Description

Pizzato Elettrica is revolutionising the concept of safety handles, with the launch of the new **P-KUBE Krome** series to the market.

These products combine the characteristics of a robust handle for safety enclosures, with an ergonomic, rounded grip and customisable functions for the customer, with various illuminated signalling options, to reflect the state of the guard, or other operating conditions the manufacturer wishes to indicate. The new handles also allow integration of a control device (e.g. a button), directly in the grip.

The new safety handles are a built-in and innovative solution for machine manufacturers who, with a single product and wiring harness, can optimise the cost of components, by eliminating peripheral control boxes and illuminated signalling columns, and implementing aesthetically pleasing and exclusive guards – without compromising on the quality and reliability offered by Pizzato products.

Integrated control device

In the grip of the P-KUBE Krome handle, a spring-return button with 1NO contact can be integrated. This can be illuminated with a LED, and thus allows interaction with the machinery; for example to request guard opening, or transmit a reset command. The button is available in white, red, green, yellow, blue, and black.
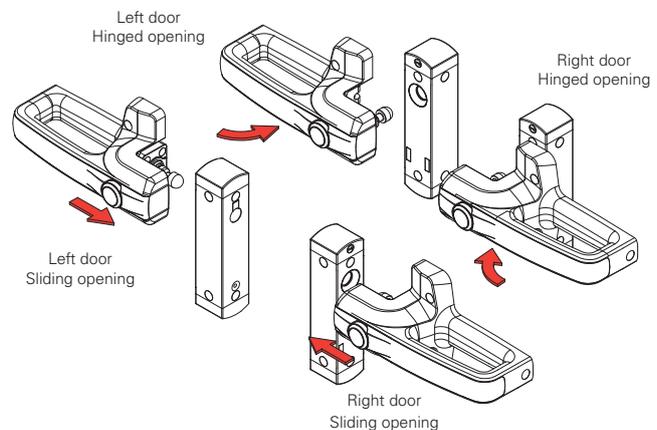

Robustness

The internal fixing plate is made of painted steel, and 5 mm thick, to ensure locking system robustness, and increased service life.
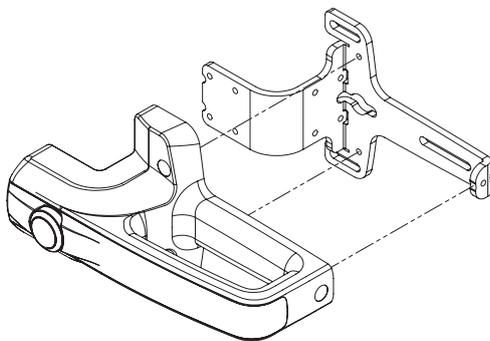

Adaptability and flexibility

The same handle can be used on both hinged and sliding doors, with opening both on the right and on the left, simply by fixing the actuator on different levels.

Left door
Hinged opening

Right door
Hinged opening

Left door
Sliding opening

Right door
Sliding opening

Protection against tampering

The P-KUBE Krome handle is supplied complete with snap-on protection caps to be applied to the holes of the fixing screws, so as to prevent access: therefore, standard screws can be used instead of tamper-proof screws, ensuring safety against deliberate tampering on the device. The caps also prevent the accumulation of soiling and facilitate the cleaning of the handle
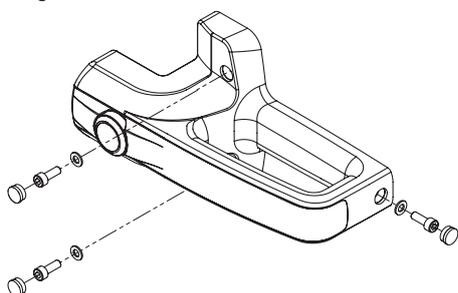
Chrome-plated or illuminated grip

The grip is available with front strip in two finishes: satin chrome, and illuminated white. In the second version, the grip can be illuminated using RGB LED technology.

The modern, ergonomic design, combined with fully concealed fixing screws and wiring, allows implementation of machines and guards with particularly pleasing aesthetics.

Available versions

Thanks to the wide range of configurations available, the P-KUBE Krome safety handle can be ordered in the version that best suits the user's needs. Customization options apply to the handle, which can be supplied with or without a control device, or with or without RGB LED lighting. This feature allows you to find the most suitable product for a specific application or to diversify the handles that are installed on the same system, depending on the needs of machine designers and installers.

- Without control device
- Satin chrome grip
  not illuminated

- Without control device
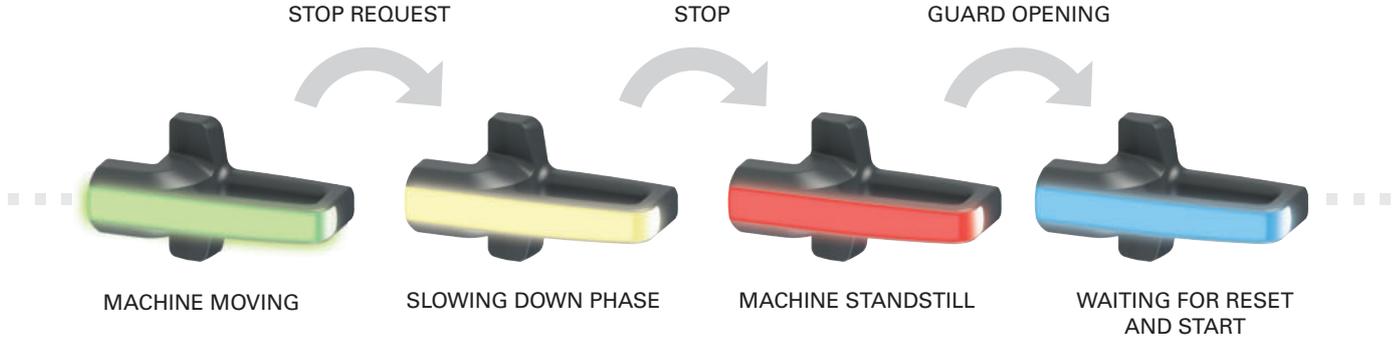- White grip, can be illuminated
  with RGB LEDs

