

# Installation Instructions for the **MICRO SWITCH SZL-VL-S** Miniature Limit Switch

Issue B

**32328692**

## **⚠ WARNING** **PERSONAL INJURY**

DO NOT use these products as safety or emergency stop devices or in any other application where failure of the product could result in personal injury.

**Failure to comply with these instructions could result in death or serious injury.**

## **⚠ WARNING** **IMPROPER INSTALLATION**

- Consult with local safety agencies and their requirements when designing a machine control link, interface, and all control elements that affect safety.
- Strictly adhere to all installation instructions.

**Failure to comply with these instructions could result in death or serious injury.**

Multiple language versions of installation instructions and other documents are available on Honeywell's website. To access:

1. Go to <http://sensing.honeywell.com/limitswitches>
2. Select the product's instructions from the installation instruction section

## **INSTALLATION INFORMATION**

1. Refer to
  - Page 4 for switch mounting torque
  - Page 5 for specifications
2. For mounting, note mounting dimension drawing for hole locations (Figure 5).

3. Mount switch
  - 3a. Torque switch to mounting surface: 2,5 Nm to 3 Nm [22.1 in-lb to 26.6 in-lb] using M4 screw
  - 3b. Care should be taken to ensure that all mounted hardware cannot become detached during the operational lifetime in the intended application
4. Loosen the screws on the switch's cover and remove it.
5. Loosen gland cover, then torque the gland to the switch's cover using 1 Nm to 2 Nm [8.85 in-lb to 17.7 in-lb] of force. Ensure the o-ring was assembled between the gland and the switch cover.
6. Thread the cable through the gland cover and gland, then press the wire into the contact block's terminals.
7. Refer to circuit diagram on switch's cover. Insert the terminals into the switch and then fully fix terminal screws: 0,5 Nm to 0,6 Nm [4.42 in-lb to 5.31 in-lb].
8. Perform functional tests. After wiring, use a voltmeter to ensure when the switch is operated (turned off and on) that a change of state occurs.
  - 8a. Confirm the normal closed contacts open when actuator is pushed or lever is rotated.
  - 8b. Confirm the normal open contacts closed when actuator is pushed or lever is rotated.
9. Reassemble up cover, and torque it: 0,5 Nm to 0,6 Nm [4.42 in-lb to 5.31 in-lb] using M3 screw.
10. Reassemble gland cover (0,8 Nm to 1,5 Nm torque)

**Figure 1. SZL-VL Wiring View**

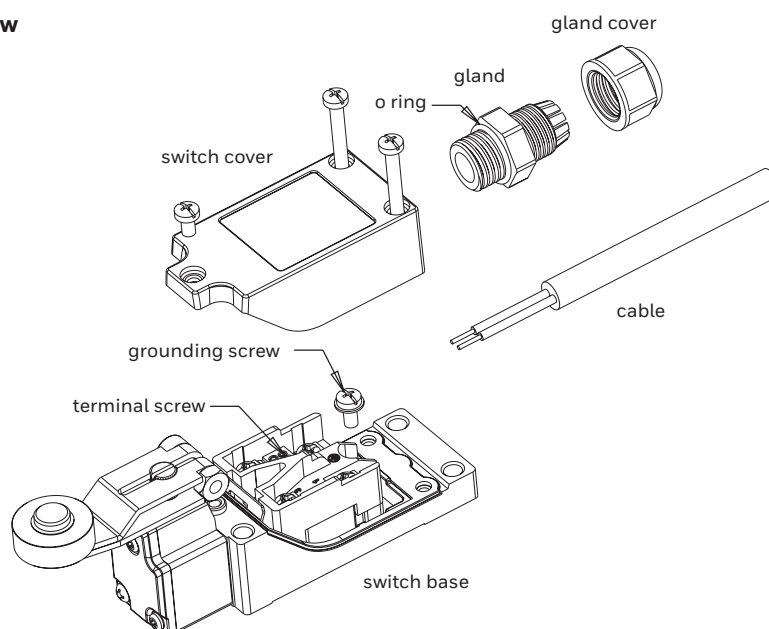
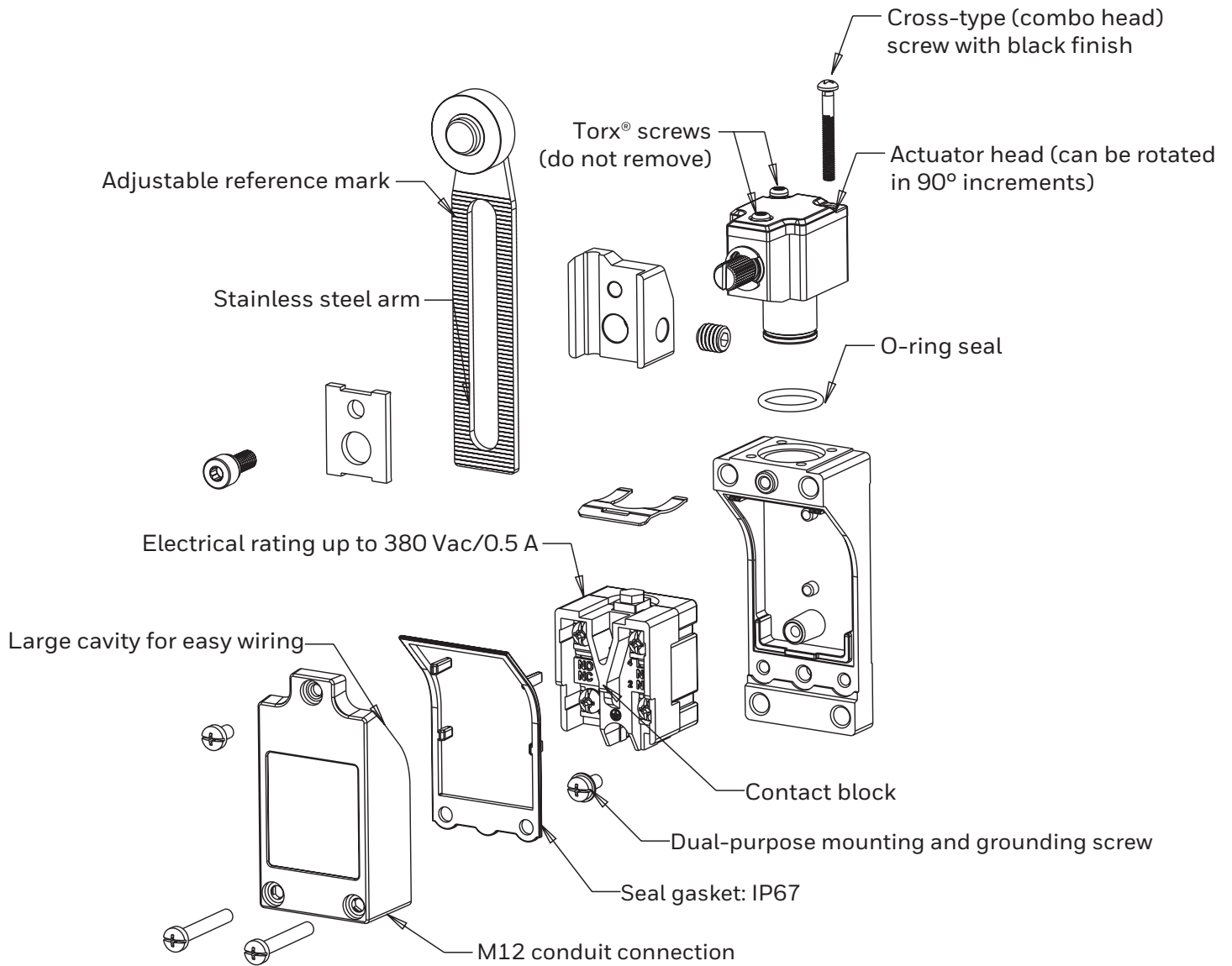
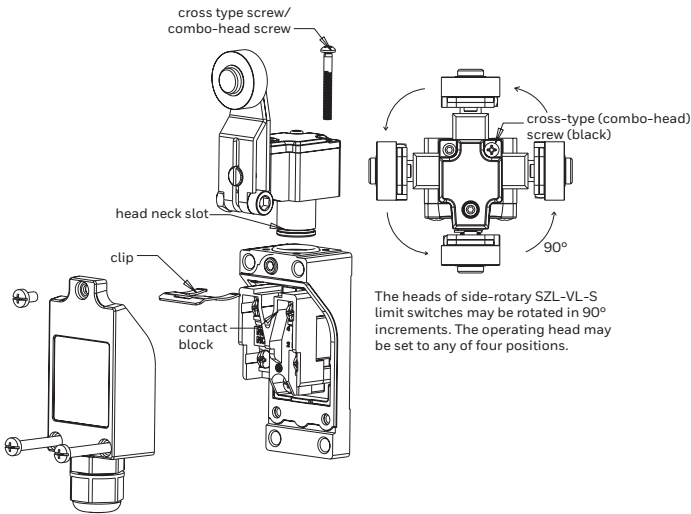


