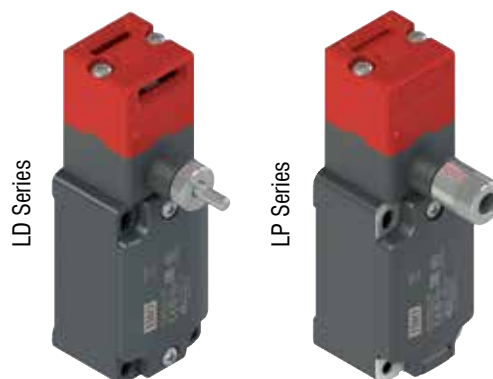


- Metal housing or technopolymer housing, one conduit entry
- Protection degree IP67
- 8 contact blocks available
- 6 stainless steel actuators available
- Assembled M12 connector version available
- Gold-plated silver contacts option
- Strong actuator locking (1000 N)
- Manual actuator unlocking
- Versions with different release delay times



Approval UL: E146236

Note: The feasibility of a code number does not mean the effective availability of a product

p1

Specifications


For safety applications up to:	SIL 3 acc. to EN 62061
Interlock with mechanical lock, coded:	PL e acc. to EN ISO 13849-1
Coding level:	type 2 acc. to EN ISO 14119
Safety parameters:	Low acc. to EN ISO 14119
B_{10d} :	1,000,000 for NC contacts
Service life:	20 years
Ambient temperature:	-25°C ... +80°C
Version for operation in ambient temperature from -40°C to +80°C on request	
Max. actuation frequency:	360 operating cycles ¹ /hour
Mechanical endurance:	500,000 operating cycles ¹
Max. actuation speed:	0.5 m/s
Min. actuation speed:	1 mm/s
Maximum force before breakage F_{1max} :	1000 N acc. to EN ISO 14119
Max. holding force F_{th} :	770 N according to EN ISO 14119
Max. backlash of the actuator:	4.5 mm

(1) One operation cycle means two movements, one to close and one to open contacts, as defined in EN 60947-5-1.

In conformity with standards

IEC 60947-5-1, EN 60947-5-1, EN 60947-1, IEC 60204-1, EN 60204-1, EN ISO 14119, EN ISO 12100, IEC 60529, EN 60529, BG-GS-ET-15, UL 508, CSA 22.2 No.14.

Housing

LP series housing made of glass fiber reinforced technopolymer, self-extinguishing, shock-proof and with double insulation: 
LD series: metal housing, baked powder coating.
One threaded conduit entry:
Protection degree:

M20x1.5 (standard)
IP67 acc. to EN 60529 with cable gland having equal or higher protection degree

In conformity with requirements requested by

Low Voltage Directive 2006/95/EC, Machinery Directive 2006/42/EC and EMC Directive 2004/108/EC.

Positive contact opening in conformity with standards

IEC 60947-5-1, EN 60947-5-1.

Cross section of the conductors (flexible copper wire)

Contact blocks C20, C21, C22, C33, C34:	min. 1 x 0.34 mm ²	(1 x AWG 22)
	max. 2 x 1.5 mm ²	(2 x AWG 16)
Contact blocks C6, C7, C9:	min. 1 x 0.5 mm ²	(1 x AWG 20)
	max. 2 x 2.5 mm ²	(2 x AWG 14)

Electrical data

Utilization category

without connector	Thermal current (I _{th}):	10 A	Alternating current: AC15 (50 ÷ 60 Hz)			
	Rated insulation voltage (U _i):	500 Vac 600 Vdc	U _e (V)	250	400	500
	Rated impulse withstand voltage (U _{imp}):	400 Vac 500 Vdc (contact blocks 20, 21, 22, 33, 34)	I _e (A)	6	4	1
		6 kV	Direct current: DC13			
	4 kV (contact blocks 20, 21, 22, 33, 34)	U _e (V)	24	125	250	
Conditional short circuit current:	1000 A acc. to EN 60947-5-1	I _e (A)	6	1.1	0.4	
Protection against short circuits:	type aM fuse 10 A 500 V					
Pollution degree:	3					
with M12 connector 4 and 5 poles	Thermal current (I _{th}):	4 A	Alternating current: AC15 (50 ÷ 60 Hz)			
	Rated insulation voltage (U _i):	250 Vac 300 Vdc	U _e (V)	24	120	250
	Protection against short circuits:	type gG fuse 4 A 500 V	I _e (A)	4	4	4
	Pollution degree:	3	Direct current: DC13			
			U _e (V)	24	125	250
		I _e (A)	4	1.1	0.4	
with M12 connector 8 poles	Thermal current (I _{th}):	2 A	Alternating current: AC15 (50 ÷ 60 Hz)			
	Rated insulation voltage (U _i):	30 Vac 36 Vdc	U _e (V)	24		
	Protection against short circuits:	type gG fuse 2 A 500 V	I _e (A)	2		
	Pollution degree:	3	Direct current: DC13			
			U _e (V)	24		
		I _e (A)	2			