- With control device, can be
  illuminated
- Satin chrome grip
  not illuminated

- With control device, can be
  illuminated
- White grip, can be illuminated
  with RGB LEDs

Customisable multicoloured illumination

The P-KUBE Krome handle, with illuminated grip, allows the machine manufacturer to locally signal the state of the guard by using various colours, and fully customisable sequences. Thanks to RGB LED technology, the handle illumination is visible from a large distance; even in brightly-lit environments. The device illuminates in colours: green, yellow, red, blue, white, purple, light blue.

STOP REQUEST   STOP   GUARD OPENING

MACHINE MOVING   SLOWING DOWN PHASE   MACHINE STANDSTILL   WAITING FOR RESET
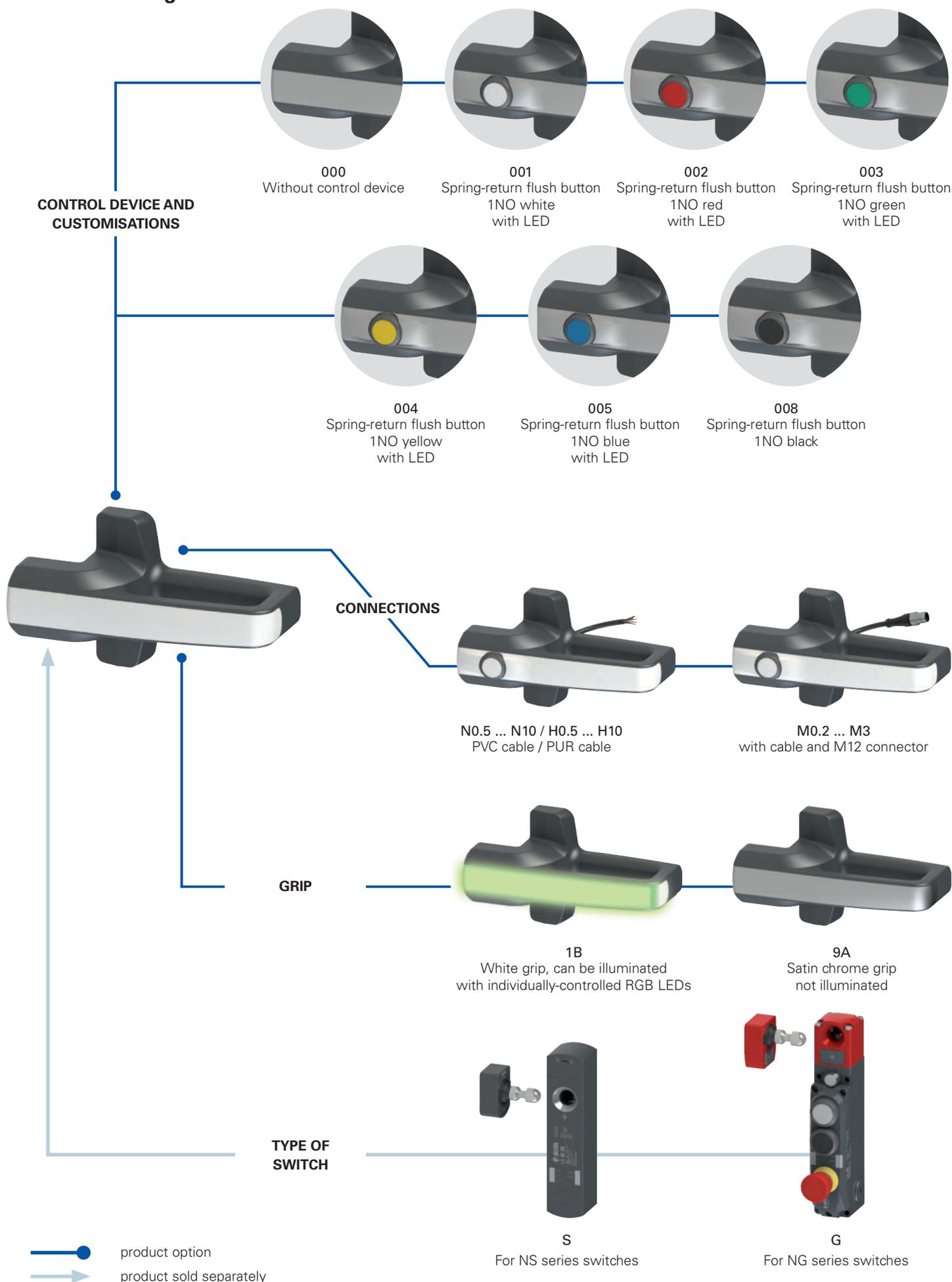AND START

Connections

The electrical connections are made through a cable that comes out at the back of the device and can therefore be easily housed inside the frame of the guard, so as to make it completely invisible. This feature has a double advantage: contributing to the aesthetics of the machine and ensuring the protection of the cable against damage and tampering.
The P-KUBE Krome handle is available with PVC cable connections or with cable and integrated M12 connector.

