
Limit switches

XC Special range

Catalogue



Simply easy!™

Limit switches XC Special range

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Limit switches

XC Standard range

Design/Applications	Miniature format	Miniature format for mobile equipments	Compact format, CENELEC EN 50047
	Metal, pre-cabled	Metal, pre-cabled	Plastic, 1 cable entry



Enclosure	Metal	Metal	Plastic, double insulated
Modularity	Head, body and connection modularity	Head and body modularity	Head, body and cable entry modularity
Conformity/Certifications	CE, UL, CSA, CCC, EAC	CE, UL, CSA	CENELEC EN 50047 UL, CSA, CCC, EAC
Body dimensions (w x h x d) in mm	30 x 50 x 16	30 x 50 x 20.5	31 x 65 x 30
Head	Linear movement (plunger) Rotary movement (lever) Rotary movement, multidirectional Same heads for ranges XCMD, XCMV, XCKD, XCKP and XCKT		
Contact blocks			
2 electrically separate contacts	<ul style="list-style-type: none"> • snap action with positive opening operation • slow break with positive opening operation 	<ul style="list-style-type: none"> • • 	<ul style="list-style-type: none"> • •
2 same polarity contacts	<ul style="list-style-type: none"> – snap action – slow break 	<ul style="list-style-type: none"> – – 	<ul style="list-style-type: none"> – –
3 electrically separate contacts	<ul style="list-style-type: none"> • snap action with positive opening operation • slow break with positive opening operation 	<ul style="list-style-type: none"> – – 	<ul style="list-style-type: none"> • •
4 electrically separate contacts	<ul style="list-style-type: none"> • snap action with positive opening operation – slow break with positive opening operation 	<ul style="list-style-type: none"> – – 	<ul style="list-style-type: none"> – –
4 contacts (2 x 2 same polarity contacts)	<ul style="list-style-type: none"> – snap action 	<ul style="list-style-type: none"> • 	<ul style="list-style-type: none"> –
Degree of protection IP/IK	IP 66, IP 67, IP 68, IK 06	IP 66, IP 67, IP 69, IK 04, IK 06 depending on model	IP 66, IP 67, IK 04,
Operating temperature	- 25 °C... + 70 °C, -40 °C depending on heads		
Raccordement			
Screw terminals	–	–	1 entry for ISO M16 or M20, Pg 11, Pg 13.5 cable gland or 1/2" NPT, PF 1/2
Pre-cabled	Ø 7.5 PVR, CEI, halogen free, depending on model	Ø 6.4 PVR	–
Connector	Integral or remote M12 or remote 7/8"-16UN	M12, Deutsch DT04-4P or AMP Superseal 1.5	M12
Type reference	XCMD	XCMV	XCKP
Pages	Please refer to our catalogue "Limit switches XC Standard"		

Compact format, CENELEC EN 50047		Compact format, with reset	
Plastic, 2 cable entries	Metal, 1 cable entry	Plastic, 1 cable entry	Plastic, 2 cable entries



Plastic, double insulated	Metal	Plastic, double insulated	
Head and body modularity	Head, body and connection modularity	–	
CENELEC EN 50047, UL, CSA, CCC, EAC		CE, UL, CSA, EAC	
58 x 51 x 30	31 x 65 x 30	31 x 65 x 30	58 x 51 x 30
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)	
•	•	•	•
•	•	•	•
–	–	–	–
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•	•	–	–
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–	–	–	–
–	–	–	–
IP 66, IP 67, IK 04	IP 66, IP 67, IK 06	IP 66, IP 67, IK 04	
- 25 °C... + 70 °C			
2 entries for ISO M16 or Pg 11 cable gland or 1/2" NPT (using adaptor)	1 entry for ISO M16 or M20, Pg 11, Pg 13.5 cable gland or 1/2" NPT, PF 1/2	1 entry for ISO M20 or Pg 13.5 cable gland or 1/2" NPT	2 entries for ISO M16 or Pg 11 cable gland or 1/2" NPT (using adaptor)
–	–	–	–
–	M12	–	–
XCKT	XCKD	XCPR	XCTR
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	<table border="1"> <tr> <td>2 electrically separate contacts</td> <td>snap action with positive opening operation</td> <td>•</td> <td>•</td> <td>•</td> <td>•</td> </tr> <tr> <td></td> <td>slow break with positive opening operation</td> <td>•</td> <td>•</td> <td>•</td> <td>•</td> </tr> <tr> <td>2 same polarity contacts</td> <td>snap action</td> <td>–</td> <td>–</td> <td>–</td> <td>•</td> </tr> <tr> <td></td> <td>slow break</td> <td>–</td> <td>–</td> <td>–</td> <td>–</td> </tr> <tr> <td>3 electrically separate contacts</td> <td>snap action with positive opening operation</td> <td>•</td> <td>•</td> <td>•</td> <td>•</td> </tr> <tr> <td></td> <td>slow break with positive opening operation</td> <td>•</td> <td>•</td> <td>•</td> <td>•</td> </tr> <tr> <td>4 electrically separate contacts</td> <td>snap action with positive opening operation</td> <td>–</td> <td>–</td> <td>–</td> <td>–</td> </tr> <tr> <td></td> <td>slow break with positive opening operation</td> <td>–</td> <td>–</td> <td>–</td> <td>–</td> </tr> <tr> <td>4 contacts (2 x 2 same polarity contacts)</td> <td>snap action</td> <td>–</td> <td>•</td> <td>•</td> <td>•</td> </tr> </table>				2 electrically separate contacts	snap action with positive opening operation	•	•	•	•		slow break with positive opening operation	•	•	•	•	2 same polarity contacts	snap action	–	–	–	•		slow break	–	–	–	–	3 electrically separate contacts	snap action with positive opening operation	•	•	•	•		slow break with positive opening operation	•	•	•	•	4 electrically separate contacts	snap action with positive opening operation	–	–	–	–		slow break with positive opening operation	–	–	–	–	4 contacts (2 x 2 same polarity contacts)	snap action	–	•	•	•
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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																																																						
	Pre-cabled	–																																																								
	Connector	–																																																								
		Integral M12 or 7/8"-16UN																																																								
Type reference	XCKM	XCKL	XCKS	XCKJ																																																						
Pages	Please refer to our catalogue "Limit switches XC Standard"																																																									

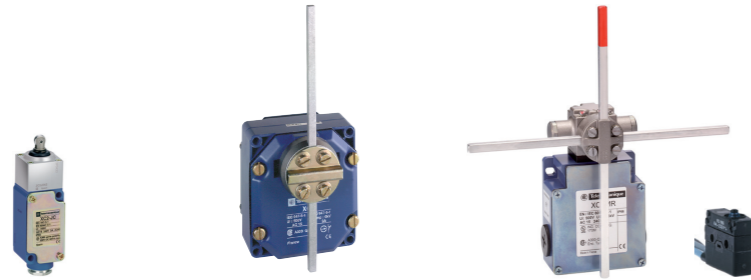
Limit switches

XC Basic range

Design	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																																													
																																																	
Enclosure	Plastic, double insulated																																																
Modularity	–																																																
Conformity/Certifications	CE, cULus, CCC	CE, UL, CSA, CCC, EAC	CENELEC EN 50047, UL, CSA, CCC, EAC																																														
Body dimensions (w x h x d) in mm	30 x 50 x 16	30 x 50 x 16	31 x 65 x 30	59 x 51 x 30 31 x 65 x 30																																													
Head	Linear movement (plunger) Rotary movement (lever) Rotary movement, multidirectional																																																
Contact blocks	<table border="1"> <tr> <td>•</td> <td>•</td> <td>•</td> <td>•</td> <td>•</td> </tr> <tr> <td>–</td> <td>–</td> <td>•</td> <td>•</td> <td>•</td> </tr> <tr> <td>•</td> <td>–</td> <td>–</td> <td>–</td> <td>–</td> </tr> <tr> <td>–</td> <td>–</td> <td>–</td> <td>•</td> <td>–</td> </tr> <tr> <td>–</td> <td>–</td> <td>•</td> <td>–</td> <td>•</td> </tr> <tr> <td>–</td> <td>–</td> <td>–</td> <td>–</td> <td>–</td> </tr> <tr> <td>–</td> <td>–</td> <td>–</td> <td>–</td> <td>–</td> </tr> <tr> <td>–</td> <td>–</td> <td>–</td> <td>–</td> <td>–</td> </tr> <tr> <td>–</td> <td>–</td> <td>–</td> <td>–</td> <td>–</td> </tr> </table>				•	•	•	•	•	–	–	•	•	•	•	–	–	–	–	–	–	–	•	–	–	–	•	–	•	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
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Degree of protection IP/IK	IP 66, IP 67, IK 04	IP 65, IK 04																																															
Operating temperature	- 25°C... + 70 °C																																																
Connection	–	–	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	–																																														
Type reference	XCMH	XCMN	XCKN	XCNT XCNR																																													
Pages	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
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
	For 3-pole scheme on AC-3	25 A or 65 A, depending on model
Conventional thermal current (Ithe) at θ ≤ 40 °C	For 2-pole scheme	80 A or 160 A, depending on model
	For 3-pole scheme	40 A or 80 A, depending on model
Rated insulation voltage (Ui)	Conforming to IEC 60158-1, IEC 947-4, VDE 0110 Group C	500 V
	Conforming to CSA 22-2 n° 14	600 V
Rated breaking capacity	Conforming to IEC 60158-1	500 V 400 A or 1000 A, depending on model
	For 2-pole scheme	660 V 180 A or 630 A, depending on model
Degree of protection	IP 54	IP 43
Operating temperature	- 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	EN/IEC 60947-5-1, EN/ISO 13849-1, EN/IEC 62061, UL 508, CSA C22-2 no. 14		
Product certifications	EN/IEC 60204-1, EN/ISO 14119		
Product certifications	UL, CSA, CCC, EAC		
Dimensions (w x h x d) in mm	Switch	Fixings	Centers
	30 x 50 x 16	31 x 34 x 89	
	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	XCSPM	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	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
-	-	-
XCSPM	XCSPR	XCSTR
Please refer to our catalogue "Safety switches XCS range"		

Safety detection solutions

XCS safety switches

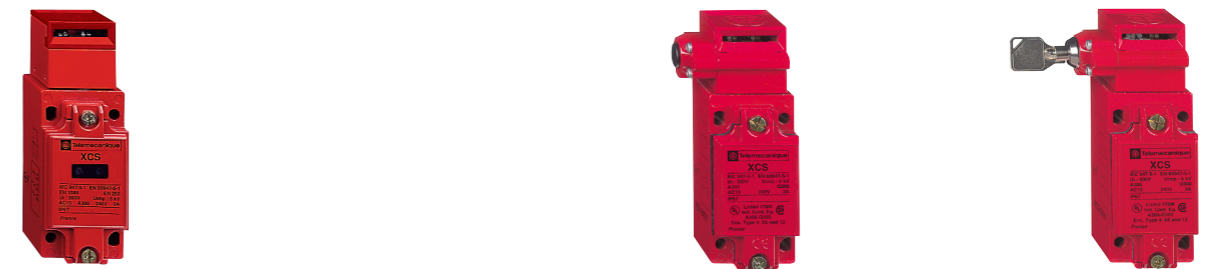
Switch type	XCS key-operated safety switches	
Applications	Protection of operators by stopping the machine when the actuating key (attached to machine guard) is withdrawn from the head of the switch. All light industrial machines with quick rundown time (1).	
Design	Miniature format	Compact format
	Pre-cabled	With 1 or 2 cable entries



Case	Plastic		
Features	Without locking of actuating key.	Without locking of actuating key. Optional accessory: guard retaining device.	
Conformity to standards	Products Machine assemblies	EN/IEC 60947-5-1, EN/ISO 13849-1, EN/IEC 62061, UL 508, CSA C22-2 no. 14 EN/IEC 60204-1, EN/ISO 14119	
Product certifications		cULus UL, CSA, CCC, EAC	
Dimensions (w x h x d) in mm	Switch	30 x 87 x 15	30 x 93.5 x 30
	Fixings	Centers: 20/22	Centers: 20/22
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	



Case	Metal		
Features	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).
Conformity to standards	Products Machine assemblies	EN/IEC 60947-5-1, EN/ISO 13849-1, EN/IEC 62061, UL 508, CSA C22-2 no. 14 EN/IEC 60204-1, EN/ISO 14119	
Product certifications		UL, CSA, CCC, EAC	
Dimensions (w x h x d) in mm	Switch	40 x 113.5 x 44	52 x 113.5 x 44
	Fixings	30 x 60	30 x 60
Head		Turret head: 8 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 + 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	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 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.	
	Pre-cabled	–	–
Type reference	XCSA	XCSB	XCSC
Pages	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	EN/IEC 60947-5-1, EN/ISO 13849-1, EN/IEC 62061, UL 508 and CSA C22-2 no. 14	
Products	EN/IEC 60204-1, EN/ISO 14119	
Machine assemblies	UL, CSA, CCC, EAC	
Product certifications	51 x 205 x 43.5	
Dimensions (w x h x d or Ø) in mm	Switch	Centers
	Fixings	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.

Switch type	XCS key-operated safety switches, locking and unlocking by solenoid (continued)	
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	Rectangular	
	-	With 2 cable entries



Case	Plastic, double insulated	Metal
Features	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.
Conformity to standards	EN/IEC 60947-5-1, EN/ISO 13849-1, UL 508, CSA C22-2 no. 14, EN/IEC 62061, EN/IEC 60947-1	
Products	EN/IEC 60204-1, EN/ISO 14119	
Machine assemblies	UL, CSA, CCC, EAC	UL, CSA, CCC, EAC
Product certifications	110 x 93.5 x 33	98 x 146 x 44
Dimensions (w x h x d or Ø) in mm	Switch	Centers
	Fixings	30 x 153.3
Head	Turret head: 8 positions for insertion of actuating key	
Resistance to forcible withdrawal of the actuator	650 N	2600 N
	500 N	2000 N
Contact blocks or outputs	Main safety contacts actuated by the actuating key; auxiliary contacts actuated by solenoid. Slow break and NC positive opening operation	
Main contacts	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
Auxiliary contacts	1 NC	1 NC + 1 NO 2 NC
Degree of protection	IP 67	
Ambient air temperature	For operation -25...+60 °C	For storage -40...+70 °C
Connection	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.
Type reference	XCSLE	XCSLF
Pages	Please refer to our catalogue "Safety switches XCS range"	

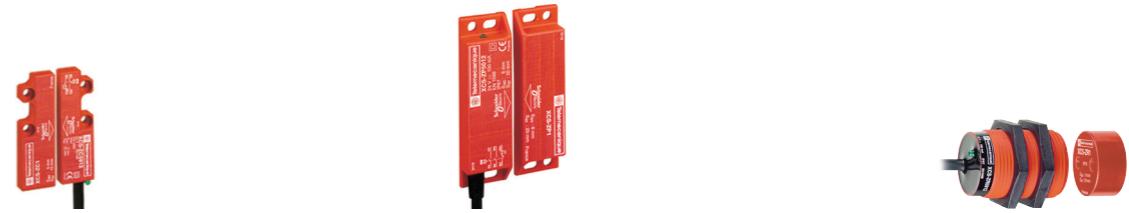
Safety detection solutions

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 Machine assemblies RFID protocol		
	EN/IEC 60947-5-2, EN/IEC 60947-5-3, UL 508, CSA C22.2 SIL 3 (IEC 61508), SILCL 3 (IEC 62061), PLe-Cat. 4 (EN ISO 13849-1) EN/IEC 60204-1, EN/ISO 14119 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
	Transponder	50 x 15 x 15	30 x 108.3 x 15
	Fixings	Centers	
		Reader	
		Transponder	
		74...78	
		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	
	Contact states given in presence of magnet	Maximum current 400mA	Maximum current 200 mA
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	1 NC + 1 NO staggered	1 NC + 1 NO staggered
2 NC staggered	2 NC staggered	2 NC staggered
Independent Reed-type contacts operated by coded magnet.	2 NC + 1 NO (NC staggered)	2 NC staggered
	1 NC + 2 NO (NO 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"		



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

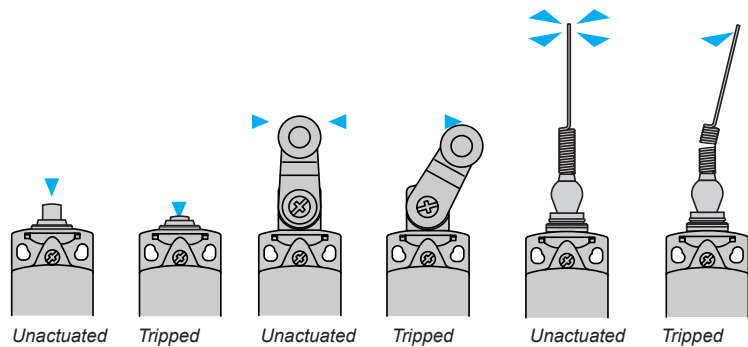
- galvanic separation of circuits,
- models suitable for low power switching combined with good electrical durability,
- very good short-circuit withstand in coordination with appropriate fuses,
- total immunity to electromagnetic interference,
- high rated operational voltage.

