

Description

The application of safety switches on machinery guards must deal with practical issues related to the ease of installation, the mechanical precision of the guard movements and the occurrence of critical environmental conditions. In addition, sometimes, guards are used by clumsy operators and, in some cases, by people who are not instructed or are unaware of the operating principles of the machines.

These problems become important when the guard is an access door to a protected area. The physical dimensions of this type of guards and their constructive tolerances create alignment problems with the resulting risk of damage to the security devices. The possibility that one or more operators physically access the protected area introduces further handling issues and the machine's risk analysis must include situations such as involuntary trapping of an operator within the hazardous area, sometimes even of unauthorised operators as in the case of cleaning personnel.

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

The basic principle of this series of products is a mechanical centring and stop system along the direction of movement of the door (Fig. 1).

This allows the operator to enter and exit the hazardous area with simple and natural movements. Especially in the case of trapped personnel, people in panic or uninstructed people, avoiding complex movements to escape the hazardous area greatly reduces the likelihood of accidents. The centring system is extremely robust and can also be used in heavy duty applications or in the presence of careless personnel.

These handles are designed to be used with switches of the same level of robustness suitable to support large axial loads, such as FG series electromagnet switches with retention forces up to 2800 N or FD series metal switches. Safety handles assembled in combination with an FG or FD series switch create an integrated locking system with related access control for hazardous areas, preventing the machine from restarting in case of open guard.

Some versions feature a "Lock-out" device to block the door in the open position and prevent an unexpected system restart when maintenance personnel access the system.

Thanks to their adjustable design these handles can be installed on different types of doors or barriers: hinged or sliding, right or left closing, as well as on various types of profiles.

The handle is supplied with all the components which have to be fixed at the appropriate mechanical distances by means of anti-tampering screws. The installer only has to assemble the components according to the application, fix the selected switch (supplied separately) and make centring adjustments.

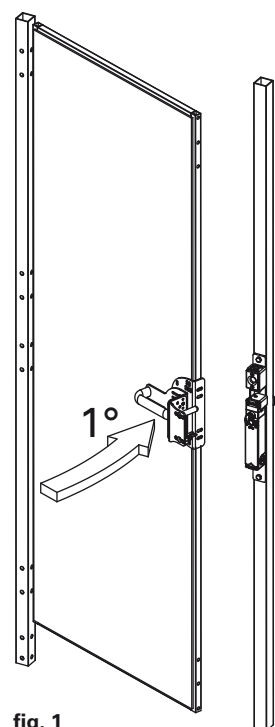


fig. 1

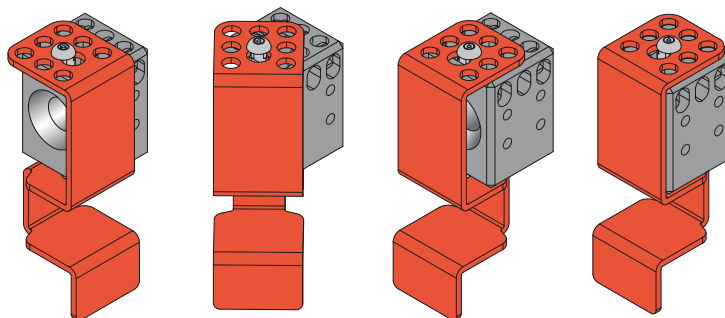
Main features

- Easy to use. No specific sequences required for door opening or closing, only intuitive actions
- Handle provided with a self-centring sturdy metal pin for the alignment between the jamb and the door. This device also serves as mechanical stop for the door.
- It can be installed both on hinged doors and sliding doors.
- Thanks to the slotted brackets the handle can be adjusted on 3 different axes.
- Easy to install.
- Optional Lock-out device that can be locked with padlocks avoiding that the actuator is inserted into the switch and therefore the accidental or unwanted closing of the guard.
- If the door interlock is carried out by means of FG series switches provided with a release push button, the door can be opened with a single movement even under stress (panic situations).
- Sturdy painted brackets (4 and 5 mm thick) and components in stainless steel.
- Compatible with FD series safety switches with separate actuator and with FG series safety switches with solenoid.

