

Position Interlock Switches
Safety Limit Switches
Large Metal Senator



Description

The large metal Senator safety limit switches conform to EN 50041 and 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 with 2, 3 or 4 contact configurations and a choice of actuator heads.

The Senator range offers the option of rotating the head in 90° increments before installation to allow ease of mounting.

Allen-Bradley/Guardmaster limit switches can be used in other applications other than guard doors, for example on moving machine beds, crane arms, lifts, elevators, etc.

Operation of these limit switches is achieved by the sliding action of the guard or other moving object deflecting the plunger or lever. For safety applications 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.

Features

- Large selection of actuator heads
- Positive operation, forced disconnection of contacts
- Snap-acting, slow make before break or slow break before make contact blocks
- Contacts 1 N.C. + 1 N.O., 2 N.C. + 1 N.O. 3 N.C., 2 N.C. + 2 N.O., 3 N.C. + 1 N.O., or 4 N.C.
- Conforms to EN 50041, EN 1088, EN 60947-5-1, EN 292 and EN 60204-1

Applications Types

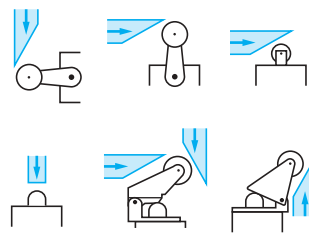


Specifications

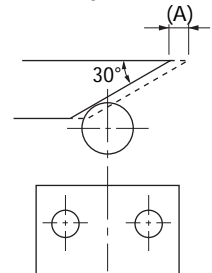
| | |
|------------------------------|--|
| Standards | EN954-1, ISO13849-1, IEC/EN60204-1, NFPA79, EN1088, ISO14119, IEC/EN60947-5-1, ANSI B11.19, AS4024.1 |
| Category | Cat. 1 Device per EN954-1 Dual channel interlocks suitable for Cat. 3 or 4 systems |
| Approvals | cULus, TUV and CE marked for all applicable directives |
| Safety Contacts | 1 N.C. snap acting, 2 N.C., 3 N.C. or 4 N.C. slow acting |
| Auxiliary Contacts | 1 N.O. (with 2 N.C.) |
| Designation/Utilization Cat. | 600V 500V 240V 120V |
| A600/AC-15 (Ue) | 1.2A 1.4A 3A 6A |
| (Ie) | |
| N600/DC-13 (Ue) | 600V 500V 250V 125V |
| (Ie) | 0.4A 0.55A 1.1A 2.2A |
| Min Current | 5V, 5mA, DC |
| Thermal Current (Ith) | 10A |
| Rated Insulation Voltage | 600V AC |
| Rated Impulse withstand Volt | 2500V |
| Travel for Positive Opening | Various (see Product Selection table) |
| Max Switching Speed | 250mm/s |
| Min Switching Speed | 100mm/min |
| Max Switching Frequency | 6000 operation per hour |
| Case Material | Die cast alloy |
| Actuator Material | See "Product Selection" table |
| Enclosure Protection | IP 66 |
| Operating Temperature | Min -25°C (-18°F) Max 80°C (+176°F) |
| Pollution Degree ① | 3 |
| Mechanical Life Expectancy | 1 x 10 ⁷ |
| Conduit Entry | M20 or 1/2in NPT |
| Fixing | 2 x M5 |
| Mounting | Any position |
| Colour | Red |

① Conductive pollution occurs, or dry, non conductive pollution occurs which becomes conductive due to condensation.

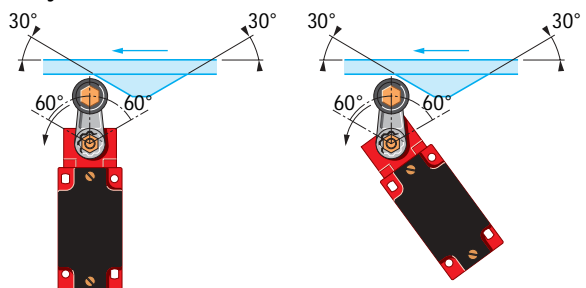
Operating Examples



Cam Displacement




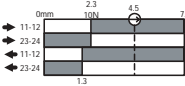
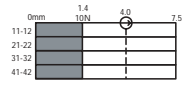
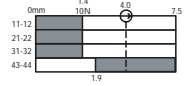
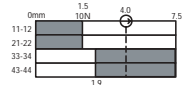

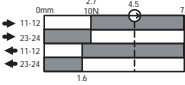
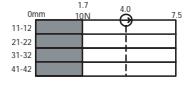
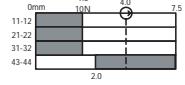
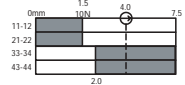