■ 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



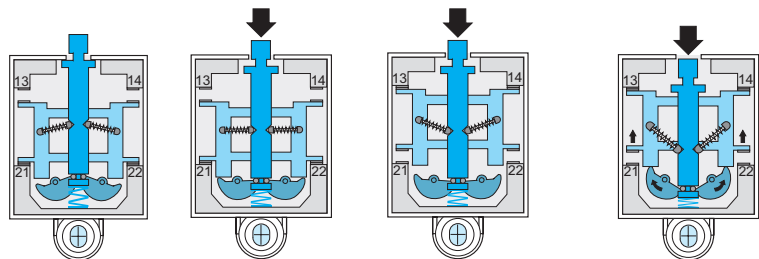
Terminology

Rated value of a quantity	<ul style="list-style-type: none"> ■ This replaces the term “nominal value”. ■ It is the fixed value for a specific function.
Utilisation categories:	<ul style="list-style-type: none"> ■ 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	<ul style="list-style-type: none"> ■ I_{th} is no longer a rated value but a conventional current used for heating tests. Example: for category A300 the corresponding operational current, I_e maximum, is 6 A-120 V or 3 A-240 V, the equivalent I_{th} being 10 A.
Positive opening operation	<ul style="list-style-type: none"> ■ A limit switch complies to this specification when all the closed contact elements of the switch can be changed, with certainty, to the open position (no flexible link between the moving contacts and the operator of the switch, to which an actuating force is applied). ■ All limit switches incorporating either a slow break contact block or a snap action NC + NO (form Zb), NC + NO + NO, NC + NC + NO, NC + NC + NO + NO contact block are positive opening operation, in complete conformity with standard IEC 60947-5-1 Appendix K.

Contact blocks

Snap action contacts

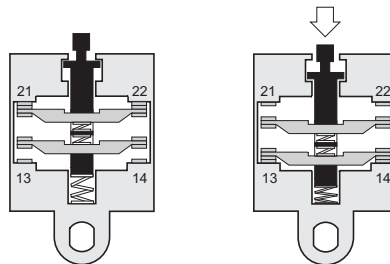
- Snap action contacts are characterised by different tripping and reset points (differential travel).
- The displacement speed of the moving contacts is not related to the speed of the operator.
- This feature ensures satisfactory electrical performance in applications involving low speed actuators.



Unactuated state Approach travel Contact change of state Positive opening

Slow break contacts

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



Electrical durability for normal loads

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

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

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

Electrical durability = 10 million operating cycles.

Switching capacity

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

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

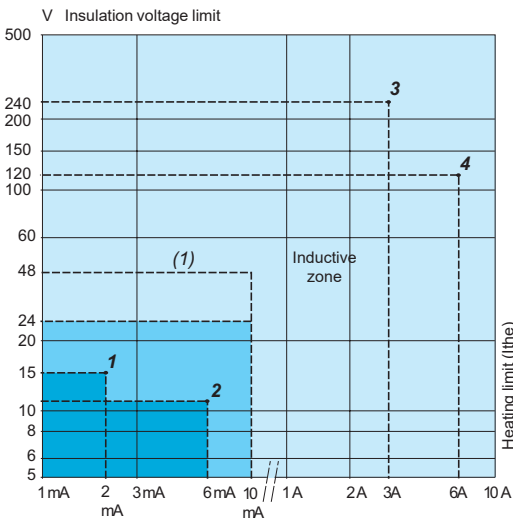
A300	240 V	3 A	B300	240 V	1.5 A
Q300	250 V	0.27 A	R300	250 V	0.13 A

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

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

Electrical durability for small loads

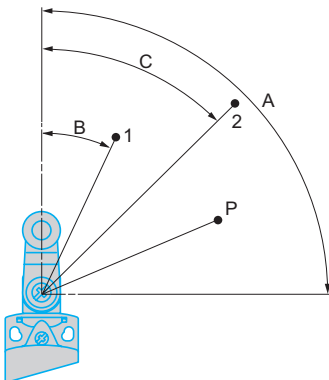
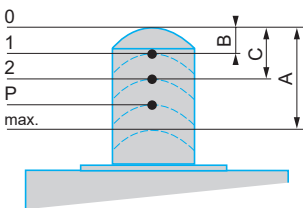
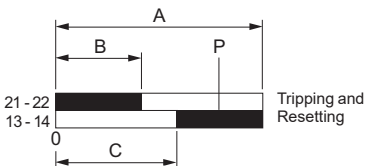
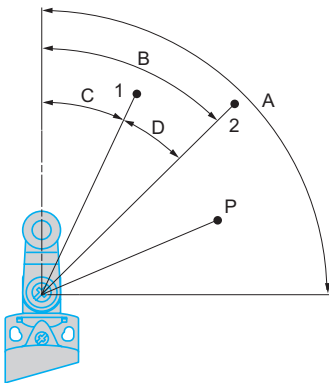
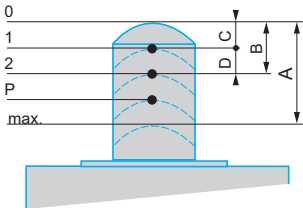
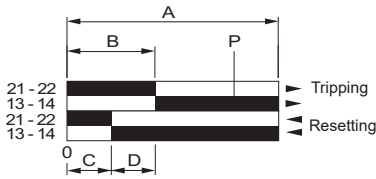
- The use of limit switches with programmable controllers is becoming more common.
- With small loads, limit switches offer the following levels of reliability:
 - failure rate of less than 1 for 100 million operating cycles using snap action contacts (contacts XE2SP),
 - failure rate of less than 1 for 20 million operating cycles using slow break contacts (contacts XE●NP and XE3SP).
 - failure rate of less than 1 for 5 million operating cycles using contacts XCMD.



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

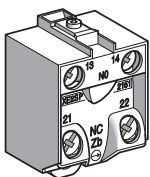
□ Linear movement (plunger)

- 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.

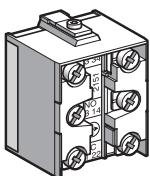
□ Rotary movement (lever)

- 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

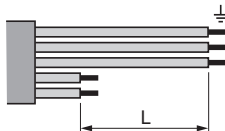


XE3•P screw clamp terminal connections

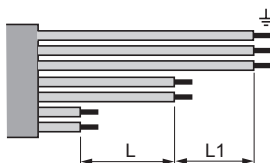
Mounting

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,

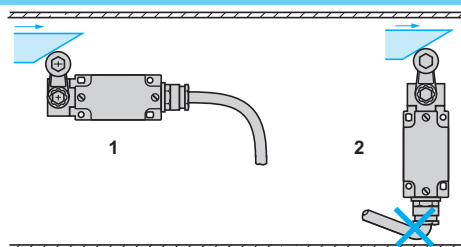


- for XE3•P, L = 14 mm, L1 = 11 mm.



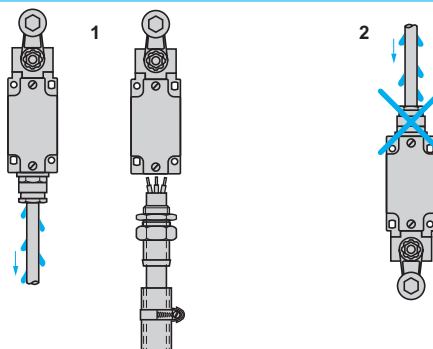
Sweep of connecting cable

- 1 Recommended
- 2 To be avoided



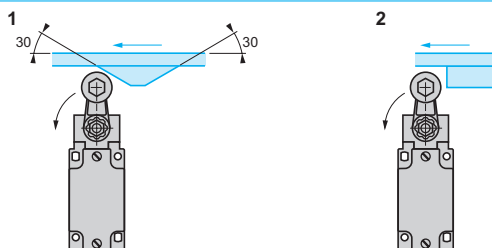
Position of cable gland

- 1 Recommended
- 2 To be avoided



Type of cam

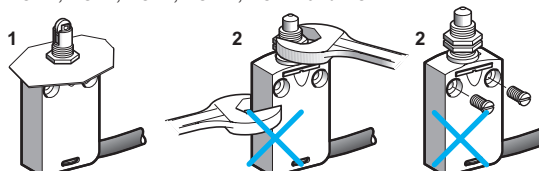
- 1 Recommended
- 2 To be avoided



Mounting and fixing limit switches by the head

- 1 Recommended
- 2 Forbidden

XCKD, XCKP, XCKT, XCMD, XCMH and XCMN



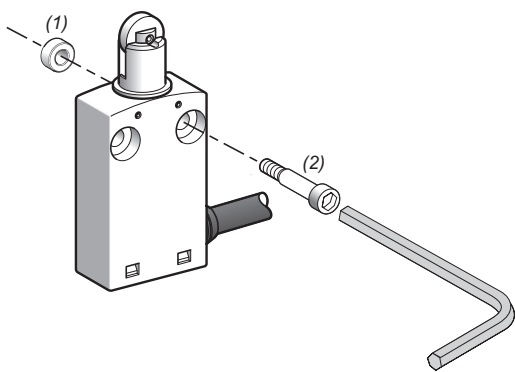
Setting-up

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

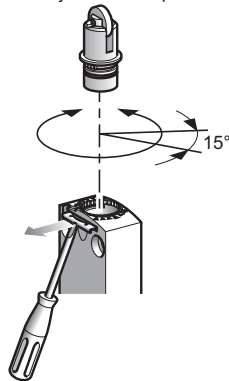
XCMH, XCMN



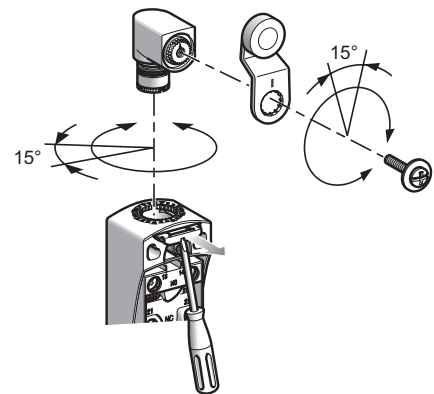
(1) 2 spacers supplied with the switch.
 (2) 2 screws Ø 4mm (not included).

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.

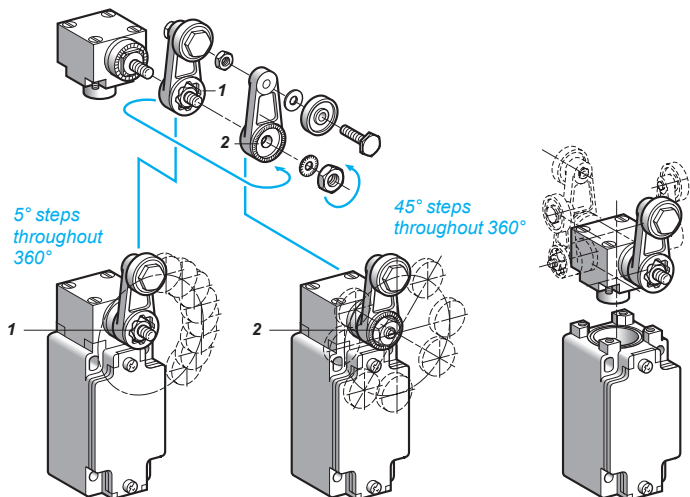


All the levers can be adjusted in 15° steps throughout 360°, in relation to the horizontal axis of the head.

XCKJ

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

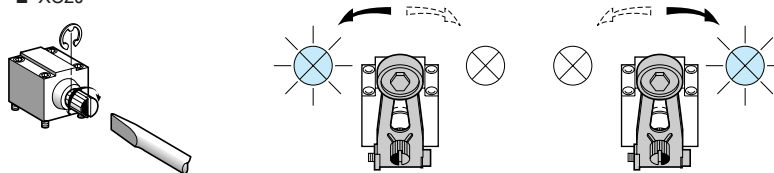
- 1 Reversed $\alpha = 5^\circ$
- 2 Forward $\alpha = 45^\circ$



Setting-up (continued)

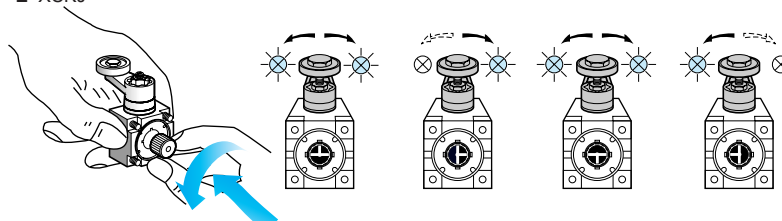
Direction of actuation programming

■ XC2J



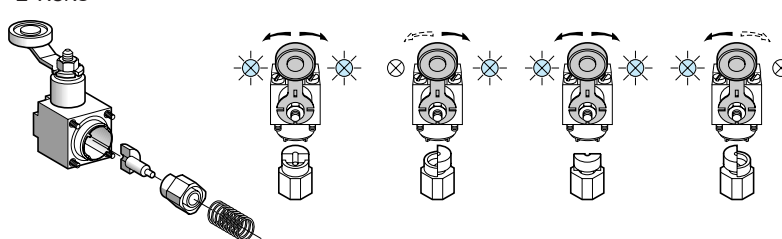
Head ZC2JE05

■ XCKJ



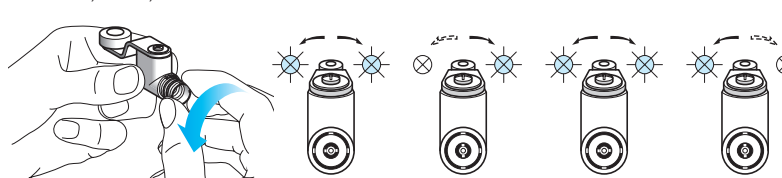
Head ZCKE05

■ XCKS



Head ZCKD05

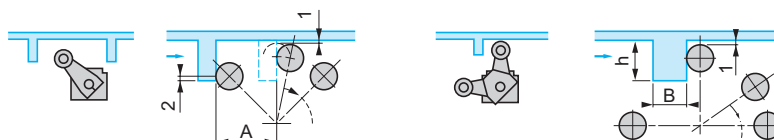
■ XCKD, XCKP, XCKT and XCMD



Head ZCE05

Specific cams for heads ZCKE09 and ZC2JE09

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



A = length of lever + 11 mm
ZCKE09: $13 < h < 18$ mm and $B = 12$ mm max.
ZC2JE09: $14 < h < 24$ mm and $B = 6$ mm max.

Reminder of the standards

The majority of Telemecanique Sensors products comply to national standards (for example French NF C standards, German DIN standards), European standards (for example CENELEC) or international standards (for example IEC). These standards rigidly stipulate the characteristic requirements of the designated products (for example IEC 60947 relating to low voltage switchgear and control gear). These products, when correctly used, enable the production of control equipment assemblies, machine control equipment or installations conforming to their own specific standards (for example IEC 60204 for the electrical equipment of industrial machines).

