

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

Issue D

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

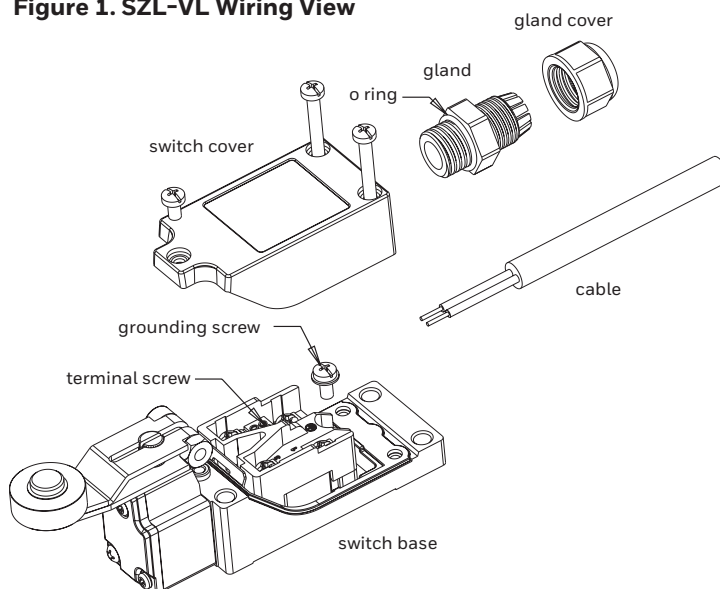
- Consult with local safety agencies and their requirements when designing a machine control link, interface, and all control elements that affect safety.
- Strictly adhere to all installation instructions.

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 **<https://sps.honeywell.com/us/en/support/sensing-and-iot/micro-switch-limit-switch-installation-instructions>**
2. Select the product's instructions from the installation instruction section

