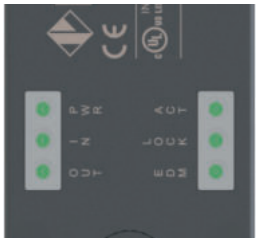
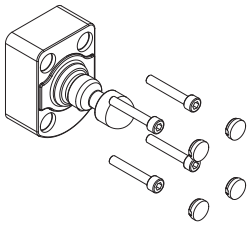
Six LEDs for immediate diagnosis



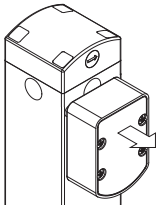
As the LEDs have been designed for quick immediate diagnosis, the status of each input and output is highlighted by one specific LED. This makes it possible to quickly identify the interruption points in the safety chain, which device is released, which guard is opened and any errors inside the device. All of this at a glance, without needing to decode complex flashing sequences.

Protection against tampering



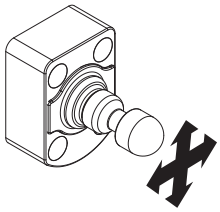
Each actuator of the NS series is supplied with four snap-on protection caps. Not only do the caps prevent dirt from accumulating and simplify cleaning, they also block access to the fastening screws of the actuator. As a result, standard screws can be used instead of tamper-proof screws.

Holding force of the unlocked actuator



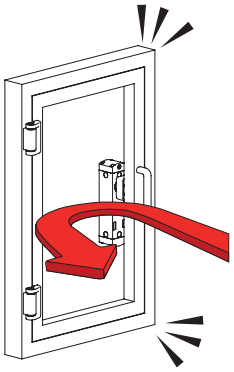
The inside of each switch features a device which holds the actuator in its closed position. Ideal for all those applications where several guards are unlocked simultaneously, but only one is actually opened. The device keeps all the unlocked guards in their position with a retaining force of approx. 20 N, stopping any vibrations or gusts of wind from opening them.

Jointed actuator for inaccurately closing guards



All NS series actuators are articulated, thereby allowing the actuator pin to be safely guided into the switch through the centring hole. As a result, the actuator and switch do not need to be precisely aligned during installation. In addition, the device can thereby be used on guards with a minimum actuation radius of 150 mm without the actuation pin needing to be angled.

Function for protecting against recoil forces

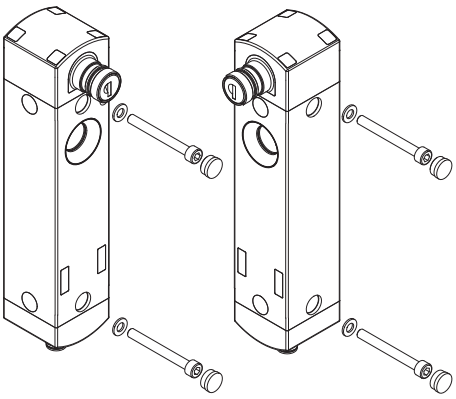


If a guard is closed too quickly or with so much force that the recoil would cause it to open again, a special function in the NS switch prevents locking. This function prevents the immediate locking of the guard if the lock signal is applied. This protects the switch against recoil forces that occur during instantaneous locking, thus avoiding possible damage to the device.

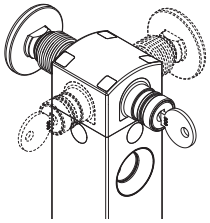
Front and side mounting

Integrated in the housing of the NS series is a hole for inserting the actuator pin. Fixing holes are also provided in the robust body for front and side mounting.

This makes it easier to mount the switch during lateral installation: the switch is directly mounted without needing to rotate the module that contains the hole for inserting the actuator pin. The fixing holes can be sealed with the protection caps provided for this purpose. Dirt deposits and tampering attempts are thereby prevented.



Key release device and escape release button



The key release device (auxiliary release) is used to permit unlocking of the actuator only by personnel in possession of the key. The device also functions with no power supply and, once actuated, prevents the guard from being locked.

The escape release button allows actuator release and immediate opening of the guard. Generally used in machines within which an operator could inadvertently become trapped, it faces towards the machine interior, to allow the operator to exit even in the event of a power failure. The button has two stable states and can be freely extended in length with suitable extensions (see accessories).

Both devices can be positioned on the four sides of the switch. As a result, it can be installed both towards the interior and towards the exterior of the machine.

High protection degree

IP69K
IP67

These devices are designed to be used in the toughest environmental conditions and they pass the IP67 immersion test acc. to EN 60529. They can therefore be used in all environments where the maximum degree of protection is required for the housing. Due to their special design, these devices are suitable for use in equipment subjected to cleaning with high pressure hot water jets. These devices meet the IP69K test requirements according to ISO 20653 (water jets with 100 bar and 80°C).

Three safety output actuation modes

MODE 1
MODE 2
MODE 3

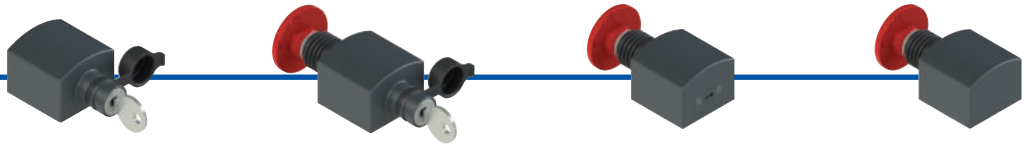
The device is available with 3 different actuation modes for safety outputs:
- mode 1: safety outputs active with inserted and locked actuator, for machines with inertia;
- mode 2: safety outputs active with inserted actuator, for machines without inertia;
- mode 3: a first safety output active with actuator inserted and locked and a second safety output active with actuator inserted, for special applications.

External device monitoring

EDM

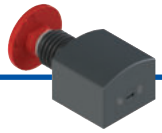
On request, the switch can be supplied with EDM function (External Device Monitoring). In this case, the switch itself checks the proper function of the devices connected to the safety outputs. These devices (usually relays or safety contactors) must send a feedback signal to the EDM input, which checks that the received signal is consistent with the state of the safety outputs.

Selection diagram

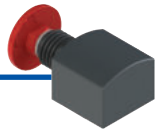


D•ST
Locked actuator with **de-energised** solenoid
key release at front

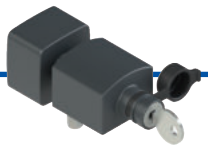
D•SE
Locked actuator with **de-energised** solenoid
key release at front and escape release button at back



D•CE
Locked actuator with **de-energised** solenoid
release by means of screwdriver at front and escape release button at back

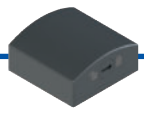


E•TE
Locked actuator with **energised** solenoid
Without release at front and escape release button at back

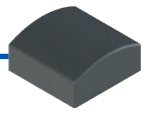


D•SR
ocked actuator with **de-energised** solenoid
front key release and rear remote escape release

D•CR
Locked actuator with **de-energised** solenoid
front screwdriver release and rear remote escape release



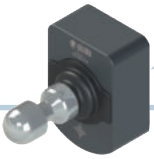
D•AZ
Locked actuator with **de-energised** solenoid
release by means of screwdriver at front



E•ZZ
Locked actuator with **energised** solenoid

RELEASE AND OPERATING PRINCIPLE

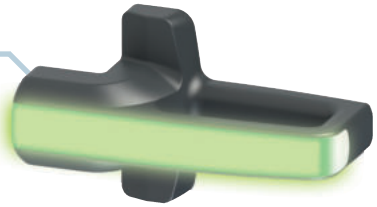
ACTUATORS



VN NS-F40
Low level coded actuator

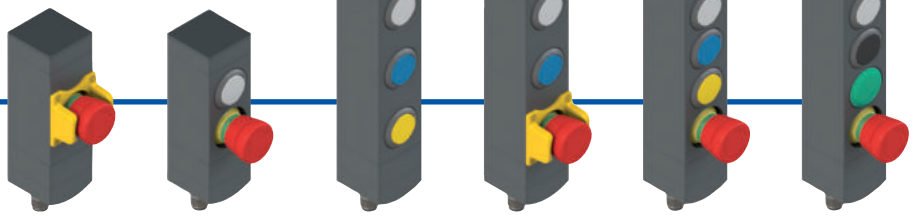
VN NS-F41
High level coded actuator

SAFETY HANDLE



P-KUBE Krome
See page 229

CONTROL DEVICES



N•••

CONNECTIONS

M12 connector, axial

SMK	12-pole
SPK	8-pole for stand-alone connection
SQK	8-pole, for series connection with Y connectors

With axial cable

SA2	PVC, 12-pole, length 2 m
SB2	PVC, 8-pole, length 2 m, for stand-alone connections
SE2	PUR, 8-pole, length 2 m, for stand-alone connections

With 0.2 m cable length and M12 connector, axial

SM0.2	12-pole
SP0.2	8-pole for stand-alone connection
SQ0.2	8-pole, for series connection with Y connectors

Two M12 connectors, axial

SRK	M12 + M12

CONNECTIONS

M12 connector, lateral, orientable

DMK	12-pole
DPK	8-pole for stand-alone connection
DQK	8-pole, for series connection with Y connectors

With cable, lateral, orientable

DA2	PVC, 12-pole, length 2 m
DB2	PVC, 8-pole, length 2 m, for stand-alone connections
DE2	PUR, 8-pole, length 2 m, for stand-alone connections

Cable, length: 0.2 m, with M12 connector, lateral, orientable

DM0.2	12-pole
DP0.2	8-pole for stand-alone connection
DQ0.2	8-pole, for series connection with Y connectors

M23 connector, axial

SSK	12-pole
STK	19-pole

For pin assignments of the connectors, see pages 194 to 198.

Product options → Sold separately as accessory

Code structure

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

article | options

NS D4AZ1SMK-F41N001E36LP30VS01

Operating principle

D	locked actuator with de-energised solenoid, mode 1
E	locked actuator with energised solenoid, mode 1
G	locked actuator with de-energised solenoid, mode 2
H	locked actuator with energised solenoid, mode 2
L	locked actuator with de-energised solenoid, mode 3
M	locked actuator with energised solenoid, mode 3

Inputs and outputs

3	2 safety inputs IS1, IS2 2 safety outputs OS1, OS2 1 signalling output O3: actuator inserted 1 signalling output O4: actuator locked 2 solenoid activation inputs IE1, IE2 1 reset input I3 **Note:**Supplied only together with actuator.
4	2 safety inputs IS1, IS2 2 safety outputs OS1, OS2 1 signalling output O3: actuator inserted 1 signalling output O4: actuator locked 2 solenoid activation inputs IE1, IE2 1 programming / reset input I3
5	2 safety inputs IS1, IS2 2 safety outputs OS1, OS2 1 signalling output O3: actuator inserted 1 signalling output O4: actuator locked 2 solenoid activation inputs IE1, IE2 1 programming / reset input I3 1 feedback input EDM I5 **Note:** Not available with mode 3.

Auxiliary release at front and back

AZ	release by means of screwdriver at front (1)
ST	key release at front (1)
SE	key release at front and escape release button at back (1)
CE	release by means of screwdriver at front and escape release button at back (1)
ZZ	without release (2)
TE	without release at front and escape release button at back (2)
SR	with front key release and rear remote escape release (3)
CR	with front screwdriver release and rear remote escape release (3)

(1) Only available for operating principle D, G and L.
(2) Only available for operating principle E, H and M.
(3) For the remote escape release, see page 203.

Output direction, connections

D	cable or connector, lateral
S	cable or connector, axial

Software versions (1)

VS01	O4: fault signalling output
VS02	O3: inverted signalling output O4: inverted signalling output
VS03	O3: fault signalling output
VS04	O3: generates a voltage dip (0.2ms) when the device is blocked

(1) Available for non-safety inputs and outputs only.

Release button length

	for max. 15 mm wall thickness (standard)
LP30	for max. 30 mm wall thickness
LP40	for max. 40 mm wall thickness
LP50	for max. 50 mm wall thickness

Actuator extraction force

	actuator extraction force 20 N (standard)
E36	actuator freely removable
E37	actuator extraction force 40 N

Button configurations

N001	configuration 001
N002	configuration 002
N003	configuration 003
...	other configurations on request

Actuator

F40	low level coded actuator VN NS-F40 the switch recognises any type F40 actuator
F41	high level coded actuator VN NS-F41 the switch recognises one single type F41 actuator

Connection type

K	integrated connector (standard)
0.2	cable, length: 0.2 m, with M12 connector
2	cable, length: 2 m (standard)
...	...
10	cable, length: 10 m

Cable or connector type

A	PVC cable 12x0.14 mm²
B	PVC cable 8x0.34 mm², for stand-alone connections (1)
E	PUR cable, halogen-free, 8x0.34 mm², for stand-alone connections (1)
M	M12 connector, 12-pole (standard)
P	M12 connector, 8-pole, for stand-alone connections (1)
Q	M12 connector, 8-pole, for series connection with Y connectors (2)
R	two M12 connectors (12-pole + 12-pole) (3)
S	M23 connector, 12-pole (3)
T	M23 connector, 19-pole (3)

(1) without inputs IS1, IS2, I5 and without output O4
(2) without inputs IE2, I3, I5 and without output O3. Only available with "inputs and outputs" in version 3
(3) only for items with integrated control devices
For the complete list of possible combinations please contact our technical department.

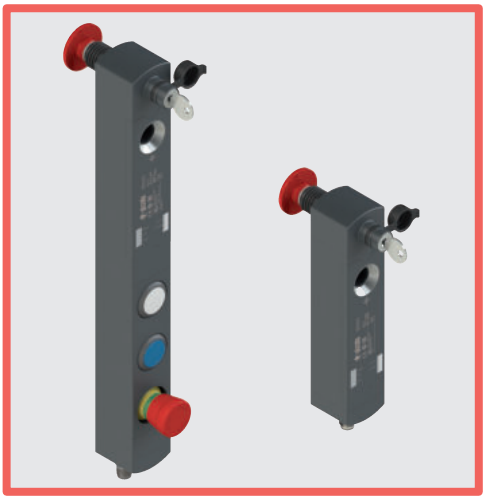
Code structure for actuator

VN NS-F40

Actuator

F40	low level coded actuator the switch recognises any type F40 actuator
F41	high level coded actuator the switch recognises one single type F41 actuator

NS series RFID safety switches with lock



Main features

- Actuation without contact, using RFID technology
- Digitally coded actuator
- SIL 3 and PL e also with series connection of up to 32 devices
- Max. actuator holding force: 2100 N
- SIL 3 and PL e with a single device
- Protection degree up to IP67 and IP69K
- 6 signalling LEDs

Quality marks:

EC type examination certificate: M6A 075157 0029 Rev. 02
UL approval: E131787
TÜV SÜD approval: Z10 075157 0025 Rev. 05
EAC approval: RU C-IT.УТ03.B.00035/19

In compliance with standards:
EN ISO 14119, EN 60947-5-3, EN 60947-1, EN 60204-1, EN ISO 12100, EN 60529, EN 61000-6-2, EN 61000-6-3, EN 61508-1, EN 61508-2, EN 61508-3, EN ISO 13849-1, EN ISO 13849-2, EN IEC 62061, EN 61326-1, EN 61326-3-1, EN IEC 63000, ETSI 301 489-1, ETSI 301 489-3, ETSI 300 330, UL 508, CSA C22.2 No. 14, BG-GS-ET-19.

Compliance with the requirements of:
Machinery Directive 2006/42/EC, EMC Directive 2014/30/EC, RED Directive 2014/53/EU, RoHS directive 2011/65/EU, FCC Part 15.

Features approved by UL

Electrical ratings: 24 Vdc Class 2, 0,25 A (versions without control devices), 0,3 A (versions with control devices).
Input Supplied by 24 Vdc, Class 2 Source or limited voltage limited energy
Input NS side: 24 Vdc, 0,15 A. Input BN side: 24 Vdc, 0,048 A max. (maximum four leds).
Output NS side: 2 output 24 Vdc, 0,25 A plus 2 output 24 Vdc, 0,1 A. Output BN side: 24 Vac/dc Class 2 0,25 A Pilot Duty (maximum four actuators, with maximum six contacts, NO or NC or both) or 0,18 A Pilot Duty (maximum four actuators, with maximum eight contacts, NO or NC or both)
Environmental ratings: Types 1, 4X, 12, 13 (versions without control devices), Type 1 (versions with control devices).

Features approved by TÜV SÜD

Operating voltage: 24 Vdc ±10%
Ambient temperature: -20°C…+50°C
Max. actuation frequency: 600 operating cycles/hour
Max. holding force F_{zh}: 1615 N
Protection degree: IP67, IP69K

Tested according to: 2006/42/EC, EN IEC 60947-5-2:2020/A11:2022, EN 60947-5-3:2013, EN 61508-1:2010 (SIL 2/3), EN 61508-2:2010 (SIL 2/3), EN 61508-3:2010 (SIL 2/3), EN IEC 62061:2021 (maximum SIL 3), EN ISO 13489-1:2015 (Cat. 2/4, PL d/e), EN ISO 14119:2013.
Please contact our technical department for the list of approved products.

Technical data

Housing made of glass fibre reinforced technopolymer, self-extinguishing and shock-proof
Versions with 12x0.14 mm² or 8x0.34 mm² integrated cable, length 2 m, other lengths from 0.5 to 10 m on request
Versions with integrated M12 stainless steel connector, single or double, or with M23 connector
Versions with 0.2 m cable and M12 connector, other lengths from 0.1 ... 3 m on request
Protection degree: IP67 acc. to EN 60529
IP69K acc. to ISO 20653 (Protect the cables from direct high-pressure and high-temperature jets)
Protection degree with control devices: IP65 acc. to EN 60529

General data

Safety parameters	SIL	PL	Cat.	DC	PFH_D	$MTTF_D$
Monitoring function: actuator locked - Mode 1	3	e	4	High	1.23E-09	2657
Monitoring function: actuator present - Mode 2	3	e	4	High	1.22E-09	1840
Monitoring function: actuator locked - Mode 3	2	d	2	High	1.50E-09	2627
Monitoring function: actuator present - Mode 3	2	d	2	High	1.49E-09	3987
Dual-channel control for locking function of the actuator	3	e	4	High	2.04E-10	2254
Single-channel control for locking function of the actuator	2	d	2	High	2.04E-10	2254

Interlock with lock, no contact, coded: type 4 acc. to EN ISO 14119
Level of coding acc. to EN ISO 14119: low with F40 actuator
High with F41 actuator
Mission time: 20 years
Ambient temperature: -20°C ... +50°C
Max. actuation frequency with actuator lock and release: 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}: 2100 N acc. to EN ISO 14119
Max. holding force F_{Zh}: 1615 N acc. to EN ISO 14119
Maximum clearance of locked actuator: 4 mm
Released actuator extraction force: ~ 20 N

Power supply electrical data

Rated operating voltage U_e: 24 Vdc ±10% SELV/PELV
Operating current at U_e voltage: 40 mA min.; 0.4 A max. with activated solenoid; 1.2 A with activated solenoid and all outputs at maximum power
Rated insulation voltage U_i: 32 Vdc
Rated impulse withstand voltage U_{imp}: 1.5 kV
External protection fuse: type gG fuse 2 A or equivalent device
Overvoltage category: III
Electrical endurance: 1 million operating cycles
Solenoid duty cycle: 100% ED (continuous operation)
Solenoid consumption: 9 W max.
Pollution degree: 3 acc. to EN 60947-1

Electrical data of inputs IS1/IS2/I3/IE1/IE2/I4/I5/EDM

Rated operating voltage U_{e1}: 24 Vdc
Rated current consumption I_{e1}: 5 mA

Electrical data of OS1/OS2 safety outputs

Rated operating voltage U_{e2}: 24 Vdc
Output type: PNP type OSSD
Maximum current per output I_{e2}: 0.25 A
Minimum current per output I_{m2}: 0.5 mA
Thermal current I_{th2}: 0.25 A
Utilization category: DC13; U_{e2}=24 Vdc, I_{e2}=0.25 A
Short circuit detection: Yes
Overcurrent protection: Yes
Internal self-resettable protection fuse: 1.1 A
Duration of the deactivation impulses at the safety outputs: < 300 µs
Permissible maximum capacitance between outputs: < 200 nF
Permissible maximum capacitance between output and ground: < 200 nF
Activation time of safety outputs OS1 and OS2 after deactivation of safety inputs IS1, IS2: typically 7 ms, max. 15 ms
Activation time upon unlocking the actuator: typically 7 ms, max. 12 ms
Activation time upon removal of the actuator: typically 120 ms, max. 200 ms
Maximum delay for EDM status change: 500 ms

Electrical data of O3/O4 signalling outputs

Rated operating voltage U_{e3}: 24 Vdc
Output type: PNP
Maximum current per output I_{e3}: 0.1 A
Utilization category: DC13; U_{e3}=24 Vdc, I_{e3}=0.1 A
Short circuit detection: No
Overcurrent protection: Yes
Internal self-resettable protection fuse: 1.1 A

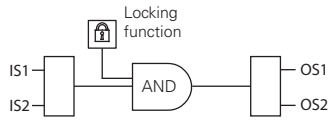
RFID sensor data

Assured operating distance S_{ao}: 2 mm
Assured release distance S_{ar}: 6 mm (actuator not locked)
10 mm (actuator locked)
Rated operating distance S_n: 3 mm
Repeat accuracy: ≤ 10 % s_n
Differential travel: ≤ 20 % s_n
RFID transponder frequency: 125 kHz
Max. switching frequency: 1 Hz

Actuation mode of the OS1 and OS2 safety outputs

Mode 1

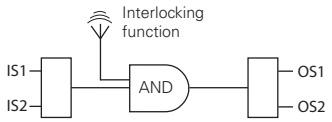
Safety outputs OS1 and OS2 are active when the actuator is inserted and locked.



In case of machines with or without inertia of the dangerous elements.
Safety category of the safety outputs: PL e, SIL 3.

Mode 2

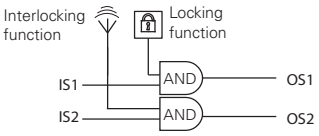
Safety outputs OS1 and OS2 are active when the actuator is inserted.



In case of machines without inertia of the dangerous elements.
Safety category of the safety outputs: PL e, SIL 3.

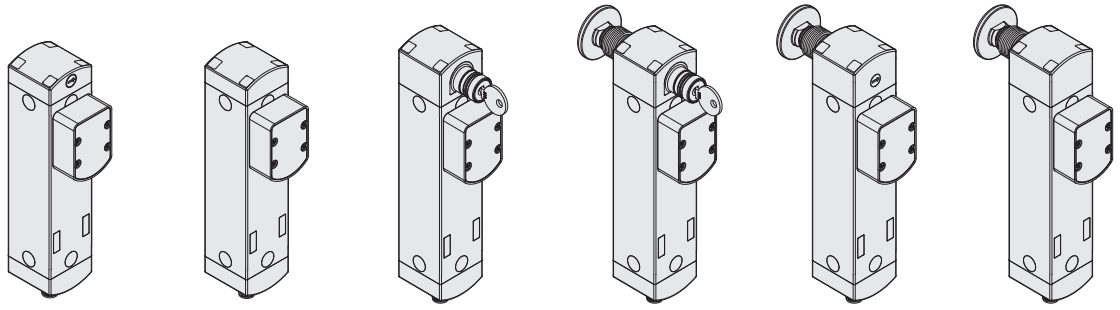
Mode 3

Safety output OS1 is active when the actuator is inserted and locked and IS1 is active. Safety output OS2 is active when the actuator is inserted and IS2 is active.



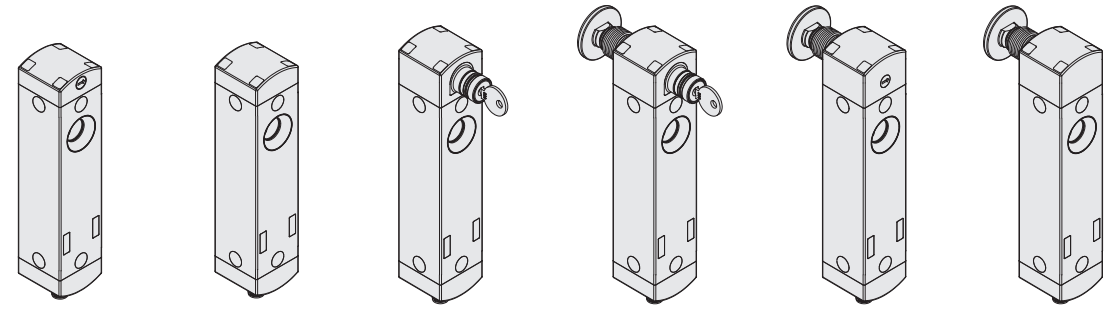
In case of machines with or without inertia of the dangerous elements.
Safety category of the safety outputs: PL d, SIL 2.

Selection table for switches with high level coded actuators



Operating principle	Locked actuator with de-energised solenoid. With screwdriver release	Locked actuator with energised solenoid	Locked actuator with de-energised solenoid. With key release	Locked actuator with de-energised solenoid. With key release and escape release button	Locked actuator with de-energised solenoid. With screwdriver release and escape release button	Locked actuator with energised solenoid. With escape release button
Mode 1	NS D4AZ1SMK-F41	NS E4ZZ1SMK-F41	NS D4ST1SMK-F41	NS D4SE1SMK-F41	NS D4CE1SMK-F41	NS E4TE1SMK-F41
Mode 2	NS G4AZ1SMK-F41	NS H4ZZ1SMK-F41	NS G4ST1SMK-F41	NS G4SE1SMK-F41	NS G4CE1SMK-F41	NS H4TE1SMK-F41
Mode 3	NS L4AZ1SMK-F41	NS M4ZZ1SMK-F41	NS L4ST1SMK-F41	NS L4SE1SMK-F41	NS L4CE1SMK-F41	NS M4TE1SMK-F41

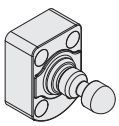
Selection table for switches



Operating principle	Locked actuator with de-energised solenoid. With screwdriver release	Locked actuator with energised solenoid	Locked actuator with de-energised solenoid. With key release	Locked actuator with de-energised solenoid. With key release and escape release button	Locked actuator with de-energised solenoid. With screwdriver release and escape release button	Locked actuator with energised solenoid. With escape release button
Mode 1	NS D4AZ1SMK	NS E4ZZ1SMK	NS D4ST1SMK	NS D4SE1SMK	NS D4CE1SMK	NS E4TE1SMK
Mode 2	NS G4AZ1SMK	NS H4ZZ1SMK	NS G4ST1SMK	NS G4SE1SMK	NS G4CE1SMK	NS H4TE1SMK
Mode 3	NS L4AZ1SMK	NS M4ZZ1SMK	NS L4ST1SMK	NS L4SE1SMK	NS L4CE1SMK	NS M4TE1SMK

To order a product with lateral connection replace character **S** with character **D** in the order codes shown above. Example: NS D4AZ1**S**MK → NS D4AZ1**D**MK
To order a product with EDM input replace number **4** with number **5** in the codes shown above. Example: NS D**4**AZ1SMK → NS D**5**AZ1SMK
Legend: interlock with lock monitoring acc. to EN ISO 14119

Selection table for actuators

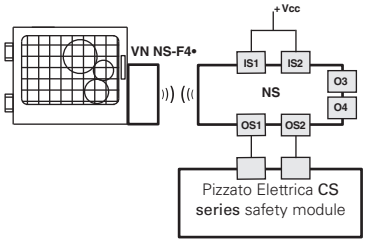


Level of coding acc. to EN ISO 14119	Article
low	VN NS-F40
high	VN NS-F41

The use of RFID technology in NS series devices makes them suitable for several applications. Pizzato Elettrica offers two different versions of actuators, in order to best suit customers' specific needs.
Type F40 actuators are all encoded with the same code. This implies that a device associated with an actuator type F40 can be activated by other actuators type F40.
Type F41 actuators are always encoded with different codes. This implies that a device associated with an actuator type F41 can be activated only by a specific actuator. Another F41 type actuator will not be recognised by the device until a new association procedure is carried out (reprogramming). After reprogramming, the old actuator F41 will no longer be recognized.
Reprogramming of the actuator can be performed repeatedly.

Complete safety system

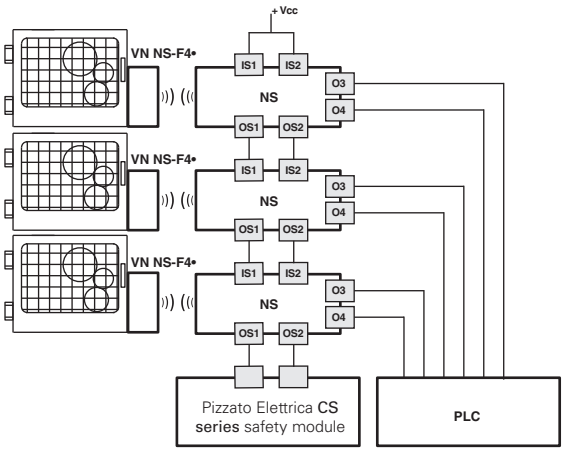
The use of complete and tested solutions guarantees the electrical compatibility between the NS series switches and the safety modules from Pizzato Elettrica, as well as high reliability. The switches have been tested with the modules listed in the adjacent table.



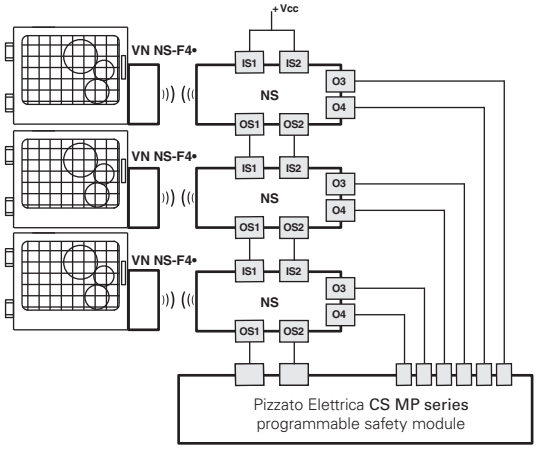
NS series switches can be used as individual devices provided that the safety outputs be evaluated by a Pizzato Elettrica safety module (see table for combinable safety modules).

