

Comepi Safety Switches Selection Guide



Series	SP2 Series	SDM Series
Prices start at		
Description	30 mm safety limit switch with keys or shaft lever	50 mm safety limit switch with keys, shaft lever or pull wire
Material of Construction	Plastic casing, double insulated	ZAMAK (zinc alloy) casing
Degree of Protection (IEC529)	IEC IP65	IEC IP66
Maximum Switching Frequency	Contact blocks: 1 cycle per second (all)	Contact blocks: 1 cycle per second (all)
Mechanical Service Life	1,000,000 operations interlock and limit switches	1,000,000 operations. interlock and limit switches 500,000 operations for K9800 and K9900 cable pull switches 25,000 operations for K98 and K99 cable pull switches
Contact Configuration	X11 - Slow action, positive opening, 1 N.O. + 1 N.C. W02 - Simultaneous, slow action, positive opening, 2 N.C.	X11 - Slow action, positive opening, 1 N.O. + 1 N.C. W02 - Simultaneous, slow action, positive opening, 2 N.C.
Conduit Opening	One cable hole, 1/2" NPT adapter	Three cable holes, 1/2" NPT
Connection	2x2.5 mm ² (AWG14) to 2x0.5 mm ² (AWG 18)	2x2.5 mm ² (AWG14) to 2x0.5 mm ² (AWG 18)
Agency Approvals	CE, UL file E189258, RoHS	CE, UL file E189258, RoHS



Series	SBM Series	SCM Series
Prices start at		
Description	40 mm safety limit switch with keys or pull wire	60 mm safety limit switches with keys or pull wire
Material of Construction	Aluminum casing	Aluminum casing
Degree of Protection (IEC529)	IEC IP66	IEC IP66
Maximum Switching Frequency	Contact blocks: 1 cycle per second (all)	Contact blocks: 1 cycle per second (all)
Mechanical Service Life	1,000,000 operations. interlock and limit switches 25,000 operations for cable pull switches	1,000,000 operations interlock and limit switches 500,000 operations for K9800 and K9900 cable pull switches 25,000 operations for K98 and K99 cable pull switches
Contact Configuration	X11 - Slow action, positive opening, 1 N.O. + 1 N.C. W02 - Simultaneous, slow action, positive opening, 2 N.C. X12 - Slow action, positive opening, 1 N.O. + 2 N.C. W03 - Simultaneous, slow action, positive opening 3 N.C.	X11 - Slow action, positive opening, 1 N.O. + 1 N.C. W02 - Simultaneous, slow action, positive opening, 2 N.C. X12 - Slow action, positive opening, 1 N.O. + 2 N.C. W03 - Simultaneous, slow action, positive opening 3 N.C.
Conduit Opening	One cable hole, 1/2" NPT	Three cable holes, 1/2" NPT
Connection	2x2.5 mm ² (AWG14) to 2x0.5 mm ² (AWG 18)	2x2.5 mm ² (AWG14) to 2x0.5 mm ² (AWG 18)
Agency Approvals	CE, UL file E189258, RoHS	CE, UL file E189258, RoHS

Comepi Safety Switches

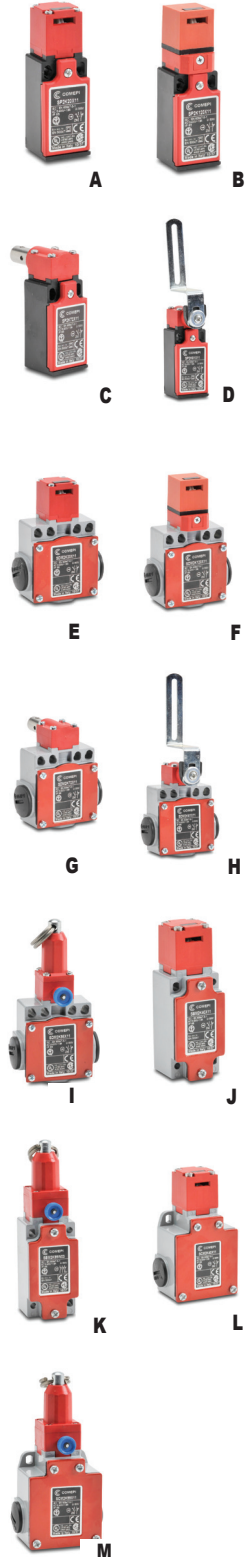
These safety switches are developed and manufactured according to IEC and EN European standards.

Easy to use, electromechanical safety switches provide:

- Visible operation
- Ability to switch large currents (10 A conventional thermal current)

- Precise operating points (consistency)
- Immunity to electromagnetic disturbances
- Electrically separated contacts (Zb)
- N.C. contacts with positive opening operation →
- Actuation Speed: Max. - 0.5 m/s; Min. - 0.01 m/s
- Conduit opening - 1/2" NPT threaded or adapter

Note: Purchase actuating tongue (key) separately.



