Comepi Safety Limit Switches

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

Easy to use, electromechanical limit 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	$B10_d$	Dimensions Body / Head	Contact Config. Diagram	Weight (lbs.)	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					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		Figures 1, 7	1	0.2	C
SP2K72W02	<--->		One					Figures 1, 7	2	0.2	C
SP2K61X11	<--->	90° adjustable head, lever hinge interlock	One					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		Figures 2, 5	1	0.6	E
SDM2K20W02	<--->		Three					Figures 2, 5	2	0.6	E
SDM2K120X11	<--->	360° adjustable head. tongue (key) interlock	Three					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		Figures 2, 7	1	0.6	G
SDM2K72W02	<--->		Three					Figures 2, 7	2	0.6	G
SDM2K61X11	<--->	90° adjustable head. lever hinge interlock	Three					Figures 2, 8	1	0.6	H
SDM2K61W02	<--->		Three					Figures 2, 8	2	0.6	H
SDM2K96X11	<--->	Cable-pull interlock, no reset	Three				25,000 operations	Figures 2, 9	1	0.6	I
SDM2K96W02	<--->		Three					Figures 2, 9	2	0.6	I
SDM2K98X11	<--->	Cable-pull interlock with reset	Three					Figures 2, 10	1	0.6	J
SDM2K98W02	<--->		Three					Figures 2, 10	2	0.6	J
SBM2K40X11	<--->	90° adjustable head, tongue (key) interlock	One	30N		45N	2,000,000 operations	Figures 3, 11	1	0.4	K
SBM2K40W02	<--->		One					Figures 3, 11	2	0.4	K
SBM2K40X12	<--->		One					Figures 3, 11	3	0.4	K
SBM2K40W03	<--->		One					Figures 3, 11	4	0.4	K
SBM2K97X11	<--->	Cable-pull interlock, no reset	One				25,000 operations	Figures 3, 12	1	0.6	L
SBM2K97W02	<--->		One					Figures 3, 12	2	0.6	L
SBM2K97X12	<--->		One					Figures 3, 12	3	0.6	L
SBM2K97W03	<--->		One					Figures 3, 12	4	0.6	L
SBM2K99X11	<--->	Cable-pull interlock with reset	One					Figures 3, 13	1	0.6	M
SBM2K99W02	<--->		One					Figures 3, 13	2	0.6	M
SBM2K99X12	<--->		One					Figures 3, 13	3	0.6	M
SBM2K99W03	<--->		One					Figures 3, 13	4	0.6	M
SCM2K40X11	<--->	90° adjustable head, tongue (key) interlock	Three	30N		45N	2,000,000 operations	Figures 4, 11	1	0.5	N
SCM2K40W02	<--->		Three					Figures 4, 11	2	0.5	N
SCM2K40X12	<--->		Three					Figures 4, 11	3	0.5	N
SCM2K40W03	<--->		Three					Figures 4, 11	4	0.5	N
SCM2K97X11	<--->	Cable-pull interlock, no reset	Three				25,000 operations	Figures 4, 12	1	0.7	O
SCM2K97W02	<--->		Three					Figures 4, 12	2	0.7	O
SCM2K97X12	<--->		Three					Figures 4, 12	3	0.7	O
SCM2K97W03	<--->		Three					Figures 4, 12	4	0.7	O
SCM2K99X11	<--->	Cable-pull interlock with reset	Three					Figures 4, 13	1	0.7	P
SCM2K99W02	<--->		Three					Figures 4, 13	2	0.7	P
SCM2K99X12	<--->		Three					Figures 4, 13	3	0.7	P
SCM2K99W03	<--->		Three					Figures 4, 13	4	0.7	P

A B

C D

E F

G H

I J

K L

M N

O P

Comepi Safety Limit Switches

Switch Body Dimensions mm [in]