Selection diagram

CONTROL DEVICE AND CUSTOMISATIONS

000
Without control device

001
Spring-return flush button
1NO white
with LED

002
Spring-return flush button
1NO red
with LED

003
Spring-return flush button
1NO green
with LED

004
Spring-return flush button
1NO yellow
with LED

005
Spring-return flush button
1NO blue
with LED

008
Spring-return flush button
1NO black

CONNECTIONS

N0.5 ... N10 / H0.5 ... H10
PVC cable / PUR cable

M0.2 ... M3
with cable and M12 connector

GRIP

1B
White grip, can be illuminated
with individually-controlled RGB LEDs

9A
Satin chrome grip
not illuminated

TYPE OF SWITCH

S
For NS series switches

G
For NG series switches

● product option

➙ product sold separately

Code structure

article   options

AN S1B000A-PN3

Device type	
S	For NS series switches
G	For NG series switches

Note: the switches and their actuators must be purchased separately.

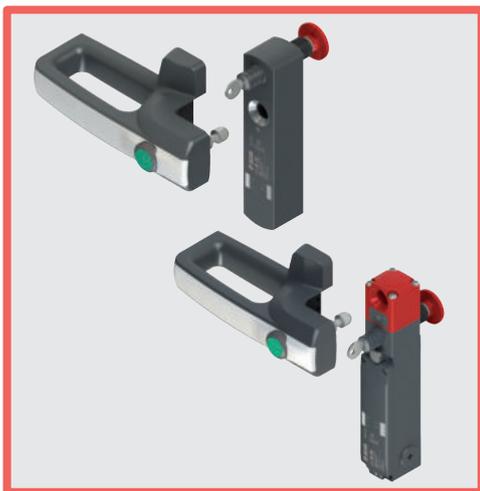| Grip	
1B	White grip, can be illuminated with multicolor RGB LEDs supply voltage 24 Vdc
9A	Satin chrome grip not illuminated

Control device and customisations	
000	Without control device
001	Spring-return flush button 1NO white with LED
002	Spring-return flush button 1NO red with LED
003	Spring-return flush button 1NO green with LED
004	Spring-return flush button 1NO yellow with LED
005	Spring-return flush button 1NO blue with LED
008	Spring-return flush button 1NO black

1NO+1NC, 2NC or 2NO contacts available on request.

Other control devices on request, see page 143.

Cable type and connection	
M0.2	PVC cable, IEC 60332-1-2 oil resistant, length 0.2 m and M12 connector (standard)
M0.5	PVC cable, IEC 60332-1-2 oil resistant, length 0.5 m and M12 connector
...	...
M3	PVC cable, IEC 60332-1-2 oil resistant, length 3 m and M12 connector
N0.5	PVC cable, IEC 60332-1-2 oil resistant, length 0.5 m
...	...
N3	PVC cable, IEC 60332-1-2 oil resistant, length 3 m (standard)
...	...
N10	PVC cable, IEC 60332-1-2 oil resistant, length 10 m
H0.5	PUR cable, halogen free, length 0.5 m
...	...
H3	PUR cable, halogen free, length 3 m (standard)
...	...
H10	PUR cable, halogen free, length 10 m

Output direction, connections	
P	rear output

Main features

- Modern and ergonomic design
- Versions with integrated RGB LEDs, for local signalling of guard state
- Customisable multicoloured illumination
- Illuminated control button integrated into grip
- Grip with different finishes
- Compatible with NG and NS series safety locking switches with RFID technology

Quality marks:

CE   c(UL)us   EAC

UL approval: E131787
EAC approval: RU C-IT.ЧТ03.B.00035/19

Features approved by UL

Enviromental ratings:
Type 4X, 12, 13 (models without control component).
Type 1 (models with control component).

Electrical ratings:
Main rating (LED supply): 24 Vdc Class 2, 75 mA.
Secondary ratings (Contacts ratings control component):
Silver contacts: 24 Vac Class 2, 1 A, Pilot Duty
                    24 Vdc Class 2, 0.27 A, Pilot Duty
Golden contacts: 24 Vdc Class 2, 100 mA

Technical data

Materials

Internal fixing plate in steel, oven-cured powder-coated.
Glass fibre reinforced technopolymer grip, self-extinguishing and shock-proof.

Electrical cables

Integrated mobile installation cable 8 x 0.25 mm² or 5 x 0.25 mm².
Versions with 3 m integrated cable, other lengths 0.5 to 10 m on request.
Versions with 0.2 m cable and M12 connector, other lengths 0.2 to 3 m on request.

General data

Protection degree	
Versions with control device:	IP65 acc. to EN 60529
Versions without control device:	IP67 acc. to EN 60529
	IP69K acc. to ISO 20653
Ambient temperature:	-20 ... +50°C
Storage temperature:	-40 ... +75°C
Mission time:	20 years

Power supply electrical data

Rated operating voltage U_e:	24 Vdc ± 15%
Operating current at U_e voltage:	75 mA max
External protection fuse:	1 A type Gg
	or equivalent device

Electrical data of RGB LED control inputs

Rated operating voltage U_{e1}:	24 Vdc
Operating current at U_{e1} voltage:	5 mA
RGB LED life:	min. 100,000 hours at rated voltage and +25 °C ambient temperature

Technical data of the control devices

|	
Mechanical endurance:	1 million operating cycles
Actuating force:	4 N min, 100 N max
Contact material:	silver contacts
Contact design:	Self-cleaning contacts with double interruption
Thermal current I_{th2}:	1 A
Rated insulation voltage U_{i2}:	32 Vac/dc
Rated impulse withstand voltage U_{imp2}:	1.5 kV
LED supply voltage:	24 Vdc ± 15%
Single LED supply current:	10 mA
Utilization category of the contact block:	DC13; U_{e2}=24 Vdc, I_{e2}=0.55 A

In compliance with standards:

For articles with integrated electrical parts:
IEC 60947-5-1, EN 60947-5-1, IEC 60947-1, EN 60947-1, IEC 60529, EN 60529, EN IEC 63000, UL 508, CSA 22.2 N. 14.