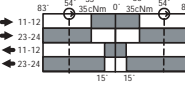
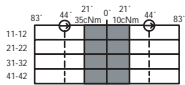
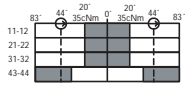
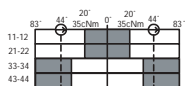
Adjustable Lever Arms



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

Position Interlock Switches
Safety Limit Switches
 Large Metal Sensor


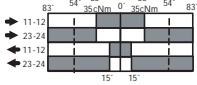
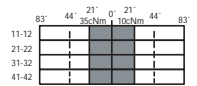
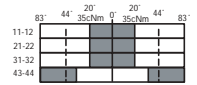
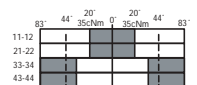

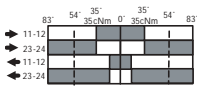
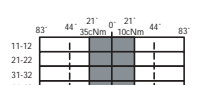
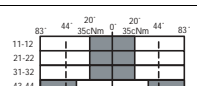
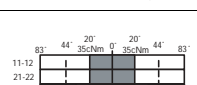
Product Selection

| Operator Type | Contacts | | Contact Type | Typical Force/ Torque to Operate | Contact Opening Characteristics □ Open ■ Closed ● Positive Opening Point | Catalogue Number | | |
|--|----------|-------|--------------|-------------------------------------|---|----------------------|--------------|-----------------------|
| | Safety | Aux. | | | | 1/2in NPT Conduit | M20 Conduit | Quick Disconnect ① |
|  | 1 N.C | 1 N.O | Snap Acting | 13N |  | 440P-MRPS11E | 440P-MRPS11B | 440P-MRPS11N5 |
| | 4 N.C | — | — | 11N |  | 440P-MRPB04E | 440P-MRPB04B | 440P-MRPB04M9 |
| | 3 N.C. | 1 N.O | BBM | 11N |  | 440P-MRPB13E | 440P-MRPB13B | 440P-MRPB13M9 |
| | 2 N.C | 2 N.O | MBB | 11N |  | 440P-MRPB22E | 440P-MRPB22B | 440P-MRPB22M9 |
|  | 1 N.C | 1 N.O | Snap Acting | 13N |  | 440P-MDPS11E | 440P-MDPS11B | 440P-MDPS11N5 |
| | 4 N.C | — | — | 11N |  | 440P-MDPB04E | 440P-MDPB04B | 440P-MDPB04M9 |
| | 3 N.C. | 1 N.O | BBM | 11N |  | 440P-MDPB13E | 440P-MDPB13B | 440P-MDPB13M9 |
| | 2 N.C | 2 N.O | MBB | 11N |  | 440P-MDPB22E | 440P-MDPB22B | 440P-MDPB22M9 |
|  | 1 N.C | 1 N.O | Snap Acting | 0.34Nm |  | 440P-MSLS11E | 440P-MSLS11B | 440P-MSLS11N5 |
| | 4 N.C | — | — | 0.20Nm |  | 440P-MSLB04E | 440P-MSLB04B | 440P-MSLB04M9 |
| | 3 N.C. | 1 N.O | BBM | 0.34Nm |  | 440P-MSLB13E | 440P-MSLB13B | 440P-MSLB13M9 |
| | 2 N.C | 2 N.O | MBB | 0.34Nm |  | 440P-MSLB22E | 440P-MSLB22B | 440P-MSLB22M9 |
| Recommended standard cordset, 2m, 5-pin mini connector. See page 15-12 for additional lengths. | | | | | | 889N-F5AE-6F | | |
| Recommended standard cordset, 2m, 12-pin 9 wire. See page 15-12 for additional lengths. | | | | | | 889M-F12X9AE-2 | | |

① N5 = 5-pin mini connector.
 M9 = 12-pin M23 connector (use 9 wire).