Figure 1: SP2K body

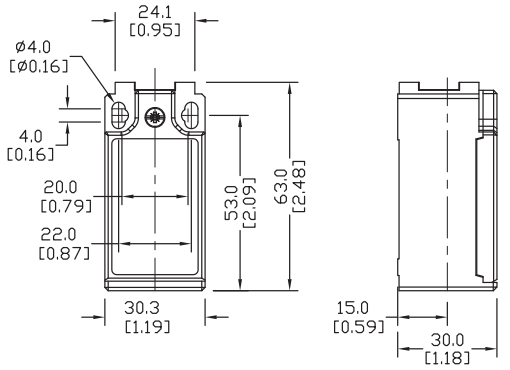


Figure 2: SDM2K body

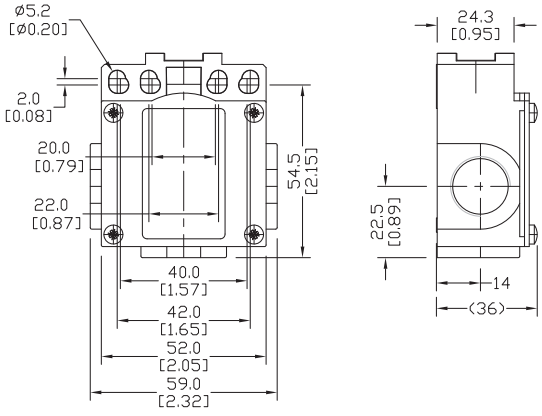


Figure 3 : SBM2K body

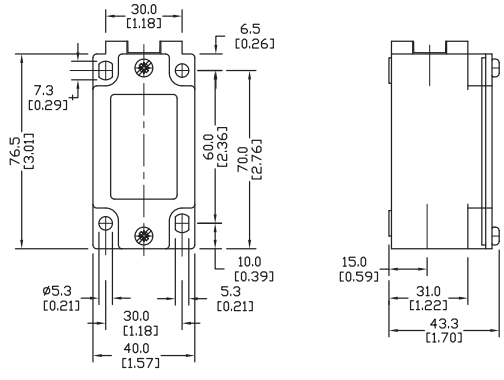
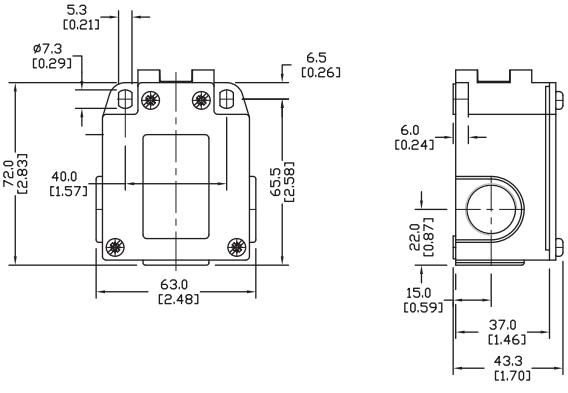


Figure 4: SCM2K body



Actuator Dimensions mm [in]

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

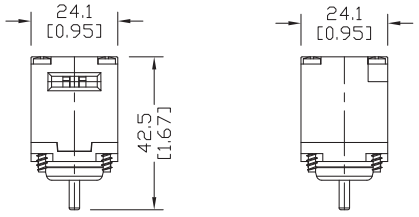


Figure 6: Fully turnable 360° head - SP2K120, SDM2K120 models

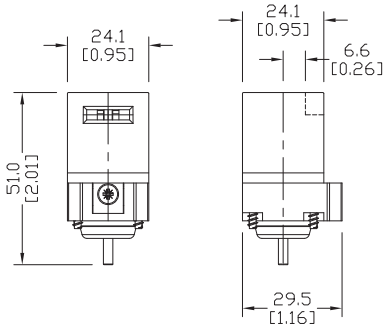


Figure 7: 90° adjustable head with shaft hinge interlock - SP2K72, SDM2K72 models