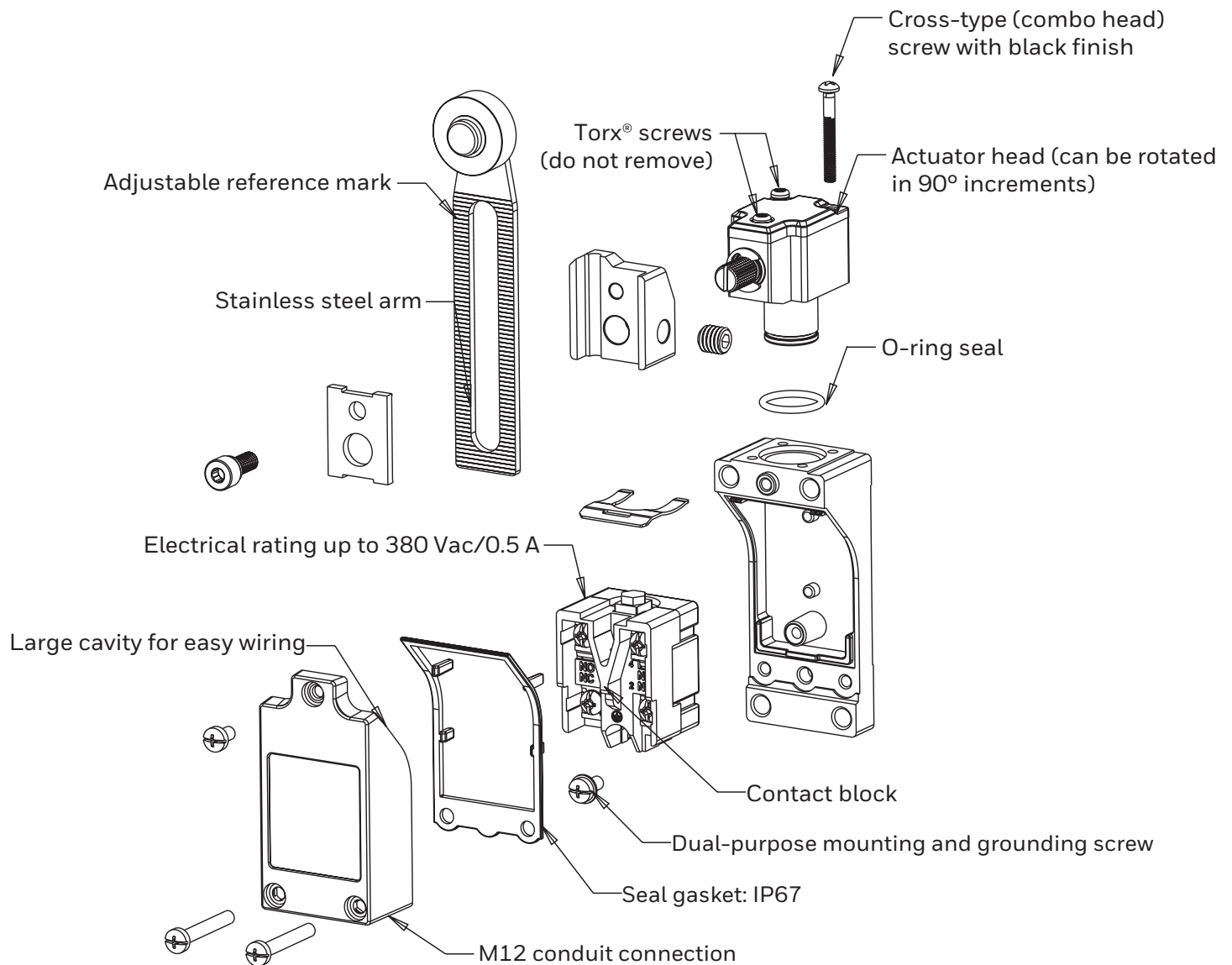
Figure 1. SZL-VL Wiring View



INSTALLATION INFORMATION

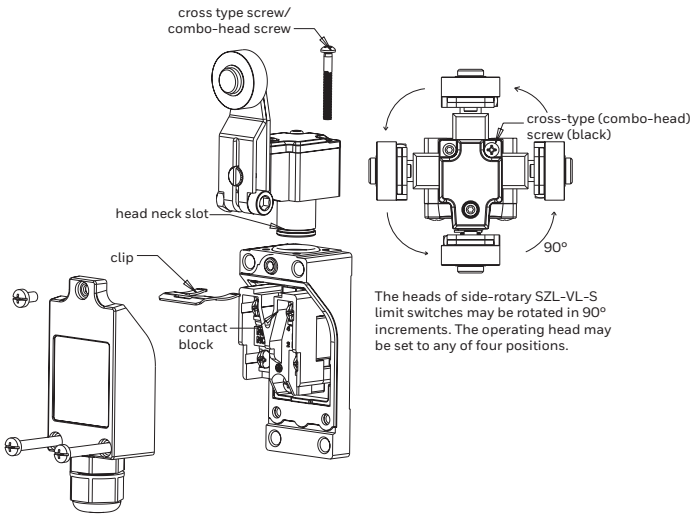
1. Refer to
 - Page 4 for switch mounting torque
 - Page 5 for specifications
2. For mounting, note mounting dimension drawing for hole locations (Figure 5).
3. Mount switch
 - 3a. Torque switch to mounting surface: 2,5 Nm to 3 Nm [22.1 in-lb to 26.6 in-lb] using M4 screw
 - 3b. Care should be taken 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. For switches where the cable gland is not provided, use a gland rated Type 1 or higher to maintain the integrity of the enclosure-type rating.
6. 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.
7. Use copper conductors rated at 75°C or higher. Thread the cable through the gland cover and gland, then press the wire into the contact block's terminals.
8. 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].
9. 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.
 - 9a. Confirm the normal closed contacts open when actuator is pushed or lever is rotated.
 - 9b. Confirm the normal open contacts closed when actuator is pushed or lever is rotated.
10. 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.
11. Reassemble gland cover (0,8 Nm to 1,5 Nm torque)

Figure 2. SZL-VL Exploded View



SIDE ROTARY HEAD DIRECTION CHANGE

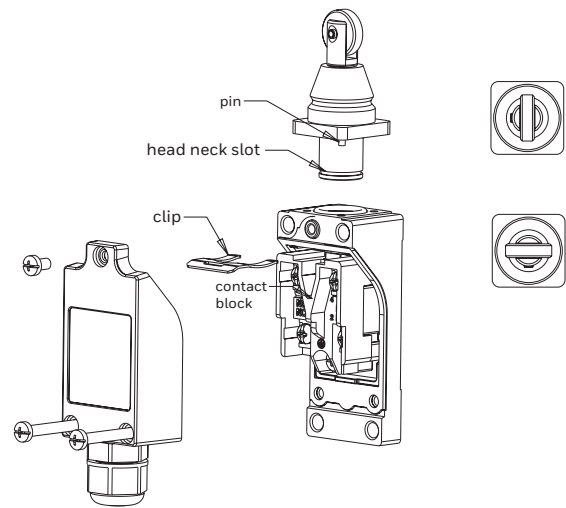
Figure 3. Rotary Head Direction Change



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	0,65 Nm to 0,85 Nm [5.8 in-lb to 7.5 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]