Description

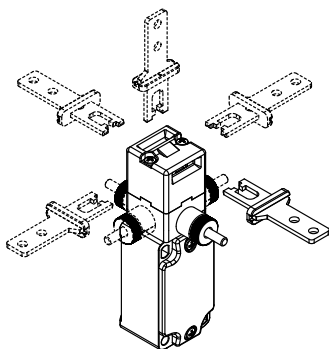


These switches are used on machines where the hazardous conditions remain for a while, even after the machine has been switched off, for example because of mechanical inertia of the pulleys, saw disks, mills. This switch has its ideal application where the guard is not open frequently and the installation of a switch with solenoid would be too expensive.

These switches are considered interlocks with locking in accordance with ISO 14119, and the product is marked on the side with the symbol shown.



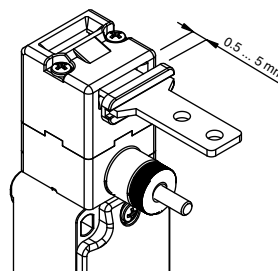
Orientable heads and knobs



The head can be quickly turned on each of the four sides of the switch by unfastening the two fixing screws.

The mechanical delay device can be rotated in 90° steps as well. This enables the switch to assume 32 different configurations.

Actuator regulation zone



The head of this switch is equipped with an actuator with a wide range of travel. In this way the guard can oscillate along the direction of insertion (4.5mm) without causing unwanted machine shutdowns. This extensive travel is available in all actuators, in order to ensure maximum device reliability.

Protection degree IP67

IP67

These devices are designed to be used in the toughest environmental conditions and they pass the IP67 immersion test acc. to IEC 60529.

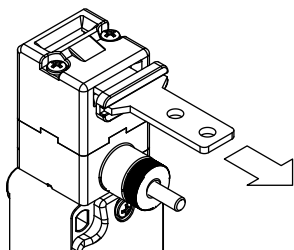
They can therefore be used in all environments where the maximum protection of the housing is required.

Contact blocks



Contact blocks with captive screws, finger protection, twin bridge contacts and double interruption for a higher contact reliability. Available in multiple variants with shifted activation strokes, which can be simultaneous or overlapping, they are suited to a variety of 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.

Extended temperature range

-40°C

This range of switches is also available in a special version with an ambient operating temperature range of -40°C to +80°C.

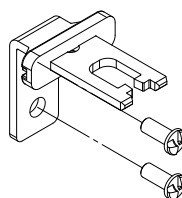
They can be used for applications in cold stores, sterilisers and other devices with low temperature environments. Special materials that have been used to realize these versions, maintain unchanged their features also in these conditions, widening the installation possibilities.

Laser engraving



All devices are indelibly marked with a dedicated laser system that allows the marking to be also suitable for extreme environments. This system that does not use labels, prevents the loss of plate data and the marking is more resistant over time.

