
Limit switches

XC Special range

Catalogue



Simply easy!™

Limit switches

XC Special range

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Limit switches
XC Standard range

Design/Applications	Miniature format	Miniature format for mobile equipments	Compact format, CENELEC EN 50047
	Metal, pre-cabled	Metal, pre-cabled	Plastic, 1 cable entry
			
Enclosure	Metal	Metal	Plastic, double insulated
Modularity	Head, body and connection modularity	Head, body and connection modularity	Head, body and cable entry modularity
Conformity/Certifications	CE, UL, CSA, CCC, EAC	CE, UL, CSA	CENELEC EN 50047 UL, CSA, CCC, EAC
Body dimensions (w x h x d) in mm	30 x 50 x 16	30 x 50 x 20.5	31 x 65 x 30
Head	Linear movement (plunger) Rotary movement (lever) Rotary movement, multidirectional Same heads for ranges XCMD, XCMV, XCKD, XCKP and XCKT		
Contact blocks			
	2 electrically separate contacts	2 electrically separate contacts	2 electrically separate contacts
2 same polarity contacts	2 electrically separate contacts	2 electrically separate contacts	2 electrically separate contacts
	2 same polarity contacts	2 same polarity contacts	2 same polarity contacts
3 electrically separate contacts	3 electrically separate contacts	3 electrically separate contacts	3 electrically separate contacts
	3 electrically separate contacts	3 electrically separate contacts	3 electrically separate contacts
4 electrically separate contacts	4 electrically separate contacts	4 electrically separate contacts	4 electrically separate contacts
	4 electrically separate contacts	4 electrically separate contacts	4 electrically separate contacts
4 contacts (2 x 2 same polarity contacts)	4 contacts (2 x 2 same polarity contacts)	4 contacts (2 x 2 same polarity contacts)	4 contacts (2 x 2 same polarity contacts)
Degree of protection IP/IK	IP 66, IP 67, IP 68, IK 06	IP 66, IP 67, IP 69, IK 04, IK 06 depending on model	IP 66, IP 67, IK 04,
Operating temperature	- 25 °C... + 70 °C		
Raccordement			
	Screw terminals	Screw terminals	Screw terminals
	Pre-cabled	Pre-cabled	Pre-cabled
Connector			
	Connector	Connector	Connector
Type reference	XCMD	XCMV	XCKP
Pages	Please refer to our catalogue " Limit switches XC Standard ".		

Compact format, CENELEC EN 50047		Compact format, with reset		
Plastic, 2 cable entries	Metal, 1 cable entry	Plastic, 1 cable entry	Plastic, 2 cable entries	Metal, 1 cable entry
				
Plastic, double insulated	Metal	Plastic, double insulated		Metal
Head and body modularity	Head, body and connection modularity	–		
CENELEC EN 50047, UL, CSA, CCC, EAC		CE, UL, CSA, EAC		
58 x 51 x 30	31 x 65 x 30	31 x 65 x 30	58 x 51 x 30	31 x 65 x 30
Linear movement (plunger) Rotary movement (lever) Rotary movement, multidirectional Same heads for ranges XCMD, XCMV, XCKD, XCKP and XCKT		Linear movement (plunger) Rotary movement (lever)		
•	•	•	•	•
•	•	•	•	•
–	–	–	–	–
–	–	–	–	–
•	•	–	–	–
•	•	–	–	–
–	–	–	–	–
–	–	–	–	–
–	–	–	–	–
IP 66, IP 67, IK 04	IP 66, IP 67, IK 06	IP 66, IP 67, IK 04 and IK06 (for XCDR)		
- 25 °C... + 70 °C				
2 entries for ISO M16 or Pg 11 cable gland or 1/2" NPT (using adaptor)	1 entry for ISO M16 or M20, Pg 11, Pg 13.5 cable gland or 1/2" NPT, PF 1/2	1 entry for ISO M20 or Pg 13.5 cable gland or 1/2" NPT	2 entries for ISO M16 or Pg 11 cable gland or 1/2" NPT (using adaptor)	1 entry for ISO M20 or Pg 13.5 cable gland or 1/2" NPT
–				
–	M12	–		
XCKT	XCKD	XCPR	XCTR	XCDR
Please refer to our catalogue " Limit switches XC Standard "				

Limit switches

XC Standard range

Design	“Classic” format		Industrial EN 50041 format	
	Metal, 3 cable entries	Metal, 1 cable entry	Plastic, 1 cable entry	Metal, 1 cable entry or connector
				
Enclosure	Metal		Plastic, double insulated	Metal
Modularity	Head, body and operator modularity			
Conformity/Certifications	CE, UL, CSA, CCC (XCKM) , EAC		CENELEC EN 50041 UL, CSA, CCC, EAC	
Body dimensions (w x h x d) in mm	63 x 64 x 30	52 x 72 x 30	40 x 72.5 x 36	40 x 77 x 44 42.5 x 84 x 36
Head	Linear movement (plunger) Rotary movement (lever) Rotary movement, multidirectional			
Contact blocks				
2 electrically separate contacts	snap action with positive opening operation		•	•
	slow break with positive opening operation		•	•
2 same polarity contacts	snap action		–	•
	slow break		–	–
3 electrically separate contacts	snap action with positive opening operation		•	•
	slow break with positive opening operation		•	•
4 electrically separate contacts	snap action with positive opening operation		–	–
	slow break with positive opening operation		–	–
4 contacts (2 x 2 same polarity contacts)	snap action		•	•
Degree of protection IP/IK	IP 66, IK 06		IP 65, IK 03	IP 66, IK 07
Operating temperature	- 25°C... + 70°C		- 25°C... + 70°C - 40°C or + 120°C depending on model	
Connection	Screw terminals (entry for cable gland)			
Connector	3 entries for ISO M20, Pg 11 cable gland or 1/2" NPT		1 entry for ISO M20, Pg 13.5 cable gland or 1/2" NPT	1 entry for ISO M20, Pg 13.5 cable gland or 1/2" NPT
	–		Integral M12 or 7/8"-16UN	
Type reference	XCKM	XCKL	XCKS	XCKJ
Pages	Please refer to our catalogue “ Limit switches XC Standard ”			

Miniature format	Compact format EN 50047		Compact format, with reset knob	
Plastic, pre-cabled	Plastic, 1 cable entry	Plastic, 2 cable entries	Plastic, 1 cable entry	Plastic, 2 cable entries
				
Plastic, double insulated				
–				
CE, UL, CSA, CCC, EAC	CENELEC EN 50047, UL, CSA, CCC, EAC		CE, UL, CSA, CCC, EAC	
30 x 50 x 16	31 x 65 x 30	59 x 51 x 30	31 x 65 x 30	59 x 51 x 30
Linear movement (plunger) Rotary movement (lever) Rotary movement, multidirectional				
•	•	•	•	•
–	•	•	•	•
–	–	–	–	–
–	–	•	–	•
–	•	–	•	–
–	•	–	•	–
–	–	–		–
–	–	–		–
–	–	–		–
IP 65, IK 04				
- 25 °C... + 70 °C				
–	1 entry for ISO M20 or Pg 11 cable gland Other cable entries: ISO M16 x 1.5 or PF 1/2 (G1/2)	2 entries for ISO M16 or Pg 11 cable gland or 1/2" NPT (using adaptor)	1 entry for ISO M20 or Pg 11 cable gland Other cable entries: ISO M16 x 1.5 or PF 1/2 (G1/2)	2 entries for ISO M16 or Pg 11 cable gland or 1/2" NPT (using adaptor)
Ø 7.5 PvR, CEI, halogen free, depending on model	–			
XCMN	XCKN	XCNT	XCNR	XCNR
Please refer to our catalogue “ Limit switches XC Standard ”				

Limit switches

XC Special range

Design/Applications	Very severe applications	Very severe material handling applications	For hoisting and material handling applications (XCR); for conveyor belt shift monitoring (XCRT)
	Metal, 1 cable entry	Metal, 3 cable entries	Metal or polyester, 1 cable entry



Enclosure	Metal	Metal	Metal or polyester
Modularity	Head and body modularity	–	–
Conformity/Certifications	CE, UL, CSA, EAC	CE, CSA, EAC	CE, CSA (XCR) CCC (XCR), EAC
Body dimensions (w x h x d) in mm	40 x 81 x 41	77 x 83 x 44	85 x 95 x 75
Head	Linear movement (plunger) or rotary movement (lever)	Linear movement (plunger)	Rotary movement (lever)
Contact blocks			
2 electrically separate contacts			
snap action with positive opening operation	–	–	–
slow break with positive opening operation	–	●	–
2 same polarity contacts			
snap action	●	–	–
slow break	–	●	–
3 electrically separate contacts			
snap action with positive opening operation	–	–	–
slow break with positive opening operation	–	–	–
4 electrically separate contacts			
snap action with positive opening operation	–	–	●
slow break with positive opening operation	–	–	●
4 contacts (2 x 2 same polarity contacts), snap action	●	–	●
Degree of protection IP/IK	IP 65, IK 08	IP 65	IP 54, IK 07 or IP 65, depending on model
Operating temperature	- 25°C... + 70°C; - 40° C or + 120° C (XC2J depending on model)		
Connection			
Screw terminals (entry for cable gland)	1 entry with integral cable gland	3 tapped entries for Pg 13.5 cable gland	1 tapped entry for Pg 13.5 cable gland
Pre-cabled	–		
Connector	–		
Type reference	XC2J	XC1AC	XCR XCRT
Pages	16 and 28	34	40

For hoisting and material handling applications	Subminiature format and microswitch. Applications requiring high precision and a low operating force
Metal or plastic, 3 cable entries	Plastic, pre-cabled



Metal or plastic	Polyester
–	–
CE, UL, CSA, CCC, EAC	CE, UL
118 x 77 x 59 (metal) 118 x 77 x 67 (plastic)	Depending on type
Rotary movement (lever)	–
–	–
–	–
–	●
–	–
–	–
–	–
–	–
●	–
–	–
IP 66, IK 07 (metal) IP 65, IK 04 (plastic)	IP 67 or IP 40 depending on model IP 00 (tags)
3 tapped entries for Pg 13.5 cable gland or tapped M20 x 1.5	Tag connections or pre-wired, depending on model
XCKMR XCKVR	XEP
41	54, 56 and 58

Safety limit switches

XCS range

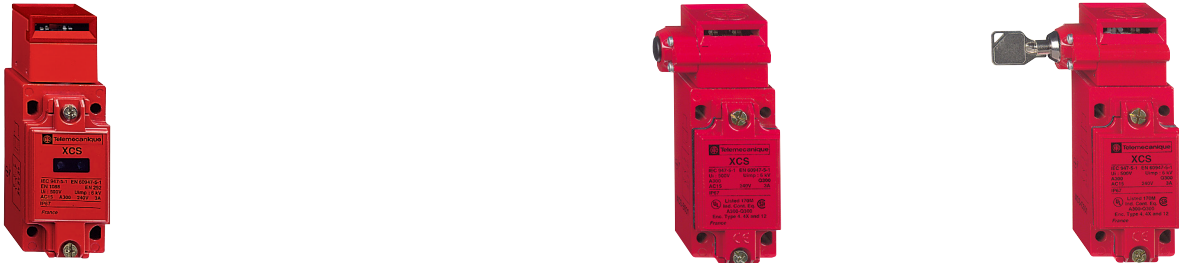
Switch type			XCS safety limit switches			
Applications			Protection of operators by stopping the machine when the gate is opened. All machines with quick rundown time.			
Design			Miniature format		Compact format	
			Pre-cabled		With 1 cable entry	
						
Case			Metal		Plastic	Metal
Features			–			
Conformity to standards		Products	EN/IEC 60947-5-1, EN/ISO 13849-1, EN/IEC 62061, UL 508, CSA C22-2 no. 14			
		Machine assemblies	EN/IEC 60204-1, EN/ISO 14119			
Product certifications			UL, CSA, CCC, EAC			
Dimensions (w x h x d) in mm		Switch	30 x 50 x 16		31 x 34 x 89	
		Fixings	20		20/22	
		Centers				
Head			Plunger or rotary head Head adjustable in 15° steps through 360° Linear (plunger) or rotary (lever) actuation.			
Contact blocks			NC contacts with positive opening operation			
			2 NC + 1 NO break before make, slow break 2 NC + 1 NO and 2 NC + 2 NO snap action		XCSD: 2 NC + 1 NO break before make, slow break or snap action XCSP: 2 NC + 1 NO snap action	
Degree of protection			IP 66, IP 67 and IP 68		IP 66 and IP 67	
Ambient air temperature		For operation	-25...+70 °C			
Connection		Screw terminals (cable entry via cable gland)	–		Tapped entry for Pg 13.5, ISO M20 cable gland or tapped 1/2" NPT	
		Pre-cabled	L = 1, 2 or 5 m		–	
Type reference			XCSM		XCSP	XCSD
Pages			Please refer to our catalogue “ Safety switches XCS range ”.			

XCS lever or spindle-operated safety switches		
Protection of operators by stopping the machine when the operating lever (attached to hinged machine guard) is displaced by 5°. All light industrial machines fitted with hinged or rotary protective covers with small opening radius.		Protection of operators by stopping the machine when the guard hinge rotates through 5°. All light industrial machines fitted with hinged access doors.
Compact format		
With 1 or 2 cable entries		
		
Plastic, double insulated		
2 types of lever: straight or elbowed (flush with rear of switch) 3 lever positions: to left, center or to right		2 types of spindle: length 30 mm or 80 mm
EN/IEC 60947-5-1, EN/ISO 13849-1, EN/IEC 62061, UL 508, CSA C22-2 no.14, JIS C4520		
EN/IEC 60204-1, EN/ISO 14119		
UL, CSA, CCC, EAC		
30 x 87.5 x 30	30 x 96 x 30	52 x 117 x 30
20/22	20/22	20/22 or 40.3
Turret head: 4 positions Rotary actuation (lever)	Turret head: 4 positions Rotary actuation (spindle)	
Slow break safety contacts with positive opening operation NC contacts open when lever or spindle displaced by more than 5°		
1 NC + 1 NO break before make 2 NC 1 NC + 2 NO break before make 2 NC + 1 NO break before make	1 NC + 1 NO break before make 2 NC 1 NC + 2 NO break before make 2 NC + 1 NO break before make	1 NC + 2 NO break before make 2 NC + 1 NO break before make 3 NC
IP 67		
-25...+70 °C		
1 tapped entry for Pg 11, ISO M16 cable gland or tapped 1/2" NPT	1 tapped entry for Pg 11, ISO M16 cable gland or tapped 1/2" NPT	2 tapped entries for Pg 11, ISO M16 cable gland or tapped 1/2" NPT
–	–	–
XCSPL	XCSPR	XCSTR
Please refer to our catalogue “ Safety switches XCS range ”.		

Safety limit switches
XCS range

Switch type		XCS key-operated safety switches			
Applications		Protection of operators by stopping the machine when the actuating key (attached to machine guard) is withdrawn from the head of the switch. All light industrial machines with quick rundown time (1).			
Design		Miniature format	Compact format		
		Pre-cabled	With 1 or 2 cable entries		
					
Case		Plastic			
Features		Without locking of actuating key. Optional accessory: guard retaining device.			
Conformity to standards		EN/IEC 60947-5-1, EN/ISO 13849-1, EN/IEC 62061, UL 508, CSA C22-2 no. 14 EN/IEC 60204-1, EN/ISO 14119			
Product certifications		cULus UL, CSA, CCC, EAC			
Dimensions (w x h x d) in mm		Switch Fixings	30 x 87 x 15 Centers: 20/22	30 x 93.5 x 30 Centers: 20/22	52 x 114.5 x 30 Centers: 20/22 or 40.3
Head		Fixed head: 2 positions for insertion of actuating key. Turret head: 8 positions for insertion of actuating key.			
Contact blocks		Safety contacts actuated by the actuating key. Slow break and NC positive opening operation.			
		1 NC + 1 NO break before make 2 NC 2 NC + 1 NO break before make 3 NC	1 NC + 1 NO slow break contacts, break before make or make before break, or snap action 2 NC slow break or snap action 2 NC + 1 NO slow break contacts, break before make, or snap action 1 NC + 2 NO slow break contacts, break before make, or snap action	1 NC + 2 NO break before make 2 NC + 1 NO break before make 3 NC	
Degree of protection		IP 67			
Ambient air temperature		For operation	-25...+70 °C		
Connection		Screw terminals (cable entry via cable gland) Pre-cabled	Tapped entry for Pg 11, ISO M16 cable gland or tapped 1/2" NPT		
Type reference		XCSMP	XCSPA	XCSTA	
Pages		Please refer to our catalogue “ Safety switches XCS range ”.			

(1) Machine stopping time less than time taken for operator to access hazardous zone.

XCS key-operated safety switches		
All heavy industrial machines with quick rundown time (1)		
Industrial format with or without locking		
With 1 cable entry, without locking		With 1 cable entry and manual locking/unlocking
		
Metal		
Without locking of actuating key.		Manual locking and unlocking of actuating key by pushbutton (can be mounted on left or right-hand side of switch head).
		Manual locking and unlocking of actuating key by key-operated lock (can be mounted on left or right-hand side of switch head).
EN/IEC 60947-5-1, EN/ISO 13849-1, EN/IEC 62061, UL 508, CSA C22-2 no. 14		
EN/IEC 60204-1, EN/ISO 14119		
UL, CSA, CCC, EAC		
40 x 113.5 x 44		52 x 113.5 x 44
30 x 60		30 x 60
Turret head: 8 positions for insertion of actuating key.		Turret head: 8 positions for insertion of actuating key.
Safety contacts actuated by the actuating key. Slow break and NC positive opening operation.		Safety contacts actuated by the actuating key. Slow break and NC positive opening operation.
1 NC + 2 NO break before make 2 NC + 1 NO break before make 3 NC		1 NC + 2 NO break before make 2 NC + 1 NO break before make 3 NC
IP 67		
-25...+70 °C		
Screw clamp terminals. Tapped entry for Pg 13.5, ISO M20 cable gland or tapped 1/2" NPT		Screw clamp terminals. Tapped entry for Pg 13.5 cable gland, ISO M20 or tapped 1/2" NPT.
–		–
XCSA		XCSB
		XCSC
Please refer to our catalogue "Safety switches XCS range".		

Safety limit switches

XCS range

Switch type	XCS key-operated safety switches, locking and unlocking by solenoid		
Applications	Protection of operators by stopping the machine when the actuating key (attached to machine guard) is withdrawn from the head of the switch. All industrial machines with long rundown time (1)		
Design	Slim format		
	With 3 cable entries	With 3 cable entries	
			
Case	Plastic	Metal	
Features	Locking and unlocking of actuating key using a solenoid (either on energization or on de-energization). Manual unlocking (auxiliary release using special tool) of actuating key in abnormal conditions.		
	Locking and unlocking of actuating key by solenoid (either on energization or on de-energization). Manual unlocking (auxiliary release using key lock) of actuating key in abnormal conditions. 1 Emergency release mushroom head pushbutton (only for XCSLF●●●●4●● and XCSLF●●●●6●●).		
Conformity to standards	Products	EN/IEC 60947-5-1, EN/ISO 13849-1, EN/IEC 62061, UL 508 and CSA C22-2 no. 14	
	Machine assemblies	EN/IEC 60204-1, EN/ISO 14119	
Product certifications	UL, CSA, CCC, EAC		
Dimensions (w x h x d or Ø) in mm	Switch	51 x 205 x 43.5	
	Fixings	30 x 153.3	
	Centers		
Head	Turret head: 8 positions for insertion of actuating key.		
Resistance to forcible withdrawal of the actuator	F1max	1400 N	3000 N
	FZh	1100 N	2300 N
Contact blocks or outputs	Main safety contacts actuated by the actuating key; auxiliary contacts actuated by solenoid. Contact states given with key inserted and solenoid not energized. Slow break and NC positive opening operation		
	Main contacts	1 NC + 1 NO break before make 2 NC 1 NC + 2 NO break before make 2 NC + 1 NO break before make 3 NC	
	Auxiliary contacts	1 NC + 1 NO break before make 2 NC 1 NC + 2 NO break before make 2 NC + 1 NO break before make 3 NC	
Degree of protection	IP 66/IP 67		
Ambient air temperature	For operation	-25...+60 °C	
	For storage	-40...+70 °C	
Connection	Terminals	Spring terminals, 3 cable entries. Tapped entry for ISO M20 cable gland or tapped 1/2" NPT.	
	Connector	M23 (18 + 1 PE)	
Type reference	XCSLE	XCSLF	
Pages	Please refer to our catalogue "Safety switches XCS range".		

(1) Machine stopping time greater than time taken for operator to access hazardous zone.

XCS key-operated safety switches, locking and unlocking by solenoid (continued)	
Protection of operators by stopping the machine when the actuating key (attached to machine guard) is withdrawn from the head of the switch. All industrial machines with long rundown time ⁽¹⁾	
Rectangular	
—	With 2 cable entries
	
Plastic, double insulated	Metal
Locking and unlocking of actuator by solenoid (either on de-energization or on energization). Manual unlocking (auxiliary release using special tool) of actuating key in abnormal conditions.	Locking and unlocking of actuating key by solenoid (either on energization or on de-energization). Manual unlocking (auxiliary release using key lock) of actuating key in abnormal conditions.
EN/IEC 60947-5-1, EN/ISO 13849-1, UL 508, CSA C22-2 no. 14, EN/IEC 62061, EN/IEC 60947-1	
EN/IEC 60204-1, EN/ISO 14119	
UL, CSA, CCC, EAC	UL, CSA, CCC, EAC
110 x 93.5 x 33	98 x 146 x 44
30 x 153.3	88 x 95
Turret head: 8 positions for insertion of actuating key	
650 N	2600 N
500 N	2000 N
Main safety contacts actuated by the actuating key; auxiliary contacts actuated by solenoid. Slow break and NC positive opening operation	
1 NC + 1 NO break before make 1 NC + 1 NO make before break 2 NC	1 NC + 2 NO break before make 2 NC + 1 NO break before make 3 NC
1 NC	1 NC + 1 NO 2 NC
IP 67	
-25...+60 °C	-25...+40 °C
-40...+70 °C	-40...+70 °C
Tapped entry for Pg 11 ISO M16 cable gland or tapped 1/2" NPT	Screw clamp terminals. 2 tapped entries for Pg 13.5 ISO M20 cable gland or tapped 1/2" NPT.
—	—
XCSTE	XCSE
Please refer to our catalogue "Safety switches XCS range".	

Safety limit switches

XCS range

Switch type	XCSR contactless RFID safety switches		
Applications	Highly tamper-proof protection of operators by stopping the machine when the gate is opened (transfer lines, assembly lines, automated equipment, machine tools, etc.). All light industrial machines fitted with access gates with imprecise guidance and/or subjected to frequent washing, shocks and vibrations. This Safety sensor is suitable for machine with low inertia.		
Design	Miniature rectangular format	Compact rectangular format	Cylindrical format
Unique pairing or 2 new pairings possible			
			
Case	Thermoplastic housing (Valox TM)		
Features	Contactless system composed of a microprocessor-controlled switch and a transponder factory-paired with a unique code. Multiposition sensor transponder.		
	15 mm		
	35 mm		
	Standalone RFID switch	Daisy-chain RFID switch for direct series connection	Single RFID switch for point-to-point connection
	Possible functioning without association with a safety control unit (Integrated External Device Monitoring (EDM) and Start/Restart function)		
	Functioning in combination with a safety control unit PL=e/Cat4 - SIL 3		
	EN/IEC 60947-5-2, EN/IEC 60947-5-3, UL 508, CSA C22.2 SIL 3 (IEC 61508), SILCL 3 (IEC 62061), PLe–Cat. 4 (EN ISO 13849-1)		
	EN/IEC 60204-1, EN/ISO 14119		
Conformity to standards	Based on ISO 15693		
Product certifications	CE, cULus, TÜV, FCC, EAC, IC, RCM, E2, ECOLAB		
Dimensions (w x h x d or Ø) in mm	Switch	30 x 108.3 x 15	
	Transponder	30 x 118.6 x 5	
	Fixings	50 x 15 x 15	
	Centers	–	
Contact blocks or outputs	Safety output	74...78	
		30...34	
		2 OSSDs (Safety outputs PNP NO). OSSDs are in the ON state when the gate is closed	
		Maximum current 400mA	Maximum current 200 mA
Degree of protection	Contact states given in presence of magnet	–	
		–	
		IP 65, IP 66, IP 67	
		IP 69K	
Ambient air temperature	For operation	-25...+70 °C	
	For storage	-40...+85 °C	
Connection	Pre-cabled	–	
	Connector	–	
	Conforming to EN/IEC 60947-5-2-A3 and EN/IEC 61076	1 M12 8-pin connector (A coding)	2 M12 5-pin connector (A coding)
		1 M12 5-pin connector (A coding)	–
Type reference	XCSRC●1●M12 XCSRC●2M12 XCSRC●0M12		
Pages	Please refer to our catalogue “Safety switches XCS range”.		