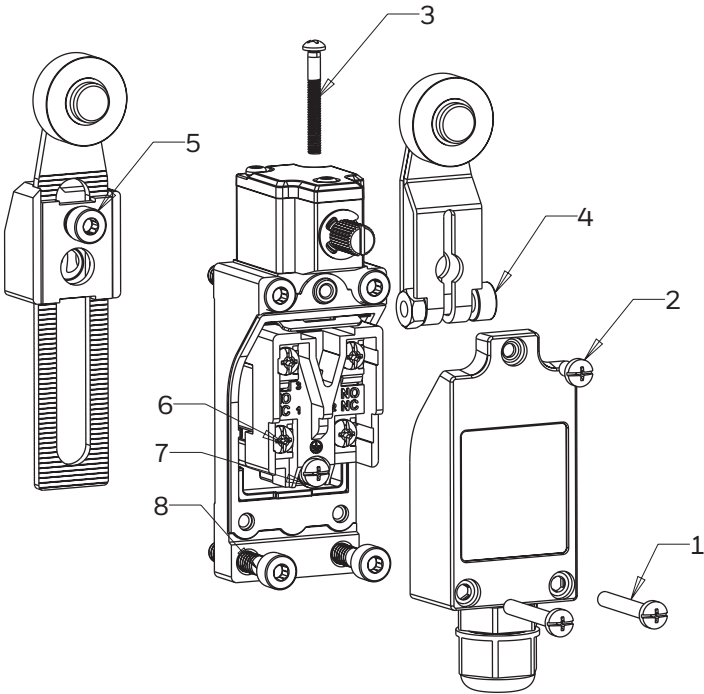


Table 2. Performance Specifications

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

Figure 6. Circuitry

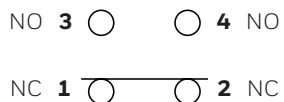


Figure 7. Mounting Holes

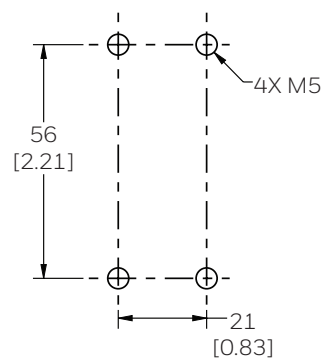


Figure 8. Wiring

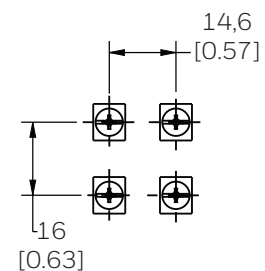


Table 3. Specifications

Catalog listing ¹	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
SZL-VL-S-A-N-M	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]	
SZL-VL-S-I-N-M	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]	
SZL-VL-S-B-N-M	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]	
SZL-VL-S-J-N-M	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]	
SZL-VL-S-C-N-M	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]	
SZL-VL-S-D-N-M	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]	
SZL-VL-S-H-N-M	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]	
SZL-VL-S-E-N-M	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]	
SZL-VL-S-F-N-M	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]	
SZL-VL-S-G-N-M	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]	
SZL-VL-S-K-N-M	Wobble, coil spring	–	Ø5,8 mm [0.23 in] coil spring	0°	30°	–	20°	n/a	2 N [0.45 lb]	

¹ 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)

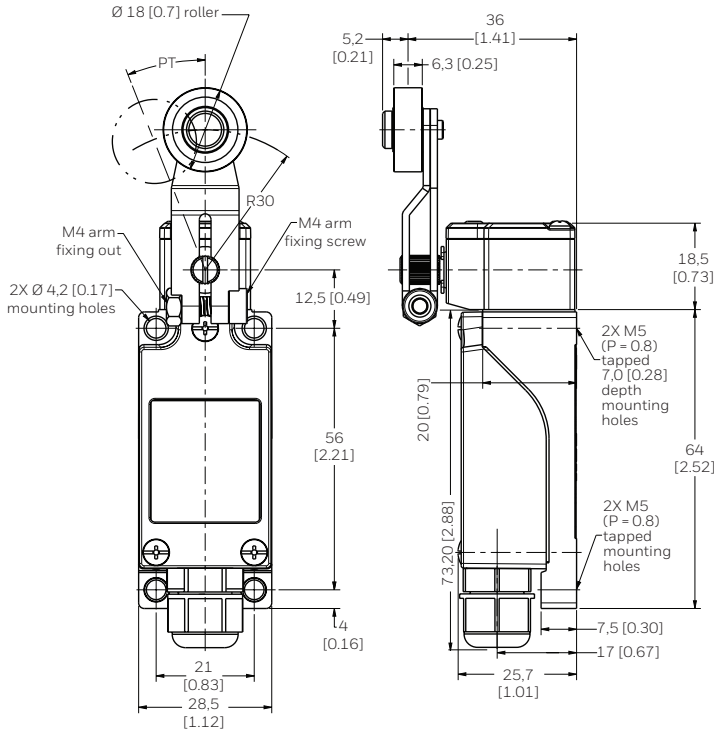


Figure 10. SZL-VL Side Rotary Limit Switch (Adjust. Lever)

