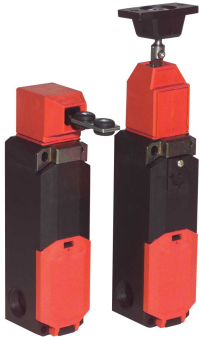




# SI-LS42 Series Locking Style Safety Interlock Switch




## Datasheet

### Spring Locking and Solenoid Locking Models



-  Positive opening safety contacts (IEC 60947-5-1)
- Choice of two locking mechanism types:
  - Spring lock with energized solenoid release
  - Energized solenoid lock with spring unlock
- Models with spring lock/solenoid unlock have a manual release
- Two solenoid voltages available:
  - 24 V AC/DC
  - 110/230 V AC
- Choose either of two stainless steel actuator types:
  - Rigid in-line
  - Flexible in-line
- Actuator head rotatable in 90° increments and can be positioned for either horizontal or vertical actuation
- Choice of four switching actuator contact configurations (with actuator engaged):
  - 1 normally-closed plus 1 normally-open
  - 2 normally-closed
  - 2 normally-closed plus 1 normally-open
  - 3 normally-closed
- Heavy-duty thermoplastic housing, rated IP67, suitable for demanding industrial environments
-  Insulated device (IEC 60947-5-1)



**Note:**  This symbol is used in the switching diagrams to identify the point in actuator travel where the normally closed safety contact is fully open.

**The user is responsible for satisfying all local, state, and national laws, rules, codes, and regulations** relating to the use of this product and its application. Banner Engineering Corp. has made every effort to provide complete application, installation, operation, and maintenance instructions. Please contact a Banner Applications Engineer with any questions regarding this product.

## Important Information

### Regarding the Use of Safety Interlocking Switches

It is the responsibility of the machine designer, controls engineer, machine builder and/or maintenance electrician to apply and maintain this product in full compliance with all applicable regulations and standards. The product can provide the required safety function only if it is properly installed, properly operated, and properly maintained. This manual attempts to provide complete installation, operational, and maintenance instruction. *Reading the manual completely is highly recommended.* Please direct any questions regarding the application or use of the product to a Banner Engineering Applications Engineer at the locations listed in this document.

#### Applicable U.S. and International Standards (not all inclusive):

ANSI B11.0 Safety of Machinery - General Requirements and Risk Assessment  
ANSI B11.19 Performance Criteria for Safeguarding  
ANSI/NFRA 79 Electrical Standard for Industrial Machinery  
ANSI/RIA R15.06 Safety Requirements for Industrial Robots and Robot Systems  
ISO 12100 Safety of Machinery - General Principles for Design, Risk Assessment and Risk Reduction  
IEC 60204-1 Electrical Equipment of Machines: General Requirements  
ISO 14119 Safety of Machinery—Interlocking Devices Associated with Guards  
ISO 14120 Safety of Machinery - Guards - General requirements for fixed and movable guards  
ISO 13857 Safety of Machinery - Safety Distances to Prevent Hazard Zones Being Reached  
EN ISO 13849-1 Safety of Machinery - Safety Related Parts of Control Systems

These and other standards are available from:

OSHA Documents: [www.osha.gov](http://www.osha.gov) (Tel: 202-512-1800)  
American National Standards Institute (ANSI): [www.ansi.org](http://www.ansi.org) (Tel: 212-642-4900)  
Robotics Industries Association (RIA): [www.robotics.org](http://www.robotics.org) (Tel: 734-994-6088)  
National Fire Protection Association (NFPA): [www.nfpa.org](http://www.nfpa.org) (Tel: 800-344-3555)



NSSN National Resource for Global Standards: [www.nssn.org](http://www.nssn.org) (Tel: 212-642-4980)  
 IHS Standards Store: [www.global.ihs.com](http://www.global.ihs.com) (Tel: 303-397-7956, 800-854-7179)  
 Document Center: [www.document-center.com/home.cfm](http://www.document-center.com/home.cfm) (Tel: 650-591-7600)

## Overview

SI-LS42 series safety interlocking switches with guard locking capability can be used to secure a guard (or a gate) such that the hazard has time to stop before the guard is opened. This allows the guard to be located closer to the hazard than otherwise possible if the guard can be opened and the hazard can be accessed.