Switches	Compatible safety modules	Safety module output contacts		
		Instantaneous safety contacts	Delayed safety contacts	Signalling contacts
NS ••••1•••	CS AR-01••••	2NO	/	1NC
	CS AR-02••••	3NO	/	/
	CS AR-05••••	3NO	/	1NC
	CS AR-06••••	3NO	/	1NC
	CS AR-08••••	2NO	/	/
	CS AT-0•••••	2NO	2NO	1NC
	CS AT-1•••••	3NO	2NO	/
	CS MP••••••	see page 369		
	CS MF••••••	see page 401		

All NS series switches can be connected, provided that compatibility is checked, to safety modules or safety PLCs with OSSD inputs.

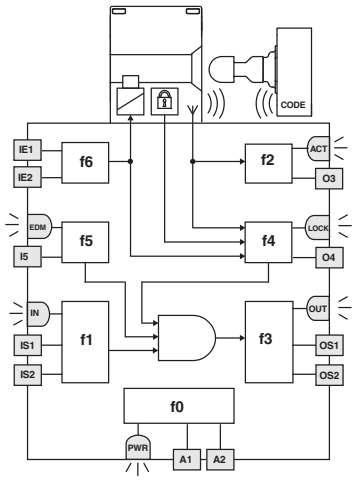


Possibility of series connection of multiple switches for simplifying the wiring of the safety system, whereby only the outputs of the last switch are evaluated by a Pizzato Elettrica safety module (see table with compatible safety modules). Each NS series switch is provided with two signalling outputs which are activated when the guard is closed (O3) or locked (O4). Depending on the specific requirements of the system that has been realised, the signals of the signalling outputs can be evaluated by a PLC.



Possibility of series connection of multiple switches for simplifying the wiring of the safety system, whereby only the outputs of the last switch are evaluated by a Pizzato Elettrica safety module of the CS MP series. Both the safety-relevant evaluation and the evaluation of the signalling outputs are performed by the CS MP series.
The examples listed above refer to applications with NS ••••1•••.

Internal wiring diagram

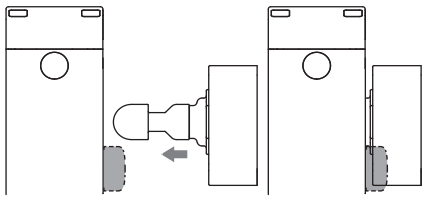


LED	Function
PWR	Power supply / self-diagnosis
IN	status of safety inputs
OUT	status of safety outputs
ACT	actuator state
LOCK	actuator locked
EDM	state of EDM inputs (NS •5••1•••)

The diagram on the side represents the 7 logic functions which interact inside the device.
Function f0 is a basic function and includes the monitoring of the power supply as well as internal, cyclical tests. Function f1 monitors the status of the device inputs, whereas function f2 monitors the presence of the actuator within the detection areas of the switch.
Function f4 checks the actuator lock condition.
Function f3 is intended to activate or deactivate the safety outputs and check for any faults or short circuits in the outputs.
In the EDM versions, the f5 function verifies the consistency of the EDM signal during safety output state changes.
The safety-related function, which combines the sub-functions mentioned above, activates the safety outputs according to the chosen operating mode:
- Both safety outputs OS1/OS2 for switches in mode 1 are activated only if both IS1/IS2 safety inputs are active and the actuator is inserted and locked;
- Both safety outputs OS1/OS2 for switches in mode 2 are activated only if both IS1/IS2 safety inputs are active and the actuator is inserted;
- The safety output OS1 for switches in mode 3 is activated only if the IS1 safety input is active and the actuator is inserted and locked, whereas the safety output OS2 is activated only if the IS2 safety input is active and the actuator is inserted.

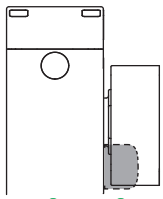
The f6 function verifies the coherence of the enable/disable signals of the actuator lock command.
The status of each function is displayed by the corresponding LED (PWR, IN, OUT, ACT, LOCK, EDM), in such a way that the general device status becomes immediately obvious to the operator.

Actuation sequence in mode 1

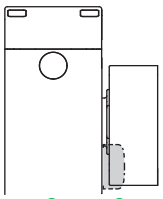


The switch is supplied with power (PWR LED on, green), the IS1 and IS2 inputs are enabled (IN LED on, green), the OS1 and OS2 safety outputs are disabled (OUT LED off). The actuator is outside of the actuation zone (LED ACT off).

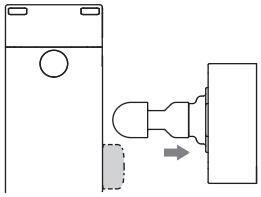
When the actuator is brought inside the safe actuation area (dark grey area), the switch turns on the ACT LED (green). In this position, the O3 signalling output (door-closed) is activated. The actuator is not locked (LOCK LED off).



The IE1, IE2 inputs can be used to lock the actuator (LOCK LED on, green). The OS1 and OS2 safety outputs are enabled (OUT LED on, green). The O4 signalling output is activated at the same time. The safe actuation area is extended in order to allow greater play for the actuator.



The IE1, IE2 inputs can be used to unlock the actuator (LOCK LED off). The switch disables the OS1 and OS2 safety outputs and turns off the OUT LED. The O4 signalling output is deactivated at the same time. The safe actuation area returns to the initial values.



When the actuator leaves the actuation limit area, the device turns off the ACT LED and the O3 signalling output.

Actuation sequence in mode 2 and mode 3

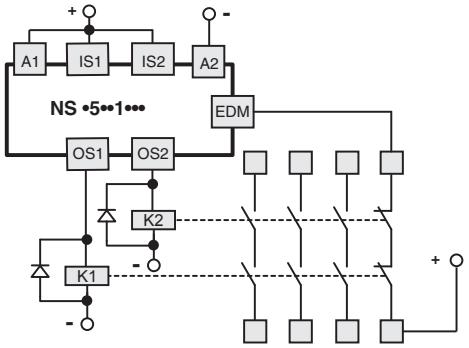
In contrast to the above mode 2 description, the safety outputs OS1 and OS2 are activated when the actuator is detected, and deactivated when the actuator is no longer detectable, in mode 3, the OS1 safety output is active with inserted and locked actuator and IS1 active, the OS2 safety output is active with inserted actuator and IS2 active.

Operating states

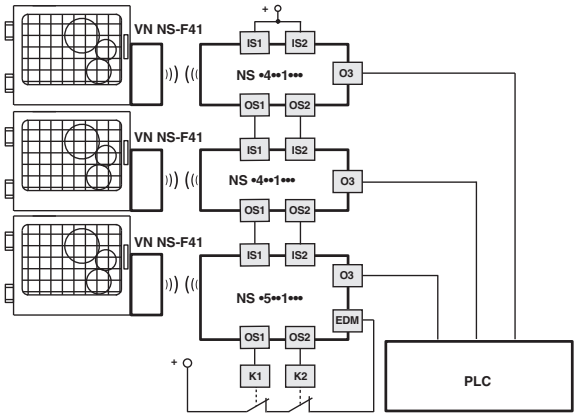
PWR LED	IN LED	OUT LED	ACT LED	LOCK LED	EDM LED (a)	Device state	Description
○	○	○	○	○	○	OFF	Device switched off.
◐	◐	◐	◐	◐	◐	POWER ON	Internal tests upon activation.
●	○	○	✳	✳	●	RUN	Safety inputs of the device not active.
●	●	✳	✳	✳	✳	RUN	Activation of safety inputs.
●	◐ blinking	○	✳	✳	✳	RUN	Safety inputs incoherence. Recommended action: check for presence and/or wiring of inputs.
●	✳	✳	✳	● blinking	✳	RUN	Incoherence of solenoid activation inputs IE1, IE2. Recommended action: check for presence and/or wiring of inputs.
●	✳	✳	✳	◐ blinking	✳	RUN	Auxiliary release activated. Deactivate the auxiliary release to lock the actuator
●	✳	✳	●	✳	✳	RUN	Actuator in safe area. O3 signalling output active.
●	✳	✳	●	●	○	RUN	Actuator in safe area and locked; O3 and O4 outputs active.
●	●	●	●	●	○	RUN	**Mode 1** Activation of safety inputs IS1, IS2. Actuator in safe area and locked. O3, O4, OS1 and OS2 outputs active.
●	●	●	●	✳	○	RUN	**Mode 2** Activation of safety inputs IS1, IS2. Actuator in safe area. O3, OS1 and OS2 outputs active.
●	◐	◐	●	●	○	RUN	**Mode 3** Actuator present, guard closed and locked, IS1 enabled, IS2 disabled, OS1 enabled, OS2 disabled
●	●	◐	●	○	○	RUN	**Mode 3** Actuator present, guard closed and not locked, IS1 and IS2 enabled, OS1 disabled, OS2 enabled
◐ blinking	✳	✳	✳	✳	✳	RUN	Rapid flashing: supply voltage too high. Slow flashing: temperature outside admissible range
●	✳	● blinking	✳	✳	✳	ERROR	Error on safety outputs. Recommended action: check for any short circuits between the outputs, outputs and ground or outputs and power supply, then restart the device.
●	○	○	● blinking	○	○	ERROR	Actuator detection error. Check the physical integrity of the device and, in case of failure, please replace the entire device. If undamaged, realign the actuator with the switch and restart the device.
●	○	○	○	○	○	ERROR	Internal error. Recommended action: restart the device. If the failure persists, replace the device.
●	✳	○	✳	✳	●	RUN	EDM signal active (external relay off)[a]
●	●	●	●	●	○	RUN	EDM signal not active (external relay on)[a]
●	○	○	○	○	● blinking	ERROR	Error in the EDM[a] function

Legend:
○ = off
● = on
● blinking = blinking
◐ = changing colours
✳ = indifferent
(a) Available for NS •5••1••• versions only

External device monitoring (EDM)



The NS •5••1••• version, in addition to maintaining the operating and safety characteristics of the NS series, allows control of forcibly guided NC contacts of contactors or relays controlled by the safety outputs of the switch itself. As an alternative to the relays or contactors you can use Pizzato Elettrica expansion modules CS ME-03 (see page 359). This check is carried out via the EDM input (External Device Monitoring as defined in EN 61496-1) of the switch.



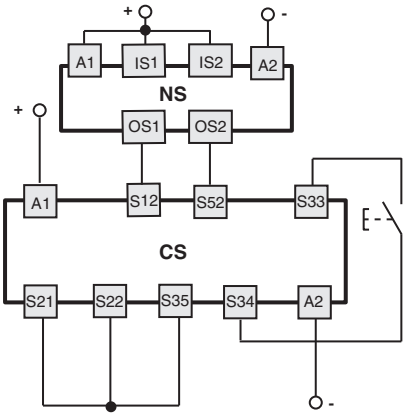
This version, with the IS safety inputs, can be used at the end of a series of NS switches, up to a maximum number of 32 devices, while maintaining the maximum PL e safety level and acc. to EN ISO 13849-1 and SIL 3 safety level acc. to EN IEC 62061.
This solution allows you to dispense with the safety module connected to the last device in the chain.
If present, the EDM function must be used.

Connection with safety modules

Connections with CS AR-08•••• safety modules

Input configuration with monitored start

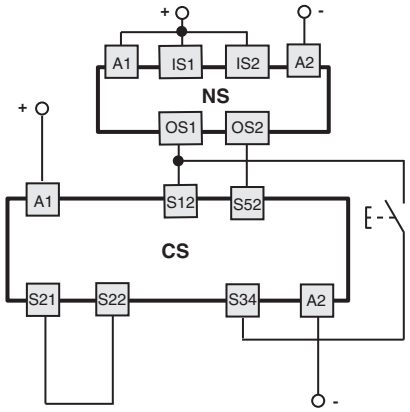
2 channels / Category 4 / up to SIL 3 / PL e



Connections with CS AR-05•••• / CS AR-06•••• safety modules

Input configuration with manual start (CS AR-05••••)
or monitored start (CS AR-06••••)

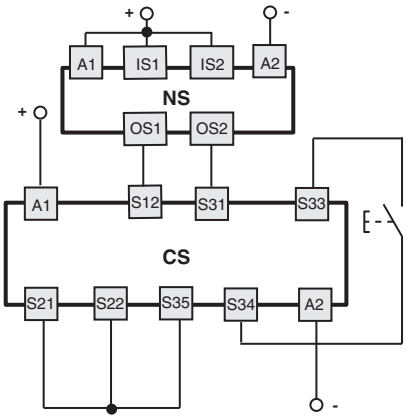
2 channels / Category 4 / up to SIL 3 / PL e



Connections with CS AT-0••••• / CS AT-1••••• safety modules

Input configuration with monitored start

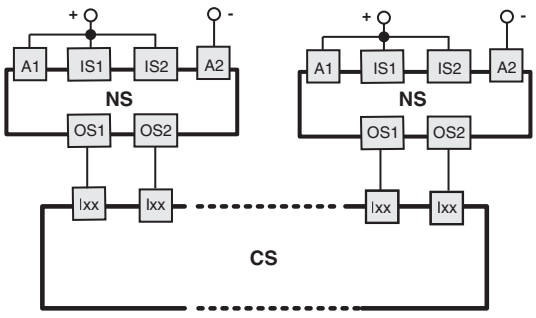
2 channels / Category 4 / up to SIL 3 / PL e



Connections with CS MF•••••, CS MP••••• safety modules

The connections vary according to the program of the module

Category 4 / up to SIL 3 / PL e

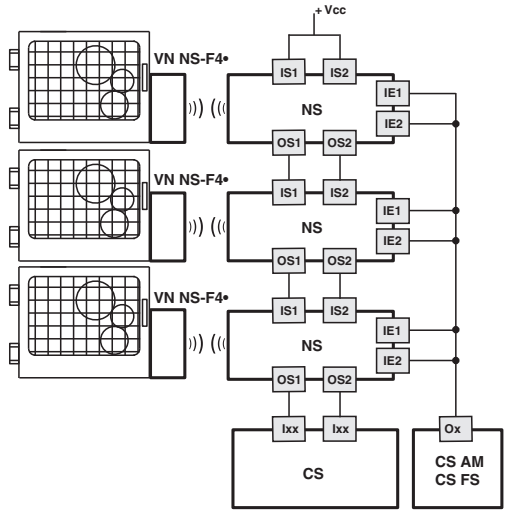


Application example on page 367.

Series connection of several switches

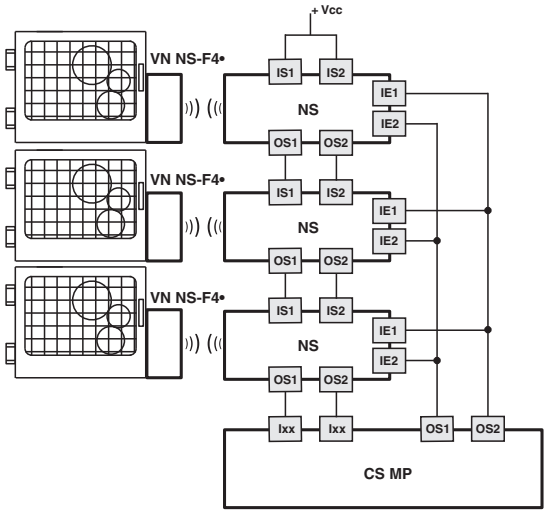
Monitoring function: actuator locked
2 channels / Category 4 / up to SIL 3 / PL e

Single-channel control for locking function of the actuator
1 channel / Category 2 / up to SIL 2 / PL d



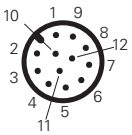
Monitoring function: actuator locked
2 channels / Category 4 / up to SIL 3 / PL e

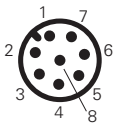
Dual-channel control for locking function of the actuator
2 channels / Category 4 / up to SIL 3 / PL e

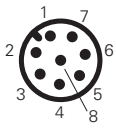


Safety switch internal connections

Versions with connector			Versions with cable			
NS ••••••M• M12 connector, 12-pole	NS ••••••P• M12 connector, 8-pole stand-alone connection	NS ••••••Q• M12 connector, 8-pole series connection with "Y" connectors	NS ••••••A• Cable 12x0.14 mm² outer diameter 6 mm	NS ••••••B•, NS ••••••E• Cable 8x0.34 mm² outer diameter 7 mm		Connection
3	3	3	White	Blue	A2	Supply input 0 V
10	8	8	Purple	Red	IE1	Solenoid activation input
12	5	/	Red-Blue	Purple	IE2	Solenoid activation input
5	2	/	Pink	Black	O3	Signalling output, actuator inserted
9	/	5(b)	Red	/	O4	Signalling output, actuator inserted and locked
8	6	/	Grey	purple-white	I3	Actuator programming input / reset
1	1	1	Brown	Brown	A1	Supply input +24 Vdc
2	/	2	Blue	/	IS1	Safety input
6	/	6	Yellow	/	IS2	Safety input
11	/	/	Grey-Pink	/	I5	EDM input (a)
4	4	4	Green	Red-White	OS1	Safety output
7	7	7	Black	Black-White	OS2	Safety output







(a) Available for NS •5••1••• version only

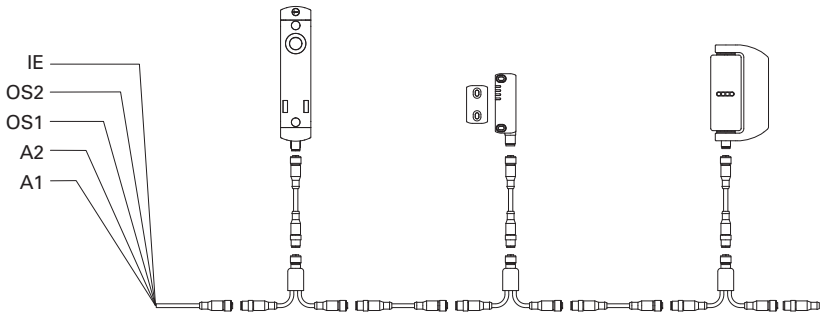
(b) Available for 8-pole connector, not available for the end of a chain with Y connectors

Series connection

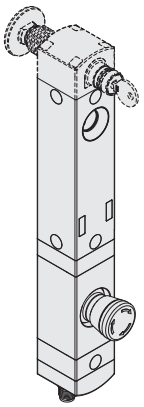
To simplify series connections of the devices, various M12 connectors are available that allow complete wiring.

This solution significantly reduces installation times while at the same time maintaining the maximum safety levels PL e and SIL 3 for the interlocking function.

For further information see page 426.



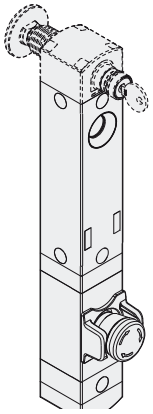
Switch with integrated control device unit for 1 device



	NS ••••SRK-N110		
	Description	Colour	Diagram
Device 1	Emergency stop button with rotary release 2NC	red	B2 B5 / B1 B4
Connector	1 x M12, 12-pole + 1 x M12, 5-pole axial	/	A B

	NS ••••SRK-N111		
	Description	Colour	Diagram
Device 1	Illuminated button, spring-return 1NO	white	B2 B3 LED / B1 B5
Connector	1 x M12, 12-pole + 1 x M12, 5-pole axial	/	A B

	NS ••••SRK-N112		
	Description	Colour	Diagram
Device 1	Illuminated selector switch with handle with two positions 1NO	black	B2 B3 LED / B1 B5
Connector	1 x M12, 12-pole + 1 x M12, 5-pole axial	/	A B



	NS ••••SRK-N187		
	Description	Colour	Diagram
Device 1	Emergency stop button with rotary release 2NC with guard	red	B2 B5 / B1 B4
Connector	1 x M12, 12-pole + 1 x M12, 5-pole axial	/	A B

	NS ••••SRK-N188		
	Description	Colour	Diagram
Device 1	Emergency stop button with rotary release 2NC+1NO with laser-marked guard	red	B6 B8 B4 / B5 B7 B1
Connector	1 x M12, 12-pole + 1 x M12, 8-pole axial	/	A B

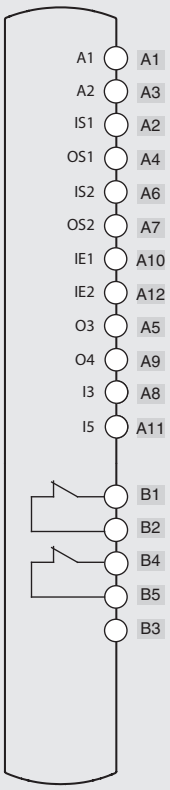
	NS ••••SRK-N189		
	Description	Colour	Diagram
Device 1	Illuminated button, spring-return 1NO	blue	B2 B3 LED / B1 B5
Connector	1 x M12, 12-pole + 1 x M12, 5-pole axial	/	A B

Internal connections (versions with integrated control device unit for 1 device)

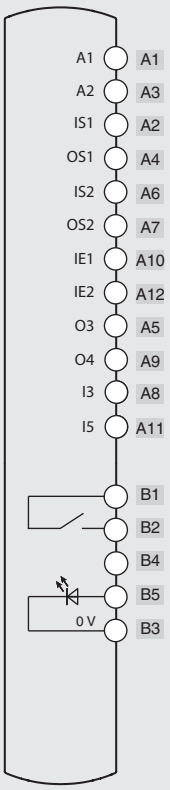
	Connection	
Safety switch	A1	Supply input +24 Vdc
	A2	Supply input 0 Vdc
	IS1	Safety input
	OS1	Safety output
	IS2	Safety input
	OS2	Safety output
	IE1	Solenoid activation input for double channel mode
	IE2	Solenoid activation input for double channel mode
	O3	Signalling output, actuator inserted
	O4	Signalling output, actuator inserted and locked
	I3	Actuator programming input / reset
	I5	EDM input (a)
	I4	Solenoid activation input for single channel mode

(a) Available for NS •5••1•••-N••• version only

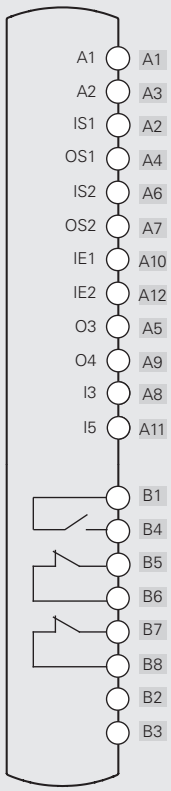
NS ••••SRK-N110
NS ••••SRK-N187



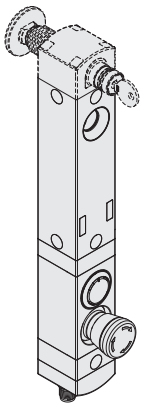
NS ••••SRK-N111
NS ••••SRK-N112
NS ••••SRK-N189



NS ••••SRK-N188



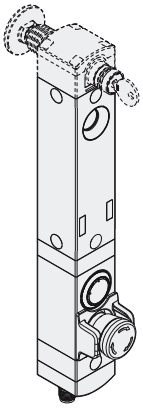
Switch with integrated control device unit for 2 devices



	NS •••••SRK-N113		
	Description	Colour	Diagram
Device 1	Illuminated button, spring-return 1NO	white	B4 B3 / B1 B2 / LED
Device 2	Emergency stop button with rotary release 2NC	red	B6 B8 / B5 B7
Connector	1 x M12, 12-pole + 1 x M12, 8-pole axial	/	A B

	NS •••••SRK-N114		
	Description	Colour	Diagram
Device 1	Illuminated button, spring-return 1NO	blue	B4 B3 / B1 B2 / LED
Device 2	Emergency stop button with rotary release 2NC	red	B6 B8 / B5 B7
Connector	1 x M12, 12-pole + 1 x M12, 8-pole axial	/	A B

	NS •••••SRK-N115		
	Description	Colour	Diagram
Device 1	Illuminated button, spring-return 1NO	white	B4 B3 / B1 B6 / LED
Device 2	Illuminated button, spring-return 1NO	blue	B2 B3 / B1 B8 / LED
Connector	1 x M12, 12-pole + 1 x M12, 8-pole axial	/	A B



	NS •••••SRK-N190		
	Description	Colour	Diagram
Device 1	Illuminated button, spring-return 1NO	white	B4 B3 / B1 B2 / LED
Device 2	Emergency stop button with rotary release 2NC with guard	red	B6 B8 / B5 B7
Connector	1 x M12, 12-pole + 1 x M12, 8-pole axial	/	A B

	NS •••••SRK-N191		
	Description	Colour	Diagram
Device 1	Illuminated button, spring-return 1NO	blue	B4 B3 / B1 B2 / LED
Device 2	Emergency stop button with rotary release 2NC with laser-marked guard	red	B6 B8 / B5 B7
Connector	1 x M12, 12-pole + 1 x M12, 8-pole axial	/	A B

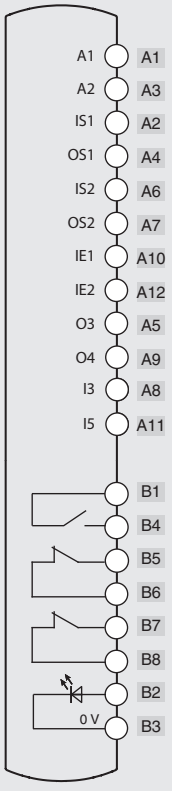
	NS •••••SRK-N192		
	Description	Colour	Diagram
Device 1	Illuminated button, spring-return 1NO	white	B4 B3 / B1 B6 / LED
Device 2	Button, not illuminated, spring-return 1NO	black	B2 / B1
Connector	1 x M12, 12-pole + 1 x M12, 8-pole axial	/	A B

Internal connections (versions with integrated control device unit for 2 devices)

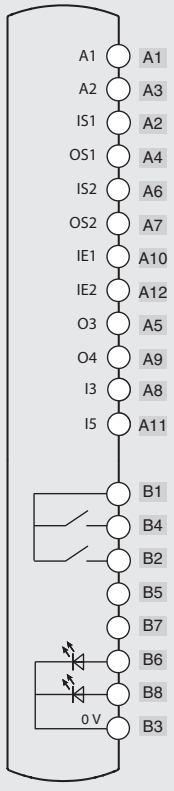
	Connection	
Safety switch	A1	Supply input +24 Vdc
	A2	Supply input 0 Vdc
	IS1	Safety input
	OS1	Safety output
	IS2	Safety input
	OS2	Safety output
	IE1	Solenoid activation input for double channel mode
	IE2	Solenoid activation input for double channel mode
	O3	Signalling output, actuator inserted
	O4	Signalling output, actuator inserted and locked
	I3	Actuator programming input / reset
	I5	EDM input (a)

(a) Available for NS •5••1•••-N••• version only

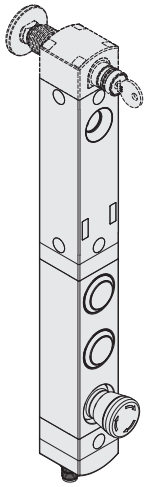
NS •••••SRK-N113
NS •••••SRK-N114
NS •••••SRK-N190
NS •••••SRK-N191



NS •••••SRK-N115
NS •••••SRK-N192



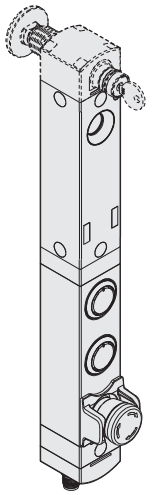
Switch with integrated control device unit for 3 devices



	NS ••••SRK-N001		
	Description	Colour	Diagram
Device 1	Illuminated button, spring-return 1NO	white	B4 B3 / B1 B2
Device 2	Illuminated button, spring-return 1NO	blue	B5 B3 / B1 B6
Device 3	Illuminated button, spring-return 1NO	yellow	B7 B3 / B1 B12
Connector	2x M12, 12-pole, axial	/	A B

	NS ••••SRK-N002		
	Description	Colour	Diagram
Device 1	Illuminated button, spring-return 1NO	white	B4 B3 / B1 B2
Device 2	Illuminated button, spring-return 1NO	blue	B5 B3 / B1 B6
Device 3	Emergency stop button with rotary release 2NC	red	B9 B11 / B8 B10
Connector	2x M12, 12-pole, axial	/	A B

	NS ••••STK-N003		
	Description	Colour	Diagram
Device 1	Illuminated button, spring-return 1NO	white	17 19 / 12 18
Device 2	Button, not illuminated, spring-return 1NO	black	15 / 12
Device 3	Emergency stop button with rotary release 2NC	red	11 14 / 10 13
Connector	M23, 19-pole, axial	/	



	NS ••••SRK-N174		
	Description	Colour	Diagram
Device 1	Illuminated 2-position selector switch 1NO	black	B4 B3 / B1 B2
Device 2	Indicator light	red	B3 / B6
Device 3	Emergency stop button with rotary release 2NC	red	B9 B11 / B8 B10
Connector	2x M12, 12-pole, axial	/	A B

	NS ••••SRK-N193		
	Description	Colour	Diagram
Device 1	Illuminated button, spring-return 1NO	white	B4 B3 / B1 B2
Device 2	Illuminated button, spring-return 1NO	blue	B5 B3 / B1 B6
Device 3	Emergency stop button with rotary release 2NC with guard	red	B9 B11 / B8 B10
Connector	2x M12, 12-pole, axial	/	A B

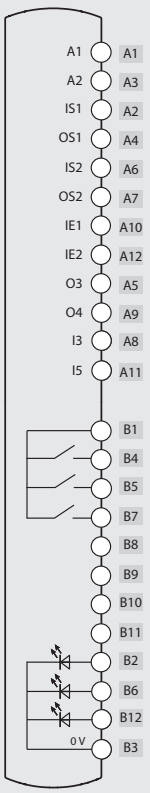
	NS ••••SRK-N194		
	Description	Colour	Diagram
Device 1	Illuminated button, spring-return 1NO	white	B4 B3 / B1 B2
Device 2	Illuminated button, spring-return 1NO	green	B5 B3 / B1 B6
Device 3	Emergency stop button with rotary release 2NC with laser-marked guard	red	B9 B11 / B8 B10
Connector	2x M12, 12-pole, axial	/	A B

Internal connections (versions with integrated control device unit for 3 devices)

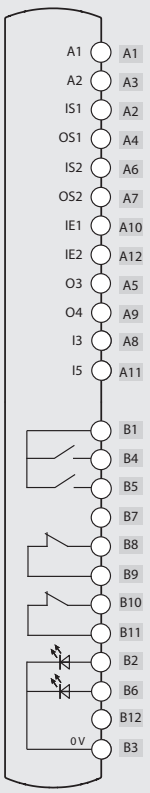
	Connection	
Safety switch	A1	Supply input +24 Vdc
	A2	Supply input 0 Vdc
	IS1	Safety input
	OS1	Safety output
	IS2	Safety input
	OS2	Safety output
	IE1	Solenoid activation input for double channel mode [b]
	IE2	Solenoid activation input for double channel mode [b]
	O3	Signalling output, actuator inserted
	O4	Signalling output, actuator inserted and locked
	I3	Actuator programming input / reset
	I5	EDM input [a]
	I4	Solenoid activation input for single channel mode [c]