XCS safety coded magnetic safety switches for detection without contact		
Protection of operators by stopping the machine when the gate is opened All light industrial machines fitted with access gates with imprecise guidance and/or subjected to frequent washing This Safety sensor is suitable for machine with low inertia.		
Miniature rectangular format	Compact rectangular format	Cylindrical format
Pre-cabled or M8 connector on flying lead	Pre-cabled or M12 connector on flying lead	
		
Plastic		
3 approach directions		1 approach direction
5 mm	8 mm	
15 mm	20 mm	
–		
–		
EN/IEC 60947-5-1, EN/ISO 13849-1, EN/IEC 62061, UL 508 and CSA C22-2 no. 14		
EN/IEC 60204-1, EN/ISO 14119		
–		
UL, CSA, EAC, ECOLAB		
16 x 51 x 7	25 x 88 x 13	Ø 30, L 38.5
–		
16	78	–
–		
–		
–		
1 NC + 1 NO staggered 2 NC staggered Independent Reed-type contacts operated by coded magnet.	1 NC + 1 NO staggered 2 NC staggered 2 NC + 1 NO (NC staggered) 1 NC + 2 NO (NO staggered)	1 NC + 1 NO staggered 2 NC staggered
To be used with safety control units.		
IP 66 and IP 67 for pre-cabled version, IP 67 for connector on flying lead version		
–		
–		
-25...+85 °C		
–		
L = 2, 5 or 10 m		
M8, on 0.15 m flying lead	M12, on 0.15 m flying lead	
–	–	–
XCSDMC	XCSDMP	XCSDMR
Please refer to our catalogue “ Safety switches XCS range ”.		

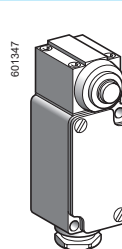
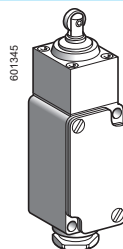
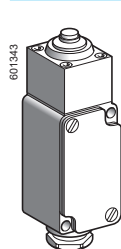
Limit switches

XC Special range

For very severe applications, XC2J

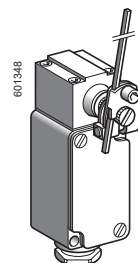
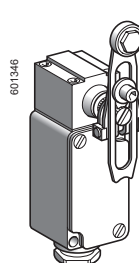
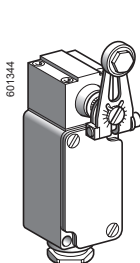
■ XC2J
with 1 cable entry

□ With head for linear movement (plunger)



Page 18

□ With head for rotary movement (lever)



Page 18

Environment characteristics

Conformity to standards	Products	IEC/EN 60947-5-1, IEC 60337-1, VDE 0660-200, UL 508, CSA C22-2 n° 14
	Machine assemblies	IEC/EN 60204-1, NF C 79-130
Product certifications	Standard version	CSA 300 V ∼ HD, 60 W ∼
	Special version	UL 250 V ∼ HD Listed, CSA 300 V ∼ HD, 60 W with 1/2" NPT tapped cable entry
Protective treatment	Standard version	"TC"
Ambient air temperature	For operation	- 25...+ 70°C. Special adaptable sub-assemblies: - 40°C or + 120°C
	For storage	- 40...+ 70°C
Vibration resistance		10 gn (10...500 Hz) conforming to IEC 60068-2-6
Shock resistance		25 gn (18 ms) conforming to IEC 60068-2-27
Electric shock protection		Class I conforming to IEC 60536 and NF C 20-030
Degree of protection		IP 65 conforming to IEC 60529, IP 657 conforming to NF C 20-010
Repeat accuracy		0.01 mm on the tripping points, with 1 million operating cycles for head with end plunger
Cable entry		1 entry incorporating cable gland. Clamping capacity: 6...13.5 mm

Contact block characteristics

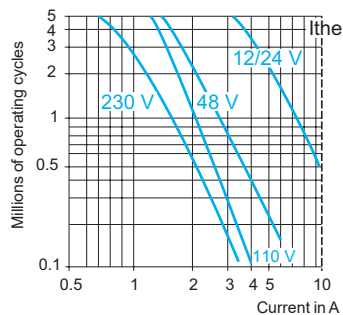
Rated operational characteristics		~ AC-15; A300 (Ue = 240 V, Ie = 3 A) ~ DC-13; Q300 (Ue = 250 V, Ie = 0.27 A), conforming to IEC 60947-5-1 Appendix A, EN 60947-5-1
Rated insulation voltage		500 V conforming to IEC 60947-5-1, group C conforming to NF C 20-040, 300 V conforming to CSA C22-2 n° 14
Resistance across terminals		≤ 25 mΩ conforming to NF C 93-050 method A or IEC 60255-7 category 3
Short-circuit protection		10 A cartridge fuse type gG (gl)
Connection	Screw clamp terminals	XCKZ01 : clamping capacity, min: 1 x 0.5 mm², max: 2 x 2.5 mm² XESP10•1 : clamping capacity, min: 1 x 0.75 mm², max: 2 x 1.5 mm²
Minimum actuation speed		0.001 m/minute

Electrical durability

- Conforming to IEC 60947-5-1 Appendix C
- Utilisation categories AC-15 and DC-13
- Maximum operating rate: 3600 operating cycles/hour
- Load factor: 0.5

XCKZ01, XESP1021, XESP1031

AC supply
50/60 Hz ∼
 inductive circuit



DC supply ∼

Voltage V	24	48	120
Power broken in W for 5 million operating cycles	10	7	4
			

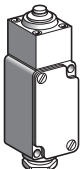
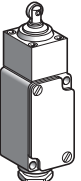
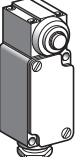
Limit switches

XC Special range

For very severe applications, XC2J

Complete switches, fixed body,

1 cable entry incorporating cable gland

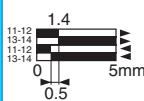
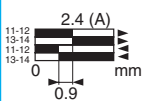
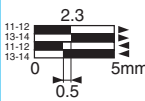
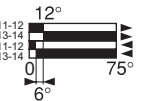
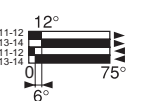
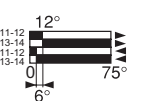
Type of head	Plunger			Rotary		
						
Type of operator	Metal end plunger	Steel roller plunger	Metal side plunger	Thermoplastic roller lever (1)	Variable length thermoplastic roller lever (1)	Steel rod lever Ø 3 mm (1)

(1) Adjustable throughout 360°.

References

Single-pole CO
snap action XCKZ01



	ZC2JC1 + ZC2JE61	ZC2JC1 + ZC2JE62	ZC2JC1 + ZC2JE63	Actuation from left AND right		
						
	Actuation from left OR right					
						
Weight (kg)	0.555	0.560	0.600	0.605	0.620	0.605
Contact operation	 closed  open			(A) = cam displacement		

Complementary characteristics not shown under general characteristics (page 17)

Switch actuation	On end	By 30° cam	On end	By 30° cam	By any moving part	
Type of actuation						
Maximum actuation speed	0.5 m/s			1.5 m/s		
Mechanical durability (in millions of operating cycles)	30	25	30			
Minimum tripping force or torque	18 N		26 N	With head ZC2JE01: 0.30 N.m With head ZC2JE05: 0.20 N.m		
Cable entry	1 tapped entry incorporating metal cable gland. Clamping capacity 6 to 13.5 mm					
Other versions	Switches with gold flashed contacts. Special protective treatments. Please consult our Customer Care Centre.					

Limit switches

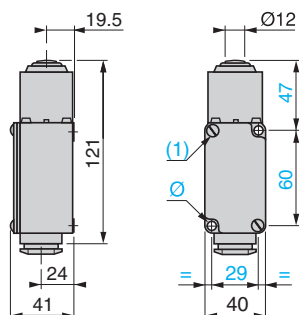
XC Special range

For very severe applications, XC2J

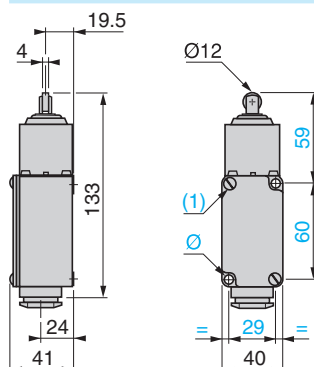
Complete switches, fixed body,

1 cable entry incorporating cable gland

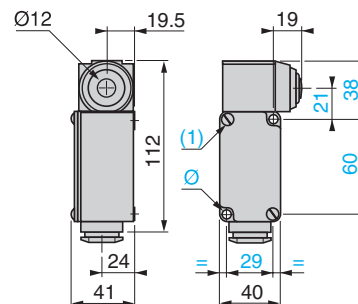
ZC2JC1 + ZC2JE61



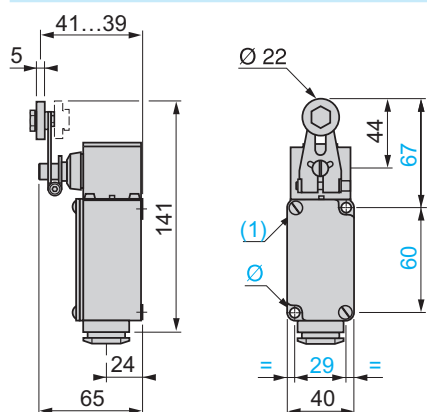
ZC2JC1 + ZC2JE62



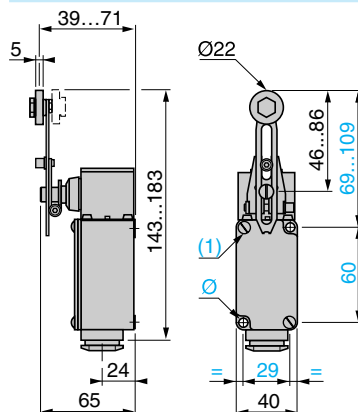
ZC2JC1 + ZC2JE63



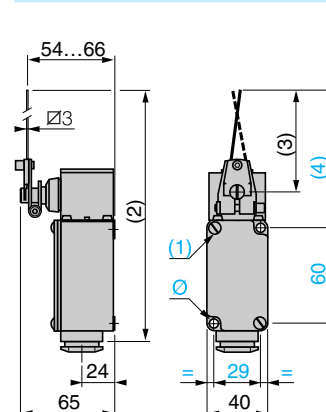
ZC2JC1 + ZC2JE0● + ZC2JY11



ZC2JC1 + ZC2JE0● + ZC2JY31



ZC2JC1 + ZC2JE0● + ZC2JY51



(1) Fixing from the rear: by 2 M5 screws.

Depth of thread on switch: 10 mm.

(2) 222 max.

(3) 125 max.

(4) 148 max.

Ø: Fixing from the front via 2 holes Ø 5.5.

Cable gland incorporated (all XC2JC models).

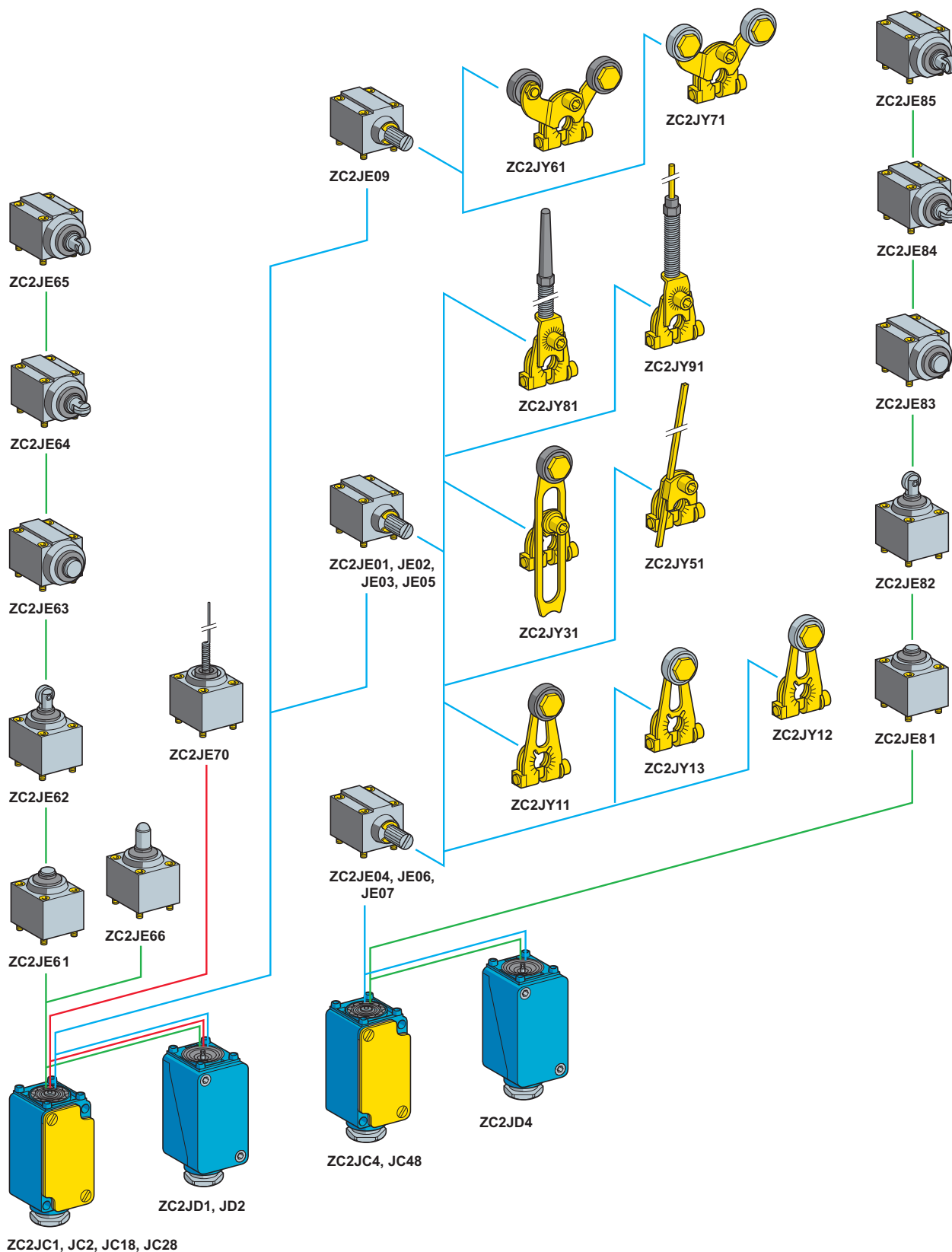
Limit switches

XC Special range

For very severe applications, XC2J

Fixed or plug-in body

Variable composition



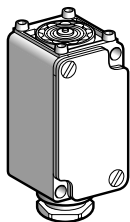
Limit switches

XC Special range

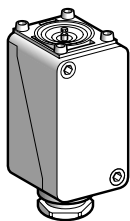
For very severe applications, XC2J

Fixed or plug-in body

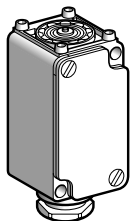
Adaptable sub-assemblies



ZC2JC●



ZC2JD●



ZC2JC●8

Bodies with contacts for plunger or rotary head

Type	With contact block	Scheme	Reference	Weight kg
Fixed bodies (see operation page 26)				
1 step	Single-pole 1 CO snap action (XCKZ01)		ZC2JC1	0.355
	Double-pole 2 CO simultaneous, snap action (XESP1021)		ZC2JC2	0.355
2 step	Double-pole 2 CO staggered, snap action (XESP1031)		ZC2JC4	0.355

Plug-in bodies

(see operation page 26)				
1 step	Single-pole CO snap action		ZC2JD1	0.380
	Double-pole 2 CO simultaneous, snap action		ZC2JD2	0.380
2 step	Double-pole 2 CO staggered, snap action		ZC2JD4	0.380

Bodies incorporating gold flashed contacts, for plunger or rotary head

Type	With contact block	Scheme	Reference	Weight kg
Fixed bodies (see operation page 26)				
1 step	Single-pole 1 CO snap action (XCKZ018)		ZC2JC18	0.355
	Double-pole 2 CO simultaneous, snap action (XESP1028)		ZC2JC28	0.360
2 step	Double-pole 2 CO staggered, snap action (XESP1038)		ZC2JC48	0.360

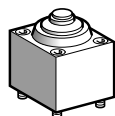
Limit switches

XC Special range

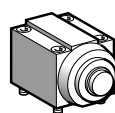
For very severe applications, XC2J

Fixed or plug-in body

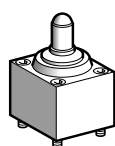
Adaptable sub-assemblies



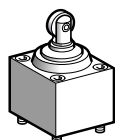
ZC2JE1



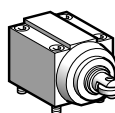
ZC2JE3



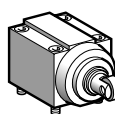
ZC2JE66



ZC2JE2



ZC2JE4



ZC2JE5

Plunger heads

Type of operator	Compatible bodies	Maximum actuation speed	Reference	Weight kg
For actuation on end				
End plunger metal	ZC2J1	0.5 m/s	ZC2JE61	0.195
	ZC2J2			
	ZC2J4	0.5 m/s	ZC2JE81	0.195
Side plunger metal	ZC2J1	0.5 m/s	ZC2JE63	0.240
	ZC2J2			
	ZC2J4	0.5 m/s	ZC2JE83	0.240
For actuation by 30° cam				
End ball bearing plunger	ZC2J1	0.1 m/s	ZC2JE66	0.205
	ZC2J2			
End roller plunger steel	ZC2J1	1 m/s	ZC2JE62	0.200
	ZC2J2			
	ZC2J4	1 m/s	ZC2JE82	0.200
Side plunger with horizontal roller steel	ZC2J1	0.6 m/s	ZC2JE64	0.245
	ZC2J2			
	ZC2J4	0.6 m/s	ZC2JE84	0.245
Side plunger with vertical roller steel	ZC2J1	0.6 m/s	ZC2JE65	0.245
	ZC2J2			
	ZC2J4	0.6 m/s	ZC2JE85	0.245

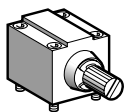
Limit switches

XC Special range

For very severe applications, XC2J

Fixed or plug-in body

Adaptable sub-assemblies



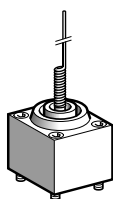
ZC2JE01

Rotary heads (without operating lever)

Type	Compatible bodies	Maximum actuation speed	Reference	Weight kg
Spring return (see operation page 26)				
Actuation from left AND right	ZC2J●1	1.5 m/s	ZC2JE01	0.210
	ZC2J●2			
	ZC2J●4	1.5 m/s	ZC2JE04	0.210
Actuation from left	ZC2J●1	1.5 m/s	ZC2JE02	0.210
	ZC2J●2			
	ZC2J●4	1.5 m/s	ZC2JE06	0.210
Actuation from right	ZC2J●1	1.5 m/s	ZC2JE03	0.210
	ZC2J●2			
	ZC2J●4	1.5 m/s	ZC2JE07	0.210
Actuation from left OR right (see page 68)	ZC2J●1	1.5 m/s	ZC2JE05	0.210
	ZC2J●2			

Stay put (see page 68)

Actuation from left AND right	ZC2J●1 ZC2J●2	1.5 m/s	ZC2JE09	0.210
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ZC2JE70

Multi-directional head (with operator)

Type of operator	Compatible bodies	Maximum actuation speed	Reference	Weight kg
For actuation by any moving part (see operation page 26)				
"Cat's whisker"	ZC2J●1 ZC2J●2	1 m/s in any direction	ZC2JE70	0.190

Limit switches

XC Special range

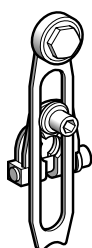
For very severe applications, XC2J

Fixed or plug-in body

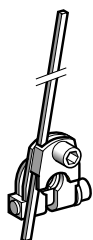
Adaptable sub-assemblies



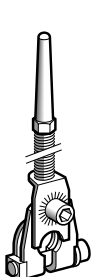
ZC2JY1●



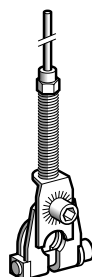
ZC2JY31



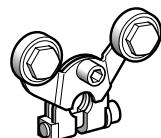
ZC2JY51



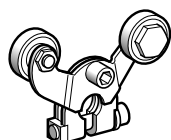
ZC2JY81



ZC2JY91



ZC2JY71



ZC2JY61

Operating levers for rotary heads

Description	Reference	Weight kg
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For actuation by 30° cam

Roller lever (1)	Thermoplastic	ZC2JY11	0.030
	Steel	ZC2JY13	0.040
	Steel, ball bearing mounted	ZC2JY12	0.040

Variable length roller lever (1)	Thermoplastic	ZC2JY31	0.045
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For actuation by any moving part

Rigid rod lever	Steel ∇ 3 mm, L = 125 mm (1)	ZC2JY51	0.035
-----------------	-------------------------------------	----------------	-------

Spring lever (1)		ZC2JY81	0.040
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Spring-rod lever (1)		ZC2JY91	0.040
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For actuation by specific cam (only for operation with head ZC2 JE09, see page 68)

Forked arm with rollers thermoplastic (1)	1 track	ZC2JY71	0.055
	2 track	ZC2JY61	0.055

(1) Adjustable throughout 360°

Other versions

Other operating levers for rotary heads.
Please consult our Customer Care Centre.