There are two styles available:

- **Spring Lock, Solenoid Unlock (Models SI-LS42DMS.. and SI-LS42WMS..)**  
 The actuator is mechanically locked when it is fully inserted into the actuator head. The actuator is unlocked by applying voltage to the solenoid.
- **Solenoid Lock, Spring Unlock (Models SI-LS42DMM.. and SI-LS42WMM..)**  
 The fully inserted actuator is locked when voltage is applied to the solenoid. The actuator is unlocked when voltage is removed from the solenoid.

## Installation Requirements

The following general requirements and considerations apply to the installation of interlocked gates and guards for the purpose of safeguarding. In addition, the user must refer to the relevant regulations and comply with all necessary requirements. See ANSI B11.19, or ISO 14119 and ISO 14120, or the appropriate standard.

Hazards guarded by the interlocked guard must be prevented from operating until the guard is closed; a stop command must be issued to the guarded machine if the guard opens while the hazard is present. Closing the guard must not, by itself, initiate hazardous motion; a separate procedure must be required to initiate the motion. The safety switches must not be used as a mechanical or end-of-travel stop.

Locate the guard an adequate distance from the danger zone (so the hazard has time to stop before the guard is opened sufficiently to provide access to the hazard). The guard must open either laterally or away from the hazard, not into the safeguarded area. The guard also should not be able to close by itself and activate the interlocking circuitry. The installation must prevent personnel from reaching over, under, around or through the guard to access the hazard. Any openings in the guard must not allow access to the hazard—see ANSI B11.19, ISO 13857, or the appropriate standard. The guard must be strong enough and designed to protect personnel and contain hazards within the guarded area that can be ejected, dropped, or emitted by the machine.

Design and install the safety interlocking switches and actuators so that they cannot be easily defeated. Mount them securely so that their physical position cannot shift, using reliable fasteners that require a tool to remove. Mounting slots in the housing, if provided, are for initial adjustment only; final mounting holes (round) must be used for permanent location.

The normally closed safety contacts are of a "positive-opening" design. Positive-opening operation causes the contacts to be forced open, without the use of springs, when the actuator is disengaged or moved from its home position. In addition, the switch(es) must be mounted in a "positive mode", to move/disengage the actuating system and actuator from its home position and open the normally closed contact, when the guard opens.



### WARNING:

- **Properly Install the Interlocked Guards**
- Failure to follow these guidelines could result in serious injury or death.
- At a minimum, the interlocked guard must prevent hazards when not fully closed and must prevent access to the hazards through any opening in the guard.
- Install the safety switches and actuators so they cannot be easily defeated and are not used as a mechanical or end-of-travel stop. Mount at least one switch in a positive mode and verify it opens the normally closed contact when the guard opens.
- The user must refer to the relevant regulations and comply with all necessary requirements. See ANSI B11.19, or ISO 14119 and ISO 14120, or the appropriate standard.



### CAUTION:

- **Do not use the safety switch as a mechanical or end-of-travel stop.**
- Catastrophic damage can cause the safety switch to fail in an unsafe manner (that is, loss of the switching action).
- Limit the movement or rotation of the guard to prevent damage to the safety switch or the actuator.

See Mechanical Installation, Switching Diagram, Specifications for additional information.



### WARNING: Safety Distances and Safe Openings

It must not be possible for personnel to reach any hazard through an opened guard or by reaching over, under, around, or through any opening in the guard before the hazardous situation has ceased. See ANSI B11.19 or ISO 14119, ISO 14120 and ISO 13857 for information on determining safety distances and safe opening sizes for your guarding device.

## Models

For kit models and interlock body models, insert "S" for Spring Lock/Solenoid Unlock or "M" for Solenoid Lock/Spring Unlock.  
**Example:** SI-LS42DM\_G can become SI-LS42DMSG or SI-LS42DMMG