Compliance with the requirements of:

For articles with integrated electrical parts:
Low Voltage Directive 2014/35/EU,
EMC Directive 2014/30/EU.
For all products:
RoHS Directive 2011/65/EU.

Electrical connections
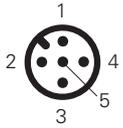
Versions with button articles AN •9A••••

Pin	Cable colour	Connection
1	brown	Supply to white button LED +24 Vdc
2	white	Supply to white button LED 0 V
3	blue	Disconnected
4	black	Button NO contact
5	grey	Button NO contact
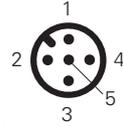
Versions with illuminated grip articles AN •1B000•

Pin	Cable colour	Connection
1	brown	Supply input +24 Vdc
2	white	Supply input +0 Vdc
3	blue	Control input blue (B) +24 Vdc
4	black	Control input red (R) +24 Vdc
5	grey	Control input green (G) +24 Vdc
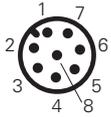
Versions with button and illuminated grip articles AN •1B••••

Pin	Cable colour	Connection
1	white	Supply input +0 Vdc
2	brown	Supply input +24 Vdc
3	green	Control input green (G) +24 Vdc
4	yellow	LED power supply for button lighting +24 Vdc
5	grey	Button NO contact
6	pink	Button NO contact
7	blue	Control input blue (B) +24 Vdc
8	red	Control input red (R) +24 Vdc

LED handle lighting combinations

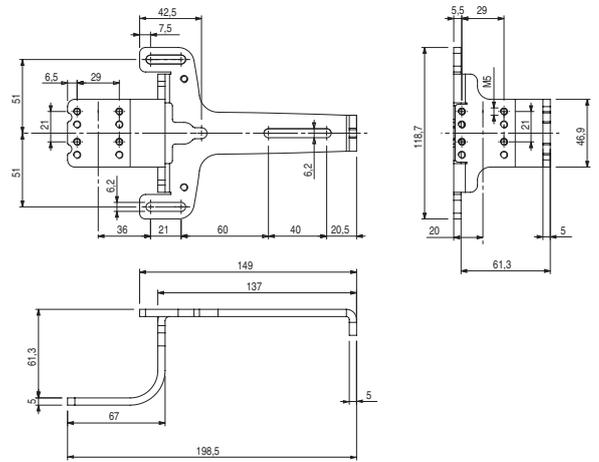| R	G	B	Colour	R	G	B	Colour
0	0	0		1	1	0	
1	0	0		1	0	1	
0	1	0		0	1	1	
0	0	1		1	1	1	

0 = colour control input off, 1 = colour control input on.

Dimensional drawings

Internal fixing plate (articles AN S••••••)
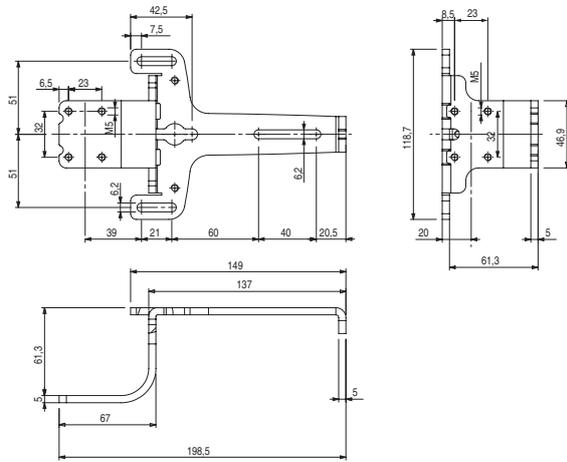
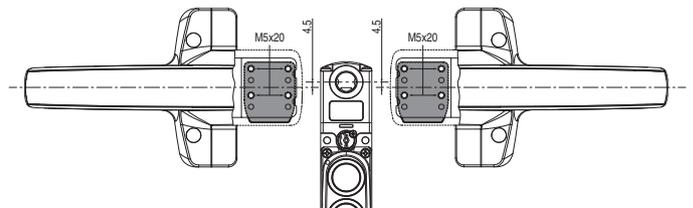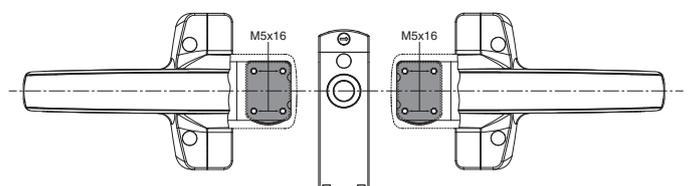### Internal fixing plate (articles AN G••••••)