Figure 2. SZL-VL Exploded View



## SIDE ROTARY HEAD DIRECTION CHANGE

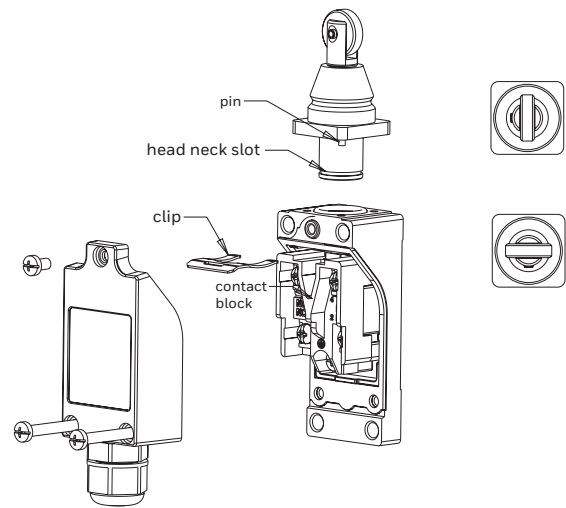
**Figure 3. Rotary Head Direction Change**



1. Disassemble the head's cross-type (combo-head) screw. Do not loosen or remove the other two Torx® screws.
2. Remove the switch cover by loosening the three (3) cover screws.
3. Lift slightly on the switch head.
4. Rotate the switch head to the desired direction ensuring the clip is still engaged with the head-neck slot.
5. If clip dislodges, return the clip to its location above the contact block and below the top of the switch housing by fully re-inserting the clip.
6. Re-insert the cross-type (combo head) screw to re-assemble the switch's head, 0,4 Nm to 0,5 Nm [3.54 in-lb to 4.42 in-lb].

## PLUNGER HEAD DIRECTION CHANGE

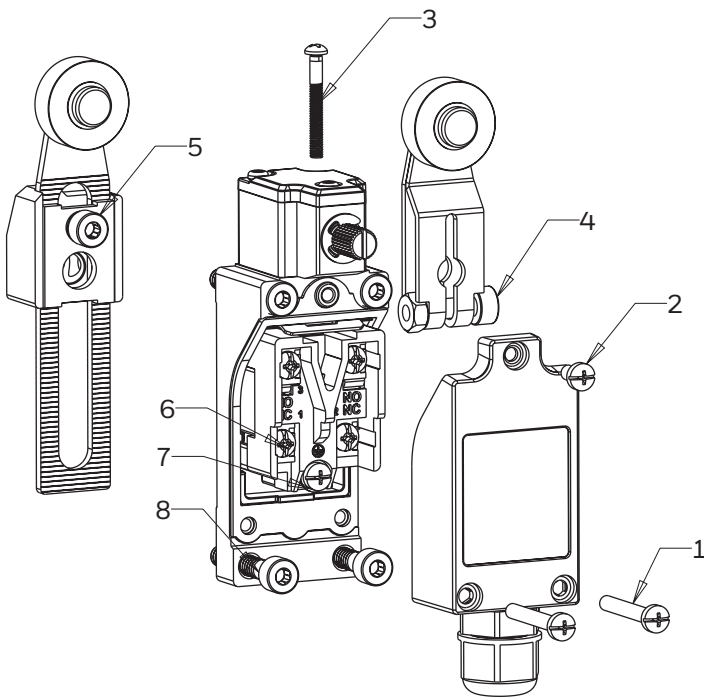
**Figure 4. Plunger Head Direction Change**



1. Remove the switch cover by loosening the three (3) cover screws.
2. Use flat screw driver to lift up the clip.
3. Rotate the switch head to the desired direction.
4. Properly align the two pins on the switch's head into the holes on the switch's body.
5. Return the clip to its location above the contact block and below the top of the switch housing by fully re-inserting the clip.