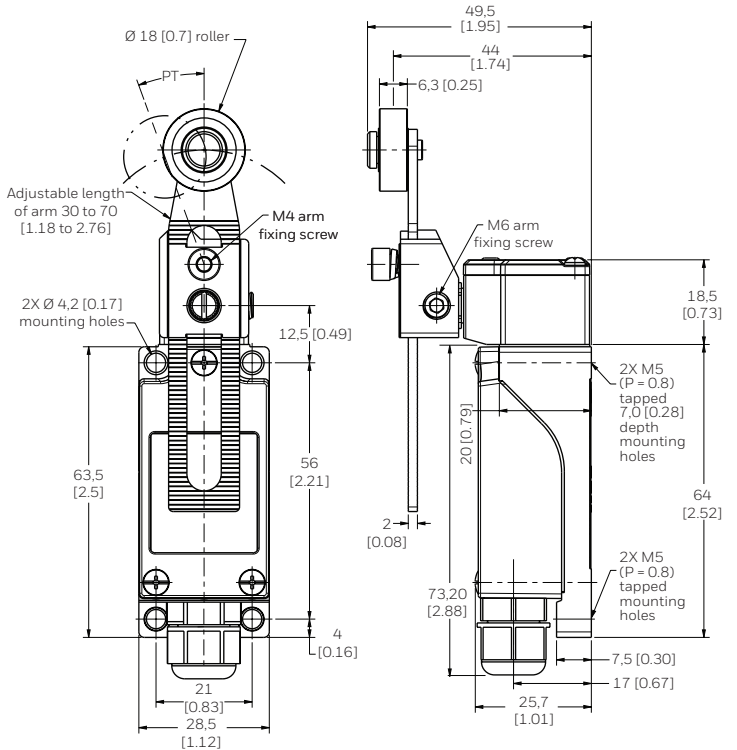


Figure 11. SZL-VL Side Rotary Limit Switch (Adjust. Rod)