Kit Model <sup>1</sup>	Solenoid Voltage	Actuator Type	Interlock Body	Contact Configuration		Switching Diagram <sup>2</sup>
				(Actuator Engaged and Locked)	(Actuator Unlocked and Removed)	
SI-LS42DM_G SI-LS42WM_G SI-LS42DM_GF	24 V AC/DC 110/230 V AC 24 V AC/DC	SI-QM-SSA Rigid in-line  SI-QM-SMFA Flexible in-line	SI-LS42D_G SI-LS42W_G SI-LS42D_G  SI-LS42W_G	Actuator Contacts 	Actuator Contacts 	
SI-LS42DM_H SI-LS42WM_H SI-LS42DM_HF	24 V AC/DC 110/230 V AC 24 V AC/DC	SI-QM-SSA Rigid in-line  SI-QM-SMFA Flexible in-line	SI-LS42D_H SI-LS42W_H SI-LS42D_H  SI-LS42W_H	Actuator Contacts 	Actuator Contacts 	
SI-LS42DM_I SI-LS42WM_I SI-LS42DM_IF	24 V AC/DC 110/230 V AC 24 V AC/DC	SI-QM-SSA Rigid in-line  SI-QM-SMFA Flexible in-line	SI-LS42D_I SI-LS42W_I SI-LS42D_I  SI-LS42W_I	Actuator Contacts 	Actuator Contacts 	
SI-LS42DM_J SI-LS42DM_JF	24 V AC/DC 24 V AC/DC	SI-QM-SSA Rigid in-line  SI-QM-SMFA Flexible in-line	SI-LS42D_J SI-LS42D_J	Actuator Contacts 	Actuator Contacts 	

## Installation Instructions

### Mechanical Installation Guidelines

#### Horizontal or Vertical Actuation

Before installation, orient the switch actuator head for either horizontal (at a right angle to the switch length) or vertical (in-line with the switch length) actuation. If vertical actuation is required, remove the head by pulling straight up and off (Figure 2 on p. 4). Re-orient the actuator head, and slide it back on in the new position until it snaps into place. Once the desired orientation is configured, install the M3 x 15 mm tamper-proof (one-way) screw, which is found in a plastic bag, stored in the wiring chamber (see Figure 1 on p. 4 and Electrical Installation for more information on opening the wiring chamber access door).

<sup>1</sup> A kit contains an interlock and actuator. Individual pieces are for replacement purposes only. See Warning.

<sup>2</sup> Contacts: Open Closed Transition

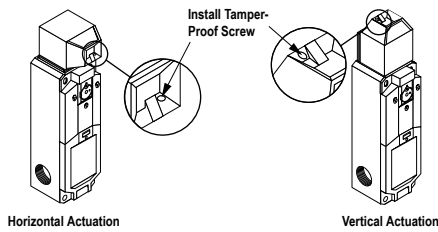


Figure 1.

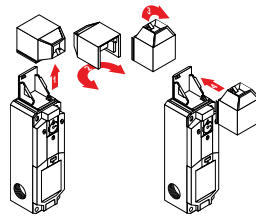


Figure 2.

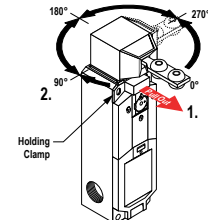


Figure 3.

## Rotating Actuator Head to Desired Position

The actuator head may be rotated in increments of 90° to create eight possible actuator engagement positions (i.e., four horizontal plus four vertical positions). To rotate the head, pull the holding clamp forward, rotate the head (in either direction) to the desired position, and push the holding clamp back in to lock. The head may be rotated with the actuator either engaged or removed (Figure 3 on p. 4).

## Installing the Switch and Actuator




**Note:** All mounting hardware is supplied by the switch user. The fasteners must be of sufficient strength to avoid incidental breakage. Use of permanent fasteners or locking hardware is recommended to prevent loosening or displacement of the actuator and switch body. The mounting holes in the switch body accept M5 (#10) screws. There are four holes on a mounting pattern of 30 x 124 mm (see [Dimensions](#)).

Position the switch, with its actuator fully engaged, at the mounting location and mark the mounting holes. Fasten the switch body and the actuator in place. The rigid in-line actuator includes floating sleeves in the mounting holes to allow some forgiveness for switch-to-actuator alignment. If the rigid in-line actuator is used, take care to not overtighten the actuator fasteners so as to allow this movement. After the mounting hardware is secure, check the actuator/switch engagement for misalignment and binding.




**Important:** A safety switch must be installed in a manner which discourages tampering or defeat. Mount each switch to prevent bypassing of the switching function at the wiring chamber. A switch and its actuator must never be used as a mechanical stop.

## Manual Release to Spring Lock Models

Models with spring lock/solenoid unlock may be unlocked manually by rotating the unlock mechanism, using an M3 Allen wrench (not supplied). First loosen the security screw (see [Dimensions](#)), then turn the unlock mechanism in either direction to the  position.