(a) Available for NS •5••1•••-N••• version only
(b) For versions with double M12 connector, 12-pole
(c) For versions with M23 connector, 19-pole

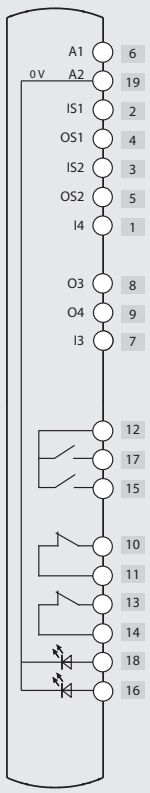
NS ••••SRK-N001



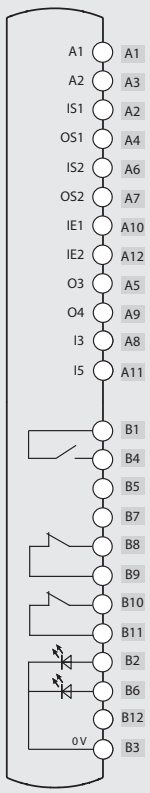
NS ••••SRK-N002
NS ••••SRK-N193
NS ••••SRK-N194



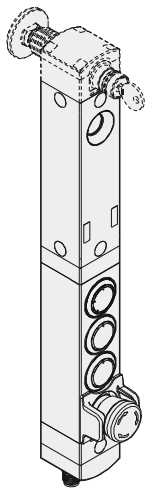
NS ••••STK-N003



NS ••••SRK-N174



Switch with integrated control device unit for 4 devices



	NS •••••SRK-N085		
	Description	Colour	Diagram
Device 1	Illuminated 2-position selector switch 1NO	black	B4 B3 LED B1 B2
Device 2	Illuminated button, spring-return 1NO	white	B5 B3 LED B1 B6
Device 3	Illuminated button, spring-return 1NO	blue	B7 B3 LED B1 B12
Device 4	Emergency stop button with rotary release 2NC	red	B9 B11 B8 B10
Connector	2x M12, 12-pole, axial	/	A B

	NS •••••SRK-N005		
	Description	Colour	Diagram
Device 1	Illuminated button, spring-return 1NO	white	B4 B3 LED B1 B2
Device 2	Illuminated button, spring-return 1NO	blue	B5 B3 LED B1 B6
Device 3	Illuminated button, spring-return 1NO	yellow	B7 B3 LED B1 B12
Device 4	Emergency stop button with rotary release 2NC	red	B9 B11 B8 B10
Connector	2x M12, 12-pole, axial	/	A B

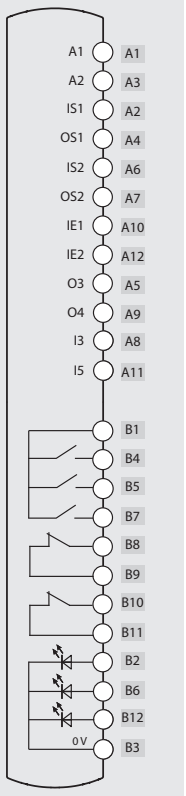
	NS •••••SRK-N007		
	Description	Colour	Diagram
Device 1	Illuminated button, spring-return 1NO	white	B4 B3 LED B1 B2
Device 2	Illuminated button, spring-return 1NO	blue	B5 B3 LED B1 B6
Device 3	Illuminated button, spring-return 1NO	green	B7 B3 LED B1 B12
Device 4	Emergency stop button with rotary release 2NC	red	B9 B11 B8 B10
Connector	2x M12, 12-pole, axial	/	A B

Internal connections (versions with integrated control device unit for 4 devices)

	Connection	
Safety switch	A1	Supply input +24 Vdc
	A2	Supply input 0 Vdc
	IS1	Safety input
	OS1	Safety output
	IS2	Safety input
	OS2	Safety output
	IE1	Solenoid activation input for double channel mode
	IE2	Solenoid activation input for double channel mode
	O3	Signalling output, actuator inserted
	O4	Signalling output, actuator inserted and locked
	I3	Actuator programming input / reset
	I5	EDM input (a)

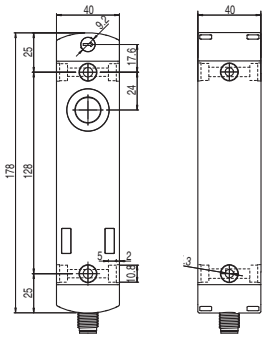
(a) Available for NS •5••1•••-N••• version only

NS •••••SRK-N005
NS •••••SRK-N007
NS •••••SRK-N085

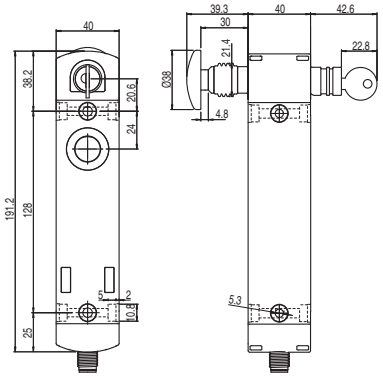


Dimensional drawings

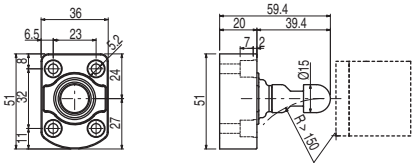
Device
NS ••AZ••MK
NS ••ZZ••MK



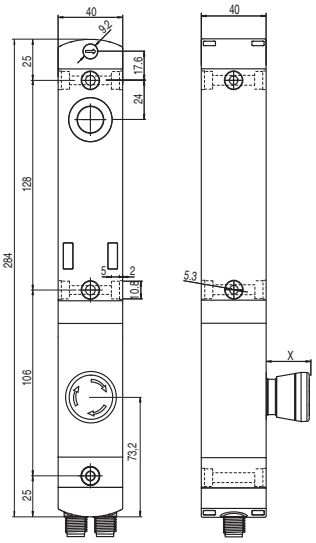
Device
NS ••ST••MK
NS ••SE••MK
NS ••CE••MK
NS ••TE••MK



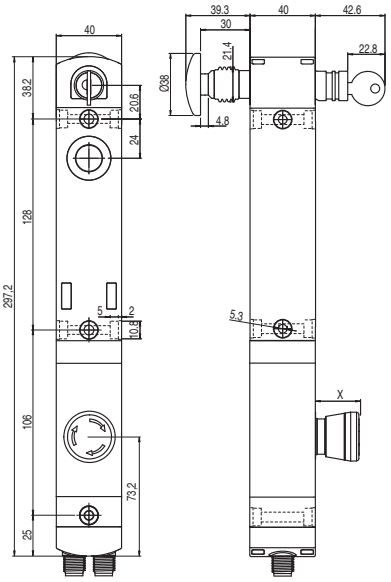
Actuator
VN NS-F4•



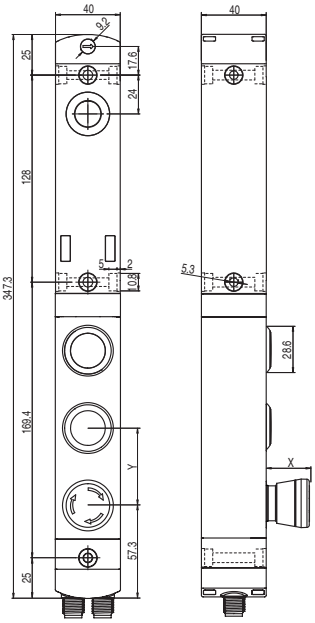
Device
NS ••AZ•S•K-N•••
NS ••ZZ•S•K-N•••



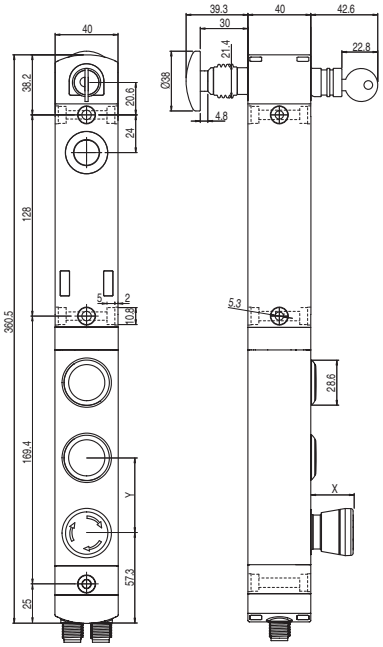
Device
NS ••ST•S•K-N•••
NS ••SE•S•K-N•••
NS ••CE•S•K-N•••
NS ••TE•S•K-N•••



Device
NS ••AZ•S•K-N•••
NS ••ZZ•S•K-N•••



Device
NS ••ST•S•K-N•••
NS ••SE•S•K-N•••
NS ••CE•S•K-N•••
NS ••TE•S•K-N•••

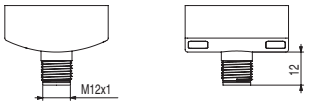


X = see page 202, Y = 47.5 mm (versions with 3 buttons); Y = 31.7 mm (versions with 4 buttons)

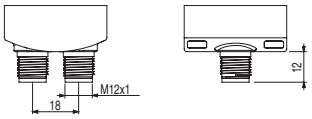
All values in the drawings are in mm

Output type

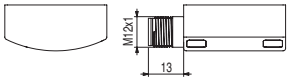
M12 connector, axial



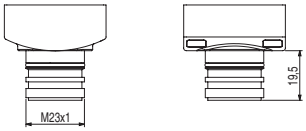
Two M12 connectors, axial



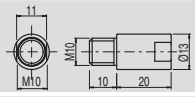
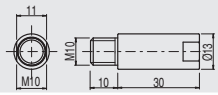
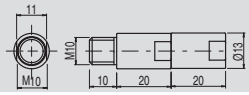
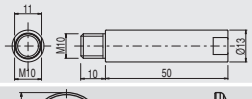
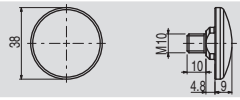
M12 connector, lateral



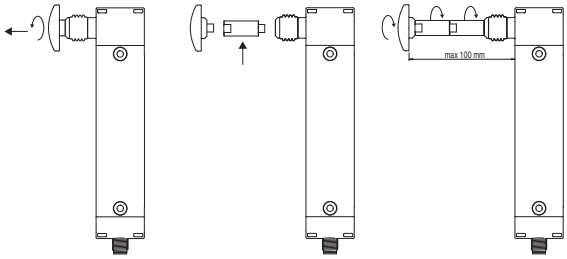
M23 connector, axial



Extensions for release button

Article	Description	Drawing
VN NG-LP30	Metal extension for release button. For max. wall thickness of 30 mm	
VN NG-LP40	Metal extension for release button. For max. wall thickness of 40 mm	
VN NG-LP50	Metal extension for release button. For max. wall thickness of 50 mm	
VN NG-LP60	Metal extension for release button. For max. wall thickness of 60 mm	
VN NG-ERB	Red metal release button	

All values in the drawings are in mm

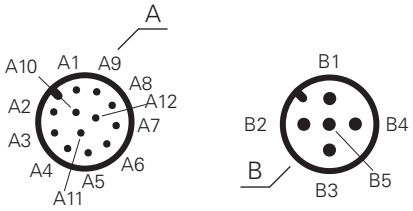


- Metal extensions can be combined with one another to achieve the desired length.
- Do not exceed an overall length of 100 mm between the release button and the switch.
- Use medium-strength thread locker to secure the extensions.

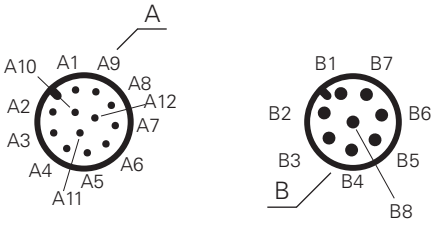
➔ The 2D and 3D files are available at **www.pizzato.com**

Electrical connector configurations

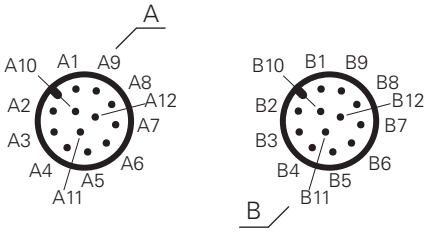
Two M12 connectors, 12-pole + M12, 5-pole



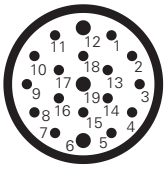
Two M12 connectors, 12-pole + M12, 8-pole



Two M12 connectors, 12-pole



M23 connector, 19-pole



All values in the drawings are in mm

Technical data of the integrated control devices

General data

Protection degree:	IP65 acc. to EN 60529
Mechanical endurance:	
Spring-return button:	1 million operating cycles
Emergency stop button:	50,000 operating cycles
Selector switch:	300,000 operating cycles
Key selector switch:	50,000 operating cycles 30,000 operating cycles including removal of the key
Safety parameter B_{10D}:	100,000 (emergency stop button)

Actuating force

Spring-return button:	4 N min	100 N max.
Emergency stop button:	20 N min	100 N max.
Selector switch:	0.1 Nm min	1.5 Nm max.
Key selector switch:	0.1 Nm min	1.3 Nm max.

Contact blocks of the control devices

Material of the contacts:	silver contacts
Contact type:	Self-cleaning contacts with double interruption

Electrical data:

Thermal current I_{th}:	1 A
Rated insulation voltage U_i:	32 Vac/dc
Rated impulse withstand voltage U_{imp}:	1.5 kV
LED supply voltage:	24 Vdc ± 15%
LED supply current:	12 mA per LED

Utilization category of the contact block:
Direct current: DC-13

U_e (V)	24
I_e (A)	0.55

Signalling contact with spring return:
Direct current: DC13

U_e (V)	24
I_e (mA)	10

In compliance with standards:
IEC 60947-5-1, IEC 60947-5-5, EN ISO 13850

⚠ Installation for safety applications:
Always connect the safety circuit to the NC contacts (normally closed contacts) as stated in standard EN 60947-5-1.

Electrical data of M12 connector:

Max. operating voltage:	32 Vac/dc
Max. operating current:	1.5 A max.

Electrical data of M23 connector:

Max. operating voltage:	32 Vac/dc
Max. operating current:	3 A max.

Accessories

Article	Description
VF KLB300	Set of two locking keys

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

Article	Description
VN NG-ERX	AISI 316 stainless steel release button

AISI 316 stainless steel release button, unpainted. Guarantees a high resistance against corrosion and aggressive cleaning.

Lock out device

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

Device made entirely of metal, to be fixed on the side of NS switches without any additional plate or support.
The front slider mechanically closes the actuator entry hole and functions as a shield for the RFID receiver antenna on the switch; thus ensuring an additional level of protection against accidental closure of the guard and untimely machine restart.
Allows insertion of up to 5 padlocks with a 3.5 mm arc diameter.

Available control devices

	Description	Colour	Spare part number	Combinable with contacts (1)	Protrusion (x) mm
	Illuminated button, spring-return	White Red Green Yellow Blue	VN NG-AC27121 VN NG-AC27123 VN NG-AC27124 VN NG-AC27125 VN NG-AC27126	1NO (1NC) (2NO) (1NO+1NC)	3
	Non-illuminated button, spring-return	Black	VN NG-AC27122	1NO (1NC) (2NO) (1NO+1NC)	3
	Non-laser-markable, illuminated, projecting spring-return push button	Red	VN NG-AC26018	1NO (1NC) (2NO) (1NO+1NC)	6,1
	Indicator light	Red Yellow Green Blue White	VN NG-AC26060 VN NG-AC26061 VN NG-AC26062 VN NG-AC26063 VN NG-AC26064	/	2,7
	Emergency stop button acc. to. EN ISO 13850 Rotary release Push-pull release	 Red Red	 VN NG-AC26052 VN NG-AC26055	2NC	26,4
	Emergency stop button acc. to. EN ISO 13850 for 2NC + 1NO contacts, spring-return(2) Rotary release	 Red	 VN NG-AC26056	2NC + 1NO, spring-return	26,4
	Illuminated emergency stop button acc. to. EN ISO 13850 Rotary release Push-pull release	 Red Red	 VN NG-AC26051 VN NG-AC26054	2NC	26,4
	Simple stop button Rotary release Push-pull release	 Black Black	 VN NG-AC26053 VN NG-AC26057	2NC	26,4
	Illuminated selector switch with handle, with transparent lens for LED 	 Black Black Black Black	 VN NG-AC26033 VN NG-AC26030 VN NG-AC26034 VN NG-AC26031	1NO (1NC) (2NO) (1NO+1NC)	16,8
	Key selector switch, 2 positions 	 Black Black Black	 VN NG-AC26043 VN NG-AC26040 VN NG-AC26041	1NO (1NC) (2NO) (1NO+1NC)	39 (a) 14 (b)
	Closing cap	Black	VN NG-AC26020	/	2,7
	Fixing key	Black	VN NG-AC26080	/	/

Legend: Maintained Spring-return Key extraction position (a) with key (b) without key

(1) The contacts in brackets are on request. Contact our technical department to verify the effective feasibility of the control device unit with the chosen combination of control devices.
(2) The NO contact with spring-return is only activated if the emergency stop button reaches the stop. The signal of the NO contact is captured by analysing the rising edge.

To order buttons with marking:
add the marking code indicated in the tables on pp. 165-168 to the article codes of the General Catalogue HMI 2023-2024.
Example: Black spring-return button with "O" engraving.
VN NG-AC27122 → VN NG-AC27122-L1

Remote escape release for NG and NS series safety switches

General data

The remote escape release is operated via a flexible cable and facilitates remote unlocking of the safety switch in cases where conventional release devices (lock-type, by screwdriver, push button, etc.) are not easily accessible due to the configuration of the machinery.

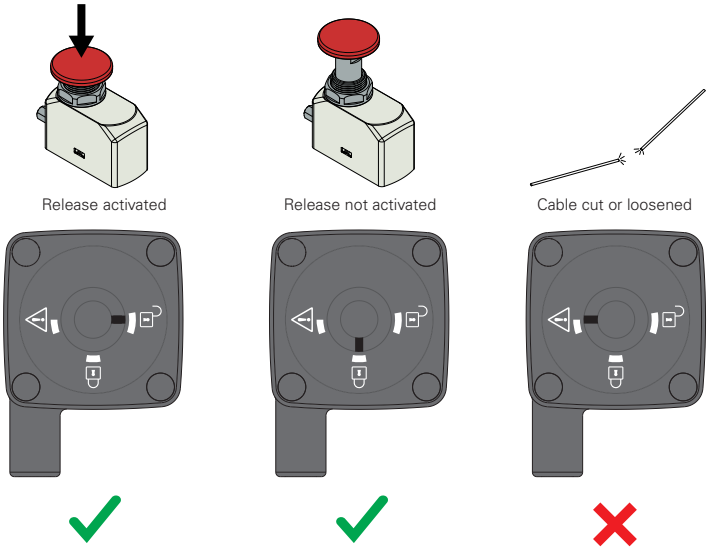
The remote escape release is particularly suitable in situations where the switch must be installed in a difficult-to-reach position, for example on top of a guard or inside a shield in order to prevent tampering.

The remote escape release can be used with NG and NS series RFID safety switches with guard locks.

Self-monitoring of cable tension

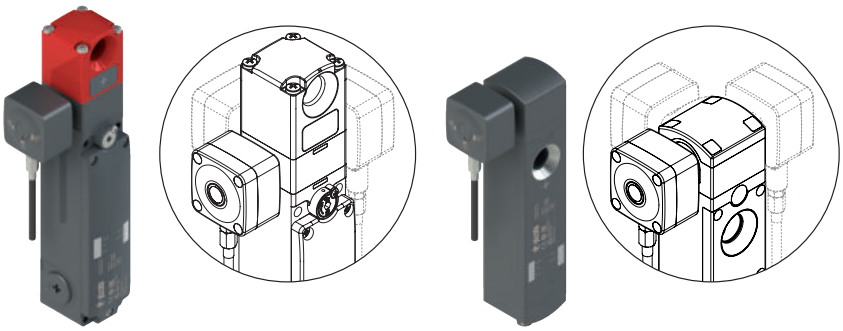
Unlike other similar solutions on the market, the Pizzato Elettrica remote escape release is equipped with an innovative mechanical control system which safely stops the machinery, if the cable is cut or loosened.

When the device is activated, the square control indicator is positioned at the symbol; in the event of a fault or anomaly, the square control indicator is positioned at the ⚠ symbol facilitating a quick diagnosis by the user.



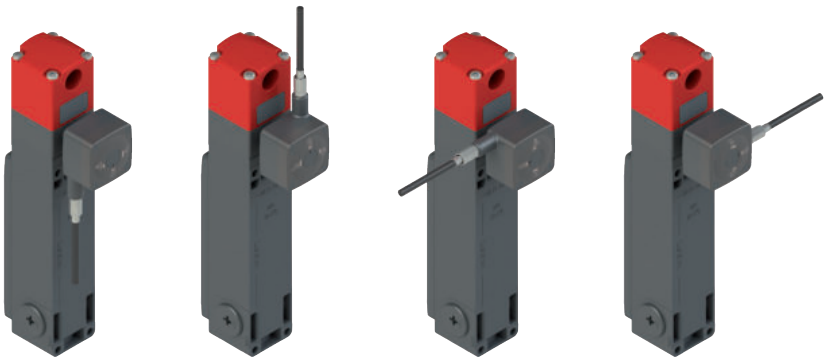
Orientable device

The remote escape release device can always be oriented to one of the four sides of the switch by simply unscrewing the four fixing screws of the switch head. This feature of the NG and NS switches facilitates a unique degree of flexibility in the installation of this type of device.



The remote escape release device can also be ordered with four different cable exit orientations in order to choose the most suitable orientation for the application on the machine.

Standard devices are configured with the cable exit direction oriented downwards.



Flexible installation

The NG and NS safety switches with remote escape release are supplied with the respective device connected to the switch head and with a heavy-duty, five-metre-long steel cable which runs inside a sheath with a steel core.

The user can cut the cable and sheath to the required length in order to optimise the adaptation of the installation to the operational requirements.

The remote release push button, with code VN RR-K4, which must be ordered separately and to which the free end of the cable must be connected, is necessary for the completion of the assembly.

The push button has a sturdy internal metallic structure which is complemented by a small plastic housing, which creates a compact, aesthetically pleasing solution.

The housing can also be combined with a label displaying the VE TF ••H•••• series marking to better indicate the function of the button.

Activation button for remote escape release

Article	Description
VN RR-K4	Activation button for remote escape release on NG and NS series switches

Mushroom push button for activating the remote escape release by means of a metallic cable, complete with plastic cover, with the option of affixing laser-marked labels from the Pizzato Elettrica Eround series.

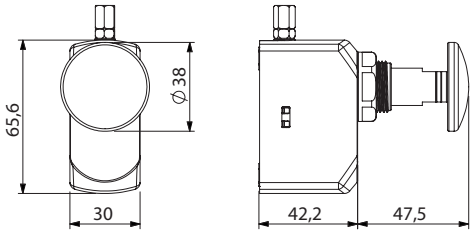
Compact device with rugged internal metallic structure, ideal for flush installation on aluminium profiles starting from 30 mm.

Double mounting mode:
- fixed with screws to the outside of the guard chassis, closed by applying the cap (Figure A);
- fixed inside the guard chassis by means of the ring supplied, on a panel with a standard Ø 22 mm hole, leaving only the mushroom push button visible (Figure B).

Note: the actuation cable is integrated in the remote release device connected to the safety switch.

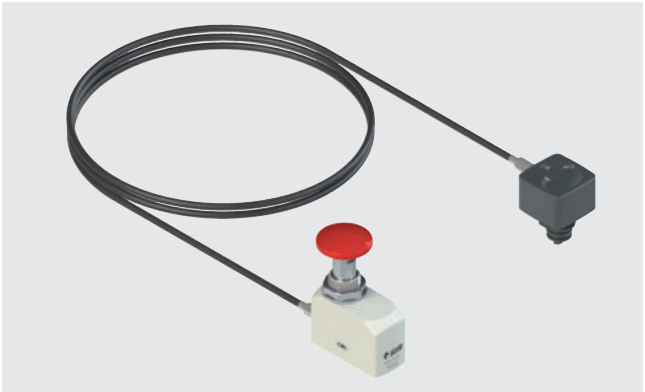
A. Installation outside the chassis

B. Installation inside the chassis, on a perforated panel



Complete kit for installation on NS series switches

Article	Description
VN RR-K1	Complete kit with connection block, cable and push button for mounting on NS series switches



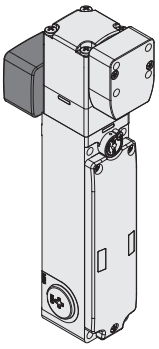
The user can install the remote escape release directly into NS series safety devices that are already equipped with a front or rear release device (items NS ••ST••••, NS ••SE••••, NS ••CE••••) by means of the disassembly procedure for the upper switch block.

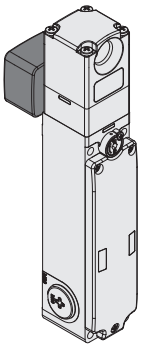
Attention: The installation of the VN RR-K1 accessory on series NS devices with an energised electromagnet operating principle is prohibited (items NS E•••••••, NS H•••••••, NS M•••••••).

All values in the drawings are in mm

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

Selection table for NG switches with remote escape release



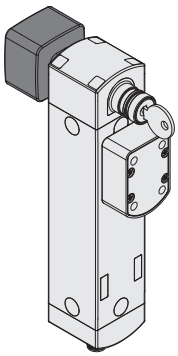


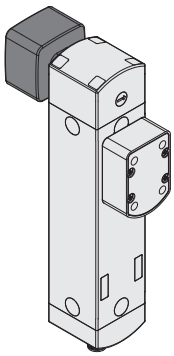
Operating principle	Locked actuator with de-energised solenoid. With sealable auxiliary release device. With actuator.	Locked actuator with de-energised solenoid. With sealable auxiliary release device.
Mode 1	NG 2D9D411A-F31	NG 2D9D411A
Mode 2	NG 2D9D421A-F31	NG 2D9D421A
Mode 3	NG 2D9D431A-F31	NG 2D9D431A

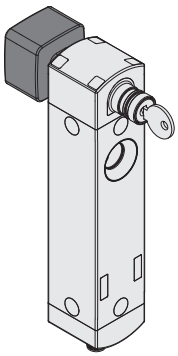
Note: The codes above include the safety switch supplied with the remote release cable which has a standard length of 5 metres.
For other lengths, please contact our Technical Department.

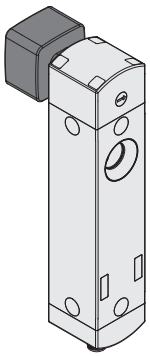
Attention! The remote escape release switch must be supplemented with the push button with the code VN RR-K4.

Selection table for NS switch with remote escape release









Operating principle	Locked actuator with de-energised solenoid. With auxiliary key release. With actuator.	Locked actuator with de-energised solenoid. With screwdriver release. With actuator.	Locked actuator with de-energised solenoid. With auxiliary key release.	Locked actuator with de-energised solenoid. With screwdriver release.
Mode 1	NS D4SR1SMK-F41	NS D4CR1SMK-F41	NS D4SR1SMK	NS D4CR1SMK
Mode 2	NS G4SR1SMK-F41	NS G4CR1SMK-F41	NS G4SR1SMK	NS G4CR1SMK
Mode 3	NS L4SR1SMK-F41	NS L4CR1SMK-F41	NS L4SR1SMK	NS L4CR1SMK

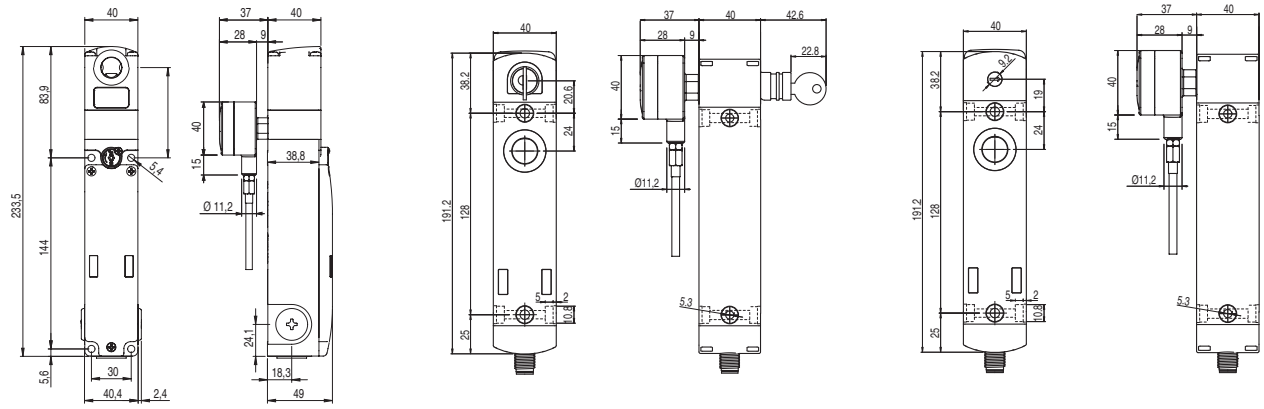
Note: The codes above include the safety switch supplied with the remote release cable which has a standard length of 5 metres.
For other lengths, please contact our Technical Department.

Attention! The remote escape release switch must be supplemented with the push button with the code VN RR-K4.

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

Dimensional drawings

NG	NS	
Switch NG 2D9D••1A	Switch NS ••SR•SMK	Switch NS ••CR•SMK, NS ••TR•SMK



Accessories

Adhesive labels for escape release button

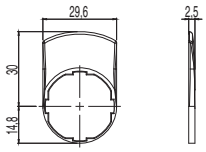
Polycarbonate yellow adhesive, rectangular, 300 x 32 mm, red inscription.

It has to be fixed on the internal part of the jamb and helps finding the escape release button.

Article	Description	
VF AP-A1AGR01	PREMERE PER USCIRE	ita
VF AP-A1AGR02	PUSH TO EXIT	eng
VF AP-A1AGR04	ZUM ÖFFNEN DRÜCKEN	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	NACISNĄĆ ABY WYJŚĆ	pol
VF AP-A1AGR09	PRESSIONAR PARA SAIR	por

Labels with laser engraving

Labels for single EROUND line devices, adjustable by 90° in 90° increments.
Available in black, grey, and yellow; the engraving is via laser, directly on the label itself. This avoids having to apply additional labels, and the command description remains permanent and indelible, for the entire lifetime of the label.
Labels are customisable with various laser engraving types, according to customer requirements.



