Limit switches
XC Special range

Catalogue

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Telemecanique
Sensors

Contents

Limit switches
XC Special range

Limit switches
XC Standard range

Design/Applications	Miniature format	Miniature format for mobile equipments	Compact format, CENELEC EN 50047	Compact format, CENELEC EN 50047		Compact format, with reset	
	Metal, pre-cabled	Metal, pre-cabled	Plastic, 1 cable entry	Plastic, 2 cable entries	Metal, 1 cable entry	Plastic, 1 cable entry	Plastic, 2 cable entries
							
Enclosure	Metal	Metal	Plastic, double insulated	Plastic, double insulated	Metal	Plastic, double insulated	
Modularity	Head, body and connection modularity	Head and body modularity	Head, body and cable entry modularity	Head and body modularity	Head, body and connection modularity	–	
Conformity/Certifications	CE, UL, CSA, CCC, EAC	CE, UL, CSA	CENELEC EN 50047 UL, CSA, CCC, EAC	CENELEC EN 50047, UL, CSA, CCC, EAC		CE, UL, CSA, 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	58 x 51 x 30	31 x 65 x 30	31 x 65 x 30	58 x 51 x 30
Head	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) Rotary movement, multidirectional Same heads for ranges XCMD, XCMV, XCKD, XCKP and XCKT		Linear movement (plunger) Rotary movement (lever)	
Contact blocks							
2 electrically separate contacts – snap action with positive opening operation	●	●	●	●	●	●	●
2 electrically separate contacts – slow break with positive opening operation	●	●	●	●	●	●	●
2 same polarity contacts – snap action	–	–	–	–	–	–	–
2 same polarity contacts – slow break	–	–	–	–	–	–	–
3 electrically separate contacts – snap action with positive opening operation	●	–	●	●	●	–	–
3 electrically separate contacts – slow break with positive opening operation	●	–	●	●	●	–	–
4 electrically separate contacts – snap action with positive opening operation	●	–	–	–	–	–	–
4 electrically separate contacts – slow break with positive opening operation	–	–	–	–	–	–	–
4 contacts (2 x 2 same polarity contacts) – snap action	–	●	–	–	–	–	–
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,	IP 66, IP 67, IK 04	IP 66, IP 67, IK 06	IP 66, IP 67, IK 04	
Operating temperature	- 25 °C... + 70 °C, -40°C depending on heads			- 25 °C... + 70 °C			
Raccordement – **Screw terminals**	–	–	1 entry for ISO M16 or M20, Pg 11, Pg 13.5 cable gland or 1/2" NPT, PF 1/2	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)
Raccordement – **Pre-cabled**	Ø 7.5 PvR, CEI, halogen free, depending on model	Ø 6,4 PvR	–	–			
Raccordement – **Connector**	Integral or remote M12 or remote 7/8"-16UN	M12, Deutsch DT04-4P or AMP Superseal 1.5	M12	–	M12	–	
Type reference	**XCMD**	**XCMV**	**XCKP**	**XCKT**	**XCKD**	**XCPR**	**XCTR**
Pages	Please refer to our catalogue "Limit switches XC Standard"			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, EAC	CE, UL, CSA, 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	●	●	●	●
2 electrically separate contacts – slow break with positive opening operation	●	●	●	●
2 same polarity contacts – snap action	–	–	–	●
2 same polarity contacts – slow break	–	–	–	–
3 electrically separate contacts – snap action with positive opening operation	●	●	●	●
3 electrically separate contacts – slow break with positive opening operation	●	●	●	●
4 electrically separate contacts – snap action with positive opening operation	–	–	–	–
4 electrically separate contacts – 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)	3 entries for ISO M20, Pg 11 cable gland or 1/2" NPT	1 entry incorporating cable gland or tapped 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
Connection – Pre-cabled	–			
Connection – Connector	–			Integral M12 or 7/8"-16UN
Type reference	**XCKM**	**XCKL**	**XCKS**	**XCKJ**
Pages	Please refer to our catalogue "Limit switches XC Standard"			

Limit switches
XC Basic range

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, double insulated				
–				
CE, cULus, CCC	CE, UL, CSA, CCC, EAC	CENELEC EN 50047, UL, CSA, CCC, EAC		CE, UL, CSA, CCC, EAC
30 x 50 x 16	30 x 50 x 16	31 x 65 x 30	59 x 51 x 30	31 x 65 x 30
Linear movement (plunger) Rotary movement (lever) Rotary movement, multidirectional				
●	●	●	●	●
–	–	●	●	●
●	–	–	–	–
–	–	–	●	–
–	–	●	–	●
–	–	●	–	●
–	–	–	–	
–	–	–	–	
–	–	–	–	
IP 66, IP 67, IK 04	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)
Ø 4.2 mm PvR, lateral or axial cable output, depending on model	Ø 7.5 PvR, CEI, halogen free, depending on model	–		
XCMH	**XCMN**	**XCKN**	**XCNT**	**XCNR**
Please refer to our catalogue "Limit switches XC Standard"				

Limit switches
XC Special range

Design/Applications	Very severe applications	For hoisting and material handling applications (XCR); for conveyor belt shift monitoring (XCRT)	For hoisting and material handling applications	Subminiature format and microswitch. Applications requiring high precision and a low operating force
	Metal, 1 cable entry	Metal or polyester, 1 cable entry	Metal or plastic, 3 cable entries	Plastic, pre-cabled
				
Enclosure	Metal	Metal or polyester	Metal or plastic	Polyester
Modularity	Head and body modularity	–	–	–
Conformity/Certifications	CE, UL, CSA, EAC	CE, CSA (XCR) CCC (XCR), EAC	CE, UL, CSA, CCC, EAC	CE, UL
Body dimensions (w x h x d) in mm	40 x 81 x 41	85 x 95 x 75	118 x 77 x 59 (metal) 118 x 77 x 67 (plastic)	Depending on model
Head	Linear movement (plunger) or rotary movement (lever)	Rotary movement (lever)	Rotary movement (lever)	–
Contact blocks				
2 same polarity contacts snap action	●	–	–	●
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 54, IK 07 or IP 65, depending on model	IP 66, IK 07 (metal) IP 65, IK 04 (plastic)	IP 67 or IP 40 depending on model IP 00 (tags)
Operating temperature	- 25°C... + 70°C; - 40° C or + 120° C (XC2J depending on model)	- 25 °C... + 70 °C	- 25 °C... + 70 °C	- 40 °C... + 105 °C, - 40° C... + 125° C selon modèle
Connection				
Screw terminals (entry for cable gland)	1 entry with integral cable gland	1 tapped entry for Pg 13.5 cable gland	3 tapped entries for Pg 13.5 cable gland or tapped M20 x 1.5, depending on model	Tag connections or pre-wired, depending on model
Type reference	**XC2J**	**XCR XCRT**	**XCKMR XCKVR**	**XEP**
Pages	26	46 and 48	52	58

Overtravel limit switches
XF9 range

Design/Applications	Overtravel limit switches for power circuits For hoisting applications	
	Aluminium alloy case or sheet steel enclosure 2 or 3 cable entries	
		
Enclosure	Aluminium alloy case	Sheet steel enclosure
Reset	Manual	Manual or automatic, depending on model
Conformity/Certifications	CSA, IEC 60158-1, NF C 63-110, VDE 0660, IEC 947-1, IEC 60947-4	
Body dimensions (w x h x d) in mm	Depending on model	
Head	Rotary movement	
Number of poles	4	3
Rated operational current (Ie) For 2-pole scheme	50 A or 130 A, depending on model	–
Rated operational current (Ie) For 3-pole scheme on AC-3	25 A or 65 A, depending on model	115 A, 185 A or 265 A, depending on model
Conventional thermal current (Ithe) at θ ≤ 40 °C For 2-pole scheme	80 A or 160 A, depending on model	–
Conventional thermal current (Ithe) at θ ≤ 40 °C For 3-pole scheme	40 A or 80 A, depending on model	200 A, 275 A or 350 A, depending on model
Rated insulation voltage (Ui) Conforming to IEC 60158-1, IEC 947-4, VDE 0110 Group C	500 V	660 V
Rated insulation voltage (Ui) Conforming to CSA 22-2 n° 14	600 V	600 V
Rated breaking capacity Conforming to IEC 60158-1 For 2-pole scheme 500 V	400 A or 1000 A, depending on model	1100 A, 1600 A or 2200 A, depending on model
Rated breaking capacity Conforming to IEC 60158-1 For 2-pole scheme 660 V	180 A or 630 A, depending on model	900 A, 1200 A or 1750 A, depending on model
Degree of protection	IP 54	IP 43
Operating temperature	- 25 °C... + 70 °C	- 25 °C... + 70 °C
Cable entry	2 tapped entries for n° 21 cable gland or 3 tapped entries for n° 29 cable gland, depending on model	2 entries incorporating n° 36 plastic cable gland
Type reference	**XF9D**	**XF9F**
Pages	66	66

Safety detection solutions
XCS safety switches

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 Centers	20	20/22	
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 detection solutions
XCS safety switches

Switch type				
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.	Without locking of actuating key. Optional accessory: guard retaining device.	
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		cULus	UL, CSA, CCC, EAC	
Dimensions (w x h x d) in mm	Switch	30 x 87 x 15	30 x 93.5 x 30	52 x 114.5 x 30
	Fixings	Centers: 20/22	Centers: 20/22	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)	–	Tapped entry for Pg 11, ISO M16 cable gland or tapped 1/2" NPT	
	Pre-cabled	L = 2, 5 or 10 m	–	–
Type reference		**XCSMP**	**XCSPA**	**XCSTA**
Pages		Please refer to our catalogue "Safety switches XCS range"		

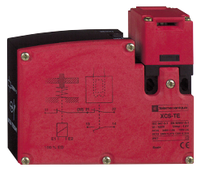
(1) Machine stopping time less than time taken for operator to access hazardous zone.

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 detection solutions
XCS safety switches

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	Centers	30 x 153.3	
Head			Turret head: 8 positions for insertion of actuating key.	
Resistance to forcible withdrawal of the actuator	F_{1max}		1400 N	3000 N
	F_{Zh}		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 detection solutions
XCS safety switches

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 switch is suitable for machine with low inertia.		
Design			Rectangular format		
			M12 connector		
					
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.		
	Assured operating sensing distance (Sao)		15 mm		
	Assured release distance (Sar)		35 mm		
	Type of switch		Standalone RFID switch	Daisy-chain RFID switch for direct series connection	Single RFID switch for point-to-point connection
	Operating mode		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	
Conformity to standards	Products		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)		
	Machine assemblies		EN/IEC 60204-1, EN/ISO 14119		
	RFID protocol		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	30 x 118.6 x 5	30 x 108.3 x 15
	Transponder		50 x 15 x 15		
	Fixings	Centers	–		
		Reader	74…78		
		Transponder	30…34		
Contact blocks or outputs	Safety output		2 OSSDs (Safety outputs PNP NO). OSSDs are in the ON state when the gate is closed		
			Maximum current 400mA	Maximum current 200 mA	
	Contact states given in presence of magnet		–		
			–		
Degree of protection			–		
	Conforming to EN/IEC 60529		IP 65, IP 66, IP 67		
	Conforming to DIN 40050		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 range
General

Presentation

Electromechanical detection

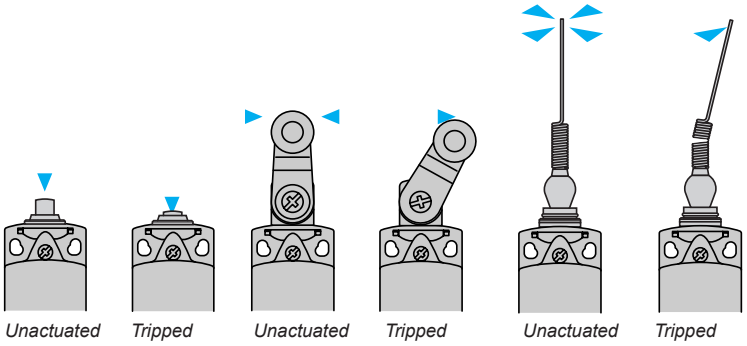
Limit switches are used in all automated installations and also in a wide variety of applications, due to the numerous advantages inherent to their technology.
They transmit data to the logic processing system regarding:
- presence/absence,
- passing,
- positioning,
- end of travel.

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

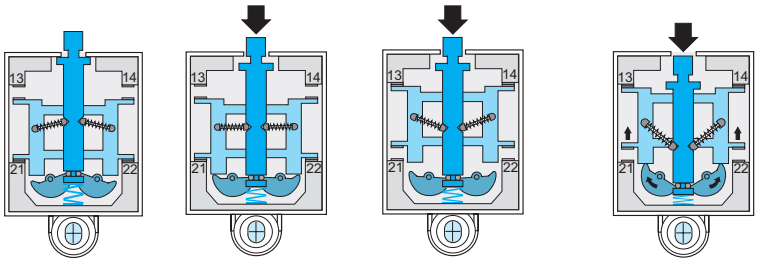
Rated value of a quantity	■ This replaces the term “nominal value”. ■ It is the fixed value for a specific function.
Utilisation categories:	■ AC-15 replaces AC-11: control of an electromagnet on AC, test 10 Ie/Ie. ■ AC-12: control of a resistive load on AC or static load isolated by opto-coupler. ■ 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.

Limit switches
XC range
General

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.

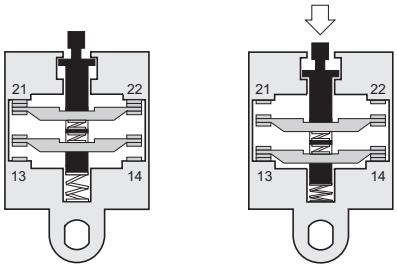


Unactuated state *Approach travel* *Contact change of state* *Positive opening*

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

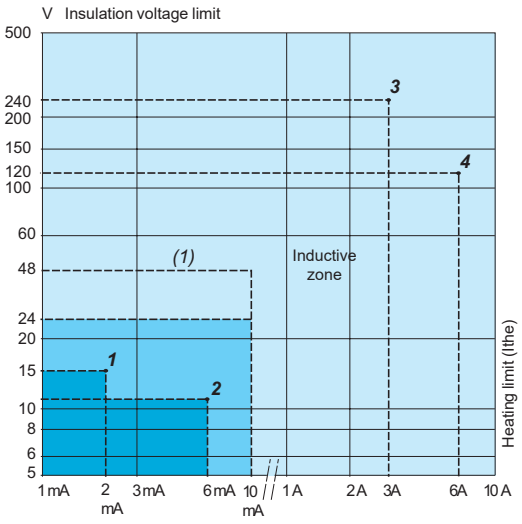
A300	240 V	3 A	B300	240 V	1.5 A
Q300	250 V	0.27 A	R300	250 V	0.13 A

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

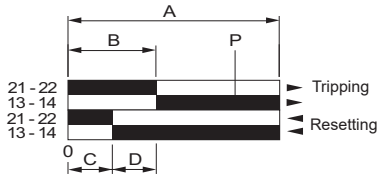
- The use of limit switches with programmable controllers is becoming more common.
- With small loads, limit switches offer the following levels of reliability:
- □ failure rate of less than 1 for 100 million operating cycles using snap action contacts (contacts XE2SP),
- □ failure rate of less than 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.

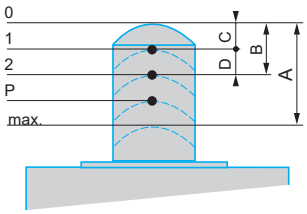


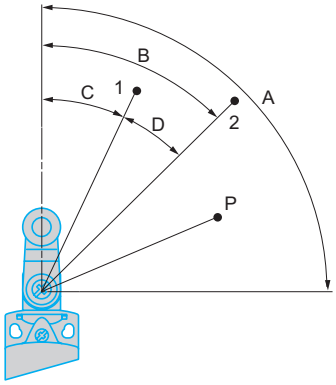
		Range of use
Standard contacts Continuous service (frequent switching)	XE2SP2151, P3151	
	XE2NP●●●●	
	Contacts of XCMD XE3●P●●●●	
Gold flashed contacts on resistive load	Occasional service Infrequent switching, ≤ 1 operating cycle/ day, and/or corrosive atmosphere	(1)

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

Contact blocks (continued)







Functional diagrams of snap action contacts

■ **Example: NC + NO**

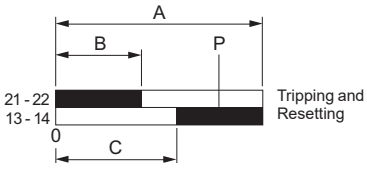
A - Maximum travel of operator in millimetres or degrees.
B - Tripping travel of contact.
C - Resetting travel of contact.
D - Differential travel = B - C.
P - Point from which positive opening is assured.

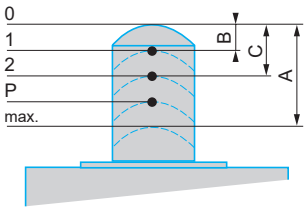
□ Linear movement (plunger)

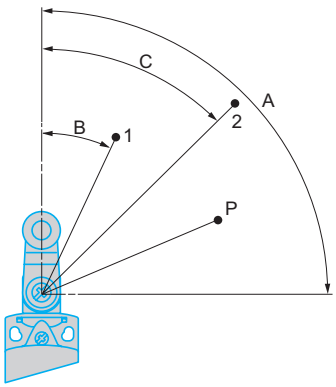
1 - Resetting point of contact.
2 - Tripping point of contact.
A - Maximum travel of operator in millimetres.
B - Tripping travel of contact.
C - Resetting travel of contact.
D - Differential travel = B - C.
P - Point from which positive opening is assured.