**Figure 5. Installation Screw Identification and Torque**

**Table 1. Installation Screw and Torque**

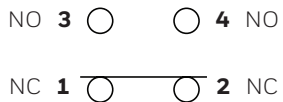


Screw	Description (see Figure 5)	Screw type	Installation torque
1	Installation screw for cover	M3 x 2.1 machine screw	0,5 Nm to 0,6 Nm [4.42 in-lb to 5.31 in-lb]
2	Installation screw for cover	M3 x 5 machine screw	0,5 Nm to 0,6 Nm [4.42 in-lb to 5.31 in-lb]
3	Installation screw for head	M2.5 screw	0,4 Nm to 0,5 Nm [3.54 in-lb to 4.42 in-lb]
4	Installation screw for fixed lever	M4 machine screw	2,5 Nm to 3 Nm [22.1 in-lb to 26.6 in-lb]
5	Installation screw for adjustable lever	M4 machine screw	2,5 Nm to 3 Nm [22.1 in-lb to 26.6 in-lb]
6	Terminal screw	M3 x 6 screw with assembled lock washer	0,5 Nm to 0,6 Nm [4.42 in-lb to 5.31 in-lb]
7	Grounding screw	M3 x 5.5 machine screw	0,5 Nm to 0,6 Nm [4.42 in-lb to 5.31 in-lb]
8	Installation screw for product	M4 machine screw	2,5 Nm to 3 Nm [22.1 in-lb to 26.6 in-lb]

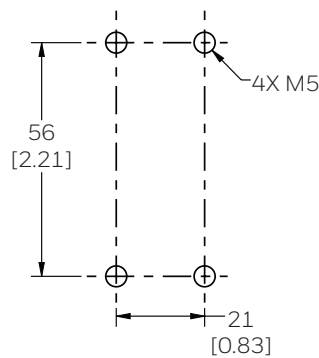
**Table 2. Performance Specifications**

Characteristic	Parameter
<b>Description</b>	Miniature industrial limit switch
<b>Approvals</b>	CCC, CE, cULus
<b>Housing material</b>	Die-cast metal housing with glass-filled, flame-retardant thermoplastic cover UL 94 flame spread testing: V-0 rated
<b>Electrical connection</b>	Conduit entry or cable gland
<b>Contact design</b>	Snap-action (all versions) Positive-opening contacts (side-rotary version only)
<b>Contact material</b>	Silver alloy
<b>Electrical ratings</b>	AC-15 A300 (380 Vac/0.5 A) DC-13 Q300 (220 Vdc/0.05 A)
<b>Thermal current (I<sub>th</sub>)</b>	10 A/250 Vac (EN 60947-5-1)
<b>Initial contact resistance</b>	≤ 25 mOhm
<b>Insulation resistance</b>	>100 MOhm at 500 Vdc
<b>Impulse voltage</b>	2500 Vdc
<b>Dielectric voltage</b>	1890 Vac for metal housing, 1890 Vac between all terminals to enclosure after durability test
<b>Leakage current</b>	≤ 10 mA
<b>Pollution degree</b>	3
<b>Environmental sealing</b>	IP67
<b>Operating temperature</b>	-20°C to 70°C [-4°F to 158°F] (with no icing)
<b>Humidity</b>	95 %RH
<b>Shock</b>	30 G, conforming to IEC 60068-2-27
<b>Vibration</b>	10 G, 10 Hz to 55 Hz displacement amplitude 0,75 mm, conforming to IEC 60068-2-6 (wobble excluded)
<b>MCTF (Mechanical life)</b>	10M cycles @ 120 cpm max.
<b>MCTF (Electrical life)</b>	0.5M cycles @ 30 cpm max. under the rated resistance load
<b>Operating speed</b>	0,05 mm/s to 2 m/s (based on pin plunger limit switch)
<b>Operating frequency</b>	Mechanical: 120 ops/min; Electrical: 30 ops/min
<b>Weight</b>	120 g to 150 g