Article		Description	Pieces/ Pack
VE TF12H12GB80		Black label with inscription "UNLOCK"	1
VE TF12H12GB81		Black label with inscription "DOOR UNLOCK"	1
VE TF12H12L495		Black label with inscription "UNLOCK" rotated 180°	1
VE TF12H12L496		Black label with inscription "DOOR UNLOCK" rotated 180°	1

All values in the drawings are in mm

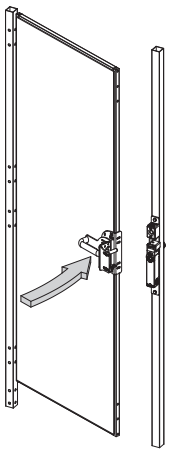
➔ The 2D and 3D files are available at **www.pizzato.com**

General data

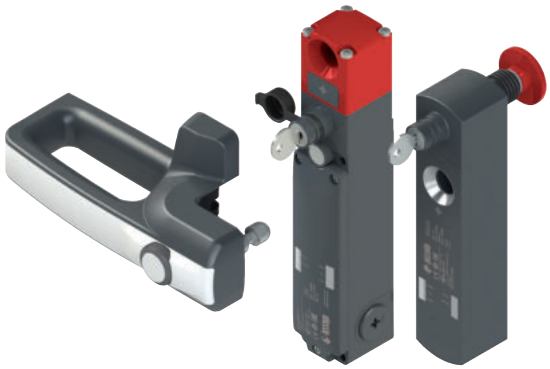
P-KUBE

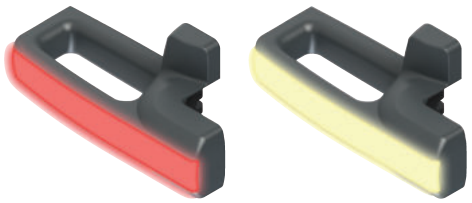
Building on its decades of experience in the field of safety switches for machinery guards, Pizzato Elettrica presents the **P-KUBE** family of safety handles. These handles, with their characteristic simplicity, versatility, and robustness, constitute an effective solution for machine builders and installers.

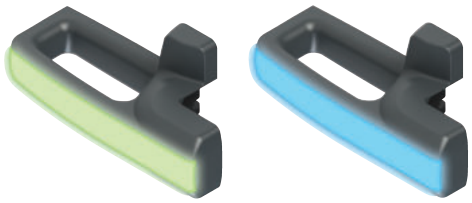
Robust, and compatible with all guard-locking switches, the P-KUBE safety handles can be used on all types of door – both hinged and sliding, left or right – with a unique product code; and they adapt with ease to all installation situations, thanks to metal brackets with adjustable slots.



P-KUBE Krome





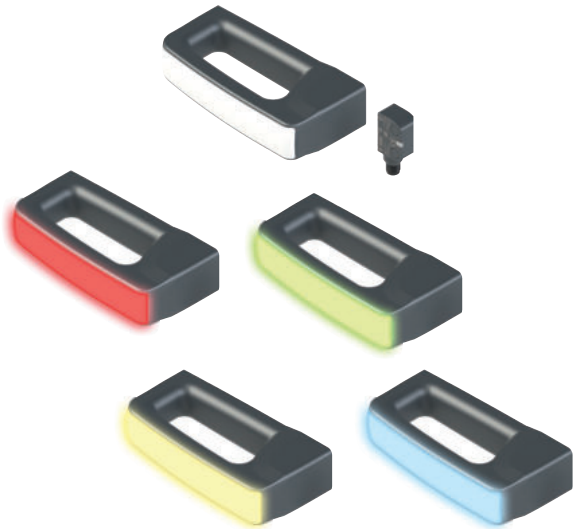


- Modern and ergonomic design; fully concealed fixing screws and cabling.
- High anti bypass coding level, thanks to RFID technology actuators.
- Tamper prevention, from interlocking protection caps inserted to fixing screw holes.
- Illuminated control button, built into grip, to request functions like opening, reset, start and others.
- Front grip customisable in various finishes.
- Compatible with NG and NS series safety locking switches with RFID technology.
- Compatible with lock out devices for NG and NS series safety switches with RFID technology.

- Available also with integrated RGB LEDs, for local signalling of guard state.
- Ability to light up a single handle in green, yellow, red, blue, white, purple, and pale blue.

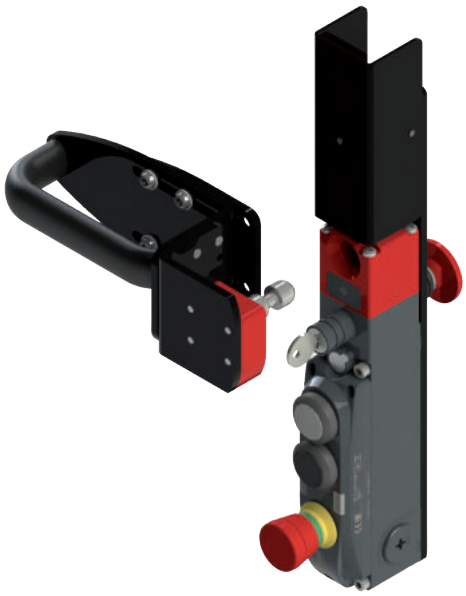
P-KUBE Smart

- Modern and ergonomic design; fully concealed fixing screws and cabling.
- High anti bypass coding level, thanks to RFID technology actuators.
- Tamper prevention, from interlocking protection caps inserted to fixing screw holes.
- Illuminated control button, built into grip, to request functions like opening, reset, start and others.
- Front grip customisable in various finishes.
- Usable with ST series RFID safety sensors.
- Available also with integrated RGB LEDs, for local signalling of guard state.
- Ability to light up a single handle in green, yellow, red, blue, white, purple, and pale blue.
- Possibility of application with horizontal or vertical handle.
- Direct fixing on the grip or through solid inner plate.



P-KUBE 1

- Can be used with FD series safety switches with separate actuator without lock, and FG and FY series with lock.
- Robust metal self-centring pin, to ensure perfect alignment between door and jamb.
- Metal pin with mechanical door stop at limit of travel: no safety switch mechanical stress.
- Integral lock out device to which a padlock can be fitted, to prevent accidental guard closure.

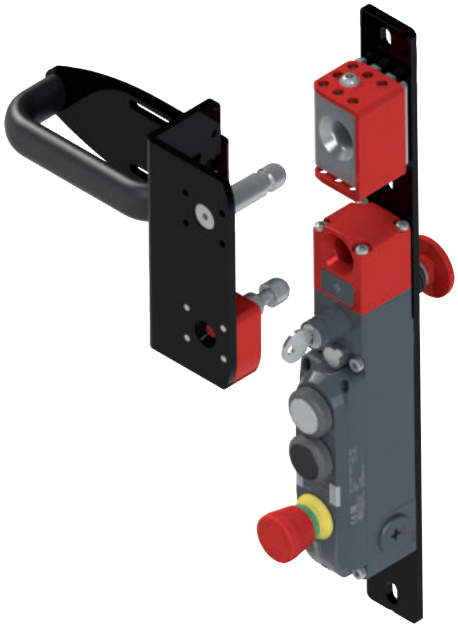


P-KUBE 2

- Can be used with NG series safety switches with lock and RFID technology.
- Increased locked actuator holding force: up to 9,750 N.
- Door retaining force (30 N) when door unlocked, to prevent accidental opening.
- High level of anti bypass coding, thanks to actuators with RFID technology.
- Lock out device available on request, to which a padlock can be fitted to prevent accidental guard closure.
- Dual safety lock out: mechanical shielding, also of actuator RFID recognition.

P-KUBE Fast

- Can be used with FD series safety switches with separate actuator without lock, and FG and FY series with lock.
- Compact, lightweight solution.
- Integrated internal lever for emergency guard opening.
- Sliding motion with internal mechanical stop, to prevent impacts between actuator and switch during closure.
- Integral lock out device to which a padlock can be fitted, to prevent accidental guard closure.



P-KUBE Super

- Designed for installation in particularly demanding work environments (rolling mills, for example).
- Dual centring pin, ideal for heavier doors with significant misalignment.
- Can be used with NG series safety switches with lock and RFID technology.
- Increased locked actuator holding force: up to 9,750 N.
- Door retaining force (30 N) when door unlocked, to prevent accidental opening.
- Metal pin with mechanical door stop at limit of travel: no safety switch mechanical stress.
- High anti bypass coding level, thanks to RFID technology actuators.
- Integral lock out device to which a padlock can be fitted, to prevent accidental guard closure.

P-KUBE 1 safety handles for FD, FG and FY series switches

Description

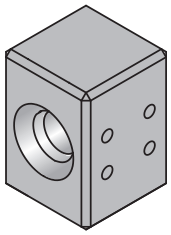
The **P-KUBE 1** safety handles are designed to install Pizzato Elettrica's FD, FG and FY series safety switches to machine guards quickly and easily, offering an effective solution to machine designers and installers for problems relating to the mechanical precision of guard movements.

The basic principle of this series of products is a mechanical centring and stop system along the direction of movement of the door. The centring system is extremely robust and can also be used in heavy duty applications or in the presence of careless personnel.

The lock out device is used 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.

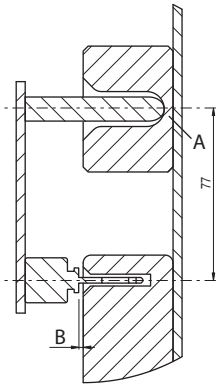
Robustness



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).

- 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 3000 N (versions with FG series switches).
- Stainless steel tamper proof bolts and screws and elastic washers (safety inserts excluded, see page 213).

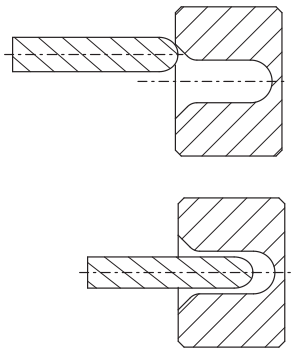
Mechanical stop



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.

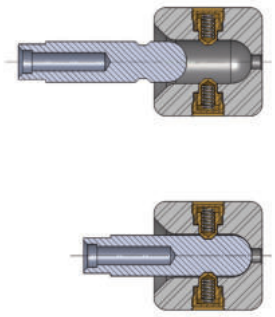
Centring



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.

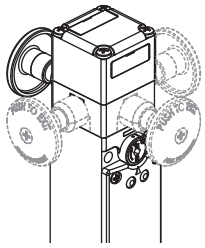
This also allows a safe re-alignment of the protection to the frame, even in case of big axial misalignments.

Holding force of the unlocked actuator



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.

Escape release button (FG and FY series)

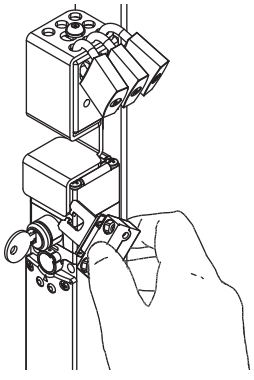


The FG and FY series switches with actuator lock can be provided with an escape release button that, if oriented towards the inside of the machinery, allows accidentally trapped personnel to escape even during a blackout.

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 escape release 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.

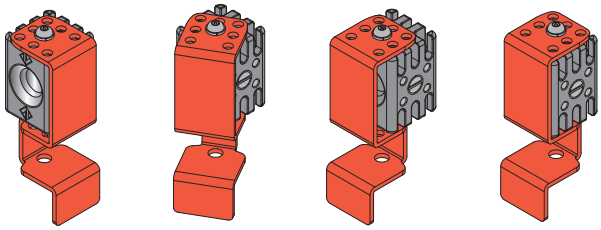
Impossible to bypass with a separate actuator



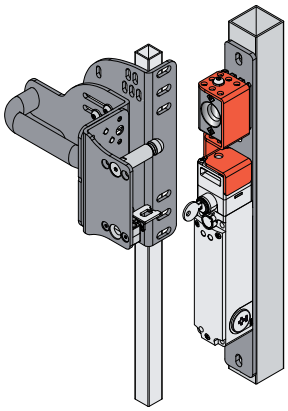
As soon as the lock out device has been actuated and locked, the slot in the switch for the actuator is no longer accessible.

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.

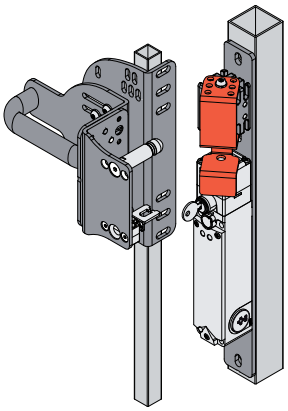
Lock out device



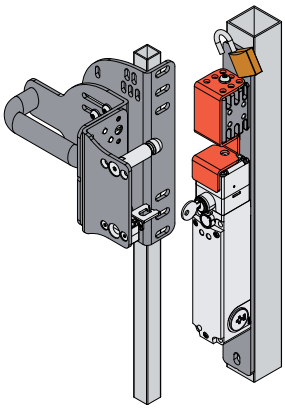
With a single operation, the lock out device enables the closure of both the centring hole and the slot for the actuator present in the switch, thus making the mechanical closure of the door and the electrical commutation of the switch contacts impossible.
The lock out device moves the red cover so that 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.
Up to 10 padlocks with a shackle diameter of up to 5 mm can be used.



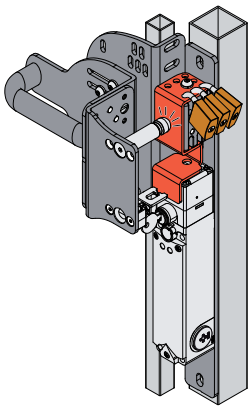
Lock out device open.
Safety switch is accessible.



Closing of the lock out device.

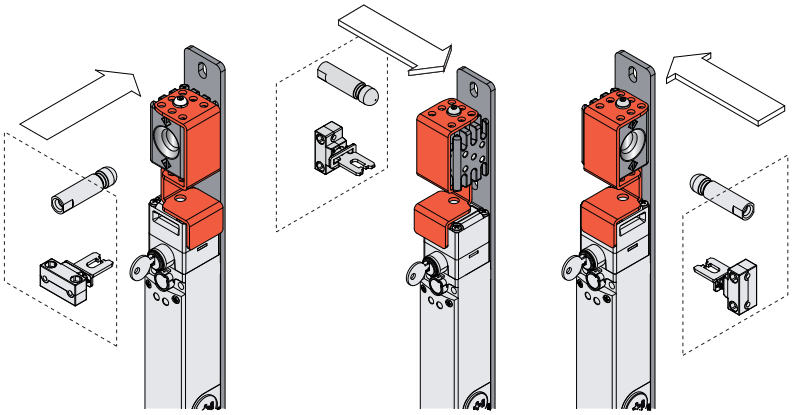


Lock out device closed.
Padlock insertion.



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

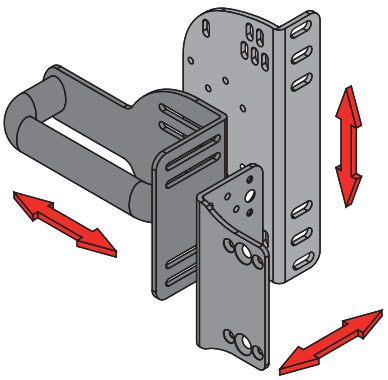
Turnable centring block

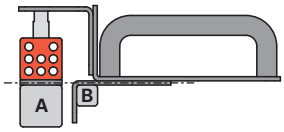


Thanks to its symmetrical design, the lock out device can be installed on hinged and sliding doors, with both right and left closing, while still retaining its centring function and allowing for the attachment of multiple padlocks.

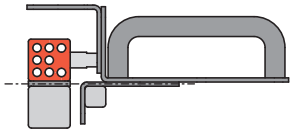
Flexibility and installation on different profiles

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.

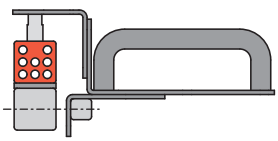




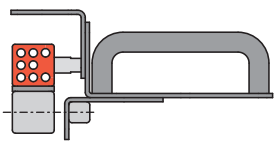
Hinged door and jamb frontally aligned



Hinged door and jamb frontally aligned



Hinged door and jamb axially aligned



Sliding door and jamb axially aligned

P-KUBE 1 safety handles for FD, FG and FY series switches

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

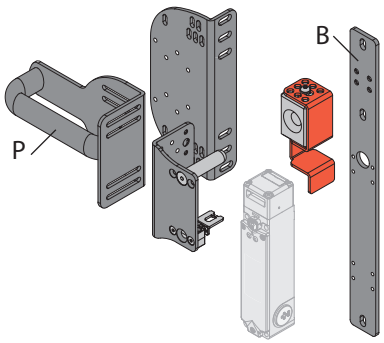
Grip	
P	plastic grip
M	metal grip
Z	without grip

Mounting bracket supplied for installation	
A	FD ••••
B	FG ••••••••, FY ••••••••
Z	without plate (B) for FG and FY brackets
Y	without plate (A) for FD brackets

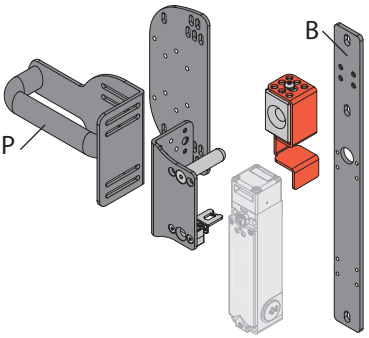
Plate configuration	
200	Configuration with adjustable "L" plate for door profiles
201	Configuration with adjustable plain plate for door profiles
202	Configuration without adjustable plate for door profiles

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

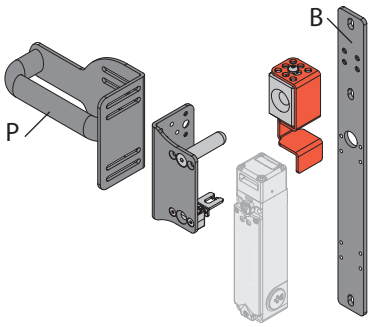
VF AP-P11B-200P

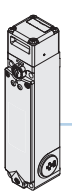


VF AP-P11B-201P

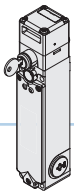


VF AP-P11B-202P

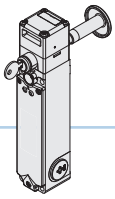




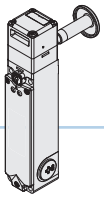
FG •••D1D••
Safety switch with solenoid and separate actuator.



FG •••D5D••
Safety switch with solenoid and separate actuator.
With key release.

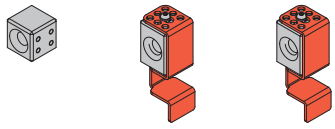


FG •••D6D••
Safety switch with solenoid and separate actuator.
With key release and escape release button.



FG •••D7D••
Safety switch with solenoid and separate actuator.
With escape release button.

Lock out device options:

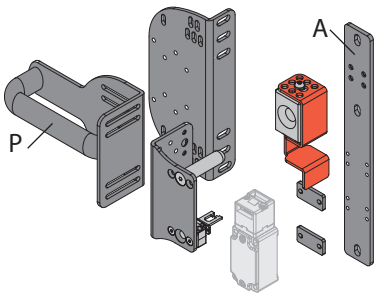


0
Centering block only

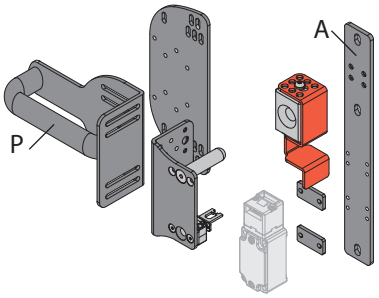
1
With LOCK OUT device

2
With LOCK OUT device with 100 N holding force

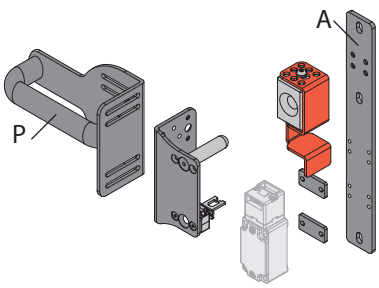
VF AP-P11A-200P

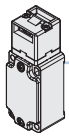


VF AP-P11A-201P

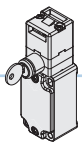


VF AP-P11A-202P





FD •93-M2
Safety switch with separate actuator.



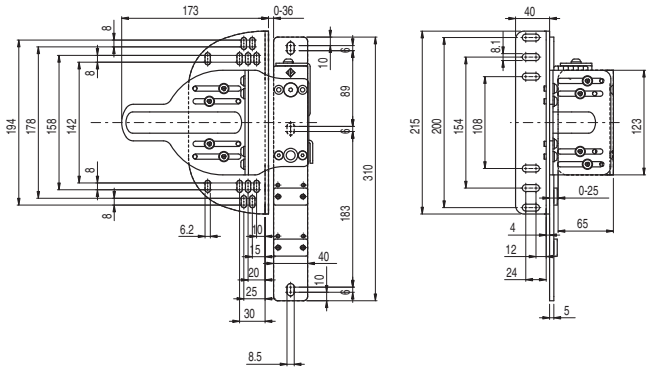
FD •99-M2
Safety switch with separate actuator and key release.

For articles and options of the FG series switches see page 123.
For articles and options of the FY series switches see page 139.
For articles and options of the FD series switches see page 17.

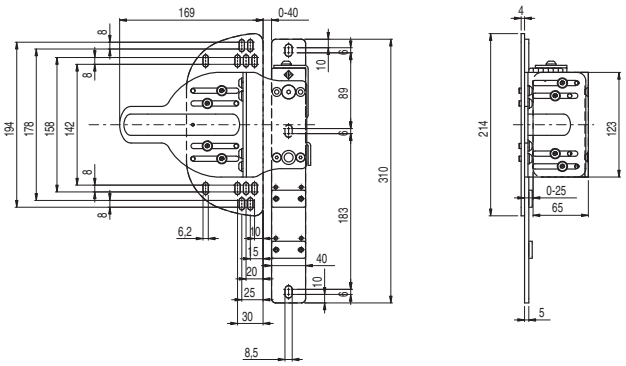
→ article sold separately

Dimensional drawings

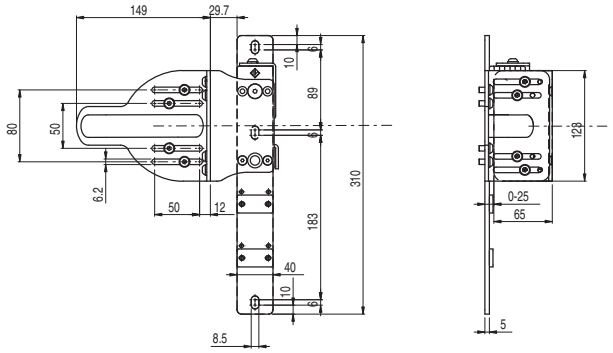
Safety handle VF AP-P1•A-200•



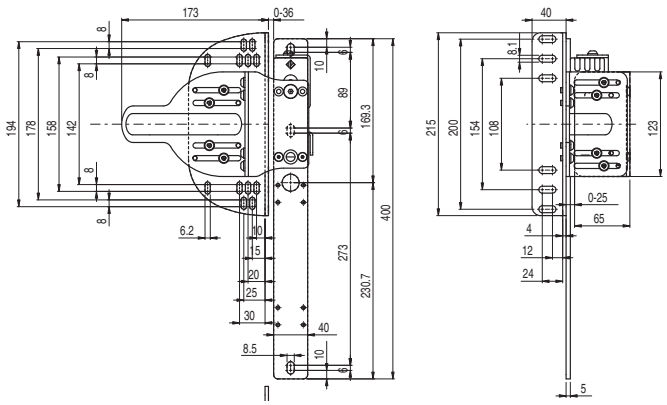
Safety handle VF AP-P1•A-201•



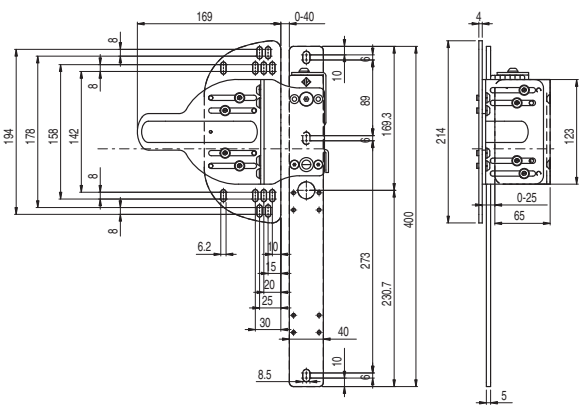
Safety handle VF AP-P1•A-202•



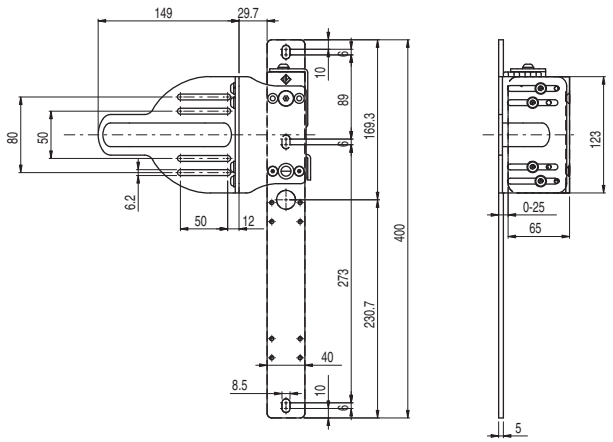
Safety handle VF AP-P1•B-200•



Safety handle VF AP-P1•B-201•



Safety handle VF AP-P1•B-202•



All values in the drawings are in mm

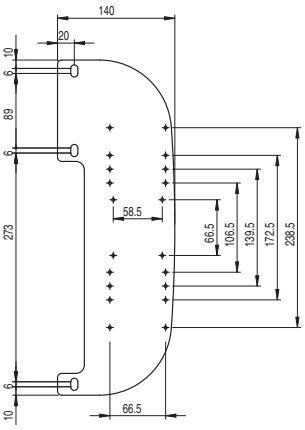
Accessories See page 419

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

Accessories

Profiled 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 Pizzato Elettrica EROUND line panel buttons (by means of common self-threading screws available on the market).



Article	Description
VF AP-C001	Profiled lateral plate

Adhesive labels for escape 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 escape release button.

Article	Description and language	
VF AP-A1AGR01	PREMERE PER USCIRE	ita
VF AP-A1AGR02	PUSH TO EXIT	eng
VF AP-A1AGR04	ZUM ÖFFNEN DRÜCKEN	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	NACISNĄĆ ABY WYJŚĆ	pol
VF AP-A1AGR09	PRESSIONAR PARA SAIR	por

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 1 safety handle is provided with tamper-proof screws. Therefore all 3 safety inserts of the set are required.

Composition of article **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

All values in the drawings are in mm

Accessories See page 419

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

Complete housings for profiled plate

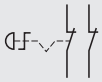
ES AC32010

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	flush, spring-return, white			
LED unit E2 LF1A2V1	White LED, 12 … 30 Vac/dc			
Contacts 1x E2 CF10G2V1	pos. 2 /	pos. 3 LED	pos. 1 1NO	
Illuminated button - 1NO E2 1PL2R5210	flush, spring-return, yellow			
LED unit E2 LF1A2V1	White LED, 12 … 30 Vac/dc			
Contacts 1x E2 CF10G2V1	pos. 2 /	pos. 3 LED	pos. 1 1NO	
Emergency stop button Ø 40 mm- 2NC E2 1PERZ4531	rotary release, Ø 40 mm, red			
Label with shaped hole VE TF32G5700	yellow, 30x60 mm rectangular, no engraving			
Contacts 2x E2 CF01G2V1	pos. 2 1NC ⊖	pos. 3 /	pos. 1 1NC ⊖	

Accessories See page 419

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

P-KUBE 2 safety handles for NG series switches

Description

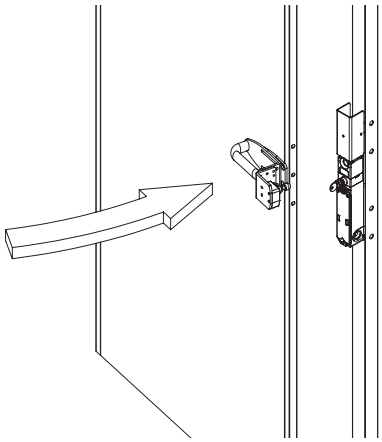
Together with the NG series RFID safety switches with guard locking, the **P-KUBE 2** safety handles form an integrated locking system for guards that enables access control to dangerous areas, offering an effective solution to designers and installers for problems related to the mechanical precision of the movements of the guard.
The basic principle of this product series is to use the self-centering properties of the actuator on the NG switch by means of hinge pins and a large insertion range into the device. The use of fixing plates with slotted holes also allows for easy and quick alignment of the switch and actuator.
The lock out device is used 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.

Maximum safety with a single device

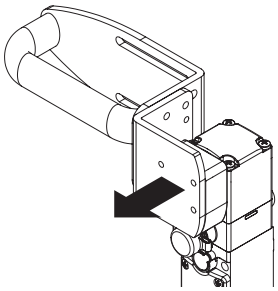
PL e + SIL 3 The P-KUBE 2 safety handles can be combined with the NG series switches. As a result, the maximum PL e and SIL 3 safety levels can be achieved through the use of a single device on a guard. This avoids expensive wiring in the field and allows faster installation. Inside the control cabinet, the two electronic safety outputs must be connected to a safety module with OSSD inputs or to a safety PLC.

Easy to use

There are no specific sequences required for opening or closing the door, but only a single opening / closing movement.
If the door interlock is realised by means of a handle provided with a release push button, the door can be opened with a single movement even under stress (panic situations).

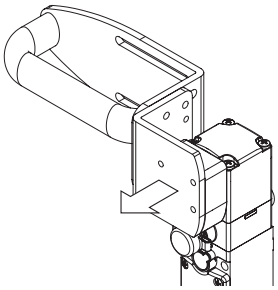


Holding force of the locked actuator



9750 N The strong interlocking system guarantees a maximum actuator holding force of F_{1max} = 9750 N. This is one of the highest values currently available on the market today, making this device suitable for heavy-duty applications.