□ 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.

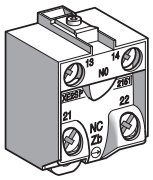
□ Linear movement (plunger)

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.

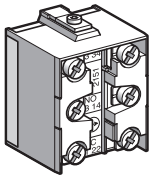
□ Rotary movement (lever)

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

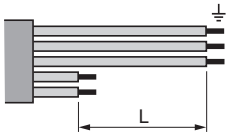


XE3●P screw clamp terminal connections

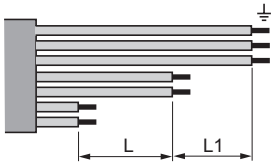
Mounting

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,

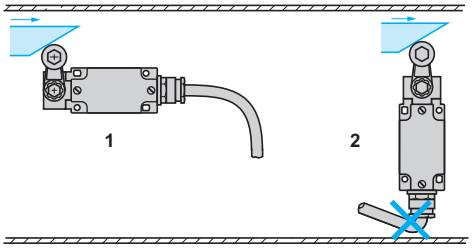


- □ for **XE3●P**, L = 14 mm, L1 = 11 mm.



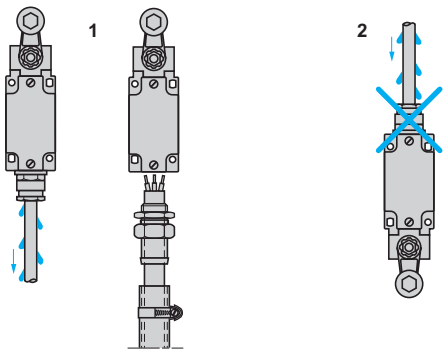
Sweep of connecting cable

1 *Recommended*
2 *To be avoided*



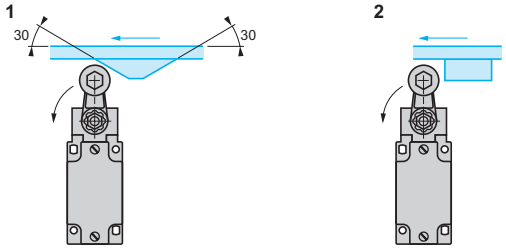
Position of cable gland

1 *Recommended*
2 *To be avoided*



Type of cam

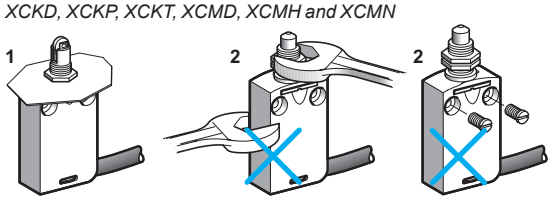
1 *Recommended*
2 *To be avoided*



Mounting and fixing limit switches by the head

1 *Recommended*
2 *Forbidden*

XCKD, XCKP, XCKT, XCMD, XCMH and XCMN



Limit switches
XC range
General

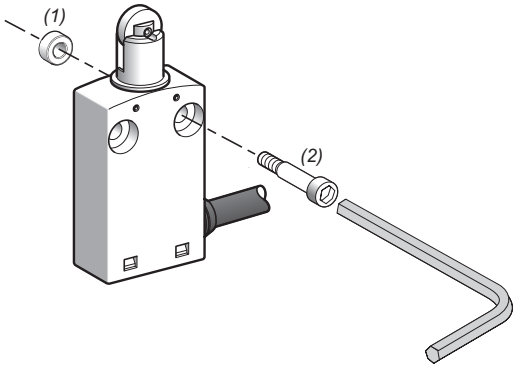
Setting-up

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, XCMH, XCMN, XCMV	Fixing screw for the product	1	1.5	*8.85*	*13.27*
	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*

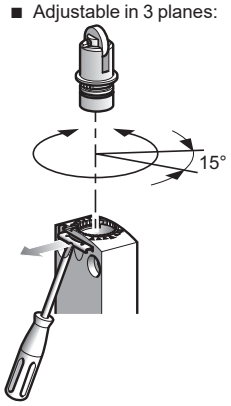
XCMH, XCMN



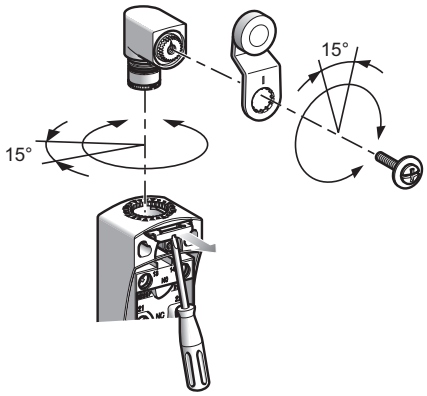
(1) 2 spacers supplied with the switch.
(2) 2 screws Ø 4mm (not included).

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.

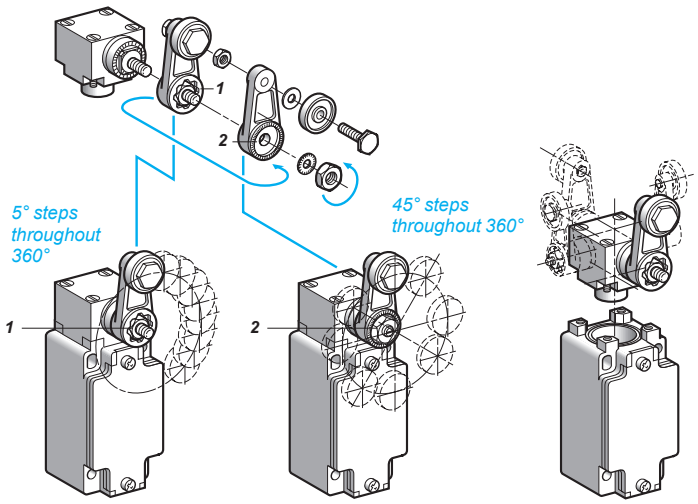


All the levers can be adjusted in 15° steps throughout 360°, in relation to the horizontal axis of the head.

XCKJ

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

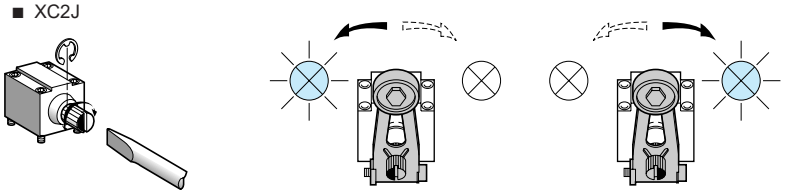
1 *Reversed* α = *5°*
2 *Forward* α = *45°*



Setting-up (continued)

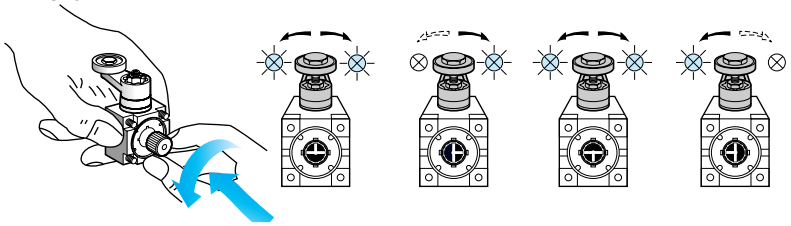
Direction of actuation programming

■ XC2J



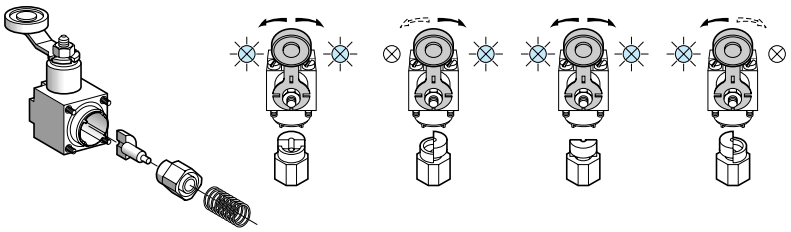
Head ZC2JE05

■ XCKJ



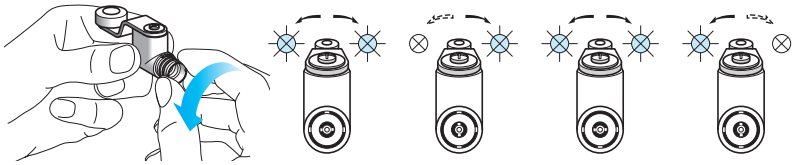
Head ZCKE05

■ XCKS



Head ZCKD05

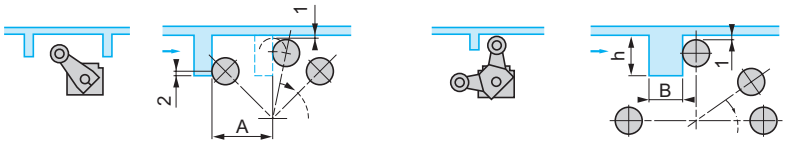
■ XCKD, XCKP, XCKT and XCMD



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

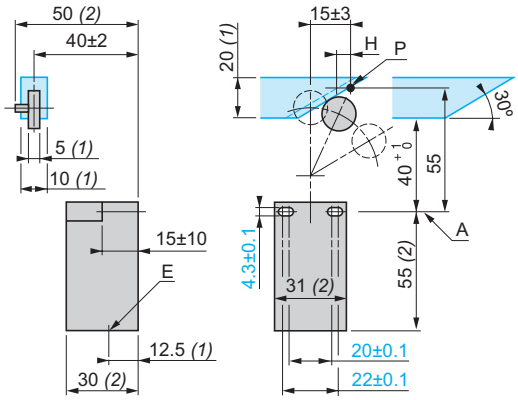
The European standards organisation CENELEC, which has 14 member countries, has defined in this standard the first type of limit switch.

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

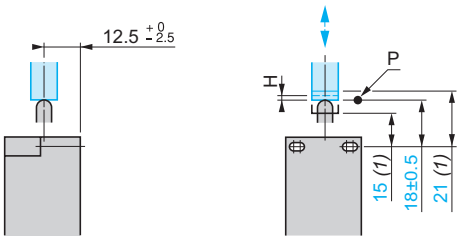
(1) Minimum value
(2) Maximum value

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

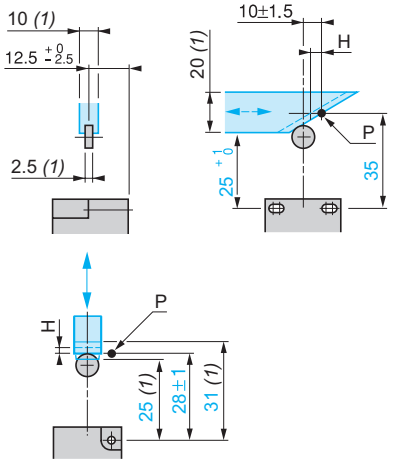
Form A, with roller lever



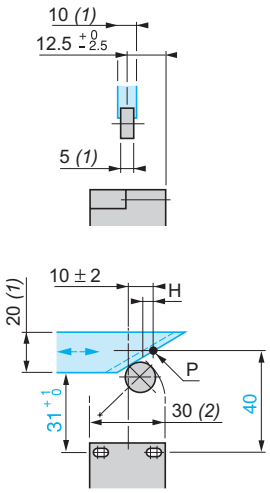
Form B, with end plunger (rounded)



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.

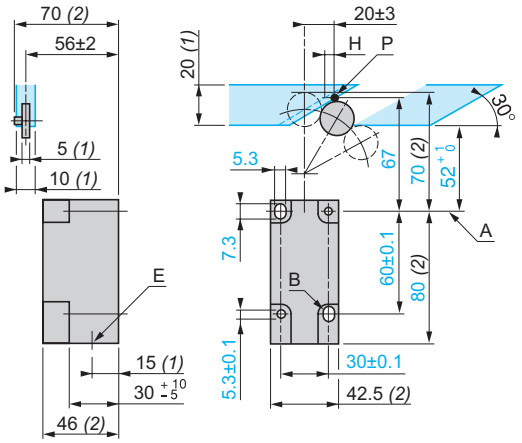
It defines 6 variants of devices (forms A, B, C, D, F, G). Limit switches XCKJ and XCKS conform to standard EN 50041.

(1) Minimum value
(2) Maximum value

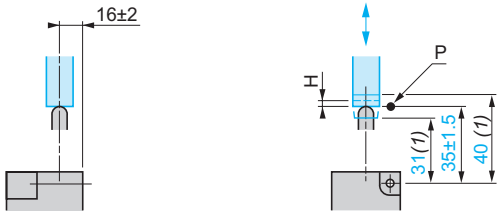
A: reference axis
B: optional elongated holes
H: differential travel
P: tripping point
E: cable entry

Za: tripping zone
Sa: tripping threshold

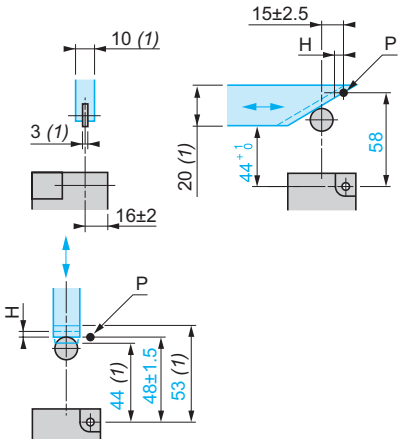
Form A, with roller lever



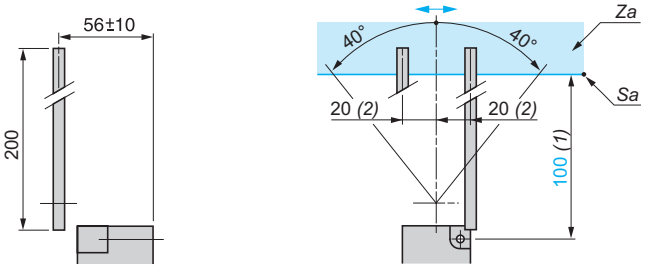
Form B, with end plunger (rounded)



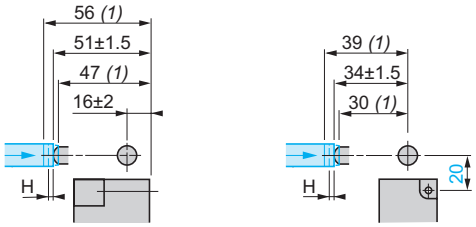
Form C, with end roller plunger



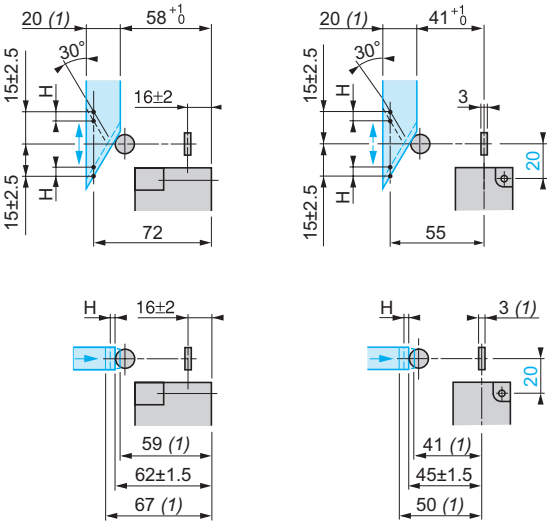
Form D, with rod lever



Form F, with side plunger (rounded)



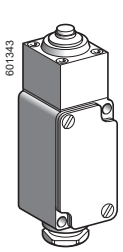
Form G, with side roller plunger

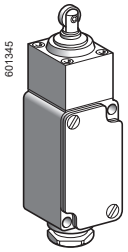


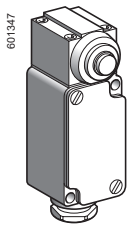
Limit switches
XC Special range
For very severe applications, XC2J

■ XC2J
with 1 cable entry

□ With head for linear movement (plunger)

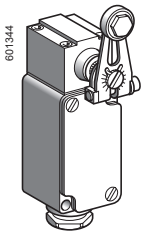


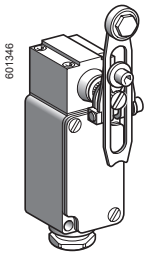


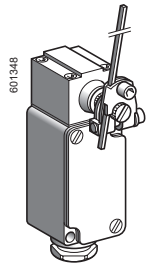


Page 26

□ With head for rotary movement (lever)







Page 26

Limit switches
XC Special range
For very severe applications, XC2J

Environment characteristics

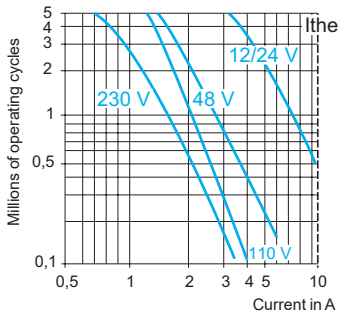
Conformity to standards	Products	IEC/EN 60947-5-1, IEC 60337-1, VDE 0660-200, UL 508, CSA C22-2 n° 14
	Machine assemblies	IEC/EN 60204-1, NF C 79-130
Product certifications	Standard version	CSA 300 V ⎓ HD, 60 W ∿
	Special version	UL 250 V ∿ HD Listed, CSA 300 V ∿ HD, 60 W with 1/2" NPT tapped cable entry
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



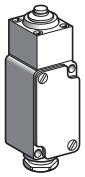
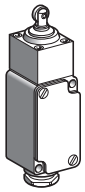
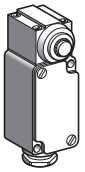
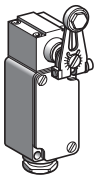
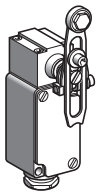
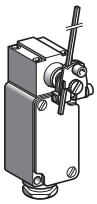
DC supply ⎓

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

Limit switches

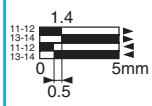
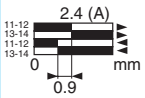
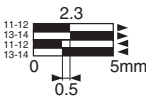
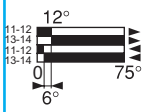
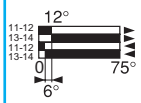
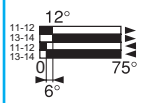
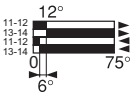
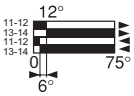
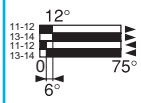
XC Special range

For very severe applications, XC2J
Complete switches, fixed body,
1 cable entry incorporating cable gland

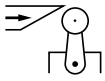
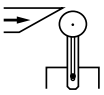
Type of head	Plunger			Rotary		
						
Type of operator	Metal end plunger	Steel roller plunger	Metal side plunger	Thermoplastic roller lever *(1)*	Variable length thermoplastic roller lever *(1)*	Steel rod lever ⌀ 3 mm *(1)*

(1) Adjustable throughout 360°.