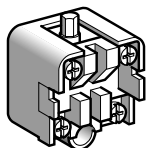
Limit switches

XC Special range

For very severe applications, XC2J

Fixed or plug-in body

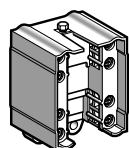
Adaptable sub-assemblies



XCKZ01

Contact blocks

Type of contact	Scheme	For body	Reference	Weight kg
Single-pole 1 CO snap action		ZC2JC1	XCKZ01	0.050
Double-pole 2 CO simultaneous, snap action		ZC2JC2	XESP1021	0.045
Double-pole 2 CO staggered, snap action		ZC2JC4	XESP1031	0.045



XESP1001

Contact blocks with gold flashed contacts

Type of contact	Scheme	For body	Reference	Weight kg
Single-pole 1 CO snap action		ZC2JC18	XCKZ018	0.050
Double-pole 2 CO simultaneous, snap action		ZC2JC28	XESP1028	0.055
Double-pole 2 CO staggered, snap action		ZC2JC48	XESP1038	0.055

Limit switches

XC Special range

For very severe applications, XC2J

Fixed or plug-in body

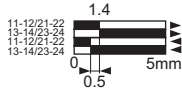
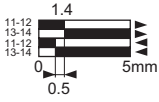
Adaptable sub-assemblies

Operation (function diagrams)

Heads ZC2JE61, ZC2JE66 with body

ZC2J●1

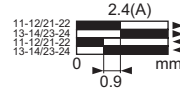
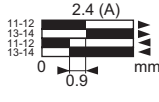
ZC2J●2



Head ZC2JE62 with body

ZC2J●1

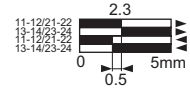
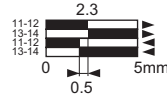
ZC2J●2



Head ZC2JE63 with body

ZC2J●1

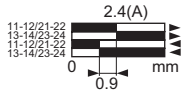
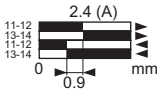
ZC2J●2



Heads ZC2JE64, ZC2JE65 with body

ZC2J●1

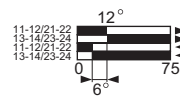
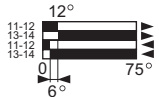
ZC2J●2



Heads ZC2JE01, ZC2JE02, ZC2JE03, ZC2JE05 with body

ZC2J●1

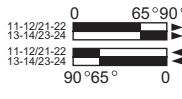
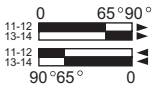
ZC2J●2



Head ZC2JE09 with body

ZC2J●1

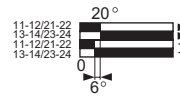
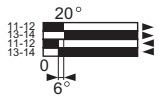
ZC2J●2



Head ZC2JE70 with body

ZC2J●1

ZC2J●2



Contact operation

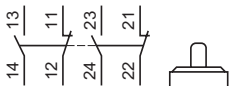
■ closed

□ open

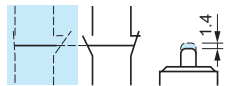
(A) = cam displacement

Heads ZC2JE81, ZC2JE82 with body ZC2J●4

Unactuated



1st step

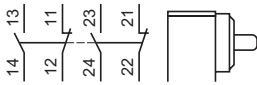


2nd step

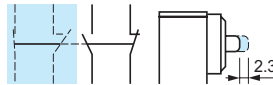


Heads ZC2JE83, ZC2JE84, ZC2JE85 with body ZC2J●4

Unactuated



1st step

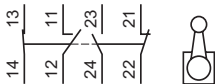


2nd step

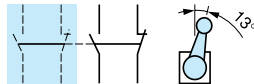


Heads ZC2JE04 with body ZC2J●4

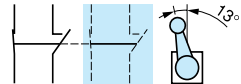
Unactuated



Actuated from left

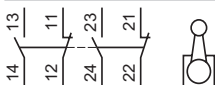


Actuated from right

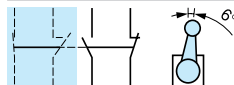


Heads ZC2JE06, ZC2JE07 with body ZC2J●4

Unactuated



1st step



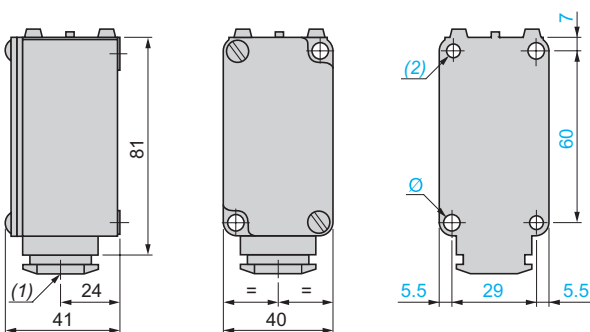
2nd step



Dimensions

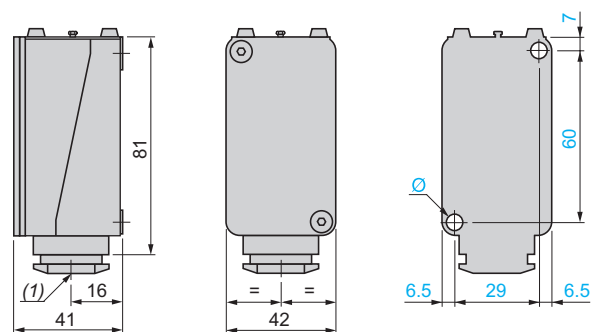
Fixed bodies

ZC2JC1, ZC2JC2, ZC2JC4



Plug-in bodies

ZC2JD1, ZC2JD2, ZC2JD4



(1) Incorporated cable gland

(2) Fixing from the rear by 2 M5 screws, depth of thread on switch: 10 mm

Ø: Fixing from the front via 2 holes Ø 5.5

(1) Incorporated cable gland

Ø: Fixing from the rear by 2 M6 screws

Fixing from the front via 2 holes Ø 5.5 (remove front part of switch for access)

Limit switches

XC Special range

For very severe applications, XC2J

Fixed or plug-in body

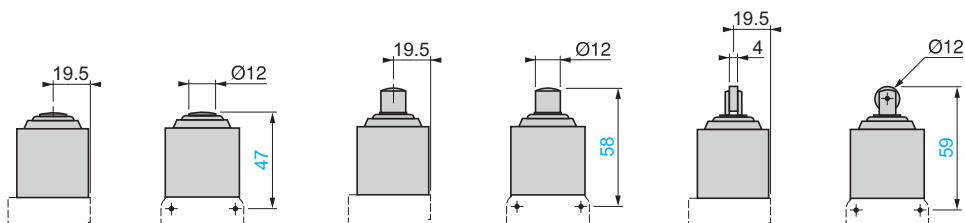
Adaptable sub-assemblies

Plunger heads

ZC2JE61, ZC2JE81

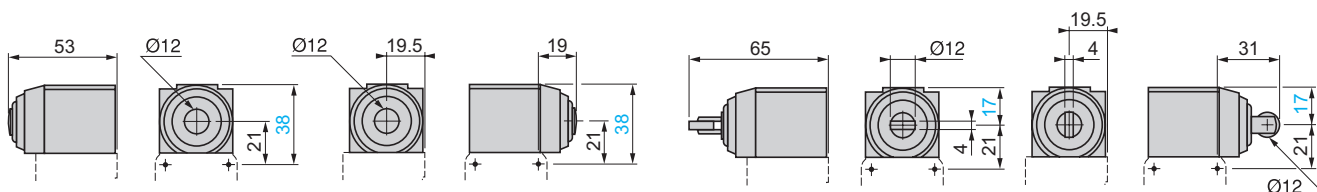
ZC2JE66

ZC2JE62, ZC2JE82



ZC2JE63, ZC2JE83 (2 position)

ZC2JE64, ZC2JE84, ZC2JE65, ZC2JE85 (2 position)

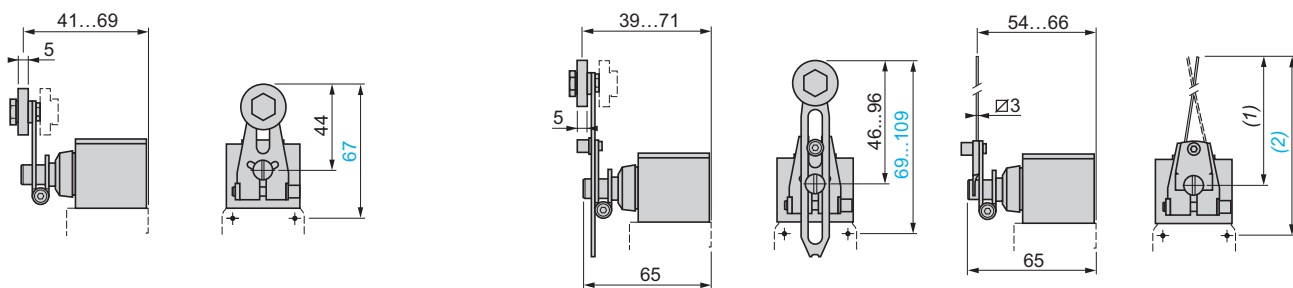


Rotary heads (ZC2JE01 to ZC2JE07) with operating lever

ZC2JY11, ZC2JY12, ZC2JY13

ZC2JY31

ZC2JY51

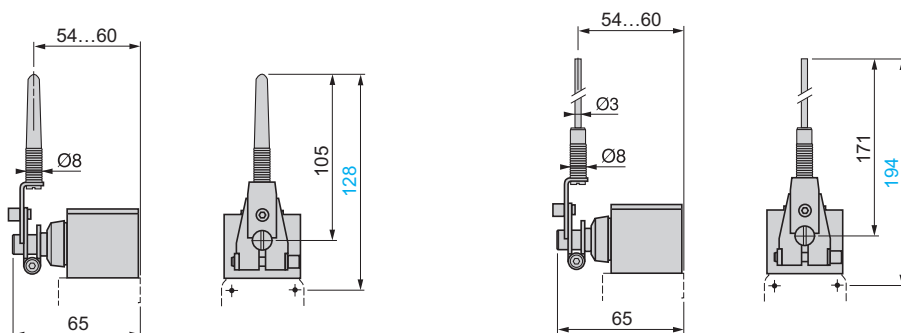


(1) 125 max.

(2) 148 max.

ZC2JY81

ZC2JY91



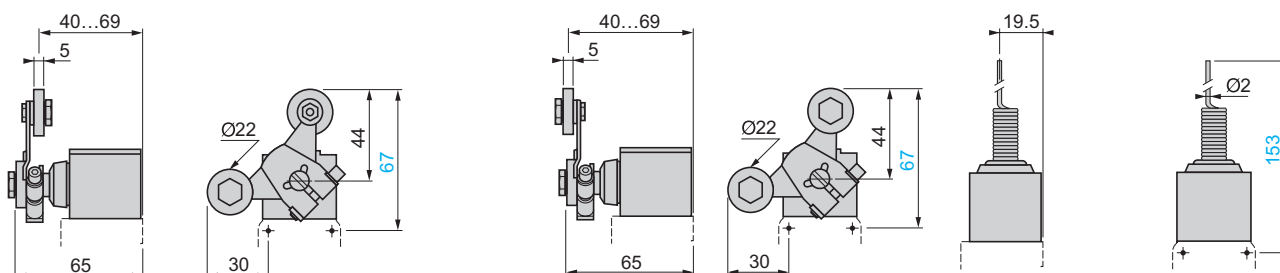
Rotary heads (ZC2JE09) with operating lever

ZC2JY61

ZC2JY71

Multi-directional heads

ZC2JE70

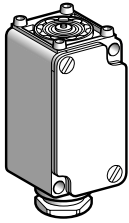


Limit switches

XC Special range

For very severe applications, XC2J

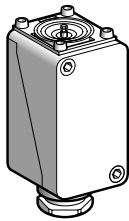
Fixed or plug-in body, adaptable sub-assemblies for low temperature applications (- 40°C)



ZC2JC●6

Bodies with contacts for plunger or rotary head

Type	With contact block	Scheme	Reference	Weight kg
Fixed bodies				
1 step	Single-pole 1 CO snap action (XCK Z01)		ZC2JC16	0.355
	Double-pole 2 CO simultaneous, snap action (XES P1021)		ZC2JC26	0.355
2 step	Double-pole 2 CO staggered, snap action (XES P1031)		ZC2JC46	0.355



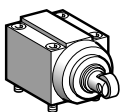
ZC2JD●6

Plug-in bodies

1 step	Single-pole CO snap action		ZC2JD16	0.380
	Double-pole 2 CO simultaneous, snap action		ZC2JD26	0.380
2 step	Double-pole 2 CO staggered, snap action		ZC2JD46	0.380

Plunger heads

Type of operator	Compatible bodies	Maximum actuation speed	Reference	Weight kg
For actuation on end				
End plunger metal	ZC2J●16	0.5 m/s	ZC2JE616	0.195
	ZC2J●26			
	ZC2J●46	0.5 m/s	ZC2JE816	0.195
Side plunger metal	ZC2J●16	0.5 m/s	ZC2JE636	0.240
	ZC2J●26			
	ZC2J●46	0.5 m/s	ZC2JE836	0.240
For actuation by 30° cam				
End ball bearing plunger	ZC2J●16	0.1 m/s	ZC2JE666	0.205
	ZC2J●26			
End roller plunger steel	ZC2J●16	1 m/s	ZC2JE626	0.200
	ZC2J●26			
	ZC2J●46	1 m/s	ZC2JE826	0.200
Side plunger with horizontal roller steel	ZC2J●16	0.6 m/s	ZC2JE646	0.245
	ZC2J●26			
	ZC2J●46	0.6 m/s	ZC2JE846	0.245
Side plunger with vertical roller steel	ZC2J●16	0.6 m/s	ZC2JE656	0.245
	ZC2J●26			
	ZC2J●46	0.6 m/s	ZC2JE856	0.245



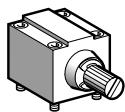
ZC2JE●56

Limit switches

XC Special range

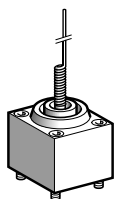
For very severe applications, XC2J

Fixed or plug-in body, adaptable sub-assemblies for low temperature applications (- 40°C)



ZC2JE06

Rotary heads (without operating lever)				
Type	Compatible bodies	Maximum actuation speed	Reference	Weight kg
Spring return				
Actuation from left AND right	ZC2J●16	1.5 m/s	ZC2JE016	0.210
	ZC2J●26			
	ZC2J●46	1.5 m/s	ZC2JE046	0.210
Actuation from left	ZC2J●16	1.5 m/s	ZC2JE026	0.210
	ZC2J●26			
	ZC2J●46	1.5 m/s	ZC2JE066	0.210
Actuation from right	ZC2J●16	1.5 m/s	ZC2JE036	0.210
	ZC2J●26			
	ZC2J●46	1.5 m/s	ZC2JE076	0.210
Actuation from left OR right (see page 68)	ZC2J●16	1.5 m/s	ZC2JE056	0.210
	ZC2J●26			
Stay put (see page 68)				
Actuation from left AND right	ZC2J●16	1.5 m/s	ZC2JE096	0.210
	ZC2J●26			



ZC2JE706

Multi-directional head (with operator)				
Type of operator	Compatible bodies	Maximum actuation speed	Reference	Weight kg
For actuation by any moving part				
"Cat's whisker"	ZC2J●16	1 m/s in any direction	ZC2JE706	0.190
	ZC2J●26			

Limit switches

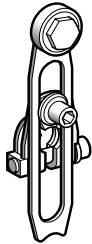
XC Special range

For very severe applications, XC2J

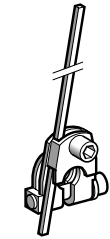
Fixed or plug-in body, adaptable sub-assemblies for low temperature applications (- 40°C)



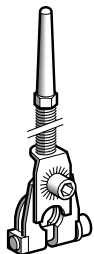
ZC2JY1●



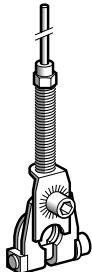
ZC2JY31



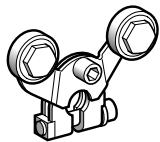
ZC2JY51



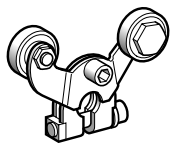
ZC2JY81



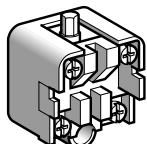
ZC2JY91



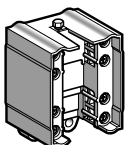
ZC2JY71



ZC2JY61



XCKZ01



XESP10●1

Operating levers for rotary heads

Description	Reference	Weight kg
For actuation by 30° cam		
Roller lever (1)	Thermoplastic	ZC2JY11 0.030
	Steel	ZC2JY13 0.040
	Steel, ball bearing mounted	ZC2JY12 0.040
Variable length roller lever (1)	Thermoplastic	ZC2JY31 0.045

For actuation by any moving part

Rigid rod lever	Steel ∇ 3 mm, L = 125 mm (1)	ZC2JY51 0.035
Spring lever (1)		ZC2JY81 0.040
Spring-rod lever (1)		ZC2JY91 0.040

For actuation by specific cam (only for operation with head ZC2 JE096, see page 68)

Forked arm with rollers thermoplastic (1)	1 track	ZC2JY71 0.055
	2 track	ZC2JY61 0.055

Contact blocks

Type of contact	Scheme	For body	Reference	Weight kg
Single-pole 1 CO snap action		ZC2JC16	XCKZ01 0.050	
Double-pole 2 CO simultaneous, snap action		ZC2JC26	XESP1021 0.045	
Double-pole 2 CO staggered, snap action		ZC2JC46	XESP1031 0.045	

(1) Adjustable throughout 360°

Other versions

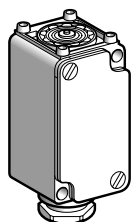
Other operating levers for rotary heads.
Please consult our Customer Care Centre.

Limit switches

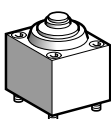
XC Special range

For very severe applications, XC2J

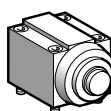
Fixed body, adaptable sub-assemblies for high temperature applications (+ 120°C)



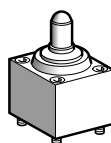
ZC2JC●5



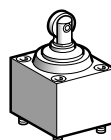
ZC2JE●15



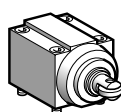
ZC2JE●35



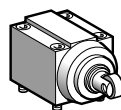
ZC2JE665



ZC2JE●25



ZC2JE●45



ZC2JE●55

Bodies with contacts for plunger or rotary head

Type	With contact block	Scheme	Reference	Weight kg
Fixed bodies				
1 step	Single-pole 1 CO snap action (XCK Z015)		ZC2JC15	0.355
	Double-pole 2 CO simultaneous, snap action (XES P10215)		ZC2JC25	0.355
2 step	Double-pole 2 CO staggered, snap action (XES P10315)		ZC2JC45	0.355

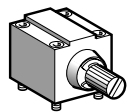
Plunger heads

Type of operator	Compatible bodies	Maximum actuation speed	Reference	Weight kg
For actuation on end				
End plunger metal	ZC2JC15 ZC2JC25	0.5 m/s	ZC2JE615	0.195
	ZC2JC45	0.5 m/s	ZC2JE815	0.195
Side plunger metal	ZC2JC15 ZC2JC25	0.5 m/s	ZC2JE635	0.240
	ZC2JC45	0.5 m/s	ZC2JE835	0.240
For actuation by 30° cam				
End ball bearing plunger	ZC2JC15 ZC2JC25	0.1 m/s	ZC2JE665	0.205
End roller plunger steel	ZC2JC15 ZC2JC25	1 m/s	ZC2JE625	0.200
	ZC2JC45	1 m/s	ZC2JE825	0.200
Side plunger with horizontal roller steel	ZC2JC15 ZC2JC25	0.6 m/s	ZC2JE645	0.245
	ZC2JC45	0.6 m/s	ZC2JE845	0.245
Side plunger with vertical roller steel	ZC2JC15 ZC2JC25	0.6 m/s	ZC2JE655	0.245
	ZC2JC45	0.6 m/s	ZC2JE855	0.245

Limit switches

XC Special range

For very severe applications, XC2J
Fixed body, adaptable sub-assemblies for high
temperature applications (+ 120°C)



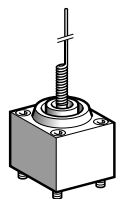
ZC2JE05

Rotary heads (without operating lever)

Type	Compatible bodies	Maximum actuation speed	Reference	Weight kg
Spring return				
Actuation from left AND right	ZC2JC15 ZC2JC25	1.5 m/s	ZC2JE015	0.210
	ZC2JC45	1.5 m/s	ZC2JE045	0.210
Actuation from left	ZC2JC15 ZC2JC25	1.5 m/s	ZC2JE025	0.210
	ZC2JC45	1.5 m/s	ZC2JE065	0.210
Actuation from right	ZC2JC15 ZC2JC25	1.5 m/s	ZC2JE035	0.210
	ZC2JC45	1.5 m/s	ZC2JE075	0.210

Stay put (see page 68)

Actuation from left AND right	ZC2JC15 ZC2JC25	1.5 m/s	ZC2JE095	0.210
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ZC2JE705

Multi-directional head (with operator)

Type of operator	Compatible bodies	Maximum actuation speed	Reference	Weight kg
For actuation by any moving part				
"Cat's whisker"	ZC2JC15 ZC2JC25	1 m/s in any direction	ZC2JE705	0.190

Limit switches

XC Special range

For very severe applications, XC2J

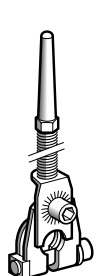
Fixed body, adaptable sub-assemblies for high temperature applications (+ 120°C)



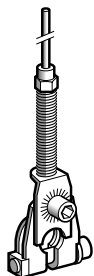
ZC2JY1●



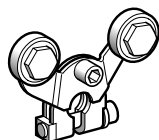
ZC2JY51



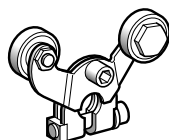
ZC2JY815



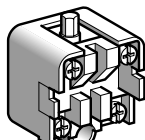
ZC2JY915



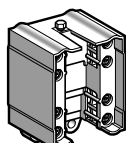
ZC2JY715



ZC2JY615



XCKZ015



XESP10●15

Operating levers for rotary heads

Description		Reference	Weight kg
For actuation by 30° cam			
Roller lever (1)	Thermoplastic	ZC2JY115	0.030
	Steel	ZC2JY13	0.040
	Steel, ball bearing mounted	ZC2JY12	0.040
Offset roller lever (1)	Thermoplastic	ZC2JY215	0.035
Variable length roller lever (1)	Thermoplastic	ZC2JY315	0.035
Variable length offset roller lever (1)	Thermoplastic	ZC2JY415	0.040
For actuation by any moving part			
Rigid rod lever	Steel $\varnothing$ 3 mm, L = 125 mm (1)	ZC2JY51	0.035
Spring lever (1)		ZC2JY815	0.040
Spring-rod lever (1)		ZC2JY915	0.040

For actuation by specific cam (only for operation with head ZC2JE095, see page 68)

Forked arm with rollers thermoplastic (1)	1 track	ZC2JY715	0.055
	2 track	ZC2JY615	0.055

Contact blocks

Type of contact	Scheme	For body	Reference	Weight kg
Single-pole 1 CO snap action		ZC2JC15	XCKZ015	0.050
Double-pole 2 CO simultaneous, snap action		ZC2JC25	XESP10215	0.045
Double-pole 2 CO staggered, snap action		ZC2JC45	XESP10315	0.045

(1) Adjustable throughout 360°

Other versions

Other operating levers for rotary heads.
Please consult our Customer Care Centre.