Safety Limit Switches														
Part Number	Price	Actuator Type	No. of Conduit Holes	Min Force for Key Actuation	Min Torque	Positive Opening Force	B10d	Dimensions Body / Head	Contact Config. Diagram	Weight (lb)	Photo			
SP2K20X11		90° adjustable head, tongue (key) interlock	One	15N		30N	2,000,000 operations	Figures 1, 5	1	0.2	A			
SP2K20W02	One		Figures 1, 5					2	0.2	A				
SP2K120X11		360° adjustable head, tongue (key) interlock	One					0.12 Nm	0.60 Nm	2,000,000 operations	Figures 1, 6	1	0.2	B
SP2K120W02	One		Figures 1, 6								2	0.2	B	
SP2K72X11		90° adjustable head, shaft hinge interlock	One	0.12 Nm	0.60 Nm	2,000,000 operations	Figures 1, 7				1	0.2	C	
SP2K72W02	One		Figures 1, 7				2				0.2	C		
SP2K61X11		90° adjustable head, lever hinge interlock	One				0.12 Nm	0.60 Nm	2,000,000 operations	Figures 1, 8	1	0.2	D	
SP2K61W02	One		Figures 1, 8							2	0.2	D		
SDM2K20X11		90° adjustable head, tongue (key) interlock	Three	15N	30N	2,000,000 operations				Figures 2, 5	1	0.6	E	
SDM2K20W02			Three							Figures 2, 5	2	0.6	E	
SDM2K120X11		360° adjustable head, tongue (key) interlock	Three				0.12 Nm	0.60 Nm	2,000,000 operations	Figures 2, 6	1	0.6	F	
SDM2K120W02			Three							Figures 2, 6	2	0.6	F	
SDM2K72X11		90° adjustable head, shaft hinge interlock	Three	0.12 Nm	0.60 Nm	2,000,000 operations				Figures 2, 7	1	0.6	G	
SDM2K72W02			Three							Figures 2, 7	2	0.6	G	
SDM2K61X11		90° adjustable head, lever hinge interlock	Three				0.12 Nm	0.60 Nm	2,000,000 operations	Figures 2, 8	1	0.6	H	
SDM2K61W02			Three							Figures 2, 8	2	0.6	H	
SDM2K98X11		Cable-pull interlock with reset	Three	30N	45N	2,000,000 operations				Figures 2, 10	1	0.6	I	
SDM2K98W02			Three							Figures 2, 10	2	0.6	I	
SBM2K40X11		90° adjustable head, tongue (key) interlock	One				30N	45N	2,000,000 operations	Figures 3, 11	1	0.4	J	
SBM2K40W02			One							Figures 3, 11	2	0.4	J	
SBM2K40X12			One	Figures 3, 11	3	0.4				J				
SBM2K40W03			One	Figures 3, 11	4	0.4				J				
SBM2K99X11		Cable-pull interlock with reset	One	30N	45N	2,000,000 operations	Figures 3, 13	1	0.6	K				
SBM2K99W02			One				Figures 3, 13	2	0.6	K				
SBM2K99X12			One				Figures 3, 13	3	0.6	K				
SBM2K99W03			One				Figures 3, 13	4	0.6	K				
SCM2K40X11		90° adjustable head, tongue (key) interlock	Three	30N	45N	2,000,000 operations	Figures 4, 11	1	0.5	L				
SCM2K40W02			Three				Figures 4, 11	2	0.5	L				
SCM2K40X12			Three				Figures 4, 11	3	0.5	L				
SCM2K40W03			Three				Figures 4, 11	4	0.5	L				
SCM2K99X11		Cable-pull interlock with reset	Three	30N	45N	2,000,000 operations	Figures 4, 13	1	0.7	M				
SCM2K99W02			Three				Figures 4, 13	2	0.7	M				
SCM2K99X12			Three				Figures 4, 13	3	0.7	M				
SCM2K99W03			Three				Figures 4, 13	4	0.7	M				

Comepi Safety Switches

Dimensions

mm [in]