Grip
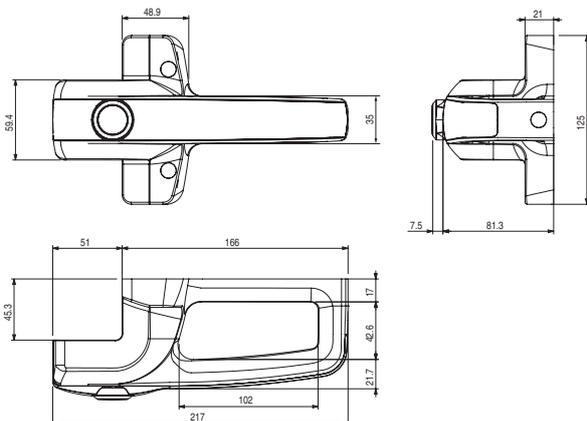
Switch-actuator alignment

Articles AN G••••••

Articles AN S••••••

All values in the drawings are in mm

Accessories See page 321

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

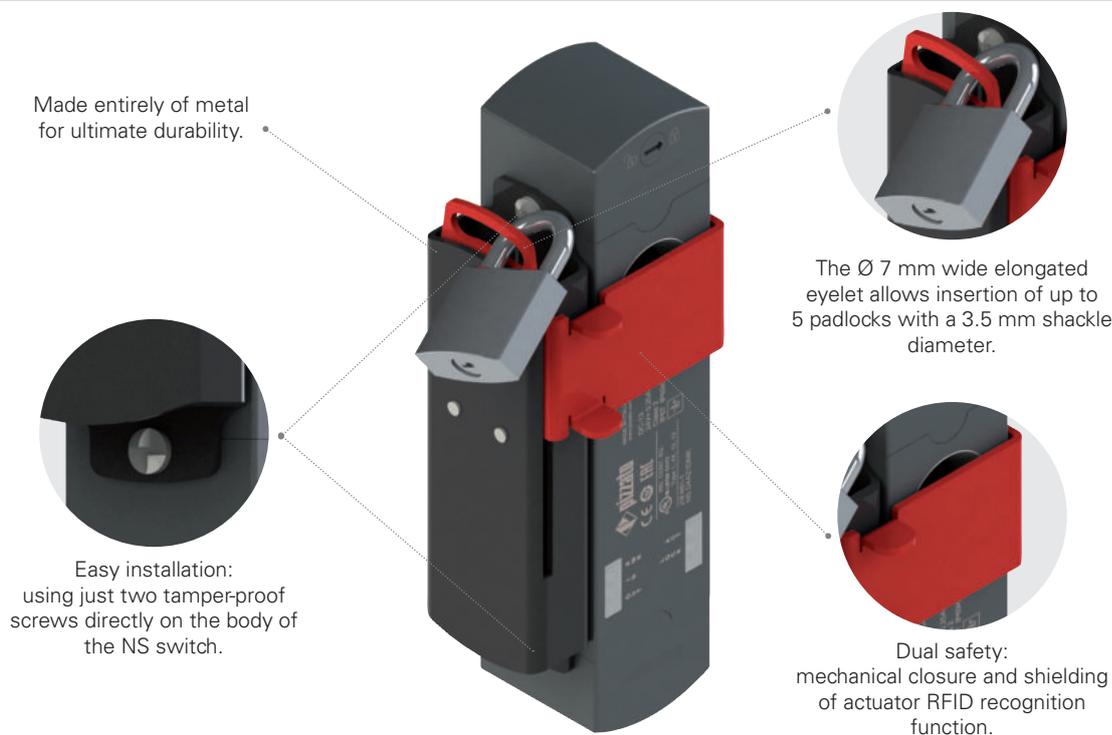## LK S lock out device for NS series switches

Description

Article	Description
LK S1D001	Lock out device for NS series switches, mounting on the right side of the switch
LK S1S001	Lock out device for NS series switches, mounting on the left side of the switch

The range of P-KUBE Krome safety handles is completed by the lock out device for NS series switches with solenoid and RFID technology. The device has a full metal design and is attached laterally to the holes on the NS device, without any auxiliary fixing plate or support.

The front slider, in addition to mechanically closing the actuator entry hole, also functions as a shield for the RFID receiver antenna on the NS switch; thus ensuring an additional level of protection against accidental closure of the guard and untimely machine restart. This is particularly effective, for example, for machines with an installed low-level coded actuator, making any attempt to bypass the switch impossible.

When the slider is lifted, a Ø 7 mm wide elongated eyelet emerges on the top of the device, allowing insertion of up to 5 padlocks.

General data

Made entirely of metal for ultimate durability.

The Ø 7 mm wide elongated eyelet allows insertion of up to 5 padlocks with a 3.5 mm shackle diameter.

Easy installation: using just two tamper-proof screws directly on the body of the NS switch.

Dual safety: mechanical closure and shielding of actuator RFID recognition function.

Error-proof operation

To prevent unintentional guard closure, simply move the red door upwards so that the actuator entry hole is fully covered, and the pin cannot be inserted.

Before entering the danger zone, each operator must insert his or her own personal padlock in the lock out slot. This means that the lock out device can be unlocked only once all padlocks have been removed; i.e., once all operators have exited the danger zone.