IEC 60947-5-1

Insulation coordination (and dielectric strength)

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

Terminal connections

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

Switching capacity

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

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

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

Electrical symbols for contacts



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



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

Symbol for positive opening



- Simplified version



- Complete symbol

CENELEC EN 50047

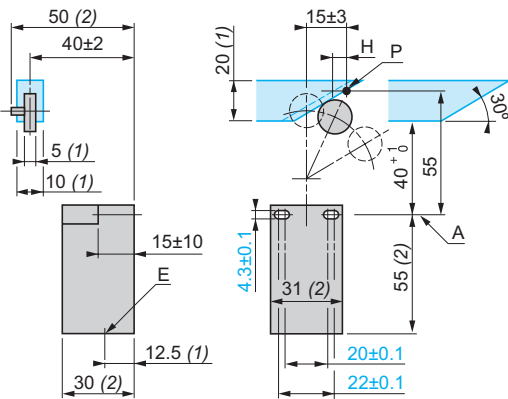
The European standards organisation CENELEC, which has 14 member countries, has defined in this standard the first type of limit switch.

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

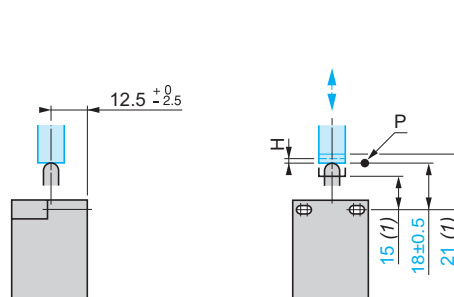
- (1) Minimum value
- (2) Maximum value

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

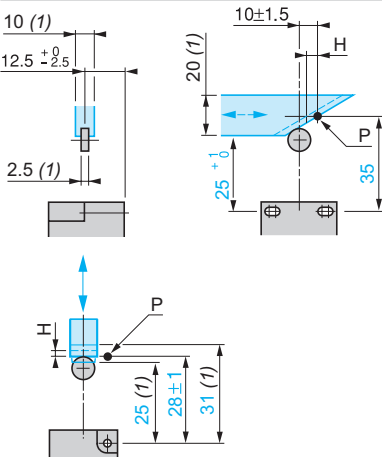
Form A, with roller lever



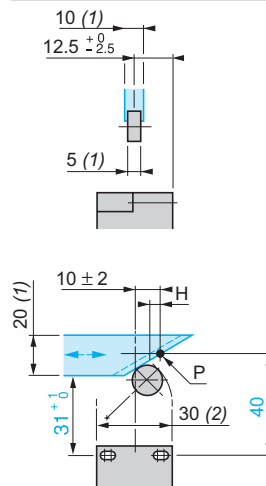
Form B, with end plunger (rounded)



Form C, with end roller plunger



Form E, with roller lever for 1 direction of actuation



Reminder of the standards (continued)

CENELEC EN 50041

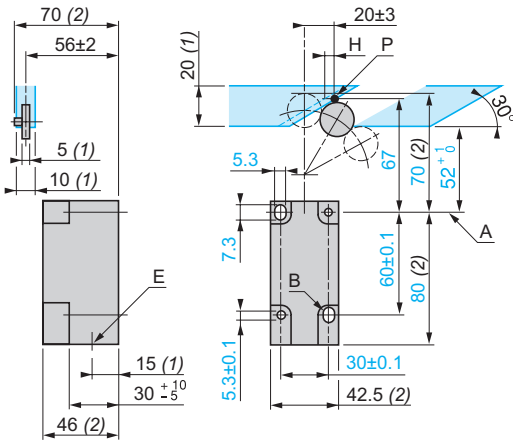
The European standards organisation CENELEC, which has 14 member countries, has defined in this standard the second type of limit switch.

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

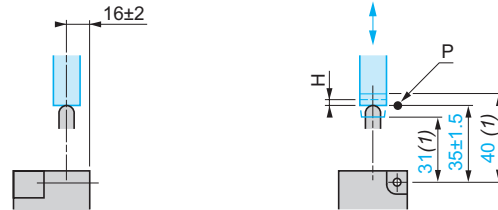
(1) Minimum value
(2) Maximum value

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

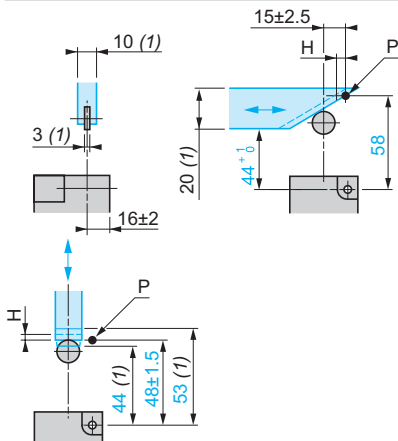
Form A, with roller lever



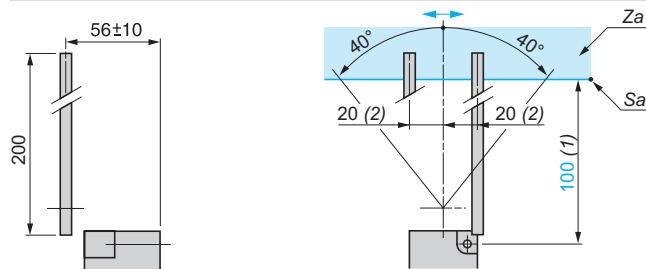
Form B, with end plunger (rounded)



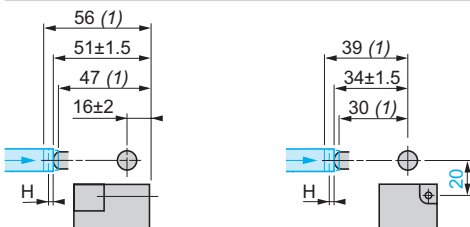
Form C, with end roller plunger



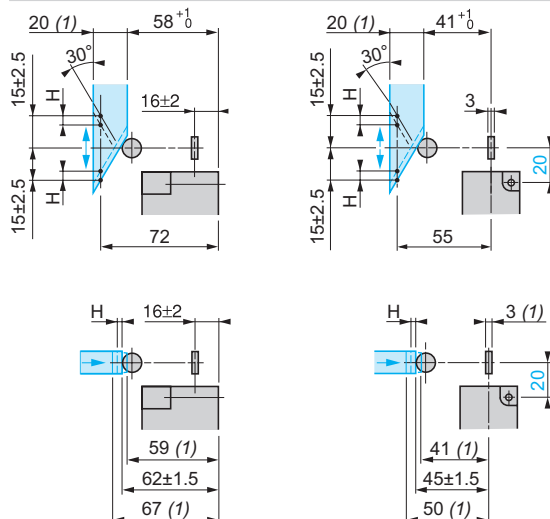
Form D, with rod lever



Form F, with side plunger (rounded)



Form G, with side roller plunger



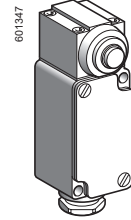
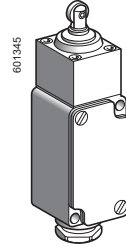
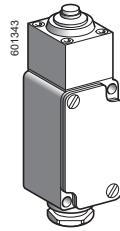
Limit switches

XC Special range

For very severe applications, XC2J

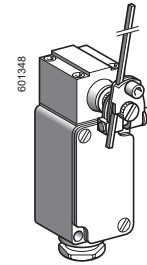
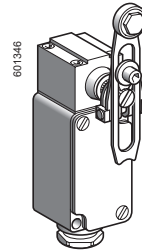
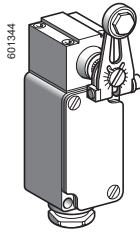
■ XC2J
with 1 cable entry

□ With head for linear movement (plunger)



Page 26

□ With head for rotary movement (lever)



Page 26

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

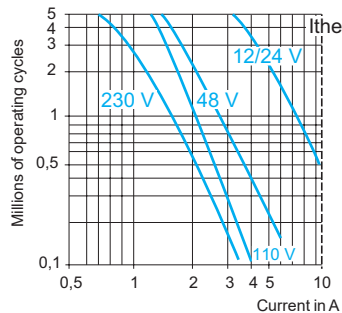
Contact block characteristics

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 mm ² , max: 2 x 2.5 mm ² XESP10•1 : clamping capacity, min: 1 x 0.75 mm ² , max: 2 x 1.5 mm ²
Minimum actuation speed	0.001 m/minute

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

XCKZ01, XESP1021, XESP1031

AC supply
50/60 Hz ~
~ inductive circuit



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

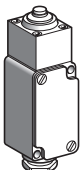
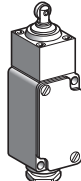
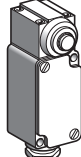
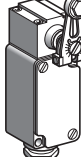
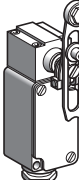
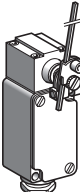
Limit switches

XC Special range

For very severe applications, XC2J

Complete switches, fixed body,

1 cable entry incorporating cable gland



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

(1) Adjustable throughout 360°.






References

Single-pole CO
snap action XCKZ01



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

Complementary characteristics not shown under general characteristics (page 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

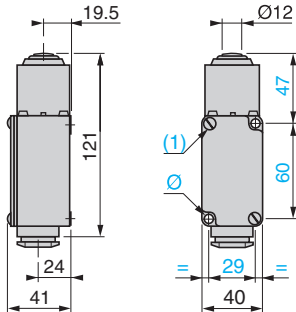
XC Special range

For very severe applications, XC2J

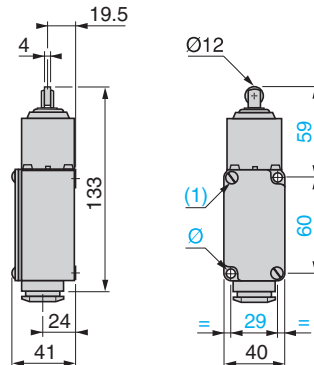
Complete switches, fixed body,

1 cable entry incorporating cable gland

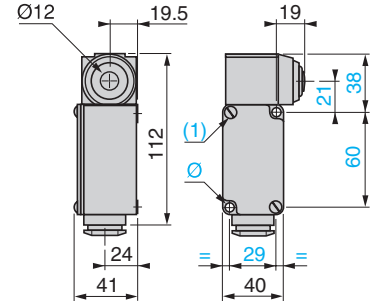
ZC2JC1 + ZC2JE61



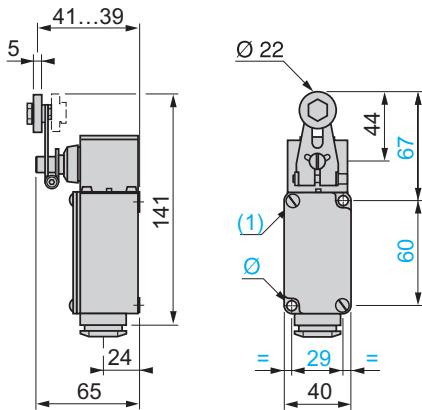
ZC2JC1 + ZC2JE62



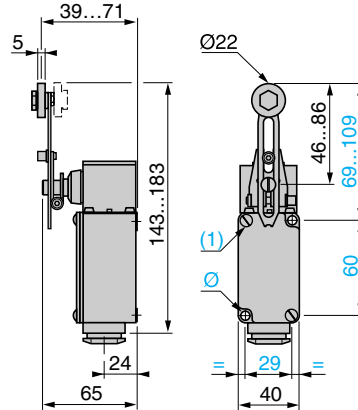
ZC2JC1 + ZC2JE63



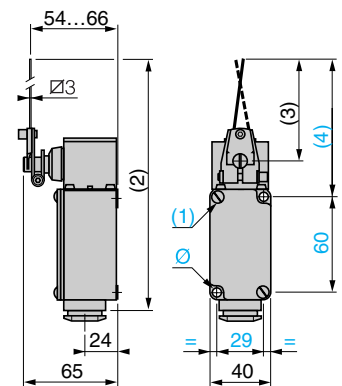
ZC2JC1 + ZC2JE0● + ZC2JY11



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).

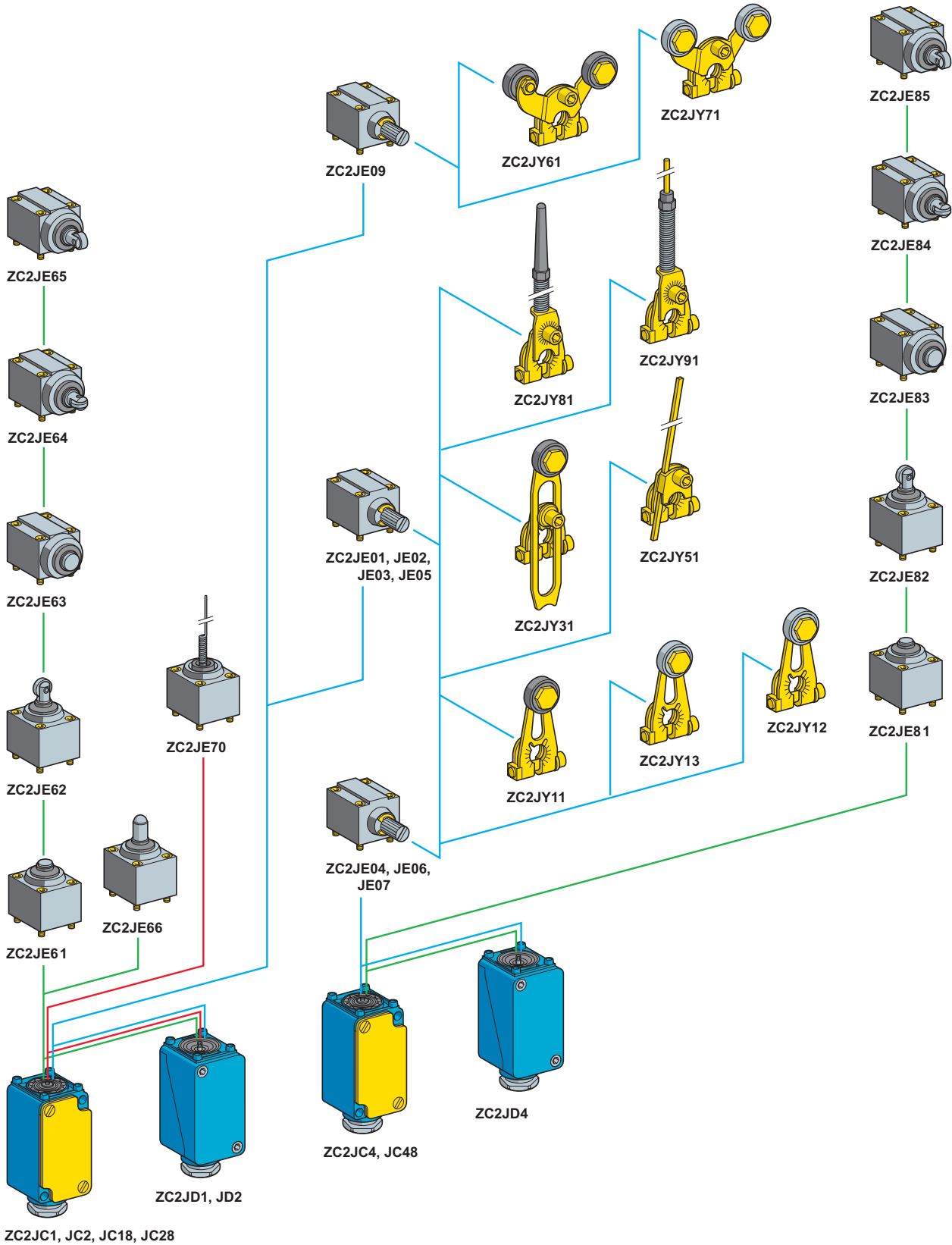
Limit switches

XC Special range

For very severe applications, XC2J

Fixed or plug-in body

Variable composition



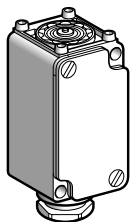
Limit switches

XC Special range

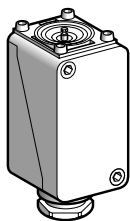
For very severe applications, XC2J

Fixed or plug-in body

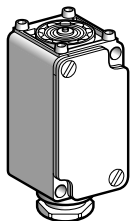
Adaptable sub-assemblies



ZC2JC●



ZC2JD●



ZC2JC●8

Bodies with contacts for plunger or rotary head

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

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

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

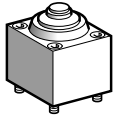
Limit switches

XC Special range

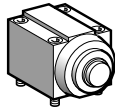
For very severe applications, XC2J

Fixed or plug-in body

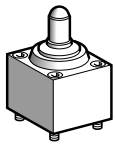
Adaptable sub-assemblies



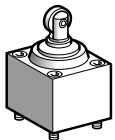
ZC2JE01



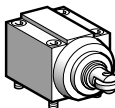
ZC2JE03



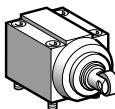
ZC2JE66



ZC2JE02



ZC2JE04



ZC2JE05

Plunger heads

Type of operator	Compatible bodies	Maximum actuation speed	Reference	Weight kg
For actuation on end				
End plunger metal	ZC2J01 ZC2J02	0.5 m/s	ZC2JE61	0.195
	ZC2J04	0.5 m/s	ZC2JE81	0.195
Side plunger metal	ZC2J01 ZC2J02	0.5 m/s	ZC2JE63	0.240
	ZC2J04	0.5 m/s	ZC2JE83	0.240
For actuation by 30° cam				
End ball bearing plunger	ZC2J01 ZC2J02	0.1 m/s	ZC2JE66	0.205
End roller plunger steel	ZC2J01 ZC2J02	1 m/s	ZC2JE62	0.200
	ZC2J04	1 m/s	ZC2JE82	0.200
Side plunger with horizontal roller steel	ZC2J01 ZC2J02	0.6 m/s	ZC2JE64	0.245
	ZC2J04	0.6 m/s	ZC2JE84	0.245
Side plunger with vertical roller steel	ZC2J01 ZC2J02	0.6 m/s	ZC2JE65	0.245
	ZC2J04	0.6 m/s	ZC2JE85	0.245