Figure 1: SP2K body

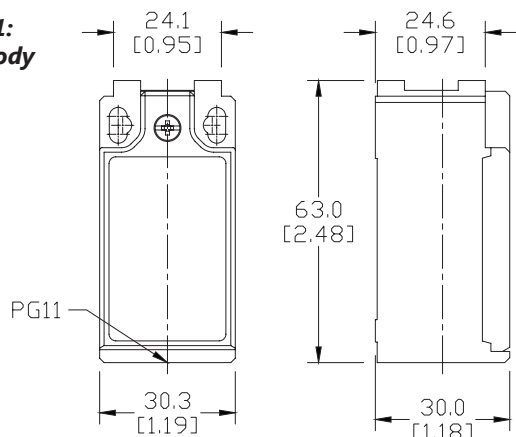


Figure 2: SDM2K body

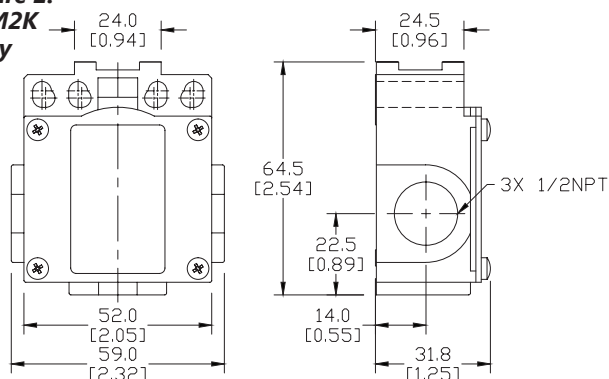


Figure 3: SBM2K body

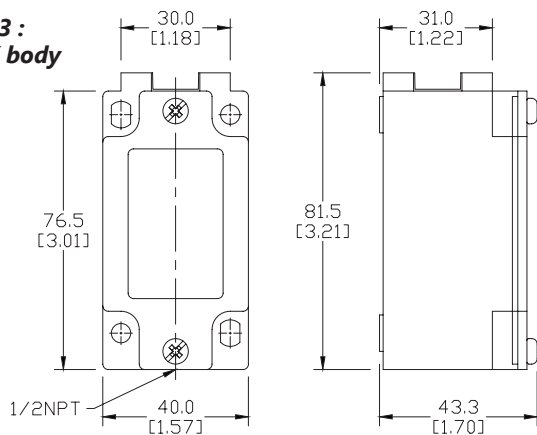
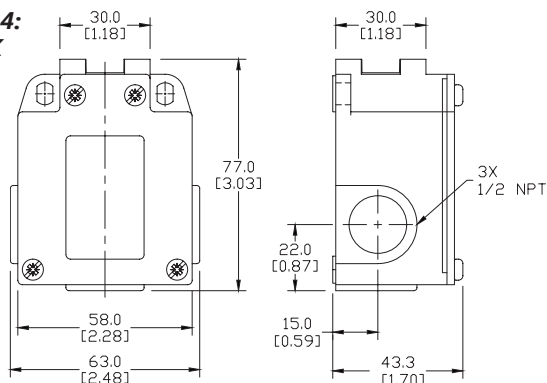


Figure 4: SCM2K body



Actuator Dimensions

mm [in]

Figure 5: 90° adjustable head - SP2K20, SDM2K20 models

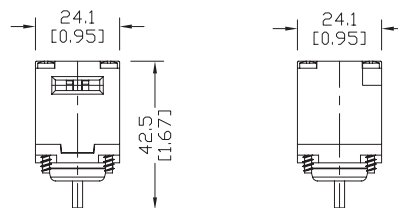


Figure 6: Fully turnable 360° head - SP2K120, SDM2K120 models

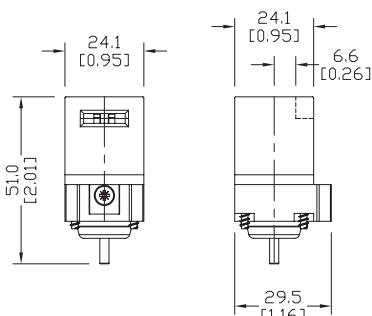


Figure 7: 90° adjustable head with shaft hinge interlock - SP2K72, SDM2K72 models

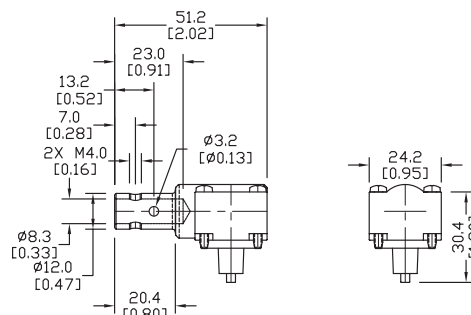
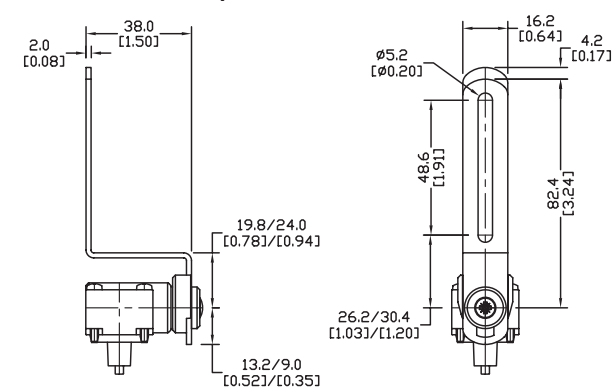


