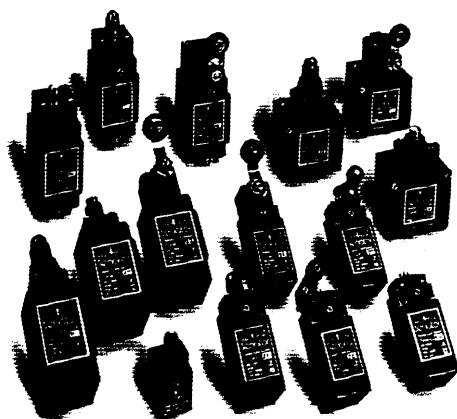




Guardmaster®
Specialists in machinery safety

Senator & Imp

safety limit switches



(Imp only)



Large selection of actuator heads

Positive-operation, forced disconnection of contacts

Contacts, 1 x N/C + 1 x N/O or 2 x N/C

Conforms to EN 1088, EN 60947-5-1,
EN 292, EN 60204-1

features

The Senator safety-limit switches have been developed to provide a range of options including metal or plastic cases in various sizes, a choice of snap-acting, slow-break/make or 2 x N/C contacts and a choice of actuator heads.

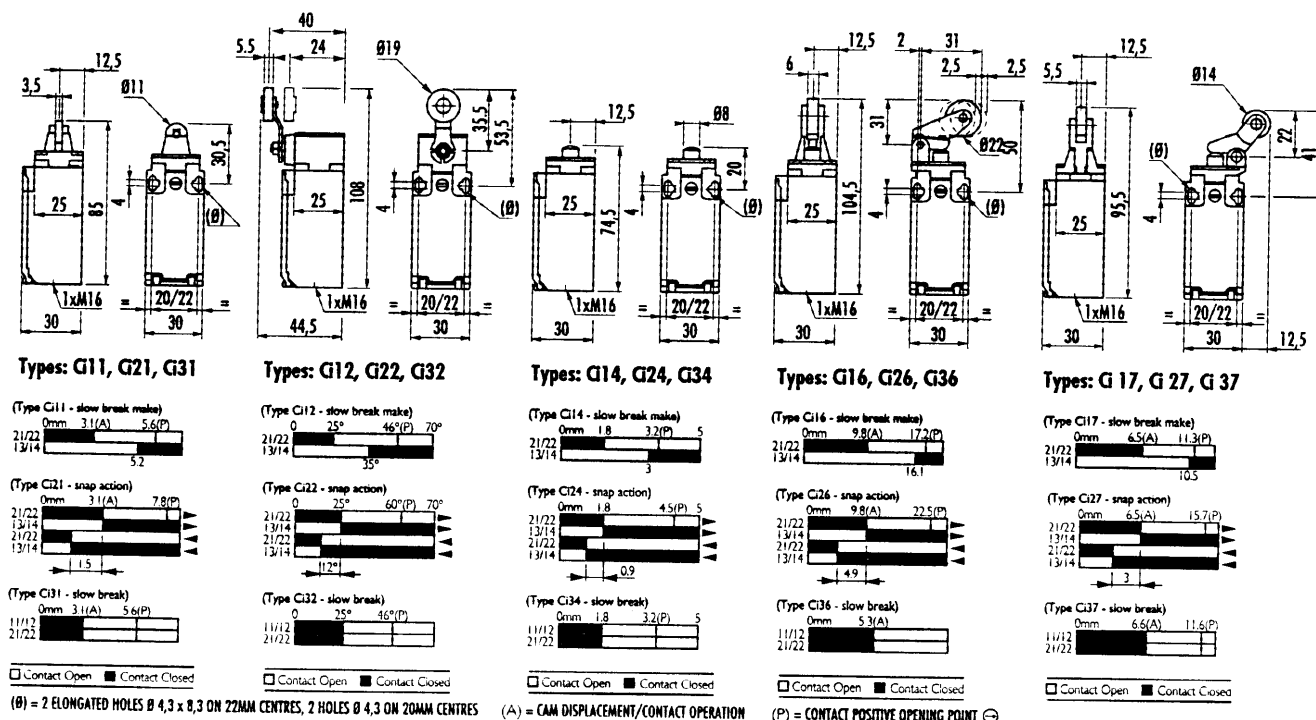
The Senator range offers the option of rotating the head before installation to allow ease of mounting. Some lever switches also incorporate a 'programmable head' allowing operation of the contacts when the lever is operated centre to right, centre to left or either way.

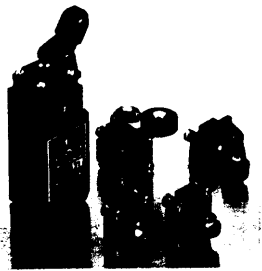
The Imp offers the safety-switch performance of bigger units in a compact case. Designed with two mounting-hole options and a choice of actuator positions, the Imp will fit in the most confined spaces.