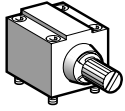
Limit switches

XC Special range

For very severe applications, XC2J

Fixed or plug-in body

Adaptable sub-assemblies



ZC2JE0

Rotary heads (without operating lever)

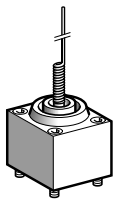
Type	Compatible bodies	Maximum actuation speed	Reference	Weight kg
Spring return (see operation page 34)				
Actuation from left AND right	ZC2J●1 ZC2J●2	1.5 m/s	ZC2JE01	0.210
	ZC2J●4	1.5 m/s	ZC2JE04	0.210
Actuation from left	ZC2J●1 ZC2J●2	1.5 m/s	ZC2JE02	0.210
	ZC2J●4	1.5 m/s	ZC2JE06	0.210
Actuation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



ZC2JE70

Limit switches

XC Special range

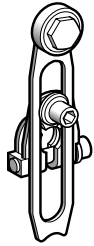
For very severe applications, XC2J

Fixed or plug-in body

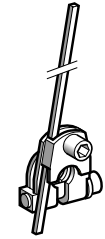
Adaptable sub-assemblies



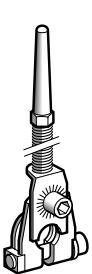
ZC2JY1



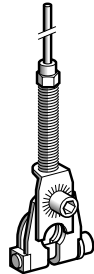
ZC2JY31



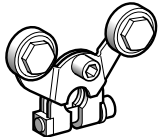
ZC2JY51



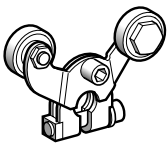
ZC2JY81



ZC2JY91



ZC2JY71



ZC2JY61

Operating levers for rotary heads

Description	Reference	Weight kg
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 \square 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°		
Other versions	Other operating levers for rotary heads. Please consult our Customer Care Centre.	

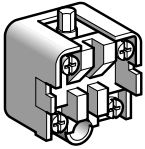
Limit switches

XC Special range

For very severe applications, XC2J

Fixed or plug-in body

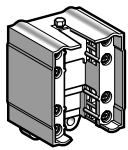
Adaptable sub-assemblies



XCKZ01

Contact blocks

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



XESP10●1

Contact blocks with gold flashed contacts

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

Limit switches

XC Special range

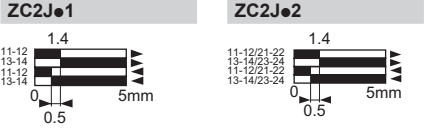
For very severe applications, XC2J

Fixed or plug-in body

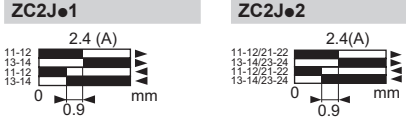
Adaptable sub-assemblies

Operation (function diagrams)

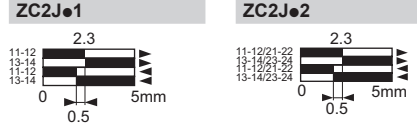
Heads ZC2JE61, ZC2JE66 with body



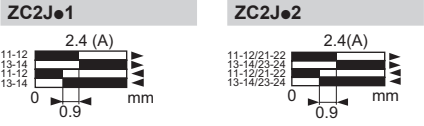
Head ZC2JE62 with body



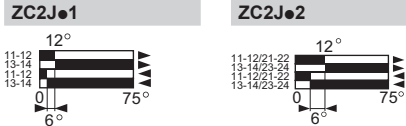
Head ZC2JE63 with body



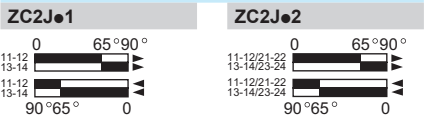
Heads ZC2JE64, ZC2JE65 with body



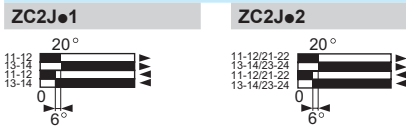
Heads ZC2JE01, ZC2JE02, ZC2JE03, ZC2JE05 with body



Head ZC2JE09 with body



Head ZC2JE70 with body



Contact operation

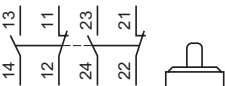
■ closed

□ open

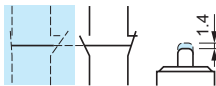
(A) = cam displacement

Heads ZC2JE81, ZC2JE82 with body ZC2J•4

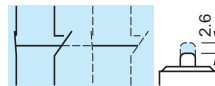
Unactuated



1st step

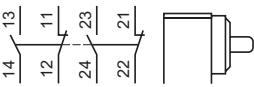


2nd step

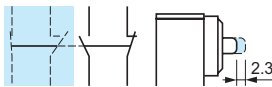


Heads ZC2JE83, ZC2JE84, ZC2JE85 with body ZC2J•4

Unactuated



1st step

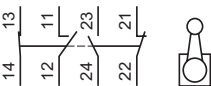


2nd step

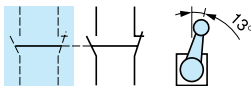


Heads ZC2JE04 with body ZC2J•4

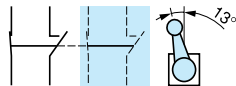
Unactuated



Actuated from left

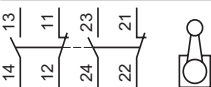


Actuated from right

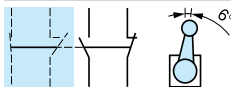


Heads ZC2JE06, ZC2JE07 with body ZC2J•4

Unactuated



1st step



2nd step



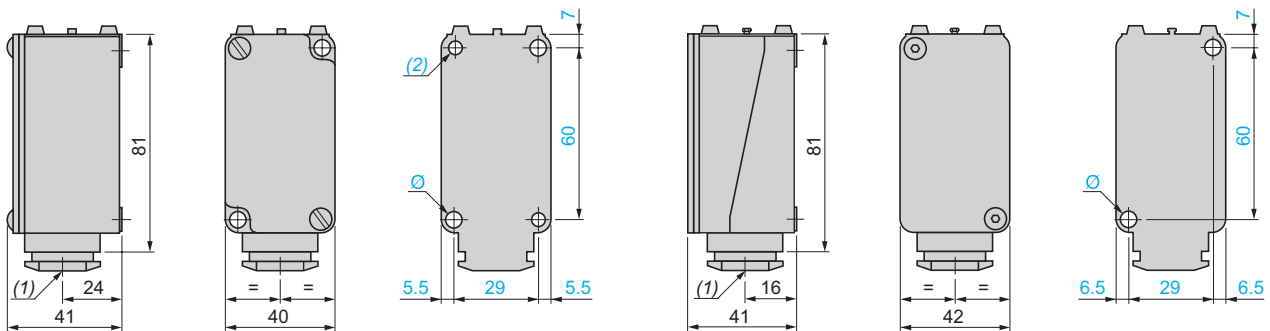
Dimensions

Fixed bodies

ZC2JC1, ZC2JC2, ZC2JC4

Plug-in bodies

ZC2JD1, ZC2JD2, ZC2JD4



(1) Incorporated cable gland

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

Ø: Fixing from the front via 2 holes Ø 5.5

(1) Incorporated cable gland

Ø: Fixing from the rear by 2 M6 screws

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

Limit switches

XC Special range

For very severe applications, XC2J

Fixed or plug-in body

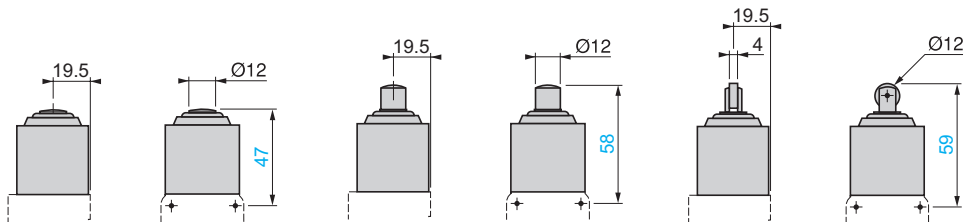
Adaptable sub-assemblies

Plunger heads

ZC2JE61, ZC2JE81

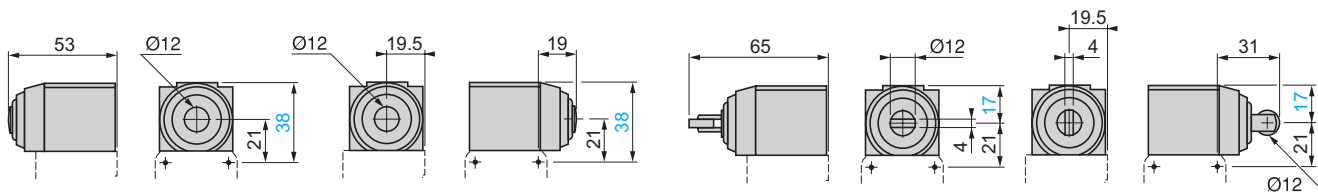
ZC2JE66

ZC2JE62, ZC2JE82



ZC2JE63, ZC2JE83 (2 position)

ZC2JE64, ZC2JE84, ZC2JE65, ZC2JE85 (2 position)

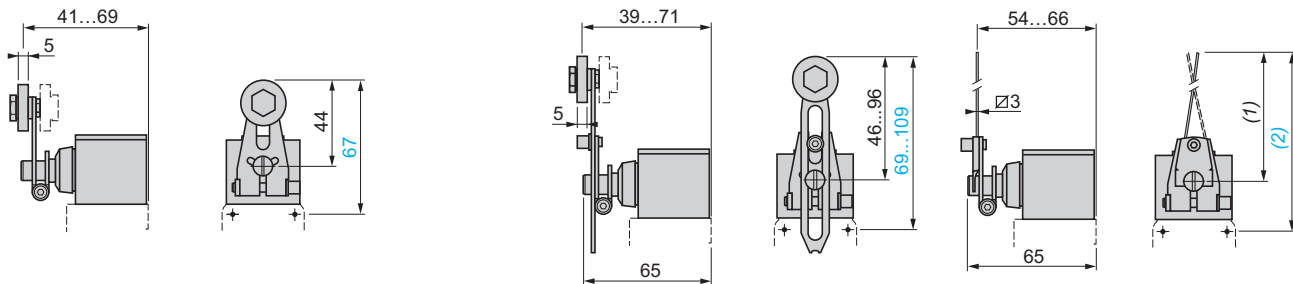


Rotary heads (ZC2JE01 to ZC2JE07) with operating lever

ZC2JY11, ZC2JY12, ZC2JY13

ZC2JY31

ZC2JY51

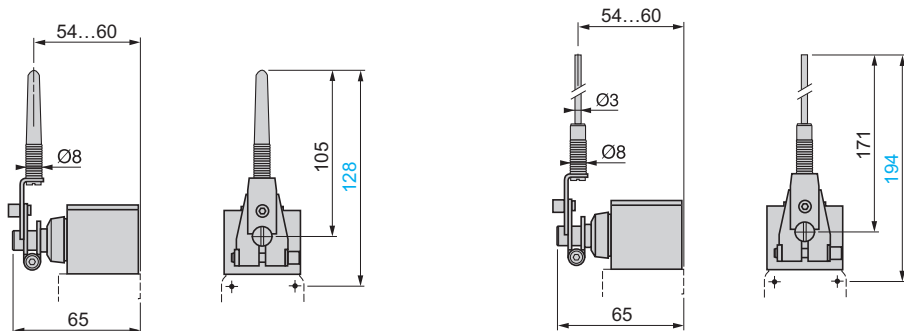


(1) 125 max.

(2) 148 max.

ZC2JY81

ZC2JY91



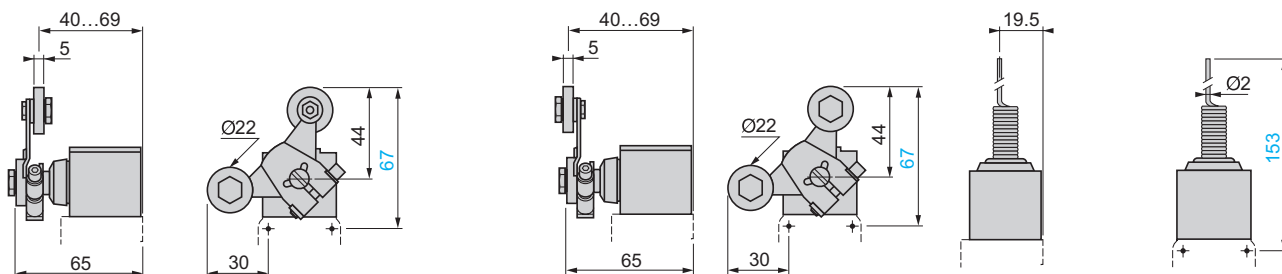
Rotary heads (ZC2JE09) with operating lever

ZC2JY61

ZC2JY71

Multi-directional heads

ZC2JE70

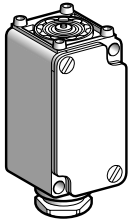


Limit switches

XC Special range

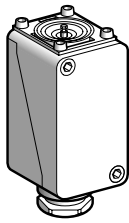
For very severe applications, XC2J

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



ZC2JC●6

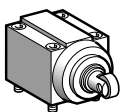
Bodies with contacts for plunger or rotary head				
Type	With contact block	Scheme	Reference	Weight kg
Fixed bodies				
1 step	Single-pole 1 CO snap action (XCK Z01)		ZC2JC16	0.355
	Double-pole 2 CO simultaneous, snap action (XES P1021)		ZC2JC26	0.355
2 step	Double-pole 2 CO staggered, snap action (XES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



ZC2JD●6

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

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



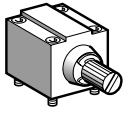
ZC2JE●56

Limit switches

XC Special range

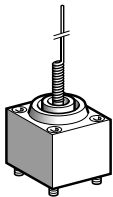
For very severe applications, XC2J

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



ZC2JE06

Rotary heads (without operating lever)				
Type	Compatible bodies	Maximum actuation speed	Reference	Weight kg
Spring return				
Actuation from left AND right	ZC2J●16 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

Limit switches

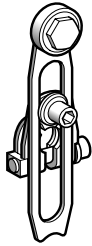
XC Special range

For very severe applications, XC2J

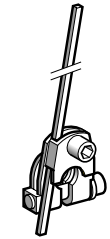
Fixed or plug-in body, adaptable sub-assemblies for low temperature applications (- 40°C)



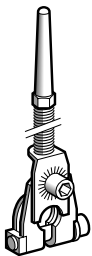
ZC2JY1



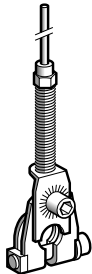
ZC2JY31



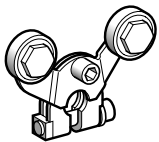
ZC2JY51



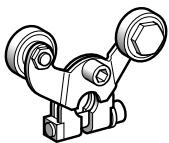
ZC2JY81



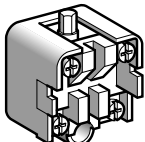
ZC2JY91



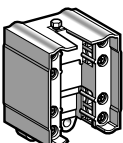
ZC2JY71



ZC2JY61



XCKZ01



XESP10

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 \square 3 mm, L = 125 mm (1)	ZC2JY51 0.035
Spring lever (1)		ZC2JY81 0.040
Spring-rod lever (1)		ZC2JY91 0.040

For actuation by specific cam (only for operation with head ZC2 JE096, see page 22)

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

Contact blocks

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

(1) Adjustable throughout 360°

Other versions

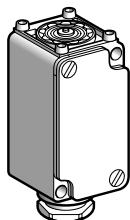
Other operating levers for rotary heads. Please consult our Customer Care Centre.