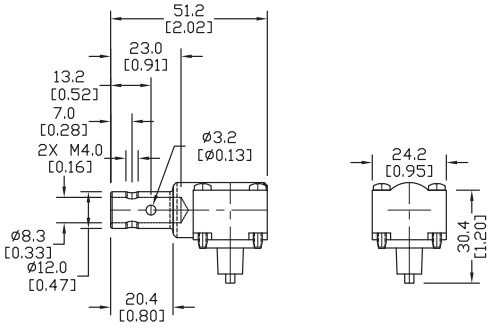
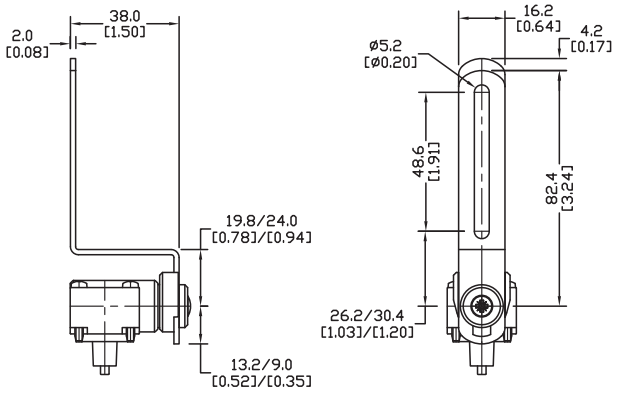


Figure 8: 90° adjustable head with lever hinge interlock - SP2K61, SDM2K61 models



Comepi Safety Limit Switches

Actuators Dimensions mm [in]