Limit switches

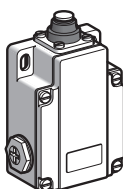
XC Special range

For material handling applications, XC1AC

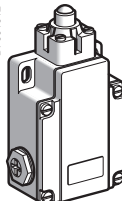
■ **XC1AC**
with slow break contacts

□ With head for linear movement (plunger)

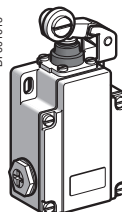
DF601611



DF601612

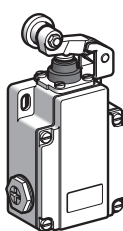


DF601613

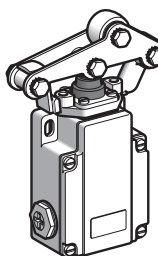


Page 36

DF601614



DF601615



Page 36

Environment characteristics

Conformity to standards	IEC/EN 60947-5-1, IEC 60337-1, VDE 0660-200, CSA C22-2 n° 14
Product certifications	Special version CSA 600 V (ac) HD
Protective treatment	Version Standard: "TC". Special: "TH"
Ambient air temperature	For operation - 25...+ 70°C
	For storage - 40...+ 70°C
Operating position	All positions
Vibration resistance	9 gn (10...500 Hz) conforming to IEC 60068-2-6
Shock resistance	95 gn (11 ms) conforming to IEC 60068-2-27
Electric shock protection	Class I conforming to IEC 60536 and NF C 20-030
Degree of protection	IP 65 conforming to IEC 60529 and NF C 20-010
Mechanical durability	10 million operating cycles
Cable entry	3 tapped entries for n° 13 cable gland

Contact block characteristics

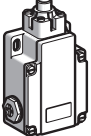
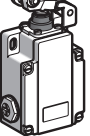
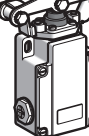
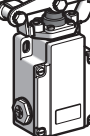
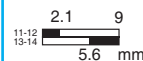
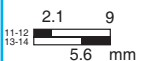
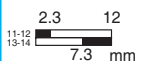
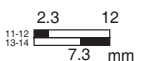
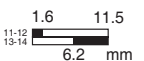
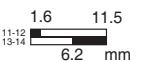
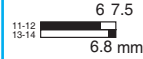
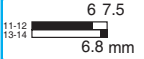
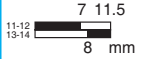
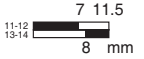
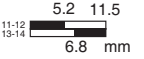
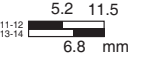
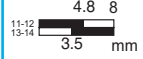
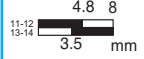
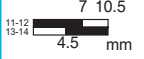
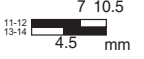
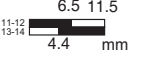
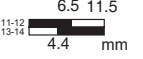
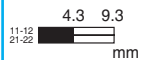
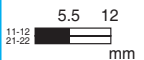
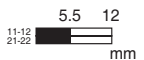
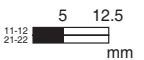
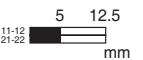
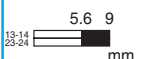
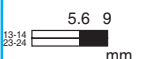
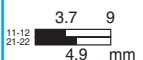
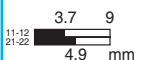
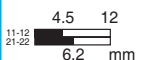
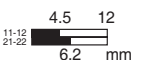
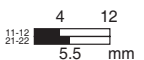
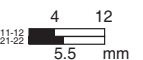
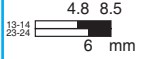
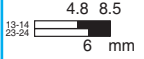
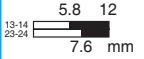
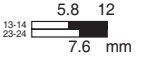
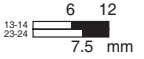
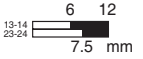
Conventional thermal current		10 A			
Rated insulation voltage	Slow break contact blocks	500 V ~ and 600 V --- conforming to IEC 60947-5-1, NF C 20-040 ~ and 600 V --- conforming to CSA C22-2 n° 14			
Resistance across terminals		≤ 8 mΩ			
Minimum tripping force		XC1AC1●1: 33 N, XC1AC1●6: 23 N, XC1AC1●7: 29 N			
Terminal referencing		Conforming to CENELEC EN 50013			
Short-circuit protection		10 A cartridge fuse type gG (gl)			
Electrical durability		■ Conforming to IEC 60947-5-1 Appendix C ■ Utilisation categories AC-15 and DC-13 ■ Maximum operating rate: 3600 operating cycles/hour ■ Load factor: 0.5			
		Slow break contact blocks			
		Power broken in VA			
AC supply 50/60 Hz ~  inductive circuit		Voltage V	48	110	230
		For 1 million operating cycles	450	900	1900
		For 3 million operating cycles	170	350	430
		Power broken in W			
DC supply ---  inductive circuit		Voltage V	48	110	230
		For 1 million operating cycles	100	100	95
		For 3 million operating cycles	35	40	33

Limit switches

XC Special range

For material handling applications, XC1AC

Complete switches with slow break contacts

Type of head	Plunger					
						
Type of operator	End plunger	End ball bearing plunger	Roller lever plunger	Offset roller lever plunger	Reinforced roller lever plunger	Needle bearing mounted roller lever plunger
References of complete switches						
Single-pole CO slow break ZC1AZ11	XC1AC111 	XC1AC115 	XC1AC116 	XC1AC118 	XC1AC117 	XC1AC119 
2-pole NC + NO break before make, slow break ZC1AZ12	XC1AC121 	XC1AC125 	XC1AC126 	XC1AC128 	XC1AC127 	XC1AC129 
2-pole NO + NC make before break ZC1AZ13	XC1AC131 	XC1AC135 	XC1AC136 	XC1AC138 	XC1AC137 	XC1AC139 
2-pole NC + NC simultaneous, slow break ZC1AZ14	XC1AC141 	XC1AC145 	XC1AC146 	XC1AC148 	XC1AC147 	XC1AC149 
2-pole NO + NO simultaneous, slow break ZC1AZ15	XC1AC151 	XC1AC155 	XC1AC156 	XC1AC158 	XC1AC157 	XC1AC159 
2-pole NC + NC staggered, slow break ZC1AZ16	XC1AC161 	XC1AC165 	XC1AC166 	XC1AC168 	XC1AC167 	XC1AC169 
2-pole NO + NO staggered, slow break ZC1AZ17	XC1AC171 	XC1AC175 	XC1AC176 	XC1AC178 	XC1AC177 	XC1AC179 
Weight (kg)	0.530	0.530	0.595	0.595	0.870	0.870
Contact operation	 closed  open					

Complementary characteristics		
Switch actuation	On end	By 30° cam
Type of actuation		
Maximum actuation speed	0.5 m/s	1 m/s (direction A), 0.5 m/s (direction B) (1)
Cable entry	3 tapped entries for n° 13 (DIN Pg 13.5) cable gland, clamping capacity 9 to 12 mm (2 entries fitted with blanking plug)	
Connection	Screw terminals. Clamping capacity: min. 1 x 0.5 mm ² , max. 1 x 2.5 mm ²	

(1) For a 45° cam the maximum actuation speed becomes 0.5 m/s and for a 15° cam, 1 m/s.

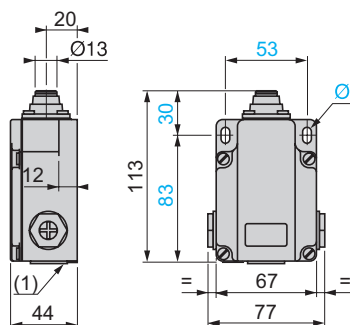
Limit switches

XC Special range

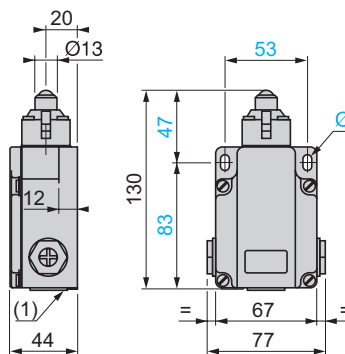
For material handling applications, XC1AC

Complete switches with slow break contacts

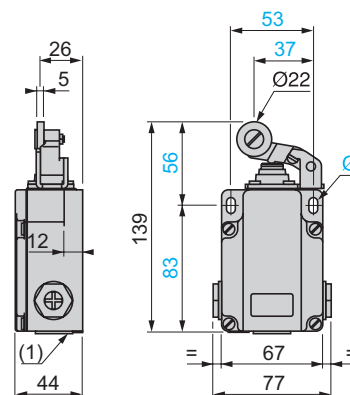
XC1AC1●1



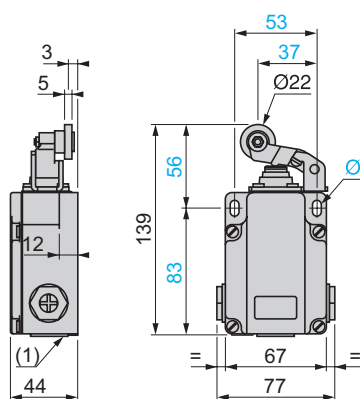
XC1AC1●5



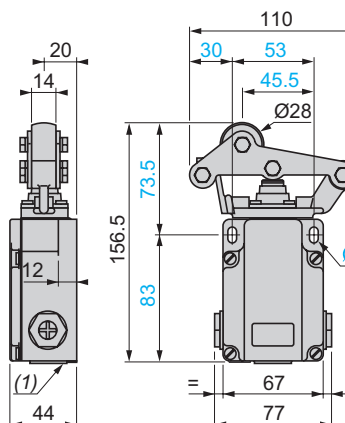
XC1AC1●6



XC1AC1●8



XC1AC1●7, XC1AC1●9



(1) 3 tapped entries for n° 13 cable gland or ISO 20 with adaptor DE9RA1620 (Schneider Electric product).

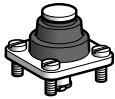
Ø: 2 elongated holes Ø 6.5 x 10.

Limit switches

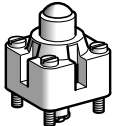
XC Special range

For material handling applications, XC1AC

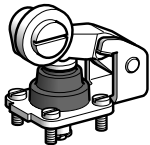
Replacement parts



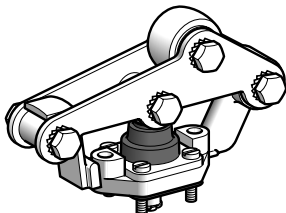
ZC1AC001



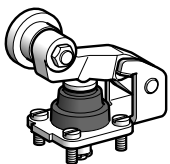
ZC1AC005



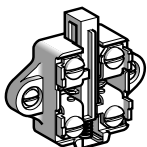
ZC1AC006



ZC1AC007
ZC1AC009



ZC1AC008

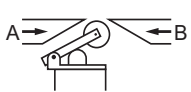
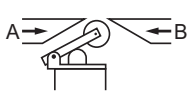
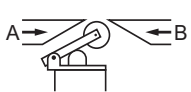


ZC1AZ1●

Plunger heads

Type of operator	Maximum actuation speed	Type of actuation	Reference	Weight kg
For actuation on end				
End plunger	0.5 m/s		ZC1AC001	0.035

For actuation by 30° cam

End ball bearing plunger	0.5 m/s		ZC1AC005	0.050
Roller lever plunger	1 m/s (direction A) 0.5 m/s (direction B)		ZC1AC006	0.100
Reinforced roller lever plunger	1 m/s (direction A) 0.5 m/s (direction B)		ZC1AC007	0.375
Offset roller lever plunger	1 m/s (direction A) 0.5 m/s (direction B)		ZC1AC008	0.100
Needle bearing mounted roller lever plunger	1 m/s (direction A) 0.5 m/s (direction B)		ZC1AC009	3.380

Contact blocks

Type of contact	Scheme	Reference	Weight kg
CO, single-pole		ZC1AZ11	0.040
NC + NO break before make		ZC1AZ12	0.045
NO + NC make before break		ZC1AZ13	0.040
NC + NC simultaneous		ZC1AZ14	0.045
NO + NO simultaneous		ZC1AZ15	0.045
NC + NC staggered		ZC1AZ16	0.040
NO + NO staggered		ZC1AZ17	0.040

Adaptation plate

Description	Reference	Weight kg
Mounting plate (For replacing an old version type RN-67522 limit switch by an XC1AC limit switch)	ZC1AZ8	3.380

Limit switches

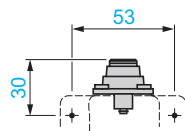
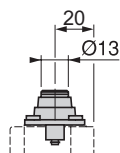
XC Special range

For material handling applications, XC1AC

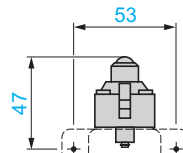
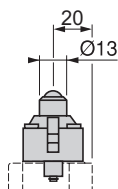
Replacement parts

Dimensions

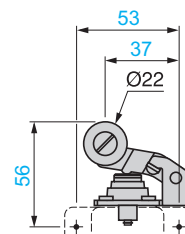
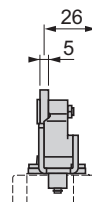
ZC1AC001



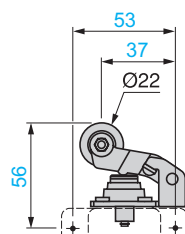
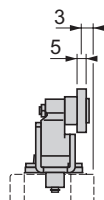
ZC1AC005



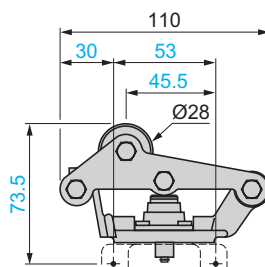
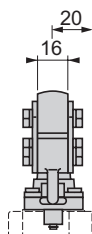
ZC1AC006



ZC1AC008



ZC1AC007, ZC1AC009



Limit switches

XC Special range

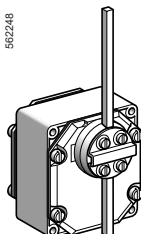
For hoisting and material handling applications, XCR

■ XCR

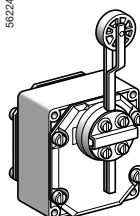
□ With head for rotary movement operators, spring return to off position

1 contact actuation position per direction

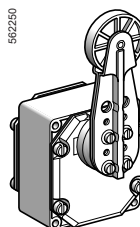
562248



562249



562250

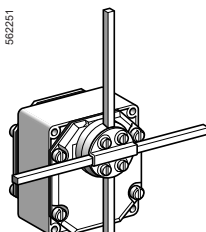


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□ With head for rotary movement operators, stay put

1 contact actuation position per direction

562251



Page 44

Limit switches

XC Special range

For hoisting and material handling applications, XCKMR and XCKVR

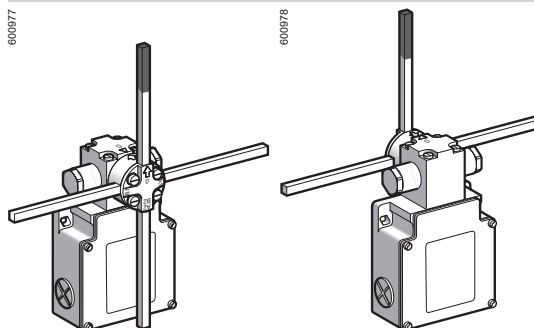
For conveyor belt shift monitoring applications, XCRT

■ XCKMR (metal)

□ With head for rotary movement operators, stay put

4 mechanical actuation positions of 4 contacts

From 2 to 5 electrical positions depending on model



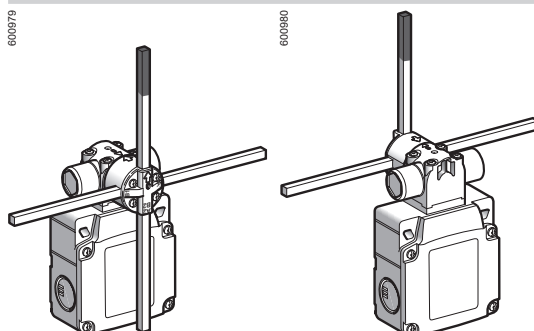
Page 50

■ XCKVR (plastic)

□ With head for rotary movement operators, stay put

4 mechanical actuation positions of 4 contacts

From 2 to 5 electrical positions depending on model



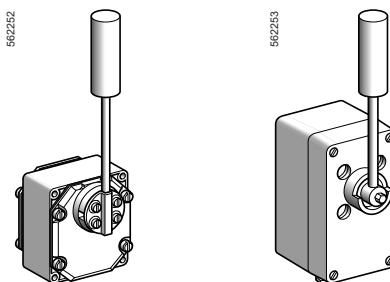
Page 50

■ XCRT

□ With head for rotary movement operators, spring return to off position

2 contact actuation positions per direction

1 contact actuated at 10°, other contact at 18°



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Limit switches

XC Special range

For hoisting and material handling applications, XCR, XCKMR and XCKVR

For conveyor belt shift monitoring applications, XCRT

Environment characteristics				
Limit switches		XCR and XCRT	XCKMR (metal)	XCKVR (plastic)
Conformity to standards	Products	EN/IEC 60947-5-1, CSA C22-2 n° 14, CCC	EN/IEC 60947-5-1, CSA C22-2 n° 14, UL 508, CCC	
	Machine assemblies	EN/IEC 60204-1		
Product certifications		XCRA, B, E, F: CE, CSA, UL CCC, EAC	CE, UL, CSA, CCC, EAC	
Protective treatment	Standard version	"TC"		
Ambient air temperature	For operation	- 25...+ 70 °C	- 25...+ 70 °C	- 25...+ 70 °C
	For storage	- 40...+ 70 °C	- 40...+ 85 °C	- 40...+ 70 °C
Vibration resistance	Conforming to EN/IEC 60068-2-6	9 gn (10...500 Hz)	25 gn (10...500 Hz)	25 gn (10...500 Hz)
Shock resistance	Conforming to EN/IEC 60068-2-27	XCRA, B, E, F: 68 gn, XCRT: 30 gn (18 ms)	50 gn	50 gn
Electric shock protection		Class I conforming to IEC 60536		
		Class II conforming to IEC 60536		
Degree of protection	Conforming to EN/IEC 60529	XCRA, B, E, F: IP 65 XCRT: IP 65	IP 66	IP 65
Degree of protection against mechanical impacts	Conforming to IEC 62262	IK 07	IK 07	IK 04
Materials	Enclosure	Metal (except XCRT315: polyester)	Zamak ZP3	(PBT + PC) - GF 30 FR (Valox)
	Cover	Metal (except XCRT315: polyester)	DC03 steel	(PBT + PC) - GF 30 FR (Valox)
	Head	Metal	Zamak ZP3	(PBT + PC) - GF 30 FR (Valox)
Cable entry		1 tapped entry for Pg 13.5 cable gland	3 tapped entries for Pg 13.5 cable gland or tapped M20 x 1.5	1 tapped entry M20 x 1.5. 2 breakout holes for ISO M20 cable gland
Contact block characteristics				
Rated operational characteristics	Conforming to EN/IEC 60947-5-1 Appendix A	XCRA, B, E, F: ~ AC-15; A300 (Ue = 240 V, Ie = 3 A), Ithe = 10 A --- DC-13 ; Q300 (Ue = 250 V, Ie = 0.27 A) XCRT: ~ AC-15; B300 (Ue = 240 V, Ie = 1.5 A/ Ue = 120 V, Ie = 3 A) --- DC-13 ; R300 (Ue = 250 V, Ie = 0.1 A)	~ AC-15 ; A300 (Ue = 240 V, Ie = 3 A), Ithe = 10 A --- DC-13 ; Q150 (Ue = 125 V, Ie = 0.55 A)	
Rated insulation voltage		Ui = 500 V degree of pollution 3 conforming to EN/IEC 60947-1 Ui = 300 V conforming to UL 508, CSA C22-2 n° 14		
Rated impulse withstand voltage		U imp = 6 kV conforming to EN/IEC 60947-1, IEC 60664		
Positive operation (depending on model)		NC contacts with positive opening operation conforming to EN/IEC 60947-5-1 Section 3 (except XCRT)	NC contacts with positive opening operation conforming to EN/IEC 60947-5-1 Section 3 (contacts 21-22)	
Resistance across terminals		≤ 25 m Ω conforming to NF C 93-050 method A or IEC 60255-7 category 3		
Short-circuit protection		10 A cartridge fuse type gG (gl)		
Connection	Screw clamp terminals	Clamping capacity XE2N P2151 ou XCRT: min: 1 x 0.5 mm², max: 2 x 2.5 mm² XE2S P2151: min: 1 x 0.34 mm², max: 2 x 1.5 mm²	Clamping capacity min: 1 x 0.5 mm² max: 2 x 2.5 mm²	
Minimum actuation speed		XE2SP2151 or XCRT: 0.01 m/mn	XE2NP2151 or XCKMR and XCKVR : 6 m/mn	

Limit switches

XC Special range

For hoisting and material handling applications, XCR, XCKMR and XCKVR

For conveyor belt shift monitoring applications, XCRT

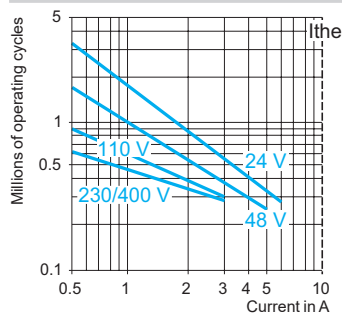
Contact block characteristics (continued)

Electrical durability

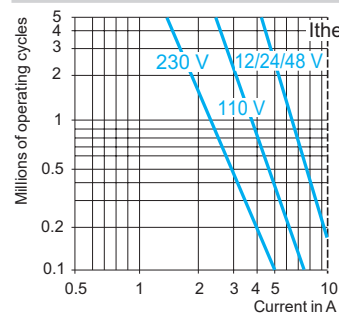
- Conforming to EN/IEC 60947-5-1 Appendix C
- Utilisation categories AC-15 and DC-13
- Maximum operating rate: 3600 operating cycles/hour
- Load factor: 0.5

AC supply
~ 50/60 Hz
~ inductive circuit

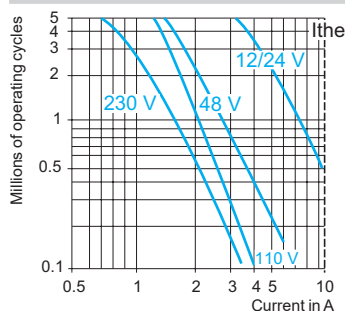
XE2SP2151



XE2NP2151



XCRT contacts



DC supply ---

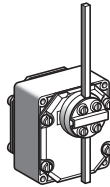
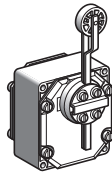
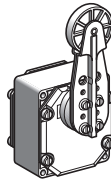
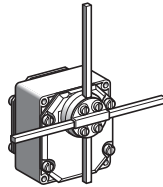
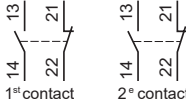
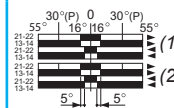
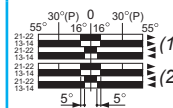
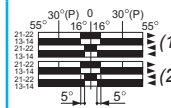
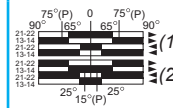
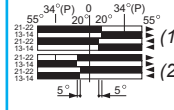
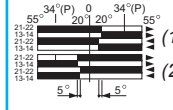
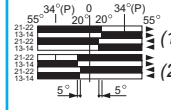
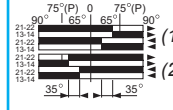
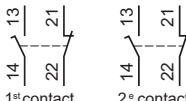
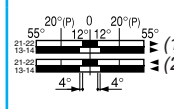
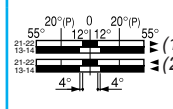
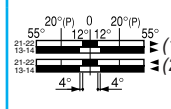
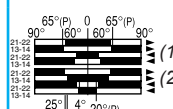
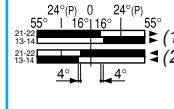
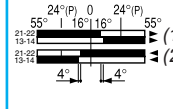
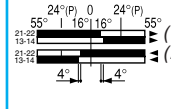
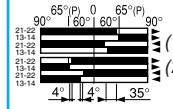
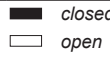
	Voltage V	24	48	120
Power broken in W for 5 million operating cycles	XE2SP2151	10	7	4
	XE2NP2151	13	9	7
	XCRT contacts	10	7	4

For XE2SP2151 on ~ or --- NC and NO contacts simultaneously loaded to the values shown with reverse polarity.