**Important:** After the switch is installed, check to be certain that the unlock mechanism is in the  position, and that the security screw is tight and covered with tamper-resistant lacquer (user-supplied).

## Electrical Installation



### WARNING:

- **Risk of electric shock**
- Use extreme caution to avoid electrical shock. Serious injury or death could result.
- Always disconnect power from the safety system (for example, device, module, interfacing, etc.), guarded machine, and/or the machine being controlled before making any connections or replacing any component. Lockout/tagout procedures might be required. Refer to OSHA 29CFR1910.147, ANSI Z244-1, or the applicable standard for controlling hazardous energy.
- Make no more connections to the device or system than are described in this manual. Electrical installation and wiring must be made by a Qualified Person<sup>3</sup> and must comply with the applicable electrical standards and wiring codes, such as the NEC (National Electrical Code), ANSI NFPA79, or IEC 60204-1, and all applicable local standards and codes.

## Access to Wiring Chamber

Access the wiring chamber using the hinged door. Insert a flat-blade screwdriver, as shown below, and pry gently down to open. Select the best wiring entrance and, if required, thread in the 1/2" x 14 NPSM conduit adapter (supplied with kit), or the optional M20 x 1.5 cable gland (see [Accessories](#) on p. 8). The switch knockout breaks loose with the final turn of the conduit adapter or cable gland.

<sup>3</sup> A person who, by possession of a recognized degree or certificate of professional training, or who, by extensive knowledge, training and experience, has successfully demonstrated the ability to solve problems relating to the subject matter and work.

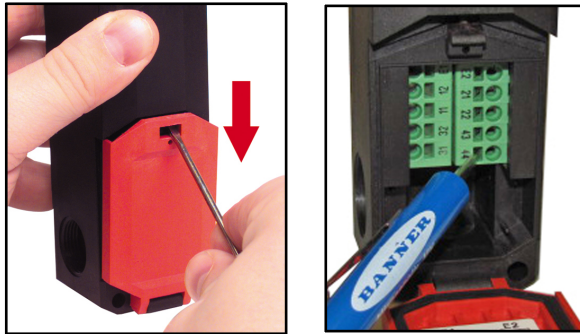


Figure 4. Opening the wiring chamber

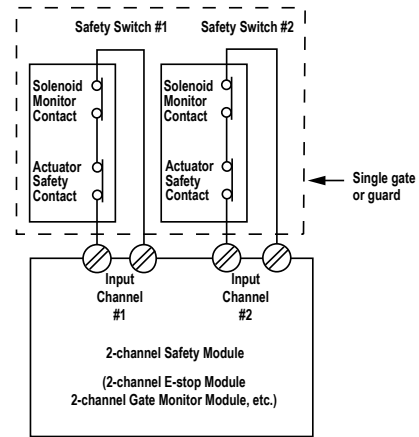


Figure 5. Wiring

**To open wiring chamber:**

1. Insert the screwdriver blade into the slot in the cover to pry cover open.

**To connect wires to terminals:**

1. Insert the screwdriver blade into the slot below the desired wiring terminal.
2. Twist the screwdriver blade in the slot to open the terminal jaws; insert wire.
3. Hold the wire in place and remove the screwdriver.

Refer to the installation instructions provided with the safety module for information regarding the interface of the safety module to the machine stop control elements.

**Connection to a Machine**

A risk assessment must be accomplished to determine the means of interfacing the switch(es) with the machine control circuit. While Banner Engineering always recommends the highest level of safety in any application, it is the responsibility of the user to safely install, operate and maintain each safety system and comply with all relevant laws and regulations.

To ensure the highest level of reliability (e.g. Control Reliable or Category 4), it is recommended to wire the safety contacts (i.e., safety contacts that are closed when the actuator is engaged and the solenoid is in its locking state) from **each of two safety switches per interlock guard** in a dual channel connection to a safety module, safety controller (see the accessories list for safety module and controller options), or the safety related part of the machine control that complies with the required level of safety performance as shown in Figure 5 on p. 5.

Two functions of the safety module or safety interface are:

1. To provide a means of monitoring the contacts of both safety switches for contact failure, and to prevent the machine from restarting if either switch fails; and
2. To provide a reset routine after closing the guard and returning the safety contacts to their closed position. This prevents the controlled machinery from restarting by simply reinserting the safety switch actuators. This necessary reset function is required by ANSI B11.0 and ANSI/NFPA 79 machine safety standards.