References

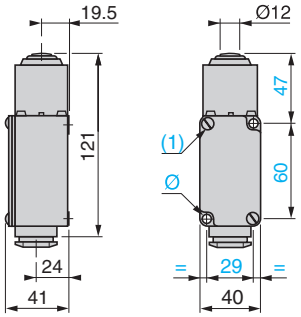
Single-pole CO snap action XCKZ01 						
	ZC2JC1 + ZC2JE61 	**ZC2JC1 + ZC2JE62** 	**ZC2JC1 + ZC2JE63** 	**Actuation from left AND right**		
				ZC2JC1 + ZC2JE01 + ZC2JY11 	**ZC2JC1 + ZC2JE01 + ZC2JY31** 	**ZC2JC1 + ZC2JE01 + ZC2JY51** 
				Actuation from left OR right		
				ZC2JC1 + ZC2JE05 + ZC2JY11 	**ZC2JC1 + ZC2JE05 + ZC2JY31** 	**ZC2JC1 + ZC2JE05 + ZC2JY51** 
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 25)

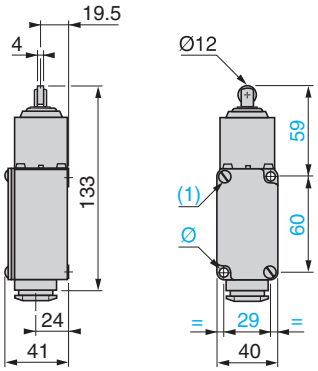
Switch actuation	On end	By 30° cam	On end	By 30° cam		By any moving part
Type of actuation						
Maximum actuation speed	0.5 m/s			1.5 m/s		
Mechanical durability (in millions of operating cycles)	**30**	**25**	**30**			
Minimum tripping force or torque	18 N		26 N	**With head ZC2JE01**: 0.30 N.m **With 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

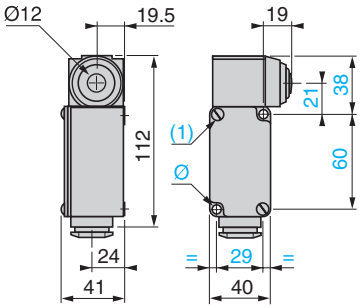
ZC2JC1 + ZC2JE61



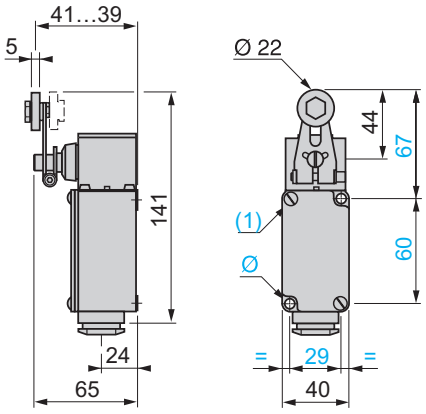
ZC2JC1 + ZC2JE62



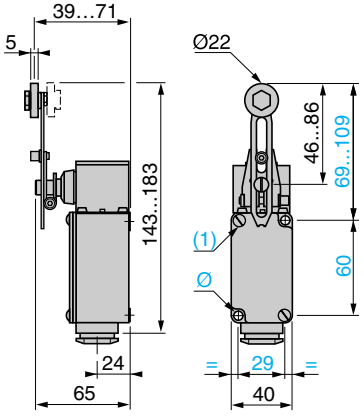
ZC2JC1 + ZC2JE63



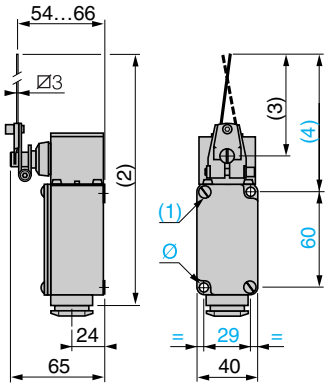
ZC2JC1 + ZC2JE0● + ZC2JY11



ZC2JC1 + ZC2JE0● + ZC2JY31



ZC2JC1 + ZC2JE0● + ZC2JY51

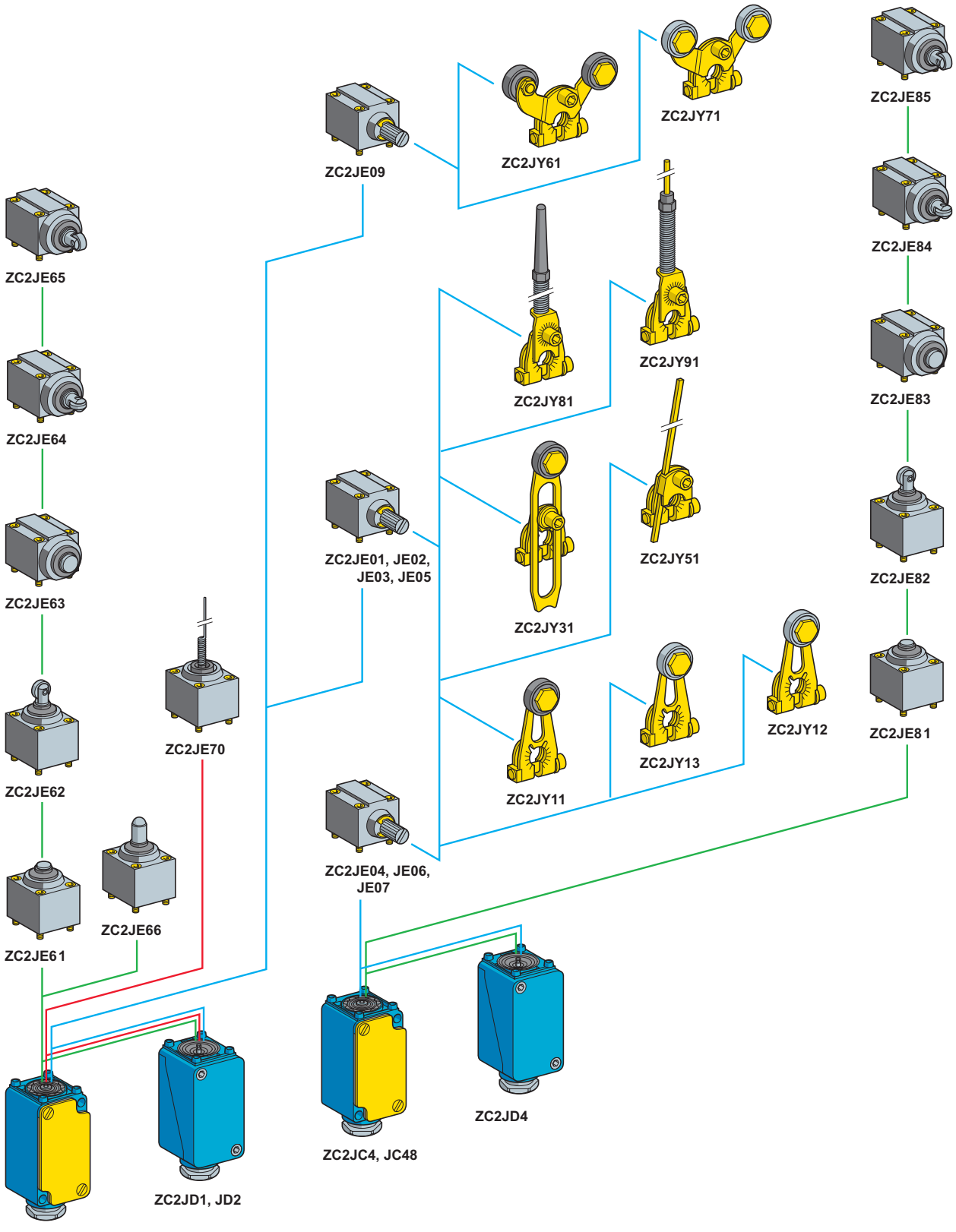


(1) Fixing from the rear: by 2 M5 screws.
Depth of thread on switch: 10 mm.
(2) 222 max.
(3) 125 max.
(4) 148 max.
Ø: Fixing from the front via 2 holes Ø 5.5.
Cable gland incorporated (all XC2JC models).

Limit switches

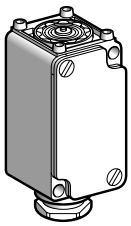
XC Special range

For very severe applications, XC2J
Fixed or plug-in body
Variable composition



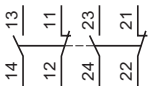
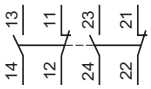
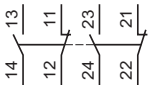
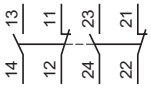
Plunger head
Rotary head
Multi-directional head

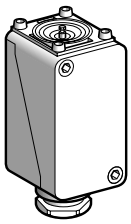
Limit switches
XC Special range
For very severe applications, XC2J
Fixed or plug-in body
Adaptable sub-assemblies



ZC2JC●

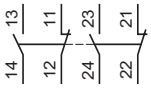
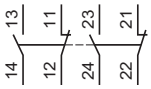
Bodies with contacts for plunger or rotary head

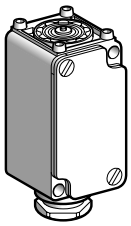
Type	With contact block	Scheme	Reference	Weight kg
Fixed bodies (see operation page 34)				
1 step	Single-pole 1 CO snap action (XCKZ01)		**ZC2JC1**	0.355
	Double-pole 2 CO simultaneous, snap action (XESP1021)		**ZC2JC2**	0.355
2 step	Double-pole 2 CO staggered, snap action (XESP1031)		**ZC2JC4**	0.355
Plug-in bodies (see operation page 34)				
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



ZC2JD●

Bodies incorporating gold flashed contacts, for plunger or rotary head

Type	With contact block	Scheme	Reference	Weight kg
Fixed bodies (see operation page 34)				
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

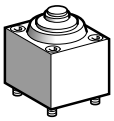


ZC2JC●8

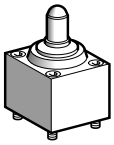
Operation:
page 34

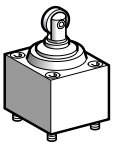
Dimensions:
pages 34 and 35

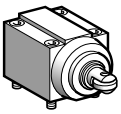
Limit switches
XC Special range
For very severe applications, XC2J
Fixed or plug-in body
Adaptable sub-assemblies

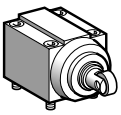

ZC2JE●1


ZC2JE●3


ZC2JE66


ZC2JE●2


ZC2JE●4

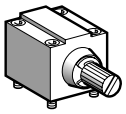

ZC2JE●5

Plunger heads

Type of operator	Compatible bodies	Maximum actuation speed	Reference	Weight kg
For actuation on end				
End plunger metal	ZC2J●1 ZC2J●2	0.5 m/s	**ZC2JE61**	0.195
	ZC2J●4	0.5 m/s	**ZC2JE81**	0.195
Side plunger metal	ZC2J●1 ZC2J●2	0.5 m/s	**ZC2JE63**	0.240
	ZC2J●4	0.5 m/s	**ZC2JE83**	0.240
For actuation by 30° cam				
End ball bearing plunger	ZC2J●1 ZC2J●2	0.1 m/s	**ZC2JE66**	0.205
End roller plunger steel	ZC2J●1 ZC2J●2	1 m/s	**ZC2JE62**	0.200
	ZC2J●4	1 m/s	**ZC2JE82**	0.200
Side plunger with horizontal roller steel	ZC2J●1 ZC2J●2	0.6 m/s	**ZC2JE64**	0.245
	ZC2J●4	0.6 m/s	**ZC2JE84**	0.245
Side plunger with vertical roller steel	ZC2J●1 ZC2J●2	0.6 m/s	**ZC2JE65**	0.245
	ZC2J●4	0.6 m/s	**ZC2JE85**	0.245

Operation: page 34
Dimensions: pages 34 and 35

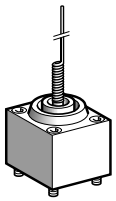
Limit switches
XC Special range
For very severe applications, XC2J
Fixed or plug-in body
Adaptable sub-assemblies



ZC2JE0●

Rotary heads (without operating lever)

Type	Compatible bodies	Maximum actuation speed	Reference	Weight kg
Spring return (see operation page 34)				
Actuation from left **AND** right	ZC2J●1 ZC2J●2	1.5 m/s	**ZC2JE01**	0.210
	ZC2J●4	1.5 m/s	**ZC2JE04**	0.210
Actuation from left	ZC2J●1 ZC2J●2	1.5 m/s	**ZC2JE02**	0.210
	ZC2J●4	1.5 m/s	**ZC2JE06**	0.210
Actuation from right	ZC2J●1 ZC2J●2	1.5 m/s	**ZC2JE03**	0.210
	ZC2J●4	1.5 m/s	**ZC2JE07**	0.210
Actuation from left **OR** right (see page 22)	ZC2J●1 ZC2J●2	1.5 m/s	**ZC2JE05**	0.210
Stay put (see page 22)				
Actuation from left **AND** right	ZC2J●1 ZC2J●2	1.5 m/s	**ZC2JE09**	0.210



ZC2JE70

Multi-directional head (with operator)

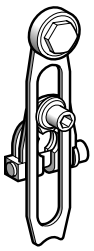
Type of operator	Compatible bodies	Maximum actuation speed	Reference	Weight kg
For actuation by any moving part (see operation page 34)				
"Cat's whisker"	ZC2J●1 ZC2J●2	1 m/s in any direction	**ZC2JE70**	0.190

Operation: page 34

Dimensions: pages 34 and 35

Limit switches
XC Special range
For very severe applications, XC2J
Fixed or plug-in body
Adaptable sub-assemblies


ZC2JY1●

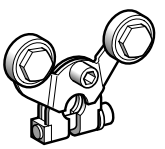

ZC2JY31

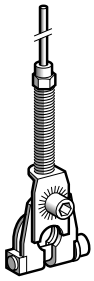

ZC2JY51

Operating levers for rotary heads

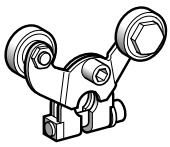
Description		Reference	Weight kg
For actuation by 30° cam			
Roller lever *(1)*	Thermoplastic	**ZC2JY11**	0.030
	Steel	**ZC2JY13**	0.040
	Steel, ball bearing mounted	**ZC2JY12**	0.040
Variable length roller lever *(1)*	Thermoplastic	**ZC2JY31**	0.045
For actuation by any moving part			
Rigid rod lever	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 JE09, see page 22)			
Forked arm with rollers thermoplastic *(1)*	1 track	**ZC2JY71**	0.055
	2 track	**ZC2JY61**	0.055

(1) Adjustable throughout 360°


ZC2JY81


ZC2JY91

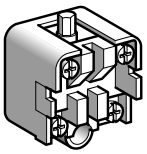
ZC2JY71


ZC2JY61

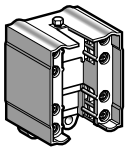
Other versions — Other operating levers for rotary heads.
Please consult our Customer Care Centre.