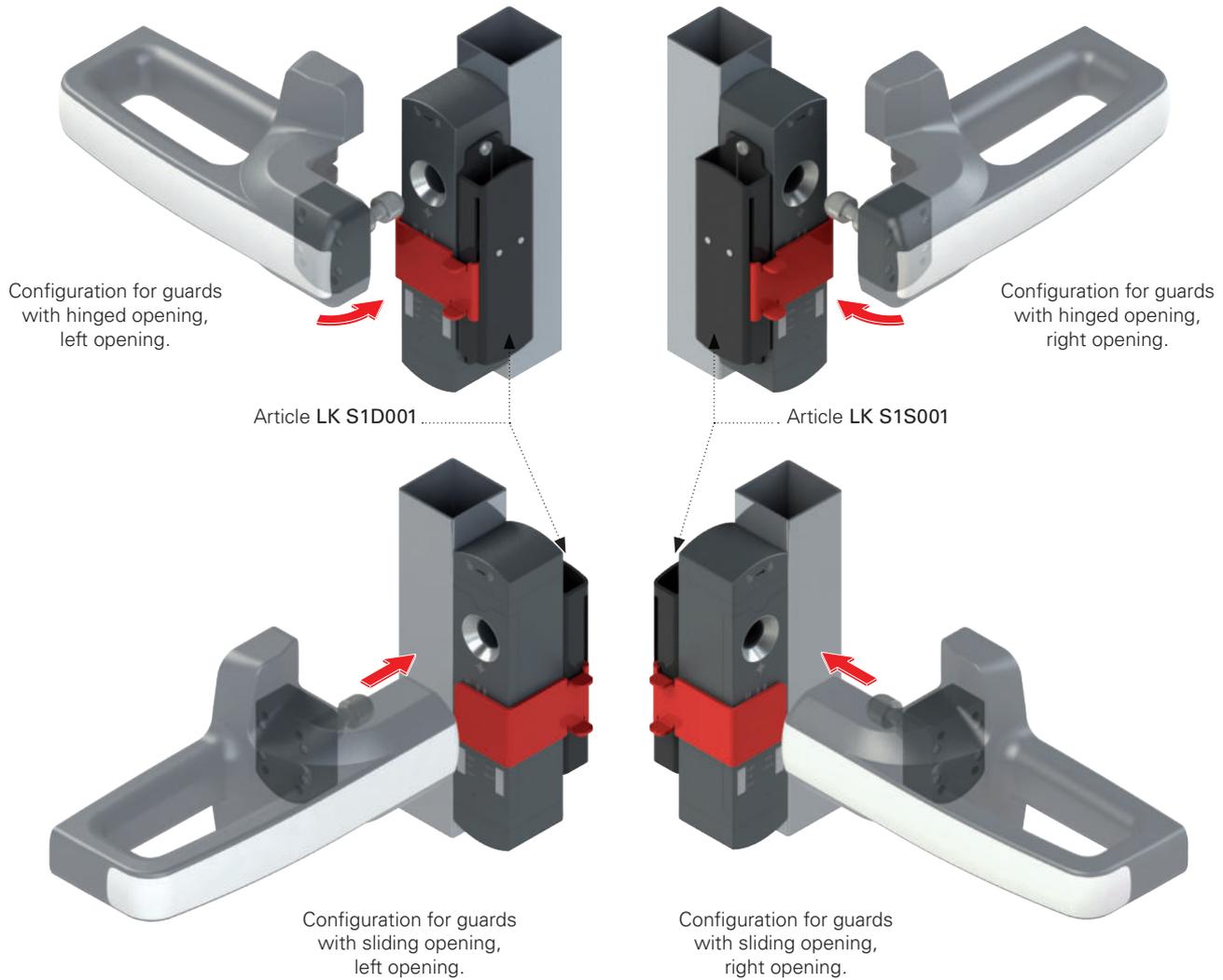Lock out disabled   Lock out enabled
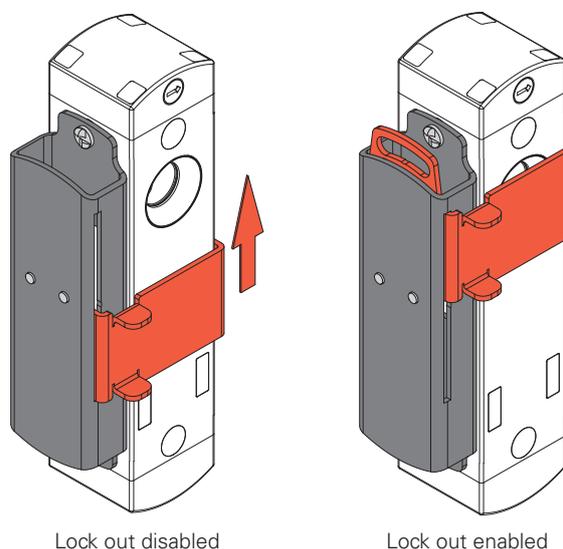
Maximum adaptability and compatibility

The precise engineering of the LK S lock out device has enabled implementation of a highly versatile product, able to easily adapt to all potential configurations of guards on which an NS series switch is used.

The unique shape of the slider that seals the actuator hole allows the LK S lock out device to be used on both hinged and sliding guards, on both left and right.
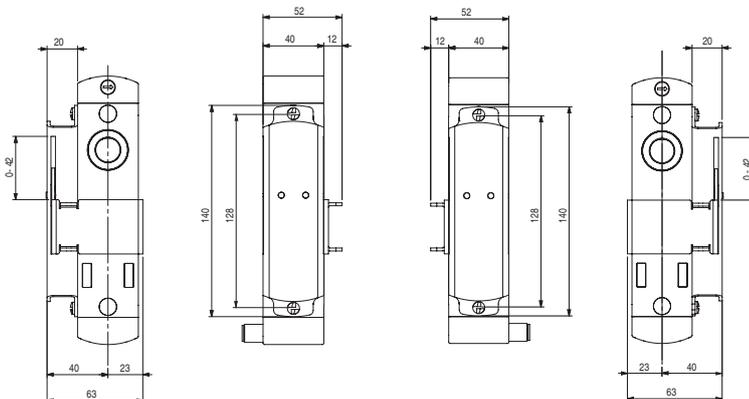
The lock out and interlock switch are designed and manufactured for ideal compatibility with the new P-KUBE Krome handles by Pizzato Elettrica; allowing implementation of robust and functional protection systems, with an innovative aesthetic impact.