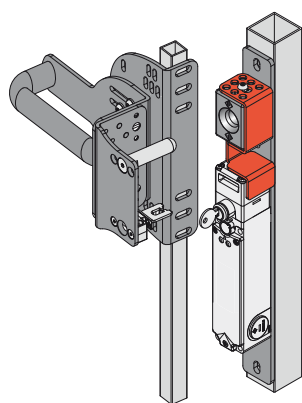
LOCK OUT (patent pending)

With a single operation, the "lock-out" device enables the closure of both the centring hole and the slot for the actuator present in the switch, thus making the mechanical closure of the door and the electrical commutation of the switch contacts impossible.

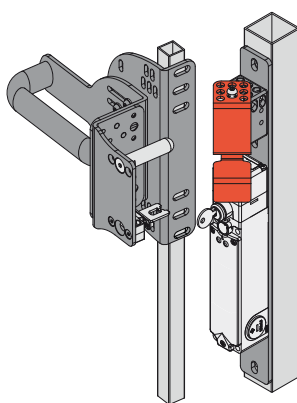
The "lock-out" device moves the red cover so that the holes in the cover do not coincide with the holes in the underlying metal block. This ensures that it is not possible to put a padlock on the device when it is open. Hole diameter for padlocks: 6.4 mm.



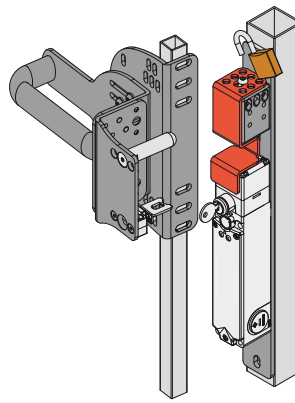
Operating principle of the LOCK OUT device



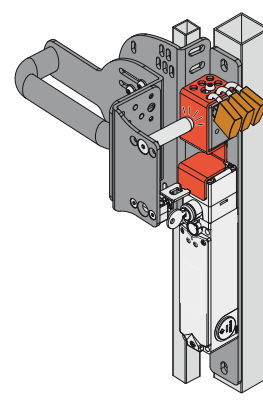
Lock-out device open
Safety switch is accessible



Closing of the lock-out device

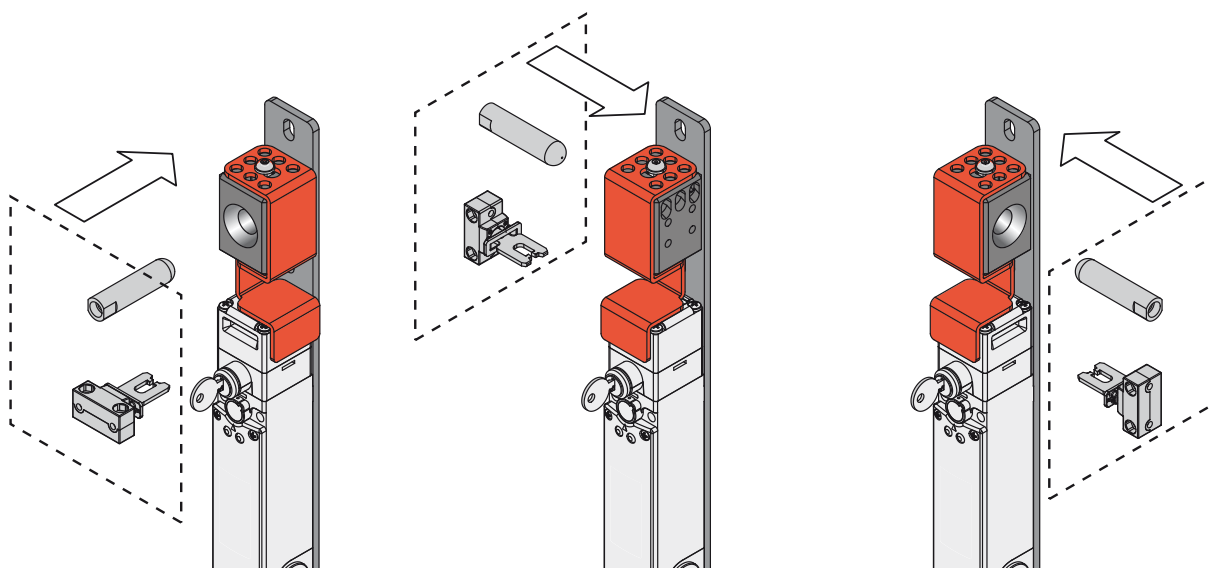


Lock-out device closed
Padlock insertion



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

Turnable centring block

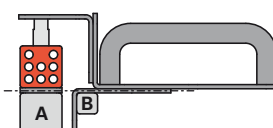
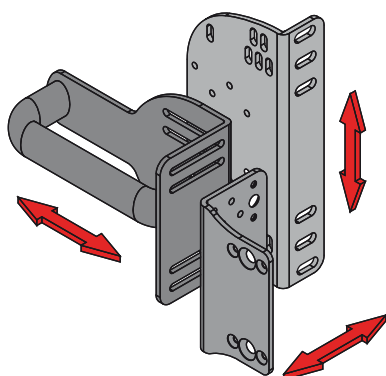