Operation: page 34
Dimensions: pages 34 and 35

Limit switches
XC Special range
For very severe applications, XC2J
Fixed or plug-in body
Adaptable sub-assemblies

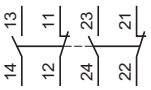
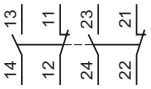


XCKZ01

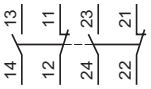
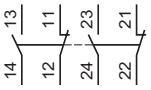


XESP10●1

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

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

Operation: page 34

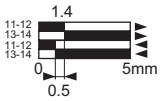
Dimensions: pages 34 and 35

Limit switches
XC Special range
For very severe applications, XC2J
Fixed or plug-in body
Adaptable sub-assemblies

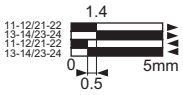
Operation (function diagrams)

Heads ZC2JE61, ZC2JE66 with body

ZC2J•1

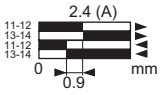


ZC2J•2

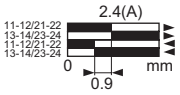


Head ZC2JE62 with body

ZC2J•1

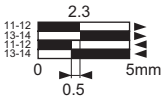


ZC2J•2

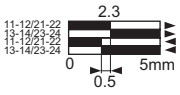


Head ZC2JE63 with body

ZC2J•1

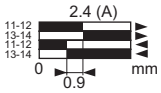


ZC2J•2

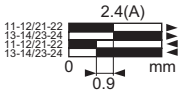


Heads ZC2JE64, ZC2JE65 with body

ZC2J•1

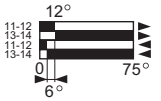


ZC2J•2

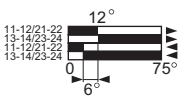


Heads ZC2JE01, ZC2JE02, ZC2JE03, ZC2JE05 with body

ZC2J•1

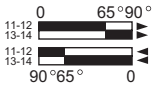


ZC2J•2

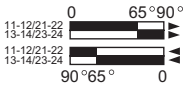


Head ZC2JE09 with body

ZC2J•1

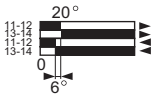


ZC2J•2

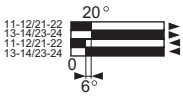


Head ZC2JE70 with body

ZC2J•1

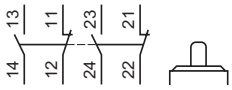
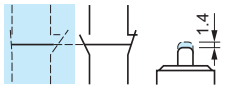


ZC2J•2

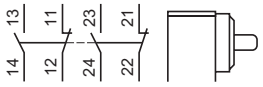


Contact operation — closed — open — (A) = cam displacement

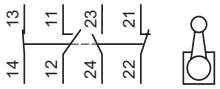
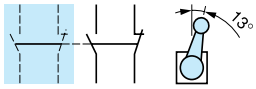
Heads ZC2JE81, ZC2JE82 with body ZC2J•4

Unactuated	1st step	2nd step
		

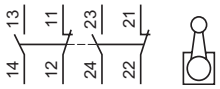
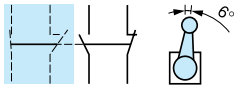
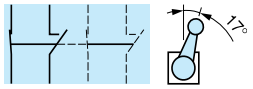
Heads ZC2JE83, ZC2JE84, ZC2JE85 with body ZC2J•4

Unactuated	1st step	2nd step
		

Heads ZC2JE04 with body ZC2J•4

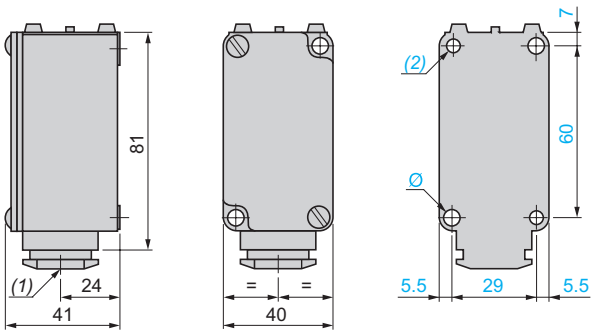
Unactuated	Actuated from left	Actuated from right
		

Heads ZC2JE06, ZC2JE07 with body ZC2J•4

Unactuated	1st step	2nd step
		

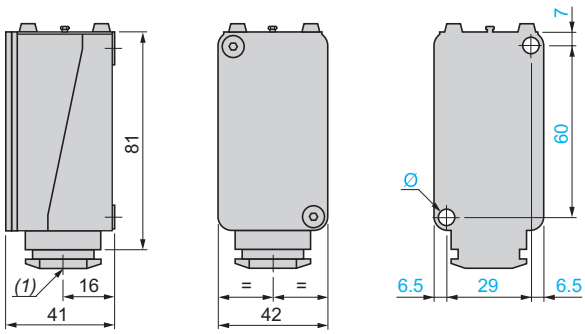
Dimensions

Fixed bodies
ZC2JC1, ZC2JC2, ZC2JC4



(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

Plug-in bodies
ZC2JD1, ZC2JD2, ZC2JD4



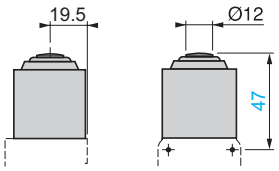
(1) Incorporated cable gland
Ø: Fixing from the rear by 2 M6 screws
Fixing from the front via 2 holes Ø 5.5 (remove front part of switch for access)

References:
pages 29 to 33

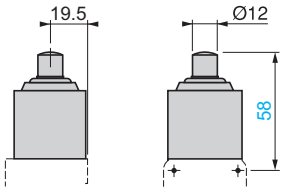
Limit switches
XC Special range
For very severe applications, XC2J
Fixed or plug-in body
Adaptable sub-assemblies

Plunger heads

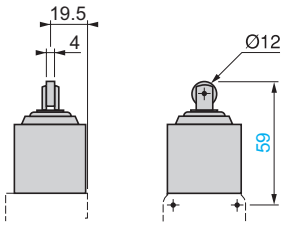
ZC2JE61, ZC2JE81



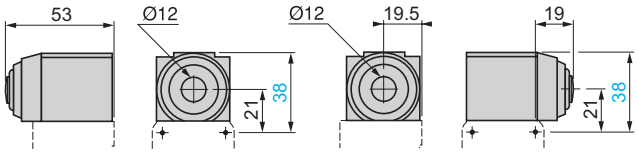
ZC2JE66



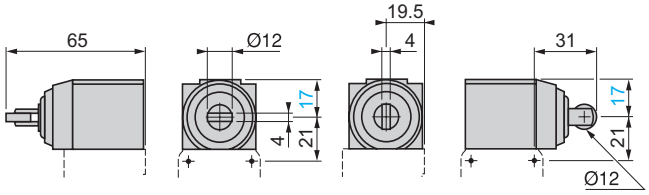
ZC2JE62, ZC2JE82



ZC2JE63, ZC2JE83 (2 position)

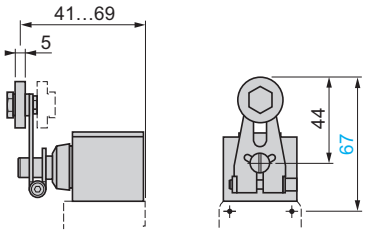


ZC2JE64, ZC2JE84, ZC2JE65, ZC2JE85 (2 position)

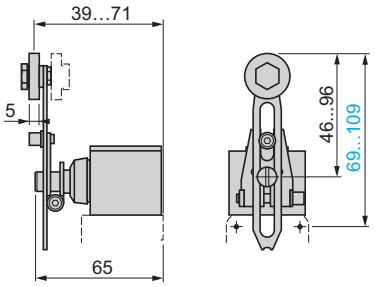


Rotary heads (ZC2JE01 to ZC2JE07) with operating lever

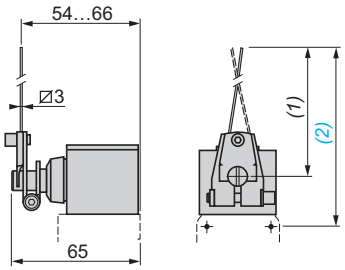
ZC2JY11, ZC2JY12, ZC2JY13



ZC2JY31

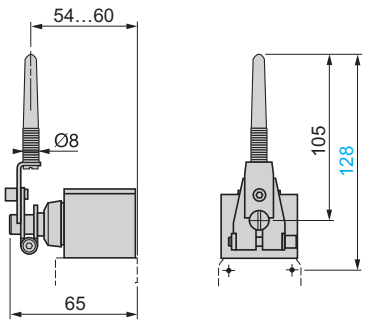


ZC2JY51

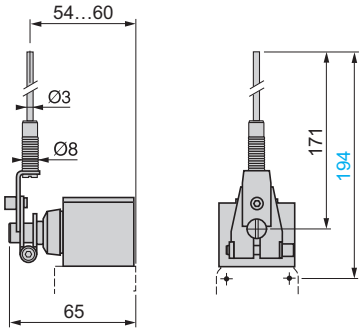


(1) 125 max. *(2) 148 max.*

ZC2JY81

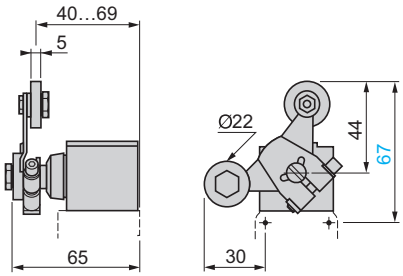


ZC2JY91

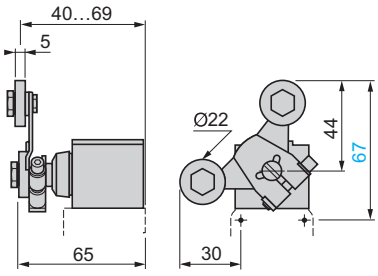


Rotary heads (ZC2JE09) with operating lever

ZC2JY61

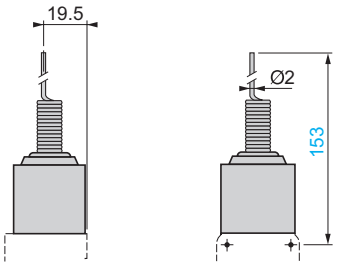


ZC2JY71



Multi-directional heads

ZC2JE70



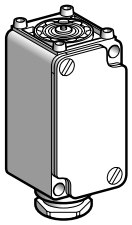
References:
pages 29 to 33

Operation:
page 34

Limit switches

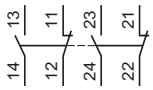
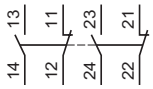
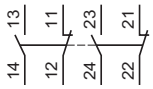
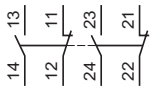
XC Special range

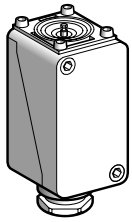
For very severe applications, XC2J
Fixed or plug-in body, adaptable sub-assemblies for low temperature applications (- 40°C)



ZC2JC●6

Bodies with contacts for plunger or rotary head

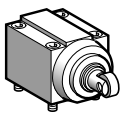
Type	With contact block	Scheme	Reference	Weight kg
Fixed bodies				
1 step	Single-pole 1 CO snap action (XCK Z01)		**ZC2JC16**	0.355
	Double-pole 2 CO simultaneous, snap action (XES P1021)		**ZC2JC26**	0.355
2 step	Double-pole 2 CO staggered, snap action (XES P1031)		**ZC2JC46**	0.355
Plug-in bodies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



ZC2JD●6

Plunger heads

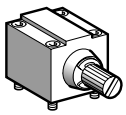
Type of operator	Compatible bodies	Maximum actuation speed	Reference	Weight kg
For actuation on end				
End plunger metal	ZC2J●16 ZC2J●26	0.5 m/s	**ZC2JE616**	0.195
	ZC2J●46	0.5 m/s	**ZC2JE816**	0.195
Side plunger metal	ZC2J●16 ZC2J●26	0.5 m/s	**ZC2JE636**	0.240
	ZC2J●46	0.5 m/s	**ZC2JE836**	0.240
For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



ZC2JE●56

Operation: page 34
Dimensions: pages 34 and 35

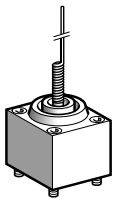
Limit switches
XC Special range
For very severe applications, XC2J
Fixed or plug-in body, adaptable sub-assemblies for low temperature applications (- 40°C)



ZC2JE0●6

Rotary heads (without operating lever)

Type	Compatible bodies	Maximum actuation speed	Reference	Weight kg
Spring return				
Actuation from left **AND** right	ZC2J●16 ZC2J●26	1.5 m/s	**ZC2JE016**	0.210
	ZC2J●46	1.5 m/s	**ZC2JE046**	0.210
Actuation from left	ZC2J●16 ZC2J●26	1.5 m/s	**ZC2JE026**	0.210
	ZC2J●46	1.5 m/s	**ZC2JE066**	0.210
Actuation from right	ZC2J●16 ZC2J●26	1.5 m/s	**ZC2JE036**	0.210
	ZC2J●46	1.5 m/s	**ZC2JE076**	0.210
Actuation from left **OR** right (see page 22)	ZC2J●16 ZC2J●26	1.5 m/s	**ZC2JE056**	0.210
Stay put (see page 22)				
Actuation from left **AND** right	ZC2J●16 ZC2J●26	1.5 m/s	**ZC2JE096**	0.210



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 ZC2J●26	1 m/s in any direction	**ZC2JE706**	0.190

Operation: page 34

Dimensions: pages 34 and 35

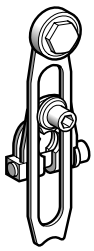
Limit switches

XC Special range

For very severe applications, XC2J

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

ZC2JY1●

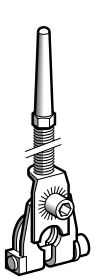


ZC2JY31

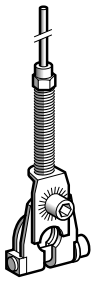
ZC2JY51

Operating levers for rotary heads

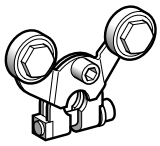
Description		Reference	Weight kg
For actuation by 30° cam			
Roller lever *(1)*	Thermoplastic	**ZC2JY11**	0.030
	Steel	**ZC2JY13**	0.040
	Steel, ball bearing mounted	**ZC2JY12**	0.040
Variable length roller lever *(1)*	Thermoplastic	**ZC2JY31**	0.045
For actuation by any moving part			
Rigid rod lever	Steel ⌀ 3 mm, L = 125 mm *(1)*	**ZC2JY51**	0.035
Spring lever *(1)*		**ZC2JY81**	0.040
Spring-rod lever *(1)*		**ZC2JY91**	0.040



ZC2JY81

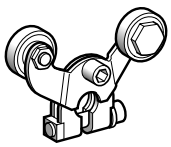


ZC2JY91



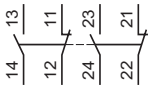
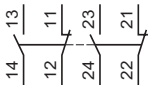
ZC2JY71

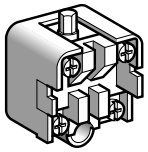
For actuation by specific cam (only for operation with head ZC2 JE096, see page 22)			
Forked arm with rollers thermoplastic *(1)*	1 track	**ZC2JY71**	0.055
	2 track	**ZC2JY61**	0.055



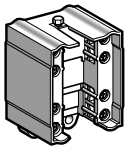
ZC2JY61

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



XCKZ01



XESP10●1

(1) Adjustable throughout 360°

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

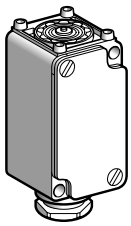
Operation: page 34

Dimensions: pages 34 and 35

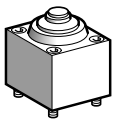
Limit switches

XC Special range

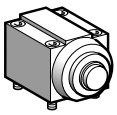
For very severe applications, XC2J
Fixed body, adaptable sub-assemblies for high temperature applications (+ 120°C)



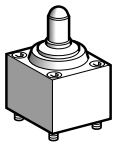
ZC2JC●5



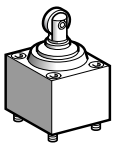
ZC2JE●15



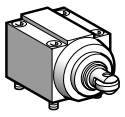
ZC2JE●35



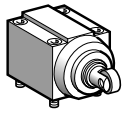
ZC2JE665



ZC2JE●25

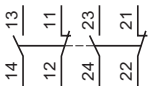
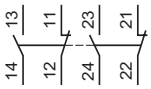


ZC2JE●45



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

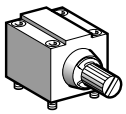
Plunger heads

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

Operation: page 34

Dimensions: pages 34 and 35

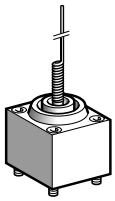
Limit switches
XC Special range
For very severe applications, XC2J
Fixed body, adaptable sub-assemblies for high temperature applications (+ 120°C)



ZC2JE0●5

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 22)				
Actuation from left **AND** right	ZC2JC15 ZC2JC25	1.5 m/s	**ZC2JE095**	0.210



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

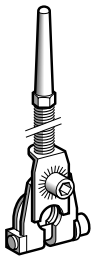
Operation: page 34

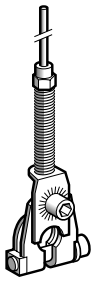
Dimensions: pages 34 and 35

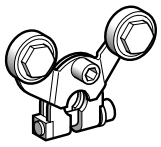
Limit switches
XC Special range
For very severe applications, XC2J
Fixed body, adaptable sub-assemblies for high temperature applications (+ 120°C)


ZC2JY1●


ZC2JY51


ZC2JY815


ZC2JY915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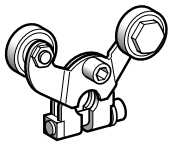
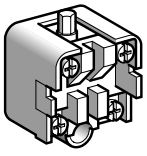
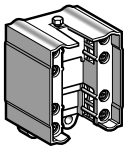

ZC2JY615

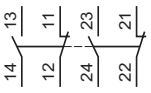
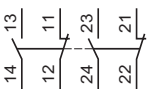

XCKZ015


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 ⌀ 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 22)			
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.