Figure 8: 90° adjustable head with lever hinge interlock - SP2K61, SDM2K61 models



Comepi Safety Switches

Actuator Dimensions

mm [in]

Figure 9: Pull wire without reset for simple stop - SDM2K96 models

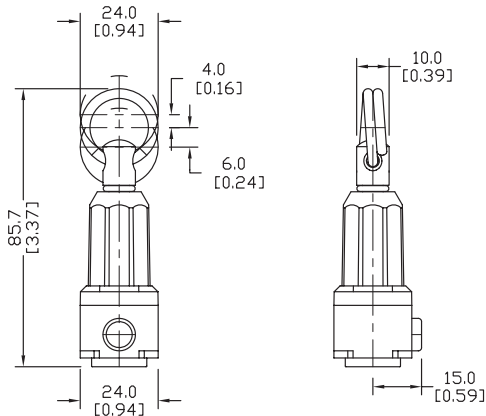


Figure 12: Pull wire without reset for simple stop - SBM2K97 and SCM2K97 models

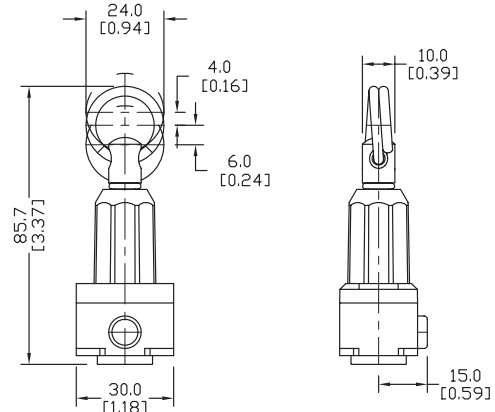


Figure 10: Pull wire with reset for emergency stop - SDM2K98 models

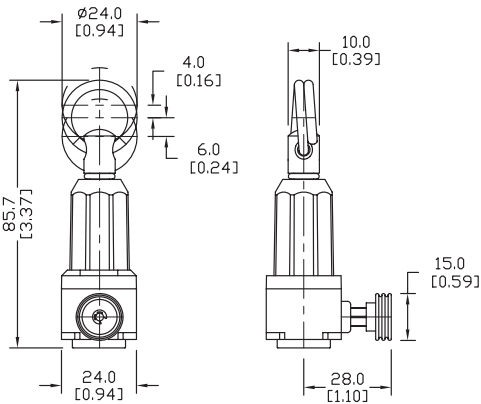


Figure 13: Pull wire with reset for emergency stop - SBM2K99 and SCM2K99 models

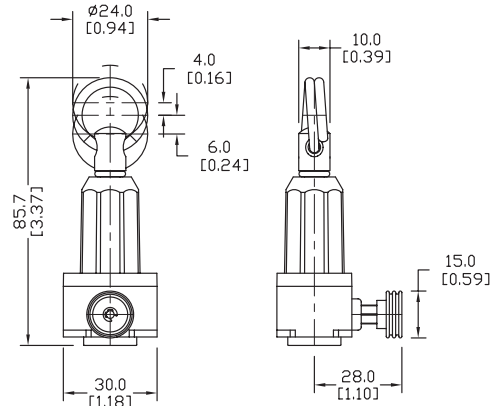
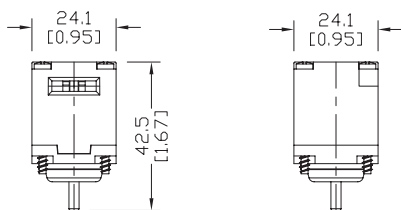