Guardmaster limit switches can be used for applications other than guard doors, for example on moving machine beds, crane arms, etc.

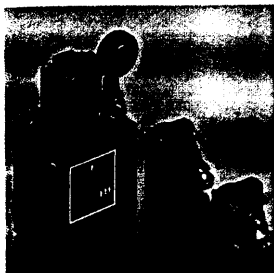
Operation of the limit switches is achieved by the sliding action of the guard or other moving objects depressing the plunger or lever. It is important that, upon actuation, the guard or other moving objects should not pass completely over the switch and allow the plunger or lever to return to its original position.

dimension drawings

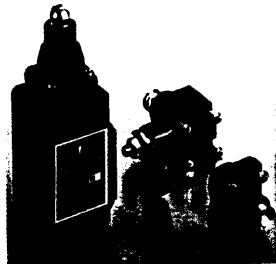




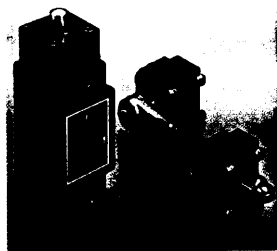
Ci range – options include roller, roller lever, plunger, roller plunger and cranked lever.



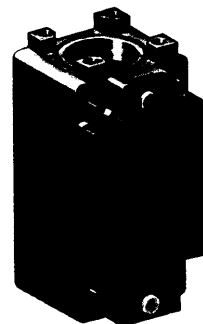
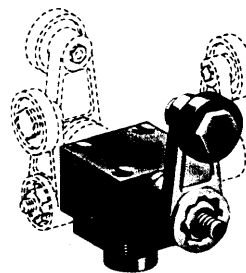
CX range – options include roller, roller lever, plunger.



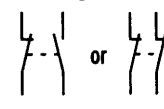
CP range – options include roller, roller lever, plunger.



CM range – options include roller, roller lever, plunger.

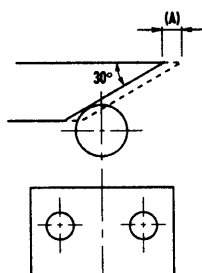


Senator contact arrangements

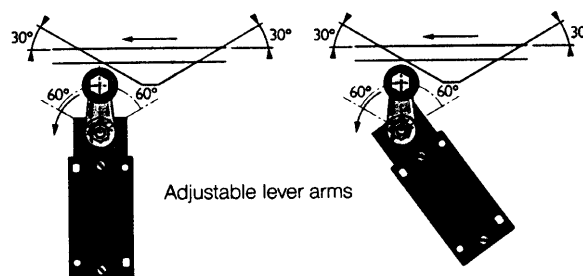


All Senators have the option of rotating the head 360° in 90° increments to give simple installation. Roller-lever operated Senators also have the option to mount the roller to the front or back of the lever.

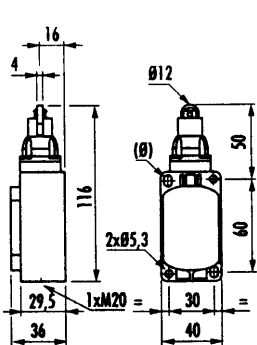
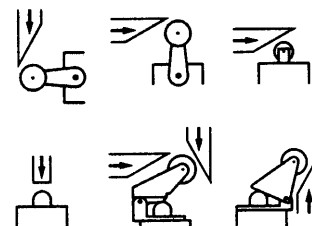
Cam displacement



The actuating cam should be profiled at 30° for optimum operation. (Note: plunger-type switches operate from a flat profile.)



Operating examples



Types CP11, CP21, CP31

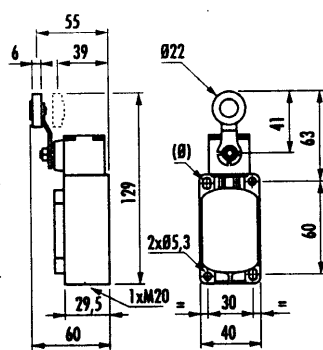
(Type CP11 - slow break make)
0mm 3.1(A) 5.6(P)
21/22 13/14

(Type CP21 - snap action)
0mm 3.1(A) 7.8(P)
21/22 13/14 21/22 13/14

(Type CP31 - slow break)
0mm 3.1(A) 5.6(P)
11/12 21/22

□ Contact Open ■ Contact Closed

(Ø) : 2 ELONGATED HOLES Ø 5,3 x 7,3



Types CP12, CP22, CP32

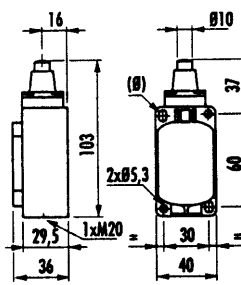
(Type CP12 - slow break make)
0 23° 42°(P) 80°
21/22 13/14