Operation: page 34
Dimensions: pages 34 and 35

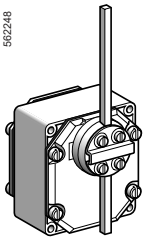
Limit switches
XC Special range
For hoisting and material handling applications, XCR

■ XCR

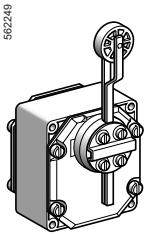
□ With head for rotary movement operators, spring return to off position

1 contact actuation position per direction

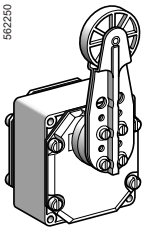
562248



562249



562250

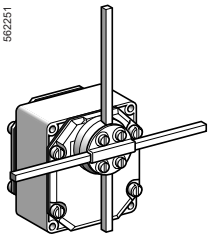


Page 46

□ With head for rotary movement operators, stay put

1 contact actuation position per direction

562251



Page 46

Limit switches

XC Special range

For hoisting and material handling applications, XCKMR and XCKVR

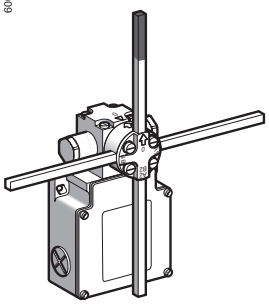
For conveyor belt shift monitoring applications, XCRT

■ XCKMR (metal)

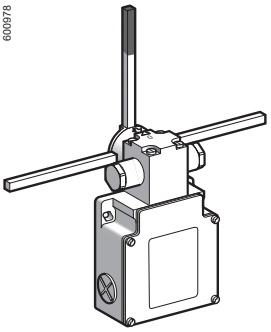
□ With head for rotary movement operators, stay put

4 mechanical actuation positions of 4 contacts
From 2 to 5 electrical positions depending on model

600977



600978



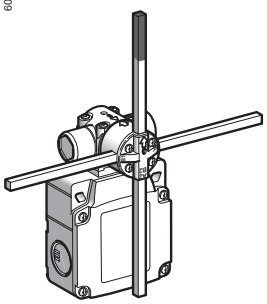
Page 52

■ XCKVR (plastic)

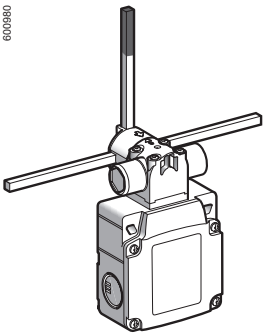
□ With head for rotary movement operators, stay put

4 mechanical actuation positions of 4 contacts
From 2 to 5 electrical positions depending on model

600979



600980



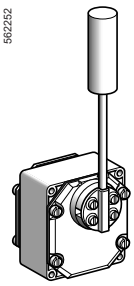
Page 52

■ XCRT

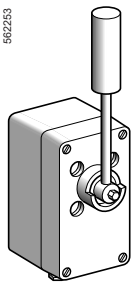
□ With head for rotary movement operators, spring return to off position

2 contact actuation positions per direction
1 contact actuated at 10°, other contact at 18°

562252



562253



Page 48

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 mm^2, max: 2 x 2.5 mm^2 **XE2S P2151**: min: 1 x 0.34 mm^2, max: 2 x 1.5 mm^2	Clamping capacity min: 1 x 0.5 mm^2 max: 2 x 2.5 mm^2
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

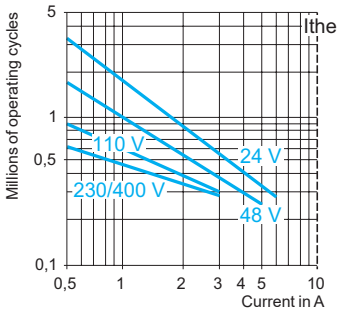
Contact block characteristics (continued)

Electrical durability

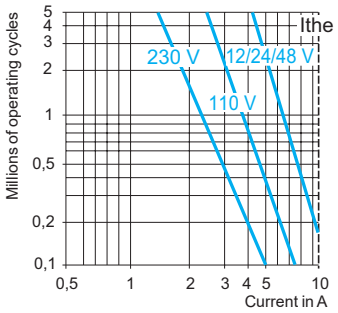
- Conforming to EN/IEC 60947-5-1 Appendix C
- Utilisation categories AC-15 and DC-13
- Maximum operating rate: 3600 operating cycles/hour
- Load factor: 0.5

AC supply
~ 50/60 Hz
inductive circuit

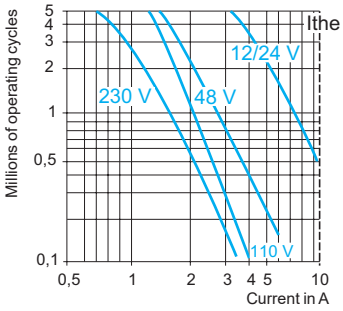
XE2SP2151



XE2NP2151



XCRT contacts



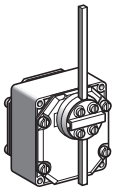
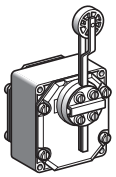
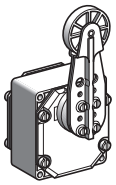
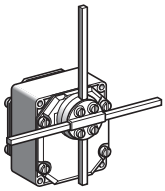
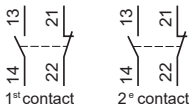
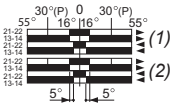
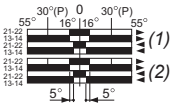
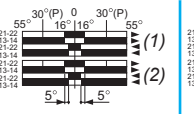
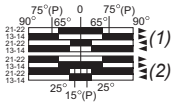
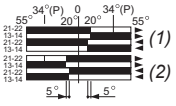
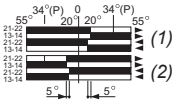
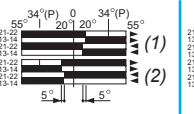
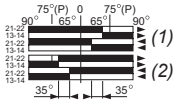
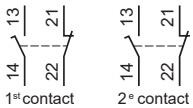
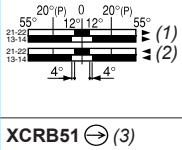
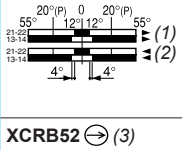
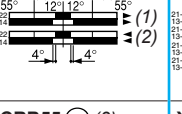
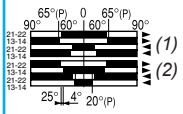
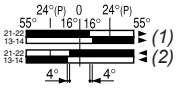
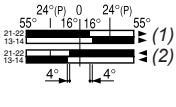
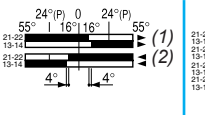
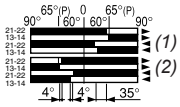
DC supply ⎓

Power broken in **W** for 5 million operating cycles
inductive circuit

Voltage V	24	48	120
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 Maximum displacement		Rotary with spring return to off position 55° in each direction			Stay put 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  1st contact 2e contact	Both contacts operate in each direction	**XCRA11** ⊖ *(3)* 	**XCRA12** ⊖ *(3)* 	**XCRA15** ⊖ *(3)* 	**XCRE18** ⊖ *(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  1st contact 2e contact	Both contacts operate in each direction	**XCRA51** ⊖ *(3)* 	**XCRA52** ⊖ *(3)* 	**XCRA55** ⊖ *(3)* 	**XCRE58** ⊖ *(3) (4)* 
	1 contact operates in each direction	**XCRB51** ⊖ *(3)* 	**XCRB52** ⊖ *(3)* 	**XCRB55** ⊖ *(3)* 	**XCRF57** ⊖ *(3)* 
Weight (kg)		1.110	1.145	1.155	1.135
Contact operation		■ *closed* □ *open*	*(P) = positive opening point* *(1) 1st contact* *(2) 2nd contact*		

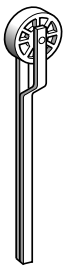
Complementary characteristics

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	

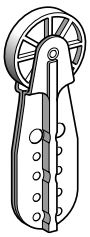
*(3) For a limit switch with watertight reinforced seal (IP 65), add **1** to the end of the reference.*
*Example: **XCRF17** becomes **XCRF171**.*
*(4) For **XCRE18** and **XCRE58**, the rotation is not limited.*

Dimensions:
page 50

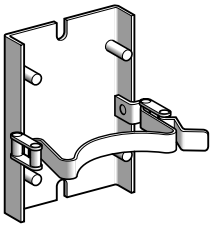
Limit switches
XC Special range
For hoisting and material handling applications, XCR



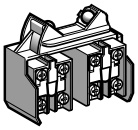
XCRZ02



XCRZ05



XCRZ09



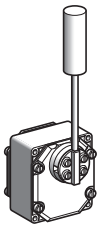
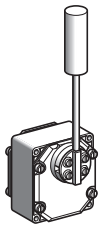
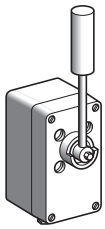
XCRZ1●

Separate components

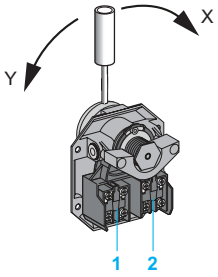
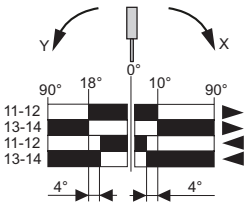
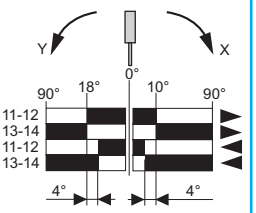
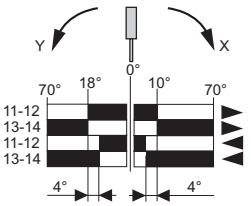
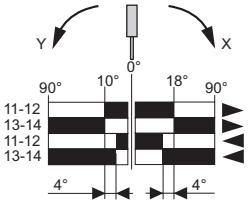
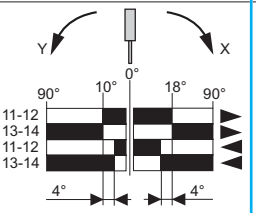
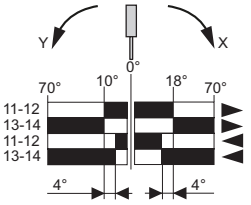
Description	For switches	Type	Reference	Weight kg
Rod, ⌀ **6 mm**	XCRA XCRB XCRE XCRF	L = 200 mm	**XCRZ03**	0.020
	XCRF	L = 300 mm	**XCRZ04**	0.030
Roller lever thermoplastic roller	XCRA XCRB	–	**XCRZ02**	0.050
Large roller lever thermoplastic roller	XCRA XCRB	–	**XCRZ05**	0.090
Quick fixing/ release bracket	XCRA, XCRB XCRE, XCRF	–	**XCRZ09**	0.520
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

Dimensions:
page 50

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°

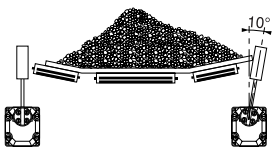
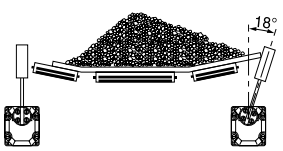
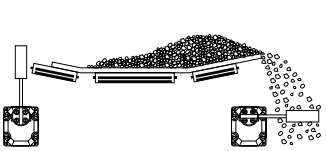
References of complete switches

2 single-pole CO snap action	XCRT115	XCRT215	XCRT315
	 1: 1st contact			
	 2: 2nd contact			
Weight (kg)	1.170	1.170	1.520
Contact operation	*closed* *open*		

Complementary characteristics

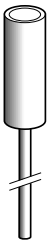
Lever maximum actuation speed	1.5 m/s
Belt maximum speed	4 m/s
Machnical durability	0.3 million operating cycles
Minimum tripping torque	1.7 N.m
Cable entry	1 entry tapped for Pg 13.5 cable gland conforming to NF C 68-300 (DIN Pg 13.5) Clamping capacity 9 to 12 mm

Switch operation

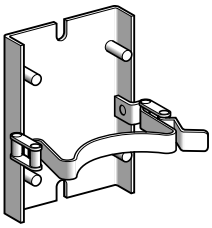
Normal position	Fault signalling	Stopping of the conveyor belt	Maximum rotation
			

Dimensions:
page 51

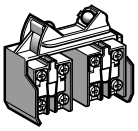
Limit switches
XC Special range
For conveyor belt shift monitoring applications, XCRT



XCRZ9●●



XCRZ09



XCRZ42

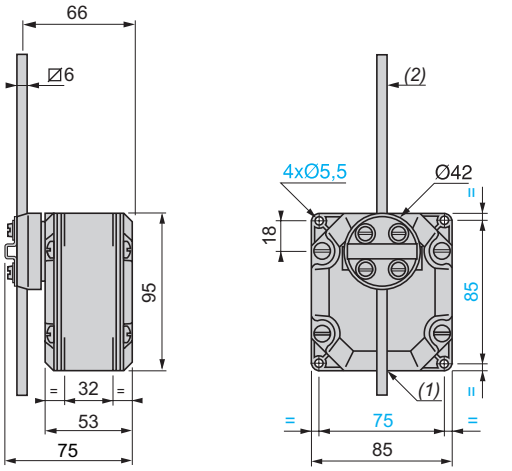
Separate components

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

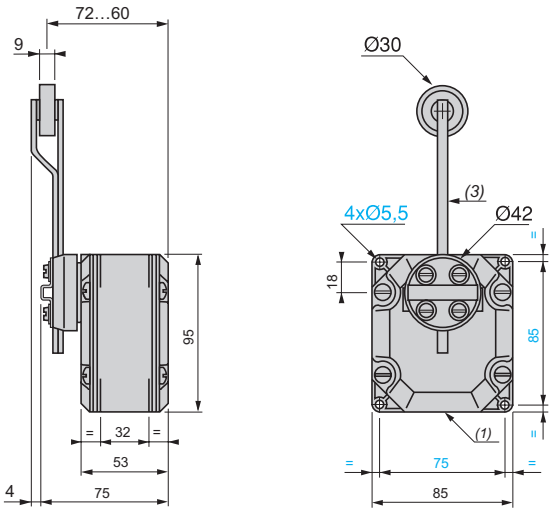
Dimensions:
page 51

Limit switches
XC Special range
For hoisting and material handling applications, XCR

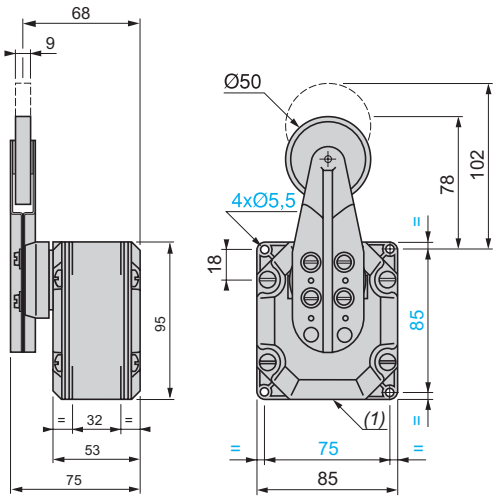
XCRA11, XCRB11, XCRA51, XCRB51



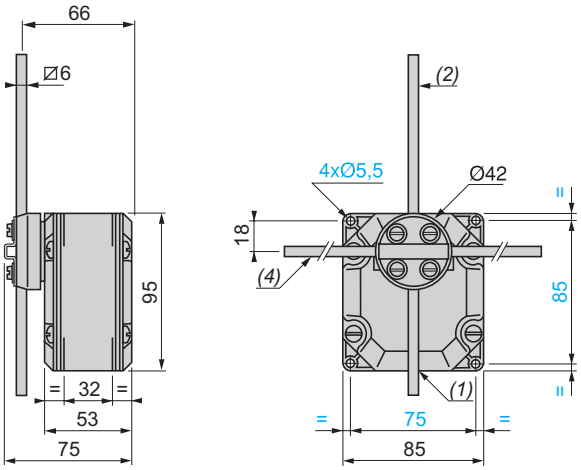
XCRA12, XCRB12, XCRA52, XCRB52



XCRA15, XCRB15, XCRA55, XCRB55



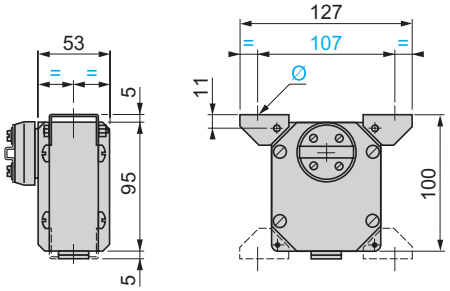
XCRE18, XCRE58, XCRF17, XCRF57



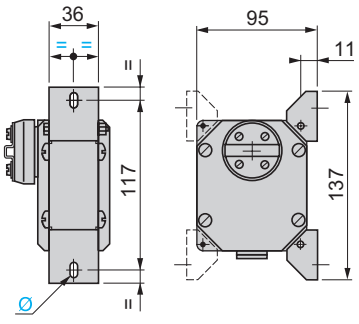
(1) 1 tapped entry for Pg 13.5 cable gland.
(2) Rod length: 200 mm.
(3) Rod + roller length: 160 mm.
(4) Rod length: 300 mm for XCRF17 and XCRF57, 200 mm for XCRE18 and XCRE58.