Use only positively-driven, normally-closed safety contacts from each switch for connection to the safety module. *The normally-open contacts may be used for control functions that are not safety-related.* A typical use is to communicate with a process controller. Refer to the installation instructions provided with the safety modules for more information regarding the interface of the safety module to the machine stop control elements.

See the Switching Diagrams in Models for contact state information.

Solenoid voltage connects to terminals E1 (+) and E2 (-).



**CAUTION:**

- **Safety switch installation**
- Using only one safety switch per interlock guard is not recommended.
- Use two safety switches for each interlock guard to achieve control reliability or Safety Category 4 (per ISO 13849-1) of a machine stop circuit.
- In addition, normally-closed (N.C.) safety contacts from each of the two safety switches should be connected to the two separate inputs of a two-channel safety monitoring device. This is required to monitor for safety switch contact failure and to provide the necessary reset routine, as required by IEC 60204-1 and NFPA 79 machine safety standards.

**WARNING:**

- **Connecting safety switches in series**
- Monitoring multiple guards with a series connection of multiple safety interlock switches is not a Safety Category 4 Application (per ISO 13849-1). A single failure can be masked or not detected at all. The loss of a safety stop signal or an inappropriate reset can lead to serious injury or death.
- When such a configuration is used, procedures must be performed regularly to verify proper operation of each switch. Correct all failures immediately (for example, immediately replace a failed switch).



**WARNING: Hazard Point**— It must not be possible for personnel to reach any hazard point through an opened guard (or any opening) before hazardous machine motion has completely stopped. Please reference OSHA CFR 1910.217 and ANSI B11 standards for information on determining safety distances and safe opening sizes for your guarding devices.

## Checkout Procedures

---

Banner Engineering highly recommends performing the checkouts as described. However, a qualified person (or team) should evaluate these generic recommendations considering their specific application and determine the appropriate frequency of checkouts. This will generally be determined by a risk assessment, such as the one contained in ANSI B11.0. The result of the risk assessment will drive the frequency and content of the periodic checkout procedures and must be followed.

**WARNING:**

- **Test multiple safety devices individually**
- Failure to test each safety device individually could result in undetected faults and create an unsafe condition that could result in serious injury or death.
- When two or more safety devices are used, individually actuate each device, causing a stop or open-contact condition, then reset/rearm the safety module (if using manual reset mode). This allows the monitoring circuits to check each device and its wiring to detect faults.

## Initial and Daily Checks

Verify the functioning of the safety switch(es) and the interlocked guard (if applicable) at designated periods. Verify at initial installation by a *qualified person*, verify daily or before each use by a *designated person*, and as part of the regular periodic checkout procedure listed below to ensure proper operation.

A *qualified person* possesses a recognized degree or certificate or has extensive knowledge, training, and experience to be able to solve problems relating to the safety switch installation. A *designated person* is identified in writing by the employer as being appropriately trained to perform a specified checkout procedure.

1. Inspect for breakage of the switch body or actuator
2. Verify good alignment and full engagement of the actuator
3. Confirmation that the safety switch is not being used as an end stop
4. Inspect for loosening, corrosion, or damage to the mounting hardware of the switch actuator
5. Verify that it is not possible to reach any hazard point through an opened guard (or any opening) before hazardous machine motion has completely stopped
6. Verify switch(es) operation per specific application. For example, the machine cycle stops and/or can not be initiated when the actuator is removed from the switch body.
7. If more than one safety switch(es) and the interlocked guard is used, perform this procedure individually for EACH device.

## Periodic Checks

A *qualified person* (as defined above) should check for the following on a periodic schedule determined by the user, based upon the severity of the operating environment and the frequency of switch actuations. At a minimum, this should take place once a year (lockout/tagout procedures for controlling hazardous energy may be required):

1. Inspect the wiring chamber for signs of contamination, deterioration, loose connections, or damage
2. Inspect the sealing at the cable entry and all electrical wiring for continuity and damage
3. Verify that wiring and installation conforms to the instructions in this document and that there are no signs of tampering or defeat
4. Perform the initial/daily checkout listed above

See also the machine manufacturer's recommendations for additional instructions. If any of these checks cannot be verified, do not attempt to use the enabling device until the defect or problem has been corrected.



