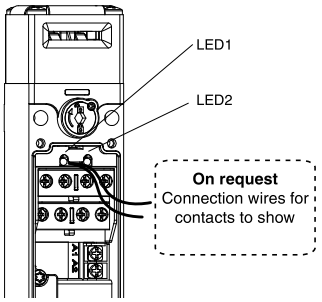
4.8 Electrical connections of the device

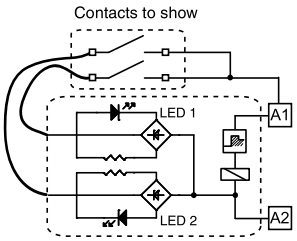
⚠ Attention: the safety circuit must be connected to the NC safety contacts. The auxiliary contacts NO must be used for signalling only (see paragraph OPERATION).

The solenoid must be powered via the A1/A2 inputs with the power supply voltage required for the different versions of the device (see paragraph TECHNICAL DATA)
To open the device cover, use a PH2 cross-head screwdriver; once operations are completed, tighten the screws to a torque between 0.8 and 1.2 Nm.

4.9 State signalling LEDs

Items with code FG 6••••••A are supplied with two green LEDs to show from the outside of the device the solenoid supply state. Electrical wiring is not necessary.
On request, versions with 2 LEDs of a different colour each are available to indicate the state of the contacts (red and green for articles FG 6••••••B, orange and green for articles FG 6••••••C). For these versions, the LEDs are supplied by two wires to be connected between the selected contacts and the A1 supply terminal.





5 OPERATION

5.1 Access monitoring

This switch alone is not sufficient to protect any operators or maintenance engineers in the event that they are able to physically enter the danger area with their whole body, since any unintentional closing of a guard behind them could allow the machine to be restarted.
In case the machine restarting control is entirely entrusted to this switch, a device must be provided to avoid that risk, such as a lock-out system which stops the machine from being restarted. A specifically designed lock-out device is available as an accessory for the switch, which prevents any unintentional machine start up with the operator still inside. Please contact our sales offices for more information (see paragraph SUPPORT).

5,2 Definitions

The structure of these devices allows them to operate in three different states (see table 1), i.e.:
- state A : with inserted and locked actuator
- state B : with inserted but not locked actuator
- state C : with extracted actuator

All or some of these states can be monitored by means of electrical NC contacts with positive opening by selecting the appropriate contact block for the article. In particular, electric contacts that are identified by the solenoid symbol (⊣⧄) are switched in the transitions between state A and state B (and vice versa), while the electric contacts identified by the actuator symbol (⊶⊏) are switched in the transitions between state B and state C (and vice versa).
When the device is in C state, any activation or deactivation of the solenoid does not influence the contacts' position of the solenoid itself (⊣⧄).
All NC contacts of these devices are with positive opening and can be used for safety circuits whereas NO contacts are normally used for signalling (see table 2). Table 2 shows the device contacts in state A. When the device is used in order to lock guards on machines with inertia, the safety circuit must be connected to the switch contacts activated by the solenoid (⊣⧄), which are closed when the actuator is inserted and locked (state A). In this way you will be sure to be able to start the machine only when guards are closed and locked.
If these switches are instead used for a general guards control and the machine stops before the operator could enter the hazardous areas, then it is possible to use in the safety circuit also NC contacts activated by the actuator (⊶⊏).

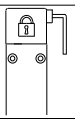
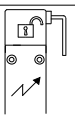
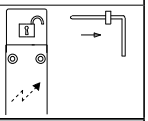
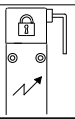
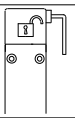
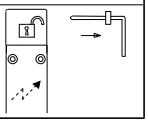
Working principle D (solenoid normally de-energised)			
Operating state	**State A**	**State B**	**State C**
Actuator (⊶⊏)	Inserted and locked	Inserted and released	Extracted
Solenoid (⊣⧄)	De-energised	Energised	Indifferent
			
Working principle E (solenoid normally energised)			
Operating state	**State A**	**State B**	**State C**
Actuator (⊶⊏)	Inserted and locked	Inserted and released	Extracted
Solenoid (⊣⧄)	Energised	De-energised	Indifferent
			

Table 1

Articles	Contacts activated by the solenoid ⊣⧄		Contacts activated by the actuator ⊶⊏	
FG 60A•••••	1NO+1NC		1NO+1NC	
	33-34	21-22	43-44	11-12
FG 60B•••••	2NC		1NO+1NC	
	11-12	21-22	43-44	31-32

Articles	Contacts activated by the solenoid ⊣⧄		Contacts activated by the actuator ⊶⊏	
FG 60M•••••	2NO+1NC		1NO	
	33-34 43-44	21-22	13-14	
FG 60N•••••	1NO+1NC		2NO	
	13-14	21-22	33-34	43-44