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

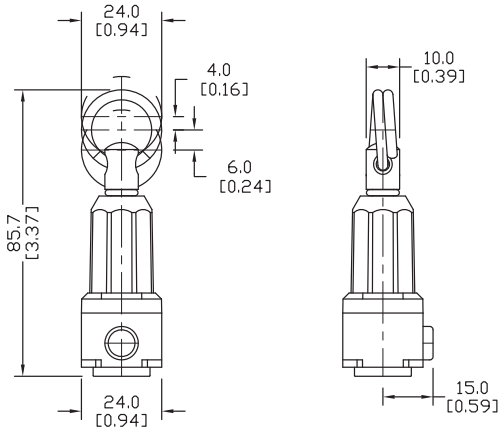


Figure 10: Pull wire with reset for emergency stop - SDM2K98 models

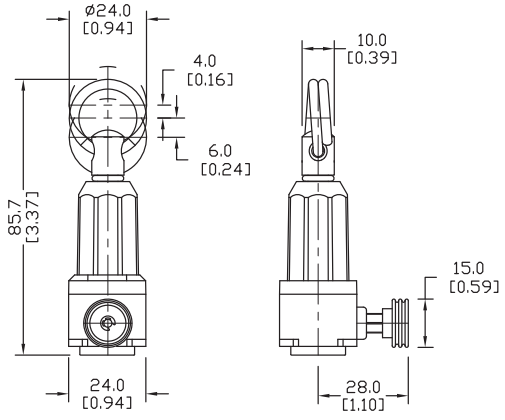


Figure 11: 90° adjustable head - SBM2K40, SCM2K40 models

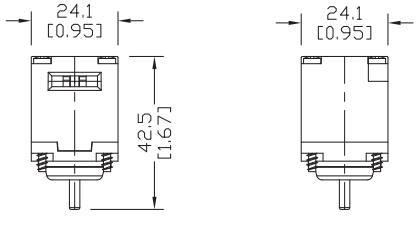


Figure 12: Pull wire without reset for simple stop - SBM2K97 and SCM2K97 models

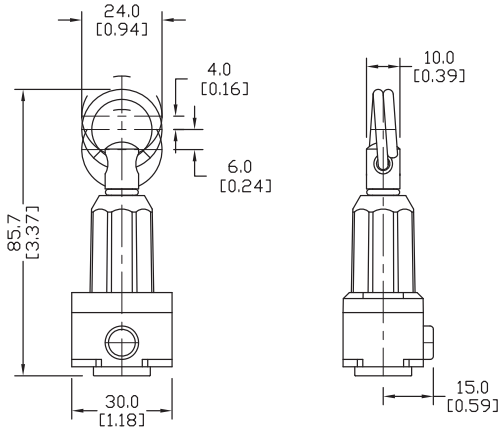
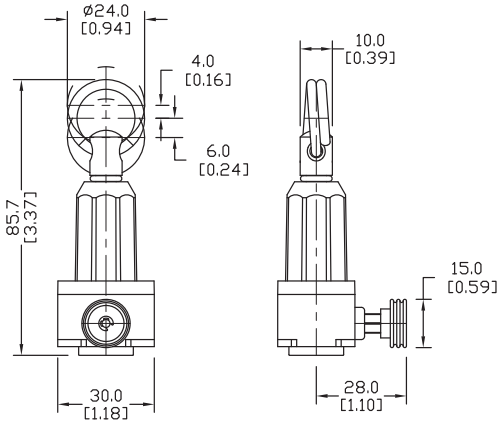


Figure 13: Pull wire with reset for emergency stop - SBM2K99 and SCM2K99 models



Comepi Safety Limit Switches

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- 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 ⊕
- Conduit threads - 1/2" NPT adapter

A

B

C

D

F

E

AP2R Series Safety Limit Switches Selection Chart

Part Number	Price	Actuator Type	No. of Conduit Holes	Max. Actuation Speed (m/s)	Min. Actuation Force (N) /Torque (Nm)	Min. Positive Opening Force (N) /Torque (Nm)	$B10_d$	Head Dimensions	Contact Config. Diagram	Weight (lbs.)	Photo
AP2R11X11	<--->	Steel plunger with reset	One	0.5	9N	44N	2,000,000 operations	Figure 1	1	0.2	A
AP2R11W02	<--->		One					Figure 1	2	0.2	
AP2R13X11	<--->	Steel plunger with nylon roller with reset	One	0.3	12N	44N		Figure 2	1	0.2	B
AP2R13W02	<--->		One					Figure 2	2	0.2	
AP2R31X11	<--->	Steel plunger with one-way horizontal actuated nylon roller with reset	One	1.0	7N	24N		Figure 3	1	0.2	C
AP2R31W02	<--->		One					Figure 3	2	0.2	
AP2R32X11	<--->	Steel plunger with one-way vertical actuated nylon roller with reset	One					Figure 4	1	0.2	D
AP2R32W02	<--->		One					Figure 4	2	0.2	
AP2R41X11	<--->	Lever with nylon roller with reset	One	1.5	0.10Nm	0.32Nm		Figure 5	1	0.2	E
AP2R41W02	<--->		One					Figure 5	2	0.2	
AP2R51X11	<--->	Adjustable lever with nylon roller with reset	One					Figure 6	1	0.2	F
AP2R51W02	<--->		One					Figure 6	2	0.2	

Dimensions mm [in]

AP2R Series Body

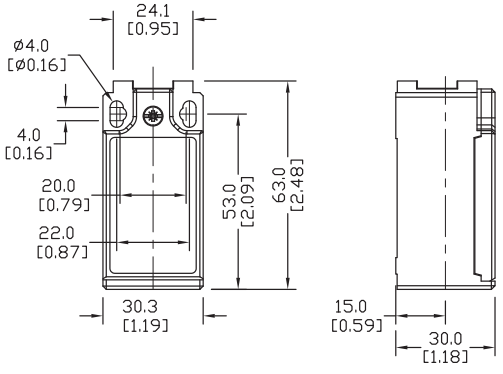
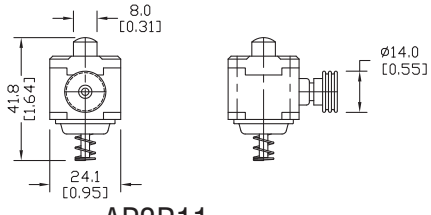
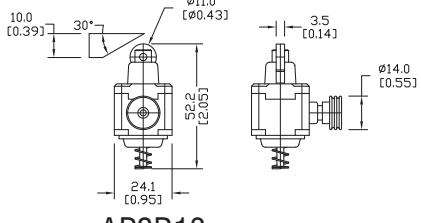