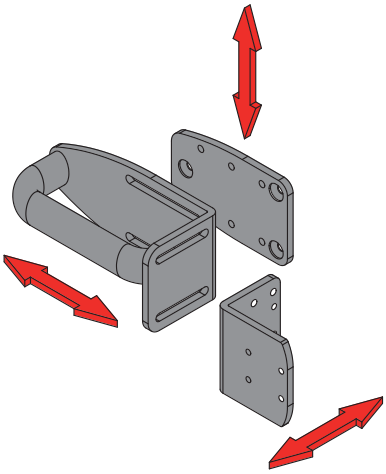
Holding force of the unlocked actuator

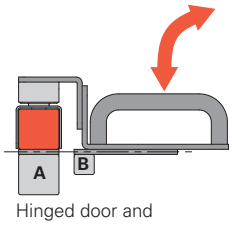


The inside of each switch features a device which holds the actuator in its closed position. Ideal for all those applications where several doors are unlocked simultaneously, but only one is actually opened. The device keeps all the unlocked doors in their position with a retaining force of 30 N, stopping any vibrations or gusts of wind from opening them.

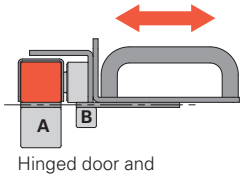
Sturdiness and easy installation

The handle is provided with 5 mm thick sturdy brackets in painted steel. The slots in the brackets allow independent adjustments to be performed. This ensures easy installation, eliminating the need to make changes to structure of the existing guard.
The adjustments make it possible to attach the handle to aluminium profiles or steel frames of various dimensions, from 40 x 40 mm to 80 x 80 mm for the frame jamb **(A)** and from 20 x 20 mm to 40 x 40 mm for the door **(B).**
It can be installed both on hinged doors and sliding doors, either with right or left closing.
The handle is supplied with all of the components necessary for fastening at the appropriate distances with tamper-proof screws. The installer only has to assemble the components according to the application, fix the selected switch (supplied separately) and make centring adjustments.

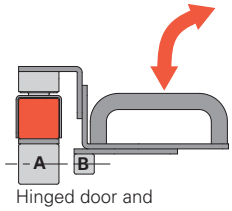




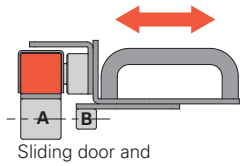
Hinged door and
jamb frontally aligned



Hinged door and
jamb frontally aligned



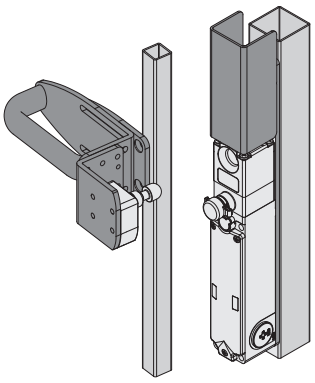
Hinged door and
jamb axially aligned



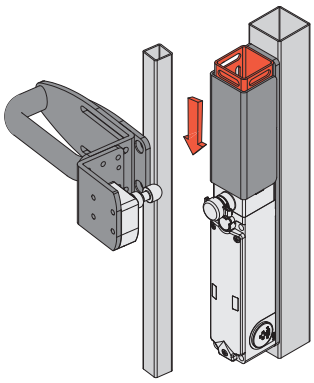
Sliding door and
jamb axially aligned

Padlocking option for protecting against errors

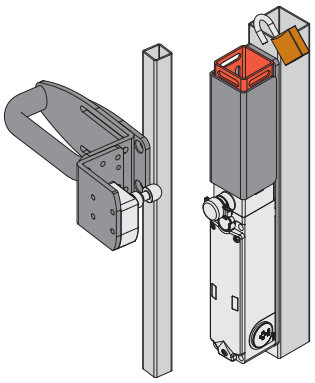
The lock out device is simply pushed downward to expose the holes for mounting padlocks. As a result, padlocks can no longer be mounted incorrectly, since the holes are not exposed until the switch is fully locked. 9 holes for padlocks with a diameter of 7 mm are present. The head of the switch can be quickly rotated in four different directions after loosening the fixing screws, while the lock out device reliably protects on 3 sides. The lock out device can thus be used on hinged and sliding doors – with both right and left closing – without any modification.



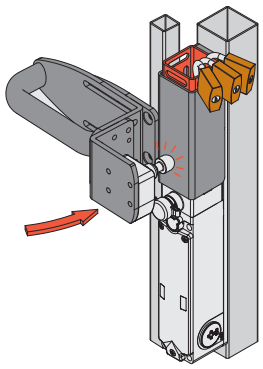
Lock out device open.
Safety switch is accessible.



Closing of the
lock out device.



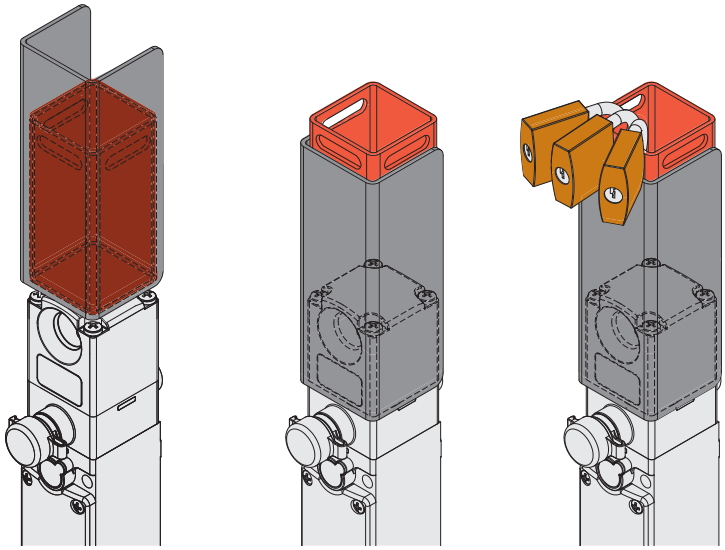
Lock out device closed.
Padlock insertion.



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

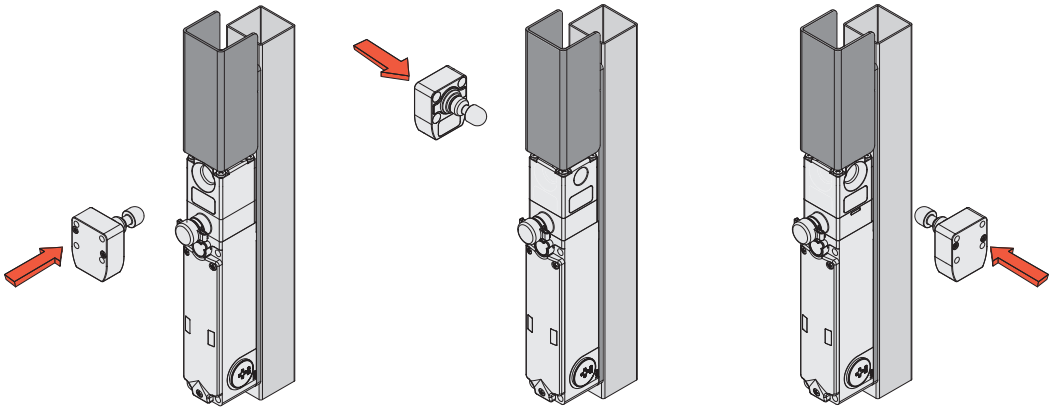
Lock out: maximum safety with just one movement

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.



Head rotation

Because the lock out device covers the switch head in the 3 possible approach directions, it can be used on hinged and sliding doors – with both right and left closing – without any additional modification.



Code structure

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

AP G1A-111P

LOCK OUT device	
1	with LOCK OUT device
0	Without LOCK OUT device

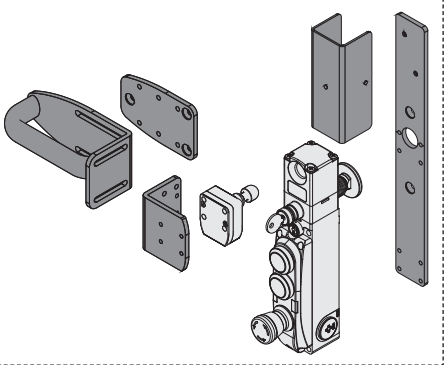
Grip	
P	plastic grip
M	metal grip
Z	without grip

Fixing on frames	
A	Long plate
B	Short plate
Z	Without plate

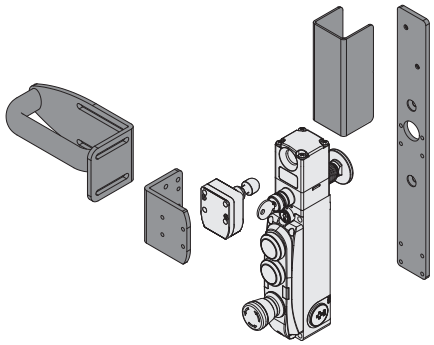
Plates for fastening the door handle	
000	Without door fastening plate
111	3 plates with multiple fastening options
011	2 plates with multiple fastening options
200	Configuration with 1 fixed plate

Note: the handle is supplied with fastening screws for the grip, for the switch, and for bolting the plates together.

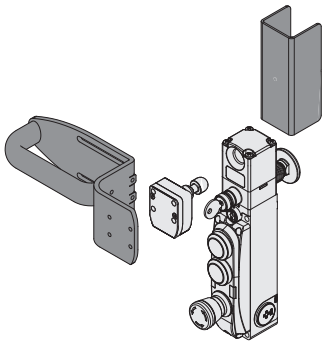
AP G1A-111P



AP G1A-011P

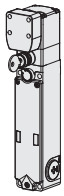


AP G1Z-200P



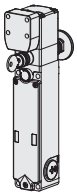
NG 2D1D••A-F3•

Safety locking switch, with separate actuator.



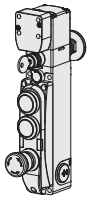
NG 2D5D••A-F3•

Safety locking switch, with separate actuator. With key release.



NG 2D6D••A-F3•

Safety locking switch, with separate actuator. With key release and escape release button.

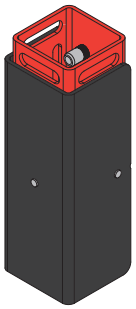


NG 2D7D••••D-F3•

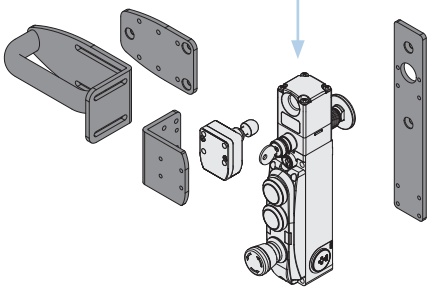
Safety locking switch, with separate actuator. With escape release button, lock and integrated control devices.

Lock out device:

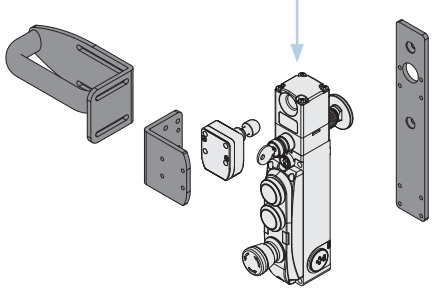
In case of special applications, the AP G1Z-000Z lock out device can also be supplied as single device.



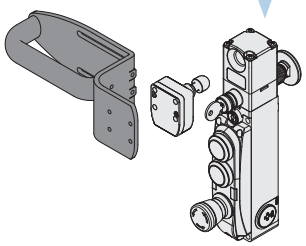
AP G0B-111P



AP G0B-011P



AP G0Z-200P

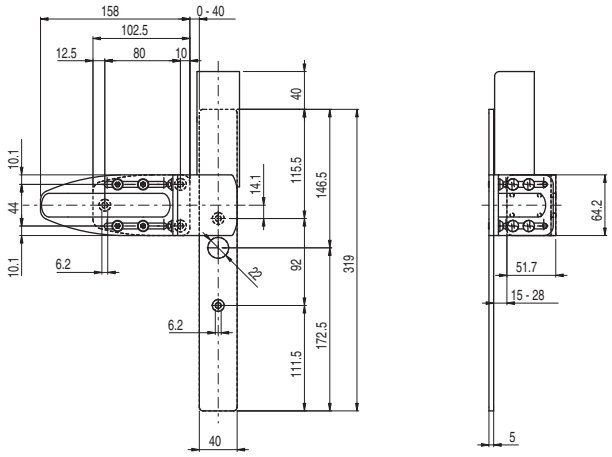


Sold separately as accessory

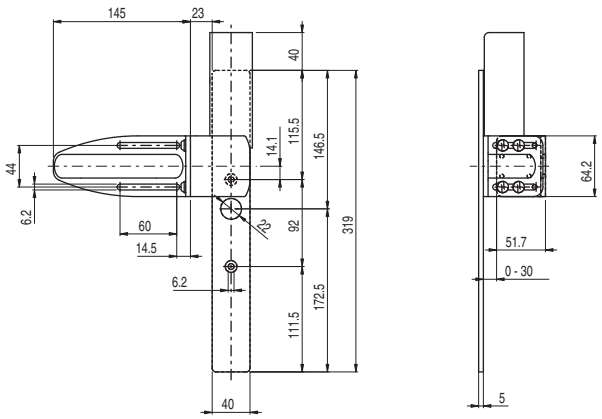
The NG series safety switch is also available in other versions. For further information see page 147.

Dimensional drawings

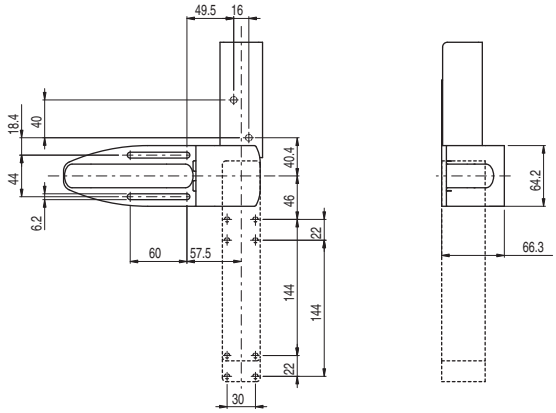
AP G1A-111• safety handles



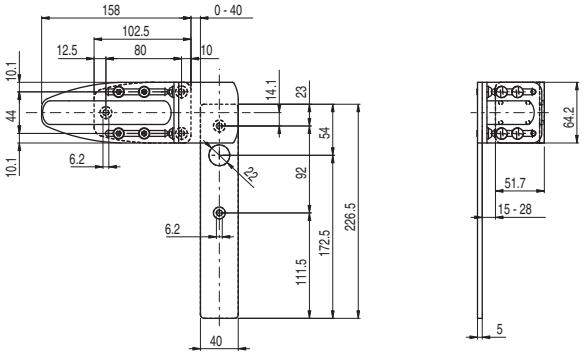
AP G1A-011• safety handles



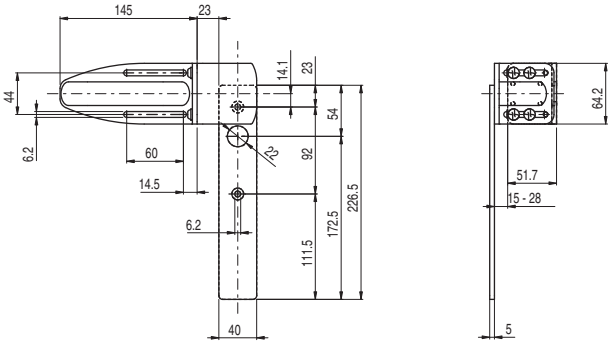
AP G1Z-200• safety handles



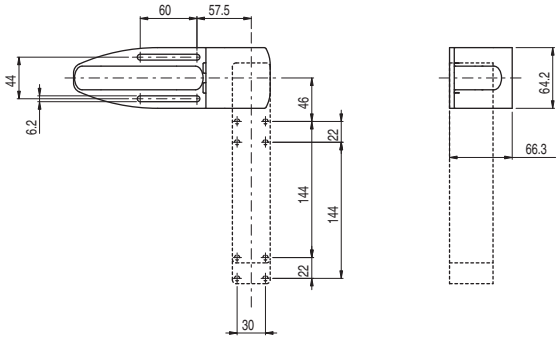
AP G0B-111• safety handles



AP G0B-011• safety handles



AP G0Z-200• safety handles



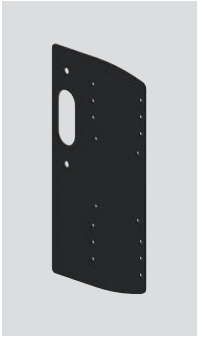
All values in the drawings are in mm

Accessories See page 419

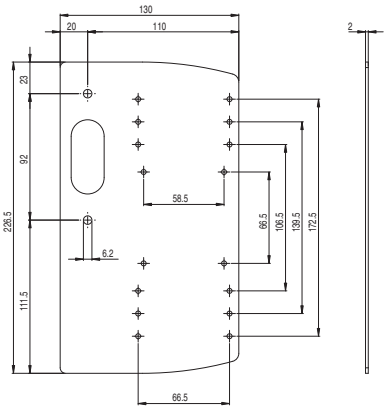
➔ The 2D and 3D files are available at **www.pizzato.com**

Accessories

Profiled 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 Pizzato Elettrica EROUND line panel buttons (by means of common self-threading screws available on the market).



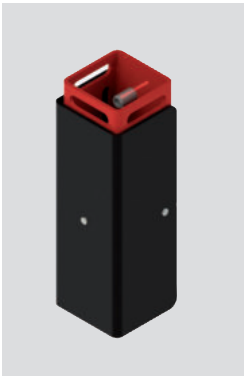
Article	Description
AP A001	Profiled lateral plate

Adhesive labels for escape release button

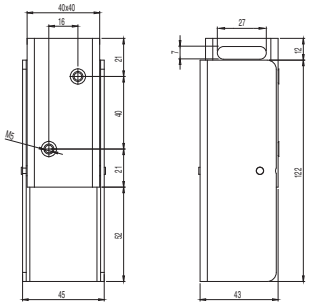
Polycarbonate yellow adhesive, rectangular, 300 x 32 mm, red inscription. It has to be fixed on the internal part of the jamb and helps finding the escape release button.

Article	Description and language	
VF AP-A1AGR01	PREMERE PER USCIRE	ita
VF AP-A1AGR02	PUSH TO EXIT	eng
VF AP-A1AGR04	ZUM ÖFFNEN DRÜCKEN	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	NACISNĄĆ ABY WYJŚĆ	pol
VF AP-A1AGR09	PRESSIONAR PARA SAIR	por

Lock out device for NG series switches

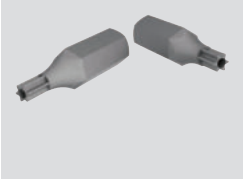


Lock out device made entirely of metal to be installed with NG series switches with solenoid and RFID technology.
To prevent unintentional guard closure, simply move the black slider down so that the actuator entry hole is fully covered.
When the slider is lowered, a perforated plate emerges on the top 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.



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

Bits for safety screws



Bits for safety screws with pin, with ¼" hexagonal connection.

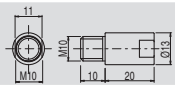
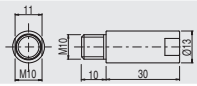
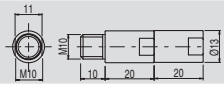
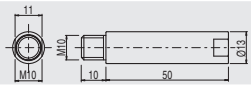
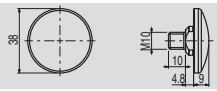
Article	Description
VF VAIT1T25	Bits for M5 screws with Torx T25 fitting
VF VAIT1T30	Bits for M6 screws with Torx T30 fitting

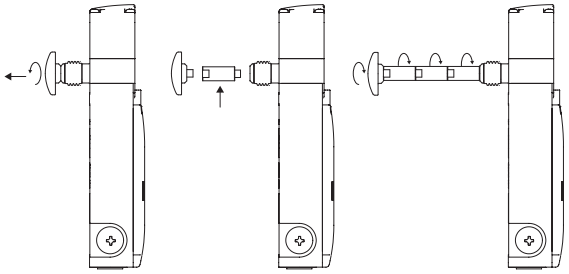
All values in the drawings are in mm

Accessories See page 419

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

Extensions for release button

Article	Description	Drawing
VN NG-LP30	Metal extension for release button. For max. wall thickness of 30 mm	
VN NG-LP40	Metal extension for release button. For max. wall thickness of 40 mm	
VN NG-LP50	Metal extension for release button. For max. wall thickness of 50 mm	
VN NG-LP60	Metal extension for release button. For max. wall thickness of 60 mm	
VN NG-ERB	Red metal release button	



- Metal extensions can be combined with one another to achieve the desired length.
- Do not exceed an overall length of 500 mm between the release button and the switch.
- Use medium-strength thread locker to secure the extensions.

Complete housings for profiled plate

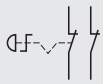
ES AC32010

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

ES AC32043

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

ES AC33076

Description	Features			Diagram
Illuminated button - 1NO E2 1PL2R2210	flush, spring-return, white			
LED unit E2 LF1A2V1	White LED, 12 … 30 Vac/dc			
Contacts 1x E2 CF10G2V1	pos. 2 /	pos. 3 LED	pos. 1 1NO	
Illuminated button - 1NO E2 1PL2R5210	flush, spring-return, yellow			
LED unit E2 LF1A2V1	White LED, 12 … 30 Vac/dc			
Contacts 1x E2 CF10G2V1	pos. 2 /	pos. 3 LED	pos. 1 1NO	
Emergency stop button Ø 40 mm- 2NC E2 1PERZ4531	rotary release, Ø 40 mm, red			
Label with shaped hole VE TF32G5700	yellow, 30x60 mm rectangular, no engraving			
Contacts 2x E2 CF01G2V1	pos. 2 1NC ⊖	pos. 3 /	pos. 1 1NC ⊖	

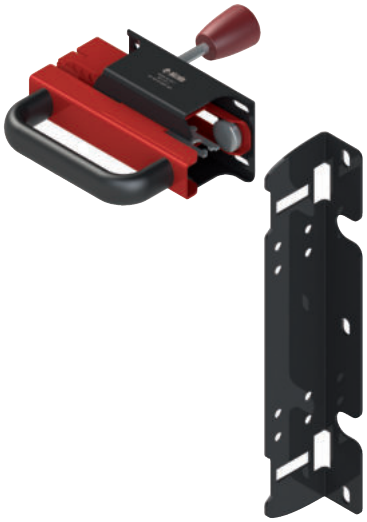
All values in the drawings are in mm

Accessories See page 419

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

P-KUBE Fast safety handles for FD, FG and FY series switches

Description



The **P-KUBE Fast** safety handles are designed to install Pizzato Elettrica's FD, FG and FY series safety switches to machine guards quickly and easily, offering an effective solution to machine designers and installers for problems relating to the mechanical precision of guard movements, as well as for critical environmental conditions.

The P-KUBE Fast safety handles, unlike other products on the market, combine their compactness and lightness resulting from the sliding movement, with the robustness of the upper end models, which are distinguished by a higher weight, more bulky dimensions and greater constructive complexity.

Structure

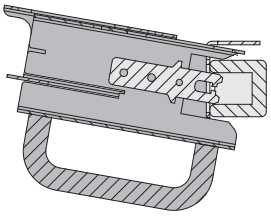
The P-KUBE Fast handle is light and compact, has a galvanized and painted metal frame and an ergonomic plastic or aluminium grip for comfortable and easy use of the door handle itself.

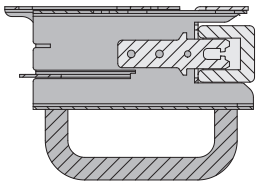
The absence of screws and removable components prevents any tampering.

Handle lock positions

There is a snap-on device that retains the handle in two positions: when it is pulled out, so as to contribute to the retaining force exerted by the actuator, and when retracted, to avoid undesirable movements caused by machine vibrations.

Centring



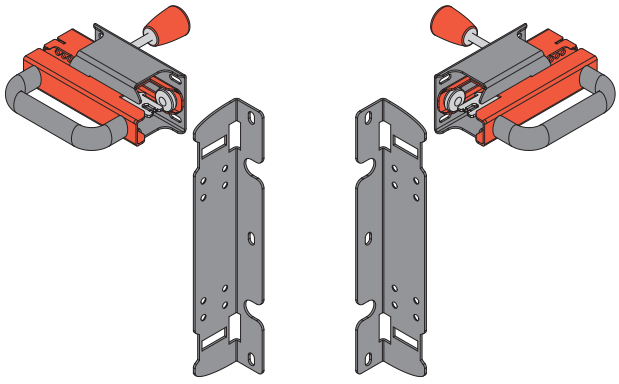


The "C"-shaped profile facilitates centring of the device when closing a guard that is not perfectly aligned with the frame. This enables an optimum alignment between actuator and switch, preventing any damage due to possible collisions.

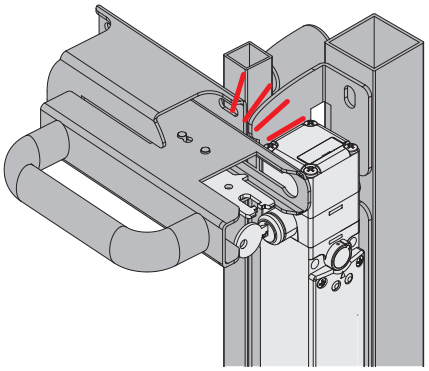
Flexibility during installation

Thanks to its symmetrical design the device can be installed on hinged and sliding doors, either with right or left closing, without requiring any further adjustment.

The slotted brackets and the large actuator travel (60 mm) allow the device to be installed and adjusted on profiles of various sizes.



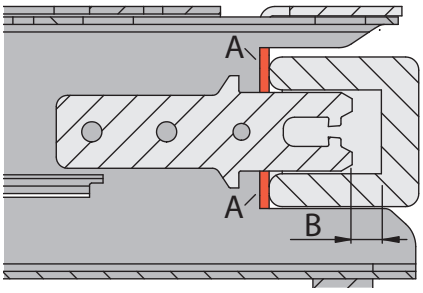
Protection of actuator and switch



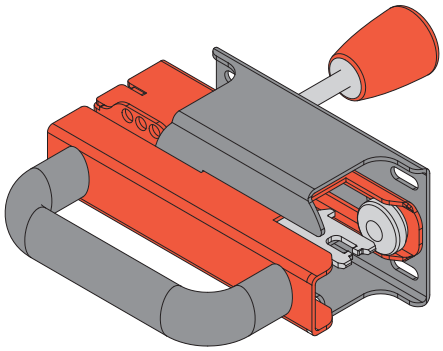
Thanks to the handle structure and the fixing bracket of the switch, both the switch and the actuator can be safely installed preventing any damage due to possible collisions. Any impacts resulting from incorrect actuation are completely absorbed on the handle frame.

Mechanical stop

During door closing, a mechanical stop (A) prevents possible impacts between the actuator and the switch by constantly ensuring a safety distance (B) between these two components and the switch housing.



Internal lever for emergency escape



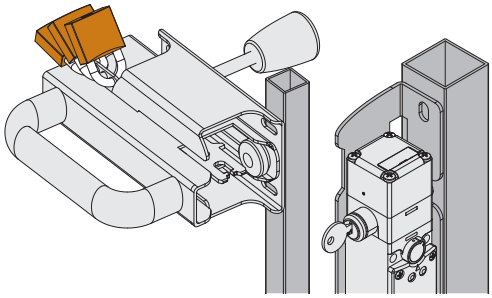
Optional lever for emergency opening from the inside: it ensures that operating personnel can exit the area should they accidentally become trapped within the dangerous area. It can be combined only with switches without lock (e.g. FD •93-M2) or switches with escape release button (e.g. FG •••D6D••).

Lock out device

The lock out device integrated in the structure of the P-KUBE Fast handles allows up to 6 padlocks to be hooked in with a shackle diameter of 6 mm to prevent unintentional closing of the guard.

When the lock out device is activated, the mechanical closing of the door and the electrical switching of the switch contacts is prevented.

The lock out device can only be unlocked when all locks have been removed, i.e. when all operators have left the danger zone.



P-KUBE Fast safety handles for FD, FG and FY series switches

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-S13BP-200

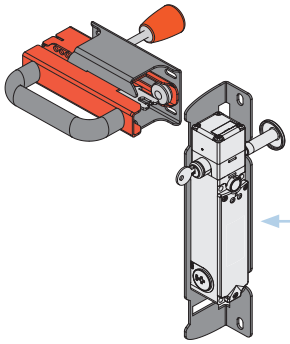
Mounting bracket supplied for installation	
A	FD ••••
B	FG ••••••••, FY ••••••••

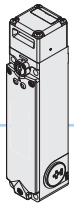
Internal lever for emergency escape	
P	internal lever for emergency escape
Z	without internal lever for emergency escape

Plate configuration	
001	without plate, with aluminium grip
002	without plate, with plastic grip
200	with plate for FG and FY: with screwed-on aluminium grip
201	with plate for FD: with screwed-on aluminium grip
300	with plate for FG and FY: with screwed-on plastic grip
301	with plate for FD: with screwed-on plastic grip

Note: the handle is supplied complete with switch actuator and fastening screws for fixing the switch to the plate.

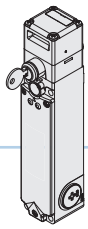
VF AP-S13BP-300





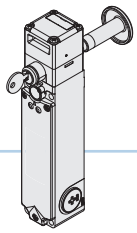
FG •••D1D••

Safety switch with solenoid and separate actuator.



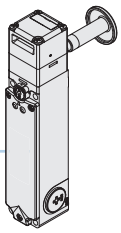
FG •••D5D••

Safety switch with solenoid and separate actuator.
With key release.



FG •••D6D••

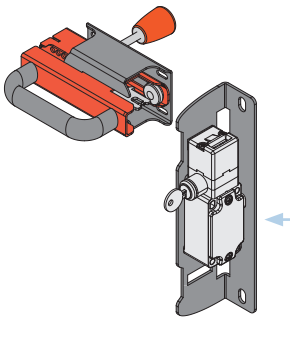
Safety switch with solenoid and separate actuator.
With key release and escape release button.

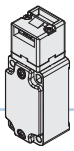


FG •••D7D••

Safety switch with solenoid and separate actuator.
With escape release button.

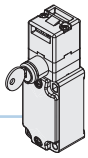
VF AP-S13AP-301





FD •93-M2

Safety switch with separate actuator.