Articles	Contacts activated by the solenoid		Contacts activated by the actuator	
FG 60C•••••	3NC		1NC	
	11-12 31-32	21-22	41-42	
FG 60D•••••	1NO+1NC		2NC	
	13-14	21-22	31-32	41-42
FG 60E•••••	1NO+2NC		1NC	
	43-44	11-12 21-22	31-32	
FG 60F•••••	1NO+2NC		1NO	
	33-34	11-12 21-22	43-44	
FG 60G•••••	2NC		2NC	
	11-12	21-22	31-32	41-42
FG 60H•••••	4NC		/	
	11-12 31-32	21-22 41-42	/	
FG 60I•••••	3NC		1NO	
	11-12 31-32	21-22	43-44	
FG 60L•••••	2NO+1NC		1NC	
	33-34 43-44	21-22	11-12	
FG 61A•••••	/		1NO+3NC	
	/		43-44	11-12 21-22 31-32
FG 61B•••••	/		2NO+2NC	
	/		11-12 21-22	33-34 43-44
FG 61C•••••	/		3NO+1NC	
	/		13-14 33-34 43-44	21-22
FG 61D•••••	1NC		3NO	
	21-22		13-14 33-34	43-44
FG 61E•••••	1NO		2NO+1NC	
	13-14		33-34 43-44	21-22

Articles	Contacts activated by the solenoid		Contacts activated by the actuator	
FG 60P•••••	1NC		3NC	
	31-32		11-12 41-42	21-22
FG 60R•••••	2NO+2NC		/	
	33-34 43-44	11-12 21-22	/	
FG 60S•••••	1NC		2NO+1NC	
	11-12		33-34 43-44	21-22
FG 60T•••••	1NC		1NO+2NC	
	11-12		43-44	21-22 31-32
FG 60U•••••	/		4NC	
	/		11-12 31-32	21-22 41-42
FG 60V•••••	2NC		2NO	
	11-12	21-22	33-34	43-44
FG 60X•••••	1NO		3NC	
	13-14		21-22 41-42	31-32
FG 60Y•••••	1NO		1NO+2NC	
	43-44		33-34	11-12 21-22
FG 61G•••••	2NO		1NO+1NC	
	33-34 43-44		13-14	21-22
FG 61H•••••	2NO		2NC	
	43-44	31-32	11-12	21-22
FG 61M•••••	3NO		1NC	
	13-14 33-34	43-44	21-22	
FG 61R•••••	1NO+3NC		/	
	43-44	11-12 21-22 31-32	/	
FG 61S•••••	3NO+1NC		/	
	13-14 33-34 43-44	21-22	/	

Table 2

Note: the versions with solenoid actuated NC contacts are considered interlocks with locking in accordance with ISO 14119, and the product's label is marked with the symbol .

6 INSTRUCTIONS FOR PROPER USE

6.1 Installation

- Tighten the fixing screws of electrical conductors to a torque from 0.6 to 0.8 Nm.
- Do not stress the device with bending and torsion.
- Do not modify the device for any reason.
- Do not exceed the tightening torques specified in the present manual.
- The device carries out an operator protection function. Any inadequate installation or tampering can cause serious injuries and even death, property damage, and economic losses.
- These devices must not be bypassed, removed, turned or disabled in any other way.
- If the machine where the device is installed is used for a purpose other than that specified, the device may not provide the operator with efficient protection.
- The safety category of the system (according to EN ISO 13849-1), including the safety device, also depends on the external components connected to it and their type.
- Before installation, make sure the device is not damaged in any part.
- Before installation, ensure that the connection cables are not powered.
- Avoid excessive bending of connection cables in order to prevent any short circuits or power failures.
- Do not paint or varnish the device.
- Do not drill the device.
- Do not use the device as a support or rest for other structures, such as raceways, sliding guides or similar.
- Before commissioning, make sure that the entire machine (or system) complies with all applicable standards and EMC directive requirements.
- The fitting surface of the device must always be smooth and clean.
- The documents necessary for a correct installation and maintenance are always available in the following languages: English, French, German and Italian.
- Should the installer be unable to fully understand the documents, the product must not be installed and the necessary assistance may be requested from the manufacturer (see paragraph SUPPORT).
- When the device is installed on a mobile frame and the actuator is installed on a mobile door, ensure that the device cannot be damaged by simultaneous opening of the frame and the door.
- After installation, check for correct operation of the auxiliary release (if present) and the escape release button (if present).
- Always attach the following instructions to the manual of the machine in which the device is installed.
- These operating instructions must be kept available for consultation at any time and for the whole period of use of the device.