Supplementary fixing using 2 adjustable lugs (included with switch)

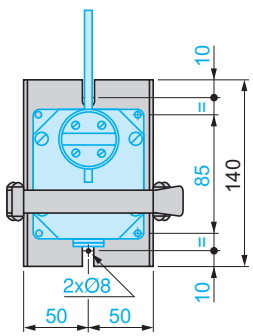
Horizontally positioned



Vertically positioned



Quick fixing/release bracket XCRZ09

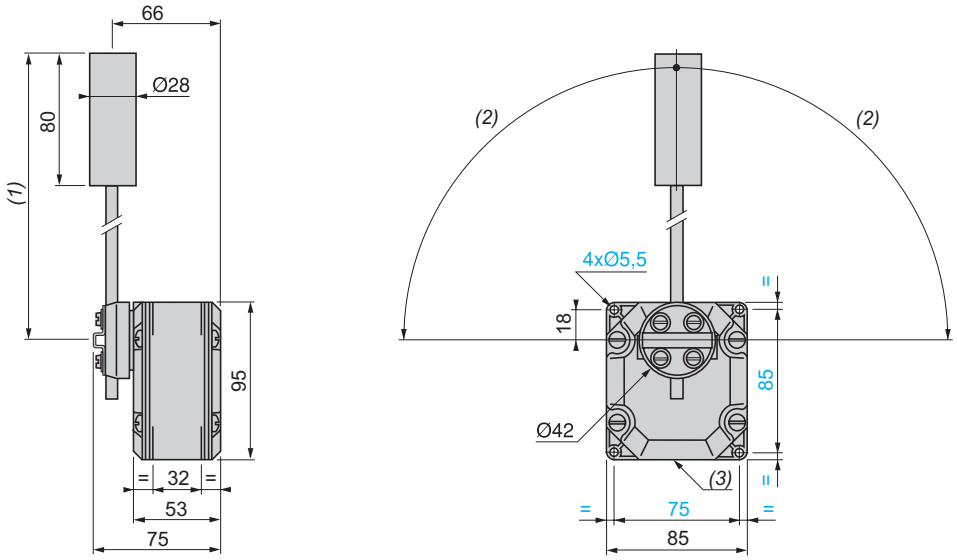


Ø: 1 elongated hole Ø 6 x 8.

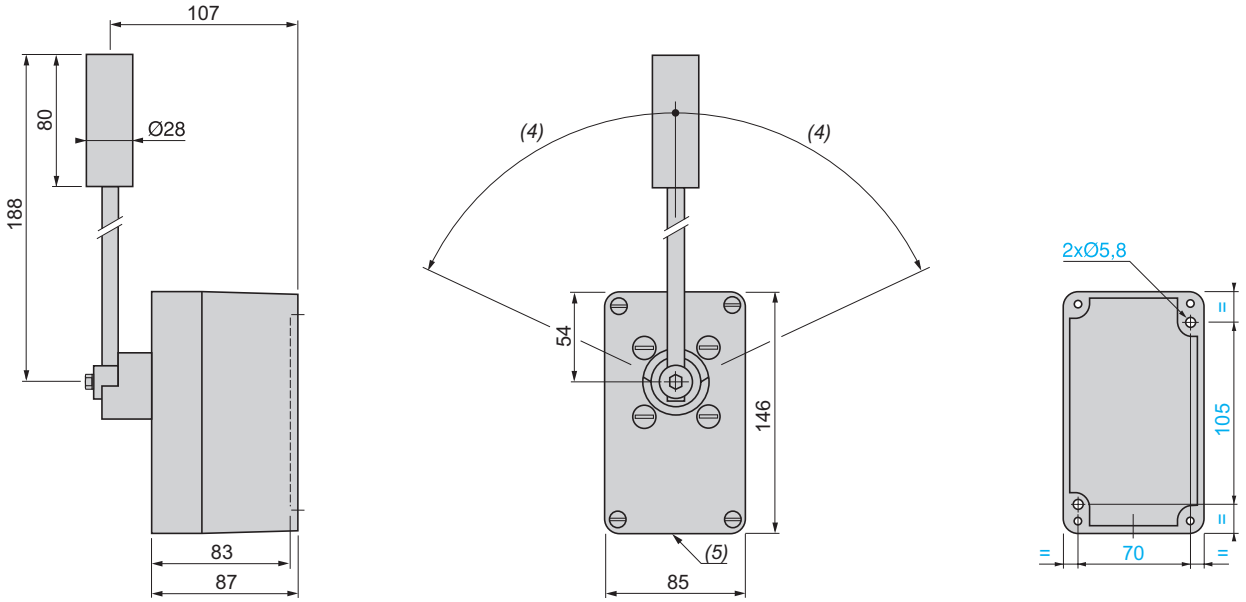
Characteristics: pages 44 to 46
References: page 46

Limit switches
XC Special range
For conveyor belt shift monitoring applications, XCRT

XCRT115, XCRT215



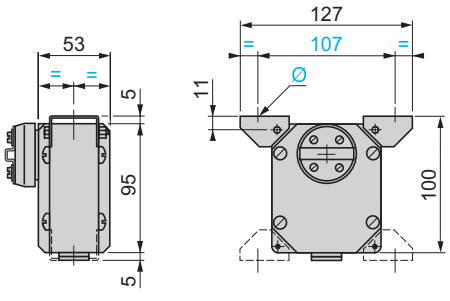
XCRT315



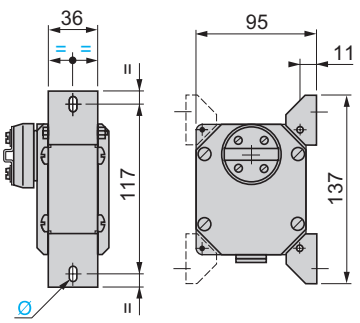
(1) 200 max., 104 min.
(2) 90° max.
(3) 1 tapped entry for Pg 13.5 cable gland.
(4) 70° max.
(5) 1 plain entry for Pg 13.5 cable gland.

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

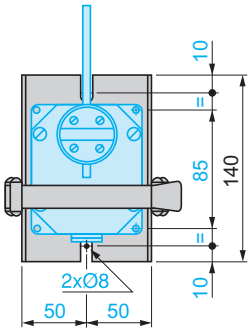
Horizontally positioned



Vertically positioned



Quick fixing/release bracket XCRZ09



Ø: 1 elongated hole Ø 6 x 8.

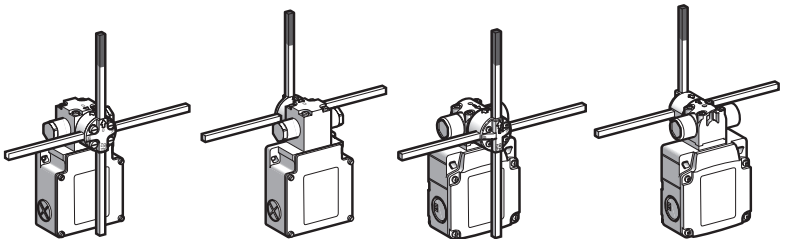
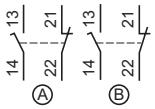
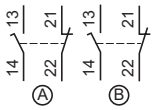
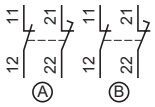
Characteristics: pages 44 to 48
References: page 48
Operation: page 48

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	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	0.5 N.m	
For positive opening	0.75 N.m	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

XCRZ03

XCRZ03R

DE9PEM20010

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

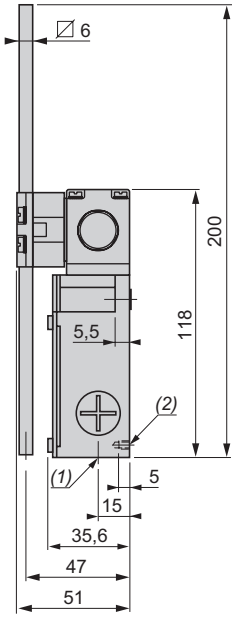
*(1) For complete switches with entry for Pg 13.5 cable gland, delete H29 from the end of the reference. Example: **XCKMR54D1H29** becomes **XCKMR54D1**.*
(2) For an actuation point on the rod between 65 and 95 mm from the axis of the fixing screws on the body.

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

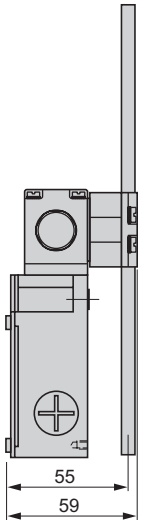
Dimensions

Metal limit switches

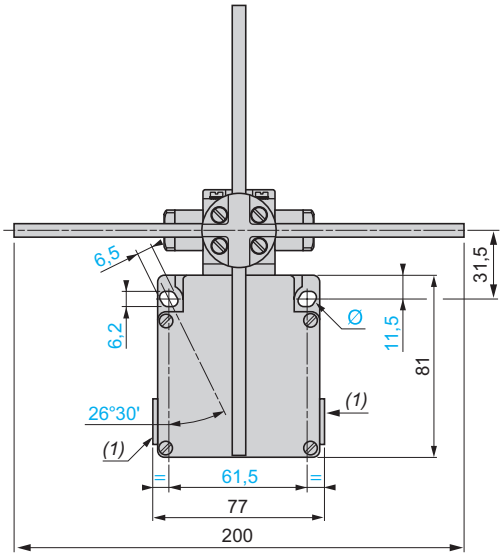
XCKMR24SR1H29, XCKMR44D1H29 and **XCKMR54D1H29**



XCKMR44D2H29 and **XCKMR54D2H29**



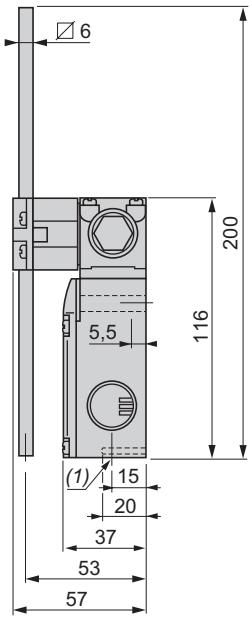
Same front view



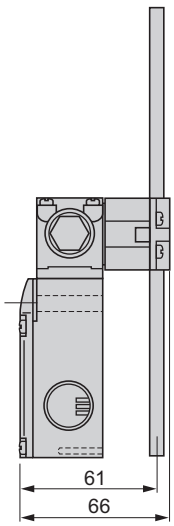
(1) XCKMR●●●●H29 = 3 tapped entries ISO M20 x 1.5.
XCKMR●●● = 3 tapped entries for Pg 13.5 cable gland.
(2) 2 centring holes Ø 3.9 ± 0.2, for cover fixing holes alignment.
Ø: 2 elongated holes 6.2 x 6.5, inclined at 26°30' to the vertical axis, for M5 screws.

Plastic limit switches

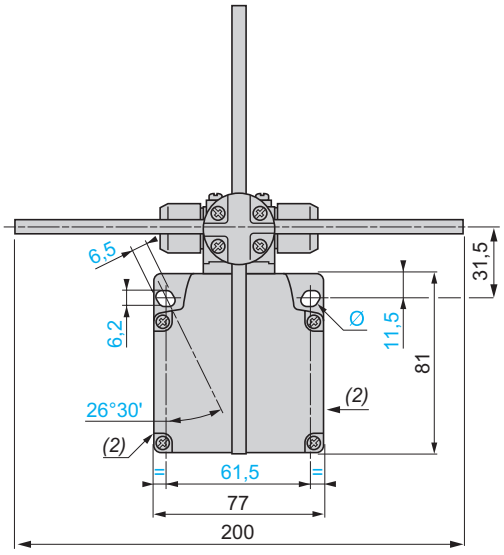
XCKVR24SR1H29, XCKVR44D1H29 and **XCKVR54D1H29**



XCKVR44D2H29 and **XCKVR54D2H29**



Same front view

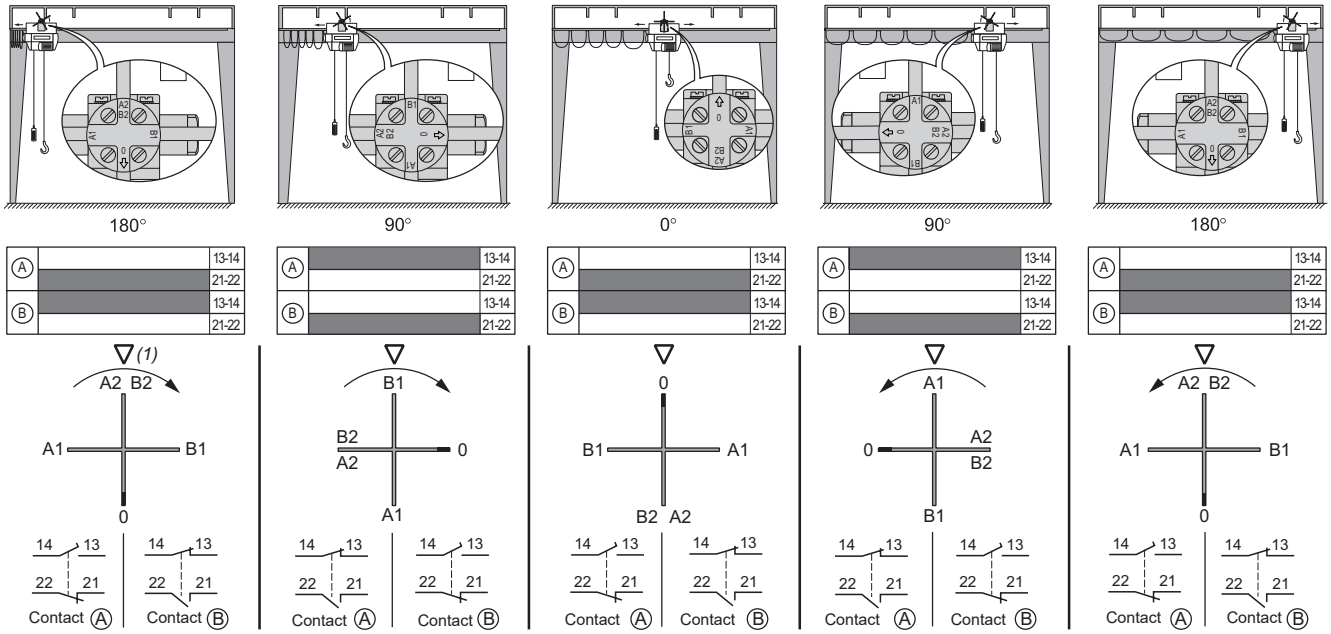


(1) 1 tapped entry ISO M20 x 1.5.
*(2) 2 knock-out holes for ISO M20 cable gland (reference: **DE9PEM20010**).*
Ø: 2 elongated holes 6.2 x 6.5, inclined at 26°30' to the vertical axis, for M5 screws.

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

Operation

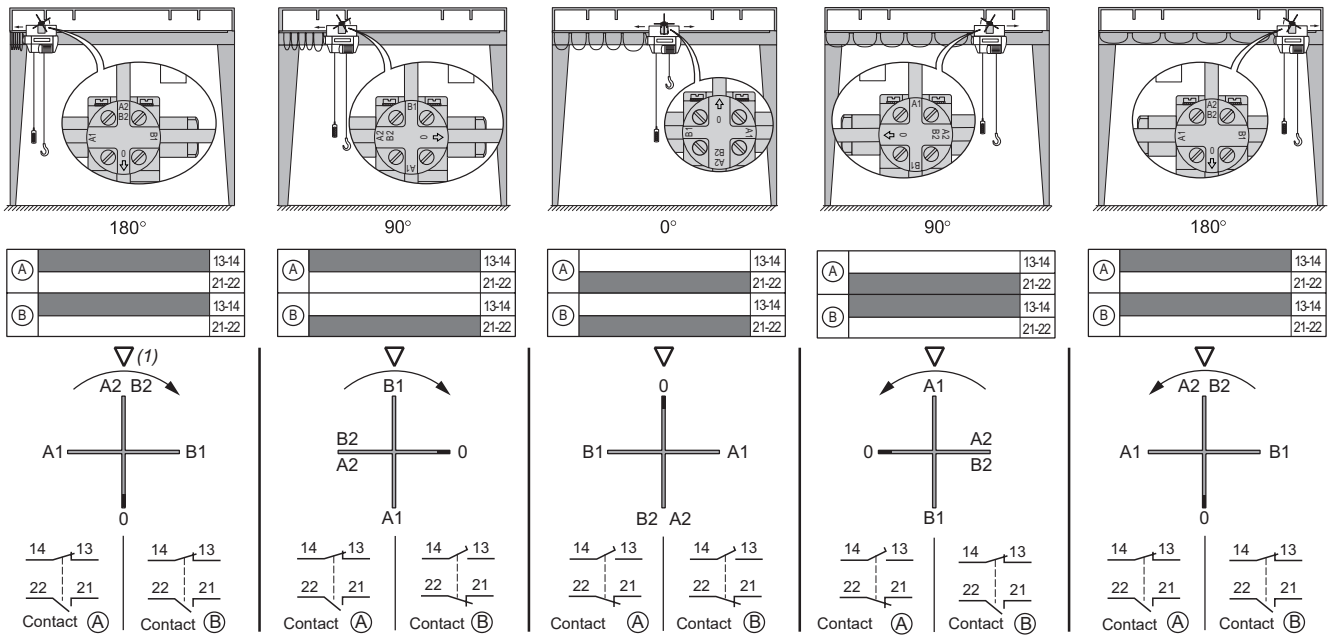
Limit switches XCK●R24SR1H29: “By pass”



(1) Triangle symbol marked on top of head.

or : direction of rotation.