Configuration for guards with hinged opening, left opening.

Configuration for guards with hinged opening, right opening.

Article LK S1D001 .... Article LK S1S001

Configuration for guards with sliding opening, left opening.

Configuration for guards with sliding opening, right opening.

Dimensional drawings

Article LK S1S001

Article LK S1D001

All values in the drawings are in mm

Accessories See page 321

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

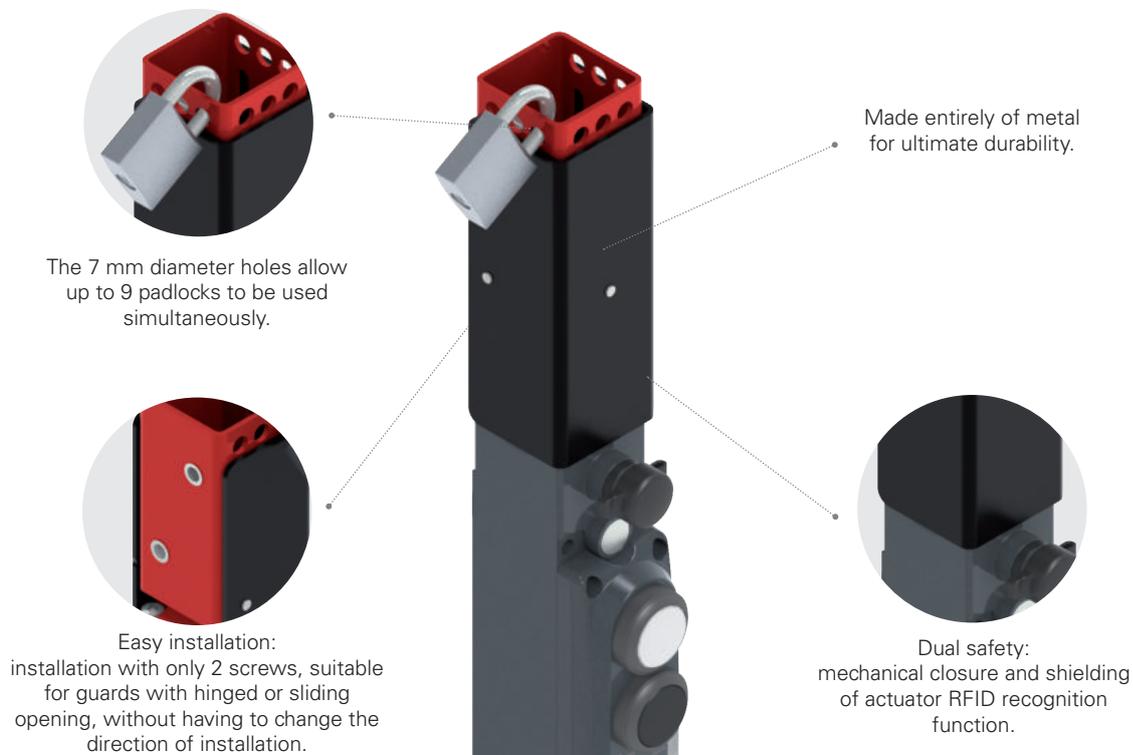## AP G1Z-000Z lock out device for NG series switches

Description

Article	Description
AP G1Z-000Z	Lock out device for NG series switches

Lock out device made entirely of metal to be installed with NG series switches with solenoid and RFID technology, compatible with the P KUBE 2 and P KUBE Krome series safety handles.

To prevent unintentional guard closure, simply move the black slider down so that the actuator entry hole is fully covered. When the slider is lowered, a plate with Ø 7 mm holes emerges on the top of the device, allowing insertion of up to 9 padlocks.

The slider also serves as a shield for the RFID receiver antenna on the NG switch.

General data

The 7 mm diameter holes allow up to 9 padlocks to be used simultaneously.

Easy installation:
installation with only 2 screws, suitable for guards with hinged or sliding opening, without having to change the direction of installation.

Made entirely of metal for ultimate durability.

Dual safety:
mechanical closure and shielding of actuator RFID recognition function.