(Type CP22 - snap action)
0 23° 58°(P) 80°
21/22 13/14 21/22 13/14

(Type CP32 - slow break)
0 23° 42°(P) 80°
21/22

□ Contact Open ■ Contact Closed

(A) = CAM DISPLACEMENT/CONTACT OPERATION



Types CP14, CP24, CP34

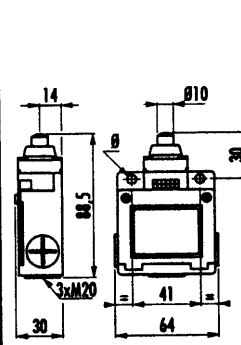
(Type CP14 - slow break make)
0mm 1.8 3.2(P) 5.5
21/22 13/14

(Type CP24 - snap action)
0mm 1.8 4.5(P) 5.5
21/22 13/14 21/22 13/14

(Type CP34 - slow break)
0mm 1.8 3.2(P) 5.5
11/12 21/22

□ Contact Open ■ Contact Closed

(P) = CONTACT POSITIVE OPENING POINT ⊕



Types CX14, CX24, CX34

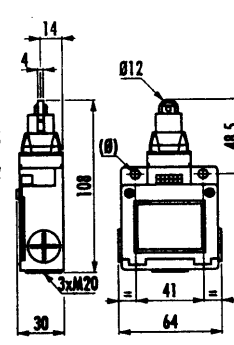
(Type CX14 - slow break make)
0mm 1.8 3.2(P) 5.5
21/22 13/14

(Type CX24 - snap action)
0mm 1.8 4.5(P) 5.5
21/22 13/14 21/22 13/14

(Type CX34 - slow break)
0mm 1.8 3.2(P) 5.5
11/12 21/22

□ Contact Open ■ Contact Closed

(Ø) : 2 ELONGATED HOLES Ø 5,2 x 6,2



Types CX11, CX21, CX31

(Type CX11 - slow break make)
0mm 3.1(A) 5.6(P)
21/22 13/14

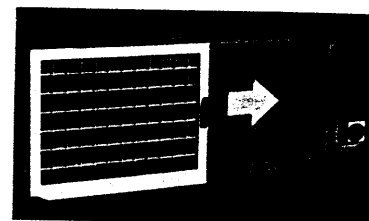
(Type CX21 - snap action)
0mm 3.1(A) 7.8(P)
21/22 13/14 21/22 13/14

(Type CX31 - slow break)
0mm 3.1(A) 5.6(P) 9
11/12 21/22

□ Contact Open ■ Contact Closed

(P) = CONTACT POSITIVE OPENING POINT ⊕

Senator	
Approvals	CSA
Conforming to standards	EN 60947-5-1, EN 1088, EN 292, EN 60204-1
Safety contacts	1 x N/C + 1 x N/O or 2 x N/C
Utilisation category	AC 15 - DC 13
AC (Ue)	240 V
(Ie)	3 A
DC (Ue) (Ie)	250 V 0.27 A
Thermal current (Ith)	10 A
Safety contact gap	>2 x 2 mm
Rtd insulation voltage	(Ui) 500 V
Rtd impulse withstand voltage	(Uimp) 6000 V
Pollution degree	3
Actuator travel for positive opening	Various (see diagrams)
Case material	(Ci, CP) Glass-reinforced plastic, (CX, CM) Die-cast alloy
Actuator material	Stainless steel
Protection	(Ci, CP) IP65, (CX, CM) IP66
Conduit entry	(CM) 1 x M20, (CX) 3 x M20, (Ci) 1 x M16
Operating temperature	-25°C to +70°C
Fixing	(Ci) M4, (CP, CX, CM) M5
Mounting	Any position
Mechanical life	1 x 10 ⁶
Colour	Red and black
Imp	
Approvals	BG, CSA
Conforming to standards	EN 60947-5-1, EN 1088, EN 292, EN 60204-1
Safety contacts	1 x N/C positive break
Utilisation category	AC 15
AC (Ue)	500 V 250 V 100 V
(Ie)	1 A 2 A 5 A
DC	250 V 0.5A, 24 V 2 A
Max. switched current/voltage/load	500 V/500 VA
Thermal current (Ith)	10 A
Minimum current	5 V 5 mA DC
Safety contact gap	>2 x 2 mm
Rtd insulation voltage	(Ui) 500 V
Rtd impulse withstand voltage	(Uimp) 2500 V
Auxiliary contacts	1 x N/O
Pollution degree	3
Actuator travel for positive opening	2.5 mm



Break contact minimum force	10 N
Maximum actuator travel	5 mm
Maximum actuation speed	160 mm per sec
Maximum actuation frequency	2 cycle per sec
Case material	UL approved glass-filled polyester
Actuator material	Acetal
Protection	IP30
Conduit entry	3 x breakout
Operating temperature	-25°C to +80°C
Fixing	2 x M3 front or 2 x M4 top
Mechanical life	10 x 10 ⁶
Electrical life	1 x 10 ⁶
Colour	Red

Note: The safety contacts of the Guardmaster switches are described as normally closed (N/C), i.e. with the guard closed, actuator in place (where relevant) and the machine able to be started.