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

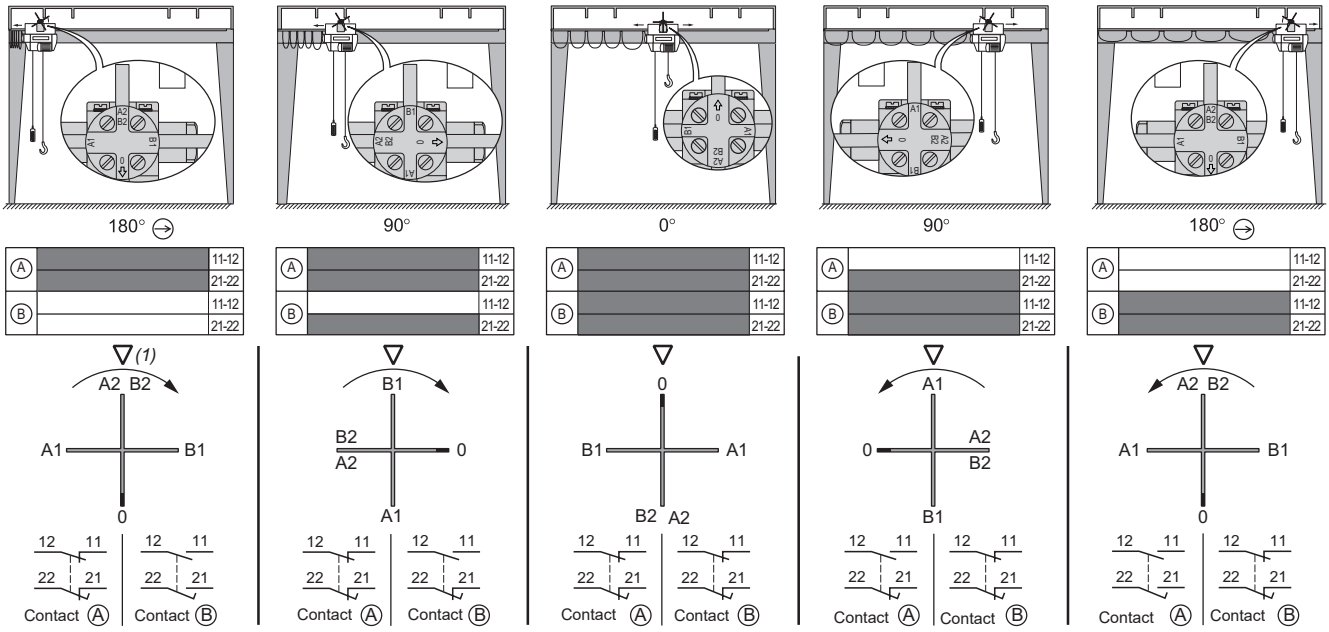


(1) Triangle symbol marked on top of head.

or : direction of rotation.

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"

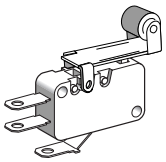


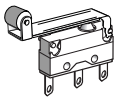
(1) Triangle symbol marked on top of head.

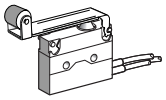
or : direction of rotation.

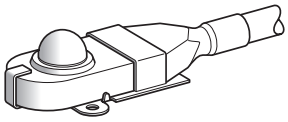
Miniature snap switches
XC Special range
Miniature design
General

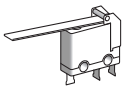
Presentation


XEP3

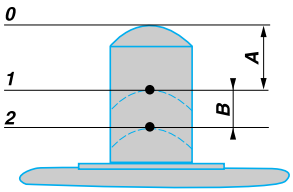

XEP4E1W7●


XEP4E1FD●

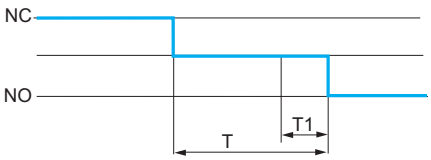

XC0


XEP5

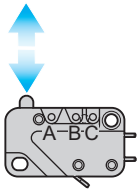
Terminology



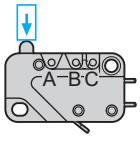
Mechanical characteristics



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.

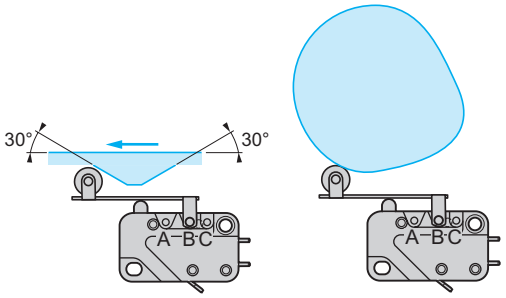
Mounting and operation

- 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

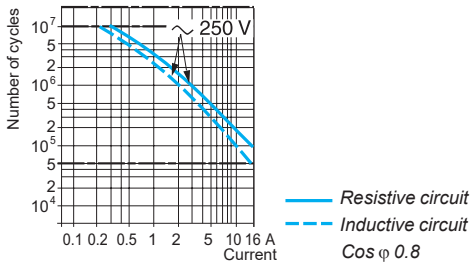
- The tightening torque of the fixing screws must conform to the following values:

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

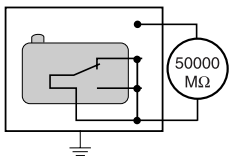
- Resistance to shock and vibration depends on the mass of the moving parts and on the forces holding the contacts together.
- In general, for a miniature snap switch without accessory:
  - vibration > 10 gn, 10 to 500 Hz,
  - shock > 50 gn, 11 ms 1/2 sine wave.

Electrical characteristics



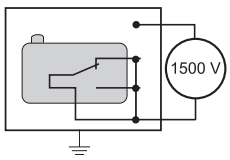
Operating curves

- 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.



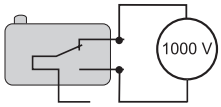
Insulation resistance

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



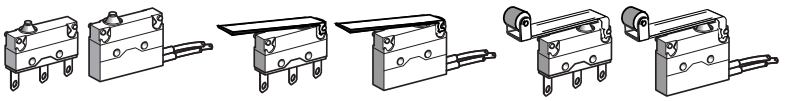
Dielectric strength

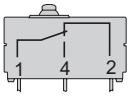
- The dielectric strength of our miniature snap switches is generally superior to:
  - 1500 Volts between live parts and earth,
  - 1000 Volts between contacts,
  - 600 Volts between contacts for switches with an inter-contact distance less than 0.3 mm.



Miniature snap switches
XC Special range
Subminiature design, DIN 41635 B format, sealed

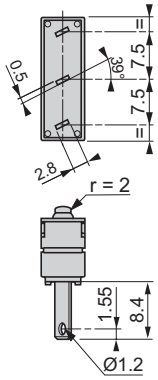
References
Subminiature design, DIN 41635 B format, sealed

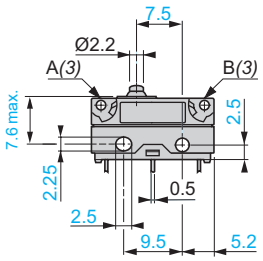


Type of operator		Plunger	Flat lever *(1)*	Roller lever *(1)*
 **Single-pole CO snap action** Wiring: 1 Black 2 Grey 4 Blue	**2.8 mm cable clip tag connections**	**XEP4E1W7** *(2)*	**XEP4E1W7A326** *(2)*	**XEP4E1W7A454** *(2)*
	Weight (g)	2.4	3.1	3.2
	Pre-cabled connections	**XEP4E1FD** *(2)*	**XEP4E1FDA326** *(2)*	**XEP4E1FDA454** *(2)*
	Weight (g)	14.1	14.8	14.9

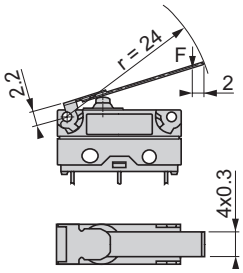
Dimensions

XEP4E1W7

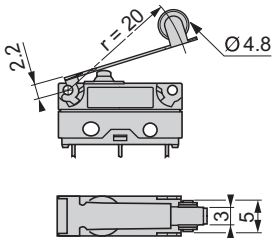




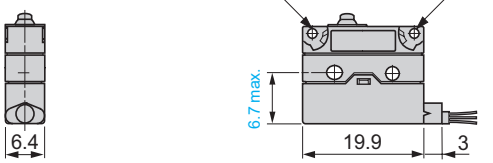
XEP4E1W7A326



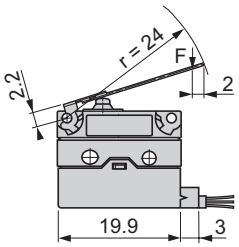
XEP4E1W7A454



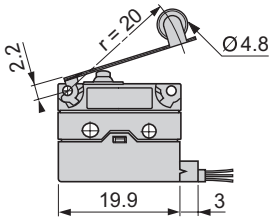
XEP4E1FD



XEP4E1FDA326



XEP4E1FDA454



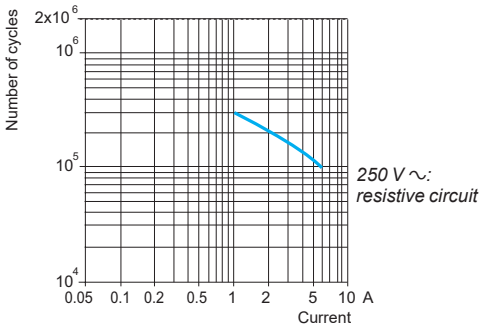
(1) In order to avoid damage to the fixing spigots, removal of the lever from complete products is not recommended.
(2) Switches sold in lots of 5.
(3) A, B: lever fixing positions.

Miniature snap switches
XC Special range
Subminiature design, DIN 41635 B format, sealed

Switch type		XEP4E1W7, XEP4E1FD	XEP4E1W7A326, XEP4E1FDA326	XEP4E1W7A454, XEP4E1FDA454
		Plunger	Flat lever	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●●●**		
Operating temperature		- 40...+ 105°C **XEP4E1FD●●●**, - 40...+ 125°C **XEP4E1W●●●**		
Materials	Case	Polyester		
	Lever	–	Stainless steel	Stainless steel, glass reinforced polyamide roller
	Contact	AgCdO		
	Tags	Tinned brass **XEP4E1W7●●●**		
Mechanical characteristics				
	Lever fixing position *(1)*			
Maximum tripping force	A	2.5 N	0.63 N	0.83 N
	B	2.5 N	1.25 N	1.67 N
Minimum release force	A	0.80 N	0.20 N	0.27 N
	B	0.80 N	0.40 N	0.53 N
Maximum permissible end of travel force	A	10 N	2.5 N	3.33 N
	B	10 N	5 N	6.67 N
Tripping point (TP) *(2)*	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
Maximum differential travel	A	0.13 mm	0.52 mm	0.39 mm
	B	0.13 mm	0.26 mm	0.20 mm
Minimum overtravel	A	0.60 mm	2.40 mm	1.80 mm
	B	0.60 mm	1.20 mm	0.90 mm
Inter-contact distance		0.4 mm		
Mechanical durability		2 million operating cycles		
Electrical characteristics				
Operational characteristics		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		
Thermal current		7.5 A on 250 V (50/60 Hz)		
Connection		**XEP4E1W7** and **XEP4E1W7●●●**: 2.8 mm clip tags **XEP4E1FD** and **XEP4E1FD●●●**: pre-cabled (horizontally in-line), 3 x 0.5 mm², length 0.5 m		

Operating curves

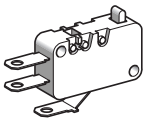
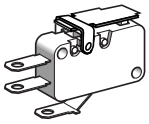
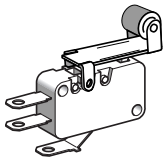
XEP4E1●●

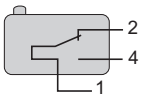


(1) Miniature snap switches fitted with a lever are supplied with the lever fixed in position A (see page 58). For basic (plunger) snap switches, it is possible to fix the lever in position A or B, depending on the required tripping conditions (see page 58).
(2) Position of the operator in relation to 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

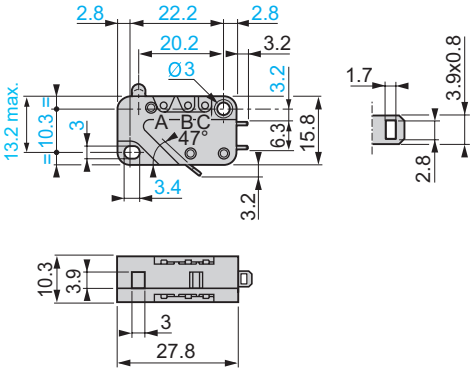
References

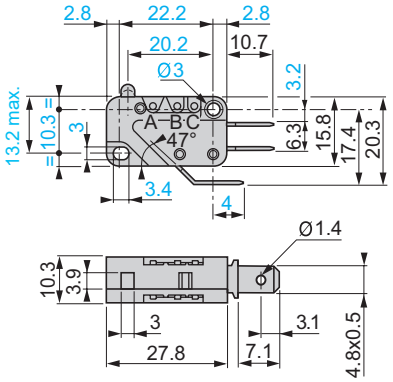
Type of operator			Plunger	Flat lever *(1)*	Roller lever *(1)*
 Single-pole CO snap action	Standard contacts	Solder tags	**XEP3S1W2** *(2)*	**XEP3S1W2B524** *(2)*	**XEP3S1W2B529** *(2)*
		4.8 mm cable clip tags	**XEP3S1W6** *(2)*	**XEP3S1W6B524** *(2)*	**XEP3S1W6B529** *(2)*
		6.35 mm cable clip tags	**XEP3S1W3** *(2)*	**XEP3S1W3B524** *(2)*	**XEP3S1W3B529** *(2)*
		Weight (g)	5.6	6.3	6.6
	Very low operating force contacts	Solder tags	–	**XEP3S2W2B524** *(2)*	**XEP3S2W2B529** *(2)*
		4.8 mm cable clip tags	**XEP3S2W6** *(2)*	–	**XEP3S2W6B529** *(2)*
		6.35 mm cable clip tags	**XEP3S2W3** *(2)*	**XEP3S2W3B524** *(2)*	**XEP3S2W3B529** *(2)*
		Weight (g)	5.6	6.3	6.6
Separate components	**Flat lever** *(3)*		**ZEP3L524** *(2)*		
	Weight (g)		0.7		

Dimensions

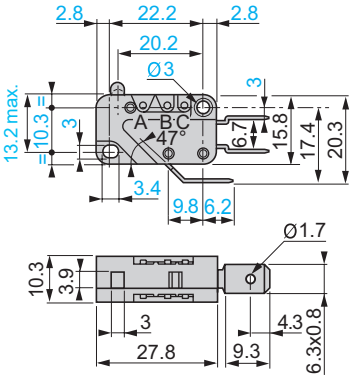
XEP3S●W2



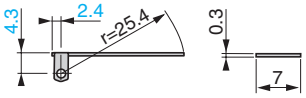
XEP3S●W6



XEP3S●W3



ZEP3L524



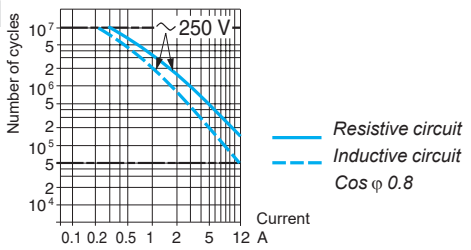
(1) In order to avoid damage to the fixing spigots, removal of the lever from complete products is not recommended.
(2) Switches sold in lots of 10.
(3) Levers only for mounting on basic (plunger) snap switches (XEP3S●W2, XEP3S●W3, XEP3S●W6), in fixing positions A, B or C.