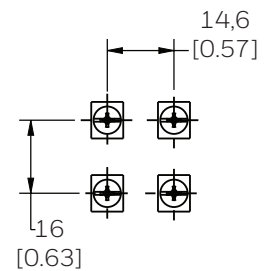
**Figure 6. Circuitry**



**Figure 7. Mounting Holes**



**Figure 8. Wiring**



**Table 3. Specifications**

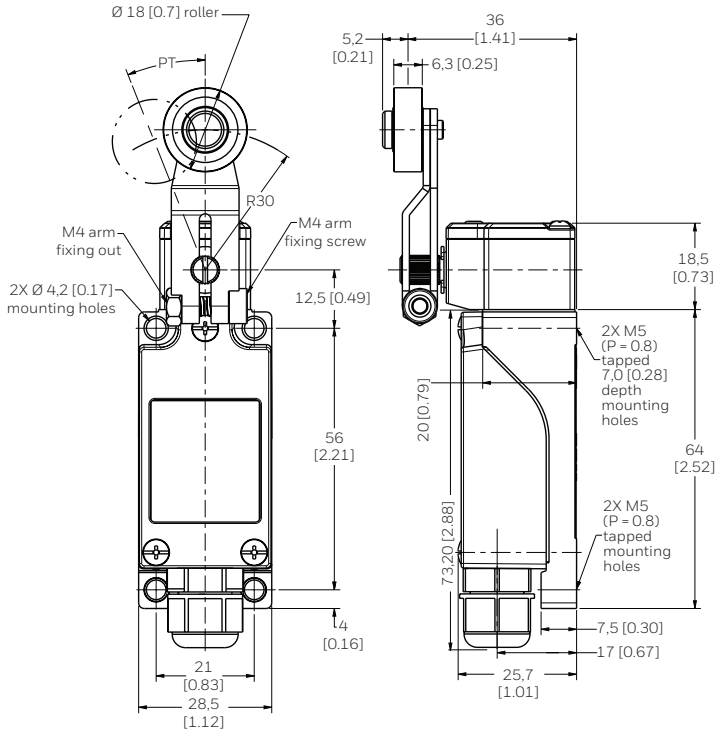
Catalog listing <sup>1</sup>	Actuator	Roller/pin plunger	Lever	Free position	Pretravel max. mm [in]	Differential travel max. mm [in]	Overtravel min. mm [in]	Min. travel to achieve positive opening	Operating force/torque (max.)	Bar chart
<b>SZL-VL-S-A-N-M</b>	Side rotary, fixed lever	Nylon roller, Ø18 x 6,5 [Ø0.71 x 0.25]	Steel, R30	0°	25°	15°	70°	40°	18 Ncm [1.59 in-lb]	
<b>SZL-VL-S-I-N-M</b>	Side rotary, fixed lever	Steel roller, Ø18 x 6,5 [Ø0.71 x 0.25]	Steel, R30	0°	25°	15°	70°	40°	18 Ncm [1.59 in-lb]	
<b>SZL-VL-S-B-N-M</b>	Side rotary, adjustable lever	Nylon roller, Ø18 x 6,5 [Ø0.71 x 0.25]	Steel, R30 to R70	0°	25°	15°	70°	40°	18 Ncm [1.59 in-lb]	
<b>SZL-VL-S-J-N-M</b>	Side rotary, adjustable lever	Steel roller, Ø18 x 6,5 [Ø0.71 x 0.25]	Steel, R30 to R70	0°	25°	15°	70°	40°	18 Ncm [1.59 in-lb]	
<b>SZL-VL-S-C-N-M</b>	Side rotary, adjustable rod	-	Metal rod, Ø2,5 mm [0.1 in], 125 mm [4.92 in] long	0°	25°	15°	70°	40°	18 Ncm [1.59 in-lb]	
<b>SZL-VL-S-D-N-M</b>	Top pin plunger	Metal pin, Ø6,6 [0.26]	-	27 ±0,8 [1.04 ±0.03]*	2 [0.08]	1,5 [0.06]	3,5 [0.14]	n/a	9 N [2.02 lb]	
<b>SZL-VL-S-H-N-M</b>	Top roller plunger	Steel roller, Ø12,5 x 3,8 [Ø0.5 x 0.15]	-	38,5 ±0,8 [1.5 ±0.03]*	2 [0.08]	1,5 [0.06]	3,5 [0.14]	n/a	9 N [2.02 lb]	
<b>SZL-VL-S-E-N-M</b>	Top cross roller plunger	Steel roller, Ø12,5 x 3,8 [Ø0.5 x 0.15]	-	38,5 ±0,8 [1.5 ±0.03]*	2 [0.08]	1,5 [0.06]	3,5 [0.14]	n/a	9 N [2.02 lb]	
<b>SZL-VL-S-F-N-M</b>	Wobble, coil spring and nylon rod	-	Ø5,8 mm [0.23 in] coil spring with plastic rod	0°	30°	-	20°	n/a	2 N [0.45 lb]	
<b>SZL-VL-S-G-N-M</b>	Wobble, coil spring and metal wire	-	Ø5,8 mm [0.23 in] coil spring with Ø1,2 mm [0.05 in] metal wire	0°	30°	-	20°	n/a	2 N [0.45 lb]	
<b>SZL-VL-S-K-N-M</b>	Wobble, coil spring	-	Ø5,8 mm [0.23 in] coil spring	0°	30°	-	20°	n/a	2 N [0.45 lb]	

<sup>1</sup> Specifications are exactly the same for the -N and -M with cable gland option

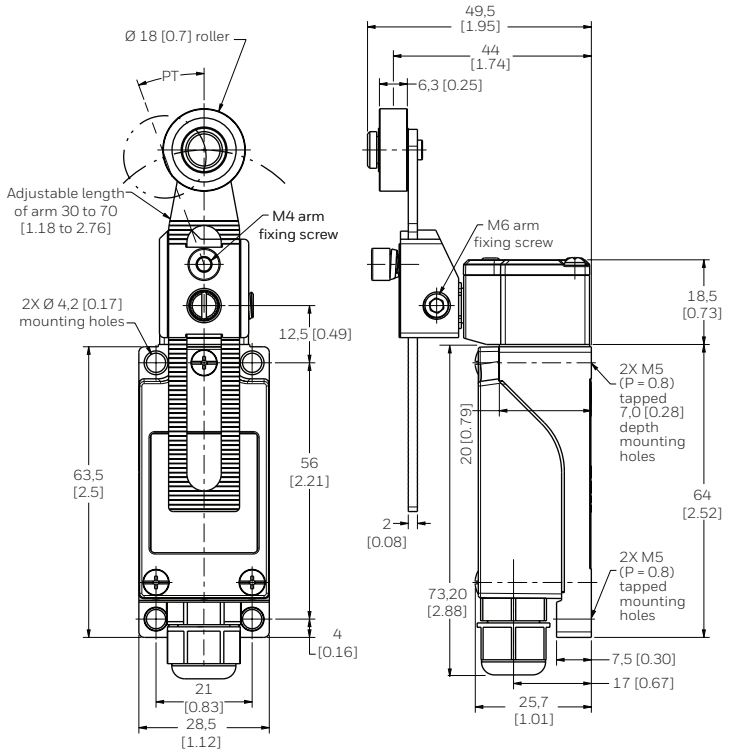
\* (from the center of the mounting hole)