Limit switches

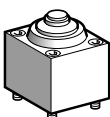
XC Special range

For very severe applications, XC2J

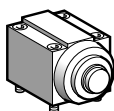
Fixed body, adaptable sub-assemblies for high temperature applications (+ 120°C)



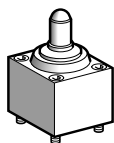
ZC2JC5



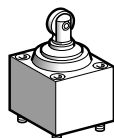
ZC2JE15



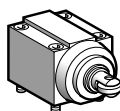
ZC2JE35



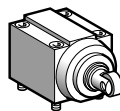
ZC2JE665



ZC2JE25



ZC2JE45



ZC2JE55

Bodies with contacts for plunger or rotary head

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

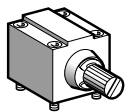
Plunger heads

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

Limit switches

XC Special range

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



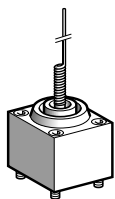
ZC2JE05

Rotary heads (without operating lever)

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

Stay put (see page 22)

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

Multi-directional head (with operator)

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

Limit switches

XC Special range

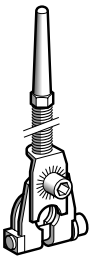
For very severe applications, XC2J
Fixed body, adaptable sub-assemblies for high
temperature applications (+ 120°C)



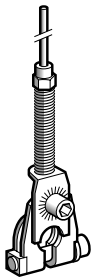
ZC2JY1



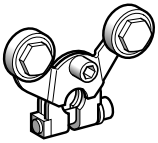
ZC2JY51



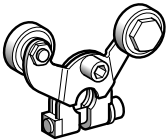
ZC2JY815



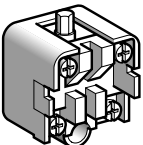
ZC2JY915



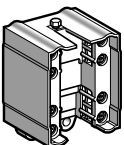
ZC2JY715



ZC2JY615



XCKZ015



XESP10

Operating levers for rotary heads

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

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

Limit switches

XC Special range

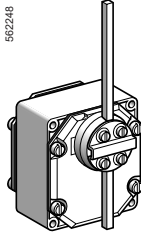
For hoisting and material handling applications, XCR

■ XCR

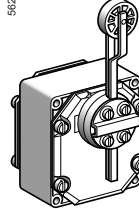
□ With head for rotary movement operators, spring return to off position

1 contact actuation position per direction

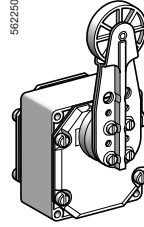
562248



562249



562250

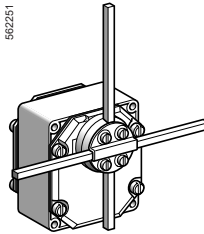


Page 46

□ With head for rotary movement operators, stay put

1 contact actuation position per direction

562251



Page 46

Limit switches

XC Special range

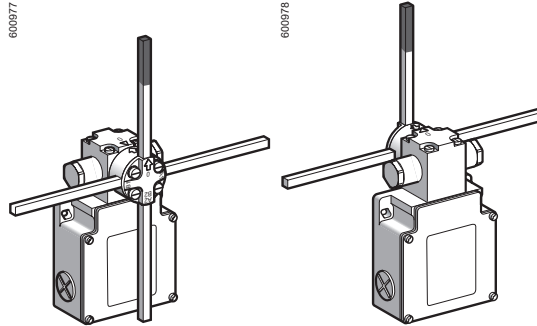
For hoisting and material handling applications, XCKMR and XCKVR

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

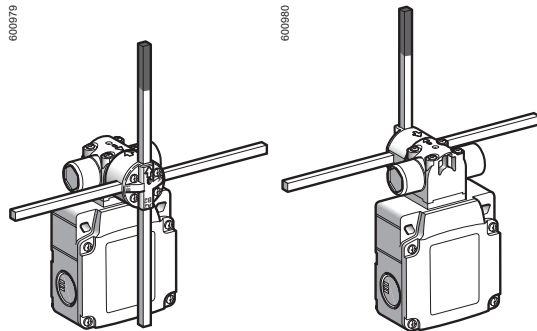


Page 52

■ 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

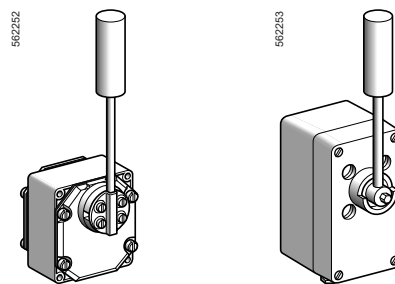


Page 52

■ 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°



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

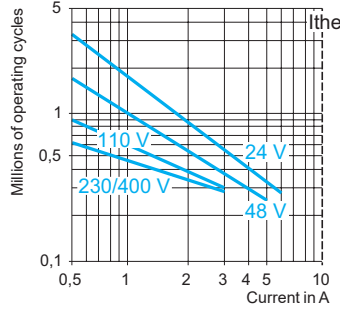
Contact block characteristics (continued)

Electrical durability

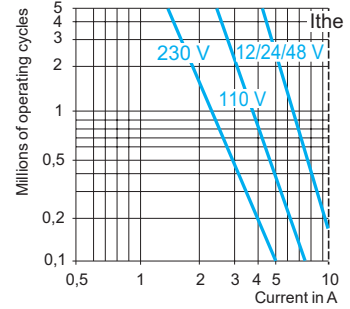
- Conforming to EN/IEC 60947-5-1 Appendix C
- Utilisation categories AC-15 and DC-13
- Maximum operating rate: 3600 operating cycles/hour
- Load factor: 0.5

AC supply
~ 50/60 Hz
~ inductive circuit

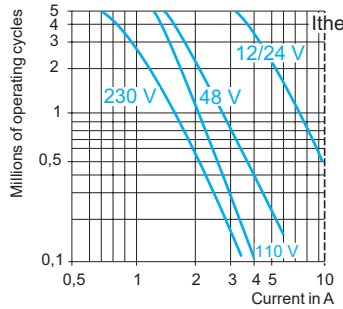
XE2SP2151



XE2NP2151



XCRT contacts



DC supply ---

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

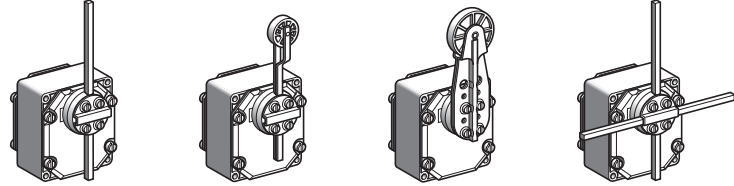
For XE2SP2151 on ~ or --- NC and NO contacts simultaneously loaded to the values shown with reverse polarity.

Limit switches

XC Special range

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

Type of head	Rotary with spring return to off position	Stay put
Maximum displacement	55° in each direction	90° in each direction



Type of operator	Metal rod, \varnothing 6 mm	Thermoplastic roller lever	Large thermoplastic roller lever	Metal rods, \varnothing 6 mm, crossed rods for XCRE●●, "T" rods for XCRF●●7
Rod length	1 rod of 200 mm	—	—	XCRE●●: 2 rods of 200 mm XCRF●●: 1 rod of 200 mm and 1 rod of 300 mm

References of complete switches (⊖ NC contact with positive opening operation)

Two 2-pole NC + NO snap action XE2SP2151 1 st contact 2 nd contact	Both contacts operate in each direction	X CRA11 (⊖) (3) 	X CRA12 (⊖) (3) 	X CRA15 (⊖) (3) 	X CRE18 (⊖) (3) (4)
	1 contact operates in each direction	X CRB11 (⊖) (3) 	X CRB12 (⊖) (3) 	X CRB15 (⊖) (3) 	X CRF17 (⊖) (3)
Two 2-pole NC + NO break before make, slow break XE2NP2151 1 st contact 2 nd contact	Both contacts operate in each direction	X CRA51 (⊖) (3) 	X CRA52 (⊖) (3) 	X CRA55 (⊖) (3) 	X CRE58 (⊖) (3) (4)
	1 contact operates in each direction	X CRB51 (⊖) (3) 	X CRB52 (⊖) (3) 	X CRB55 (⊖) (3) 	X CRF57 (⊖) (3)
Weight (kg)	1.110	1.145	1.155	1.135	
Contact operation	■ closed (P) = positive opening point □ open (1) 1 st contact (2) 2 nd contact				

Complementary characteristics

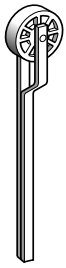
Lever maximum actuation speed	1.5 m/s
Mechanical durability	10 million operating cycles
Minimum torque	For tripping: 0.45 N.m For positive opening: 0.75 N.m
Cable entry	1 entry tapped for Pg 13.5 cable gland conforming to NF C 68-300 (DIN Pg 13.5) Clamping capacity 9 to 12 mm

(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.

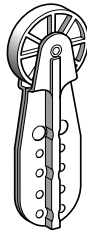
Limit switches

XC Special range

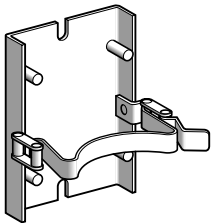
For hoisting and material handling applications, XCR



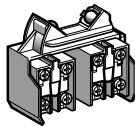
XCRZ02



XCRZ05



XCRZ09



XCRZ11

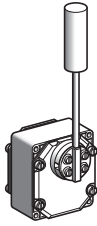
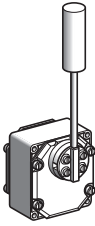
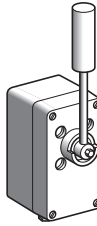
Separate components

Description	For switches	Type	Reference	Weight kg
Rod, \varnothing 6 mm	XCRA 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

Limit switches

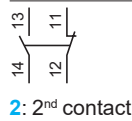
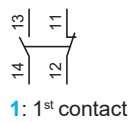
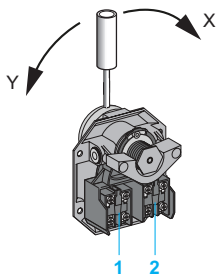
XC Special range

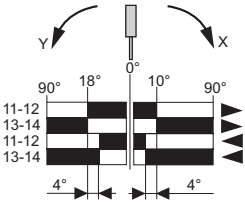
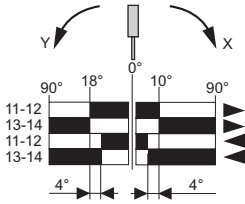
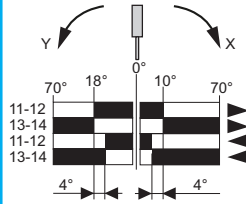
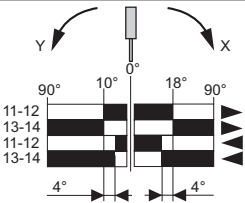
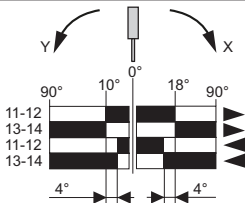
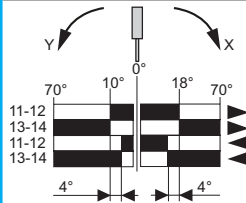
For conveyor belt shift monitoring applications, XCRT
Complete switches with 1 cable entry

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

References of complete switches

2 single-pole CO snap action



	XCRT115	XCRT215	XCRT315
			
			



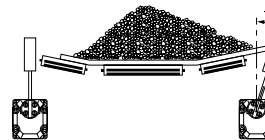
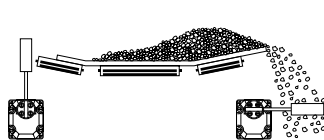
Weight (kg)	1.170	1.170	1.520
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Contact operation	 closed  open
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Complementary characteristics

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

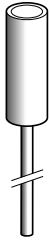
Switch operation

Normal position	Fault signalling	Stopping of the conveyor belt	Maximum rotation
			

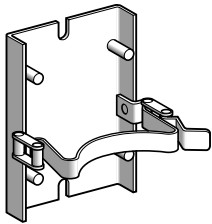
Limit switches

XC Special range

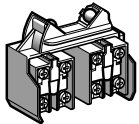
For conveyor belt shift monitoring applications,
XCRT



XCRZ9●●



XCRZ09



XCRZ42

Separate components

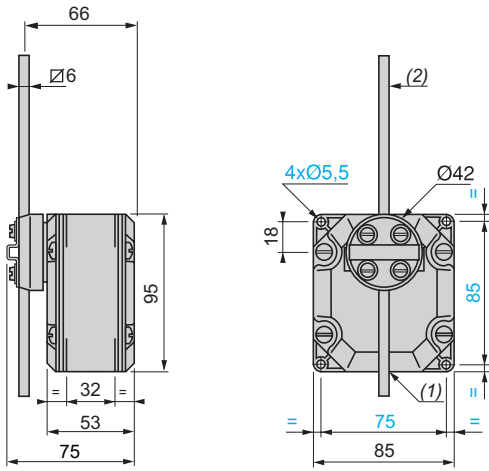
Description	Type	For switches	Reference	Weight kg
Roller with lever	Zinc plated steel	XCRT115	XCRZ901	0.230
		XCRT215		
	Stainless steel	XCRT115	XCRZ902	0.230
		XCRT215		
		XCRT315	XCRZ903	0.230
Quick fixing/release bracket	–	XCRT115 XCRT215	XCRZ09	0.520
Contact block (2 contacts) with mounting plate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