Position Interlock Switches
Safety Limit Switches
 Large Metal Senator


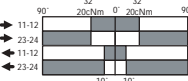
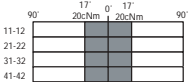
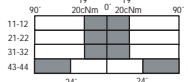
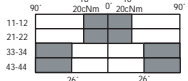

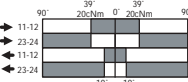
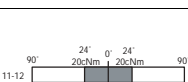
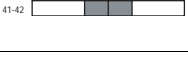
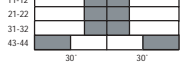
Product Selection (continued)

| Operator Type | Contacts | | Contact Type | Typical Force/ Torque to Operate | Contact Opening Characteristics <input type="checkbox"/> Open <input checked="" type="checkbox"/> Closed <input checked="" type="checkbox"/> Positive Opening Point | Catalogue Number | | |
|--|----------|-------|--------------|-------------------------------------|---|----------------------|--------------|------------------------------|
| | Safety | Aux. | | | | 1/2in NPT Conduit | M20 Conduit | Quick Disconnect ① |
|  Metal Adjustable Lever ② | 1 N.C | 1 N.O | Snap Acting | 0.34Nm |  | 440P-MALS11E | 440P-MALS11B | 440P-MALS11N5 |
| | 4 N.C | — | — | 0.20Nm |  | 440P-MALB04E | 440P-MALB04B | 440P-MALB04M9 |
| | 3 N.C. | 1 N.O | BBM | 0.34Nm |  | 440P-MALB13E | 440P-MALB13B | 440P-MALB13M9 |
| | 2 N.C | 2 N.O | MBB | 0.34Nm |  | 440P-MALB22E | 440P-MALB22B | 440P-MALB22M9 |
|  Metal Rod Lever ② | 1 N.C | 1 N.O | Snap Acting | 0.34Nm |  | 440P-MARS11E | 440P-MARS11B | 440P-MARS11N5 |
| | 4 N.C | — | — | 0.20Nm |  | 440P-MARB04E | 440P-MARB04B | 440P-MARB04M9 |
| | 3 N.C. | 1 N.O | BBM | 0.34Nm |  | 440P-MARB13E | 440P-MARB13B | 440P-MARB13M9 |
| | 2 N.C | 2 N.O | MBB | 0.34Nm |  | 440P-MARB22E | 440P-MARB22B | 440P-MARB22M9 |
| Recommended standard cordset, 2m, 5-pin mini connector. See page 15-12 for additional lengths. | | | | | | 889N-F5AE-6F | | |
| Recommended standard cordset, 2m, 12-pin 9 wire. See page 15-12 for additional lengths. | | | | | | 889M-F12X9AE-2 | | |

- ①** N5 = 5-pin mini connector.
M9 = 12-pin M23 connector (use 9 wire).
- ②** Not positive opening

Position Interlock Switches
Safety Limit Switches
 Large Metal Sensor

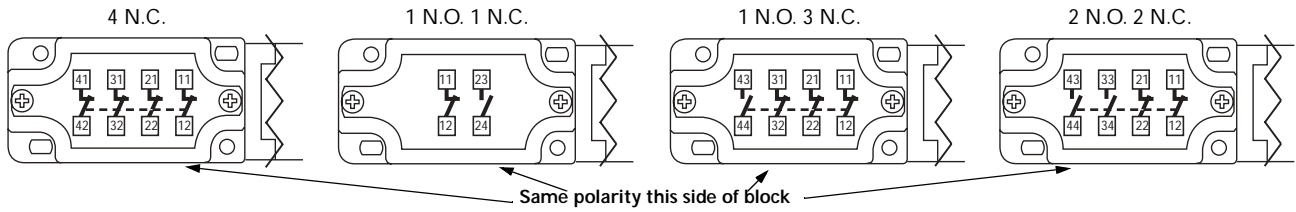
Product Selection (continued)

| Operator Type | Contacts | | Contact Type | Typical Force/ Torque to Operate | Contact Opening Characteristics □ Open ■ Closed | Catalogue Number | | |
|---|----------|-------|--------------|-------------------------------------|---|----------------------|----------------|-----------------------|
| | Safety | Aux. | | | | 1/2in NPT Conduit | M20 Conduit | Quick Disconnect ① |
|  Metal Spring Rod ② | 1 N.C | 1 N.O | Snap Acting | 0.20Nm |  | 440P-MSRS11E | 440P-MSRS11B | 440P-MSRS11N5 |
| | 4 N.C | — | — | 0.20Nm |  | 440P-MSRB04E | 440P-MSRB04B | 440P-MSRB04M9 |
| | 3 N.C. | 1 N.O | BBM | 0.20Nm |  | 440P-MSRB13E | 440P-MSRB13B | 440P-MSRB13M9 |
| | 2 N.C | 2 N.O | MBB | 0.20Nm |  | 440P-MSRB22E | 440P-MSRB22B | 440P-MSRB22M9 |
|  Telescope Arm ② | 1 N.C | 1 N.O | Snap Acting | 0.20Nm |  | 440P-MTAS11E | 440P-MTAS11B | 440P-MTAS11N5 |
| | 4 N.C | — | — | 0.20Nm |  | 440P-MTAB04E | 440P-MTAB04B | 440P-MTAB04M9 |
| | 3 N.C. | 1 N.O | BBM | 0.20Nm |  | 440P-MTAB13E | 440P-MTAB13B | 440P-MTAB13M9 |
| | 2 N.C | 2 N.O | MBB | 0.20Nm |  | 440P-MTAB22E | 440P-MTAB22B | 440P-MTAB22M9 |
| Recommended standard cordset, 2m, 5-pin mini connector. See page 15-12 for additional lengths. | | | | | | | 889N-F5AE-6F | |
| Recommended standard cordset, 2m, 12-pin 9 wire. See page 15-12 for additional lengths. | | | | | | | 889M-F12X9AE-2 | |