Figure 1



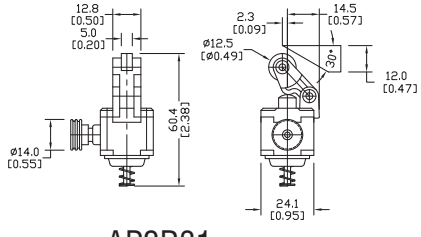
AP2R11

Figure 2



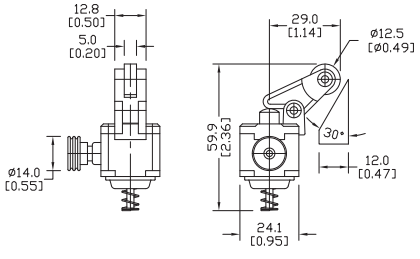
AP2R13

Figure 3



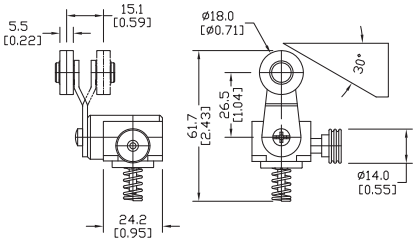
AP2R31

Figure 4



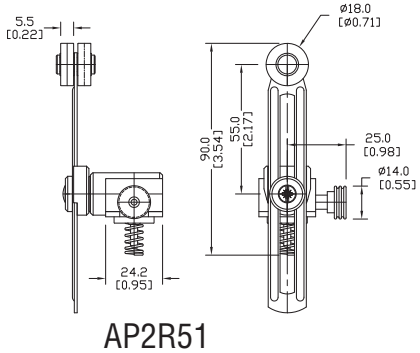
AP2R32

Figure 5



AP2R41

Figure 6



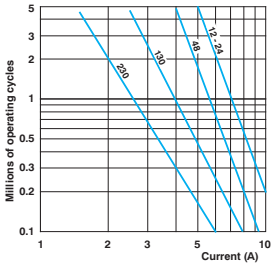
AP2R51

Comepi Safety Limit 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 Ω
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)

AC-15 Slow Action



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

Comepi Safety Limit Switches

Contacts Configuraton Charts

Chart 1

X11 Slow action break before make 1NO+1NC

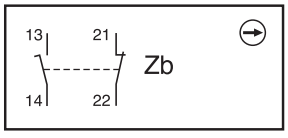


Chart 2

W02 Simultaneous slow action 2NC

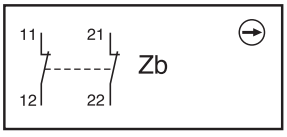


Chart 3

X12 Slow action break before make 1NO+2NC

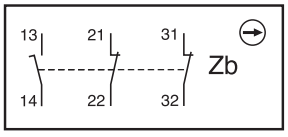
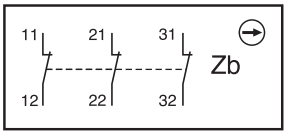