Limit switches

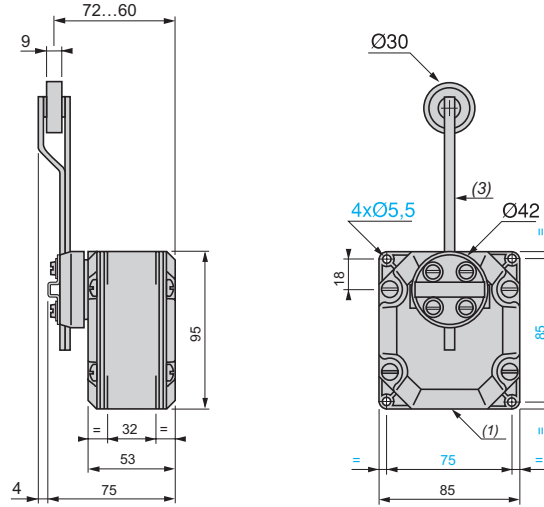
XC Special range

For hoisting and material handling applications, XCR

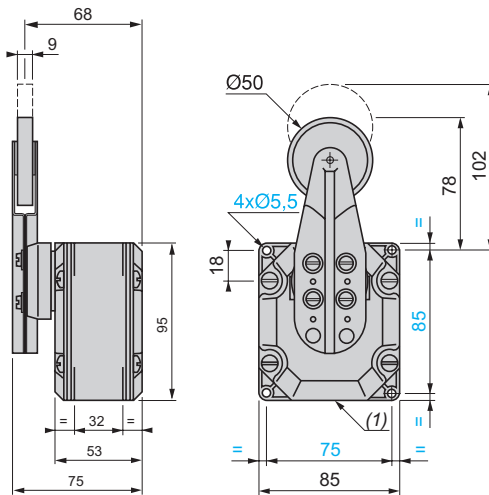
XCRA11, XCRB11, XCRA51, XCRB51



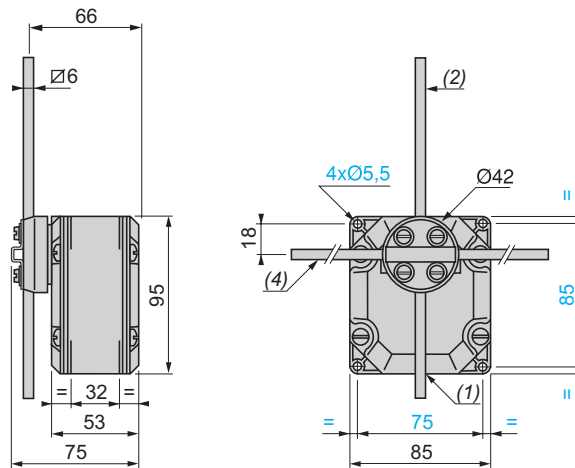
XCRA12, XCRB12, XCRA52, XCRB52



XCRA15, XCRB15, XCRA55, XCRB55



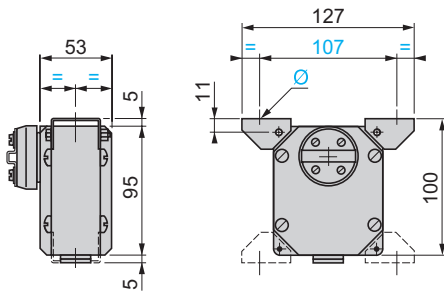
XCRE18, XCRE58, XCRF17, XCRF57



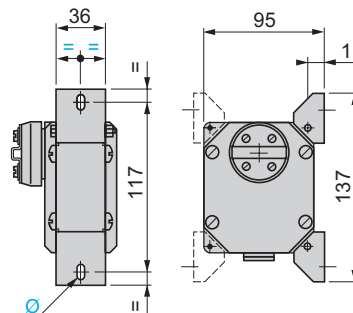
- (1) 1 tapped entry for Pg 13.5 cable gland.
- (2) Rod length: 200 mm.
- (3) Rod + roller length: 160 mm.
- (4) Rod length: 300 mm for XCRF17 and XCRF57, 200 mm for XCRE18 and XCRE58.

Supplementary fixing using 2 adjustable lugs (included with switch)

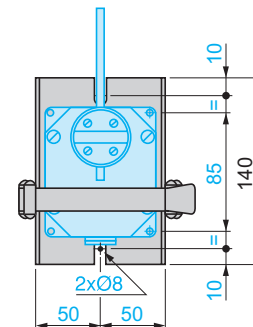
Horizontally positioned



Vertically positioned



Quick fixing/release bracket XCRZ09



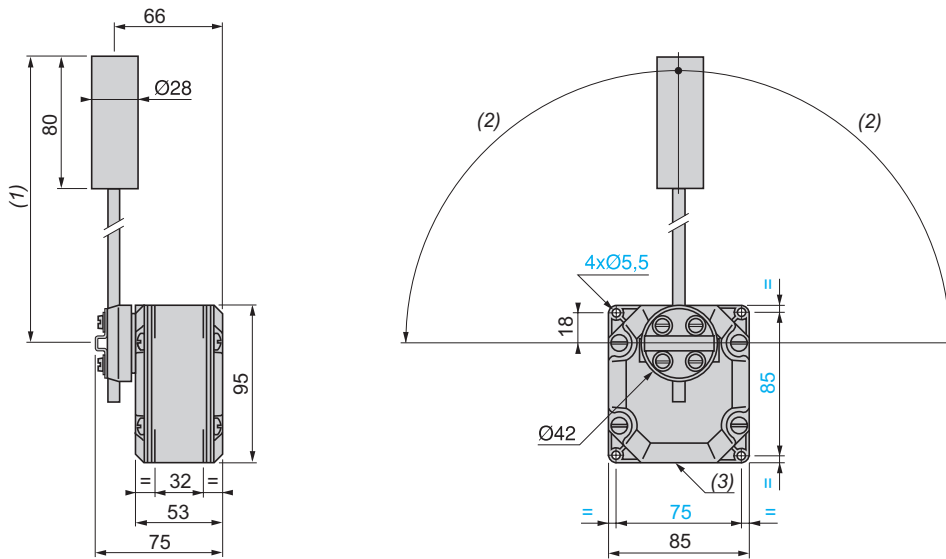
Ø: 1 elongated hole Ø 6 x 8.

Limit switches

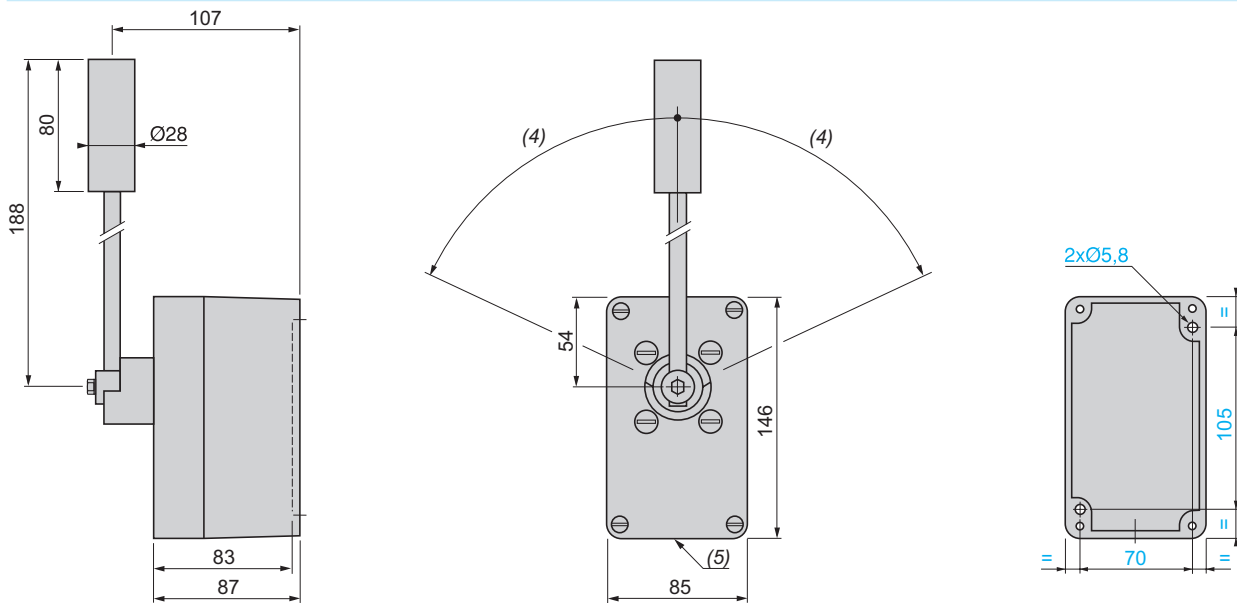
XC Special range

For conveyor belt shift monitoring applications,
XCRT

XCRT115, XCRT215



XCRT315



(1) 200 max., 104 min.

(2) 90° max.

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

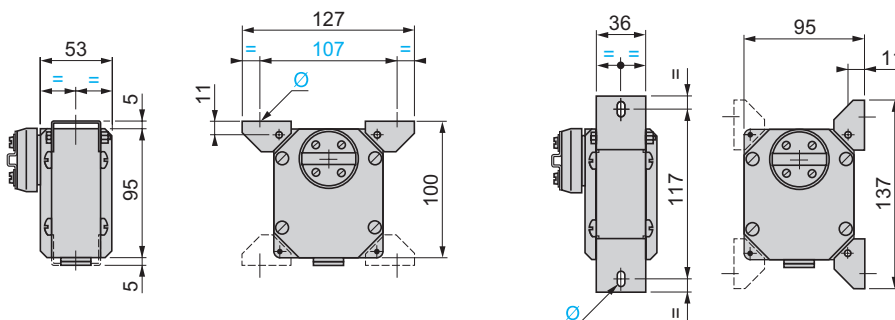
(4) 70° max.

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

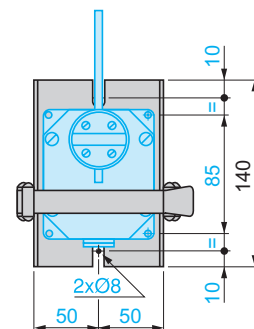
Supplementary fixing using 2 adjustable lugs (included with XCRT115 and XCRT215)

Horizontally positioned

Vertically positioned



Quick fixing/release bracket XCRZ09



Ø: 1 elongated hole Ø 6 x 8.

Limit switches

XC Special range

For hoisting and material handling applications,

XCKMR and XCKVR

Complete switches with 3 cable entries

Type of operating head	Rotary			

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

References

“By pass” switches

	2 x 2-pole NC+NO break before make, slow break (XE2NP2151)	XCKMR24SR1H29	–	XCKVR24SR1H29	–
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“Single speed” switches

	2 x 2-pole NC+NO break before make, slow break (XE2NP2151)	XCKMR44D1H29	XCKMR44D2H29	XCKVR44D1H29	XCKVR44D2H29
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“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
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Weight (kg)	0.684	0.684	0.320	0.320
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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 For positive opening	0.5 N.m 0.75 N.m	0.5 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

	Description	Reference	Weight kg
	Rod \varnothing 6 mm, L = 200 mm	XCRZ03	0.020
	Rod \varnothing 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

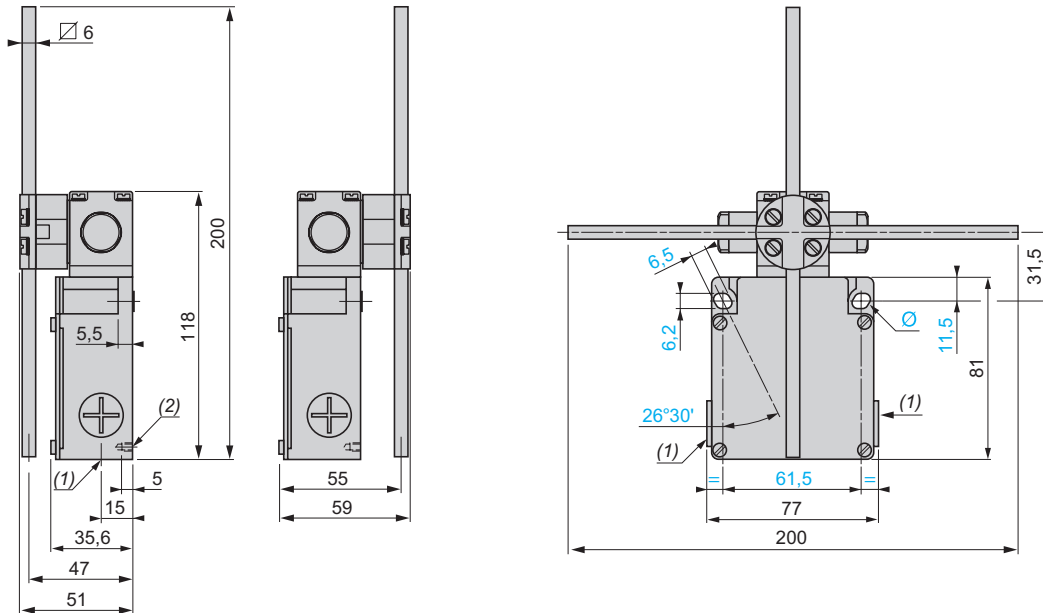
Dimensions

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 $\varnothing 3.9 \pm 0.2$, for cover fixing holes alignment.

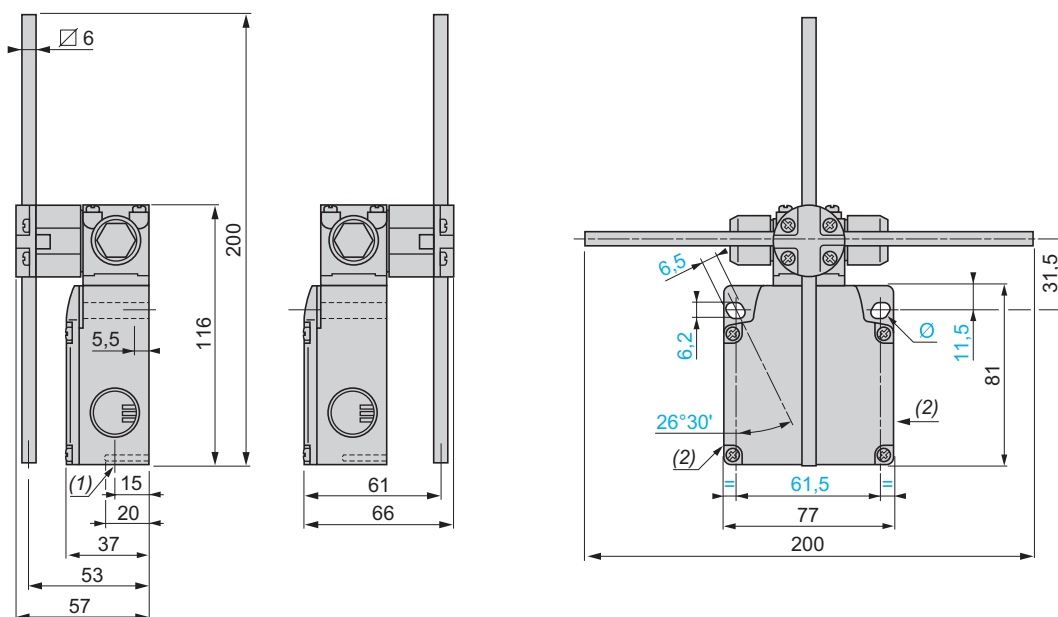
\varnothing : 2 elongated holes 6.2×6.5 , inclined at $26^\circ 30'$ to the vertical axis, for M5 screws.

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).

\varnothing : 2 elongated holes 6.2×6.5 , inclined at $26^\circ 30'$ to the vertical axis, for M5 screws.