Limit switches

XC Special range

For hoisting and material handling applications, XCR
Complete switches with 1 cable entry

Type of head	Rotary with spring return to off position			Stay put	
Maximum displacement	55° in each direction			90° in each direction	
					
Type of operator	Metal rod, Ø 6 mm	Thermoplastic roller lever	Large thermoplastic roller lever	Metal rods, Ø 6 mm, crossed rods for XCRE●8, "T" rods for XCRF●7	
Rod length	1 rod of 200 mm	—	—	XCRE●●: 2 rods of 200 mm XCRF●●: 1 rod of 200 mm and 1 rod of 300 mm	
References of complete switches (⊖ NC contact with positive opening operation)					
Two 2-pole NC + NO snap action XE2SP2151  1 st contact 2 ^e contact	Both contacts operate in each direction	XCR11 ⊖ (3) 	XCR12 ⊖ (3) 	XCR15 ⊖ (3) 	XCR18 ⊖ (3) (4) 
	1 contact operates in each direction	XCRB11 ⊖ (3) 	XCRB12 ⊖ (3) 	XCRB15 ⊖ (3) 	XCRF17 ⊖ (3) 
Two 2-pole NC + NO break before make, slow break XE2NP2151  1 st contact 2 ^e contact	Both contacts operate in each direction	XCR11 ⊖ (3) 	XCR12 ⊖ (3) 	XCR15 ⊖ (3) 	XCR18 ⊖ (3) (4) 
	1 contact operates in each direction	XCRB11 ⊖ (3) 	XCRB12 ⊖ (3) 	XCRB15 ⊖ (3) 	XCRF17 ⊖ (3) 
Weight (kg)	1.110	1.145	1.155	1.135	
Contact operation	 (P) = positive opening point (1) 1 st contact (2) 2 nd contact				

Complementary characteristics

Lever maximum actuation speed		1.5 m/s	
Mechanical durability		10 million operating cycles	
Minimum torque	For tripping	0.45 N.m	0.60 N.m
	For positive opening	0.75 N.m	0.70 N.m
Cable entry		1 entry tapped for Pg 13.5 cable gland conforming to NF C 68-300 (DIN Pg 13.5) Clamping capacity 9 to 12 mm	

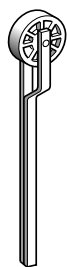
(3) For a limit switch with watertight reinforced seal (IP 65), add 1 to the end of the reference. Example: XCRF17 becomes XCRF171.

(4) The rotation is not limited for XCRE18 and XCRE58.

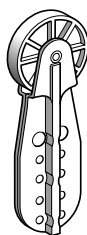
Limit switches

XC Special range

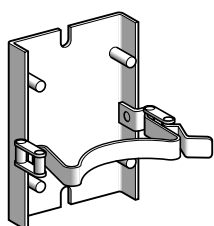
For hoisting and material handling applications, XCR



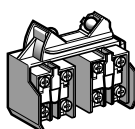
XCRZ02



XCRZ05



XCRZ09



XCRZ11

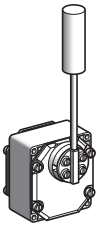
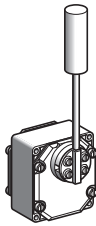
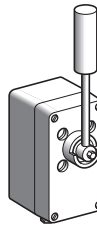
Separate components

Description	For switches	Type	Reference	Weight kg
Rod, $\varnothing$ 6 mm	XCRA	L = 200 mm	XCRZ03	0.020
	XCRB			
	XCRE			
	XCRF			
	XCRF	L = 300 mm	XCRZ04	0.030
Roller lever thermoplastic roller	XCRA	—	XCRZ02	0.050
	XCRB			
Large roller lever thermoplastic roller	XCRA	—	XCRZ05	0.090
	XCRB			
Quick fixing/ release bracket	XCRA, XCRB	—	XCRZ09	0.520
	XCRE, XCRF			
Contact block (2 contacts) with mounting plate	XCRA, XCRB XCRE, XCRF	2-pole NC + NO snap action	XCRZ12	0.135
		2-pole NC + NO break before make, snap action	XCRZ15	0.135

Limit switches

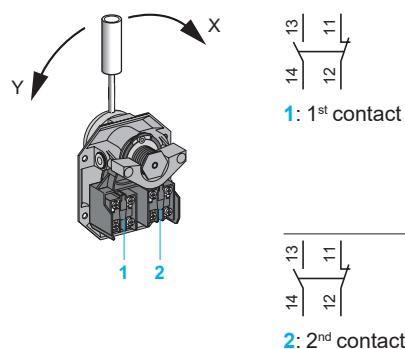
XC Special range

For conveyor belt shift monitoring applications, XCRT
Complete switches with 1 cable entry

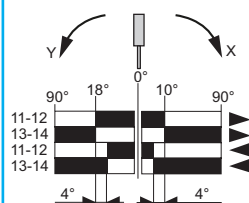
Type of switch	Standard	For corrosive atmospheres	
			
Features	Zinc alloy enclosure Colour: industrial blue Zinc plated steel lever, spring return to off position Cam angles: 10° and 18° Maximum displacement: 90°	Zinc alloy enclosure Colour: blue Stainless steel lever, spring return to off position Cam angles: 10° and 18° Maximum displacement: 90°	Glass reinforced polyester enclosure Colour: grey Stainless steel lever, spring return to off position Cam angles: 10° and 18° Maximum displacement: 70°

References of complete switches

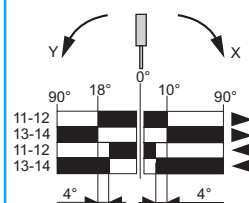
2 single-pole CO snap action



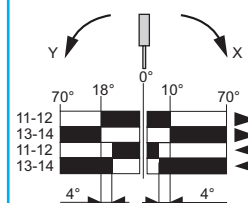
XCRT115



XCRT215



XCRT315



Weight (kg)

1.170

1.170

1.520

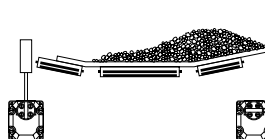
Contact operation

■ closed
□ open

Complementary characteristics

Lever maximum actuation speed	1.5 m/s
Belt maximum speed	4 m/s
Machnical durability	0.3 million operating cycles
Minimum tripping torque	1.7 N.m
Cable entry	1 entry tapped for Pg 13.5 cable gland conforming to NF C 68-300 (DIN Pg 13.5) Clamping capacity 9 to 12 mm

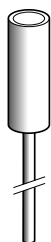
Switch operation

Normal position	Fault signalling	Stopping of the conveyor belt	Maximum rotation
			

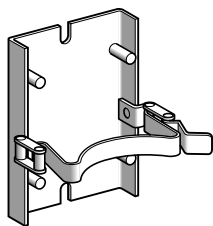
Limit switches

XC Special range

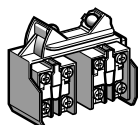
For conveyor belt shift monitoring applications,
XCRT



XCRZ9●●



XCRZ09



XCRZ42

Separate components

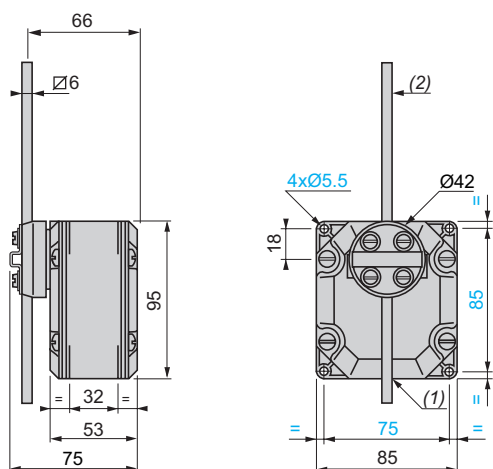
Description	Type	For switches	Reference	Weight kg
Roller with lever	Zinc plated steel	XCRT115 XCRT215	XCRZ901	0.230
	Stainless steel	XCRT115 XCRT215	XCRZ902	0.230
		XCRT315	XCRZ903	0.230
Quick fixing/release bracket	—	XCRT115 XCRT215	XCRZ09	0.520
Contact block (2 contacts) with mounting plate	Single-pole CO snap action	XCRT●15	XCRZ42	0.135

Limit switches

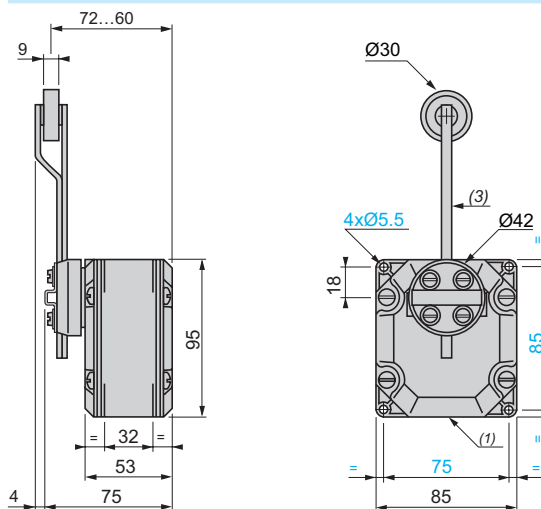
XC Special range

For hoisting and material handling applications, XCR

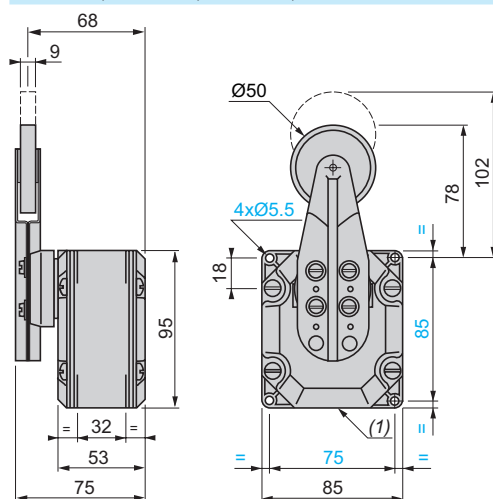
XCRA11, XCRB11, XCRA51, XCRB51



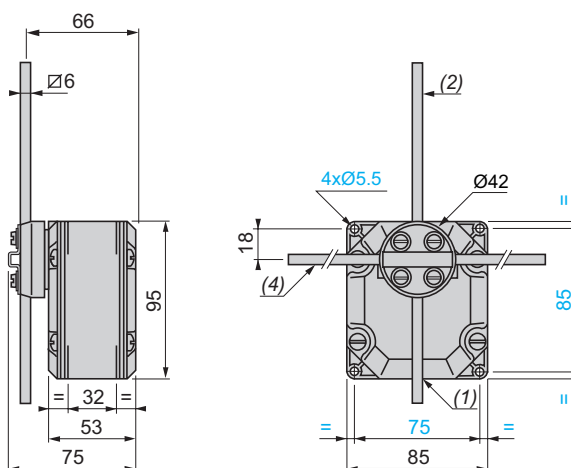
XCRA12, XCRB12, XCRA52, XCRB52



XCRA15, XCRB15, XCRA55, XCRB55



XCRE18, XCRE58, XCRF17, XCRF57



(1) 1 tapped entry for Pg 13.5 cable gland.

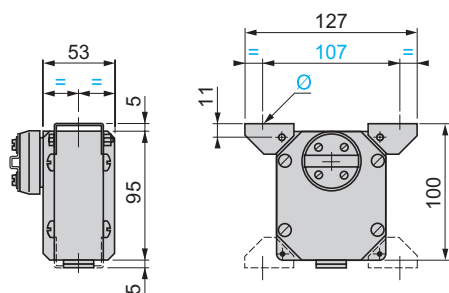
(2) Rod length: 200 mm.

(3) Rod + roller length: 160 mm.

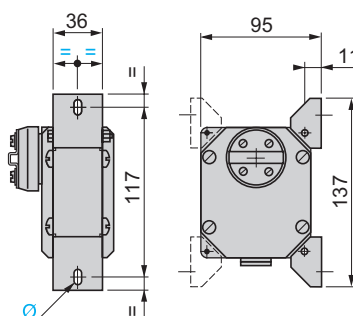
(4) Rod length: 300 mm for XCRF17 and XCRF57, 200 mm for XCRE18 and XCRE58.

Supplementary fixing using 2 adjustable lugs (included with switch)

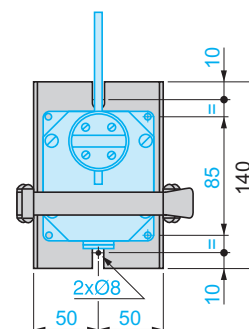
Horizontally positioned



Vertically positioned



Quick fixing/release bracket XCRZ09



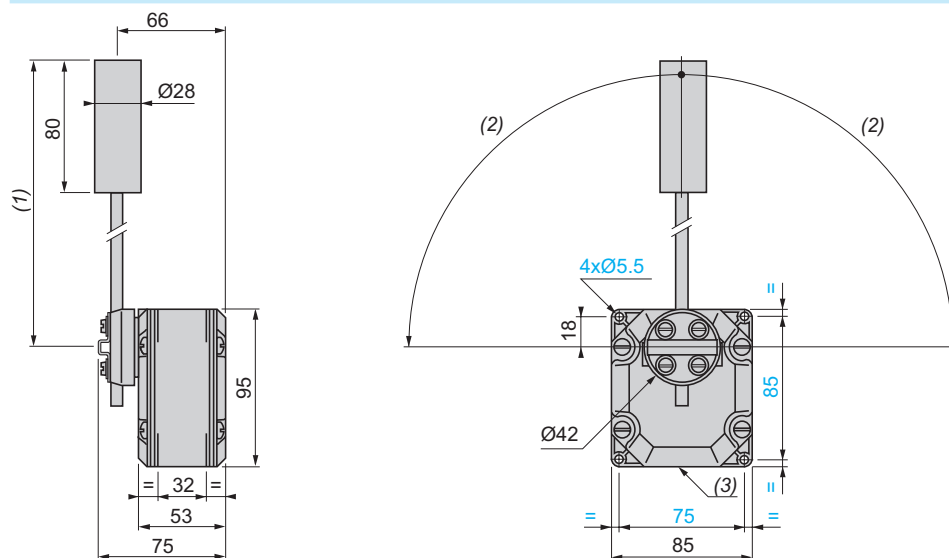
Ø: 1 elongated hole Ø 6 x 8.

Limit switches

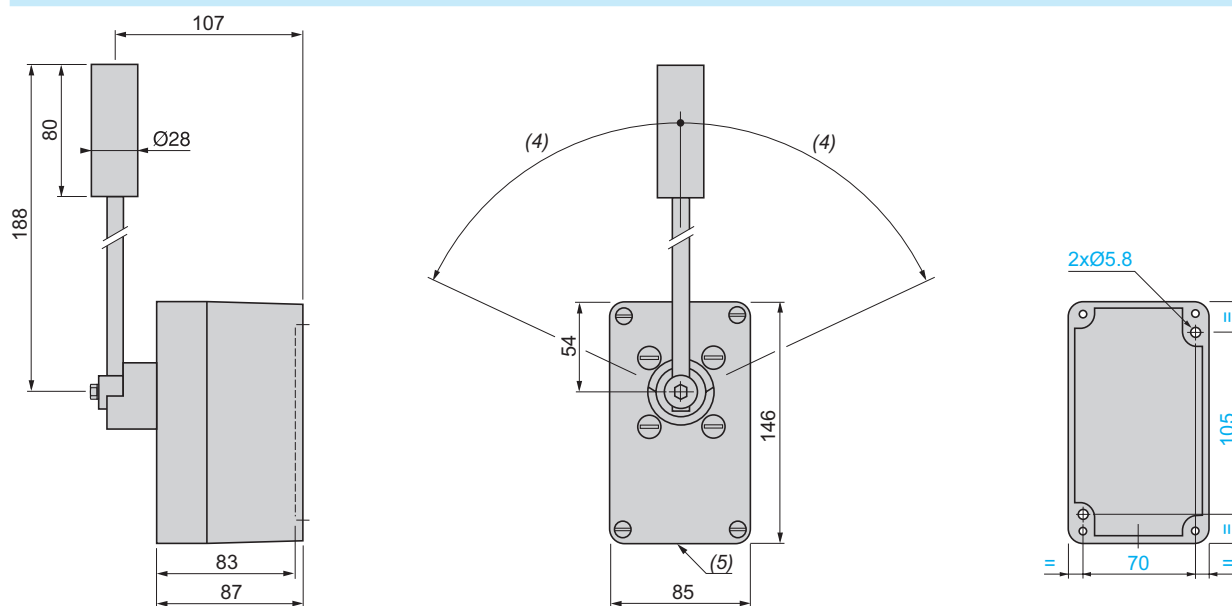
XC Special range

For conveyor belt shift monitoring applications,
XCRT

XCRT115, XCRT215



XCRT315



(1) 200 max., 104 min.

(2) 90° max.

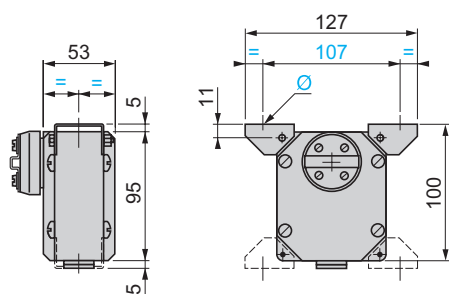
(3) 1 tapped entry for Pg 13.5 cable gland.

(4) 70° max.

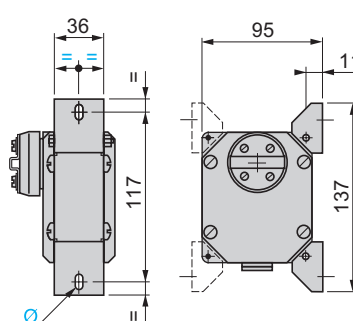
(5) 1 plain entry for Pg 13.5 cable gland.

Supplementary fixing using 2 adjustable lugs (included with XCRT115 and XCRT215)

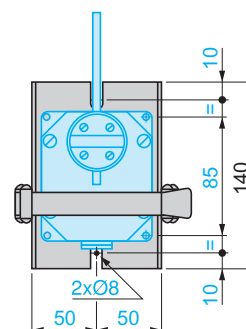
Horizontally positioned



Vertically positioned



Quick fixing/release bracket XCRZ09



Ø: 1 elongated hole Ø 6 x 8.

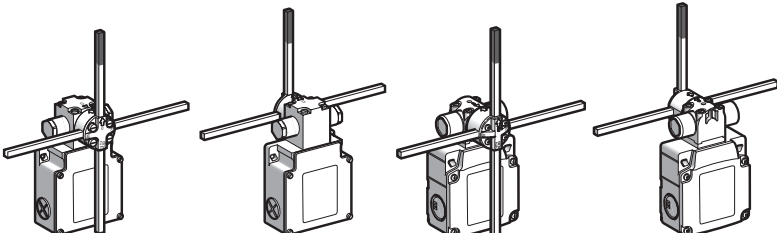
Limit switches

XC Special range

For hoisting and material handling applications,

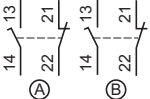
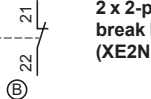
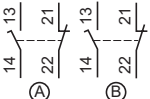
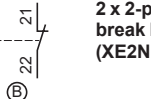
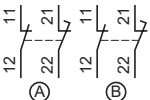
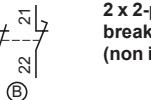
XCKMR and XCKVR

Complete switches with 3 cable entries

Type of operating head	Rotary			
				

Material	Metal		Plastic	
Type of operator	With cruciform metal rods	With cruciform metal rods, reversed head	With cruciform metal rods	With cruciform metal rods, reversed head

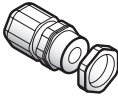
References

“By pass” switches				
	2 x 2-pole NC+NO break before make, slow break (XE2NP2151)	XCKMR24SR1H29	–	XCKVR24SR1H29
				
“Single speed” switches				
	2 x 2-pole NC+NO break before make, slow break (XE2NP2151)	XCKMR44D1H29	XCKMR44D2H29	XCKVR44D1H29
				XCKVR44D2H29
“Double speed” switches (⊖ NC contact with positive opening operation on contacts 21-22)				
	2 x 2-pole NC+NC break before make, slow break (non interchangeable contacts)	XCKMR54D1H29 (1)	XCKMR54D2H29 (1)	XCKVR54D1H29
				XCKVR54D2H29
Weight (kg)		0.684	0.684	0.320

Complementary characteristics

Switch actuation	Horizontal	Horizontal
Permissible actuation area on the rods	Between 65 and 95 mm from the axis of the fixing screws on the body	
Minimum actuation speed	6 m/mn	6 m/mn
Maximum actuation speed (2)	1.5 m/s	1.5 m/s
Minimum force or torque	For tripping	0.5 N.m
	For positive opening	0.75 N.m
Mechanical durability	2 million operating cycles	1 million operating cycles
Setting up	Rods included with the switch: for customer assembly	

References of separate components

	Description	Reference	Weight kg
 XCRZ03	Rod Ø 6 mm, L = 200 mm	XCRZ03	0.020
 XCRZ03R	Rod Ø 6 mm, L = 200 mm with red mark	XCRZ03R	0.020
 DE9PEM20010	Plastic cable gland ISO M20	DE9PEM20010	0.010

(1) For complete switches with entry for Pg 13.5 cable gland, delete H29 from the end of the reference. Example: **XCKMR54D1H29** becomes **XCKMR54D1**.

(2) For an actuation point on the rod between 65 and 95 mm from the axis of the fixing screws on the body.

Limit switches

XC Special range

For hoisting and material handling applications,

XCKMR and XCKVR

Complete switches with 3 cable entries

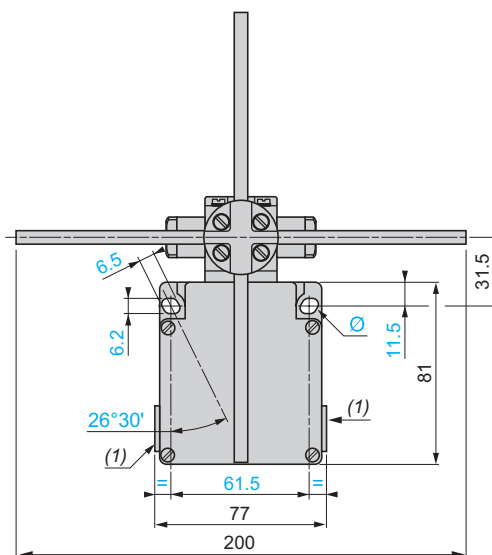
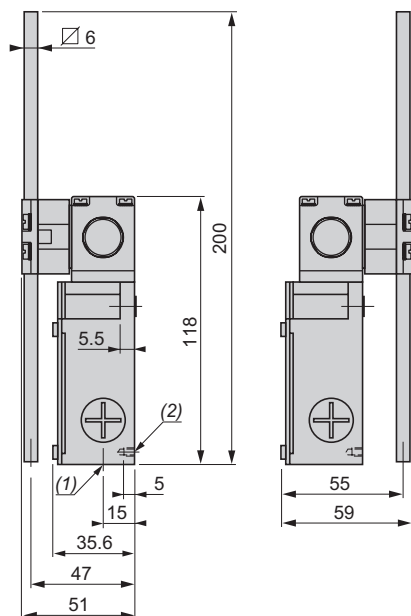
Dimensions

Metal limit switches

XCKMR24SR1H29,
XCKMR44D1H29 and
XCKMR54D1H29

XCKMR44D2H29 and
XCKMR54D2H29

Same front view



(1) XCKMR●●●●H29 = 3 tapped entries ISO M20 x 1.5.

XCKMR●●●● = 3 tapped entries for Pg 13.5 cable gland.

(2) 2 centring holes Ø 3.9 ± 0.2, for cover fixing holes alignment.