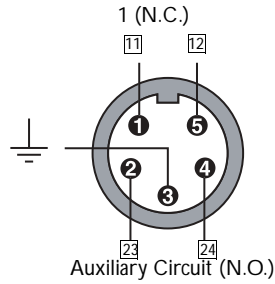
- ① N5 = 5-pin mini connector.
M9 = 12-pin M23 connector (use 9 wire).
- ② Not positive opening

Position Interlock Switches
Safety Limit Switches
 Large Metal Senator

Typical Wiring Diagram



N5 Connector 2 Circuit 5-Pin Mini Connector

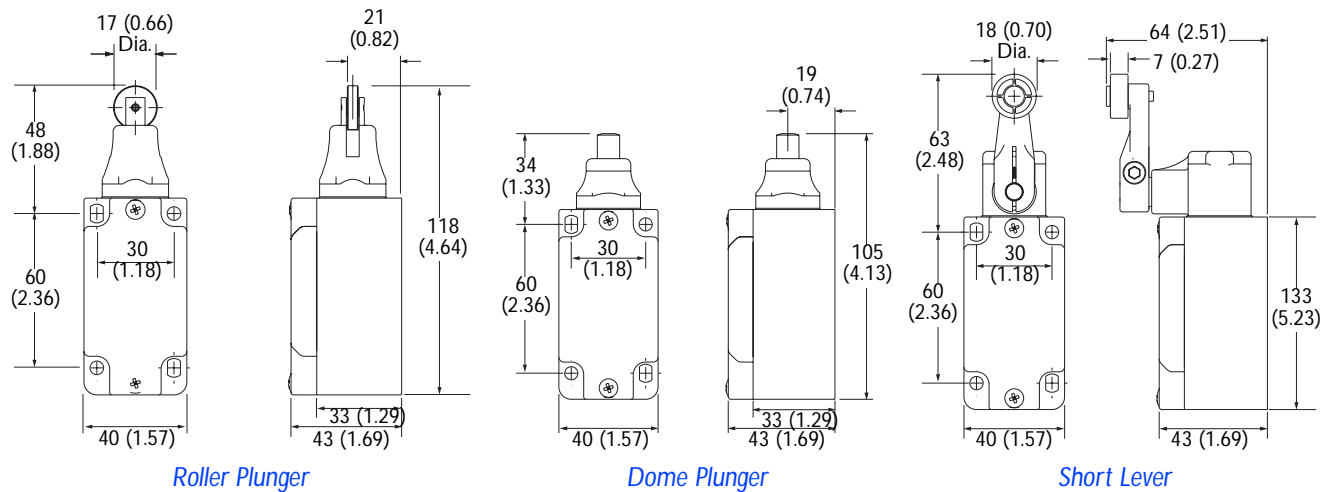


M9 12-Pin M23 Connector

| Connector Pinout | 4 N.C. | | 3 N.C. 1 N.O. | | 2 N.C. 2 N.O. | | |
|------------------|----------|---------|---------------|---------|---------------|---------|------|
| | Terminal | Contact | Terminal | Contact | Terminal | Contact | |
| | 1 | 11 | 11 | 11 | 11 | 11 | |
| | 3 | 12 | N.C. | 12 | N.C. | 12 | N.C. |
| | 4 | 21 | N.C. | 21 | N.C. | 21 | N.C. |
| | 6 | 22 | N.C. | 22 | N.C. | 22 | N.C. |
| | 7 | 31 | N.C. | 31 | N.C. | 33 | N.O. |
| | 8 | 32 | N.C. | 32 | N.C. | 34 | N.O. |
| | 9 | 41 | N.C. | 43 | N.O. | 43 | N.O. |
| | 10 | 42 | N.C. | 44 | N.O. | 44 | N.O. |
| | 12 | Ground | | | | | |

Approximate Dimensions—mm (inches)