Miniature snap switches
XC Special range
Miniature design, DIN 41635 A format

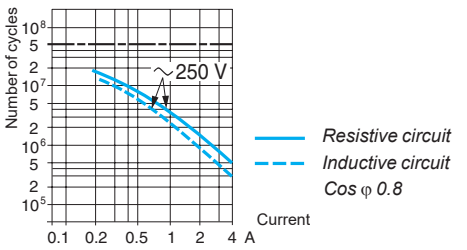
Switch type Type of operator			XEP3S●W● Plunger	XEP3S●W2B254 Flat lever	XEP3S●W2B259 Roller lever
Environment characteristics					
Lever fixing position *(1)*			–	B	B
Switch actuation			On end	Horizontal	
Product certifications			⎓ UR us, CE, IEC/EN 60947-5-1, UL 1054, EN 61058-1		
Degree of protection			Case IP 40 and tags IP 00		
Operating temperature			- 25...+ 125°C		
Materials	Case		Polyester		
	Lever		–	Stainless steel	Stainless steel, glass reinforced polyamide roller
	Contact		AgNi		
Mechanical characteristics					
	Lever fixing position *(1)*				
Maximum tripping force	Standard	A	0.8 N	0.2 N	
		B	0.8 N	0.4 N	
		C	0.8 N	0.53 N	
	Very low force	A	0.25 N	0.06 N	
		B	0.25 N	0.13 N	
		C	0.25 N	0.17 N	
Minimum release force	Standard	A	0.20 N	0.05 N	
		B	0.20 N	0.10 N	
		C	0.20 N	0.13 N	
	Very low force	A	0.05 N	0.01N	
		B	0.05 N	0.03 N	
		C	0.05 N	0.03 N	
Maximum permissible end of travel force	Standard, very low force	A	20 N	5 N	
		B	20 N	10 N	
		C	20 N	13 N	
Tripping point (TP) *(2)*	Standard, very low force	A	14.70 $^{+/-0.4}$ mm	15.20 $^{+/-2.5}$ mm	20.5 $^{+/-2.9}$ mm
		B	14.70 $^{+/-0.4}$ mm	15.20 $^{+/-1.0}$ mm	20.5 $^{+/-1.5}$ mm
		C	14.70 $^{+/-0.4}$ mm	15.20 $^{+/-0.8}$ mm	20.5 $^{+/-1.2}$ mm
Maximum differential travel	Standard, very low force	A	0.35 mm	1.40 mm	
		B	0.35 mm	0.70 mm	
		C	0.35 mm	0.53 mm	
Minimum overtravel	Standard	A	1.20 mm	4.80 mm	
		B	1.20 mm	2.40 mm	
		C	1.20 mm	1.80 mm	
	Very low force	A	1.10 mm	4.40 mm	
		B	1.10 mm	2.20 mm	
		C	1.10 mm	1.65 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		

Operating curves

XEP3S1●●

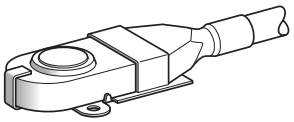
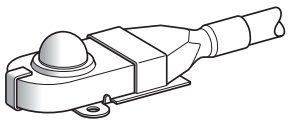
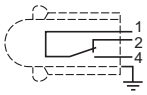


XEP3S2●●



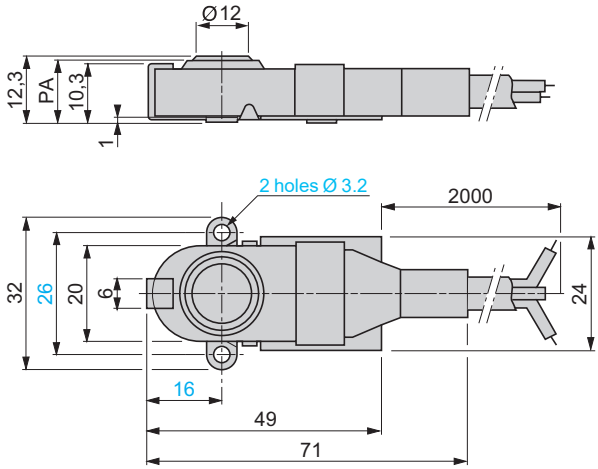
(1) Miniature snap switches fitted with a lever are supplied with the lever fixed in position B (see page 60). For basic (plunger) snap switches, it is possible to fix the lever in position A, B or C, depending on the required tripping conditions (see page 60).
(2) Position of the operator in relation 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

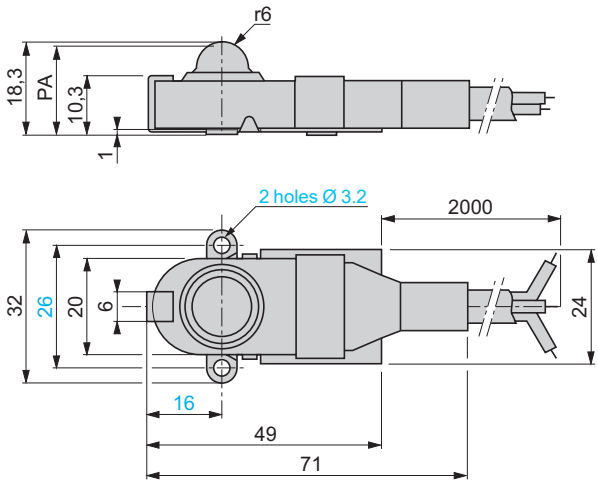
Type of head	Plunger (fixing by the body)	
		
Type of operator	Head with flat plunger	Head with domed encased plunger
References		
 **Single-pole CO snap action** Wiring: 1 Black 2 Brown 4 Blue	**XC010L2**	**XC011L2**
Weight (kg)	0.145	0.150

Dimensions

XC010L2



XC011L2



Miniature snap switches
XC Special range
Sealed design
Pre-cabled

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 62).

Overtravel limit switches
For power circuits, XF9 range

XUF9D●●●

XUF9F●●●

Functions

The overtravel limit switches for power circuit switching are specifically designed to ensure the safety of hoisting equipment.

They directly break the power supply to the hoist motor if the load being handled accidentally exceeds the operating limits of the equipment.

Their mechanism is designed to ensure breakage of the power supply in the event of a malfunction and therefore, an overtravel limit switch cannot be used in place of an end of travel limit switch. It must only be used as a back-up device in the event of failure of the latter, or any other component forming part of an automated control circuit monitoring for excessive overtravel.

Description

XF9D●●● overtravel limit switches are housed in an aluminium alloy case.
XF9F●●● overtravel limit switches are housed in a sheet steel enclosure.

They are equipped with power contacts from Schneider Electric contactors.

Operation

Mounting and operating precautions

It is recommended that the overtravel limit switch be connected as near as possible to the motor, in order to minimise the risk of shunting.

The switch must be positioned in such a manner so as to avoid any damage in the event of the load exceeding the end of travel limits.

In order to ensure positive operation, the operating lever of the overtravel limit switch must be actuated directly by the moving part being monitored. It is essential that the use of any flexible or deformable intermediate actuators be avoided.

Manual reset switches - resetting after tripping

■ Before resetting the overtravel limit switch ensure that the cause of its tripping is located and rectified.
■ Rotate and hold lever up against end stop.
■ Simultaneously press the reset button (XF9D), using accessory included with switch, or operate the reset lever (XF9F) and turn the control station switch away from the trip position.
■ Rotate lever back to its initial position.

Characteristics: page 65
References: page 66
Dimensions: page 67

Overtravel limit switches
For power circuits, XF9 range

Environment

Overtravel limit switch type				XF9D251	XF9D651	XF9F1151 XF9F1152	XF9F1851 XF9F1852	XF9F2651 XF9F2652
Conformity to standards				IEC 60158-1, NF C 63-110, VDE 0660, IEC 60947-1, IEC 60947-4				
Product certification	3-phase			CSA				
				20 HP 40 A, 600 V	20 HP 80 A, 600 V	100 HP 175 A, 600 V	150 HP40 A, 200 A, 600 V	200 HP 428 A, 600 V
	Single-phase, 2-pole			3 HP 40 A, 230 V	10 HP 80 A, 230 V	–	–	–
Protective treatment	Standard version			"TC"				
	Special version			"TH" on request				
Ambient air temperature	For storage		**°C**	- 40…+ 70				
	For operation		**°C**	- 25…+ 70				
Degree of protection	Conforming to IEC/EN 60529			IP 54		IP 43		
Housing				Aluminium alloy case		Sheet steel enclosure		
Cable entry				2 tapped entries for n° 21 cable gland	3 tapped entries for n° 29 cable gland	2 entries incorporating n° 36 plastic cable gland		

Contact block characteristics

Number of poles				4		3		
Rated operational current (Ie)	For 2-pole scheme		**A**	50	130	–	–	–
	For 3-pole scheme on AC-3		**A**	25	65	115	185	265
Conventional thermal current (Ithe) at θ ≤ 40 °C	For 2-pole scheme		**A**	80	160	–	–	–
	For 3-pole scheme		**A**	40	80	200	275	350
Rated insulation voltage (Ui)	Conforming to IEC 60158-1, IEC 947-4, VDE 0110 Group C		**V**	500		660		
	Conforming to CSA 22-2 n° 14		**V**	600				
Rated breaking capacity (I rms)	Conforming to IEC 60158-1 For 2-pole scheme	500 V	**A**	400	1000	1100	1600	2200
		660 V	**A**	180	630	900	1200	1750
Connection Min./max. cable c.s.a.	Flexible wiring, without cable end	1 conductor	**mm²**	1.5/10	2.5/25	–	–	–
		2 conductors	**mm²**	1.5/6	2.5/16	–	–	–
	Flexible wiring, with cable end	1 conductor	**mm²**	1/6	2.5/16	–	–	–
		2 conductors	**mm²**	1/4	2.5/6	–	–	–
	Solid wiring, without cable end	1 conductor	**mm²**	1.5/6	2.5/25	–	–	–
		2 conductors	**mm²**	1.5/6	4/16	–	–	–
	Cable	1 conductor	**mm²**	–	–	95	150	240
		2 conductors	**mm²**	–	–	95	150	240

Presentation: page 64
References: page 66
Dimensions: page 67

Overtravel limit switches
For power circuits, XF9 range

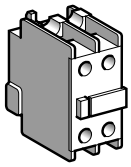
XF9D251

References of overtravel limit switches

Switches without auxiliary contact block

Description	Rated operational current	Conventional thermal current	Disconnection	Reference	Weight
	A	A			kg
With manual latching and resetting restricted by a padlockable device Snap action opening mechanism Maximum travel: 75° in each direction 0° 13° 75°	25 or 50	40 or 80	3-pole or 4-pole 2-pole	**XF9D251**	2.200
	65 or 130	80 or 160	3-pole or 4-pole 2-pole	**XF9D651**	5.000
With manual latching and resetting Horizontal or vertical actuation Snap action opening mechanism 0° 6° 32°	115	200	3-pole	**XF9F1151**	25.500
	185	275	3-pole	**XF9F1851**	26.000
	265	350	3-pole	**XF9F2651**	27.500
With counterweights and automatic resetting Horizontal or vertical actuation Slow break opening mechanism Minimum actuation speed: 2.5m/s 0° 15° 32° 3 mm 0 8,5 mm	115	200	3-pole	**XF9F1152**	28.500
	185	275	3-pole	**XF9F1852**	29.000
	265	350	3-pole	**XF9F2652**	32.500

XF9F●●●2



LADN11

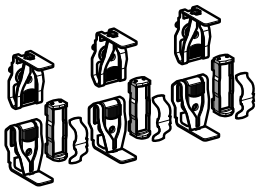
References of accessories (Schneider Electric products)

Auxiliary contact blocks

Description	For use with switches	Reference	Weight kg
N/C + N/O instantaneous	XF9F●●●	**LADN11**	0.030

Replacement parts

Description	For use with switches	Reference	Weight kg
Contact set comprising per pole: - 2 fixed contacts, - 1 moving contact, - 2 deflectors, - 1 backplate, clamping screw and washers	XF9F115●	**LA5FF431**	0.270
	XF9F185●	**LA5FG431**	0.350
	XF9F265●	**LA5FH431**	0.660
Arc chambers	XF9F115●	**LA511550**	0.490
	XF9F185●	**LA518550**	0.670
	XF9F265●	**LA526550**	0.920



LA5FG431

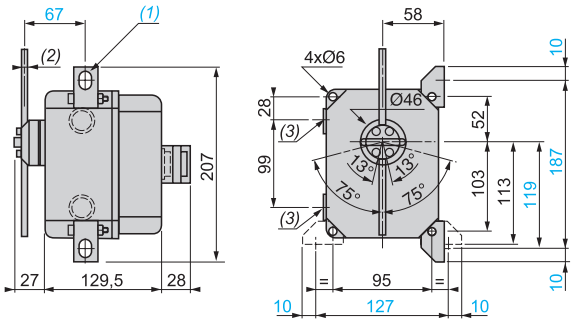
Contacts closed
Contacts open

Presentation: page 64
Characteristics: page 65
Dimensions: page 67

Overtravel limit switches
For power circuits, XF9 range

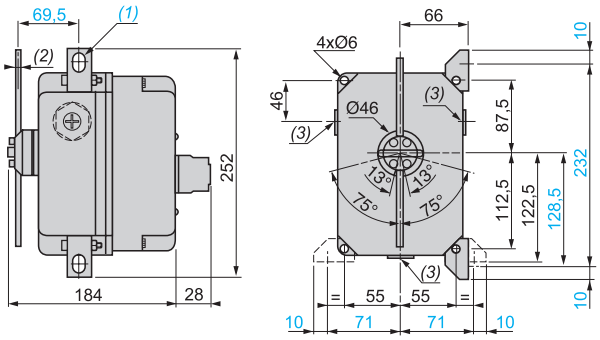
Dimensions

XF9D251



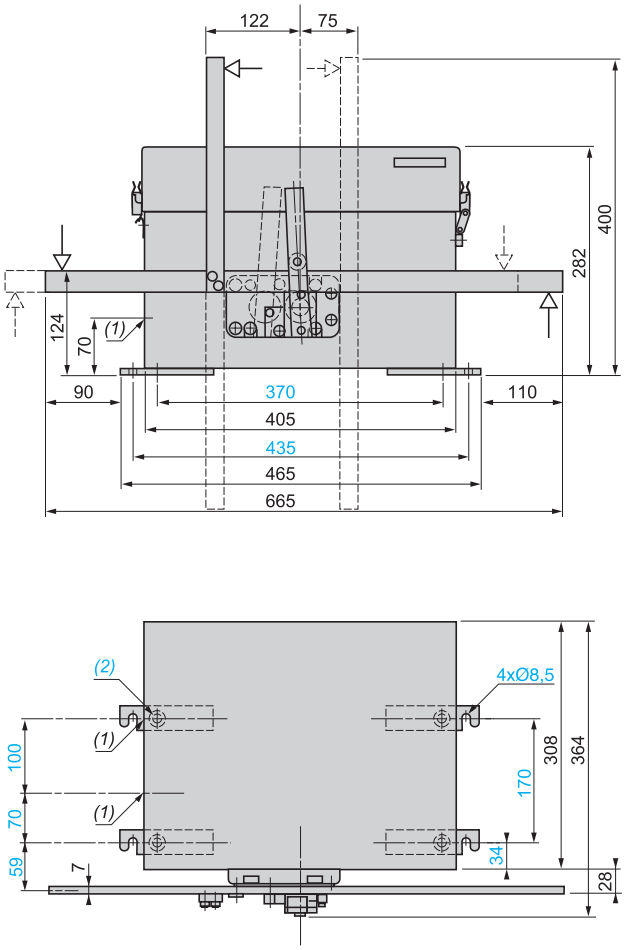
(1) 2 elongated holes Ø 6 x 8.5 (removable fixing lugs).
(2) 6 mm square rod, length 200 (can be mounted at 90°).
(3) 2 tapped entries for n° 21 cable gland.
13° = contact actuation, 75° = maximum travel.

XF9D651



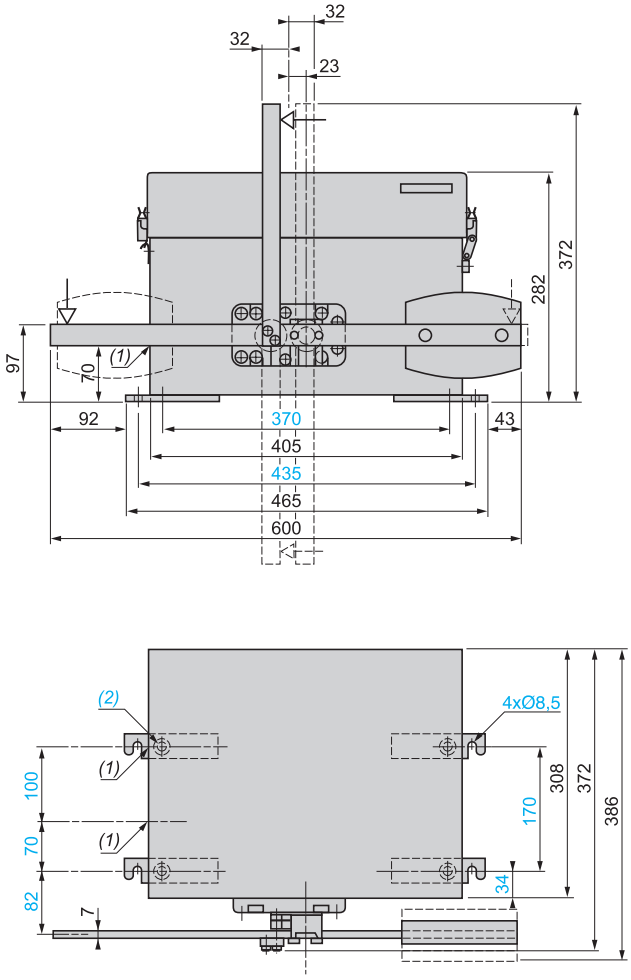
(1) 2 elongated holes Ø 6 x 8.5 (removable fixing lugs).
(2) 6 mm square rod, length 200 (can be mounted at 90°).
(3) 3 plain entries for n° 29 cable gland.
13° = contact actuation, 75° = maximum travel.

XF9F●●●1
Manual resetting



(1) 2 entries incorporating n° 36 plastic cable gland.
(2) 4 holes Ø 8.5 to be drilled by user (for attaching fixing lugs to enclosure base).

XF9F●●●2
Automatic resetting



(1) 2 entries incorporating n° 36 plastic cable gland.
(2) 4 holes Ø 8.5 to be drilled by user (for attaching fixing lugs to enclosure base).

Index of references

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