Thanks to its symmetrical design, the lock-out device can be installed on hinged and sliding doors, with both right and left closing, while still retaining its centring function and allowing for the attachment of multiple padlocks.

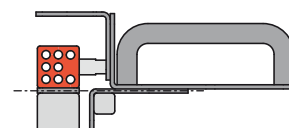
Flexibility and installation on different profiles

The slots of the three brackets applied on the door allow to carry out independent adjustments on 3 axes, providing an extremely easy installation and avoiding any modification of the existing protection structure. Thanks to these adjustments the handle can be installed on door profiles with different dimensions, from 40x40 mm to 60x60 mm **(A)** on the jamb and from 20x20 mm to 40x40 mm **(B)** on the door. The brackets are bolted together by means of anti-tampering screws.

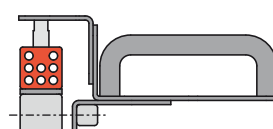
Thanks to its vertical design, the bracket containing the safety switch and the lock-out device does not protrude beyond the jamb's profile.



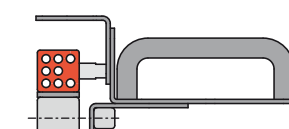
Hinged door and jamb frontally aligned



Sliding door and jamb frontally aligned



Hinged door and jamb axially aligned



Sliding door and jamb axially aligned

Code structure

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

VF AP-P11A-200P

LOCK OUT device

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

Handle

P	Plastic handle
M	Metal handle
Z	Without handle

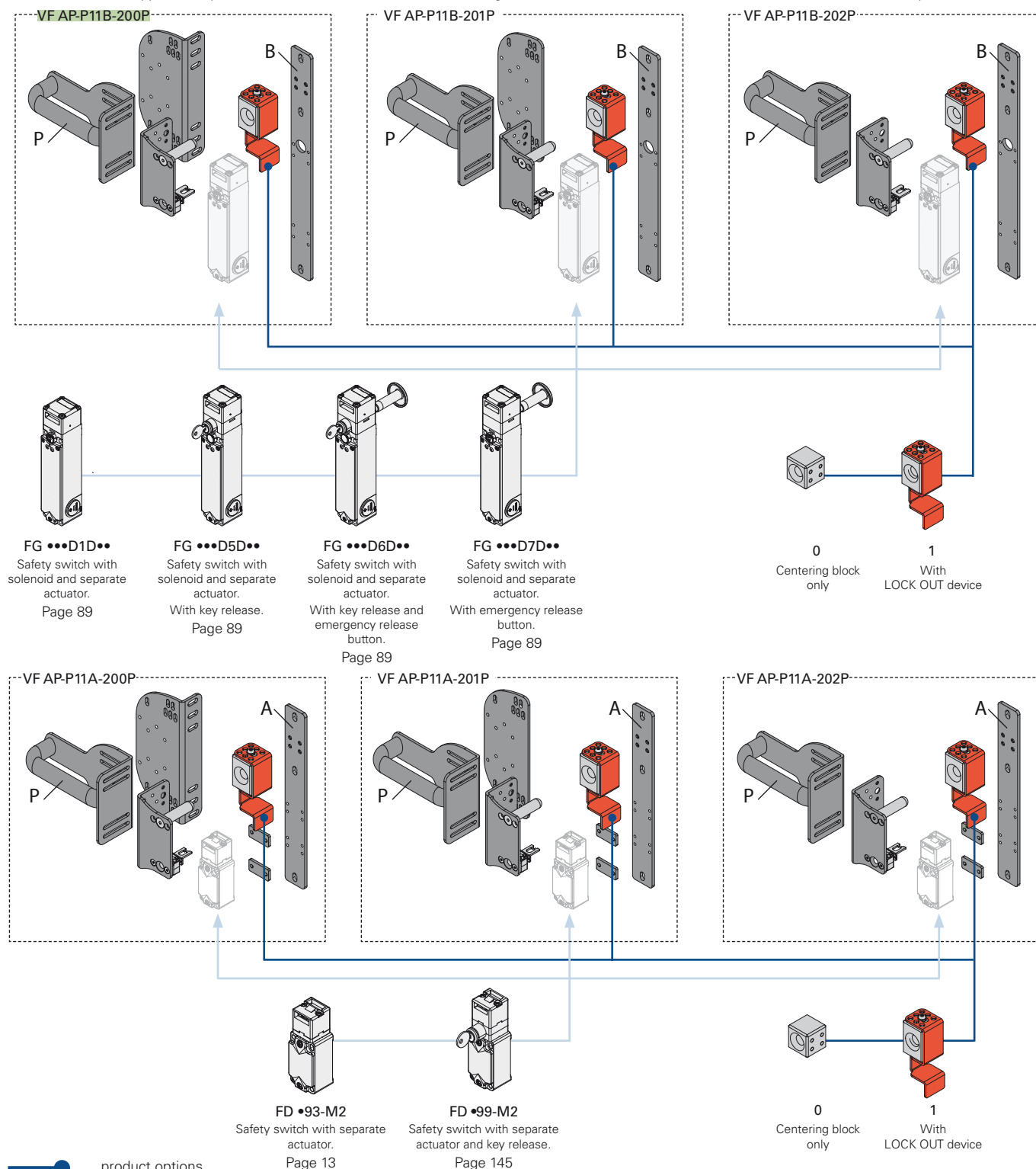
Mounting bracket supplied for installation