Limit switches

XC Special range

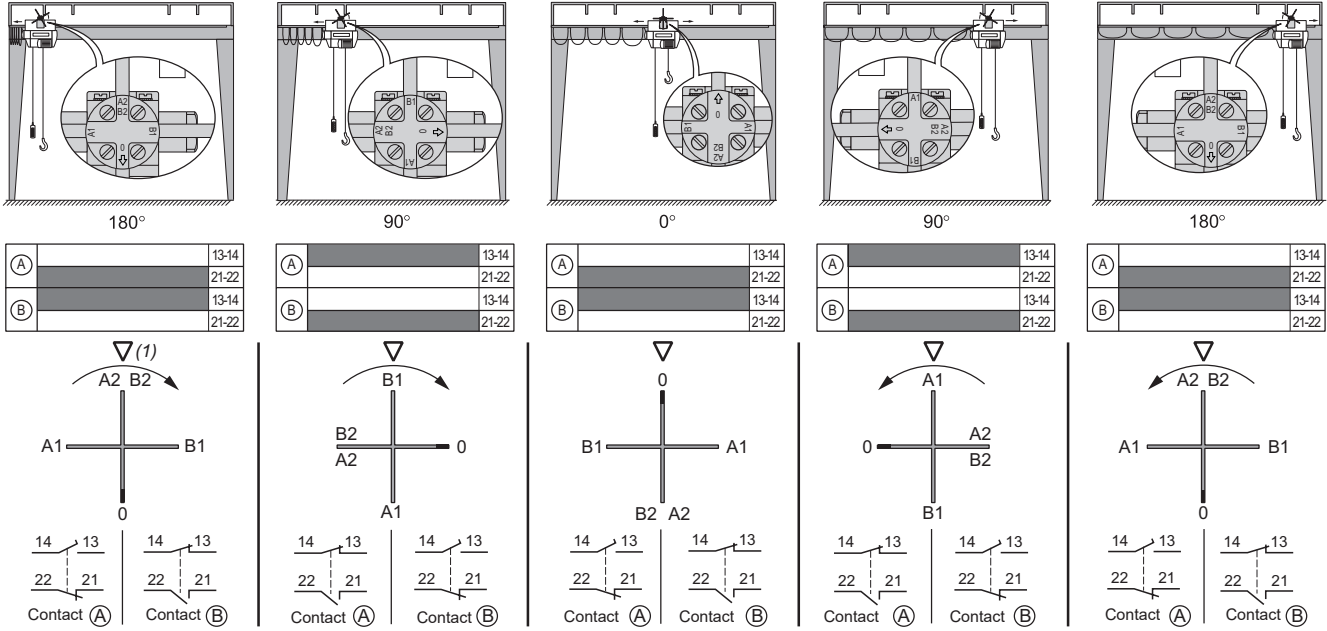
For hoisting and material handling applications,

XCKMR and XCKVR

Complete switches with 3 cable entries

Operation

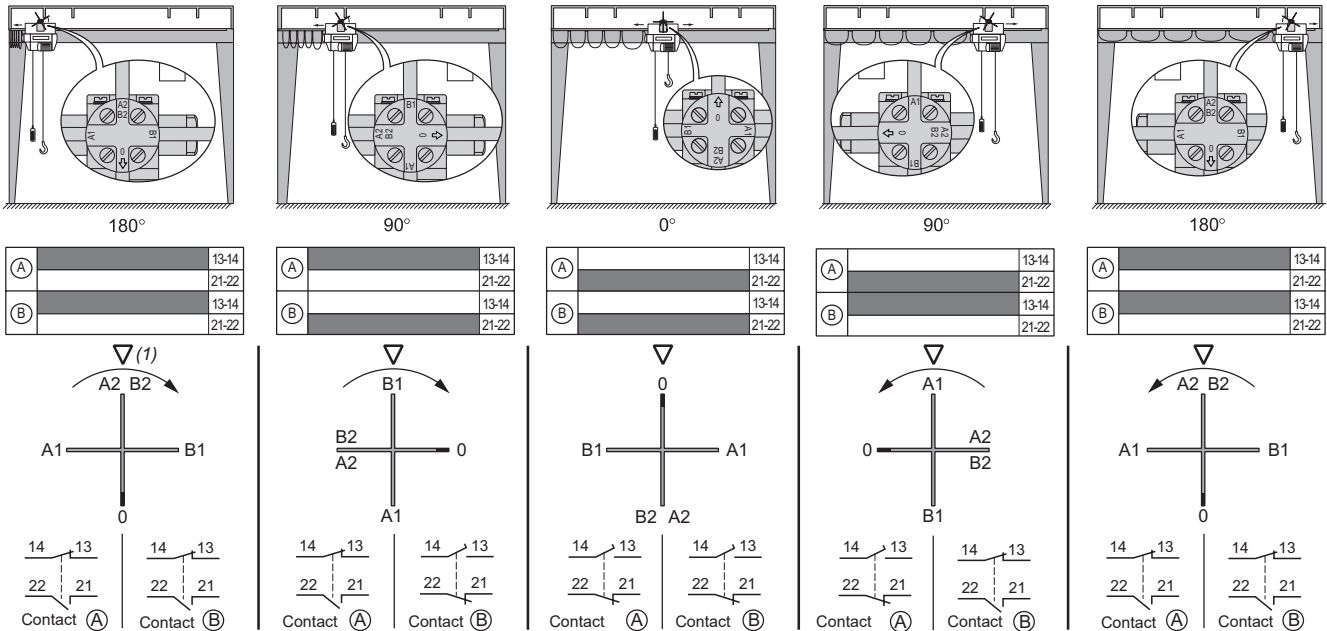
Limit switches XCK●R24SR1H29: "By pass"



(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

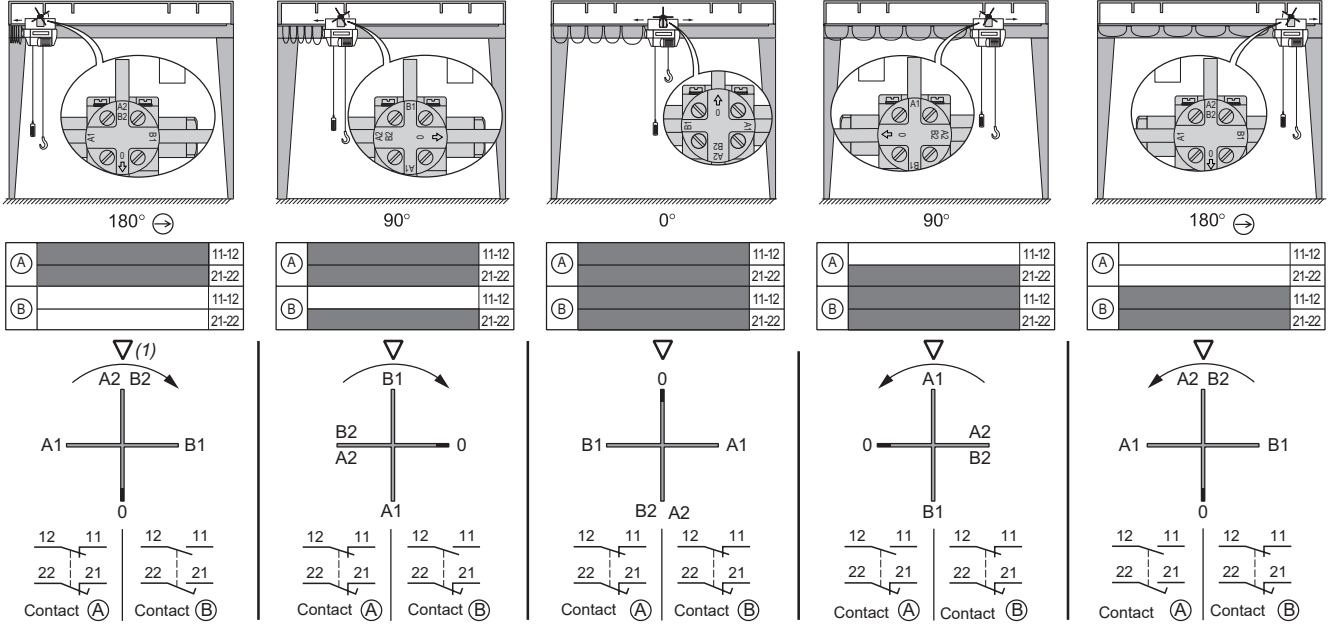
For hoisting and material handling applications,

XCKMR and XCKVR

Complete switches with 3 cable entries

Operation (continued)

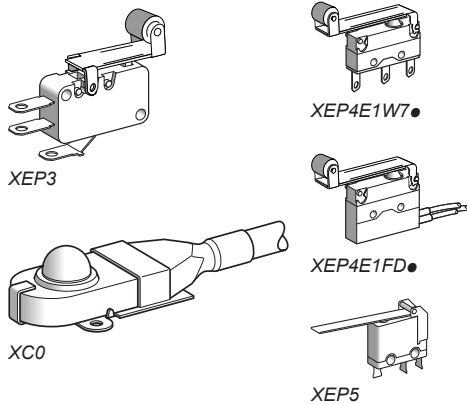
Limit switches XCK●R54D●●●●: "Double speed"



(1) Triangle symbol marked on top of head.

or : direction of rotation.

Presentation



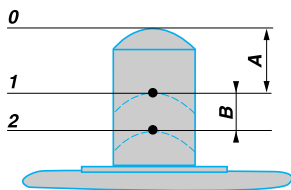
Electromechanical detection

- 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.

Terminology



Forces

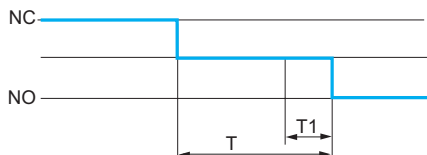
- Maximum tripping force: maximum force which must be applied to the operator to move it from the rest (unactuated) position to the trip position (tripping point).
- Minimum release force: value to which the force on the operator must be reduced to allow the snap action mechanism to return to its rest (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

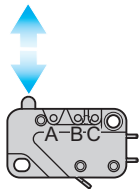
- 1 **Tripping point:** position of the operator in relation to the switch fixings (fixing hole centre line) at the instant the switch contact changes state.
- A **Differential travel:** distance between the tripping point and the position at which the snap action mechanism returns to its initial state 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.

Mechanical characteristics



T1: bounce time
T: changeover time



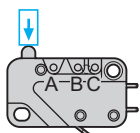
Changeover time

- 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



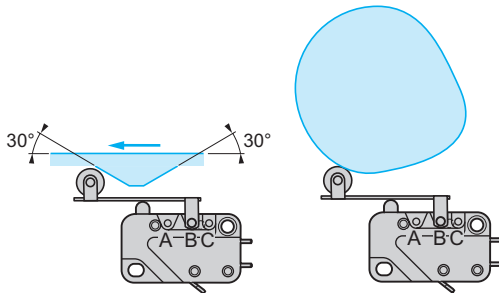
Mounting and operation

- 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

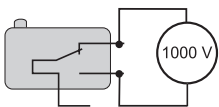
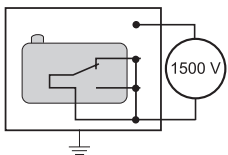
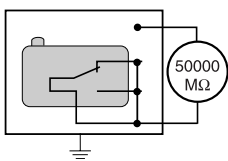
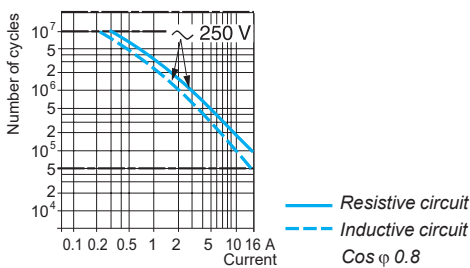
- The tightening torque of the fixing screws must conform to the following values:

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.

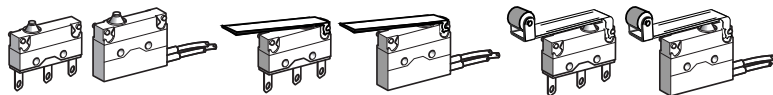
Miniature snap switches

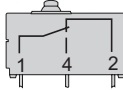
XC Special range

Subminiature design, DIN 41635 B format, sealed

References

Subminiature design, DIN 41635 B format, sealed



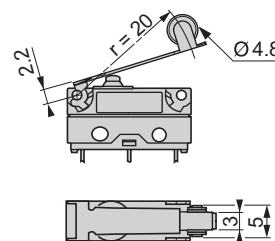
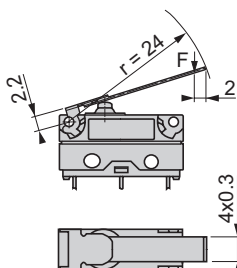
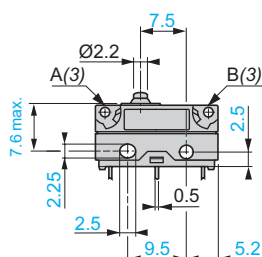
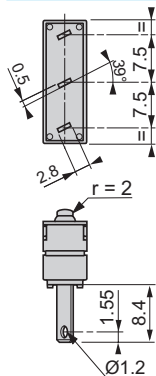
Type of operator		Plunger	Flat lever (1)	Roller lever (1)
 <p>Single-pole CO snap action Wiring: 1 Black 2 Grey 4 Blue</p>	2.8 mm cable clip tag connections	XEP4E1W7 (2)	XEP4E1W7A326 (2)	XEP4E1W7A454 (2)
	Weight (g)	2.4	3.1	3.2
	Pre-cabled connections	XEP4E1FD (2)	XEP4E1FDA326 (2)	XEP4E1FDA454 (2)
	Weight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

Dimensions

XEP4E1W7

XEP4E1W7A326

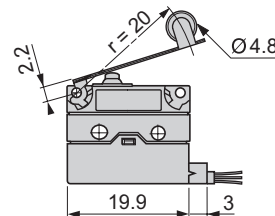
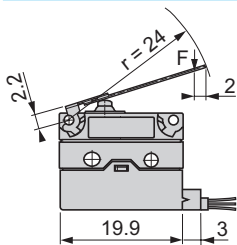
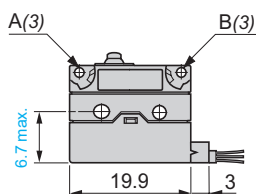
XEP4E1W7A454



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 mm ² , length 0.5 m

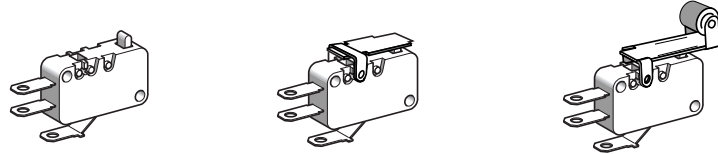
Operating curves



(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.

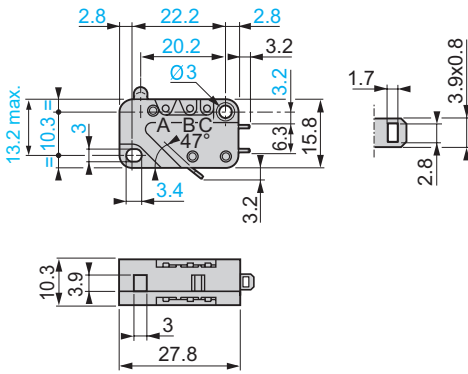
References



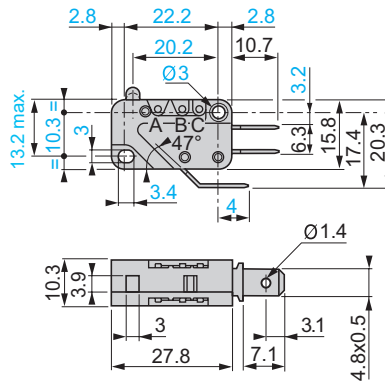
Type of operator		Plunger	Flat lever (1)	Roller lever (1)	
<p>Single-pole CO snap action</p>	Standard contacts	Solder tags	XEP3S1W2 (2)	XEP3S1W2B524 (2)	
		4.8 mm cable clip tags	XEP3S1W6 (2)	XEP3S1W6B524 (2)	
		6.35 mm cable clip tags	XEP3S1W3 (2)	XEP3S1W3B524 (2)	
		Weight (g)	5.6	6.3	6.6
	Very low 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

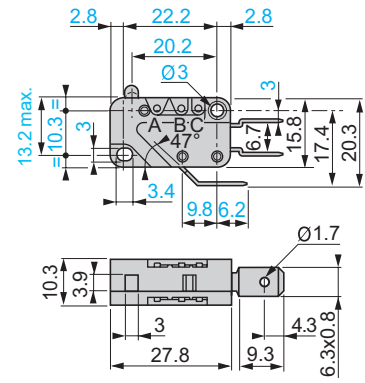
XEP3S●W2



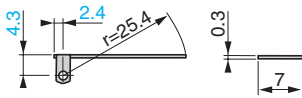
XEP3S●W6



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.