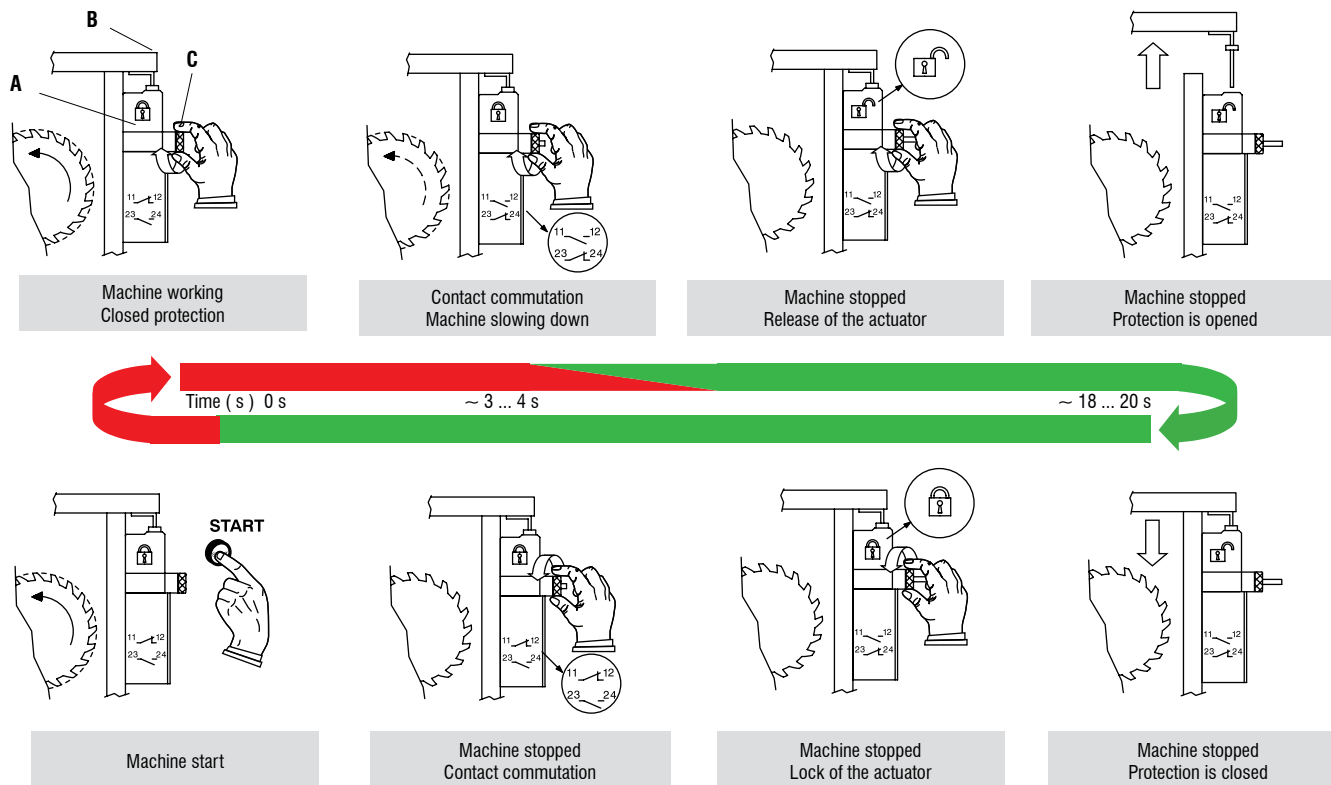
Safety screws for actuators



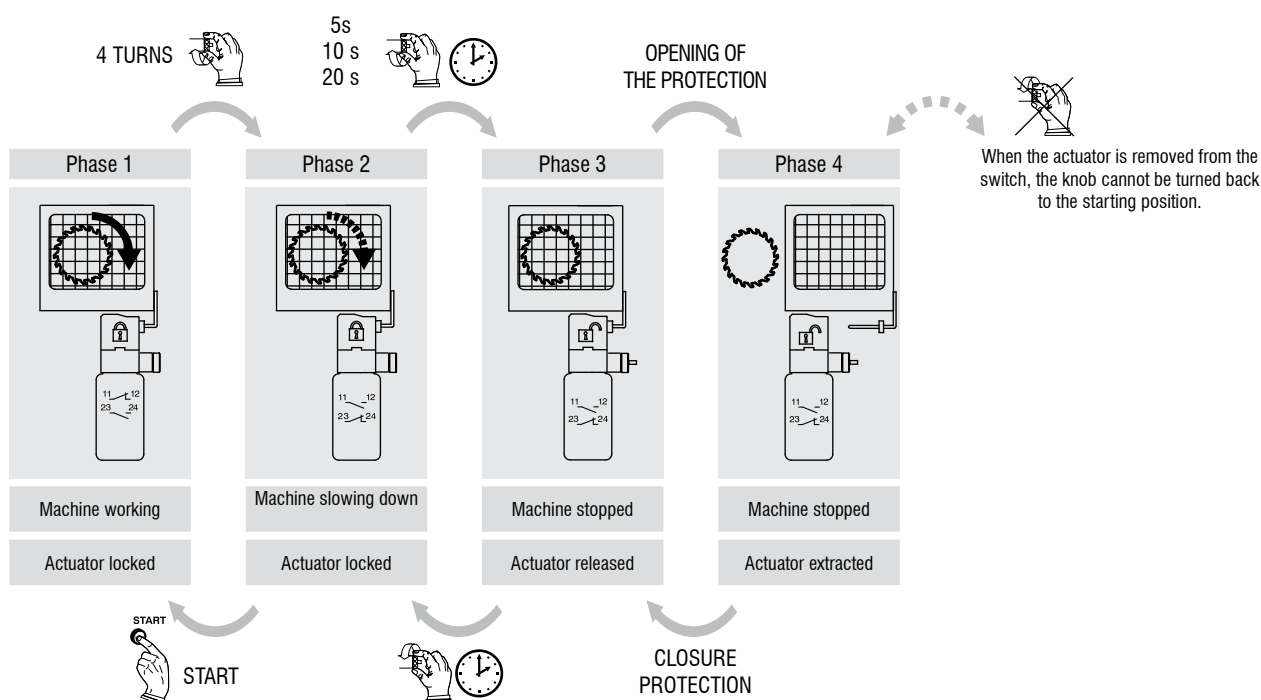
As required by EN ISO 14119, the actuator must be fixed immovably to the door frame. Pan head safety screws with one-way fitting are available for this purpose. With this screw type, the actuators cannot be removed or tampered with using common tools.

Operation (LPC6R2-20F1)

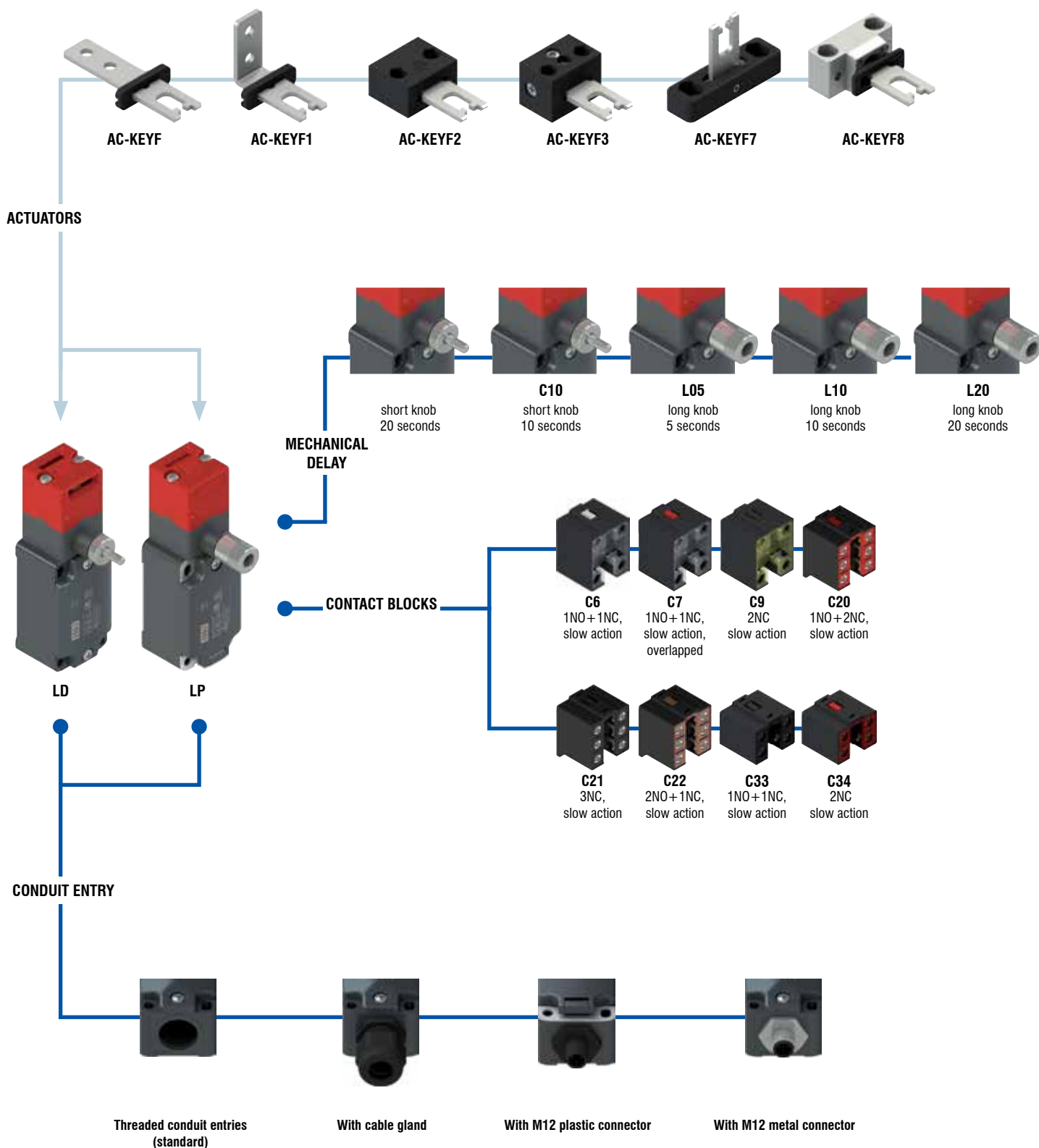
The switch is fixed to the machine body (A), while the stainless steel actuator is fastened to the guard (B). Once installed, the switch will firmly lock the actuator. In order to remove the actuator, the knob (C) has to be rotated. On the first turns the electrical contacts will positively open, then, after about 20 seconds (or 10 seconds depending on the knob version), the actuator will be released. In order to close the guard, the knob must be rotated in the opposite direction. This switch doesn't need power supply or timer and can be easily installed on old machines without important changes in their electrical circuit. The knob (C) may be supplied in a short (standard) or in a long version.