Error-proof operation

With a single operation, the lock out device can close the centring hole in the NG switch as well as shield the RFID recognition system for detecting the actuator. Accidental closing of the guard is thereby prevented by inhibiting both the mechanical locking of the door and the electrical switching of the switch contacts.
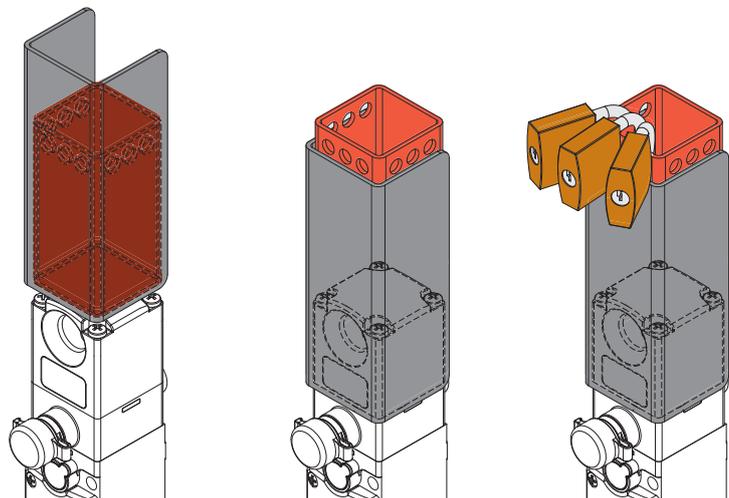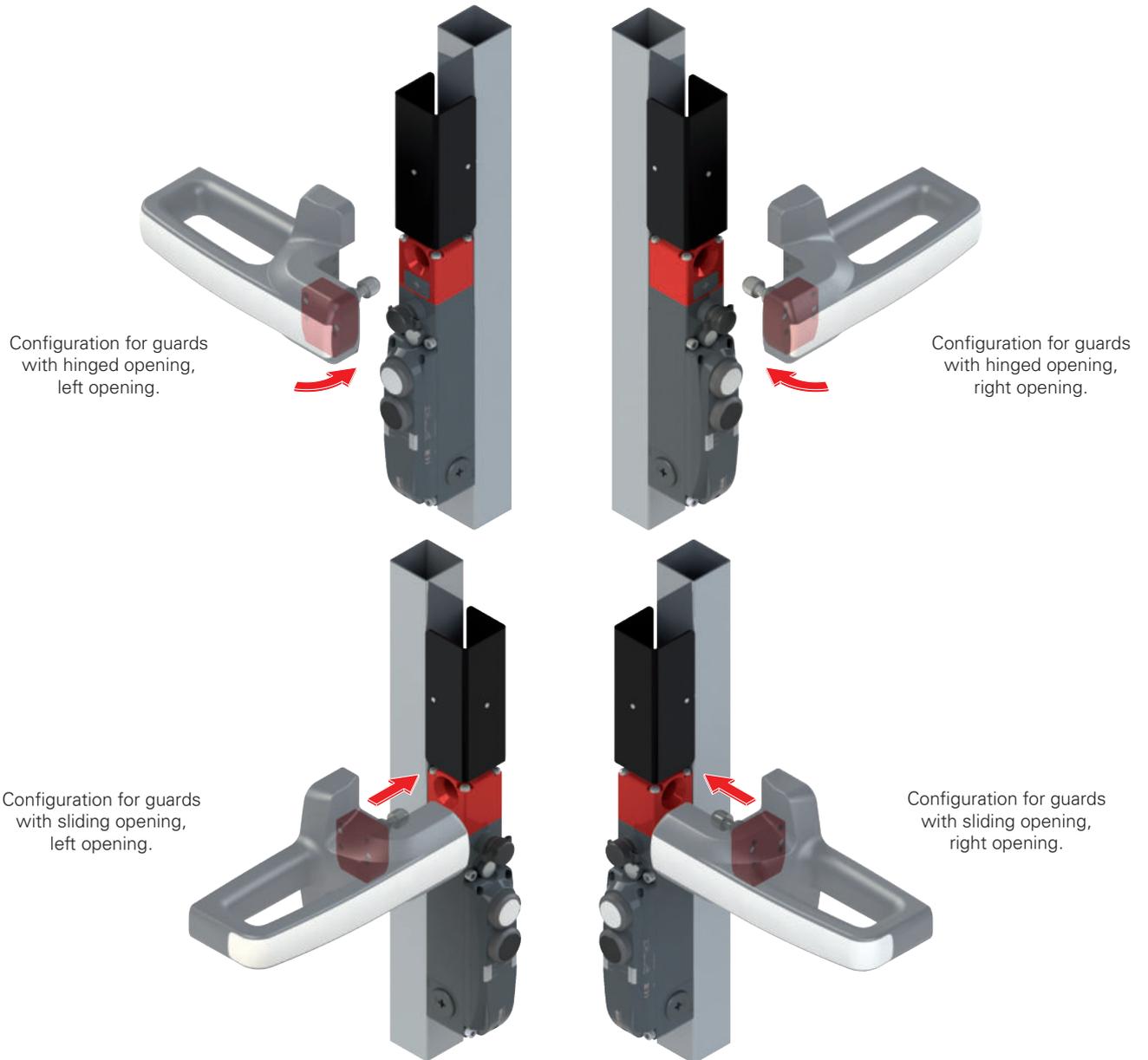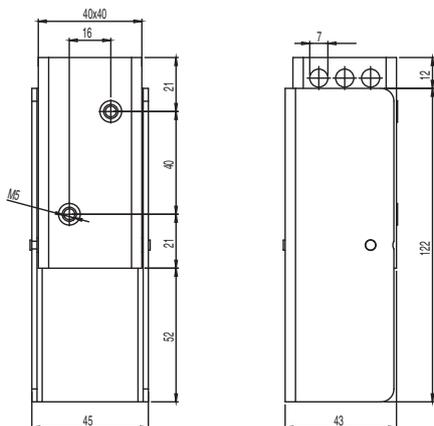
Maximum adaptability and compatibility

The symmetry of the AP G1Z-000Z lock out device allows it to be used in all possible configurations of guards on which a switch of the NG series is used, without any type of adaptation and any modification to the mounting position.

The unique shape of the slider that seals the actuator hole allows the AP G1Z-000Z lock out device to be used on both hinged and sliding guards, on both left and right.

The lock out and interlock switch are designed and manufactured for ideal compatibility with the new P-KUBE Krome handles by Pizzato Elettrica; allowing implementation of robust and functional protection systems, with an innovative aesthetic impact.

Configuration for guards with hinged opening, left opening.

Configuration for guards with hinged opening, right opening.

Configuration for guards with sliding opening, left opening.

Configuration for guards with sliding opening, right opening.

Dimensional drawings

All values in the drawings are in mm

Accessories See page 321

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