**Dimensional Drawings • mm [in]**

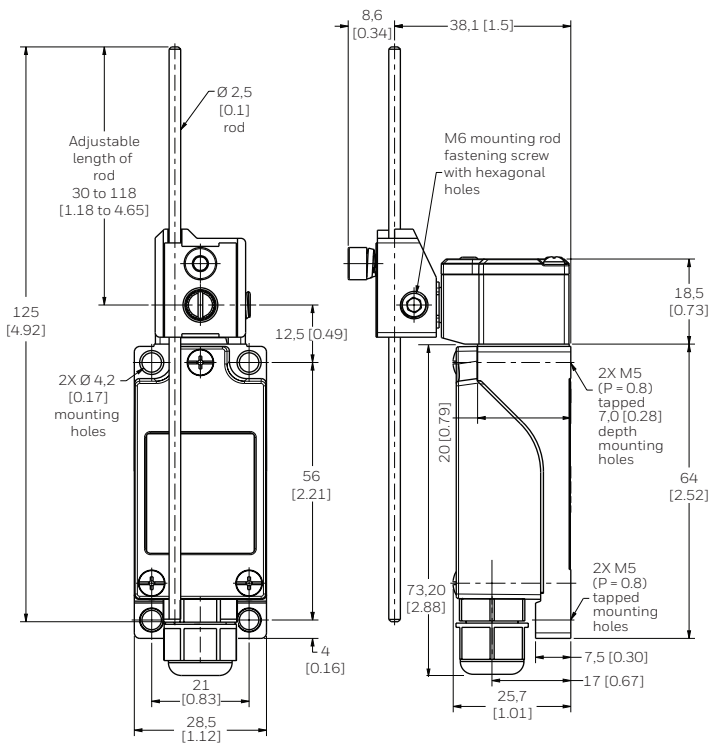
**Figure 9. SZL-VL Side Rotary Limit Switch (Fixed Lever)**



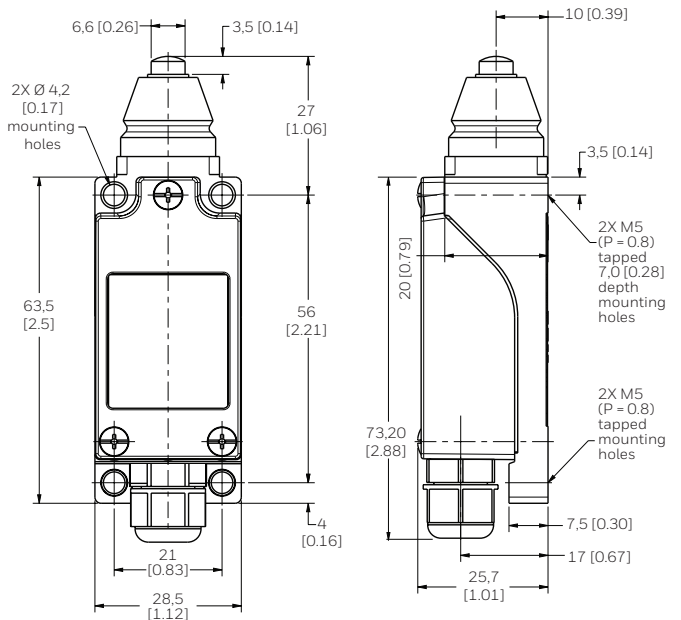
**Figure 10. SZL-VL Side Rotary Limit Switch (Adjust. Lever)**



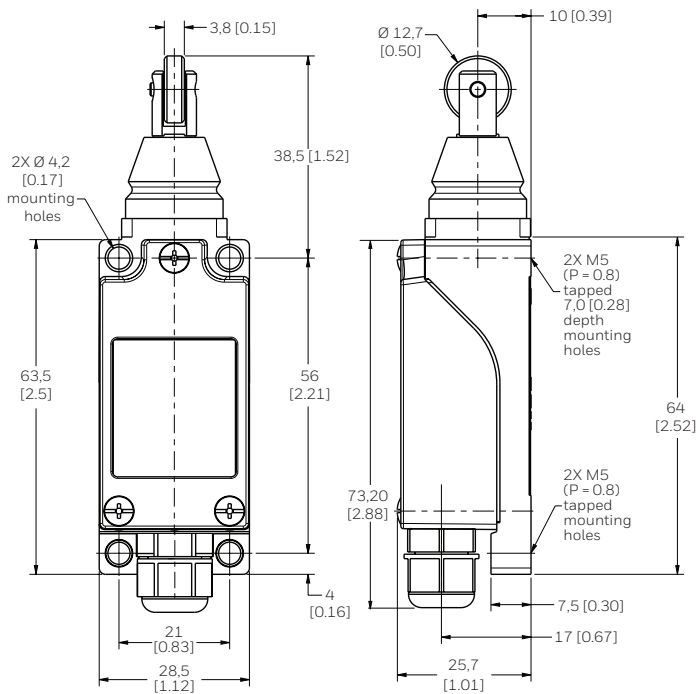
**Figure 11. SZL-VL Side Rotary Limit Switch (Adjust. Rod)**



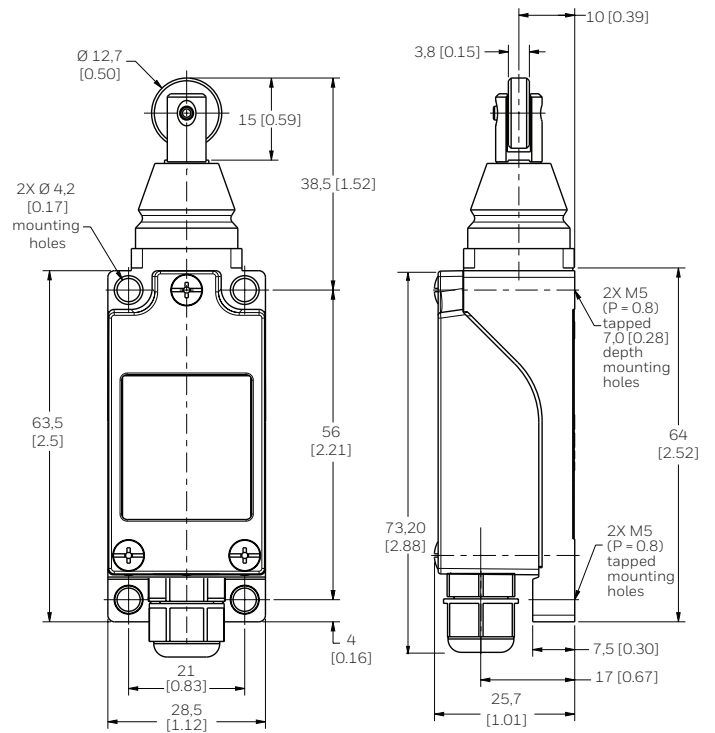
**Figure 12. SZL-VL Pin Plunger Limit Switch**