Working cycle steps (LDC6R2-20F1)



Selection diagram



Dimensional drawings

All measures in the drawings are in mm

Contact type:

L = slow action
LO = slow action overlapped

Contact blocks

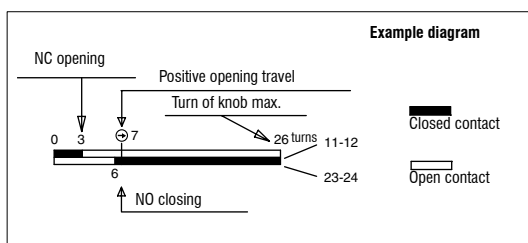
	Technopolymer housing Without actuator	Metal housing Without actuator	Metal housing Without actuator
C6 L	LPC6R2 1NO+1NC 	LDC6R2 1NO+1NC 	LDC6R2 1NO+1NC
C7 LO	LPC7R2 1NO+1NC 	LDC7R2 1NO+1NC 	LDC7R2 1NO+1NC
C9 L	LPC9R2 2NC 	LDC9R2 2NC 	LDC9R2 2NC
C20 L	LPC20R2 1NO+2NC 	LDC20R2 1NO+2NC 	LDC20R2 1NO+2NC
C21 L	LPC21R2 3NC 	LDC21R2 3NC 	LDC21R2 3NC
C22 L	LPC22R2 2NO+1NC 	LDC22R2 2NO+1NC 	LDC22R2 2NO+1NC
C33 L	LPC33R2 1NO+1NC 	LDC33R2 1NO+1NC 	LDC33R2 1NO+1NC
C34 L	LPC34R2 2NC 	LDC34R2 2NC 	LDC34R2 2NC
Min. force	10 N (18 N)	10 N (18 N)	10 N (18 N)

All measures in the diagrams are in turns of the knob

Legend: With positive opening according to EN 60947-5-1, interlock with lock monitoring in accordance with EN ISO 14119

How to read travel diagrams

All measures in the diagrams are in turns of the knob



IMPORTANT:

NC contact has to be considered with inserted and blocked actuator and with the knob turned anti-clockwise up to the end of the travel. In **safety applications**, actuate the switch **at least up to the positive opening travel** shown in the travel diagrams with symbol . Operate the switch **at least with the positive opening force**, indicated between brackets below each article, aside the minimum force value.