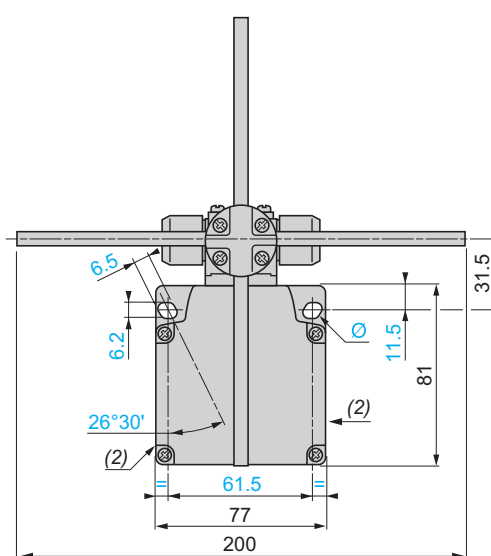
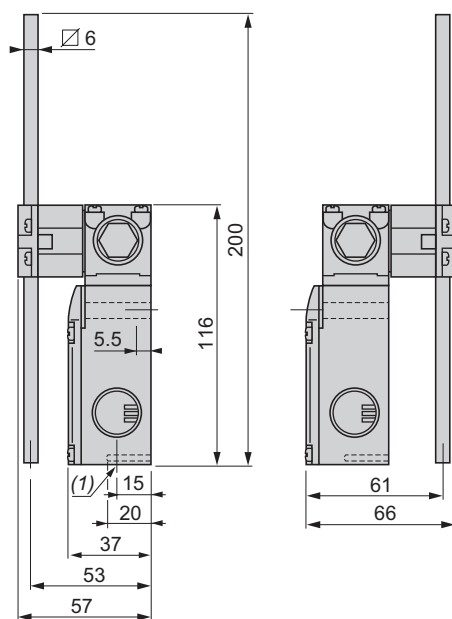
Ø: 2 elongated holes 6.2 x 6.5, inclined at 26°30' to the vertical axis, for M5 screws.

Plastic limit switches

XCKVR24SR1H29,
XCKVR44D1H29 and
XCKVR54D1H29

XCKVR44D2H29 and
XCKVR54D2H29

Same front view



(1) 1 tapped entry ISO M20 x 1.5.

(2) 2 knock-out holes for ISO M20 cable gland (reference: DE9PEM20010).

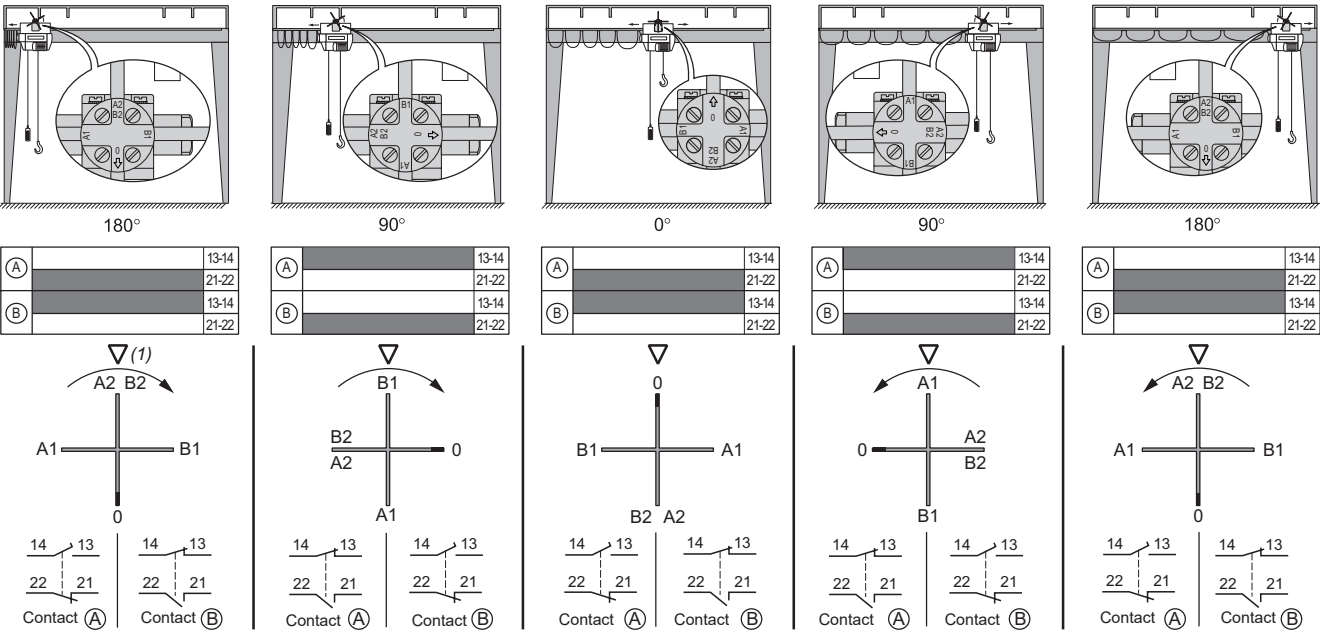
Ø: 2 elongated holes 6.2 x 6.5, inclined at 26°30' to the vertical axis, for M5 screws.

Limit switches

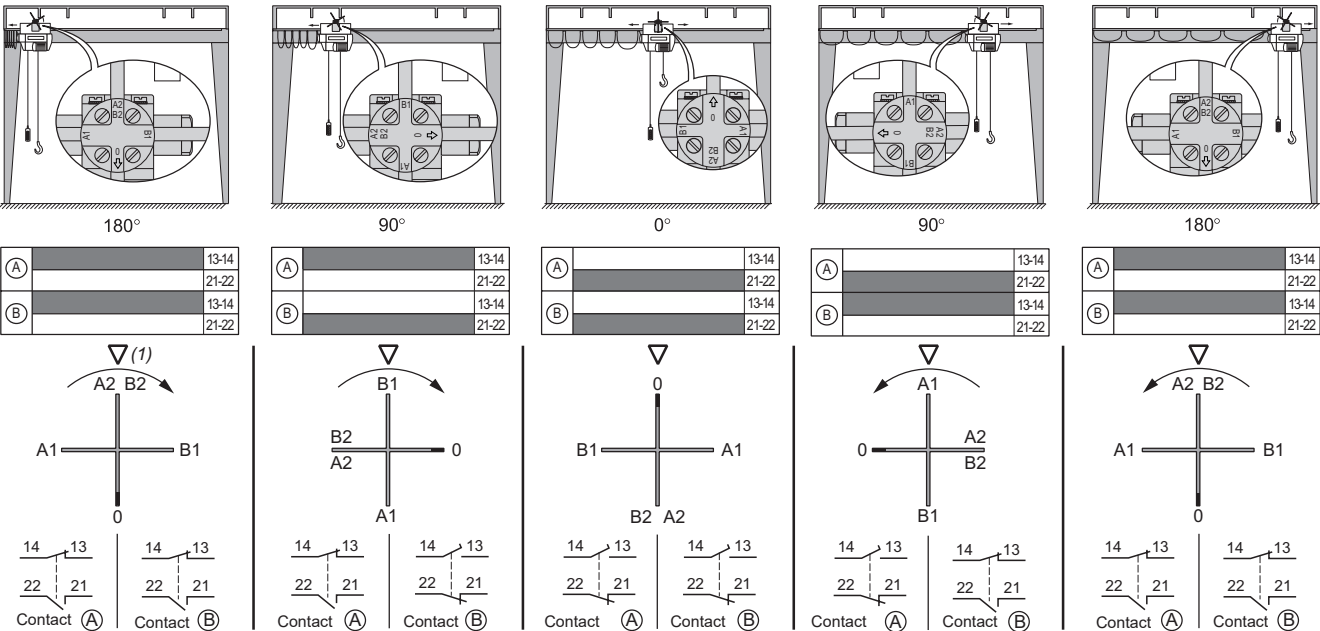
XC Special range
For hoisting and material handling applications,
XCKMR and XCKVR
Complete switches with 3 cable entries

Operation

Limit switches XCK•R24SR1H29: “By pass”



Limit switches XCK•R44D•H29: “Single speed”



Limit switches

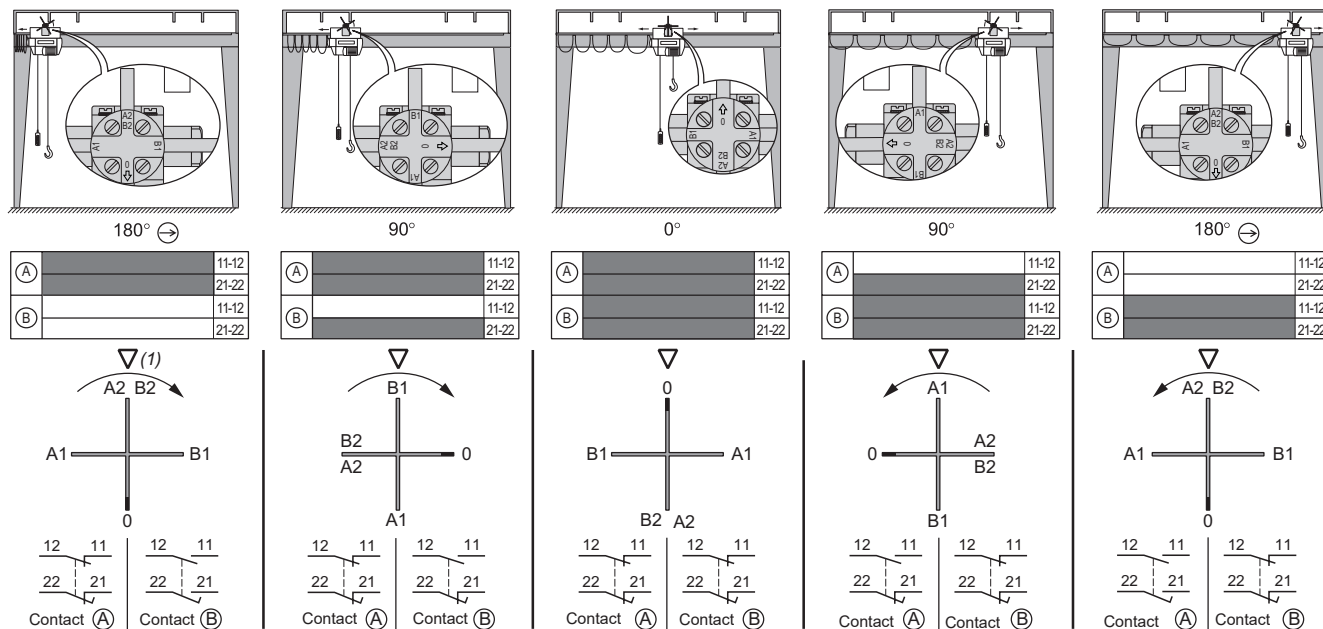
XC Special range

For hoisting and material handling applications,
XCKMR and XCKVR

Complete switches with 3 cable entries

Operation (continued)

Limit switches XCK●R54D●●●●: "Double speed"



(1) Triangle symbol marked on top of head.

or
: direction of rotation.

Miniature snap switches

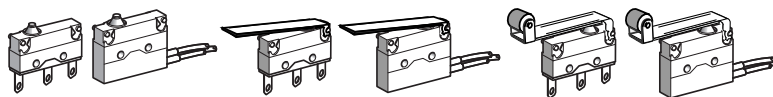
XC Special range

Subminiature design, DIN 41635 B format, sealed

Sub-subminiature design, DIN 41635 D format

References

Subminiature design, DIN 41635 B format, sealed



Type of operator	Plunger	Flat lever (1)	Roller lever (1)
 Single-pole CO snap action Wiring: 1 Black 2 Grey 4 Blue	2.8 mm cable clip tag connections XEP4E1W7 (3) Weight (g) Pre-cabled connections XEP4E1FD (3) Weight (g)	Flat lever (1) XEP4E1W7A326 (3) 3.1 XEP4E1FDA326 (3) 14.8	Roller lever (1) XEP4E1W7A454 (3) 3.2 XEP4E1FDA454 (3) 14.9
Separate components	Flat lever (2)	ZEP4L326 (3)	—
	Weight (g)	0.7	—
	Roller lever (2)	ZEP4L454 (3)	—
	Weight (g)	0.8	—

Sub-subminiature design, DIN 41635 D format



Type of operator		Plunger	Flat lever (1)
 Single-pole CO snap action	Solder tag connections	XEP5P1W2 (3)	XEP5P1W2Z55B (3)
	Weight (g)	1.4	1.9

Dimensions

[illegible]

(1) In order to avoid damage to the fixing spigots, removal of the lever from complete products is not recommended.

(2) Levers only for mounting on basic (plunger) snap switches (**XEP4E1W7** and **XEP4E1FD**).

(3) Switches sold in lots of 5.

(4) A, B, Z: lever fixing positions.

Miniature snap switches

XC Special range

Subminiature design, DIN 41635 B format, sealed

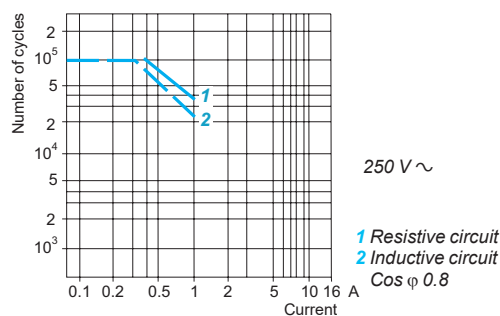
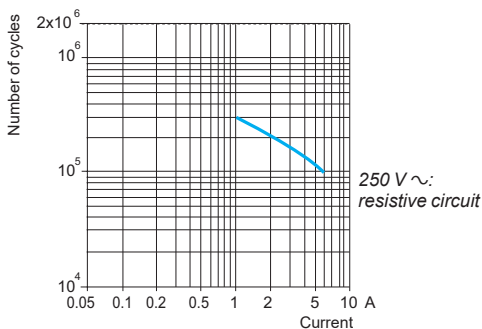
Sub-subminiature design, DIN 41635 D format

Switch type			XEP4E1●●, XEP5P1W2 Plunger	XEP4E1●●A326, XEP5P1W2Z55B Flat lever	XEP4E1●●A454 Roller lever
Environment characteristics					
Lever fixing position (1)			—	A	A
Switch actuation			On end	Horizontal	
Product certifications			CE, IEC 60947-5-1, EN 60947-5-1, c UR us, UL 1054, EN 61058		
Degree of protection			IP 67 XEP4E1FD●●, case IP 67 and tags IP 00 XEP4E1W7●●, case IP 40 and tags IP 00 XEP5P1W2●●		
Operating temperature			- 40...+ 105°C XEP4E1FD●●, - 40...+ 125°C XEP4E1W●●●● and XEP5P1●●●		
Materials	Case		Polyester XEP4, diallyl-phtalate XEP5		
	Lever		—	Stainless steel	Stainless steel, glass reinforced polyamide roller
	Contact		AgCdO XEP4E1●●, Ag XEP5		
	Tags		Tinned brass XEP4E1W●●●, gold plated brass XEP5P1●●		
Mechanical characteristics					
		Lever fixing position (1)			
Maximum tripping force	XEP4	A	2.5 N	0.63 N	0.83 N
		B	2.5 N	1.25 N	1.67 N
	XEP5		2 N	0.80 N	—
Minimum release force	XEP4	A	0.80 N	0.20 N	0.27 N
		B	0.80 N	0.40 N	0.53 N
	XEP5		0.40 N	0.15 N	—
Maximum permissible end of travel force	XEP4	A	10 N	2.5 N	3.33 N
		B	10 N	5 N	6.67 N
	XEP5		10 N	—	—
Tripping point (TP) (2)	XEP4	A	8.40 ^{+/- 0.3} mm	10.7 ^{+/- 1.7} mm	15.5 ^{+/- 1.4} mm
		B	8.40 ^{+/- 0.3} mm	9.6 ^{+/- 1.0} mm	14.5 ^{+/- 0.9} mm
	XEP5		8.40 mm	9.20 mm	—
Maximum differential travel	XEP4	A	0.13 mm	0.52 mm	0.39 mm
		B	0.13 mm	0.26 mm	0.20 mm
	XEP5		0.06 mm	0.25 mm	—
Minimum overtravel	XEP4	A	0.60 mm	2.40 mm	1.80 mm
		B	0.60 mm	1.20 mm	0.90 mm
	XEP5		0.10 mm	—	—
Inter-contact distance	XEP4		0.4 mm		
	XEP5		0.3 mm		
Mechanical durability	XEP4		2 million operating cycles		
	XEP5		0.1 million operating cycles		
Electrical characteristics					
Operational characteristics	XEP4		AC-15: B300 (Ue: 240 V, Ie: 1.5 A) DC-13: R300 (Ue: 250 V, Ie: 0.1 A) conforming to IEC 60947-5-1, EN 60947-5-1 Appendix A 125-250 V AC 6.0 A conforming to UL 1054 6 (1) A 250 V AC 10 000 cycles conforming to EN 61058		
	XEP5		AC-15: D300 (Ue: 240 V, Ie: 0.3 A) conforming to IEC 60947-5-1, EN 60947-5-1 Appendix A		
Thermal current	XEP4		7.5 A on 250 V (50/60 Hz)		
	XEP5		8.5 A on 250 V (50/60 Hz)		
Connection	XEP4		XEP4E1W7●: 2.8 mm clip tags XEP4E1FD: Pre-cabled (horizontally in-line), 3 x 0.5 mm², length 0.5 m		
	XEP5		Solder tags		

Operating curves

XEP4E1●●

XEP5P1●●



(1) Miniature snap switches fitted with a lever are supplied with the lever fixed in position A (see page 54). For basic (plunger) snap switches, it is possible to fix the lever in position A or B, depending on the required tripping conditions (see page 54).

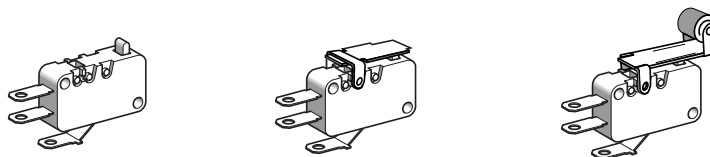
(2) Position of the operator in relation to the switch fixings (fixing hole centre line) at the instant the switch contact changes state.

Miniature snap switches

XC Special range

Miniature design, DIN 41635 A format

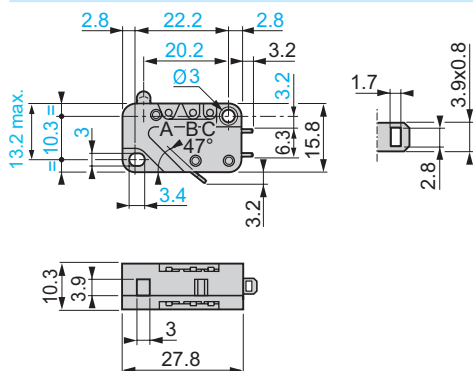
References



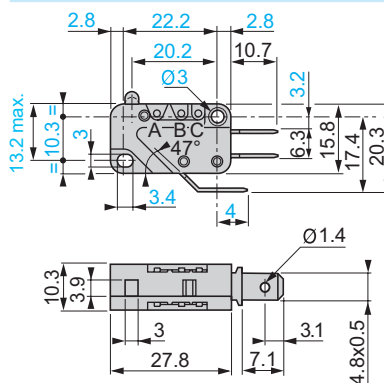
Type of operator		Plunger	Flat lever (1)	Roller lever (1)
 Single-pole CO snap action	Standard contacts	Solder tags	XEP3S1W2 (2)	XEP3S1W2B524 (2)
		4.8 mm cable clip tags	XEP3S1W6 (2)	XEP3S1W6B524 (2)
		6.35 mm cable clip tags	XEP3S1W3 (2)	XEP3S1W3B524 (2)
		Weight (g)	5.6	6.3
	Very low operating force contacts	Solder tags	XEP3S2W2 (2)	XEP3S2W2B524 (2)
		4.8 mm cable clip tags	XEP3S2W6 (2)	XEP3S2W6B524 (2)
		6.35 mm cable clip tags	XEP3S2W3 (2)	XEP3S2W3B524 (2)
Separate components		Weight (g)	5.6	6.3
	Flat lever (3)	ZEP3L524 (2)		
	Weight (g)	0.7		
	Roller lever (3)	ZEP3L529 (2)		
	Weight (g)	1		

Dimensions

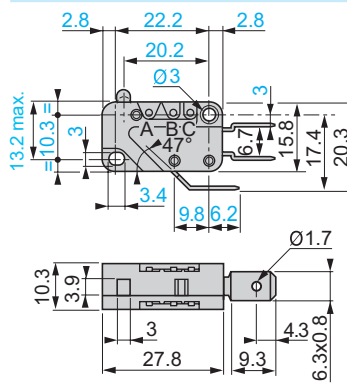
XEP3S●W2



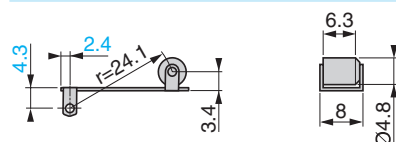
XEP3S●W6



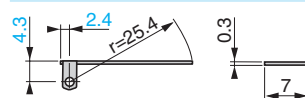
XEP3S●W3



ZEP3L529



ZEP3L524



(1) In order to avoid damage to the fixing spigots, removal of the lever from complete products is not recommended.

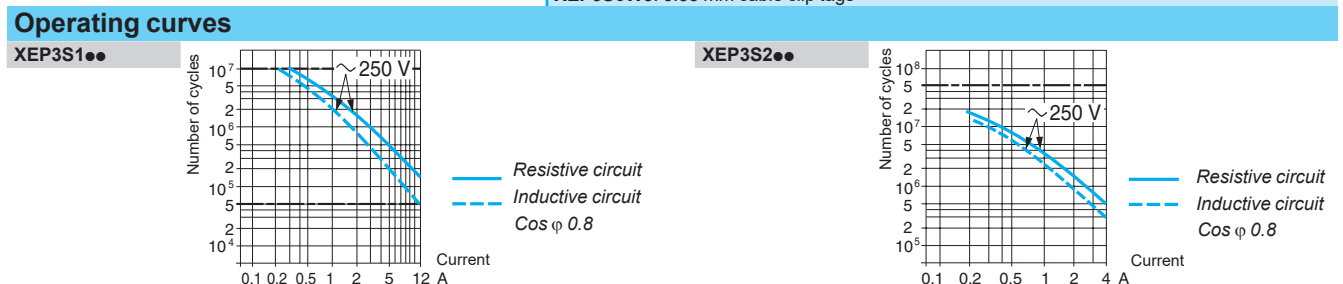
(2) Switches sold in lots of 10.

(3) Levers only for mounting on basic (plunger) snap switches (XEP3S●W2, XEP3S●W3, XEP3S●W6), in fixing positions A, B or C.

Switch type Type of operator	XEP3S●W2 Plunger	XEP3S●W2B254 Flat lever	XEP3S●W2B259 Roller lever
Environment characteristics			
Lever fixing position (1)	–	B	B
Switch actuation	On end	Horizontal	
Product certifications	UR us, CE, IEC/EN 60947-5-1, UL 1054, EN 61058-1		
Degree of protection	Case IP 40 and tags IP 00		
Operating temperature	- 25...+ 125°C		
Materials	Case	Polyester	
	Lever	–	Stainless steel
	Contact	AgNi	Stainless steel, glass reinforced polyamide roller

Mechanical characteristics			
	Lever fixing position (1)		
Maximum tripping force	Standard	A	0.8 N
		B	0.8 N
		C	0.8 N
	Very low force	A	0.25 N
		B	0.25 N
		C	0.25 N
Minimum release force	Standard	A	0.20 N
		B	0.20 N
		C	0.20 N
	Very low force	A	0.05 N
		B	0.05 N
		C	0.05 N
Maximum permissible end of travel force	Standard, very low force	A	20 N
		B	20 N
		C	20 N
Tripping point (TP) (2)	Standard, very low force	A	14.70 $\pm$ 0.4 mm
		B	14.70 $\pm$ 0.4 mm
		C	14.70 $\pm$ 0.4 mm
Maximum differential travel	Standard, very low force	A	0.35 mm
		B	0.35 mm
		C	0.35 mm
Minimum overtravel	Standard	A	1.20 mm
		B	1.20 mm
		C	1.20 mm
	Very low force	A	1.10 mm
		B	1.10 mm
		C	1.10 mm
Inter-contact distance			0.40 mm
Mechanical durability for 2/3 overtravel	Standard		20 million operating cycles
	Very low force		50 million operating cycles

Electrical characteristics			
Operational characteristics	Standard	AC-15: B300 (Ue: 240 V, Ie: 1.5 A) DC-13: R300 (Ue: 250 V, Ie: 0.1 A) conforming to IEC/EN 60947-5-1 Appendix A 125-250 V AC 10,1 A - 1/2 HP conforming to UL 1054 12 (3) A 250 V AC 10 000 cycles conforming to EN 61058-1	
	Very low force	AC-15: D300 (Ue: 240 V, Ie: 0.3 A) conforming to IEC/EN 60947-5-1 Appendix A 125-250 V AC 4 A - 1/10 HP conforming to UL 1054 4 (1) A 250 V AC 50 000 cycles conforming to EN 61058-1	
Thermal current	Standard	15 A on 250 V (50/60 Hz)	
	Very low force	5 A on 250 V (50/60 Hz)	
Connection		XEP3S●W2: solder tags, XEP3S●W6: 4.8 mm cable clip tags, XEP3S●W3: 6.35 mm cable clip tags	



(1) Miniature snap switches fitted with a lever are supplied with the lever fixed in position B (see page 56). For basic (plunger) snap switches, it is possible to fix the lever in position A, B or C, depending on the required tripping conditions (see page 56).