FD •99-M2

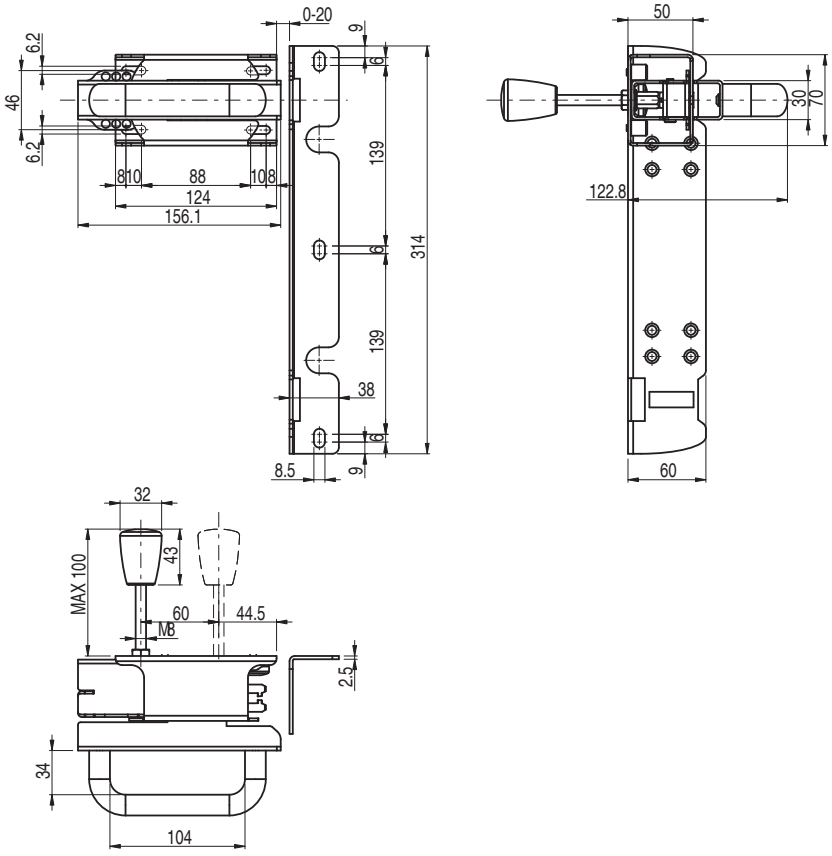
Safety switch with separate actuator and key release.

article sold separately

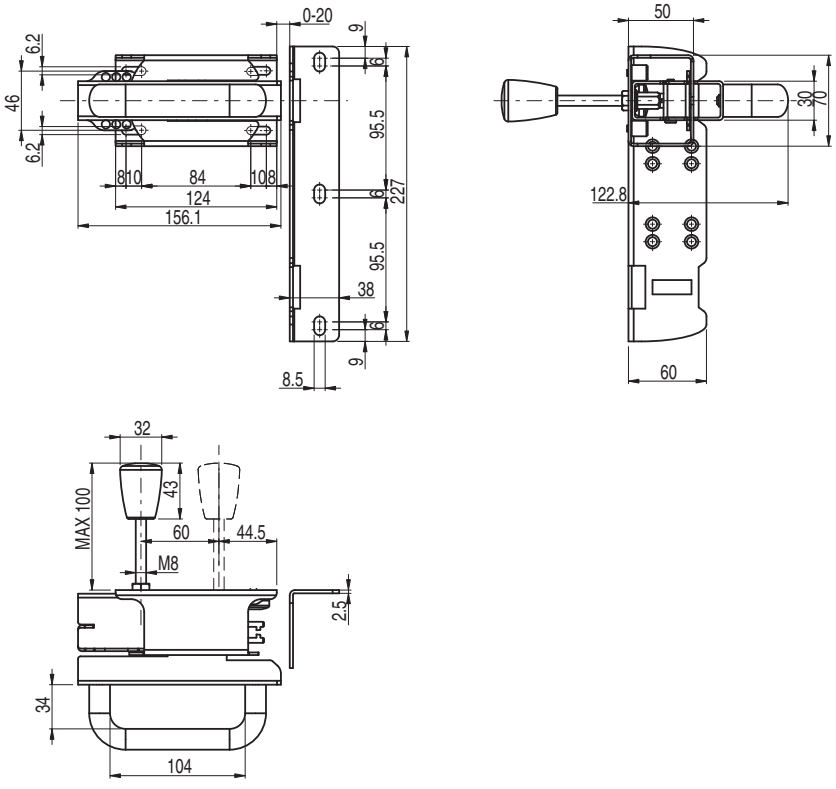
For articles and options of the FG series switches see page 123.
For articles and options of the FY series switches see page 139.
For articles and options of the FD series switches see page 17.

Dimensional drawings

Safety handle VF AP-S13BP-300



Safety handle VF AP-S13AP-301



All values in the drawings are in mm

Accessories See page 419

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

P-KUBE Super safety handles for NG series switches

Description

Together with the NG series RFID safety switches with guard locking, the **P-KUBE Super** safety handles form an integrated locking system for guards that enables access control to dangerous areas, offering an effective solution to designers and installers for problems related to the mechanical precision of the movements of the guard.

Designed as an evolution of the P-KUBE 2 handles, the P-KUBE Super handles with double centering pin are specifically designed for guards installed in heavy-duty work environments (e.g. rolling mills, iron and steel plants, etc.) where very heavy doors or doors with such dimensions as to generate high misalignments between the movable and fixed parts of the guard may be present.

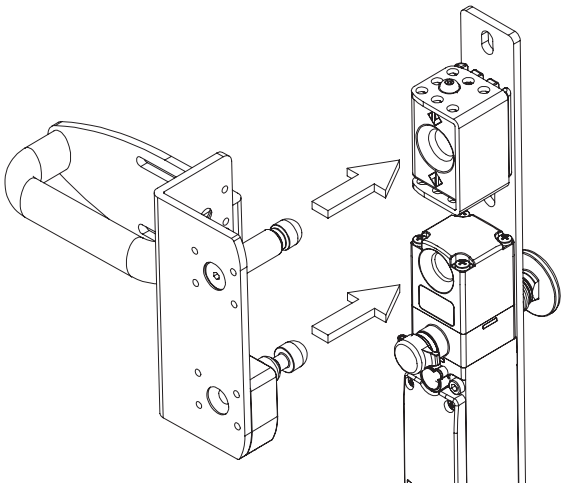
The integrated lock out device is used to block the door in the open position and prevent an unexpected system restart when maintenance personnel access the system.

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.

Maximum safety with a single device

PL e + SIL 3 The P-KUBE Super safety handles can be combined with the NG series switches. As a result, the maximum PL e and SIL 3 safety levels can be achieved through the use of a single device on a guard. This avoids expensive wiring in the field and allows faster installation. Inside the control cabinet, the two electronic safety outputs must be connected to a module suitable for managing devices with solid state outputs, or to a safety PLC.

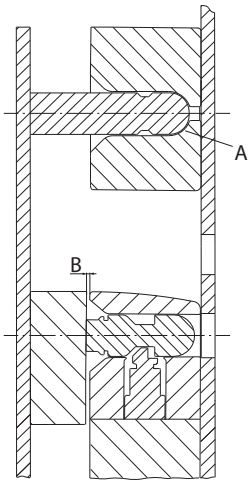
Dual centring pin



When closing the guard, the upper metal pin attached to the handle plate hits the bottom of the centering block (A) before the actuator hits the switch housing, leaving a safe distance (B) to avoid collisions between the devices.

The upper metal centering pin can also only hit surfaces that transmit the impact to the support structure of the guard but not to the switch itself, which is thus relieved of all mechanical loads when the door is opened and closed.

The coupling with the actuators of the NG series with hinge pin allows further adaptation to the centering hole even with doors with inaccurate opening, thus avoiding continuous maintenance operations to realign the actuator and switch.



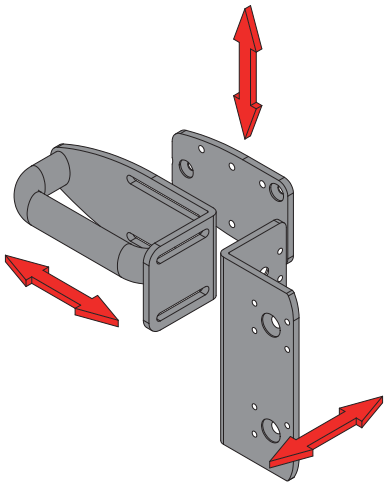
Sturdiness and easy installation

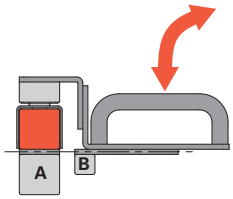
The handle is provided with 5 mm thick sturdy brackets in painted steel. The slots in the brackets allow independent adjustments to be performed. This ensures easy installation, eliminating the need to make changes to structure of the existing guard.

The adjustments make it possible to attach the handle to aluminium profiles or steel frames of various dimensions, from 40 x 40 mm to 80 x 80 mm for the frame jamb **(A)** and from 20 x 20 mm to 40 x 40 mm for the door **(B).**

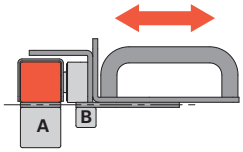
It can be installed both on hinged doors and sliding doors, either with right or left closing.

The handle is supplied with all of the components necessary for fastening at the appropriate distances with tamper-proof screws. The installer only has to assemble the components according to the application, fix the selected NG series switch (supplied separately) and make centring adjustments.

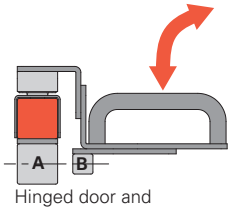




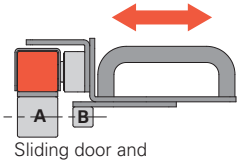
Hinged door and jamb frontally aligned



Hinged door and jamb frontally aligned

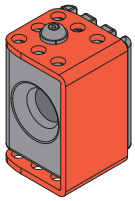


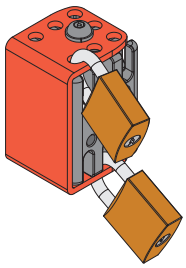
Hinged door and jamb axially aligned



Sliding door and jamb axially aligned

Lock out device



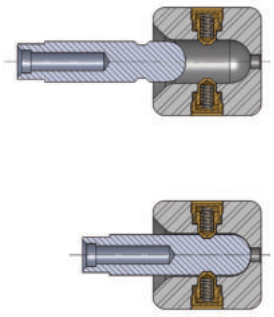


With a single operation, the lock out device can close the centering hole, making it impossible to mechanically close the door.

Simply turn the red cover so that the centering hole is completely covered and the holes on the top of the cover match the holes in the metal block underneath.

With the lock out device activated, it is possible to insert up to 12 padlocks with a shackle diameter of 5 mm; this feature makes the P-KUBE Super handle particularly suitable for large and complex systems, in which the maintenance phases require the simultaneous entry of several operators into the hazardous areas.

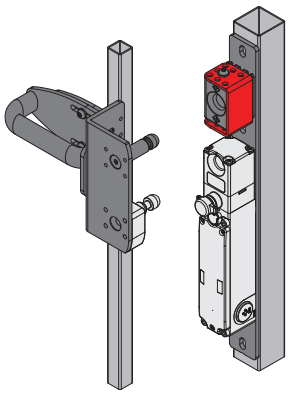
Holding force of the unlocked actuator



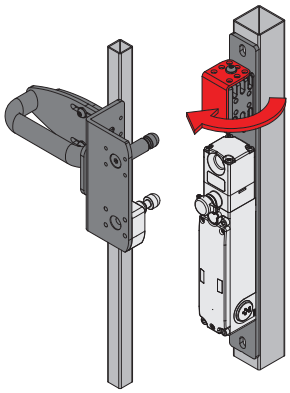
A version of the lock out device with 100 N holding force is available on request. With this new optional feature, the handle is kept in its limit-stop closed position; a moderately energetic pull is required to open the door. This device is ideal for all applications where multiple doors are unlocked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

Padlocking option for protecting against errors

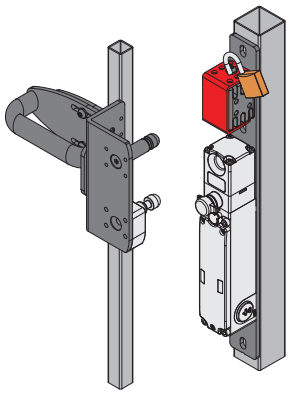
The lock out device is operated by a simple rotation of the slider to expose the holes for mounting padlocks. As a result, padlocks can no longer be mounted incorrectly, since the holes are not exposed until the switch is fully locked. 12 holes for padlocks with a diameter of 7 mm are present.



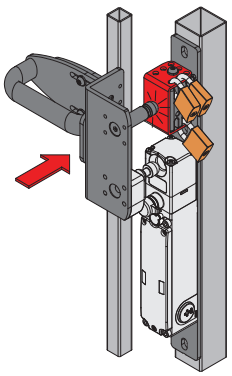
Lock out device open.
Safety switch is accessible.



Closing of the
lock out device.



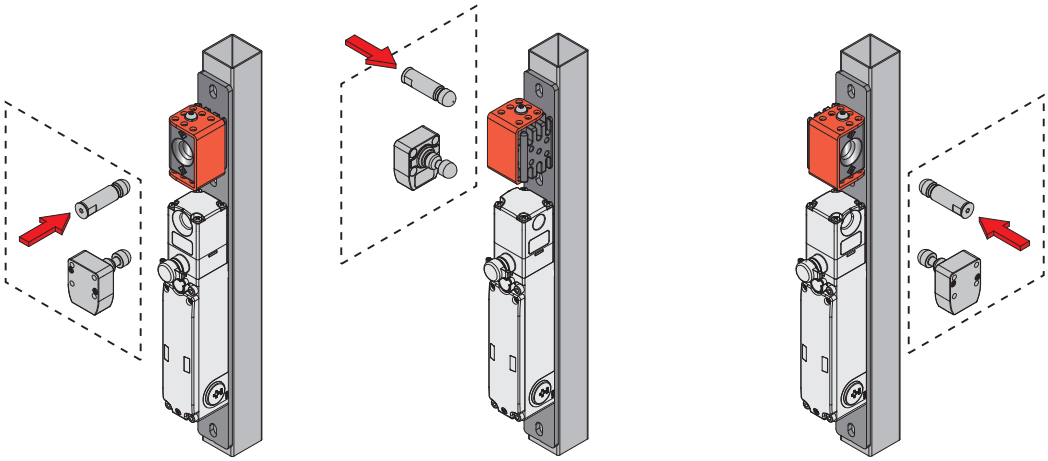
Lock out device closed.
Padlock insertion.



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

Turnable centring block

The special configuration allows the use of the lock out device on hinged and sliding doors, both right and left, changing only the mounting position.



Code structure

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

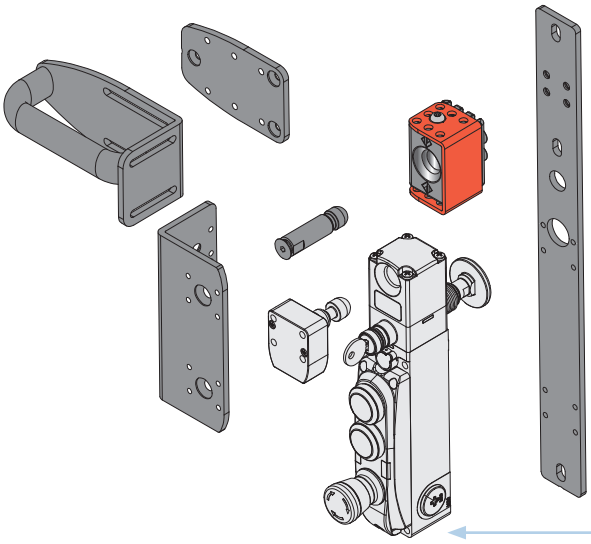
AP G2C-800P

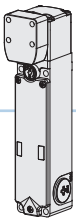
LOCK OUT device	
0	Centering block only
1	LOCK OUT device
2	LOCK OUT device with 100 N holding force

Grip	
P	plastic grip
M	metal grip

Note: the handle is supplied with fastening screws for the grip, for the switch, and for bolting the plates together.

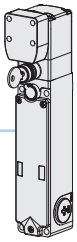
AP G2C-800•





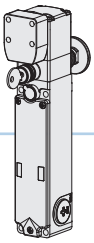
NG 2D1D••A-F3•

Safety locking switch, with separate actuator.



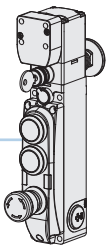
NG 2D5D••A-F3•

Safety locking switch, with separate actuator. With key release.



NG 2D6D••A-F3•

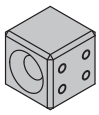
Safety locking switch, with separate actuator. With key release and escape release button.



NG 2D7D••••D-F3•

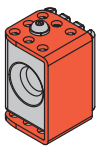
Safety locking switch, with separate actuator. With escape release button, lock and integrated control devices.

Lock out device options:



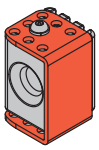
0

Centering block only



1

With LOCK OUT device



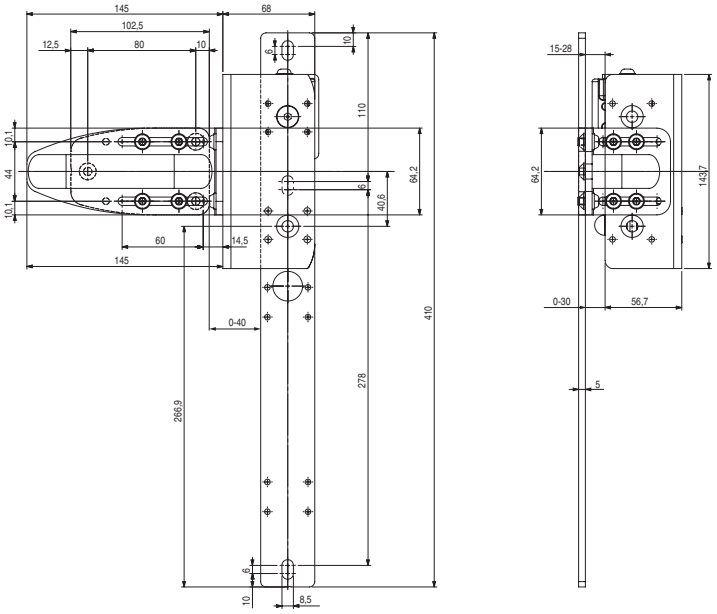
2

With LOCK OUT device with 100 N holding force

Sold separately as accessory

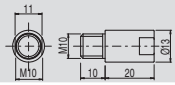
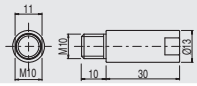
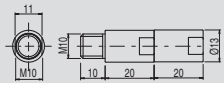
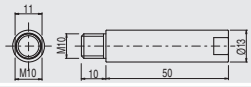
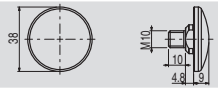
The NG series safety switch is also available in other versions. For further information see page 169.

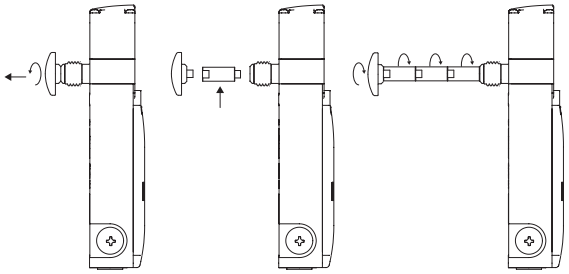
Dimensional drawings



Accessories

Extensions for release button

Article	Description	Drawing
VN NG-LP30	Metal extension for release button. For max. wall thickness of 30 mm	
VN NG-LP40	Metal extension for release button. For max. wall thickness of 40 mm	
VN NG-LP50	Metal extension for release button. For max. wall thickness of 50 mm	
VN NG-LP60	Metal extension for release button. For max. wall thickness of 60 mm	
VN NG-ERB	Red metal release button	



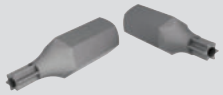
- Metal extensions can be combined with one another to achieve the desired length.
- Do not exceed an overall length of 500 mm between the release button and the switch.
- Use medium-strength thread locker to secure the extensions.

Adhesive labels for escape release button

Polycarbonate yellow adhesive, rectangular, 300 x 32 mm, red inscription. It has to be fixed on the internal part of the jamb and helps finding the escape release button.

Article	Description and language	
VF AP-A1AGR01	PREMERE PER USCIRE	ita
VF AP-A1AGR02	PUSH TO EXIT	eng
VF AP-A1AGR04	ZUM ÖFFNEN DRÜCKEN	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	NACISNĄĆ ABY WYJŚĆ	pol
VF AP-A1AGR09	PRESSIONAR PARA SAIR	por

Bits for safety screws



Bits for safety screws with pin, with ¼" hexagonal connection.

Article	Description
VF VAIT1T25	Bits for M5 screws with Torx T25 fitting
VF VAIT1T30	Bits for M6 screws with Torx T30 fitting

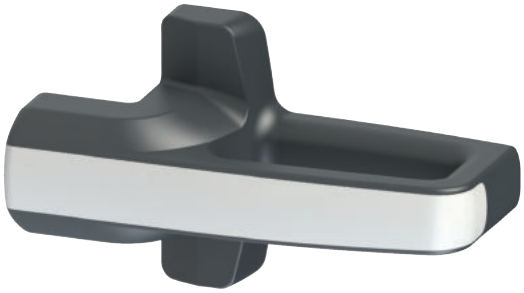
All values in the drawings are in mm

Accessories See page 419

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

P-KUBE Krome safety handles for NG and NS series switches

Description



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

This product series combines 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.

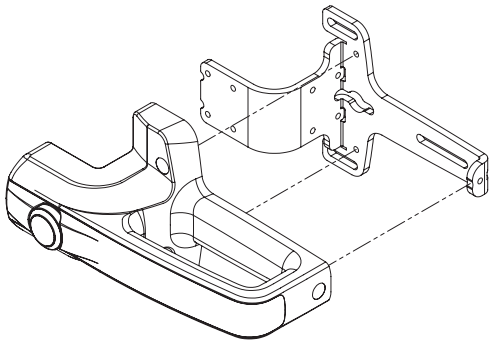
The P-KUBE Krome safety handles are a built-in and innovative solution for machine manufacturers who, with a single product and wiring harness, can optimise the cost of components, by eliminating peripheral control boxes and illuminated signalling columns, and implementing aesthetically pleasing and 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.

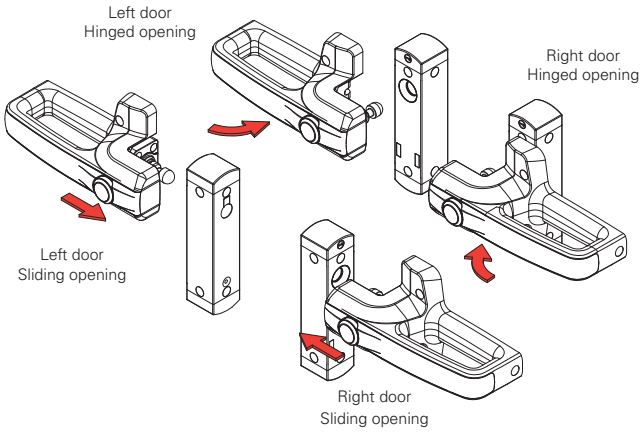
Robustness

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



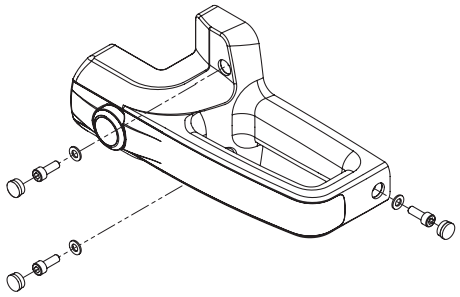
Adaptability and flexibility

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.



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

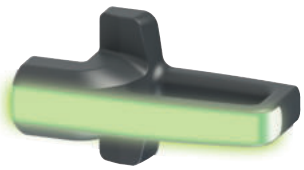
The grip is available with front strip in two finishes: satin chrome, and illuminated white. In the second version, the grip can be illuminated using RGB LED technology.

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 grip, 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



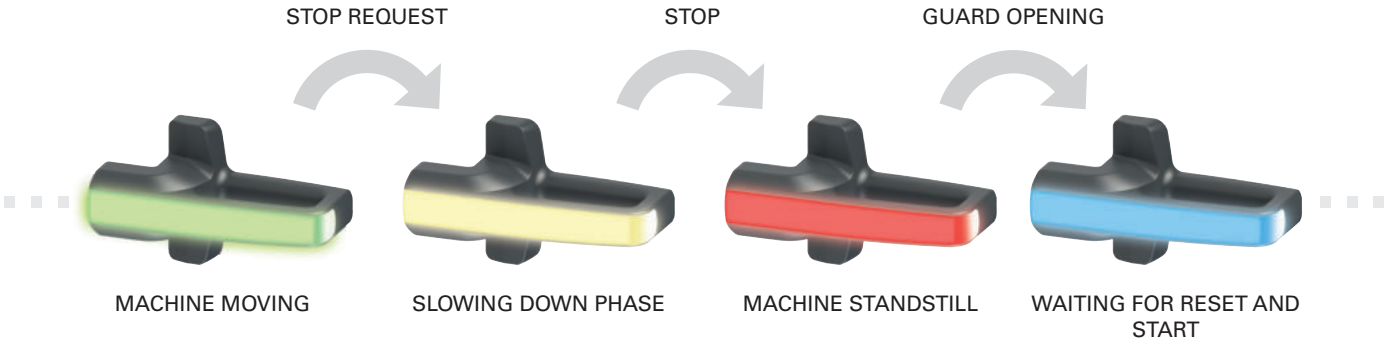
- Without control device
- White grip, can be illuminated with RGB LEDs

- 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.

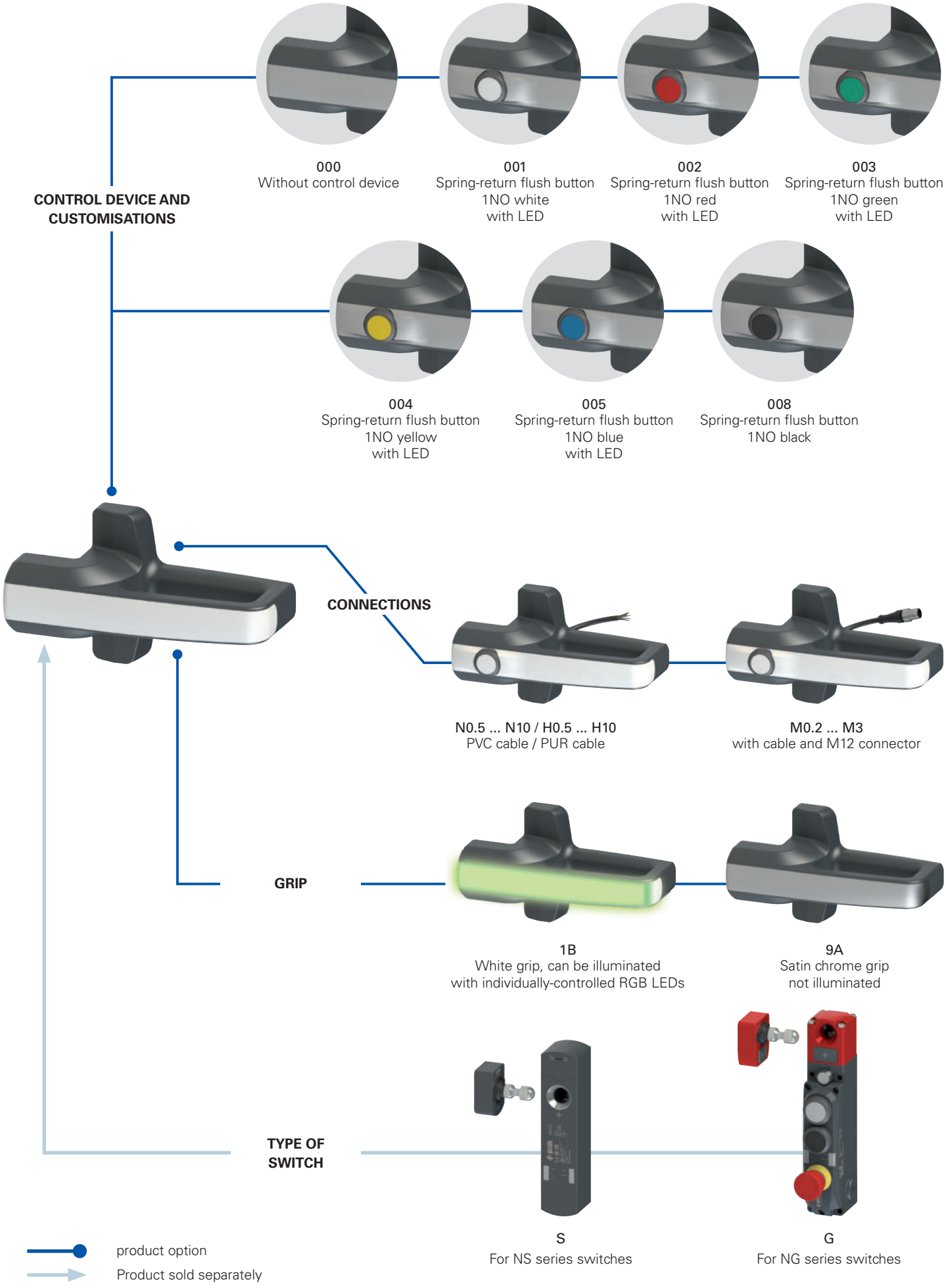


Connections

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 that the cable is protected from damage and tampering.
The P-KUBE Krome handle is available with PVC cable connections or with cable and integrated M12 connector.

P-KUBE Krome safety handles for NG and NS series switches

Selection diagram



Code structure

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

article: **AN S1B000A** options: **-PN3-X**

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

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

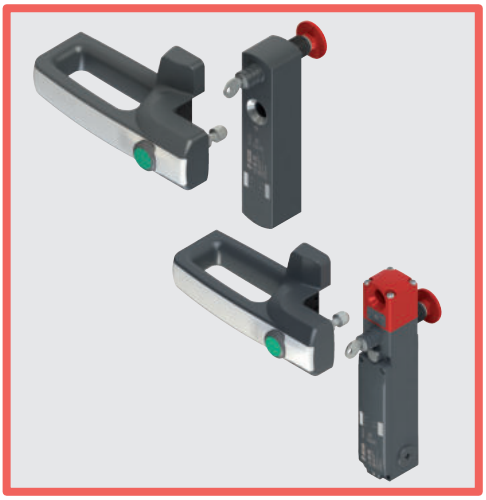
Other control devices on request, see page 183.