Figure 11: 90° adjustable head - SBM2K40, SCM2K40 models

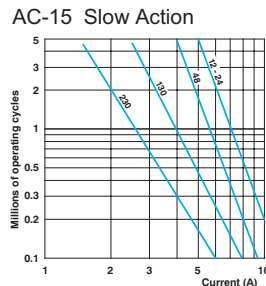


Comepi Safety Switches

Approvals	
All: IEC 947-5-1, EN 60947-5-1, UL 508, CSA C22.2 No 14, RoHS	
Environmental	
Degree of Protection	Plastic models: IP65 according to IEC 529 Aluminum and ZAMAK (zinc alloy) models: IP66 according to IEC 529
Temperature Range	Plastic models: storage: -30° to 80°C (-22° to 176°F) operating: -25° to 70°C (-13° to 158°F) Aluminum and ZAMAK (zinc alloy) models: storage: -30° to 80°C (-22° to 176°F) operating: -25° to 70°C (-13° to 158°F); minimum temperatures assume that the atmosphere is free of moisture, which could cause moving parts to freeze up.
Rated Insulation Voltage	SDM:400V, All others 500V; (degree of pollution - 3)
Mechanical Ratings	
Mechanical Life	1 million operations. Pull wire models - 25,000 operations
Enclosure Material	Plastic models: fiberglass-reinforced plastic-V0 class (UL94); aluminum models: die-cast aluminum; ZAMAK models: zinc alloy
Contact Blocks Rating	
Positive Opening	Yes, all models
Electrical Ratings	AC15 Make: 60A@120VAC; 30A @ 240VAC; 18A @ 400VAC Break: 10A @ 24VAC; 6.5A @130VAC; 3.1A @ 230VAC; 1.8A @ 400VAC
	DC13 2.8A @ 24VDC; 0.5A @ 110VDC
Maximum Switching Frequency	Contact blocks: all one cycle per second
Repeat Accuracy	0.01mm on the operating points at 1 million operations
Short-Circuit Protection	Cartridge fuses, general purpose, gl 10A-500V 10.3x38 1 100KA
Contact Resistance	25 milli q
Recommended Minimum Operating Speed	With slow-action contacts: 500 mm per minute*
Rated Insulation Voltage	660V
Terminals Marking	According to CENELEC EN 50013
Wiring Connections	2 x 2.5mm ² (AWG14) to 2 x 0.5mm ² (AWG18)
Wiring Terminal Type	Captive screw with self-lifting pressure plate
Wiring Terminal Markings	According to CENELEC EN50013
User Protection	Double insulation (plastic models only)
Contact Blocks Performance	
Operation Frequency	3600 ops/h
Electrical Durability (according to IEC 947-5-1)	Utilization categories AC-15 and DC-13; load factor of 0.5. See table and curves below.
Tools Needed	
Phillips screwdriver, #1 #2 / Hex wrench, 10mm	

*Note: Slow-action contacts must not be operated at very low speeds because of the tendency to maintain the arc if contacts are not rapidly separated.

**Electrical Durability
(according to
IEC 947-5-1)**



DC-13	Slow Action
	<i>Power breaking for a durability of 5 million cycles</i>
24 Volts	12W
48 Volts	9W
110 Volts	6W

Comepi Safety Switches

Contacts Configuration Charts

Chart 1

X11 Slow action break before make 1NO+1NC

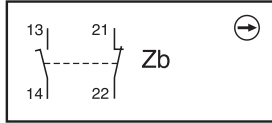


Chart 2

W02 Simultaneous slow action 2NC

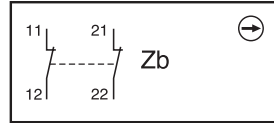


Chart 3

X12 Slow action break before make 1NO+2NC

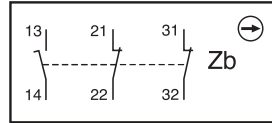
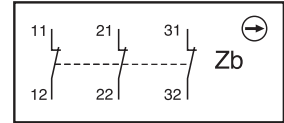


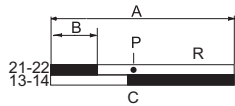
Chart 4

W03 Simultaneous slow action 3NC

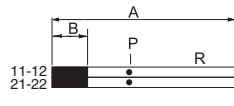


Bar charts for keys, shaft lever or limit switches

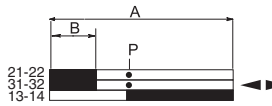
X11



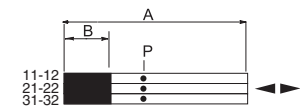
W02



X12



W03



A = Max. travel of the operator in mm or degrees
B = Tripping travel of the N.C. contact
C = Tripping travel of the N.O. contact
P = Point from which positive opening is assured
R = Reset latch activates