## Specifications

### Contact Rating

**Utilization categories:** AC-15,  $U_e/I_e$  24 V / 1 A (IEC/EN 90497-5-1)  
 $U_i$  = 250V  
 $I_{th}$  = 5A  
 $U_{imn}$  = 2.5 kV

### Contact Material

Silver-nickel alloy

### Short Circuit Protection

4A general purpose fuse (rated gL per IEC DIN EN 60269-1)

### Electrical Protection Class

II, double insulated

### Solenoid Power Consumption

**Switch operations:** 600/h max  
**Temperature class:** F (155 °C)  
**Operating voltage:** 110/230 V ac  
 · Inrush power consumption 65 VA (0.1 s)  
 · Permanent power consumption 8 VA  
**Operating voltage:** 24 V ac/dc  
 · Inrush power consumption 12 VA (0.2 s)  
 · Permanent power consumption 4.4 VA

### Maximum Actuator Speed

0.5 m/second (19.7 in/second)

### Environmental Rating

IEC IP67 (acc. to IEC/EN 60529)

### Operating Conditions

**Temperature:** -25 °C to +70 °C (-13 °F to +158 °F)

### Applicable Standards

IEC 60947-1  
 DIN EN 60947-1  
 IEC 60947-5-1  
 DIN EN 60947-5-1  
 VDE 0660 T100/T200  
 GS-ET-19

### Certifications

All models	SI-LS42DM_G, SI-LS42DM_H, SI-LS42DM_I, SI-LS42DM_J models only
------------	-------------------------------------------------------------------



B300 (same polarity)

### Minimum Actuator Engagement Radius

**In-line actuators:** 400 mm (16 in)  
**Flexible actuators:** 150 mm (6 in)

### Actuator Extraction Force

≤1500 Newtons (337 lbf) when locked (acc. to GS-ET-19)

### Mechanical Life

1 x 10<sup>6</sup> switching cycles

### Wire Connections

10 spring-clamp connections  
 0.5 - 1.5 mm max. flexible (stranded) (16 AWG max)

### Cable Entry

M20 x 1.5 threaded entrance (x3 ports)  
 Adapter supplied to convert M20 x 1.5 to 1/2" - 14 NPT

### Construction

Enclosure: Thermoplastic GV (UL94-V0)  
 Actuating Head: Thermoplastic GV (exterior) / Zn-GD (internal cam)  
 (GV = Glass fiber-reinforced polyamide thermoplastic housing, UL 94-V0 rating)  
 (Zn-GD = Zinc-diecast)

### Weight

approximately 0.34 kg

### Required Overcurrent Protection

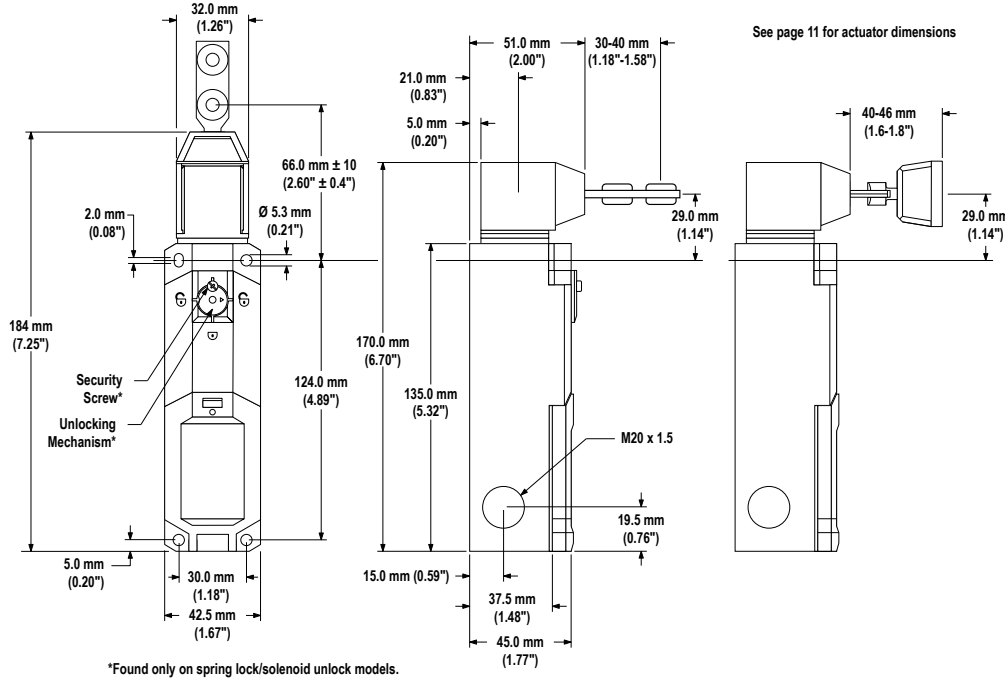


**WARNING:** Electrical connections must be made by qualified personnel in accordance with local and national electrical codes and regulations.