6.2 Do not use in the following environments

⚠ Attention: Do not use in environments where dust and dirt may in any way penetrate the head and deposit there. In particular where metal dust, concrete or chemicals are spread.

- In environments where continual changes in temperature cause the formation of condensation inside the device.
- In environments where the application causes the device to be subjected to strong impacts or vibrations.
- In environments containing explosive or inflammable gases or dusts.
- In environments where ice can form on the device.
- In environments containing strongly aggressive chemicals, where the products used coming into contact with the device may impair its physical or functional integrity.

6.3 Mechanical stop

⚠ Attention: The door must always be provided with an independent end-limit mechanical stop at limit of travel.
Do not use the device as mechanical stop for the door.

6.4 Maintenance and functional tests

⚠ Attention: Do not disassemble or try to repair the device. In case of any malfunction or failure, replace the entire device.

⚠ Attention: In case of damages or wear it is necessary to change the whole device including its actuator. Correct operation cannot be guaranteed when the device is deformed or damaged.

- The device installer is responsible for establishing the sequence of functional tests to which the device is to be subjected before the machine is started up and during maintenance intervals.
- The sequence of the functional tests can vary depending on the machine complexity and circuit diagram, therefore the functional test sequence detailed below is to be considered as minimal and not exhaustive.

- Perform the following sequence of checks before the machine is commissioned and at least once a year (or after a prolonged shutdown):
1) Lock the protection and start the machine. It must be impossible to open the guard.
2) Try to start the machine while the guard is open. The machine must not start.
3) Check correct actuator to device alignment. If the actuator inlet is worn, replace the entire device and actuator assembly.
4) When the escape release button (if present) is pressed, the protection must open freely and the machine must not start. Each time the escape release button is activated, the machine must stop and the door must open immediately. The escape release button must slide freely and be tightly screwed in. The signs placed inside the machine, indicating the function of the escape release button (if present), must be intact, clean and clearly readable.
5) When the auxiliary release (if present) is activated, the protection must open freely and the machine must not start.
6) If the guard is closed but not locked, it must not be possible for the machine to start
7) All external parts must be undamaged.
8) If the device is damaged, replace it completely.
9) The actuator must be securely locked to the door; make sure that none of the machine operator's tools can be used to disconnect the actuator from the door.
10) If you have difficulty inserting the actuator in the switch, never apply oil or grease to the switch head; instead, check the actuator alignment as described in paragraph INSTALLATION INSTRUCTIONS. If it is still difficult to insert the actuator, replace the entire device.

- The device has been created for applications in dangerous environments, therefore it has a limited service life. Although still functioning, after 20 years from the date of manufacture the device must be replaced completely. The date of manufacture is placed next to the product code (see paragraph MARKINGS).

6.5 Wiring

⚠ Attention: Check that the supply voltage is correct before powering the device.
- Keep the charge within the values specified in the electrical operation categories.
- Only connect and disconnect the device when the power is off.
- Do not open the internal device cover under any circumstances.
- Always connect the protection fuse (or equivalent device) in series to the safety electrical contacts.
- Always connect the protection fuse (or equivalent device) in series with the power supply for each device (see paragraph ELECTRICAL DATA).
- Comply with the minimum and maximum sections of electrical conductors admitted by terminals. The device contains two internal screw terminals for connecting the following wire types:
  min. 1 x 0.34 mm^2 (1 x AWG 22)
  max. 2 x 1.5 mm^2 (2 x AWG 16)
- The stripping length of the cable or wire end sleeve (x) must be 7 mm.

- At the end of the wiring, check that no contaminating element has been introduced inside the device.
- Before closing the device cover verify the correct positioning of the gaskets.
- Verify that the electrical cables, wire-end sleeves, cable numbering systems and any other parts do not obstruct the cover from closing correctly or if pressed between them do not damage or compress internal parts
- During and after the installation do not pull the electrical cables connected to the device. If traction is applied to the cables (not supported by an appropriate cable gland) internal parts of the device may be damaged.

6.6 Additional prescriptions for safety applications with operator protection functions

Provided that all previous requirements for the devices are fulfilled, for installations with operator protection function additional requirements must be observed.
- The utilization implies knowledge of and compliance with following standards: EN 60947-5-3, EN ISO 13849-1, EN 62061, EN 60204-1, EN ISO 14119, EN ISO 12100.

6.7 Limits of use

- Use the device following the instructions, complying with its operation limits and the standards in force.
- The devices have specific application limits (min. and max. ambient temperature, mechanical endurance, IP protection degree, etc.) These limitations are met by the device only if considered individually and not as combined with each other.
- The manufacturer's liability is to be excluded in the following cases:

1) Use not conforming to the intended purpose;
2) Failure to adhere to these instructions or regulations in force;
3) Fitting operations not carried out by qualified and authorized personnel;
4) Omission of functional tests.