Metal fixing plate	
	painted steel (standard)
X	stainless steel (only for AN S••••••)

Cable type and connection	
M0.2	PVC cable, IEC 60332-1-2 oil resistant, length 0.15 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

P-KUBE Krome safety handles for NG and NS series switches



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:

UL approval: E131787
EAC approval: RU C-IT.УТ03.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

The models provided with M12 connector may be provided with the mating-connectors-part (with cord attached).

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 0.15 m cable length and M12 connector, other lengths 0.15 … 3 m available 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°C ... +50°C
Storage temperature:	-40°C ... +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
Material of the contacts:	silver contacts
Contact type:	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 C22.2 No. 14.

Compliance with the requirements of:
For articles with integrated electrical parts:
Low Voltage Directive 2014/35/EU,
EMC Directive 2014/30/EU.
RoHS Directive 2011/65/EU.

Selection table for handles

Connection cable not necessary

	With satin chrome grip, for NS series switches	With satin chrome grip, for NG series switches
		
Without control device	AN S9A000A	AN G9A000A

With 3 m long PVC cable

	With satin chrome grip, for NS series switches	With satin chrome grip, for NG series switches	With illuminated grip (white), for NS series switches	With illuminated grip (white), for NG series switches
				
Without control device	/	/	AN S1B000A-PN3	AN G1B000A-PN3
With spring-return button, 1NO, white, illuminated	AN S9A001A-PN3	AN G9A001A-PN3	AN S1B001A-PN3	AN G1B001A-PN3
With spring-return button, 1NO, red, illuminated	AN S9A002A-PN3	AN G9A002A-PN3	AN S1B002A-PN3	AN G1B002A-PN3
With spring-return button, 1NO, green, illuminated	AN S9A003A-PN3	AN G9A003A-PN3	AN S1B003A-PN3	AN G1B003A-PN3
With spring-return button, 1NO, yellow, illuminated	AN S9A004A-PN3	AN G9A004A-PN3	AN S1B004A-PN3	AN G1B004A-PN3
With spring-return button, 1NO, blue, illuminated	AN S9A005A-PN3	AN G9A005A-PN3	AN S1B005A-PN3	AN G1B005A-PN3
With spring-return button, 1NO, black, non-illuminated	AN S9A008A-PN3	AN G9A008A-PN3	AN S1B008A-PN3	AN G1B008A-PN3

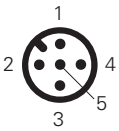
With 0.15 m long PVC cable and M12 connector

	With satin chrome grip, for NS series switches	With satin chrome grip, for NG series switches	With illuminated grip (white), for NS series switches	With illuminated grip (white), for NG series switches
				
Without control device	/	/	AN S1B000A-PM0.2	AN G1B000A-PM0.2
With spring-return button, 1NO, white, illuminated	AN S9A001A-PM0.2	AN G9A001A-PM0.2	AN S1B001A-PM0.2	AN G1B001A-PM0.2
With spring-return button, 1NO, red, illuminated	AN S9A002A-PM0.2	AN G9A002A-PM0.2	AN S1B002A-PM0.2	AN G1B002A-PM0.2
With spring-return button, 1NO, green, illuminated	AN S9A003A-PM0.2	AN G9A003A-PM0.2	AN S1B003A-PM0.2	AN G1B003A-PM0.2
With spring-return button, 1NO, yellow, illuminated	AN S9A004A-PM0.2	AN G9A004A-PM0.2	AN S1B004A-PM0.2	AN G1B004A-PM0.2
With spring-return button, 1NO, blue, illuminated	AN S9A005A-PM0.2	AN G9A005A-PM0.2	AN S1B005A-PM0.2	AN G1B005A-PM0.2
With spring-return button, 1NO, black, non-illuminated	AN S9A008A-PM0.2	AN G9A008A-PM0.2	AN S1B008A-PM0.2	AN G1B008A-PM0.2

Note: To order a product with PUR cable, replace the letter N or M with the letter H in the order codes shown above.

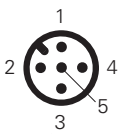
P-KUBE Krome safety handles for NG and NS series switches

Electrical connections



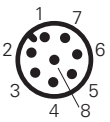
Versions with button
articles AN •9A••••

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

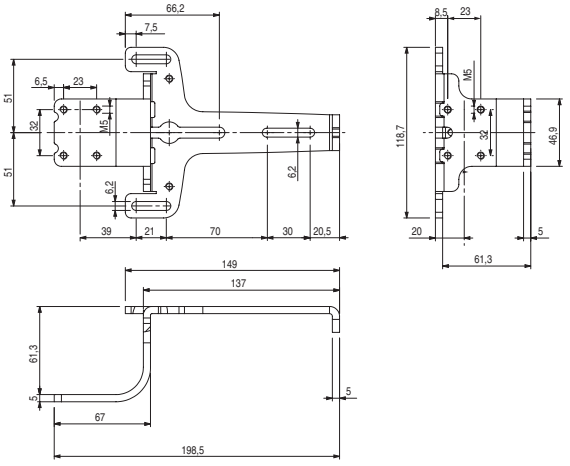
LED grip lighting combinations

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	

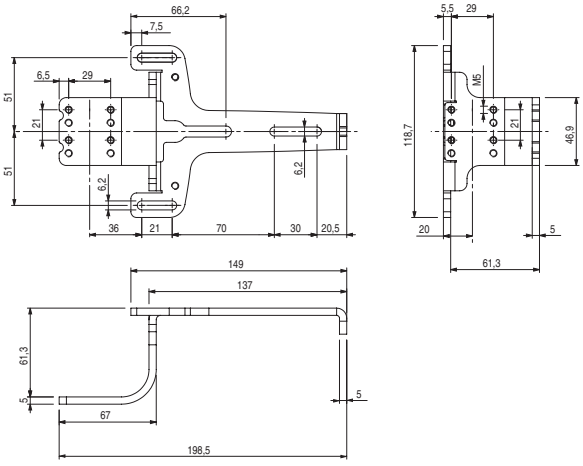
0 = colour control input off, 1 = colour control input on.

Dimensional drawings

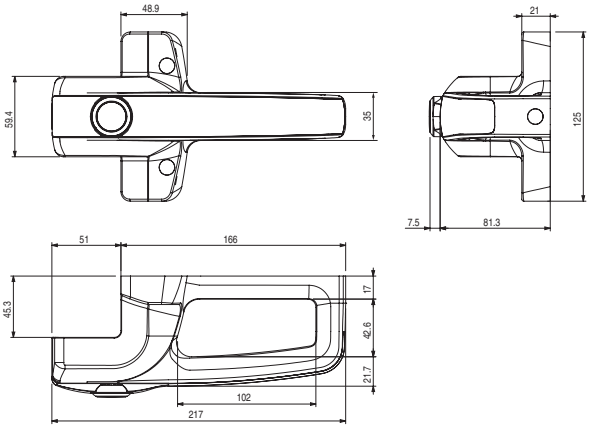
Internal fixing plate (articles AN S••••••)



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

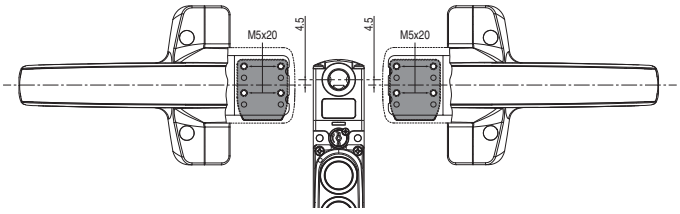


Grip

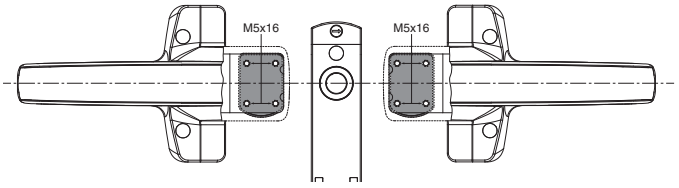


Switch-actuator alignment

Articles AN G••••••



Articles AN S••••••



All values in the drawings are in mm

Accessories See page 419

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

Notes

LK S lock out device for NS series switches

Description

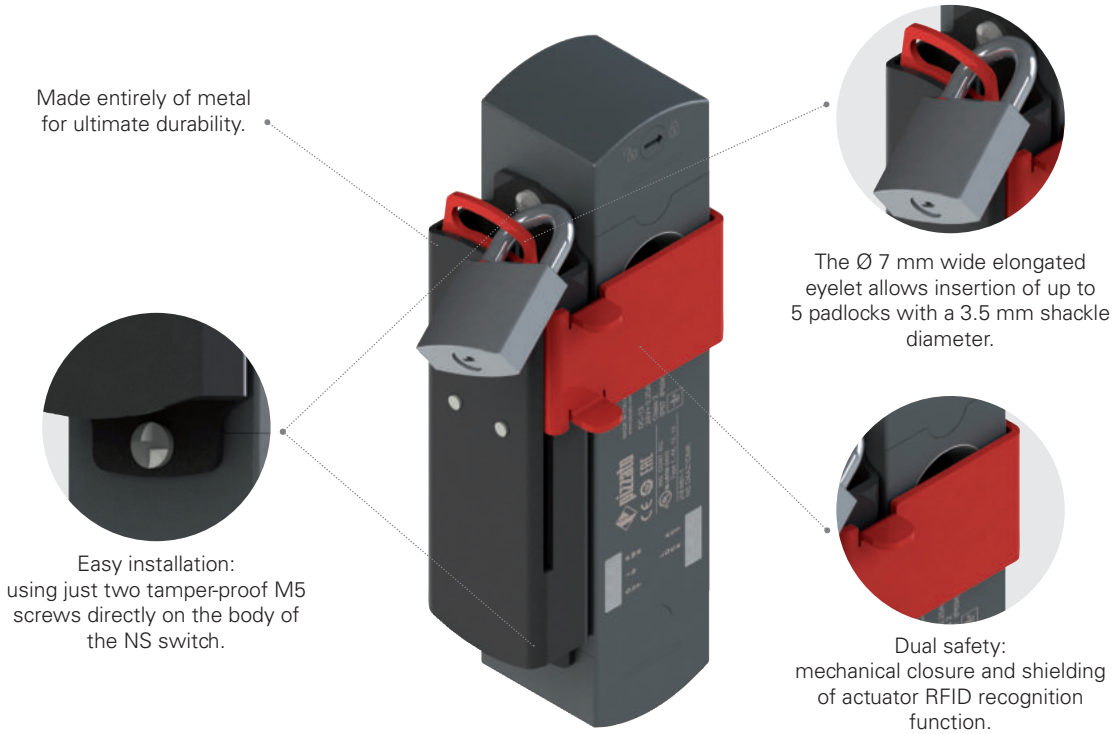
Article	Description
LK S1D001	Lock out device for NS series switches, mounting on the right side of the switch
LK S1S001	Lock out device for NS series switches, mounting on the left side of the switch

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.

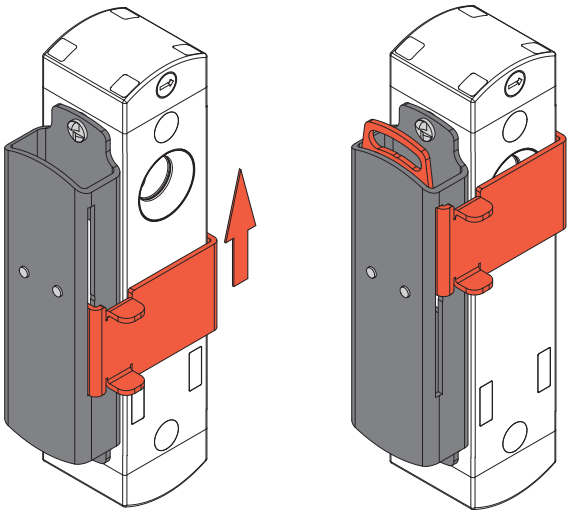
General data



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.

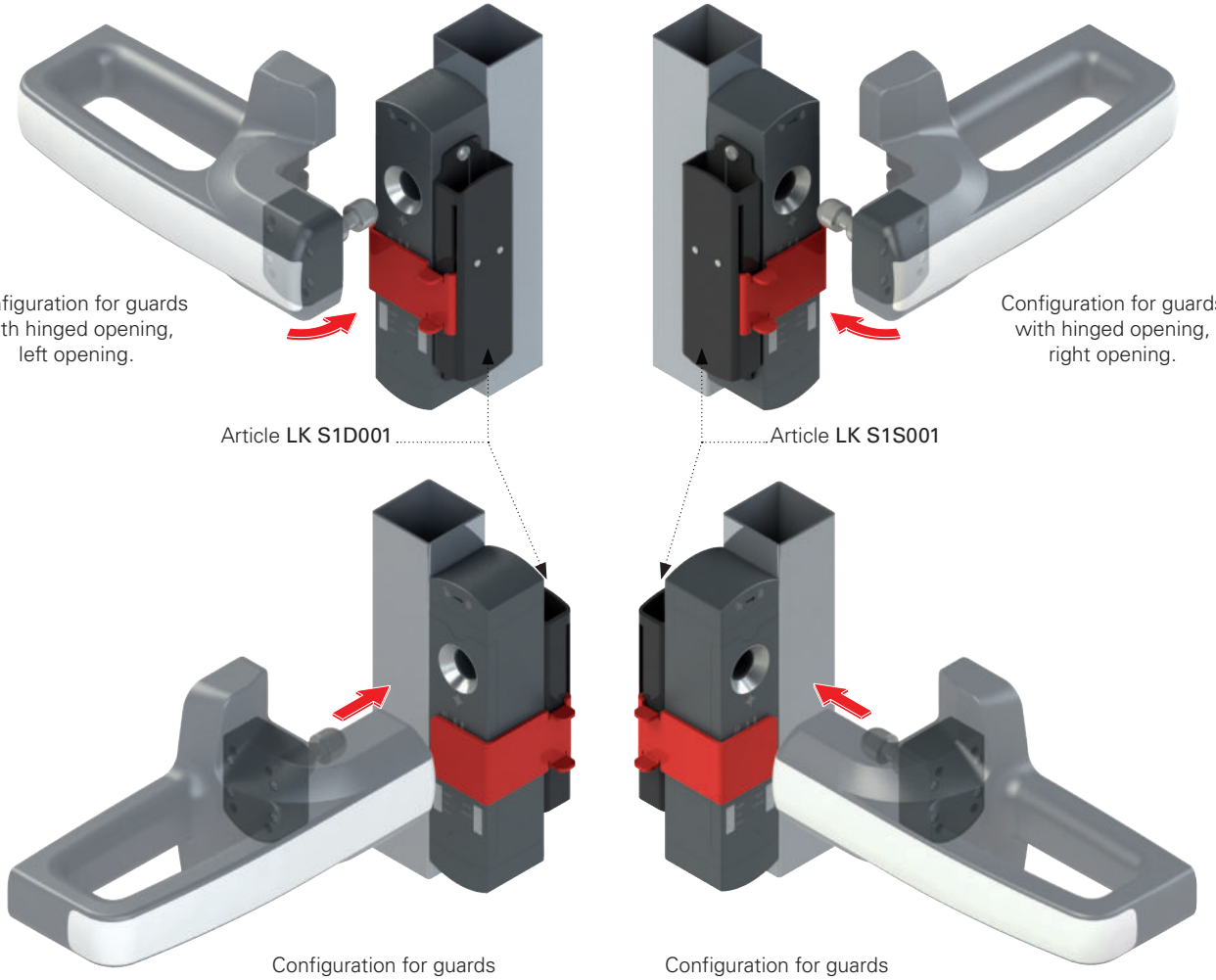


Lock out disabled

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.

Article **LK S1D001**

Article **LK S1S001**

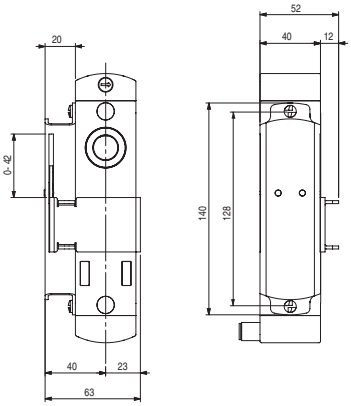
Configuration for guards with hinged opening, right opening.

Configuration for guards with sliding opening, left opening.

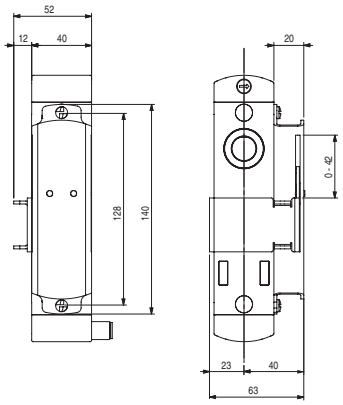
Configuration for guards with sliding opening, right opening.

Dimensional drawings

Article **LK S1S001**



Article **LK S1D001**



All values in the drawings are in mm

Accessories See page 419

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

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

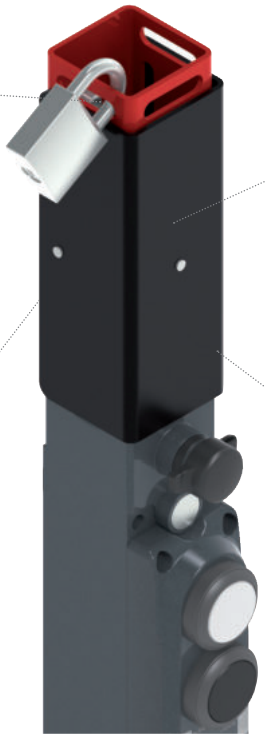
Description

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.



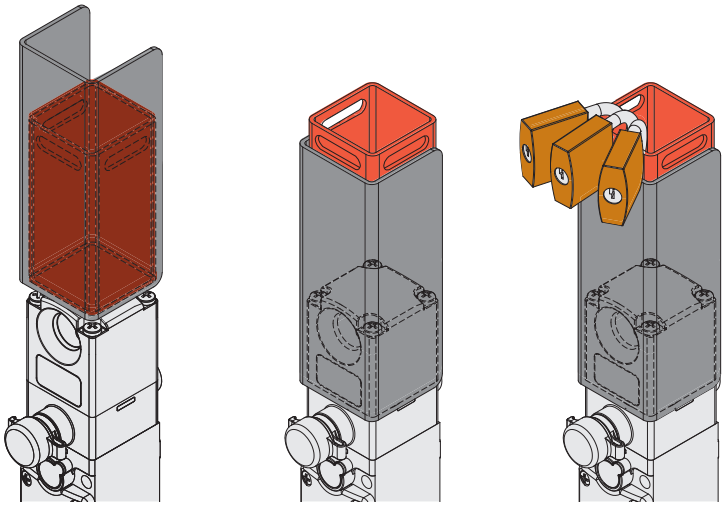
Made entirely of metal for ultimate durability.

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

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

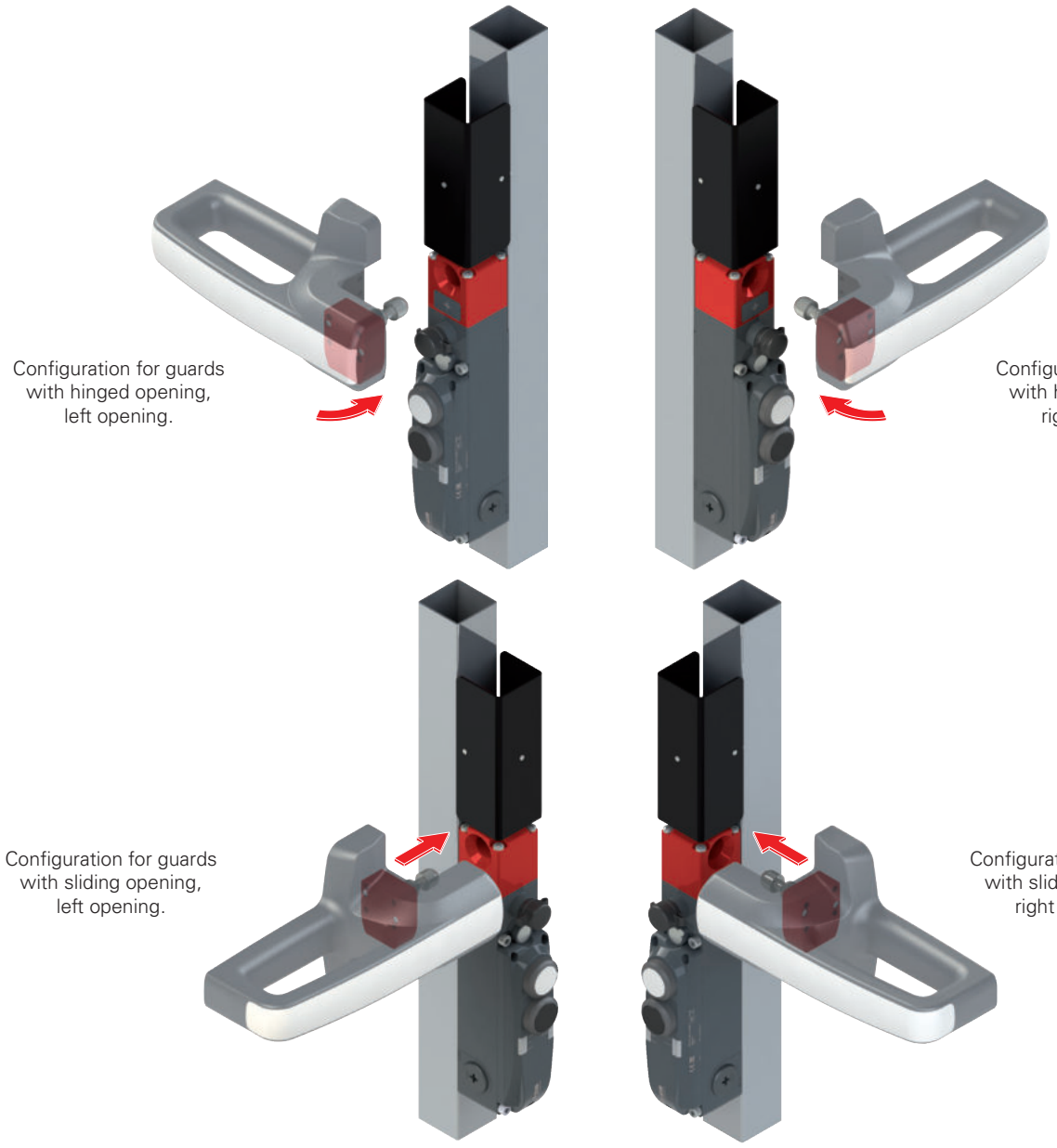
Error-proof operation

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.



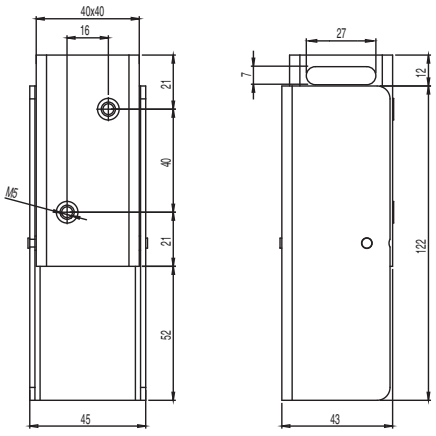
Configuration for guards with hinged opening, left opening.

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 419

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

P-KUBE Smart safety handles for ST series RFID sensors

Description

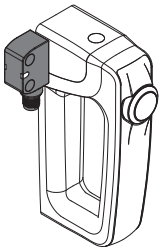
P-KUBE Smart safety handle can be used together with the RFID safety sensors of the ST series to create a modern and effective interlock system for all guards of machines without inertia.

This product series combines 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.

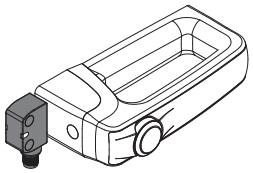
Depending on user needs, the new handles also allow integration of a control device (e.g. a button), directly in the grip.

Adaptability and flexibility

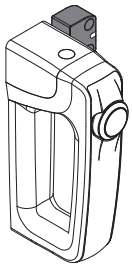
The same article code can be used both on hinged doors and sliding doors, with an opening both on the right and on the left side. Furthermore, it is possible to install the handle with horizontal or vertical grip, so that it can also be mounted on doors or compact guards along the external frame.



Vertical mounting with sensor on the left side



Horizontal mounting

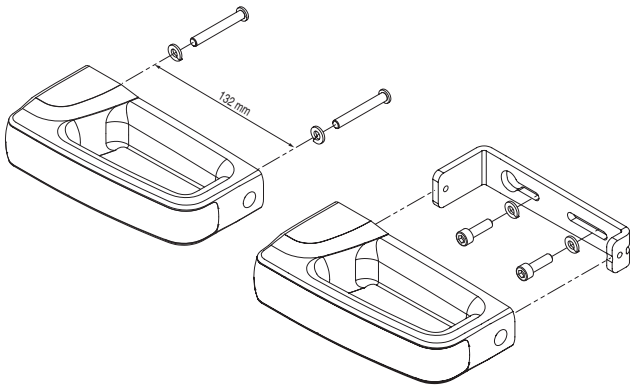


Vertical mounting with sensor on the right side

Double fixing possibility

For applications on light or compact guards, it is possible to order the version with fixing directly on the handle using the two internal threaded inserts.

In the case of application on heavier guards, it is possible to fix the handle through an internal 5mm auxiliary plate, made of painted steel, to guarantee strength and long duration.



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.

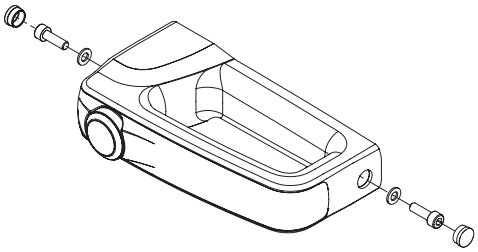
The modern, ergonomic design, combined with fully concealed fixing screws and wiring, allows implementation of machines and guards with particularly pleasing aesthetics.

Integrated control device

In the grip of the P-KUBE Smart 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 machine stop, or transmit a reset command. The button is available in white, red, green, yellow, blue, and black.

Protection against tampering

The P-KUBE Smart 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.



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 that the cable is protected from damage and tampering.

The P-KUBE Smart handle is available with PVC cable connections or with cable and integrated M12 connector.

Available versions

Thanks to the wide range of configurations available, the P-KUBE Smart safety handle can be ordered in the version that best suits the user's needs. Customization options apply to the grip, which can be supplied with or without a control device, or with or without RGB LED lighting. This feature allows you to identify 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

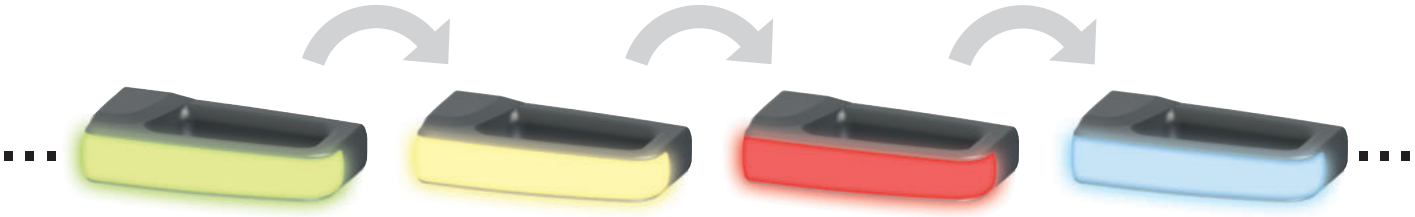
- Without control device
- White grip, can be illuminated with RGB LEDs

- 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 Smart 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.



MACHINE MOVING

MALFUNCTIONS

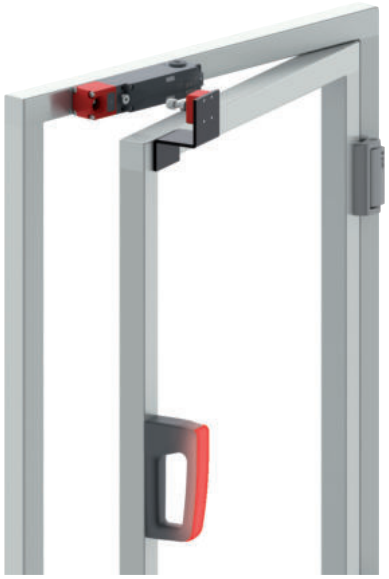
MACHINE STANDSTILL

WAITING FOR RESET AND START

Universal handle

The P-KUBE Smart handle is also available in the version without RFID tag, so that it can be used as a simple handle to open a guard, regardless of the type of safety switch with which the door interlock is made of.

In this configuration, it is possible to use the versions with illuminated grip, to create an integrated visual signal system without the need to install further devices on board of the machine.