Type	Contacts	Cable entry	Part no.
Plastic case limit switches			
SB = Slow break contacts, SA = Snap acting contacts, SBM = Slow break before make contacts			
Senator (Ci-31)	2N/C (SB)	1xM16	931164831
Senator (Ci-21)	1N/C+1N/O (SA)	1xM16	931162831
Senator (Ci-11)	1N/C+1N/O (SBM)	1xM16	931161831
Senator (Ci-32)	2N/C (SB)	1xM16	931164832
Senator (Ci-22)	1N/C+1N/O (SA)	1xM16	931162832
Senator (Ci-12)	1N/C+1N/O (SBM)	1xM16	931161832
Senator (Ci-34)	2N/C (SB)	1xM16	931164834
Senator (Ci-24)	1N/C+1N/O (SA)	1xM16	931162834
Senator (Ci-14)	1N/C+1N/O (SBM)	1xM16	931161834
Senator (Ci-36)	2N/C (SB)	1xM16	931164836
Senator (Ci-26)	1N/C+1N/O (SA)	1xM16	931162836
Senator (Ci-16)	1N/C+1N/O (SBM)	1xM16	931161836
Senator (Ci-37)	2N/C (SB)	1xM16	931164837
Senator (Ci-27)	1N/C+1N/O (SA)	1xM16	931162837
Senator (Ci-17)	1N/C+1N/O (SBM)	1xM16	931161837
Senator (CP-31)	2N/C (SB)	1xM20	921164821
Senator (CP-21)	1N/C+1N/O (SA)	1xM20	921162821
Senator (CP-11)	1N/C+1N/O (SBM)	1xM20	921161821
Senator (CP-32)	2N/C (SB)	1xM20	921164822
Senator (CP-22)	1N/C+1N/O (SA)	1xM20	921162822
Senator (CP-12)	1N/C+1N/O (SBM)	1xM20	921161822
Senator (CP-34)	2N/C (SB)	1xM20	921164824
Senator (CP-24)	1N/C+1N/O (SA)	1xM20	921162824
Senator (CP-14)	1N/C+1N/O (SBM)	1xM20	921161824
Senator (CP-11-Ex)	1N/C+1N/O	pre-wired	922164851
Senator (CP-14-Ex)	1N/C+1N/O	pre-wired	922164854
Imp 1 (roller parallel to switch front)	1N/C+1N/O	3xbreakouts	18001
Imp 2 (roller parallel to switch side)	1N/C+1N/O	3xbreakouts	18002

Type	Contacts	Cable entry	Part no.
Metal case limit switches			
SB = Slow break contacts, SA = Snap acting contacts, SBM = Slow break before make contacts			
Senator (CX-31)	2N/C (SB)	3xM20	951164821
Senator (CX-21)	1N/C+1N/O (SA)	3xM20	951162821
Senator (CX-11)	1N/C+1N/O (SBM)	3xM20	951161821
Senator (CX-32)	2N/C (SB)	3xM20	951164822
Senator (CX-22)	1N/C+1N/O (SA)	3xM20	951162822
Senator (CX-12)	1N/C+1N/O (SBM)	3xM20	951161822
Senator (CX-34)	2N/C (SB)	3xM20	951164804
Senator (CX-24)	1N/C+1N/O (SA)	3xM20	951162804
Senator (CX-14)	1N/C+1N/O (SBM)	3xM20	951161804
Senator (CM-31)	2N/C (SB)	1xM20	911164811
Senator (CM-21)	1N/C+1N/O (SA)	1xM20	911162811
Senator (CM-11)	1N/C+1N/O (SBM)	1xM20	911161811
Senator (CM-32)	2N/C (SB)	1xM20	911164812
Senator (CM-22)	1N/C+1N/O (SA)	1xM20	911162812
Senator (CM-12)	1N/C+1N/O (SBM)	1xM20	911161812
Senator (CM-34)	2N/C (SB)	1xM20	911164814
Senator (CM-24)	1N/C+1N/O (SA)	1xM20	911162814
Senator (CM-14)	1N/C+1N/O (SBM)	1xM20	911161814

Note: Replacement heads and actuators are available. Please contact Guardmaster for further details.

For Ex and details refer to the Ex and interlock switches section.