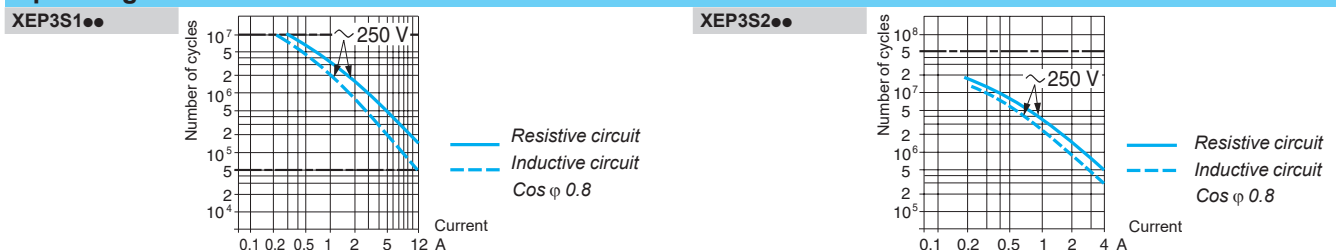
(3) Levers only for mounting on basic (plunger) snap switches (XEP3S●W2, XEP3S●W3, XEP3S●W6), in fixing positions A, B or C.

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
	Contact	AgNi	Stainless steel, glass reinforced polyamide roller

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

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

Operating curves



(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).

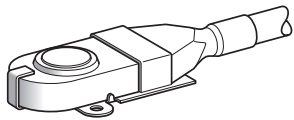
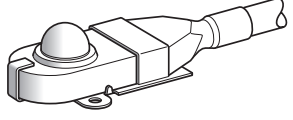
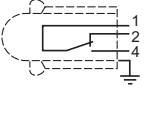
(2) Position of the operator in relation to the switch fixings (fixing hole centre line) at the instant the switch contact changes state.

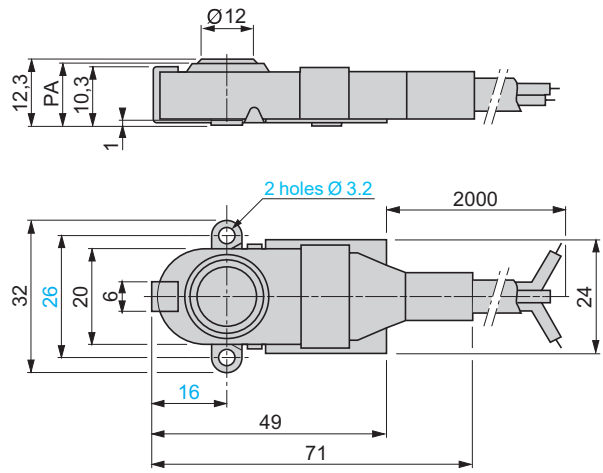
Miniature snap switches

XC Special range

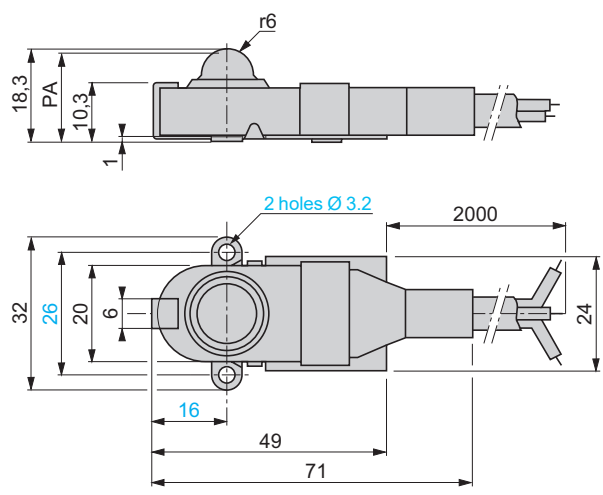
Sealed design

Pre-cabled

Type of head	Plunger (fixing by the body)	
		
Type of operator	Head with flat plunger	Head with domed enclosed plunger
References		
 <p data-bbox="284 591 422 703">Single-pole CO snap action Wiring: 1 Black 2 Brown 4 Blue</p>	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 ^{±0.4} mm	17.4 ^{±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).



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.

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 HP 40 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 $\theta \leq 40$ °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 60158-1 500 V	A	400	1000	1100	1600	2200	
	For 2-pole scheme 660 V	A	180	630	900	1200	1750	
Connection Min./max. cable c.s.a.	Flexible wiring, without cable end	1 conductor	mm ²	1.5/10	2.5/25	–	–	–
		2 conductors	mm ²	1.5/6	2.5/16	–	–	–
	Flexible wiring, with cable end	1 conductor	mm ²	1/6	2.5/16	–	–	–
		2 conductors	mm ²	1/4	2.5/6	–	–	–
	Solid wiring, without cable end	1 conductor	mm ²	1.5/6	2.5/25	–	–	–
		2 conductors	mm ²	1.5/6	4/16	–	–	–
	Cable	1 conductor	mm ²	–	–	95	150	240
		2 conductors	mm ²	–	–	95	150	240

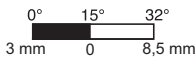
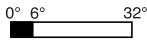
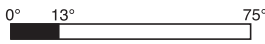


XF9D251

References of overtravel limit switches

Switches without auxiliary contact block

Description	Rated operational current A	Conventional thermal current A	Disconnection	Reference	Weight kg
With manual latching and resetting restricted by a padlockable device Snap action opening mechanism Maximum travel: 75° in each direction	25	40	3-pole or 4-pole	XF9D251	2.200
	or	or	2-pole		
	50	80	3-pole or 4-pole	XF9D651	5.000
	or	or	2-pole		
With manual latching and resetting Horizontal or vertical actuation Snap action opening mechanism	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	115	200	3-pole	XF9F1152	28.500
	185	275	3-pole	XF9F1852	29.000
	265	350	3-pole	XF9F2652	32.500

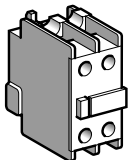


XF9F...2

References of accessories (Schneider Electric products)

Auxiliary contact blocks

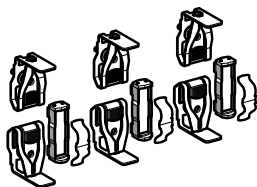
Description	For use with switches	Reference	Weight kg
N/C + N/O instantaneous	XF9F...●●	LADN11	0.030



LADN11

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

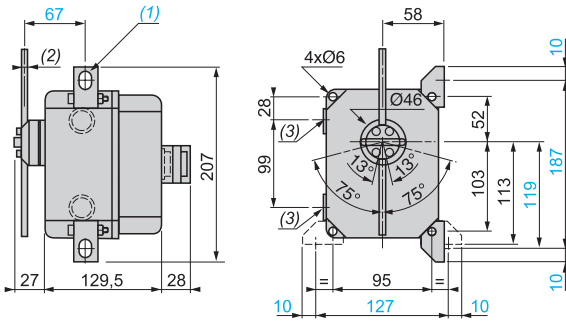


LA5FG431

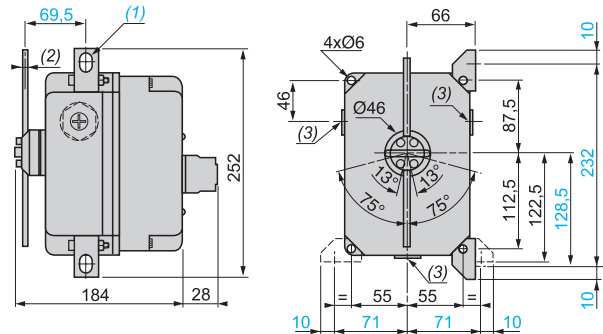
■ Contacts closed
□ Contacts open

Dimensions

XF9D251



XF9D651

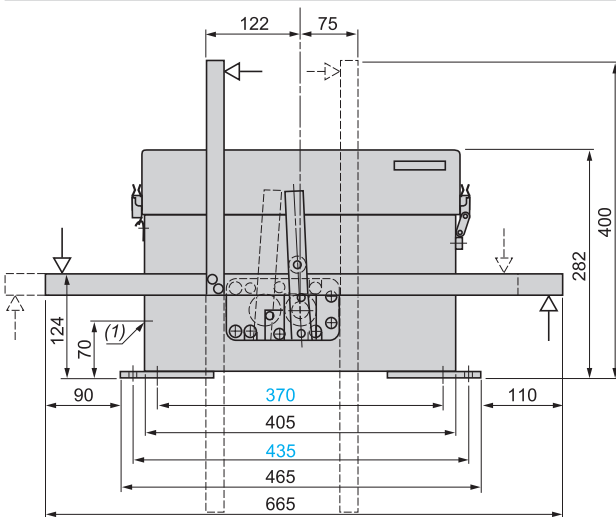


- (1) 2 elongated holes Ø 6 x 8.5 (removable fixing lugs).
- (2) 6 mm square rod, length 200 (can be mounted at 90°).
- (3) 2 tapped entries for n° 21 cable gland.
- 13° = contact actuation, 75° = maximum travel.

- (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.

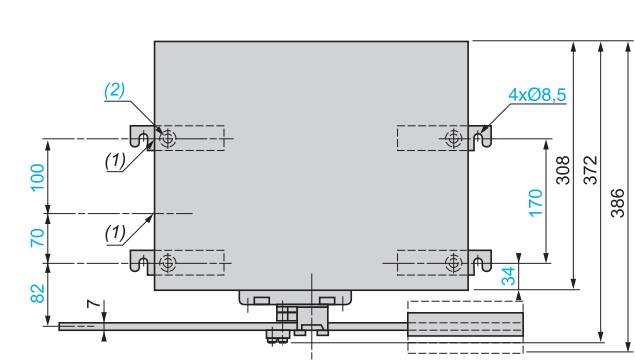
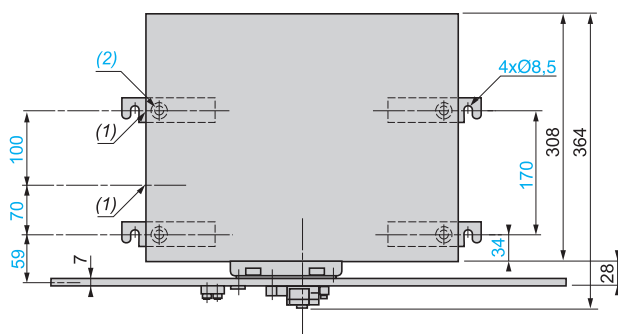
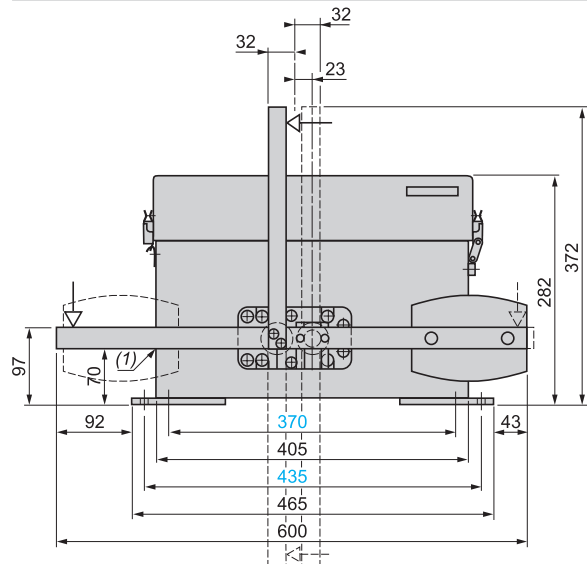
XF9F●●●1

Manual resetting



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).

- (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).

D					
DE9PEM20010	52	XEP3S1W3B524	60	ZC2JE04	31
L		XEP3S1W3B529	60	ZC2JE045	40
LA511550	66	XEP3S1W6	60	ZC2JE046	37
LA518550	66	XEP3S1W6B524	60	ZC2JE05	26
LA526550	66	XEP3S1W6B529	60		31
LA5FF431	66	XEP3S2W2B524	60	ZC2JE056	37
LA5FG431	66	XEP3S2W2B529	60	ZC2JE06	31
LA5FH431	66	XEP3S2W3	60	ZC2JE065	40
LADN11	66	XEP3S2W3B524	60	ZC2JE066	37
X		XEP3S2W3B529	60	ZC2JE07	31
XC010L2	62	XEP3S2W6	60	ZC2JE075	40
XC011L2	62	XEP3S2W6B529	60	ZC2JE076	37
XCKMR24SR1H29	52	XEP4E1FD	58	ZC2JE09	31
XCKMR44D1H29	52	XEP4E1FDA326	58	ZC2JE095	40
XCKMR44D2H29	52	XEP4E1FDA454	58	ZC2JE096	37
XCKMR54D1H29	52	XEP4E1W7	58	ZC2JE61	26
XCKMR54D2H29	52	XEP4E1W7A326	58		30
XCKVR24SR1H29	52	XEP4E1W7A454	58	ZC2JE615	39
XCKVR44D1H29	52	XESP1021	33	ZC2JE616	36
XCKVR44D2H29	52		38	ZC2JE62	26
XCKVR54D1H29	52	XESP10215	41		30
XCKVR54D2H29	52	XESP1028	33	ZC2JE625	39
XCKVR54D2H29	52	XESP1031	33	ZC2JE626	36
XCKZ01	33		38	ZC2JE63	26
	38	XESP10315	41		30
XCKZ015	41	XESP1038	33	ZC2JE635	39
XCKZ018	33	XF9D251	66	ZC2JE636	36
XCRA11	46	XF9D651	66	ZC2JE64	30
XCRA12	46	XF9F1151	66	ZC2JE645	39
XCRA15	46	XF9F1152	66	ZC2JE646	36
XCRA51	46	XF9F1851	66	ZC2JE65	30
XCRA52	46	XF9F1852	66	ZC2JE655	39
XCRA55	46	XF9F2651	66	ZC2JE656	36
XCRB11	46	XF9F2652	66	ZC2JE66	30
XCRB12	46	Z		ZC2JE665	39
XCRB15	46	ZC2JC1	26	ZC2JE666	36
XCRB51	46		29	ZC2JE70	31
XCRB52	46	ZC2JC15	39	ZC2JE705	40
XCRB55	46	ZC2JC16	36	ZC2JE706	37
XCRE18	46	ZC2JC18	29	ZC2JE81	30
XCRE58	46	ZC2JC2	29	ZC2JE815	39
XCRF17	46	ZC2JC25	39	ZC2JE816	36
XCRF57	46	ZC2JC26	36	ZC2JE82	30
XCRT115	48	ZC2JC28	29	ZC2JE825	39
XCRT215	48	ZC2JC4	29	ZC2JE826	36
XCRT315	48	ZC2JC45	39	ZC2JE83	30
XCRZ02	47	ZC2JC46	36	ZC2JE835	39
XCRZ03	47	ZC2JC48	29	ZC2JE836	36
	52	ZC2JD1	29	ZC2JE84	30
XCRZ03R	52	ZC2JD16	36	ZC2JE845	39
XCRZ04	47	ZC2JD2	29	ZC2JE846	36
XCRZ05	47	ZC2JD26	36	ZC2JE85	30
XCRZ09	47	ZC2JD4	29	ZC2JE855	39
	49	ZC2JD46	36	ZC2JE856	36
XCRZ12	47	ZC2JE01	26	ZC2JY11	26
XCRZ15	47		31		32
XCRZ42	49	ZC2JE015	40		38
XCRZ901	49	ZC2JE016	37	ZC2JY115	41
XCRZ902	49	ZC2JE02	31	ZC2JY12	32
XCRZ903	49	ZC2JE025	40		38
XEP3S1W2	60	ZC2JE026	37	ZC2JY13	32
XEP3S1W2B524	60	ZC2JE03	31		38
XEP3S1W2B529	60	ZC2JE035	40		41
XEP3S1W3	60	ZC2JE036	37	ZC2JY215	41
				ZC2JY31	26
					32
					38
				ZC2JY315	41
				ZC2JY415	41
				ZC2JY51	26
					32
					38
					41
				ZC2JY61	32
					38
				ZC2JY615	41
				ZC2JY71	32
					38
				ZC2JY715	41
				ZC2JY81	28
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					38
				ZC2JY815	41
				ZC2JY91	32
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