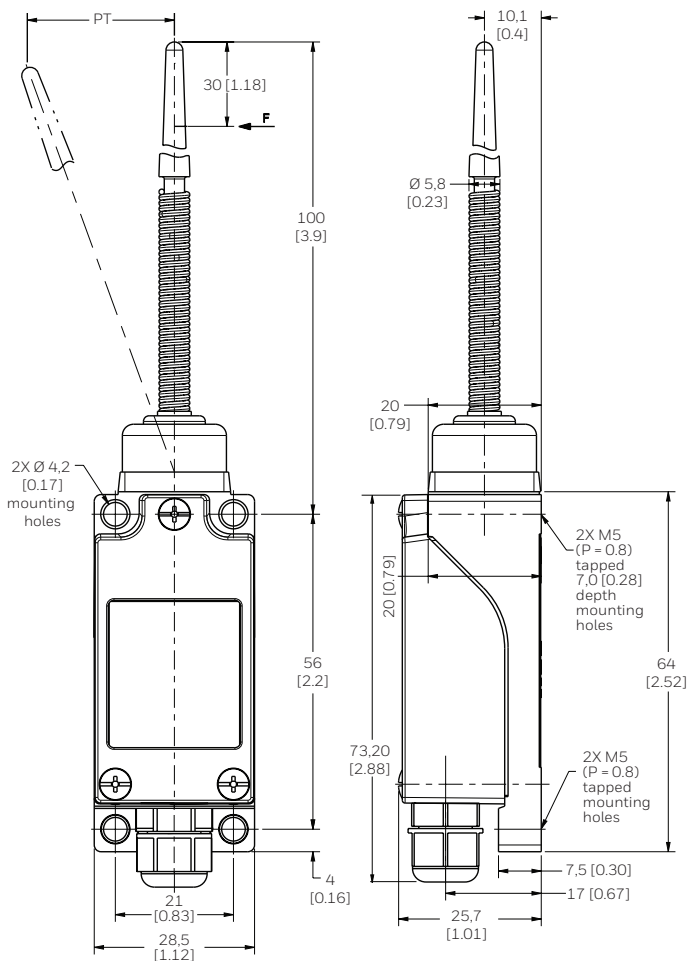
**Figure 13. SZL-VL Cross Roller Plunger Limit Switch**



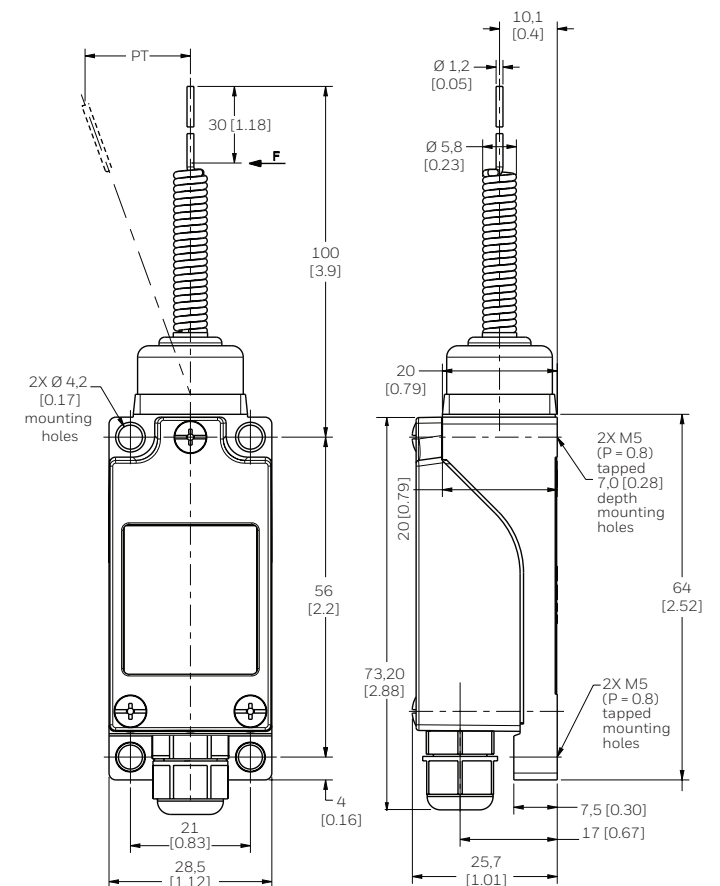
**Figure 14. SZL-VL Roller Plunger Limit Switch**