Utilization limits

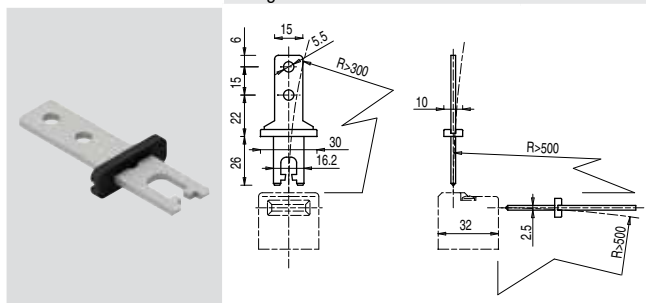
Do not use where dust and dirt may penetrate in any way into the head and deposit there. In particular where metal dust, concrete or chemicals are spread. Adhere to the EN ISO 14119 requirements regarding low level of coding for interlocks. Do not use in environments with the presence of explosive or flammable gas. In these cases, use ATEX products.

Attention! These switches alone are not suitable for applications where operators may physically enter the dangerous area, because an eventual closing of the door behind them could restart the machine operation. In this case the entry locking device AC-KB1 must be used.

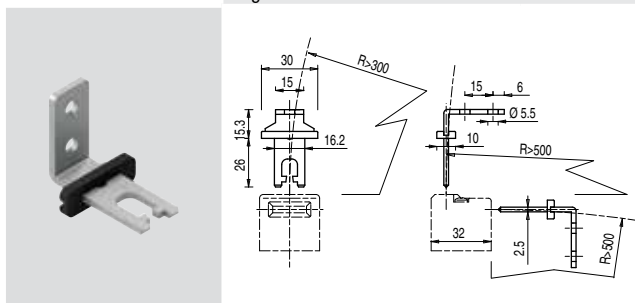
Stainless steel actuators

IMPORTANT: These actuators can be used with items of the LD, LP, LL, LC and LS series only (e.g. LDC18MR).
Low level of coding acc. to EN ISO 14119.

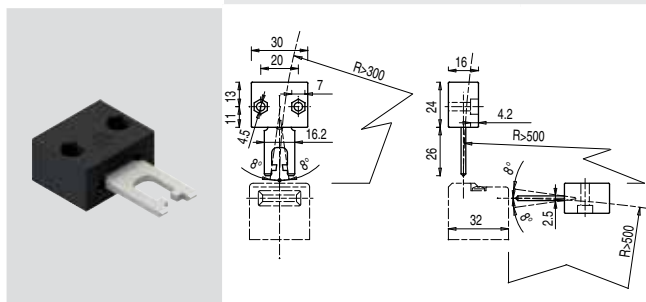
Article	Description
AC-KEYF	Straight actuator



Article	Description
AC-KEYF1	Angled actuator

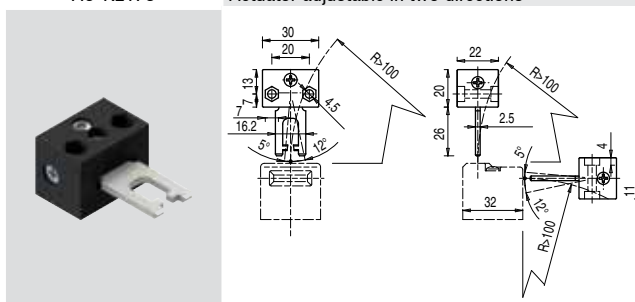


Article	Description
AC-KEYF2	Jointed actuator



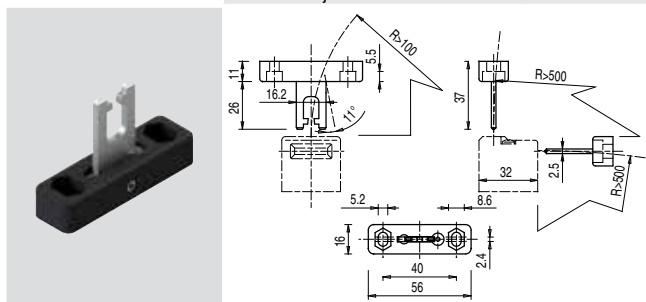
The actuator can flex in four directions for applications where the door alignment is not precise.