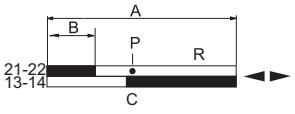
Chart 4

W03 Simultaneous slow action 3NC

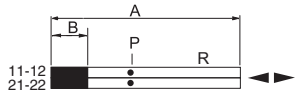


Bar charts for keys, shaft lever or limit switches

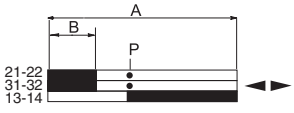
X11



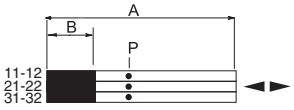
W02



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

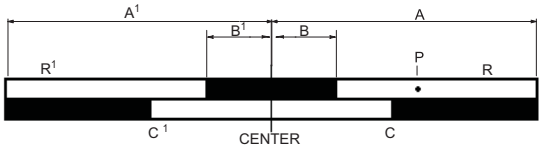
= Contact open
= Contact closed

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)	–
AP2R11	X11	5.6 (0.22)	1.6 (0.06)	2.5 (0.10)	3.2 (0.13)	4.4 (0.17)
	W02	5.6 (0.22)	1.5 (0.06)	–	3.1 (0.12)	4.4 (0.17)
AP2R13	X11	9.6 (0.38)	3.2 (0.13)	4.6 (0.18)	6.0 (0.23)	7.5 (0.30)
	W02	9.6 (0.38)	3.0 (0.12)	–	5.9 (0.23)	7.5 (0.30)
AP2R31, AP2R32	X11	21.0 (0.83)	6.0 (0.24)	8.6 (0.34)	10.5 (0.41)	15.6 (0.61)
	W02	21.0 (0.83)	5.7 (0.22)	–	10.2 (0.40)	15.6 (0.61)
AP2R41, AP2R51	X11	±74°	±21°	±30°	±37°	±60°
	W02	±74°	±19°	–	±37°	±60°

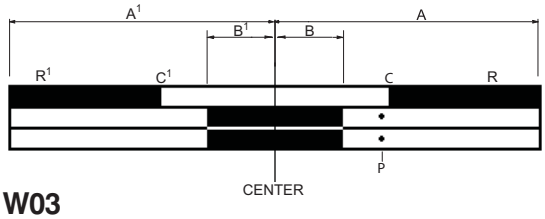
Comepi Safety Limit Switches

Bar charts for cable pulls

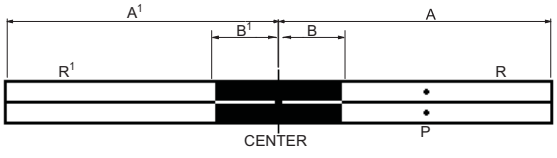
X11



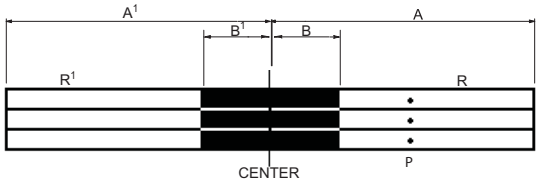
X12



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 latchactivates

Lax Tension from Center

A^1 = Max. travel of the operator in mm
B^1 = Tripping travel of the N.C. contact
C^1 = Tripping travel of the N.O. contact
R^1 = Reset latch activates

= Contact open
= Contact closed

Part Series	Contact Configuration	Displacement Values mm(in)									
		A	B	C	P	R	Center*	A^1	B^1	C^1	R^1
SBM2K97, SBM2K99, SCM2K97, SCM2K99	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)
	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)
	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)
	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, SDM2K98	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)
	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*	A^1	B^1	C^1	R^1
SBM2K97, SBM2K99, SCM2K97, SCM2K99	X11	300	170	190	240	260	100	0	70	55	40
	W02	300	170	–	240	260	100	0	70	–	40
	X12	300	170	190	240	260	100	0	70	55	40
	W03	300	170	–	240	260	100	0	70	–	40
SDM2K96, SDM2K98	X11	140	95	100	115	120	70	0	50	40	30
	W02	140	95	–	115	120	70	0	50	–	30

Note: At center line, green ring on switch will be visible.