**Figure 15. SZL-VL Coil Wobble (Plastic Tip) Limit Switch**

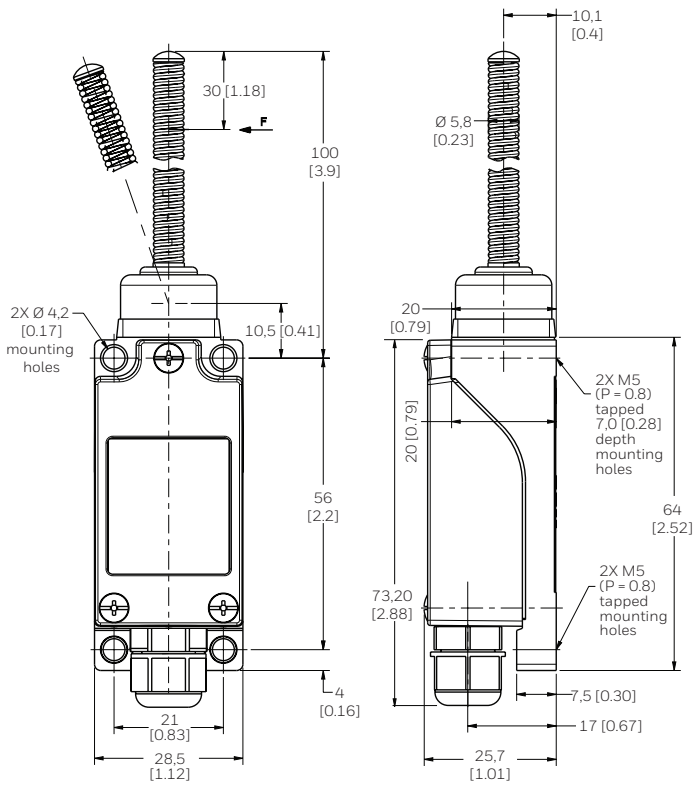


**Figure 16. SZL-VL Coil Wobble (Wire Tip) Limit Switch**

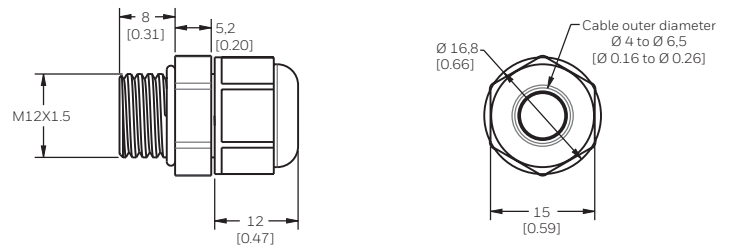




**Figure 17. SZL-VL Coil Wobble Limit Switch**



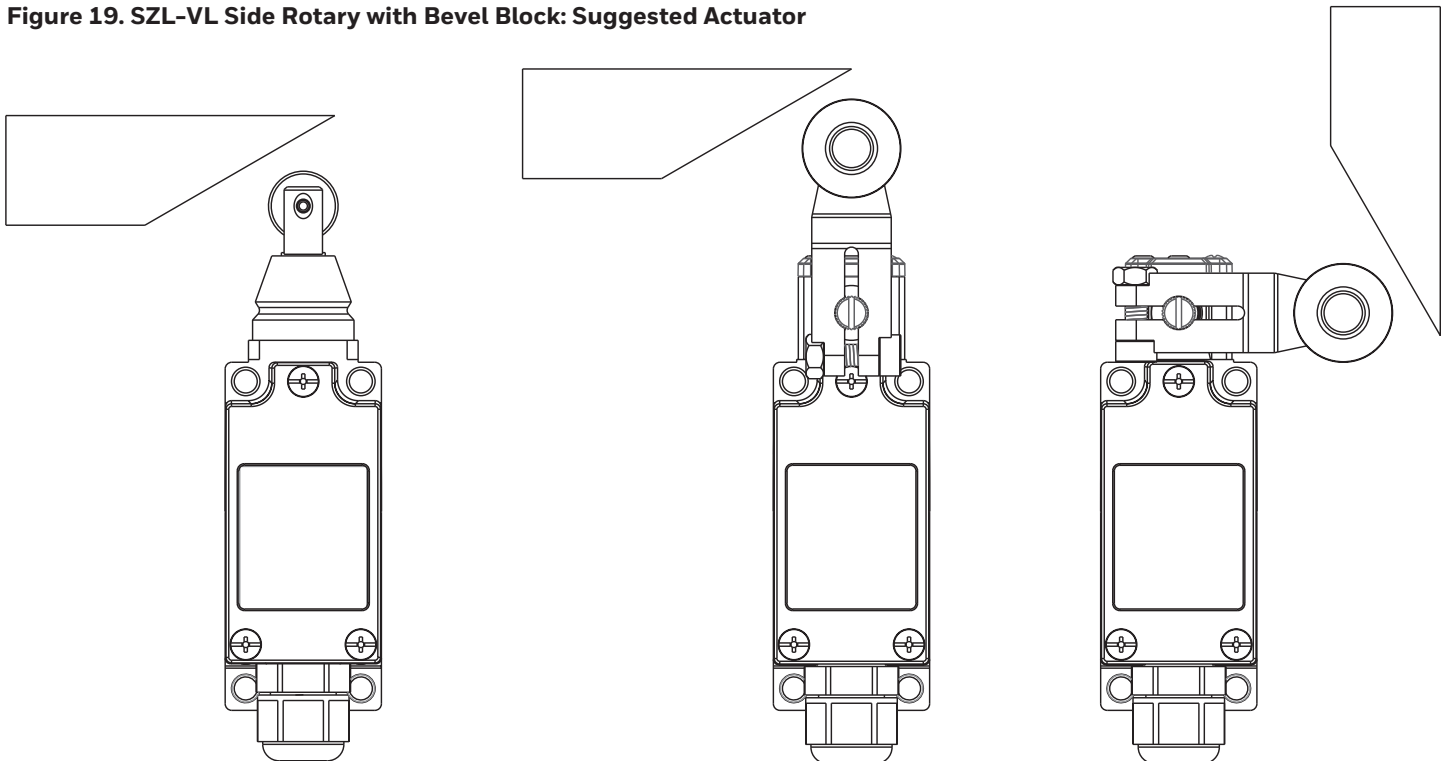
**Figure 18. SZL-VL M12 Cable Gland (A1-LSC-F)**



## INSTALLATION INFORMATION

Actuator should use bevel block for fixed lever, adjustable lever and top roller plunger