Article	Description
AC-KEYF3	Actuator adjustable in two directions



Actuator adjustable in two directions for doors with reduced dimensions.

Article	Description
AC-KEYF7	Actuator adjustable in one direction

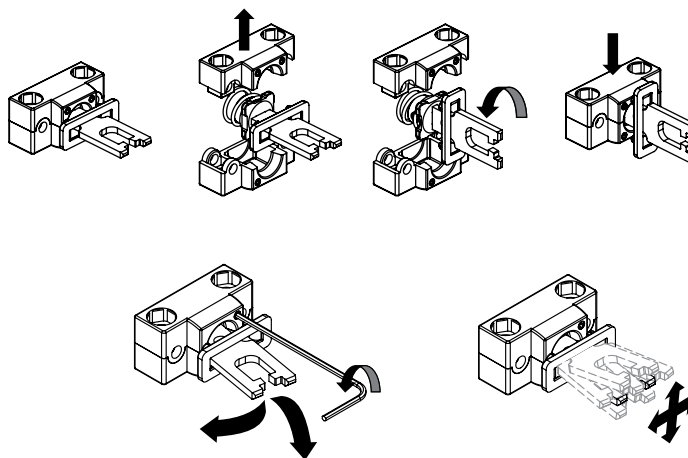
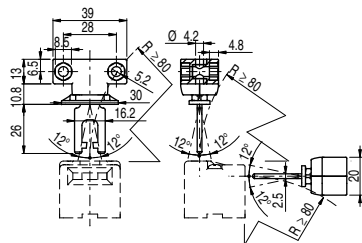
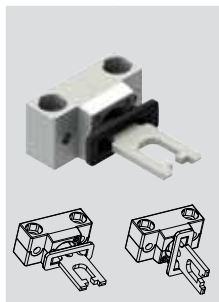


Actuator adjustable in one direction for doors with reduced dimensions.

Universal actuator AC-KEYF8

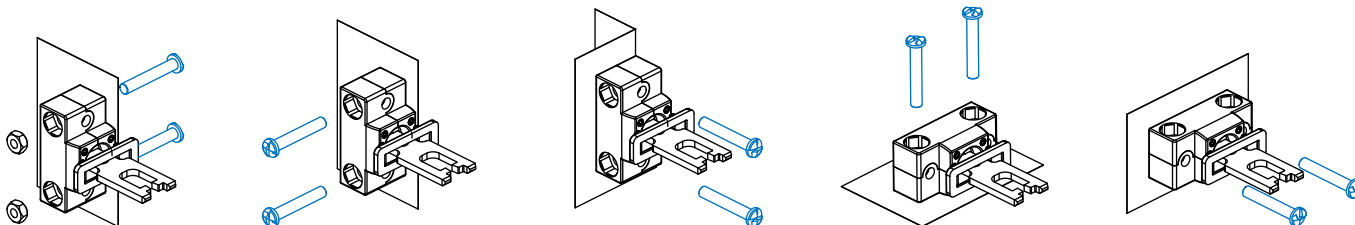
IMPORTANT: These actuators can be used with items of the LD, LP, LL, LC and LS series only (e.g. LDC18MR).
Low level of coding acc. to EN ISO 14119.

Article	Description
AC-KEYF8	Universal actuator



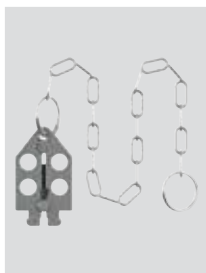
Joined and two directions adjustable actuator for doors with reduced dimensions.

The actuator has two couples of fixing holes and it is possible to rotate by 90° the actuator-working plan.



Accessories

Article	Description
AC-KB1	Actuator entry locking device



Padlockable device to lock the actuator entry in order to prevent from the accidental closing of the door behind operators while they are inside the machine.
Hole diameter for padlocks 9 mm.