A	FD
B	FG
Z	without plate (B) for FG brackets
Y	without plate (A) for FD brackets

Plate configuration

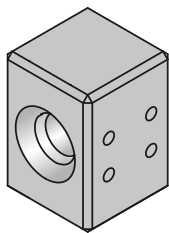
200	Configuration with adjustable "L" plate for door profiles
201	Configuration with adjustable plain plate for door profiles
202	Configuration without adjustable plate for door profiles

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



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

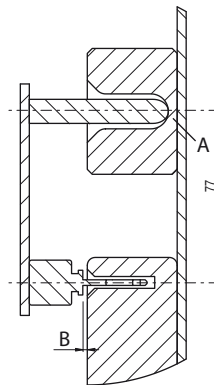
Robustness and simplicity



Thanks to its particular design and its special materials the safety handle can be used in heavy duty applications and with sturdy wide-ranging guards (min. 700 mm). In particular:

- Mounting system made up of robust painted brackets with thicknesses of 4 and 5 mm.
- Single-body centering block in stainless steel
- Large diameter centring pin in stainless steel
- Max. holding force of the actuator equal to 2800 N (versions with FG series switches).
- Stainless steel tamper proof bolts and screws and elastic washers (safety inserts excluded, see page 157).

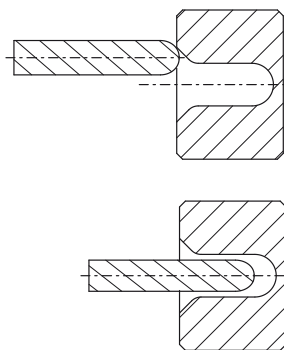
Mechanical stop



During door closing, the metal pin is flush to the bottom of the centring block (A) before the actuator can bump against the switch housing, leaving a safe distance (B), thus avoiding possible damage.

The metal pin is always flush on surfaces that transmit the impact to the frame and not to the switch, regardless of whether the lock-out device is open or closed.

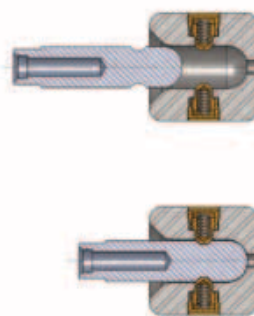
Centring



The centering of the pin on the block (both in stainless steel) forces the alignment between actuator and switch, ensuring a proper insertion preventing any risk of collisions.

This also allows a safe re-alignment of the protection to the frame, even in case of big axial misalignments.

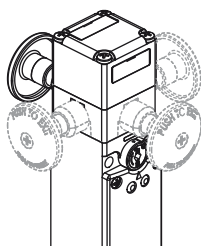
Holding force 100 N



A version of the lock-out device with 100 N holding force is available on request. With this new optional feature, the handle is kept in its limit-stop closed position; a moderately energetic pull is required to open the door. This device is ideal for all applications where multiple doors are unlocked simultaneously but only one is actually opened; all unlocked doors are held in position, thereby preventing vibrations or gusts of wind from opening them.