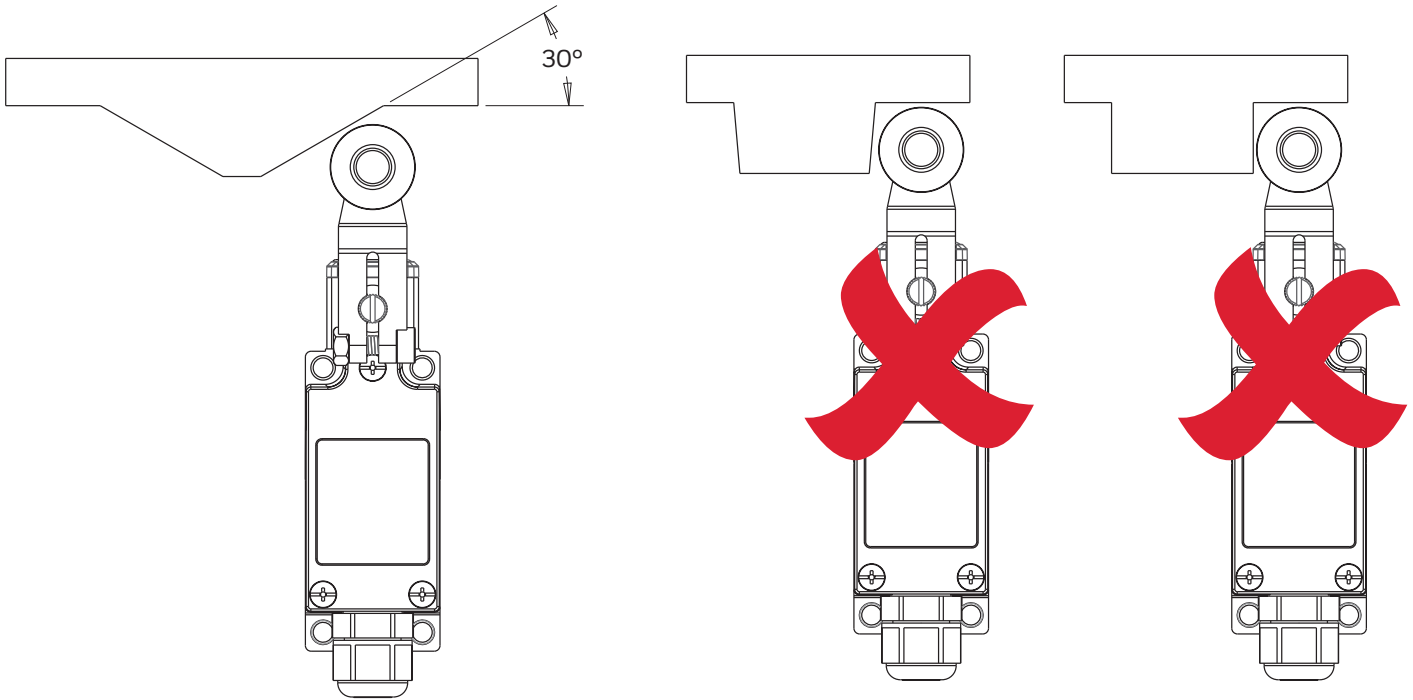
**Figure 19. SZL-VL Side Rotary with Bevel Block: Suggested Actuator**



## INSTALLATION INFORMATION, CONTINUED

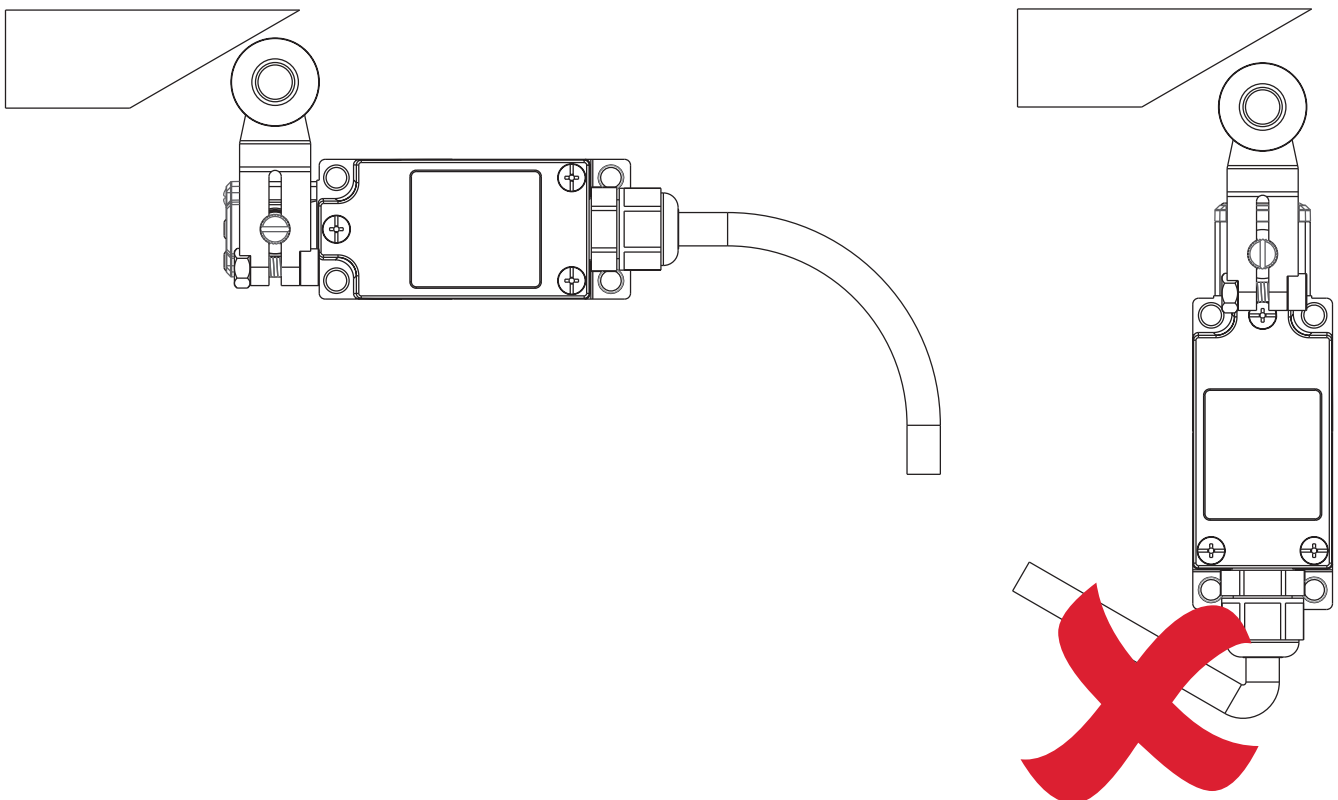
Actuator should use bevel block for fixed lever, adjustable lever and top roller plunger

**Figure 20. SZL-VL Side Rotary with Bevel Block: Suggested Actuator**



When wiring, leave enough space for cable.

**Figure 21. SZL-VL Side Rotary with Bevel Block: Suggested Cable**



## Warranty/Remedy

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