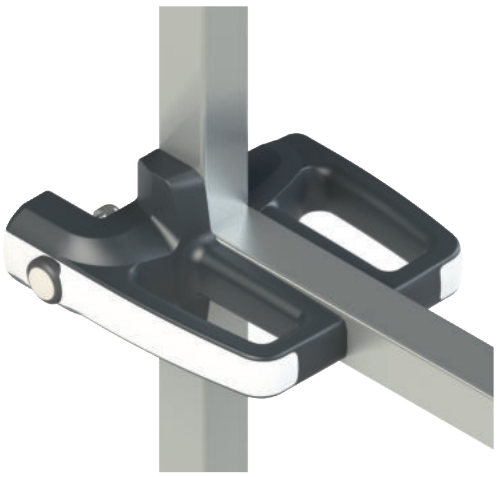


Compatible with P-KUBE Krome

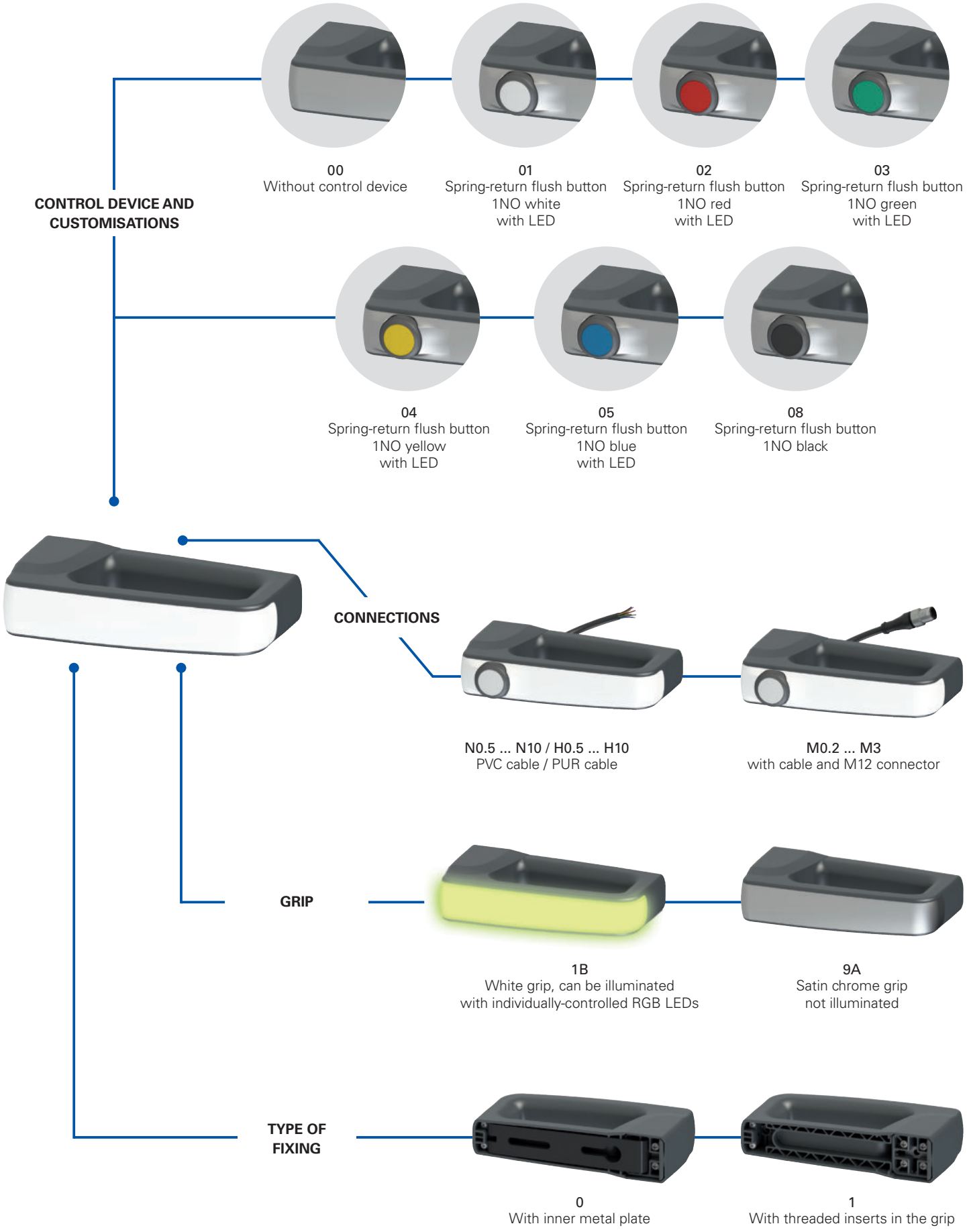
Designed with the same handle size and the same interaxle spacings for the fixing holes of the inner plate, the P-KUBE Smart series can be used as inner handle in guards using the P-KUBE Krome safety handle for NS and NG series RFID saftey switches with lock.

The mounting turns out to be practical and quick, as the two handles can be fixed by using only two holes passing through the frame and two screws of adequate length.

All these elements put together form a system with uniform lines and with aesthetic continuity between the inner and outer handle.



Selection diagram



product option

Product sold separately

Code structure

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

article / options

AN T 1B 0 00 A 1 - P N3

Device type

T	For ST series RFID sensors

Note: the sensors 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

Type of fixing

0	With inner metal plate
1	On the grip with threaded inserts

Control device and customisations

00	Without control device
01	Spring-return flush button 1NO white with LED
02	Spring-return flush button 1NO red with LED
03	Spring-return flush button 1NO green with LED
04	Spring-return flush button 1NO yellow with LED
05	Spring-return flush button 1NO blue with LED
08	Spring-return flush button 1NO black

1NC, 1NO+1NC, 2NC or 2NO contacts available on request.
Other control devices available on request.
For further information contact our technical department.

RFID coding

Z	Without RFID tag
0	With RFID tag with low coding level The ST sensor identifies any RFID tag of type 0
1	With RFID tag with high coding level The ST sensor identifies one single RFID tag of type 1

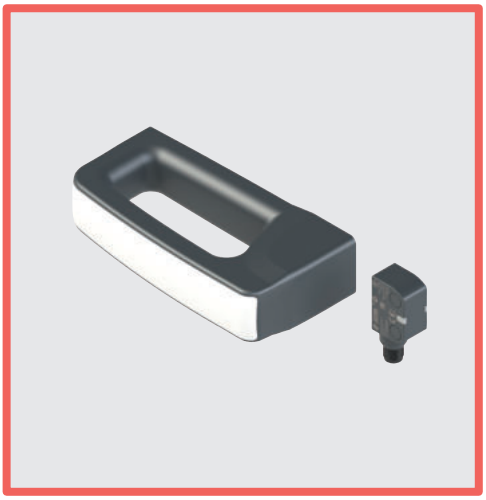
Cable type and connection

M0.2	PVC cable, IEC 60332-1-2 oil resistant, length 0.15 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

P-KUBE Smart safety handles for ST series RFID sensors



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
- Possibility of application with horizontal or vertical handle
- Direct fixing on the grip or through solid inner plate
- Usable with ST series RFID safety sensors

Quality marks:

UL approval: E131787
TÜV SÜD approval: Z10 075157 0026 (in combination with ST series)
EAC approval: RU C-IT.УТ03.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

Accessory for series ST, AN T models.

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 0.15 m cable length and M12 connector, other lengths 0.15 … 3 m available 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°C ... +50°C
Storage temperature:	-40°C ... +75°C
Mission time:	20 years

Power supply electrical data

Rated operating voltage U_e:	24 Vdc ± 15%
Operating current at U_e voltage:	60 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
Material of the contacts:	silver contacts
Contact type:	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

Actuation data

Assured operating distance S_{ao}:	11 mm
Assured release distance S_{ar}:	24 mm
Rated operating distance S_n:	15 mm
Rated release distance S_{nr}:	18.5 mm
Repeat accuracy:	≤ 10 % s_n
Differential travel:	≤ 20 % s_n
RFID transponder frequency:	125 kHz
Max. switching frequency:	1 Hz

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 C22.2 No. 14.

Compliance with the requirements of:
For articles with integrated electrical parts:
Low Voltage Directive 2014/35/EU,
EMC Directive 2014/30/EU.
RoHS Directive 2011/65/EU.

Selection table for handles

With RFID at a high level of coding for ST series sensors.
Connection cable not necessary

	With satin chrome grip with fixing on internal metal plate	With satin chrome grip with fixing on the grip
		
Without control device	ANT9A000A1	ANT9A100A1

With 3 m long PVC cable
and RFID at a high level of coding for ST series sensors

	With satin chrome grip with fixing on internal metal plate	With satin chrome grip with fixing on the grip	With illuminated white grip with fixing on the internal metal plate	With illuminated white grip with fixing on the grip
				
Without control device	/	/	ANT1B000A1-PN3	ANT1B100A1-PN3
With spring-return button, 1NO, white, illuminated	ANT9A001A1-PN3	ANT9A101A1-PN3	ANT1B001A1-PN3	ANT1B101A1-PN3
With spring-return button, 1NO, red, illuminated	ANT9A002A1-PN3	ANT9A102A1-PN3	ANT1B002A1-PN3	ANT1B102A1-PN3
With spring-return button, 1NO, green, illuminated	ANT9A003A1-PN3	ANT9A103A1-PN3	ANT1B003A1-PN3	ANT1B103A1-PN3
With spring-return button, 1NO, yellow, illuminated	ANT9A004A1-PN3	ANT9A104A1-PN3	ANT1B004A1-PN3	ANT1B104A1-PN3
With spring-return button, 1NO, blue, illuminated	ANT9A005A1-PN3	ANT9A105A1-PN3	ANT1B005A1-PN3	ANT1B105A1-PN3
With spring-return button, 1NO, black, non-illuminated	ANT9A008A1-PN3	ANT9A108A1-PN3	ANT1B008A1-PN3	ANT1B108A1-PN3

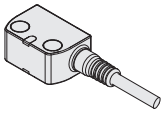
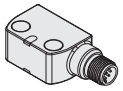
With 0.15 m long PVC cable and M12 connector and
RFID at a high level of coding for ST series sensors

	With satin chrome grip with fixing on internal metal plate	With satin chrome grip with fixing on the grip	With illuminated white grip with fixing on the internal metal plate	With illuminated white grip with fixing on the grip
				
Without control device	/	/	ANT1B000A1-PM0.2	ANT1B100A1-PM0.2
With spring-return button, 1NO, white, illuminated	ANT9A001A1-PM0.2	ANT9A101A1-PM0.2	ANT1B001A1-PM0.2	ANT1B101A1-PM0.2
With spring-return button, 1NO, red, illuminated	ANT9A002A1-PM0.2	ANT9A102A1-PM0.2	ANT1B002A1-PM0.2	ANT1B102A1-PM0.2
With spring-return button, 1NO, green, illuminated	ANT9A003A1-PM0.2	ANT9A103A1-PM0.2	ANT1B003A1-PM0.2	ANT1B103A1-PM0.2
With spring-return button, 1NO, yellow, illuminated	ANT9A004A1-PM0.2	ANT9A104A1-PM0.2	ANT1B004A1-PM0.2	ANT1B104A1-PM0.2
With spring-return button, 1NO, blue, illuminated	ANT9A005A1-PM0.2	ANT9A105A1-PM0.2	ANT1B005A1-PM0.2	ANT1B105A1-PM0.2
With spring-return button, 1NO, black, non-illuminated	ANT9A008A1-PM0.2	ANT9A108A1-PM0.2	ANT1B008A1-PM0.2	ANT1B108A1-PM0.2

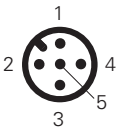
Note: To order a product with PUR cable, replace the letter N or M with the letter H in the order codes shown above.

P-KUBE Smart safety handles for ST series RFID sensors

Selection table for sensors

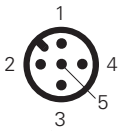
OS safety outputs	O signalling outputs	IS safety inputs	I programming inputs	EDM inputs	Programmable	 with 0.2 m cable length and M12 connector	 with cable	 with M12 connector
2	1	2	1	-	•	ST GD420M0.2	ST GD420N•	ST GD420MP

Electrical connections



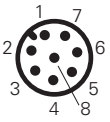
Versions with button articles ANT9A••••

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 ANT1B000•

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 ANT1B••••

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

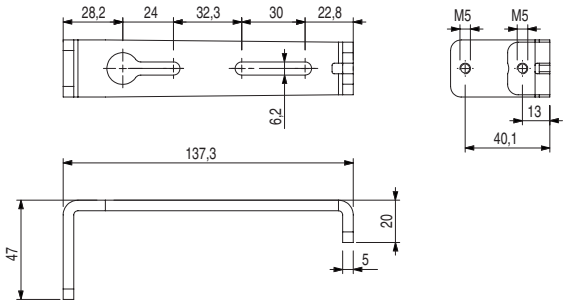
LED grip lighting combinations

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	

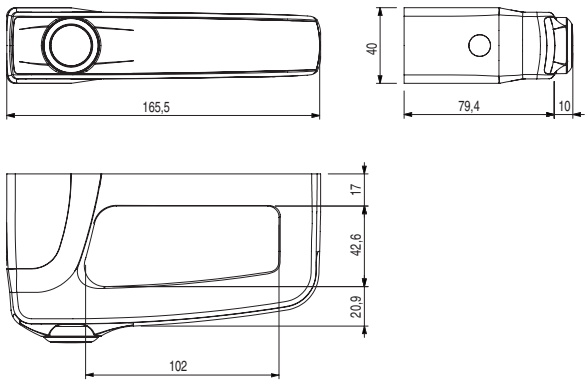
0 = colour control input off, 1 = colour control input on.

Dimensional drawings

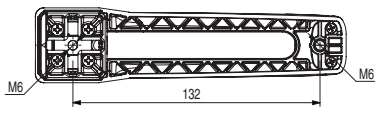
Internal fixing plate (articles ANT••0••••)



Grip



Threaded fixing inserts (articles ANT••1••••)



All values in the drawings are in mm

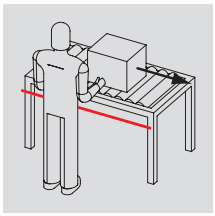
→ The 2D and 3D files are available at **www.pizzato.com**

Notes

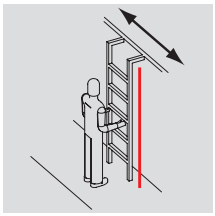
Introduction to **rope** safety switches

Description

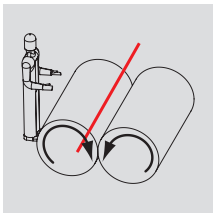
The rope switches from Pizzato Elettrica are the result of many years of experience and cooperation with major industrial machine manufacturers. The products can be used in nearly all industrial applications.
The product range includes solutions for general start/stop applications as well as for emergency stop switches. The emergency-stop rope switches were the first on the market to satisfy the requirements of EN ISO 13850 with patented solutions in a small size. The range of products offered by Pizzato Elettrica is complemented with appropriate accessories for safe and long-term use, even under difficult environmental conditions. Among the latest product innovations, the fastening and tensioning systems of the "FAST" line are worth mentioning (patented). At the focus of this development was the fast installation and an attractive design that blends harmoniously into the designs of current machine generations.



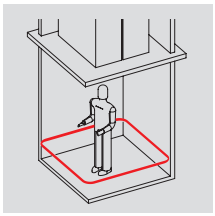
Conveyors



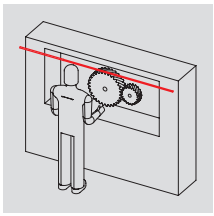
Sliding ladders



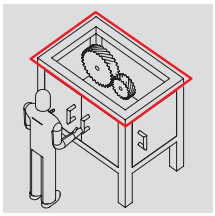
Rollers



Lift compartment



Long bay machinery



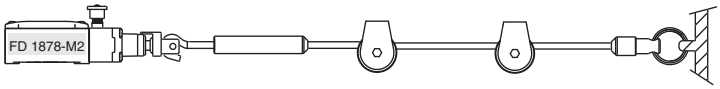
Complete perimeter protection

Rope switches are used to give different types of commands.

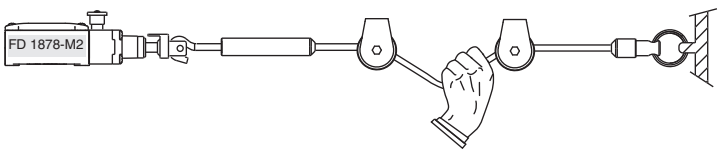
- **For stop commands,** rope switches with positive opening at medium rope tension are used; this also allows damage to the rope to be detected**.**
- **For emergency stop,** rope switches with positive opening in accordance with standard EN ISO 13850 are used. Here, the mechanical reset system opens the contact independent of the actuation speed of the rope, upon both actuation as well as breakage of the rope. With these switches, the reset system must be manually reset after each intervention.

	Requirements	Colours	How to install:
Stop commands  example: FD 1879-M2	Positive opening is required ⊖	Black is the colour suggested by standards for stop operations.	 The rope should be tensioned so as to enable detection of any breaks or stretching of the rope
Emergency stops  example: FD 1878-M2	Positive opening is required ⊖ Compliance with EN ISO 13850 is required	For emergency stops red rope is compulsory. A yellow background is recommended (see function indicator).	 The rope must be tensioned so as to enable detection of any breaks or stretching of the rope

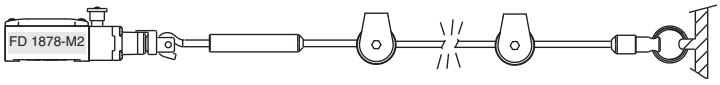
Detection of an actuated or cut rope



Rope correctly mounted and in resting position, electric contacts closed.



Rope pulled by operator, electric contacts open.



Rope cut, electric contacts open.

Accessories for rope locking and tightening, "FAST" system

Pizzato Elettrica has developed and patented special accessories for more quickly installing the ropes of safety switches and at the same time creating a more aesthetically pleasing system.

Compared to the traditional fixing method, the new accessories offer the following advantages:

- The installation is faster because only one screw is used for the fastening of every rope extremity, and the parts are designed to ease the installation. Practical laboratory tests have shown that the installation time is reduced by over half, hence the name: "FAST".
- The system is aesthetically pleasant, because thread parts (which sometimes tear operators' dresses) and the rope extremities, usually fixed by heat-shrinkable sheath or adhesive tape, have been hidden.
- The rope is fixed without kinking and, as a result, does not stretch over time; re-calibration of the rope tension is no longer necessary.

The system has been tested for correct function only if used with steel ropes of high quality like the ones Pizzato Elettrica supplies.

Rope function indicator

These function indicators help in the visualization of the rope and its emergency function highlighting its presence as recommended by the standard EN ISO 13850 chap. 4.5.1 and 4.4.5.

They are fixed on the rope through screws and thanks to their handle-shape make the operation easier. The indicators can be supplied with different texts in several languages.

LED signalling lights

It is sometimes important to have an indicator that is visible on-site to indicate which rope switch has been actuated. The high luminosity LED signalling lights from Pizzato Elettrica were developed for this purpose and can be installed directly on the threaded cable glands of the switches. These signalling lights are robust and designed in protection degrees IP67 and IP69K. The inner part of the signalling light can rotate in such a way that it can be wired without any risk of twisting the wires. They are available for power supplies of 24 Vac/dc, 120 Vac and 230 Vac and can be delivered in red, green, yellow and white.

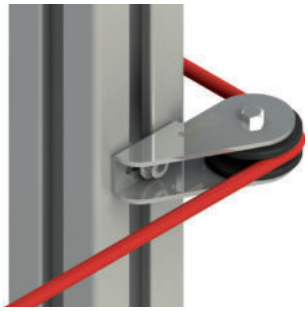
For more details see page 436.

Safety springs

For some applications, ropes are needed for covering especially long spans. With day/night changes of temperature, the ropes are lengthened or shortened in proportion to the rope length, to the change of temperature and to the coefficient of expansion of the steel.

With safety switches, the rope must be under tension within an operating tension range. As a result, an undesired actuation of the safety switch is possible with very long ropes or in the case of very high temperature differences. To reduce the effect of the changes of the temperature, it is possible to install a safety spring at the opposite extremity of the switch, so the rope elongation is equally divided between the two devices. The safety spring has been made to have an elastic coefficient equal to the spring inside the switch. In addition, the safety spring is equipped with a fixed ring that fully transfers the tensile force to the switch.

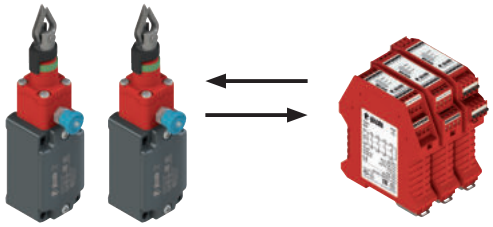
Stainless steel rope pulleys



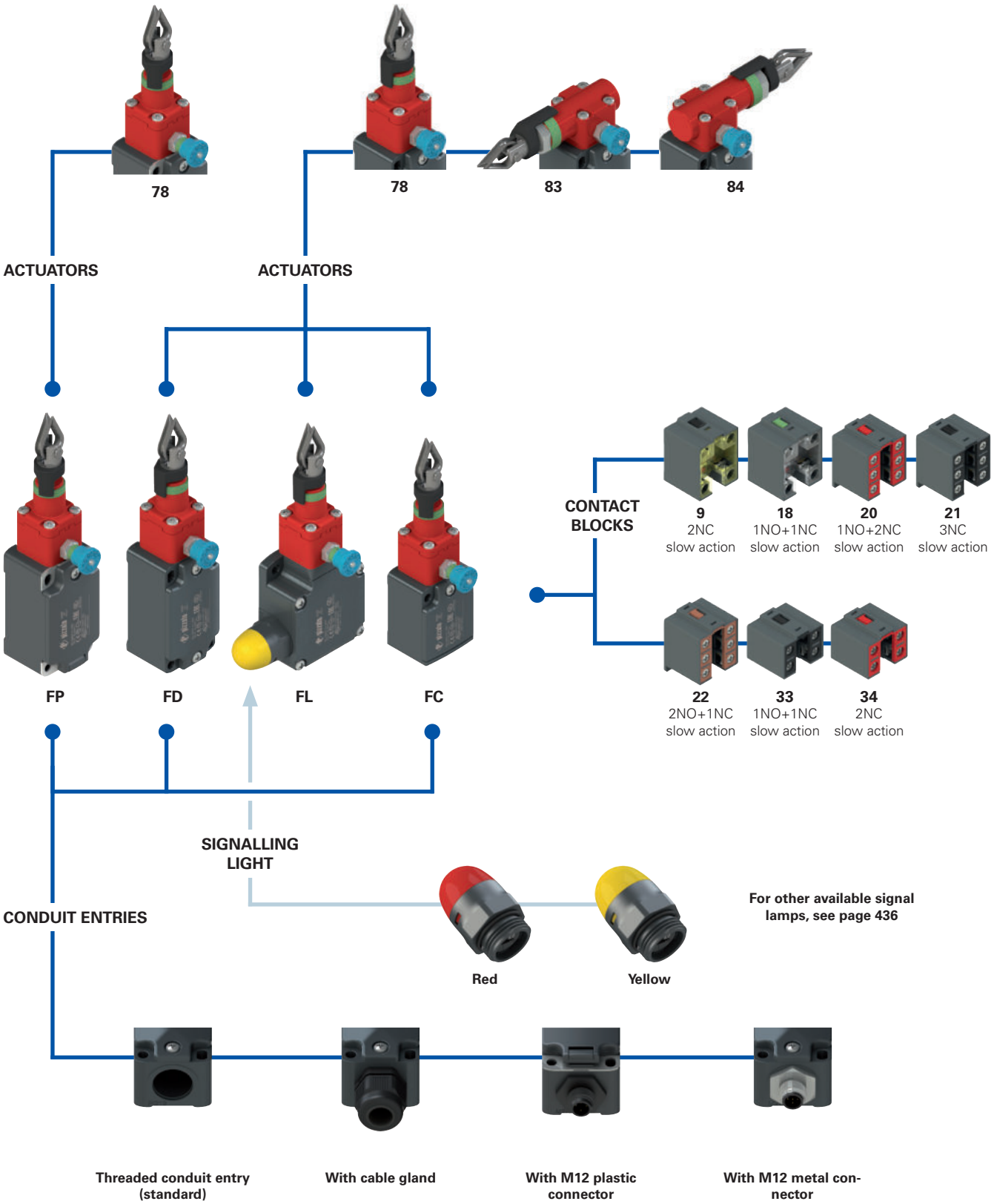
The pulleys in stainless steel are used in applications where the rope is rather long, to support its length or bend its route. The two available pulleys are robust and dimensioned so as not to deform and to securely hold the rope in the guide even if the rope is pulled energetically. The angular pulley is available in a special design with a slotted fixing hole. This simplifies installation and ensures that the rope retains the correct distance from guard edges.

Safety modules

The rope safety switches inserted in the emergency chains can be connected with the Pizzato Elettrica safety modules in order to obtain safety circuits up to PL e in accordance with EN ISO 13849. Safety modules with instantaneous and delayed contacts are available for the realization of emergency circuits type 0 (immediate stop) or type 1 (monitored stop).



Selection diagram



Code structure

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

article | options | options

FD 1878-E7GM2K50T6

Housing	
FD	metal, one conduit entry
FL	metal, three conduit entries
FP	technopolymer, one conduit entry

Contact blocks	
9	2NC, slow action
18	1NO+1NC, slow action
20	1NO+2NC, slow action
21	3NC, slow action
22	2NO+1NC, slow action
33	1NO+1NC, slow action
34	2NC, slow action

Actuating head	
78	longitudinal head
83	left transversal head (FD-FL housing only)
84	right transversal head (FD-FL housing only)

Actuating force	
	standard
E7	initial 20 N...final 40 N (only head 78)
E9	initial 13 N...final 75 N (only head 83-84)

Contact type	
	silver contacts (standard)
G	silver contacts with 1 µm gold coating
G1	Silver contacts, 2.5 µm gold coating (not for contact blocks 20, 21, 22, 33, 34)

Threaded conduit entry	
M2	M20x1.5 (standard)
	PG 13.5

Pre-installed cable glands or connectors	
	no cable gland or connector (standard)
K23	cable gland for cables Ø 6 … 12 mm
...	…
K50	M12 metal connector, 5-pole
...	…

For the complete list of possible combinations please contact our technical department.

Ambient temperature	
	-25°C … +80°C (standard)
T6	-40°C … +80°C

article | options | options

FC 3378-E7GM2K50T6

Housing	
FC	metal, one conduit entry

Contact blocks	
33	1NO+1NC, slow action
34	2NC, slow action

Actuating head	
78	longitudinal head
83	left transversal head
84	right transversal head

Actuating force	
	standard
E7	initial 20 N...final 40 N (only head 78)
E9	initial 13 N...final 75 N (only head 83-84)

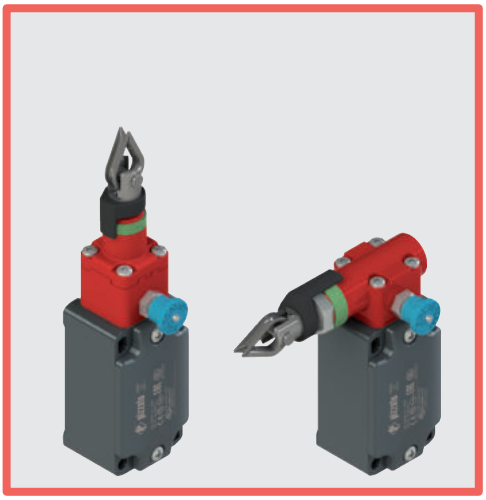
Contact type	
	silver contacts (standard)
G	silver contacts with 1 µm gold coating

Threaded conduit entry	
M2	M20x1.5 (standard)
	PG 11

Pre-installed cable glands or connectors	
	no cable gland (standard)
K23	cable gland for cables Ø 6 … 12 mm
K50	M12 metal connector, 5-pole

Ambient temperature	
	-25°C … +80°C (standard)
T6	-40°C … +80°C

Safety **rope switches with reset** for emergency stop



Main features

- Metal or plastic housing, from one to three conduit entries
- Protection degree IP67
- In compliance with EN ISO 13850
- 7 contact blocks available
- Versions with vertical or horizontal actuation
- Versions with assembled M12 connector
- Versions with gold-plated silver contacts

Quality marks:

IMQ approval:	EG605
UL approval:	E131787
CCC approval:	2021000305000099
EAC approval:	RU C-IT.УТ03.B.00035/19

Technical data

Housing

FP series housing made of glass fibre reinforced technopolymer, self-extinguishing, shock-proof and with double insulation: ⧈
FD, FL and FC series: metal housing, baked powder coating.

FD, FP, FC series: one threaded conduit entry:	M20x1.5 (standard)
FL series: three threaded conduit entries:	M20x1.5 (standard)
Protection degree:	IP67 acc. to EN 60529 with cable gland of equal or higher protection degree

General data

SIL (SIL CL) up to:	SIL 3 acc. to EN 62061
Performance Level (PL) up to:	PL e acc. to EN ISO 13849-1
Safety parameters:	
B_{10D}:	200,000 for NC contacts
Mission time:	20 years
Ambient temperature:	-25°C … +80°C (standard) -40°C … +80°C (T6 option)
Max. actuation frequency:	1 cycle / 6 s
Mechanical endurance:	100,000 operating cycles
Max. actuation speed:	0.5 m/s
Min. actuation speed:	1 mm/s
Tightening torques for installation:	see page 441
Wire cross-sections and wire stripping lengths:	see page 461

In compliance with standards:
IEC 60947-5-1, IEC 60947-5-5, IEC 60947-1, IEC 60204-1, EN ISO 14119, EN ISO 12100, IEC 60529, EN ISO 13850, EN IEC 63000, UL 508, CSA C22.2 No. 14.
Approvals:
EN 60947-5-1, UL 508, CSA C22.2 No. 14, GB/T14048.5

Compliance with the requirements of:
Machinery Directive 2006/42/EC, EMC Directive 2014/30/EU, RoHS Directive 2011/65/EU.
Positive contact opening in conformity with standards:
IEC 60947-5-1, EN 60947-5-1.

⚠ **If not expressly indicated in this chapter, for correct installation and utilization of all articles see the instructions given on pages 443 to 454.**

Electrical data			Utilization category
without connector	Thermal current (I_{th}):	10 A	Alternating current: AC15 (50÷60 Hz) U_e (V) 250 400 500 I_e (A) 6 4 1 Direct current: DC13 U_e (V) 24 125 250 I_e (A) 3 0.55 0.3
	Rated insulation voltage (U_i):	500 Vac 600 Vdc 400 Vac 500 Vdc (contact blocks 20, 21, 22, 33, 34)	
	Rated impulse withstand voltage (U_{imp}):	6 kV 4 kV (contact blocks 20, 21, 22, 33, 34)	
	Conditional short circuit current:	1000 A acc. to EN 60947-5-1	
	Protection against short circuits:	type aM fuse 10 A 500 V	
	Pollution degree:	3	
with M12 connector, 4 and 5-pole	Thermal current (I_{th}):	4 A	Alternating current: AC15 (50÷60 Hz) U_e (V) 24 120 250 I_e (A) 4 4 4 Direct current: DC13 U_e (V) 24 125 250 I_e (A) 3 0.55 0.3
	Rated insulation voltage (U_i):	250 Vac 300 Vdc	
	Protection against short circuits:	type gG fuse 4 A 500 V	
	Pollution degree:	3	
with M12 connector, 8-pole	Thermal current (I_{th}):	2 A	Alternating current: AC15 (50÷60 Hz) U_e (V) 24 I_e (A) 2 Direct current: DC13 U_e (V) 24 I_e (A) 2
	Rated insulation voltage (U_i):	30 Vac 36 Vdc	
	Protection against short circuits:	type gG fuse 2 A 500 V	
	Pollution degree:	3	