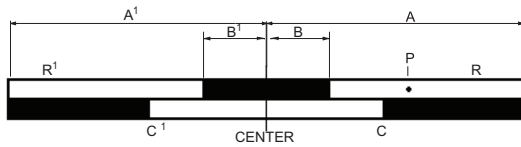
□ = Contact open
 ■ = Contact closed

Part Series	Contact Configuration	Displacement Values mm[in] or degrees				
		A	B	C	P	R
SP2K20, SP2K120, SDM2K20, SDM2K120 Top Key Extraction	X11	21.5 [0.85]	2.0 [0.08]	3.0 [0.12]	3.5 [0.14]	-
	W02	21.5 [0.85]	1.8 [0.07]	-	3.3 [0.13]	-
SP2K20, SP2K120, SDM2K20, SDM2K120 Front Key Extraction	X11	21.5 [0.85]	3.8 [0.15]	4.8 [0.19]	5.3 [0.21]	-
	W02	21.5 [0.85]	3.5 [0.14]	-	5.0 [0.20]	-
SP2K72, SP2K61, SDM2K72, SDM2K61	X11	±90°	±6°	±15°	±31°	-
	W02	±90°	±5°	-	±30°	-
SBM2K40, SCM2K40 Top Key Extraction	X11	26.6 [1.05]	4.6 [0.18]	6.1 [0.24]	5.8 [0.23]	-
	W02	26.6 [1.05]	4.1 [0.16]	-	5.6 [0.22]	-
	X12	26.6 [1.05]	4.3 [0.17]	5.8 [0.23]	5.5 [0.21]	-
	W03	26.6 [1.05]	4.1 [0.16]	-	5.6 [0.22]	-
SBM2K40, SCM2K40 Front Key Extraction	X11	26.6 [1.05]	5.8 [0.23]	7.3 [0.29]	7.0 [0.28]	-
	W02	26.6 [1.05]	5.3 [0.21]	-	6.8 [0.27]	-
	X12	26.6 [1.05]	5.5 [0.21]	7.0 [0.28]	6.7 [0.26]	-
	W03	26.6 [1.05]	5.3 [0.21]	-	6.8 [0.27]	-

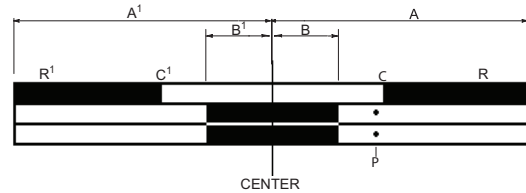
Comepi Safety Switches

Bar charts for cable pulls

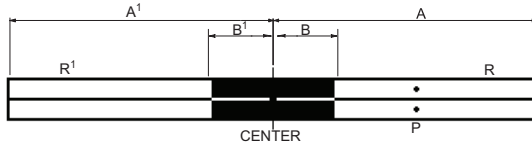
X11



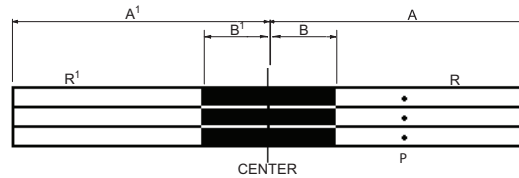
X12



W02



W03

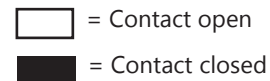


Pull Tension from Center

- A = Max. travel of the operator in mm
- B = Tripping travel of the N.C. contact
- C = Tripping travel of the N.O. contact
- P = Point from which positive opening is assured
- R = Reset latch activates

Lax Tension from Center

- A¹ = Max. travel of the operator in mm
- B¹ = Tripping travel of the N.C. contact
- C¹ = Tripping travel of the N.O. contact
- R¹ = Reset latch activates



Part Series	Contact Configuration	Displacement Values mm[in]									
		A	B	C	P	R	Center**	A1	B1	C1	R1
SBM2K97*	X11	4 [0.16]	1.4[0.06]	2.3 [0.09]	2.6 [0.10]	3.7 [0.15]	0	6 [0.24]	1.4 [0.06]	2.4 [0.09]	4.7 [0.19]
SBM2K99	W02	4 [0.16]	1.2 [0.05]	–	2.4 [0.09]	3.7 [0.15]	0	6 [0.24]	1.2 [0.05]	–	4.7 [0.19]
SCM2K97*	X12	4 [0.16]	1.5 [0.06]	3.0[0.12]	2.7 [0.11]	3.7 [0.15]	0	6 [0.24]	1.5 [0.06]	3.0 [0.12]	4.7 [0.19]
SCM2K99	W03	4 [0.16]	1.4 [0.06]	–	2.6 [0.10]	3.7 [0.15]	0	6 [0.24]	1.4 [0.06]	–	4.7 [0.19]
SDM2K96	X11	4 [0.16]	1.4 [0.06]	2.3 [0.09]	2.6 [0.10]	3.7 [0.15]	0	6 [0.24]	1.4 [0.06]	2.4 [0.09]	4.7 [0.19]
SDM2K98	W02	4 [0.16]	1.2 [0.05]	–	2.4 [0.09]	3.7 [0.15]	0	6 [0.24]	1.2 [0.05]	–	4.7 [0.19]

Part Series	Contact Configuration	Force Values N									
		A	B	C	P	R	Center**	A1	B1	C1	R1
SBM2K97*	X11	300	170	190	240	260	100	0	70	55	40
SBM2K99	W02	300	170	–	240	260	100	0	70	–	40
SCM2K97*	X12	300	170	190	240	260	100	0	70	55	40
SCM2K99	W03	300	170	–	240	260	100	0	70	–	40
SDM2K96	X11	140	95	100	115	120	70	0	50	40	30
SDM2K98	W02	140	95	–	115	120	70	0	50	–	30

Notes:
 * K97 models do not support Rest Latch (R).
 **At center line, green ring on switch will be visible.