Comepi Safety Limit Switches

KEY13

KEY14

KEY15
KEY35

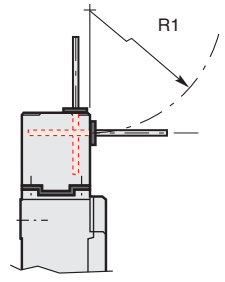
KEY16
KEY36

KEY17

KEY18

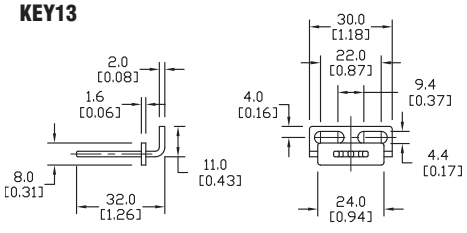
KEY19
KEY39

Safety Limit Switches Operating Keys							
Part Number	*Price*	*Description*	*Weight (lbs.)*	*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]		180 [7.09]	200 [7.87]
KEY35	<--->	Actuator tongue. Key with 90-degree bent mounting tab.	0.1	13 [0.51]	SBM2K and SCM2K series safety switches	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]

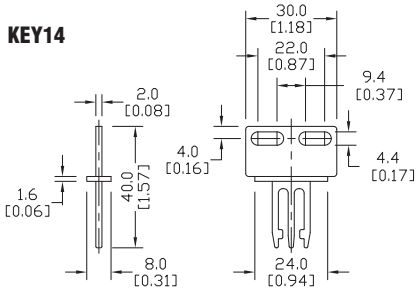


Dimensions mm[in]

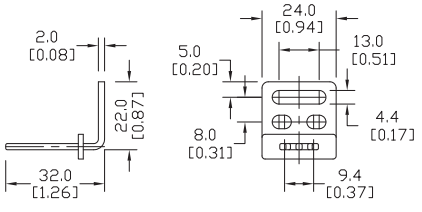
KEY13



KEY14



KEY15



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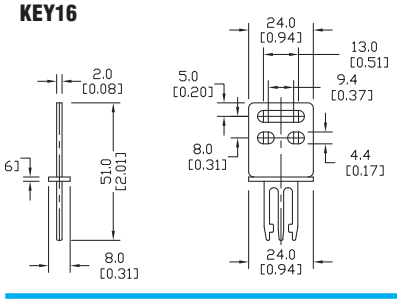
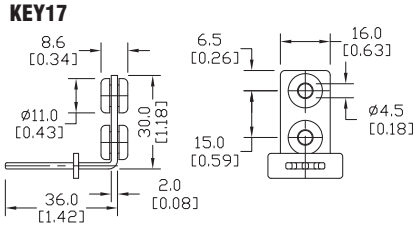
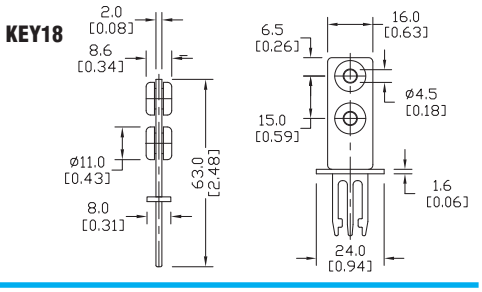