Overcurrent protection is required to be provided by end product application per the supplied table.  
 Overcurrent protection may be provided with external fusing or via Current Limiting, Class 2 Power Supply.  
 Supply wiring leads < 24 AWG shall not be spliced.  
 For additional product support, go to [www.bannerengineering.com](http://www.bannerengineering.com).

Supply Wiring (AWG)	Required Overcurrent Protection (Amps)
20	5.0
22	3.0
24	2.0
26	1.0
28	0.8
30	0.5

## Dimensions



## Accessories

### Replacement Parts

#### Plastic Conduit Adapter

Model	Size	Thread Conversion	Dimensions	Used With
SI-QS-M20	½ in-14 NPT Plastic	M20 × 1.5 to ½ in-14 NPT		SI-QS90 Safety Interlock Switches SI-LS100 Safety Interlock Switches SI-LS31 Safety Interlock Switches SI-LS42 Safety Interlock Switches RP-LS42 Rope Pull Switches

Model	Description	Used with Switch Models	Dimensions
SI-LS42-COVER	Replacement Terminal Cover	All	N/A
SI-LS42-SCREW OW	Replacement One-Way Screw	All	N/A

## Safety Controllers

Safety Controllers provide a fully configurable, software-based safety logic solution for monitoring safety and non-safety devices. For additional models and XS26 expansion modules, see instruction manual p/n [174868](#) (XS/SC26-2).

Non-Expandable Models	Expandable Models	Description
SC26-2	XS26-2	26 convertible I/O and 2 Redundant Solid State Safety Outputs
SC26-2d	XS26-2d	26 convertible I/O and 2 Redundant Solid State Safety Outputs with Display
SC26-2e	XS26-2e	26 convertible I/O and 2 Redundant Solid State Safety Outputs with Ethernet
SC26-2de	XS26-2de	26 convertible I/O and 2 Redundant Solid State Safety Outputs with Display and Ethernet
SC10-2roe		10 Inputs, 2 redundant relay safety outputs (3 contacts each) (ISD compatible)



## Safety Modules

Model	Description
UM-FA-9A	3 normally open (N.O.) redundant-output 6 A contacts
UM-FA-11A	2 normally open (N.O.) redundant-output 6 A contacts, plus 1 normally closed (N.C.) auxiliary contact
ES-FA-9AA	3 Normally Open (NO), 6 A
ES-FA-11AA	2 Normally Open and 1 Normally Closed (NC), 7 A

## Cable Glands

Model	Size	For Cable Diameter	Dimensions	Used With
SI-QS-CGM20	M20 x 1.5 Plastic	5.0 to 12.0 mm (0.20 to 0.47 inches)		SI-QS90 Safety Interlock Switches SI-LS100 Safety Interlock Switches SI-LS31 Safety Interlock Switches SI-LS42 Safety Interlock Switches RP-LS42 Rope Pull Switches

## Accessory Actuators

Model	Application	Dimensions
SI-QM-SB	Rigid in-line metal actuator used for doors or covers. Slide-bolt design for use in heavy-duty applications where alignment is difficult to maintain.	



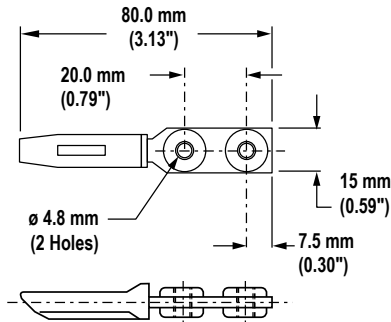
**WARNING:**

- **Spare actuators**
- Using spare actuators to bypass the safety switch could create an unsafe situation that could result in serious injury or death.
- Do not use spare actuators to bypass or otherwise defeat the protective function of a safety switch.