Comepi Safety Switches



KEY13

KEY14

KEY15

KEY16

KEY17

KEY18

KEY19

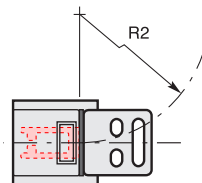
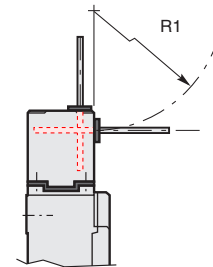
KEY35

KEY36

KEY39

Safety Limit Switches Operating Keys

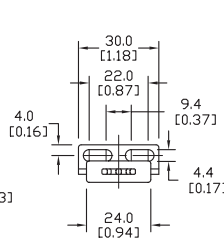
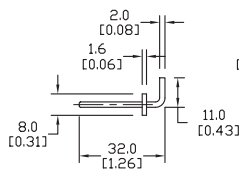
Part Number	Price	Description	Weight (lb)	Mounting Holes Spacing mm [in]	Use With	Minimum Values mm [in]	
						R1	R2
KEY13		Actuator tongue. Key with 90-degree bent mounting tab.	0.1	22 [0.87]	SP2K and SDM2K series safety switches	400 [15.75]	400 [15.75]
KEY14		Actuator tongue. Key with straight mounting tab.	0.1	22 [0.87]		400 [15.75]	400 [15.75]
KEY15		Actuator tongue. Key with 90-degree bent mounting tab.	0.1	13 [0.51]		400 [15.75]	400 [15.75]
KEY16		Actuator tongue. Key with straight mounting tab.	0.1	13 [0.51]		400 [15.75]	400 [15.75]
KEY17		Shock-absorbing actuator tongue. Key with 90-degree bent mounting tab.	0.1	15 [0.59]		250 [9.84]	350 [13.78]
KEY18		Shock-absorbing actuator tongue. Key with straight mounting tab.	0.1	15 [0.59]		350 [13.78]	350 [13.78]
KEY19		Actuator tongue. Key with adjustable mounting tab.	0.1	40 [1.57]	SBM2K and SCM2K series safety switches	180 [7.09]	200 [7.87]
KEY35		Actuator tongue. Key with 90-degree bent mounting tab.	0.1	13 [0.51]		400 [15.75]	400 [15.75]
KEY36		Actuator tongue. Key with straight mounting tab.	0.1	13 [0.51]		400 [15.75]	400 [15.75]
KEY39		Actuator tongue. Key with adjustable mounting tab.	0.1	40 [1.57]		180 [7.09]	200 [7.87]



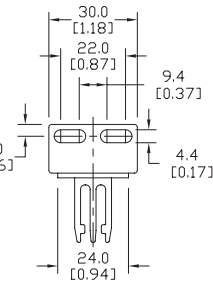
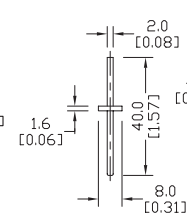
Dimensions

mm[in]

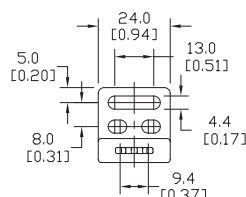
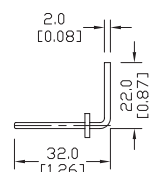
KEY13



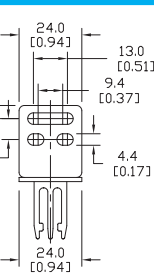
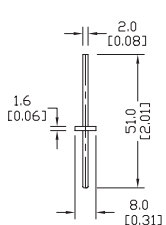
KEY14



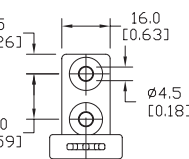
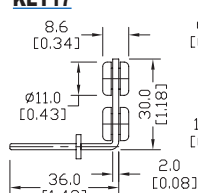
KEY15



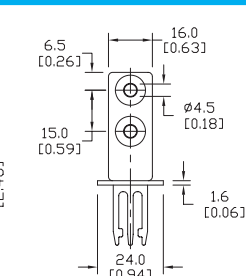
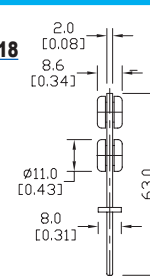
KEY16



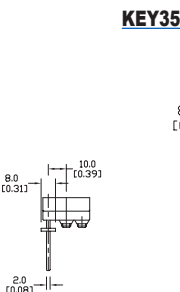
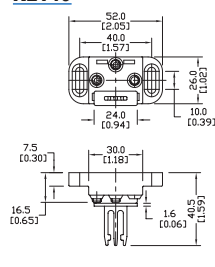
KEY17