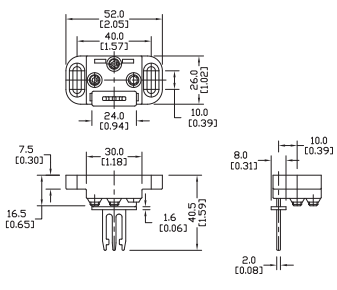
KEY17



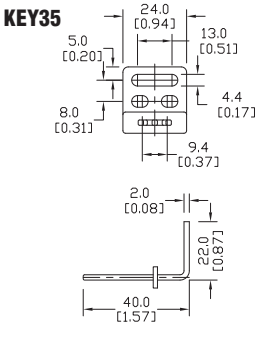
KEY18



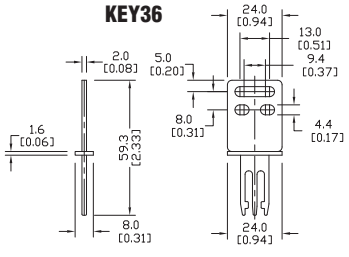
KEY19



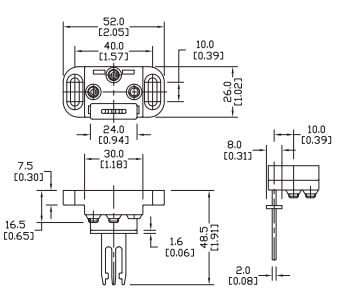
KEY35



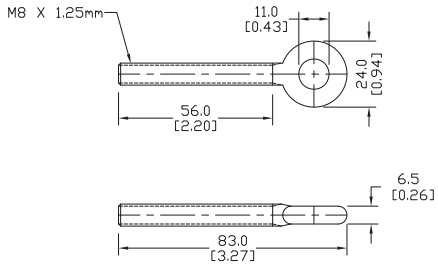
KEY36



KEY39

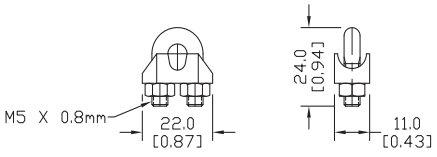


Comepi Safety Limit Switches Accessories

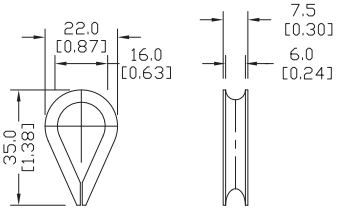


OCC08

Safety Limit Switches Cable Pull Accessories			
Part Number	***Price***	***Description***	***Weight (lbs.)***
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

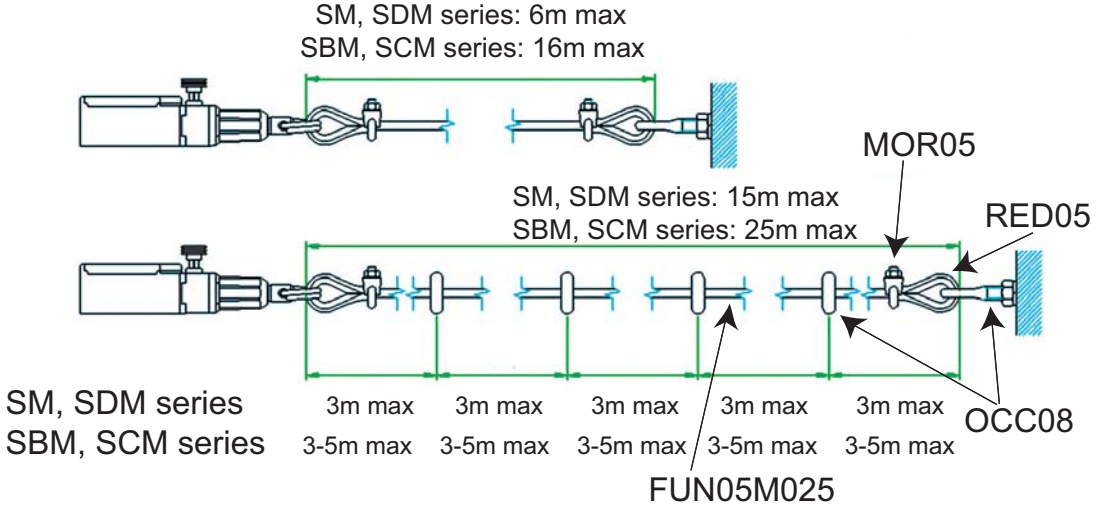


RED05

FUN05M025

All dimensions are in mm [in].

Installation example



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