As a result, the machine can be restarted very quickly, as it is no longer necessary to close doors that were unlocked and inadvertently opened.

Emergency release button (FG series)

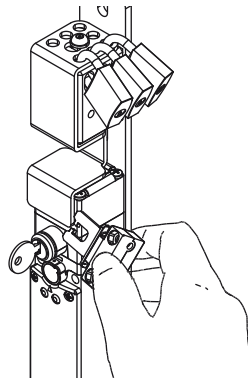


The FG series switches with actuator lock can be provided with an emergency release button that, if oriented towards the inside of the machinery, allows accidentally trapped personnel to escape even during a blackout.

Pushing the button results in the same function as the auxiliary release device. To reset the switch, just return the button to its initial position.

The emergency button can be rotated and is available with different lengths. It is fixed to the switch by means of a screw allowing the installation of the switch both inside and outside the guards.

Impossible to bypass with a separate actuator



As soon as the lock-out device has been actuated and locked, the slot in the switch for the actuator is no longer accessible.

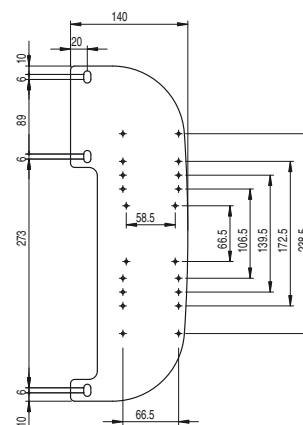
If an operator is in possession of a second, separate actuator, he is not able to bypass blocking of the device and actuate the switch.

Profiled plate


Article	Description
VF AP-C001	Profiled lateral plate



Profiled plate to be installed under the fixing plate of the switch. Suitable for both right and left mounting and provided with holes, this plate can be used for the installation of housings for the EROUND line button panels by Pizzato Elettrica (by means of common self-threading screws available on the market).


Safety inserts set


Set with 3 x 1/4" hexagonal safety inserts. Connection DIN 3126, C 6.35. Hex mount with hole. The P-Kube safety handle is provided with tamper-proof screws. Therefore all 3 safety inserts of the set are required.

Article composition VF AP-K01:

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

Adhesive labels for emergency release button


Polycarbonate yellow adhesive, rectangular, 300x32 mm, red inscription. It has to be fixed on the internal part of the jamb and helps finding the emergency release button.

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

Complete housings for profiled plate

ES AC32010

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

ES AC32043

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

ES AC33076

Description	Features	Diagram
Illuminated button - 1NO E2 1PL2R2210 LED unit E2 LF1A2V1 Contacts 1x E2 CP10G2V1	flush, spring-return, white White LED, 12 ... 30 Vac/dc pos. 2 / pos. 3 LED pos. 1 1NO	
Illuminated button - 1NO E2 1PL2R5210 LED unit E2 LF1A2V1 Contacts 1x E2 CP10G2V1	flush, spring-return, yellow White LED, 12 ... 30 Vac/dc pos. 2 / pos. 3 LED pos. 1 1NO	
Emergency button Ø 40 mm- 2NC E2 1PERZ4531	rotary release, Ø 40 mm, red	
Label with shaped hole VE TF32G5700 Contacts 2x E2 CF01G2V1	yellow, 30x60 mm rectangular, no engraving pos. 2 1NC pos. 3 / pos. 1 1NC	