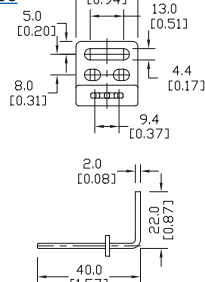
KEY18



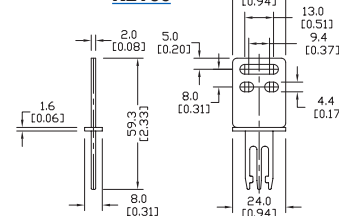
KEY19



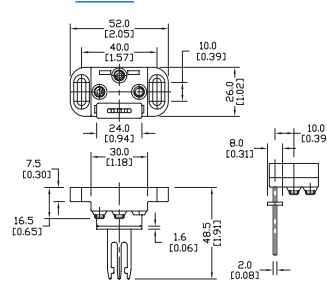
KEY35



KEY36



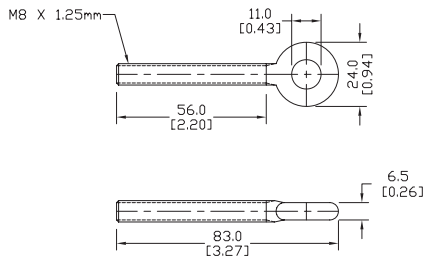
KEY39



Comepi Safety Switches Accessories



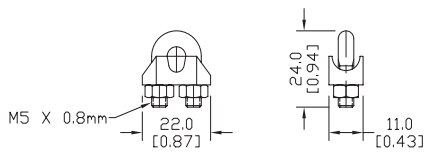
OCC08



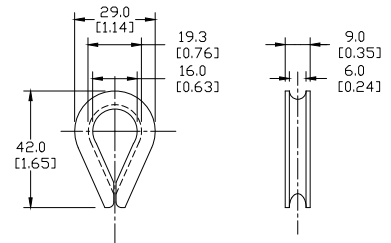
Safety Limit Switches Cable Pull Accessories			
Part Number	Price	Description	Weight (lb)
OCC08		Eye bolt	0.2
MOR05		Cable Clamp	0.1
RED05		Eye thimble	0.0
FUN05M015		15 meter length steel cable 5 mm diameter, Red	2.0
FUN05M025		25 meter length steel cable, 5 mm diameter, Red	3.3



MOR05



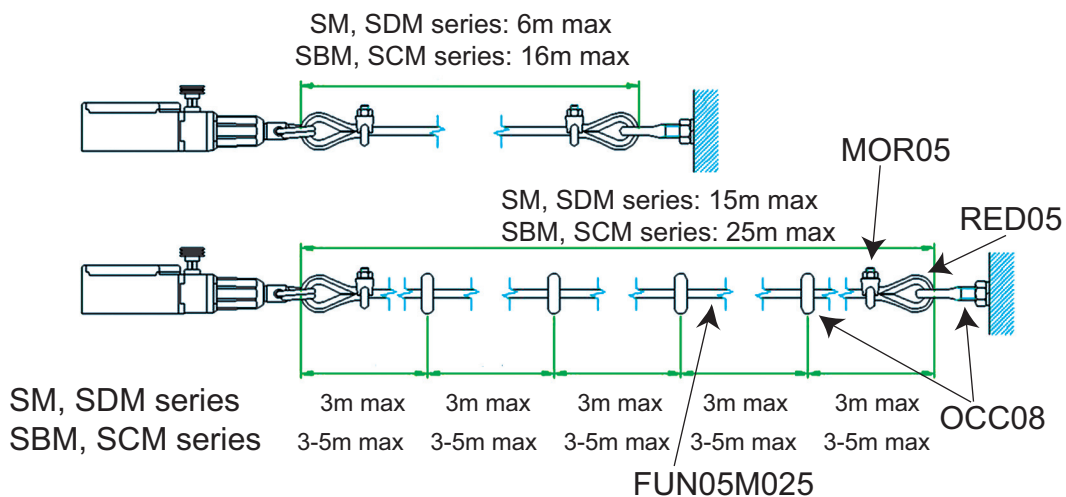
RED05



FUN05M025

All dimensions are in mm [in].

Installation example



Safety Products



Warning: Safety products sold by AutomationDirect are Safety components only. The purchaser/installer is solely responsible for the application of these components and ensuring all necessary steps have been taken to assure each application and use meets all performance and applicable safety requirements and/or local, national and/or international safety codes as required by the application. AutomationDirect cannot certify that our products, used solely or in conjunction with other AutomationDirect or other vendors' products, will assure safety for any application. Any person using or applying any products sold by AutomationDirect is responsible for learning the safety requirements for their individual application and applying them, and therefore assumes all risks, and accepts full and complete responsibility, for the selection and suitability of the product for their respective application.

AutomationDirect does not provide design or consulting services, and cannot advise whether any specific application or use of our products would ensure compliance with the safety requirements for any application.