- For the cases listed below, before proceeding with the installation contact our technical assistance service (see paragraph SUPPORT):

a) In nuclear power stations, trains, airplanes, cars, incinerators, medical devices or any application where the safety of two or more persons depend on the correct operation of the device;
b) Applications not contemplated in this instruction manual.

- Permanent application of maximum holding force Fzh is not permitted.

7 MARKINGS

The outside of the device is provided with external marking positioned in a visible place. Marking includes:

- Producer trademark
- Product code
- Batch number and date of manufacture. Example: A19 FG1-123456. The batch's first letter refers to the month of manufacture (A=January, B=February, etc.). The second and third letters refer to the year of manufacture (19 = 2019, 20 = 2020, etc…).

8 TECHNICAL DATA

8.1 Housing

Metal head and housing, baked powder coating.

Three threaded conduit entries:	M20x1.5
Protection degree:	IP67 acc. to EN 60529 with cable gland of equal or higher protection degree

8.2 General data

For safety applications up to:	SIL 3 acc. to EN 62061 PL e acc. to EN ISO 13849-1
Interlock with mechanical lock, coded:	type 2 acc. to EN ISO 14119
Coding level:	Low acc. to EN ISO 14119

Safety parameters:

B_{10D}:	5,000,000 for NC contacts
Mission time:	20 years
Ambient temperature:	-25°C … +60°C
Storage temperature:	-40°C … +80°C
Max. actuation frequency:	600 operating cycles/hour
Mechanical endurance:	1 million operating cycles
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
Released actuator extraction force:	30 N

8.3 Electrical data

8.3.1 Versions without connector

Thermal current (I_{th}):	10 A
Rated insulation voltage (U_i):	400 Vac 300 Vdc
Rated impulse withstand voltage (Uimp):	6 kV
Conditional short circuit current:	1000 A acc. to EN 60947-5-1
Protection against short circuits:	type gG fuse 10 A 500 V
Pollution degree:	3

8.3.2 Versions with M23 connector, 12-pole

Thermal current (I_{th}):	8 A
Rated insulation voltage (U_i):	250 Vac 300 Vdc
Protection against short circuits: fuse	8 A 500 V type gG
Pollution degree:	3

8.3.3 Versions with M12 connector, 12-pole

Thermal current (I_{th}):	1.5 A
Rated insulation voltage (U_i):	30 Vac 36 Vdc
Protection against short circuits:	type gG fuse 1.5 A
Pollution degree:	3

8.3.4 Electrical data of the solenoid

Supply voltage:		
Items FG 6••D•3•:	12 Vdc	-15% +20%
Items FG 6••D•0•:	24 Vac/dc	-10% +10%
Items FG 6••D•1•:	120 Vac/dc	-15% +10%
Items FG 6••D•2•:	230 Vac	-15% +10%
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	

8.3.5 Utilization categories

Versions without connector:

Alternating 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

Versions with M23 connector, 12-pole:

Alternating 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

Versions with M12 connector, 12-pole:

Alternating current: AC15 (50÷60 Hz)

Ue (V)	24
Ie (A)	1.5

Direct current: DC13

Ue (V)	24
Ie (A)	1.5

8.4 Compliance 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, EN 50581, BG-GS-ET-15, UL 508, CSA 22.2 N. 14.

8.5 Compliance with the requirements of:

Machinery Directive 2006/42/EC, EMC Directive 2014/30/EU, RoHS Directive 2011/65/EU.

9 SPECIAL VERSIONS ON REQUEST

Special versions of the device are available on request.
The special versions may differ substantially from the indications in this instruction sheet.
The installer must ensure that he has received written information from the support service regarding installation and use of the special version requested.

10 DISPOSAL

At the end of service life product must be disposed of properly, according to the rules in force in the country in which the disposal takes place.

11 SUPPORT

The device can be used for safeguarding people's physical safety, therefore in case of any doubt concerning installation or operation methods, always contact our technical support service:

Pizzato Elettrica Srl
Via Torino, 1 - 36063 Marostica (VI) - ITALY
Telephone +39.0424.470.930
E-mail tech@pizzato.com
www.pizzato.com

Our support service provides assistance in Italian and English.

12 EC CONFORMITY DECLARATION

I, the undersigned, as a representative of the following manufacturer:
Pizzato Elettrica Srl - Via Torino, 1 - 36063 Marostica (VI) – ITALY
hereby declare that the product is in conformity with whatever prescribed by the 2006/42/EC Machine Directive. The complete version of the present conformity declaration is available on our website www.pizzato.com
Marco Pizzato