(2) Position of the operator in relation to the switch fixings (fixing hole centre line) at the instant the switch contact changes state.

Miniature snap switches

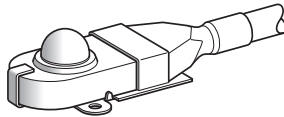
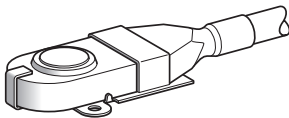
XC Special range

Sealed design

Pre-cabled

Type of head

Plunger (fixing by the body)

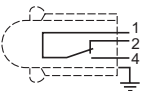


Type of operator

Head with flat plunger

Head with domed encased plunger

References



Single-pole CO
snap action

Wiring:
1 Black
2 Brown
4 Blue

XC010L2

XC011L2

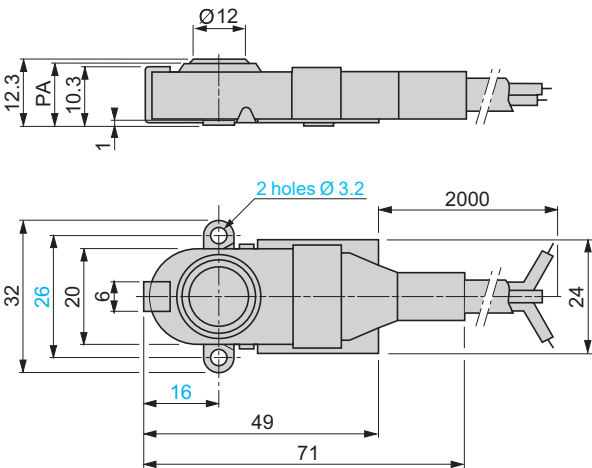
Weight (kg)

0.145

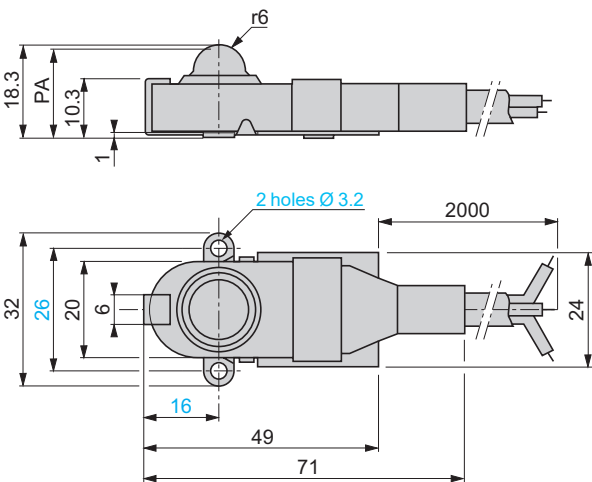
0.150

Dimensions

XC010L2



XC011L2



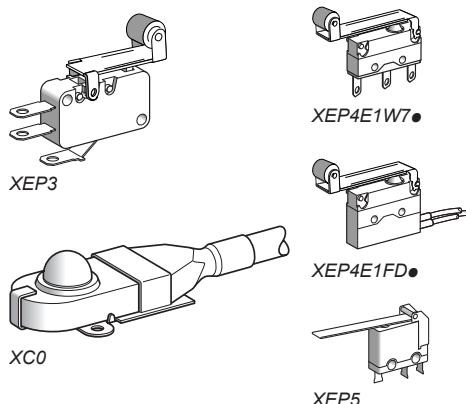
Switch type		XC010L2	XC011L2
Environment characteristics			
Switch actuation		On end, flat plunger (1)	On end, domed plunger (1)
Product certifications		CE, IEC 60947-5-1	
Degree of protection		IP 66	
Operating temperature		0...+ 85°C	
Materials	Internal housing	Metal	
	Casing	Nitrile	
	Fixing support	Steel, zinc passivated	
	Contact	Ag	
Mechanical characteristics			
Maximum tripping force		5.3 N	
Minimum release force		1.5 N	
Maximum permissible end of travel force		30 N	
Tripping point (TP) (2)		11.4 $\pm$ 0.4 mm	17.4 $\pm$ 0.5 mm
Maximum differential travel		0.2 mm	
Minimum overtravel		0.2 mm	
Inter-contact distance		0.5 mm	
Mechanical durability		2 million operating cycles	
Electrical characteristics			
Operational current		1 A on 24 V (50/60 Hz)	
Thermal current/insulation voltage		12 A/60 V	
Connection		A05 VVF cable, 3 x 0.75 mm ² , length 2 metres, external diameter ≤ 7.6 mm	
Electrical durability		AC-15: 0.5 million operating cycles	

(1) Manual actuation must be made by an intermediate insulated part, in order to meet basic safety requirements.

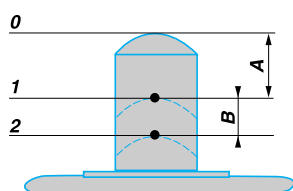
One of the two fixing holes must also be used as an earth protection terminal.

(2) Distance between the base of the switch and the top of the plunger at the instant the contact changes state (see dimensions, page 58).

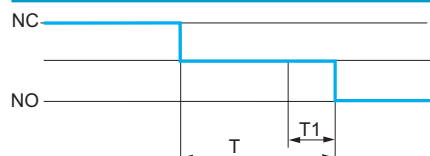
Presentation



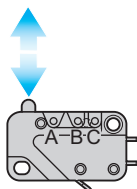
Terminology



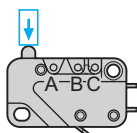
Mechanical characteristics



T1: bounce time
T: changeover time



Mounting



Electromechanical detection

- XC miniature snap switches, featuring electromechanical technology, assure the following functions:
 - detection of presence or absence,
 - detection of position.

Actuation of the operator (plunger or lever) on the miniature snap switch causes the electrical contact to change state. This information can then be processed by a PLC controlling the installation.

XC miniature snap switches can be used both in industrial applications and the building sector.

Features

- XC miniature snap switches incorporate a CO snap action, single break, contact. They are characterised by:
 - high electrical ratings for their very small size,
 - short tripping travel,
 - low tripping force,
 - high repeat accuracy on the tripping points,
 - long service life.

Forces

- Maximum tripping force: maximum force which must be applied to the operator to move it from the rest (unactuated) position to the trip position (tripping point).
- Minimum release force: value to which the force on the operator must be reduced to allow the snap action mechanism to return to its rest (unactuated) position.
- Maximum permissible end of travel force: maximum force that can be applied to the operator at the end of its travel without damaging the switch.

Position/Travel

- 1 **Tripping point:** position of the operator in relation to the switch fixings (fixing hole centre line) at the instant the switch contact changes state.
- A **Differential travel:** distance between the tripping point and the position at which the snap action mechanism returns to its initial state on release of the operator.
- 2 **Overtravel limit:** position of the operator when an extreme force has moved it to the effective end of its available travel.
- B **Overtravel:** distance between the tripping point and the overtravel limit.

The reference point for the figures given for forces and travel is a point F, which is situated on the plunger in the case of a basic switch or at 3 mm from the end of the plain lever in the case of a lever operated switch.

Changeover time

- This is the time taken by the moving contact when moving from one fixed contact to another until it becomes fully stable (contact bounce included).
- This time is related to the inter-contact distance, the mechanical characteristics of the snap action mechanism and the mass of the moving element. However, due to the snap action mechanisms used, the time is largely independent to the speed of operation. It is normally less than 20 milliseconds (including bounce times of less than 5 ms).

Operating speed and maximum usable operating rate

- Our miniature snap switches are suitable for a wide range of operating speeds: generally, from 1 mm/mn to 1 m/s.
- The maximum usable operating rate on a light electrical load may be as high as 10 operations/second.

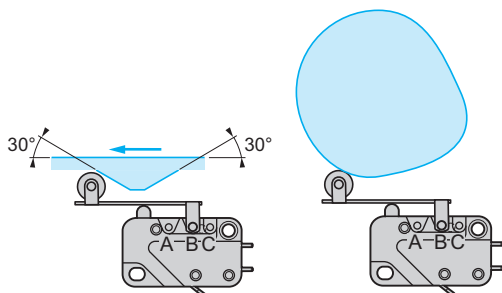
Mounting and operation

- To conform to the leakage paths and air gaps in standards EEC 24 - EN/IEC 61058 - EN/IEC 60947:
 - an insulation pad must be inserted between the snap switch and the fixing surface if the latter is metal.
 - manual operation of a metal actuator must only be carried out with the aid of an intermediate actuator made of an insulating material.
- The installer must ensure adequate protection against direct contact with the output terminals.

Actuation method

- Direct operation:
 - the plunger should preferably be actuated along its axis. However, the majority of our miniature snap switches will accept skewed operation provided the angle of actuation is not more than 45°.
- The travel of the actuator must not be limited to only reaching the tripping point. The actuator must always be operated in such a manner so that the plunger reaches a point at least 0.5 times the stated overtravel value of the switch. Steps must also be taken to ensure that it does not reach its end of travel nor exceed the maximum permissible end of travel force.

Characteristics (continued)



Actuation method (continued)

- Lever operators
 - when actuation is by a roller lever, force should preferably be applied in the direction shown in the diagrams opposite.
 - where the movements involved are fast, the ramp should be so designed as to ensure that the operator is not subjected to any violent impact or abrupt release.

Fixing - Tightening torque

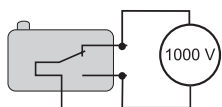
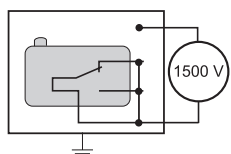
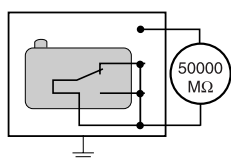
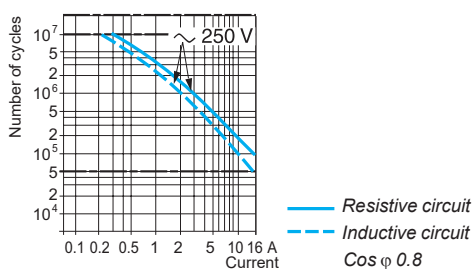
- The tightening torque of the fixing screws must conform to the following values:

Ø of fixing screw		2	2.5	3	3.5	4
Tightening torque (cm.N)	Maximum	25	35	60	100	150
	Minimum	15	25	40	60	100

Resistance to mechanical shock and vibration

- Resistance to shock and vibration depends on the mass of the moving parts and on the forces holding the contacts together.
- In general, for a miniature snap switch without accessory:
 - vibration > 10 gn, 10 to 500 Hz,
 - shock > 50 gn, 11 ms 1/2 sine wave.

Electrical characteristics



Operating curves

- These indicate the electrical life of the miniature snap switches under standard conditions (20°C, 1 cycle/2 seconds), by showing the number of switching operations which can be performed with given types of load. For sealed snap switches, the operating rate is 1 cycle/6s.

Insulation resistance

- The insulation resistance of the miniature snap switches is generally greater than 50,000 MΩ, measured at 500 V DC.

Dielectric strength

- The dielectric strength of our miniature snap switches is generally superior to:
 - 1500 Volts between live parts and earth,
 - 1000 Volts between contacts,
 - 600 Volts between contacts for switches with an inter-contact distance less than 0.3 mm.

Presentation

Electromechanical detection

Limit switches are used in all automated installations and also in a wide variety of applications, due to the numerous advantages inherent to their technology.

They transmit data to the logic processing system regarding:

- presence/absence,
- passing,
- positioning,
- end of travel.

Simplicity of installation, advantages

■ From an electrical viewpoint

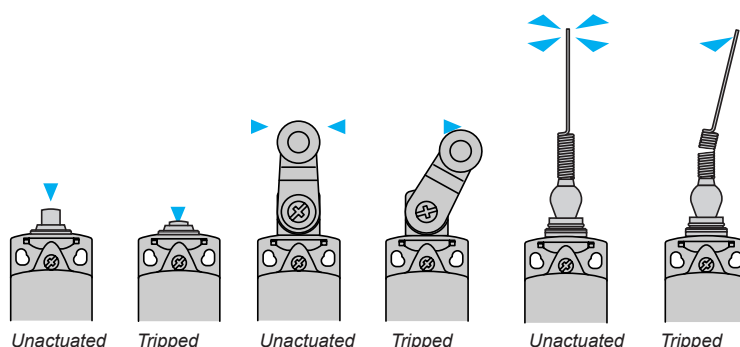
- galvanic separation of circuits,
- models suitable for low power switching combined with good electrical durability,
- very good short-circuit withstand in coordination with appropriate fuses,
- total immunity to electromagnetic interference,
- high rated operational voltage.

■ From a mechanical viewpoint

- NC contacts with positive opening operation,
- high resistance to the different ambient conditions encountered in industry (standard tests and specific tests under laboratory conditions),
- high repeat accuracy, up to 0.01 mm on the tripping points.

Detection movements

- Linear movement (plunger)
- Rotary movement (lever)
- Multi-directional movement



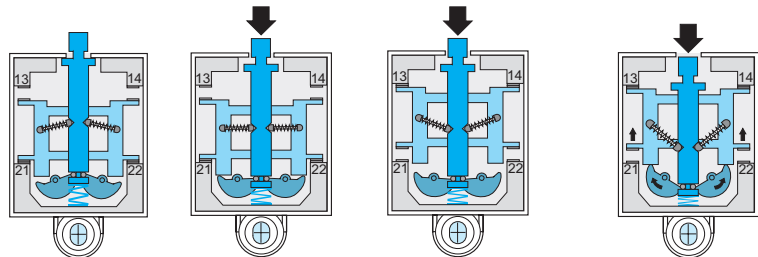
Terminology

Rated value of a quantity	■ This replaces the term "nominal value". ■ It is the fixed value for a specific function.
Utilisation categories:	■ AC-15 replaces AC-11: control of an electromagnet on AC, test 10 Ie/Ie. ■ AC-12: control of a resistive load on AC or static load isolated by opto-coupler. ■ DC-13 replaces DC-11: control of an electromagnet on DC, test Ie/Ie.
Positive opening travel	■ Minimum travel from the initial movement of contact actuator to the position required to accomplish positive opening operation.
Positive opening force	■ The force required on the contact actuator to accomplish positive opening operation.
Switching capacity	■ Ithe is no longer a rated value but a conventional current used for heating tests. Example: for category A300 the corresponding operational current, Ie maximum, is 6 A-120 V or 3 A-240 V, the equivalent Ithe being 10 A.
Positive opening operation	■ A limit switch complies to this specification when all the closed contact elements of the switch can be changed, with certainty, to the open position (no flexible link between the moving contacts and the operator of the switch, to which an actuating force is applied). ■ All limit switches incorporating either a slow break contact block or a snap action NC + NO (form Zb), NC + NO + NO, NC + NC + NO, NC + NC + NO + NO contact block are positive opening operation, in complete conformity with standard IEC 60947-5-1 Appendix K.

Contact blocks

Snap action contacts

- Snap action contacts are characterised by different tripping and reset points (differential travel).
- The displacement speed of the moving contacts is not related to the speed of the operator.
- This feature ensures satisfactory electrical performance in applications involving low speed actuators.



Unactuated state

Approach travel

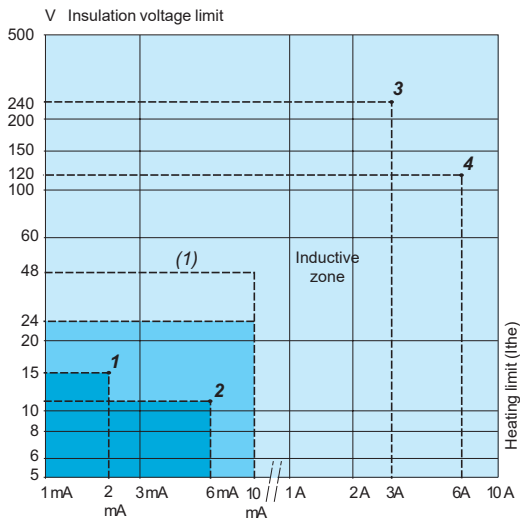
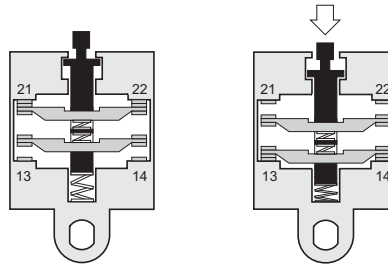
Contact change of state

Positive opening

Slow break contacts

- Slow break contacts are characterised by identical tripping and resetting points.
- The displacement speed of the moving contacts is equal, or proportional, to the speed of the operator (which must not be less than 0.1 m/s = 6 m/minute).

The opening distance is also dependent on the distance travelled by the operator.



Electrical durability for normal loads

- Normally, for inductive loads, the current value is less than 0.1 A (sealed), i.e. values of 3 to 40 VA sealed and 30 to 1000 VA inrush, depending on the voltage.

For this type of application the electrical durability will exceed 10 million operating cycles.

Application example: XCKJ161 + LC1D12●●●● (7 VA sealed, 70 VA inrush).

Electrical durability = 10 million operating cycles.

Switching capacity

- 1 Normal industrial PLC input type 1 (PLC: industrial programmable logic controllers)
- 2 Normal industrial PLC input type 2

- 3 Switching capacity conforming to IEC 60947-5-5, utilisation category AC-15, DC-13

A300	240 V	3 A	B300	240 V	1.5 A
Q300	250 V	0.27 A	R300	250 V	0.13 A

- 4 Switching capacity conforming to IEC 60947-5-1, utilisation category AC-15, DC-13

A300	120 V	6 A	B300	120 V	3 A
Q300	125 V	0.55 A	R300	125 V	0.27 A

Electrical durability for small loads

- The use of limit switches with programmable controllers is becoming more common.

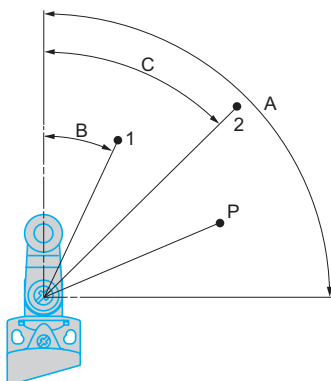
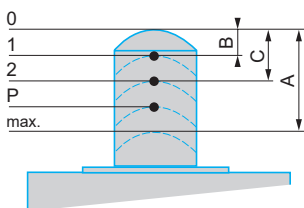
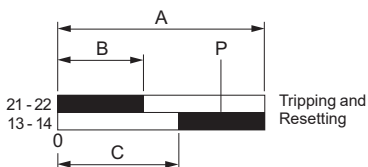
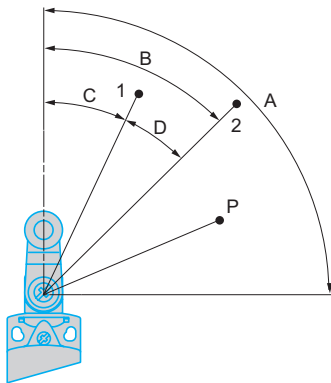
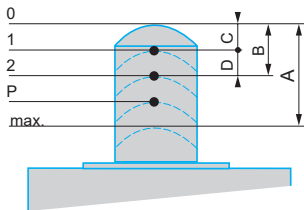
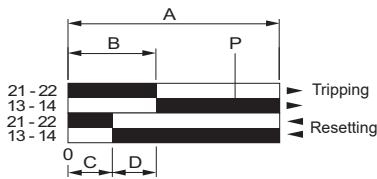
- With small loads, limit switches offer the following levels of reliability:

- failure rate of less than 1 for 100 million operating cycles using snap action contacts (contacts XE2SP),
- failure rate of less than 1 for 20 million operating cycles using slow break contacts (contacts XE●NP and XE3SP).
- failure rate of less than 1 for 5 million operating cycles using contacts XCMD.

		Range of use
Standard contacts	XE2SP2151, P3151	
	XE2NP●●●●	
Continuous service (frequent switching)	Contacts of XCMD	
	XE3●P●●●●	
Gold flashed contacts	Occasional service	(1)
on resistive load	Infrequent switching, ≤ 1 operating cycle/day, and/or corrosive atmosphere	

(1) Usable up to 48 V/10 mA.

Contact blocks (continued)



Functional diagrams of snap action contacts

■ Example: NC + NO

- A - Maximum travel of operator in millimetres or degrees.
- B - Tripping travel of contact.
- C - Resetting travel of contact.
- D - Differential travel = B - C.
- P - Point from which positive opening is assured.

□ Linear movement (plunger)

- 1 - Resetting point of contact.
- 2 - Tripping point of contact.
- A - Maximum travel of operator in millimetres.
- B - Tripping travel of contact.
- C - Resetting travel of contact.
- D - Differential travel = B - C.
- P - Point from which positive opening is assured.

□ Rotary movement (lever)

- 1 - Resetting point of contact.
- 2 - Tripping point of contact.
- A - Maximum travel of operator in degrees.
- B - Tripping travel of contact.
- C - Resetting travel of contact.
- D - Differential travel = B - C.
- P - Point from which positive opening is assured.

Functional diagrams of slow break contacts

■ Example: NC + NO break before make

- A - Maximum travel of operator in millimetres or degrees.
- B - Tripping and resetting travel of contact 21-22.
- C - Tripping and resetting travel of contact 13-14.
- P - Point from which positive opening is assured.

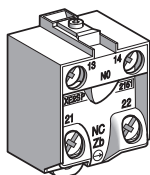
□ Linear movement (plunger)

- 1 - Tripping and resetting points of contact 21-22.
- 2 - Tripping and resetting points of contact 13-14.
- A - Maximum travel of operator in millimetres.
- B - Tripping and resetting travel of contact 21-22.
- C - Tripping and resetting travel of contact 13-14.
- P - Positive opening point.

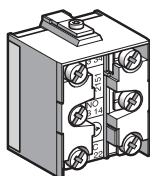
□ Rotary movement (lever)

- 1 - Tripping and resetting points of contact 21-22.
- 2 - Tripping and resetting points of contact 13-14.
- A - Maximum travel of operator in degrees.
- B - Tripping and resetting travel of contact 21-22.
- C - Tripping and resetting travel of contact 13-14.
- P - Positive opening point.