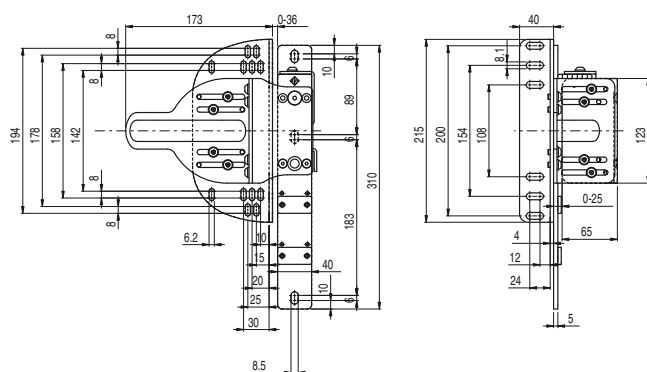
Accessories See page 299



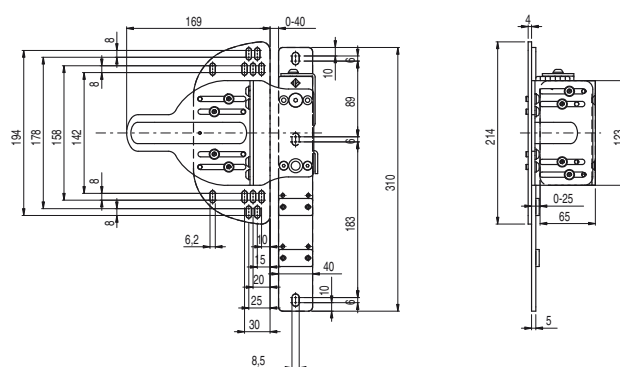
Dimensional drawings

All values in the drawings are in mm

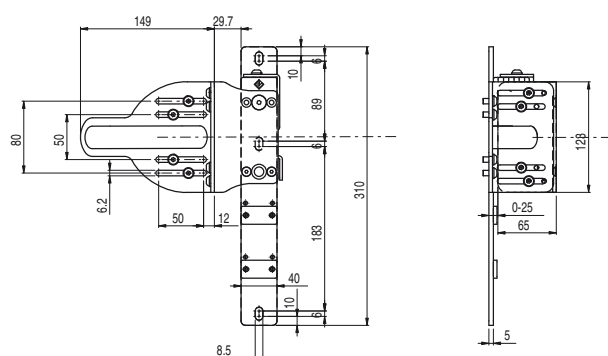
Safety handle VF AP-P1•A-200•



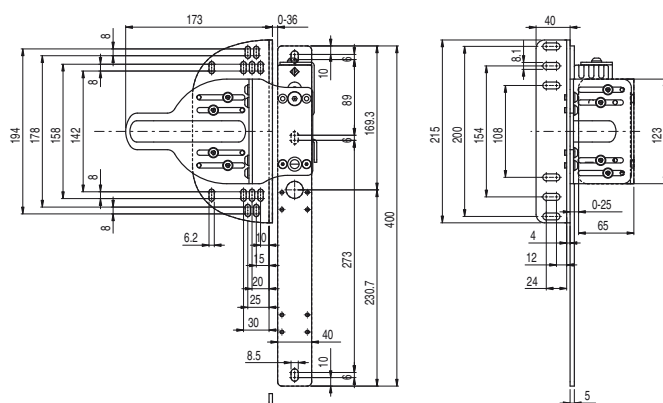
Safety handle VF AP-P1•A-201•



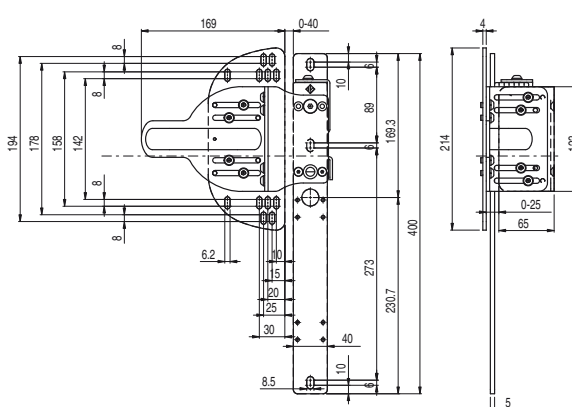
Safety handle VF AP-P1•A-202•



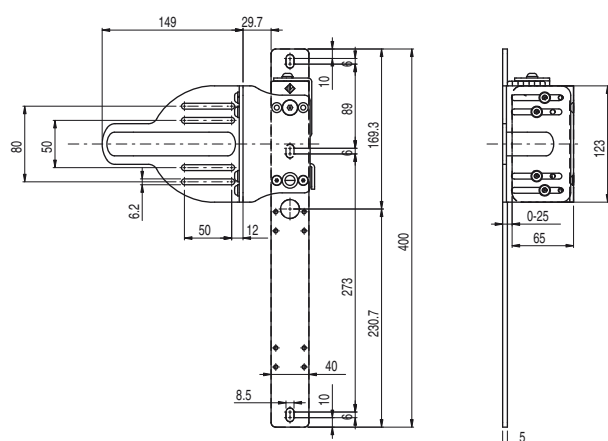
Safety handle VF AP-P1•B-200•



Safety handle VF AP-P1•B-201•



Safety handle VF AP-P1•B-202•



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