## Actuator Dimensions

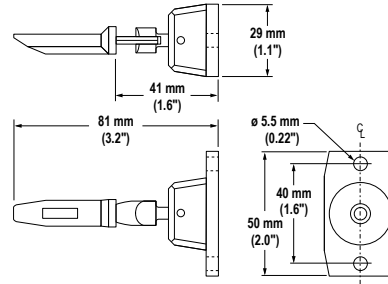
**SI-QM-SSA Rigid In-line Actuator**

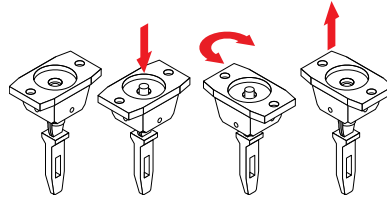
400 mm (16") minimum actuator engagement radius



**SI-QM-SMFA Flexible In-line Actuator**

150 mm (6") minimum actuator engagement radius





The flexible actuator mounting flange may be rotated 90° with respect to the actuator position. To rotate, push the flange in the direction of actuation, turn the flange either direction, and release to lock the flange in the new position; see the diagram above.

## Product Support and Maintenance

### Repairs

**Do not attempt any repairs to the safety interlocking switch. It contains no field-replaceable components. Return it to Banner Engineering for warranty repair or replacement.**

Contact Banner Factory Application Engineering. They will attempt to troubleshoot the system from your description of the problem. If they conclude that a component is defective, they will issue a return merchandise authorization (RMA) number for your paperwork, and give you the proper shipping address.



**Important:** Pack the safety switches carefully. **Damage that occurs in return shipping is not covered by warranty.**

### EU Declaration of Conformity (DoC)

Banner Engineering Corp. herewith declares that these products are in conformity with the provisions of the listed directives and all essential health and safety requirements have been met. For the complete DoC, please go to [www.bannerengineering.com](http://www.bannerengineering.com).

Product	Directive
SI-LS42 Series Locking Style Safety Interlock Switch	2006/42/EC

Representative in EU: Peter Mertens, Managing Director, Banner Engineering BV. Address: Park Lane, Culliganlaan 2F, bus 3,1831 Diegem, Belgium.

### Banner Engineering Corp. Limited Warranty

Banner Engineering Corp. warrants its products to be free from defects in material and workmanship for one year following the date of shipment. Banner Engineering Corp. will repair or replace, free of charge, any product of its manufacture which, at the time it is returned to the factory, is found to have been defective during the warranty period. This warranty does not cover damage or liability for misuse, abuse, or the improper application or installation of the Banner product.

**THIS LIMITED WARRANTY IS EXCLUSIVE AND IN LIEU OF ALL OTHER WARRANTIES WHETHER EXPRESS OR IMPLIED (INCLUDING, WITHOUT LIMITATION, ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE), AND WHETHER ARISING UNDER COURSE OF PERFORMANCE, COURSE OF DEALING OR TRADE USAGE.**

This Warranty is exclusive and limited to repair or, at the discretion of Banner Engineering Corp., replacement. **IN NO EVENT SHALL BANNER ENGINEERING CORP. BE LIABLE TO BUYER OR ANY OTHER PERSON OR ENTITY FOR ANY EXTRA COSTS, EXPENSES, LOSSES, LOSS OF PROFITS, OR ANY INCIDENTAL, CONSEQUENTIAL OR SPECIAL DAMAGES RESULTING FROM ANY PRODUCT DEFECT OR FROM THE USE OR INABILITY TO USE THE PRODUCT, WHETHER ARISING IN CONTRACT OR WARRANTY, STATUTE, TORT, STRICT LIABILITY, NEGLIGENCE, OR OTHERWISE.**

Banner Engineering Corp. reserves the right to change, modify or improve the design of the product without assuming any obligations or liabilities relating to any product previously manufactured by Banner Engineering Corp. Any misuse, abuse, or improper application or installation of this product or use of the product for personal protection applications when the product is identified as not intended for such purposes will void the product warranty. Any modifications to this product without prior express approval by Banner Engineering Corp will void the product warranties. All specifications published in this document are subject to change; Banner reserves the right to modify product specifications or update documentation at any time. Specifications and product information in English supersede that which is provided in any other language. For the most recent version of any documentation, refer to: [www.bannerengineering.com](http://www.bannerengineering.com).

For patent information, see [www.bannerengineering.com/patents](http://www.bannerengineering.com/patents).