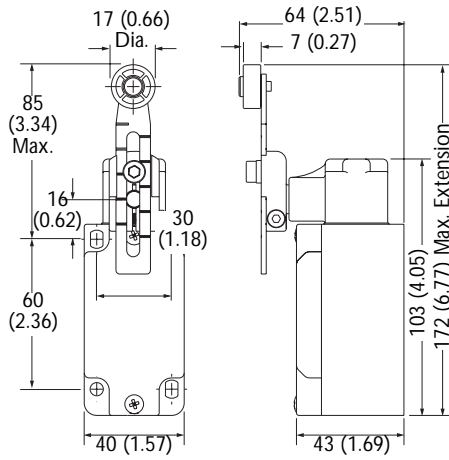
Dimensions are not intended to be used for installation purposes.



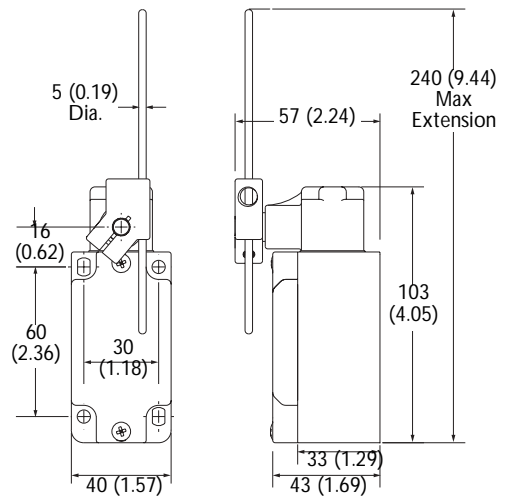
Position Interlock Switches
Safety Limit Switches
 Large Metal Sensor

Approximate Dimensions—mm (inches) (continued)

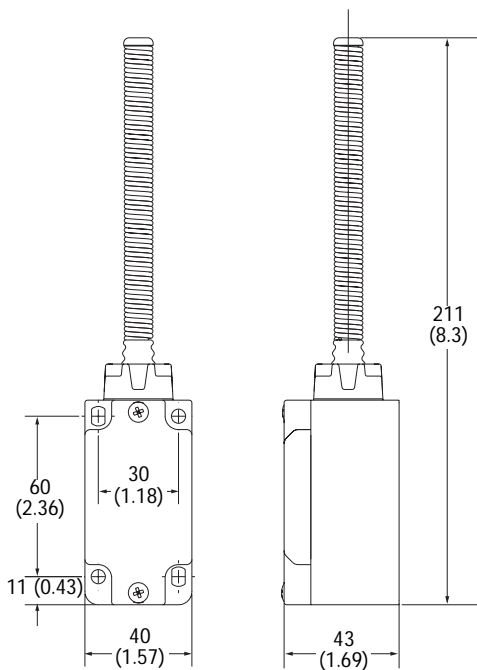
Dimensions are not intended to be used for installation purposes.



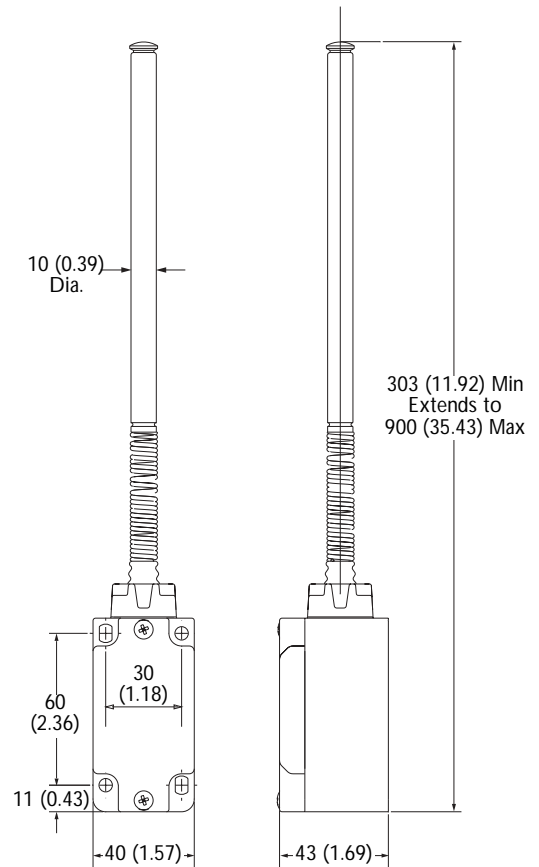
Adjustable Lever



Rod Lever



Spring Rod



Telescopic Arm