Contact blocks (continued)



XE2•P screw clamp terminal connections

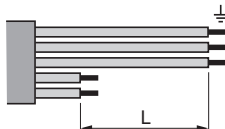


XE3•P screw clamp terminal connections

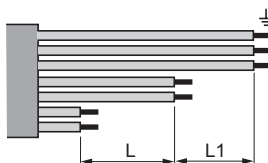
Mounting

Contact connections

- Tightening torque:
 - minimum tightening torque ensuring the nominal characteristics of the contact: 0.8 N.m,
 - maximum tightening torque without damage to the terminals: 1.2 N.m for XE2•P, 1 N.m for XE3•P.
- Connecting cable: cable preparation lengths:
 - for XE2•P, L = 22 mm,
 - for XE2•P3•••, L = 45 mm,

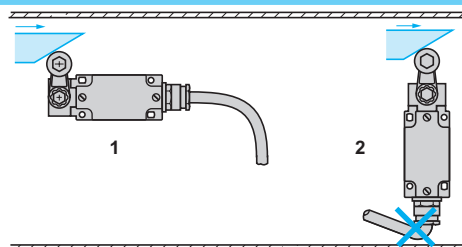


- for XE3•P, L = 14 mm, L1 = 11 mm.



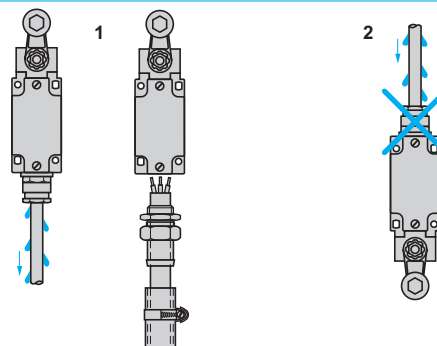
Sweep of connecting cable

- 1 Recommended
- 2 To be avoided



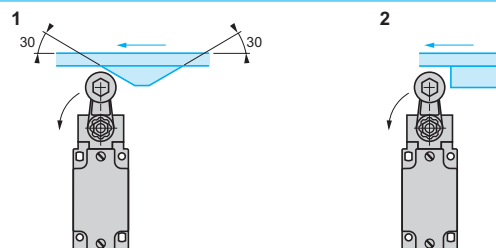
Position of cable gland

- 1 Recommended
- 2 To be avoided



Type of cam

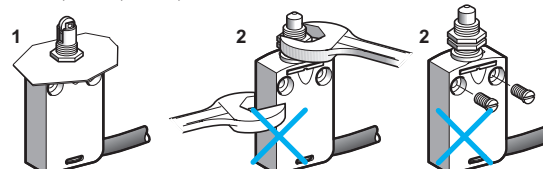
- 1 Recommended
- 2 To be avoided



Mounting and fixing limit switches by the head

- 1 Recommended
- 2 Forbidden

XCKD, XCKP, XCKT, XCMD and XCMN



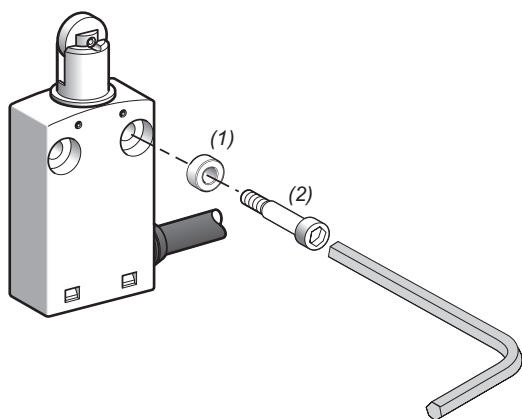
Setting-up

Tightening torque

- The minimum torque is that required to ensure correct operation of the switch.
- The maximum torque is the value which, if exceeded, will damage the switch.

Range	Item	Torque (N.m)		Torque (lb-in)	
		Min.	Max.	Min.	Max.
Compact design XCKD, XCKP, XCKT	Cover	0.8	1.2	7.08	10.62
	Fixing screw for lever on rotary head	1	1.5	8.85	13.27
Miniature design XCMD, XCMN, XCMV	—	—	—	—	—
	Fixing screw for lever on rotary head	1	1.5	8.85	13.27
Compact design XCKN	Cover	0.8	1.2	7.08	10.62
	Fixing screw for lever on rotary head	1	1.5	8.85	13.27
Classic design XCKJ	Cover	1	1.5	8.85	13.27
	Fixing nut for lever on rotary head	1	1.5	8.85	13.27
Classic design XCKS	Cover	0.8	1.2	7.08	10.62
	Fixing nut for lever on rotary head ZCKD	1	1.5	8.85	13.27
	Fixing nut for lever on rotary head XCKS	0.8	1.2	7.08	10.62
	Fixing head on body	0.8	1.2	7.08	10.62
Classic design XCKM, XCKML, XCKL	Cover	0.8	1.2	7.08	10.62
	Fixing nut for lever on rotary head	1	1.5	8.85	13.27

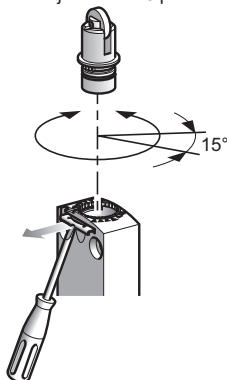
XCMN



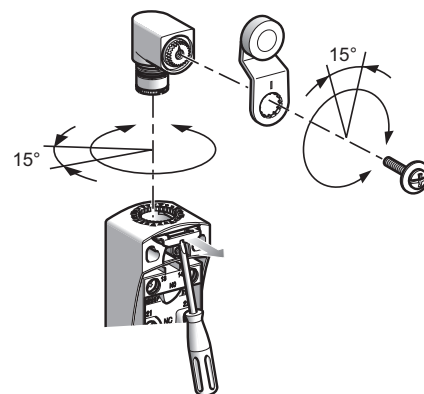
(1) 2 spacers supplied with the XCMN switch.
(2) 2 screws Ø 4mm (not included).

XCKD, XCKP, XCKT, XCMD, XCMV

- Adjustable in 3 planes:



All the heads can be adjusted in 15° steps throughout 360°, in relation to the body.

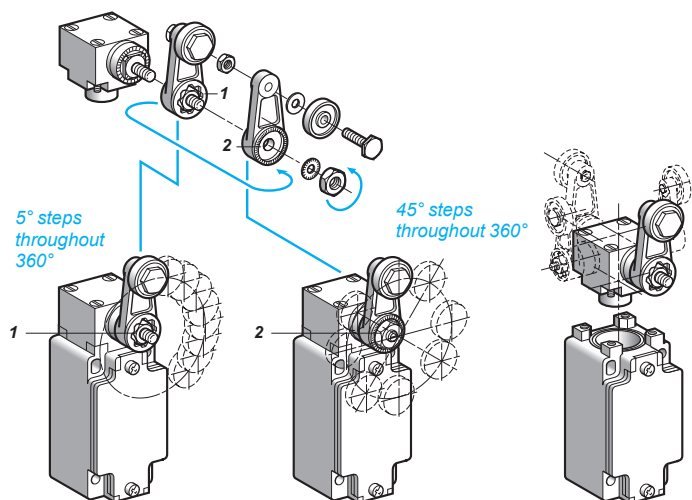


All the levers can be adjusted in 15° steps throughout 360°, in relation to the horizontal axis of the head.

XCKJ

- Adjustable throughout 360° in 5° steps, or in 45° steps by reversing the lever or its mounting.

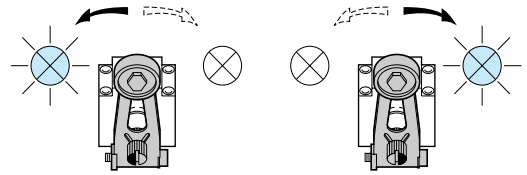
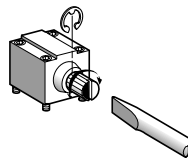
- 1 Reversed $\alpha = 5^\circ$
- 2 Forward $\alpha = 45^\circ$



Setting-up (continued)

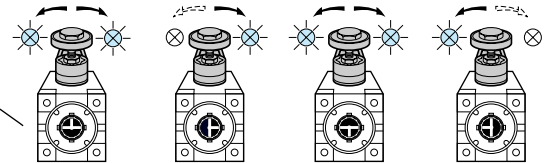
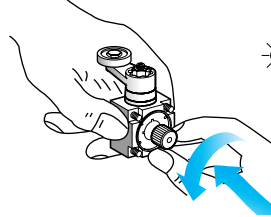
Direction of actuation programming

■ XC2J



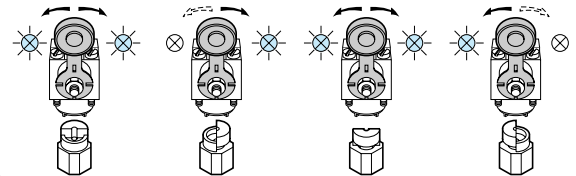
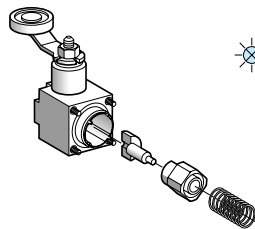
Head ZC2JE05

■ XCKJ



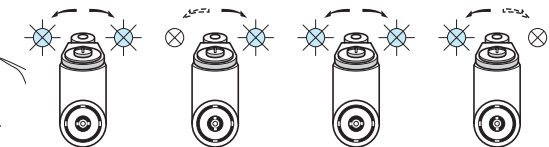
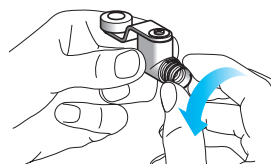
Head ZCKE05

■ XCKS



Head ZCKD05

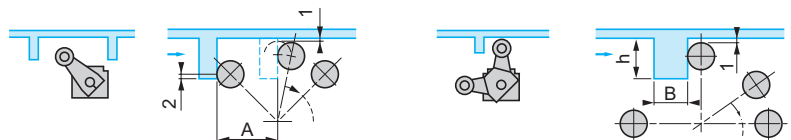
■ XCKD, XCKP, XCKT and XCMD



Head ZCE05

Specific cams for heads ZCKE09 and ZC2JE09

- 1 0.5 mm min.
- 2 2 mm min.



A = length of lever + 11 mm

ZCKE09: $13 < h < 18$ mm and $B = 12$ mm max.

ZC2JE09: $14 < h < 24$ mm and $B = 6$ mm max.

Reminder of the standards

The majority of Telemecanique Sensors products comply to national standards (for example French NF C standards, German DIN standards), European standards (for example CENELEC) or international standards (for example IEC). These standards rigidly stipulate the characteristic requirements of the designated products (for example IEC 60947 relating to low voltage switchgear and control gear).

These products, when correctly used, enable the production of control equipment assemblies, machine control equipment or installations conforming to their own specific standards (for example IEC 60204 for the electrical equipment of industrial machines).

IEC 60947-5-1

Insulation coordination (and dielectric strength)

- The standard IEC 60664 defines 4 categories of prospective transient overvoltages. It is important for the user to select control circuit components which are able to withstand these overvoltages. To these ends, the manufacturer states the rated impulse withstand voltage (U_{imp}) applicable to the product.

Terminal connections

- The cabling capacity, mechanical robustness and durability of the terminals, as well as the ability to resist loosening, are verified by standardised tests.
- Terminal reference marking conforms to standard IEC 60947-5-1 Appendix M.

Switching capacity

- With maximum electrical load. A single designation (A300 for example) enables indication of the contact block characteristics related to its utilisation category.

Positive opening operation (IEC 60947-5-1 Appendix K)

- For contacts used in safety applications (end of travel, emergency stop device, etc.) the assurance of positive opening is required (see IEC 60204, EN 60204) after each test, the opening of the contact being verified by testing with an impulse voltage (2500 V).

Electrical symbols for contacts



- Form Za, the 2 contacts (NO + NC) are the same polarity.



- Form Zb, the 2 contacts (NO + NC) are electrically separate.

Symbol for positive opening



- Simplified version



- Complete symbol

CENELEC EN 50047

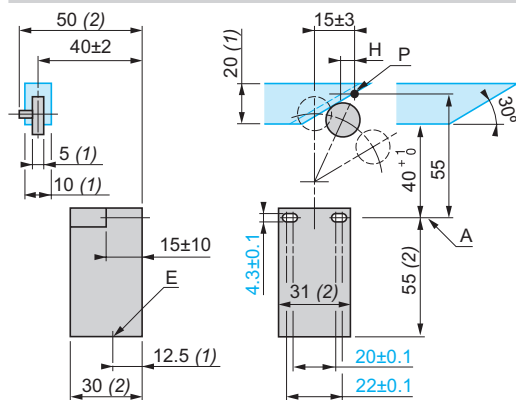
The European standards organisation CENELEC, which has 14 member countries, has defined in this standard the first type of limit switch.

It defines 4 variants of devices (forms A, B, C, E). Limit switches XCKP, XCKD and XCKT conform to standard EN 50047.

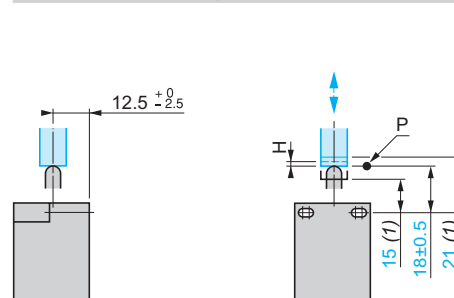
- (1) Minimum value
(2) Maximum value

A: reference axis
H: differential travel
P: tripping point
E: cable entry

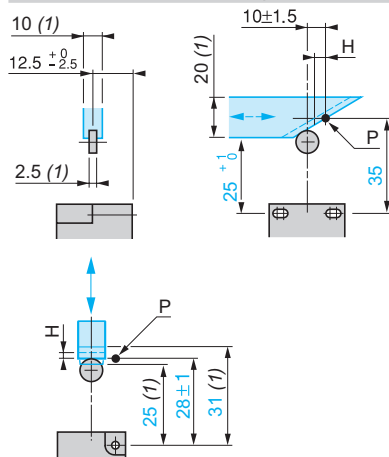
Form A, with roller lever



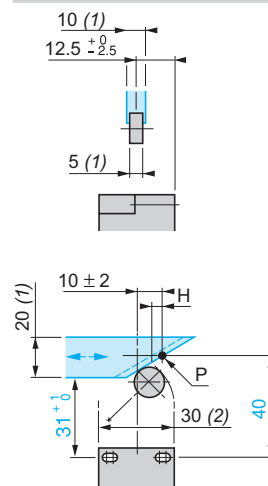
Form B, with end plunger (rounded)



Form C, with end roller plunger



Form E, with roller lever for 1 direction of actuation



Reminder of the standards (continued)

CENELEC EN 50041

The European standards organisation CENELEC, which has 14 member countries, has defined in this standard the second type of limit switch.

It defines 6 variants of devices (forms A, B, C, D, F, G).

Limit switches XCKJ and XCKS conform to standard EN 50041.

(1) Minimum value

(2) Maximum value

A: reference axis

B: optional elongated holes

H: differential travel

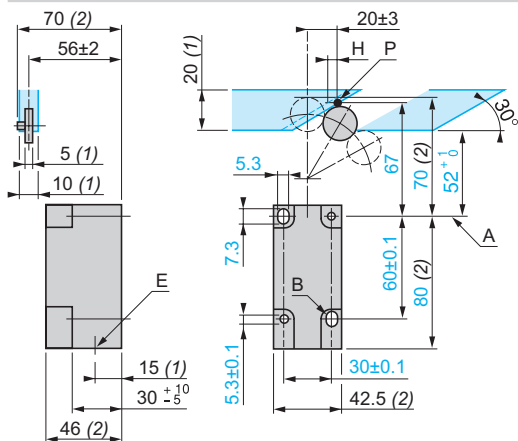
P: tripping point

E: cable entry

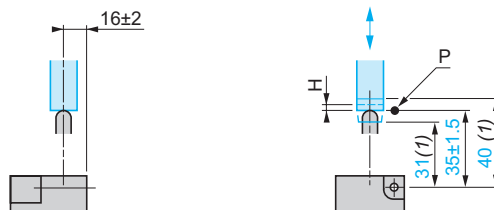
Za: tripping zone

Sa: tripping threshold

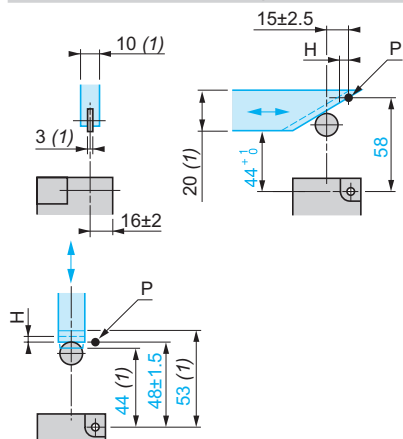
Form A, with roller lever



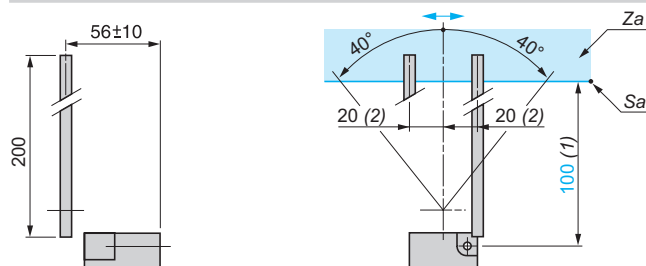
Form B, with end plunger (rounded)



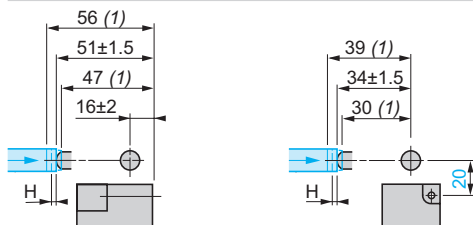
Form C, with end roller plunger



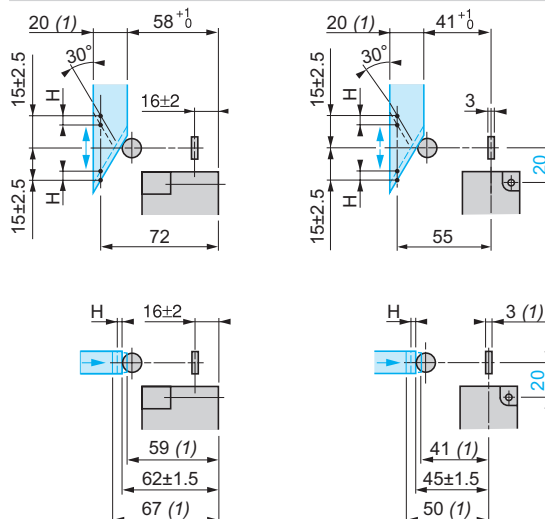
Form D, with rod lever



Form F, with side plunger (rounded)



Form G, with side roller plunger



D					
DE9PEM20010	50				
X					
XC010L2	58	XCRA11	44	XESP1028	25
XC011L2	58	XCRA12	44	XESP1031	25
XC1AC111	36	XCRA15	44		30
XC1AC115	36	XCRA51	44	XESP10315	33
XC1AC116	36	XCRA52	44	XESP1038	25
XC1AC117	36	XCRA55	44	Z	
XC1AC118	36	XCRB11	44	ZC1AC001	38
XC1AC119	36	XCRB12	44	ZC1AC005	38
XC1AC121	36	XCRB15	44	ZC1AC006	38
XC1AC125	36	XCRB51	44	ZC1AC007	38
XC1AC126	36	XCRB52	44	ZC1AC008	38
XC1AC127	36	XCRB55	44	ZC1AC009	38
XC1AC128	36	XCRE18	44	ZC1AZ11	38
XC1AC129	36	XCRE58	44	ZC1AZ12	38
XC1AC131	36	XCRF17	44	ZC1AZ13	38
XC1AC135	36	XCRF57	44	ZC1AZ14	38
XC1AC136	36	XCRT115	46	ZC1AZ15	38
XC1AC137	36	XCRT215	46	ZC1AZ16	38
XC1AC138	36	XCRT315	46	ZC1AZ17	38
XC1AC139	36	XCRZ02	45	ZC1AZ8	38
XC1AC141	36	XCRZ03	45	ZC2JC1	21
XC1AC145	36		50		18
XC1AC146	36	XCRZ03R	50	ZC2JC15	31
XC1AC147	36	XCRZ04	45	ZC2JC16	28
XC1AC148	36	XCRZ05	45	ZC2JC18	21
XC1AC149	36	XCRZ09	45	ZC2JC2	21
XC1AC151	36		47	ZC2JC25	31
XC1AC155	36	XCRZ12	45	ZC2JC26	28
XC1AC156	36	XCRZ15	45	ZC2JC28	21
XC1AC157	36	XCRZ42	47	ZC2JC4	21
XC1AC158	36	XCRZ901	47	ZC2JC45	31
XC1AC159	36	XCRZ902	47	ZC2JC46	28
XC1AC161	36	XCRZ903	47	ZC2JC48	21
XC1AC165	36	XEP3S1W2	56	ZC2JD1	21
XC1AC166	36	XEP3S1W2B524	56	ZC2JD16	28
XC1AC167	36	XEP3S1W2B529	56	ZC2JD2	21
XC1AC168	36	XEP3S1W3	56	ZC2JD26	28
XC1AC169	36	XEP3S1W3B524	56	ZC2JD4	21
XC1AC171	36	XEP3S1W3B529	56	ZC2JD46	28
XC1AC175	36	XEP3S1W6	56	ZC2JE01	18
XC1AC176	36	XEP3S1W6B524	56		23
XC1AC177	36	XEP3S1W6B529	56	ZC2JE015	32
XC1AC178	36	XEP3S2W2	56	ZC2JE016	29
XC1AC179	36	XEP3S2W2B524	56	ZC2JE02	23
XCKMR24SR1H29	50	XEP3S2W2B529	56	ZC2JE025	32
XCKMR44D1H29	50	XEP3S2W3	56	ZC2JE026	29
XCKMR44D2H29	50	XEP3S2W3B524	56	ZC2JE03	23
XCKMR44D2H29	50	XEP3S2W3B529	56	ZC2JE035	32
XCKMR54D1H29	50	XEP3S2W6	56	ZC2JE036	29
XCKMR54D2H29	50	XEP3S2W6B524	56	ZC2JE04	23
XCKVR24SR1H29	50	XEP3S2W6B529	56	ZC2JE045	32
XCKVR44D1H29	50	XEP4E1FD	54	ZC2JE046	29
XCKVR44D2H29	50	XEP4E1FDA326	54	ZC2JE05	18
XCKVR54D1H29	50	XEP4E1FDA454	54		23
XCKVR54D2H29	50	XEP4E1W7	54	ZC2JE056	29
XCKZ01	25	XEP4E1W7A326	54	ZC2JE06	23
	30	XEP4E1W7A454	54	ZC2JE065	32
XCKZ015	33	XEP5P1W2	54	ZC2JE066	29
XCKZ018	25	XEP5P1W2Z55B	54	ZC2JE07	23
		XESP1021	25	ZC2JE075	32
			30	ZC2JE076	29
		XESP10215	33	ZC2JE09	23
				ZC2JE095	32
				ZC2JE096	29
				ZC2JE61	18
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				ZC2JE615	31
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				ZC2JE625	31
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				ZC2JE83	22
				ZC2JE835	31
				ZC2JE836	28
				ZC2JE84	22
				ZC2JE845	31
				ZC2JE846	28
				ZC2JE85	22
				ZC2JE855	31
				ZC2JE856	28
				ZC2JY11	18
					24
					30
				ZC2JY115	33
				ZC2JY12	24
					30
					33
				ZC2JY13	24
					30
					33
				ZC2JY215	33
				ZC2JY31	18
					24
					30
				ZC2JY315	33
				ZC2JY415	33
				ZC2JY51	18
					24
					30
					33
				ZC2JY61	24
					30
				ZC2JY615	33
				ZC2JY71	24
					30

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July 2020 - V2.0

DIA4ED2180201EN