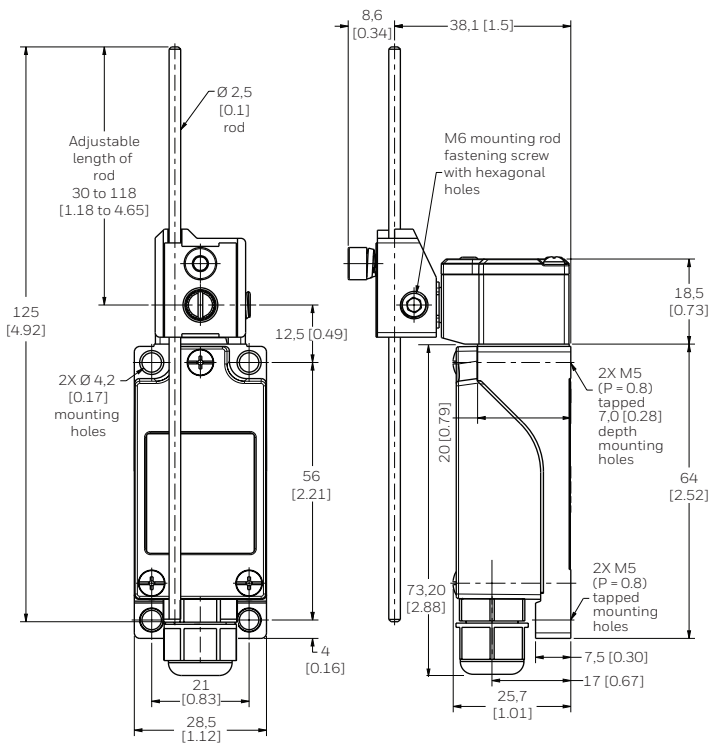


Figure 12. SZL-VL Pin Plunger Limit Switch

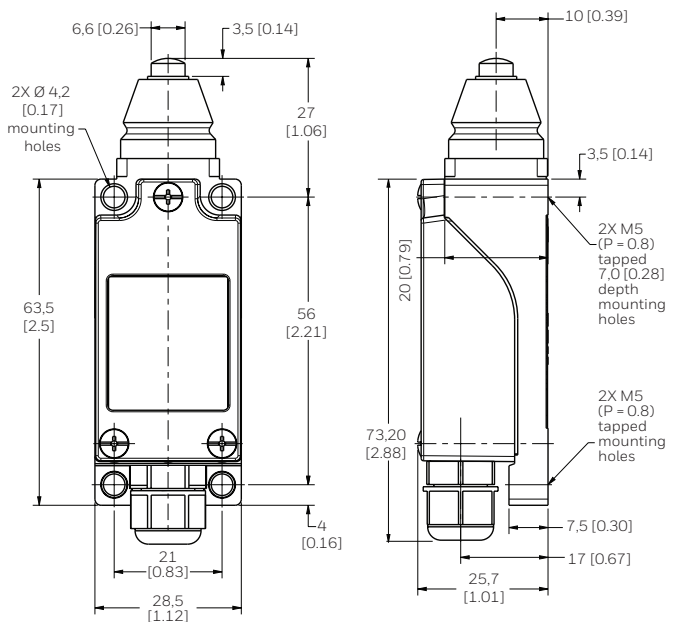


Figure 13. SZL-VL Cross Roller Plunger Limit Switch

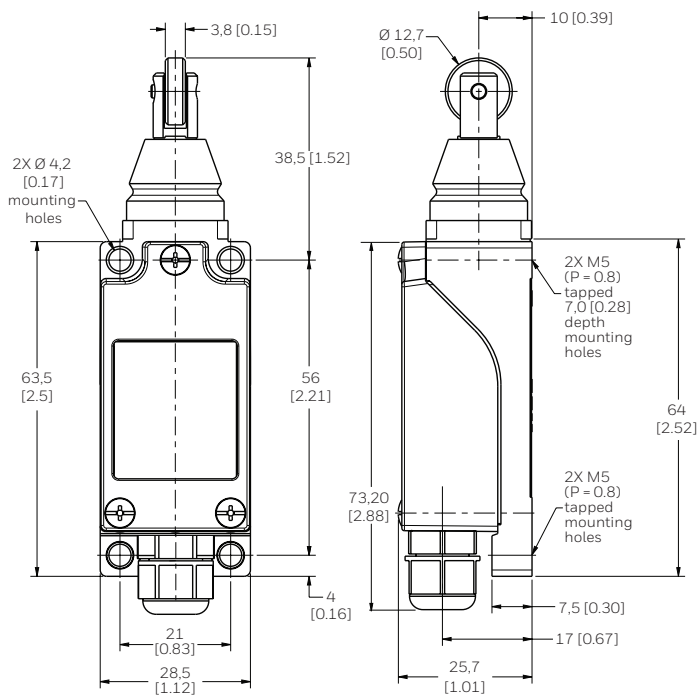


Figure 14. SZL-VL Roller Plunger Limit Switch

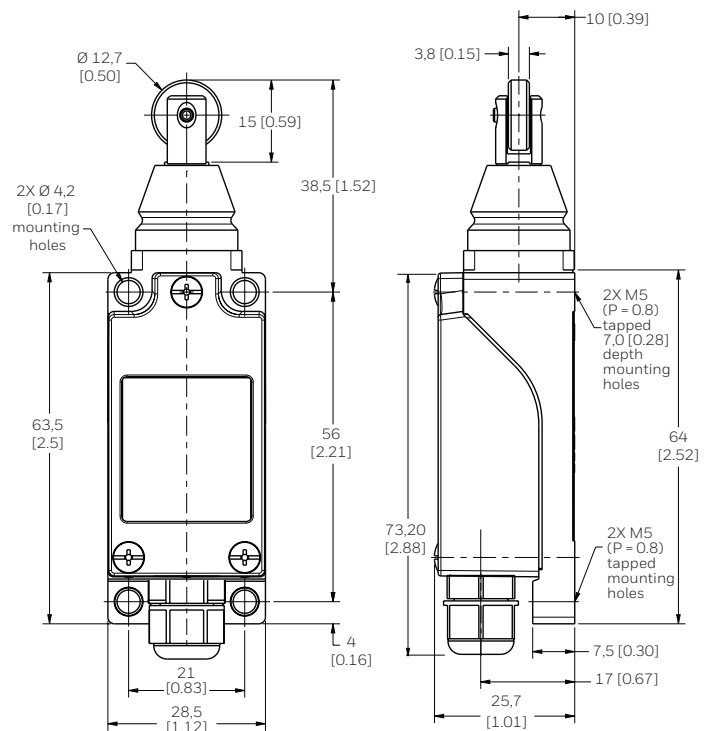


Figure 15. SZL-VL Coil Wobble (Plastic Tip) Limit Switch

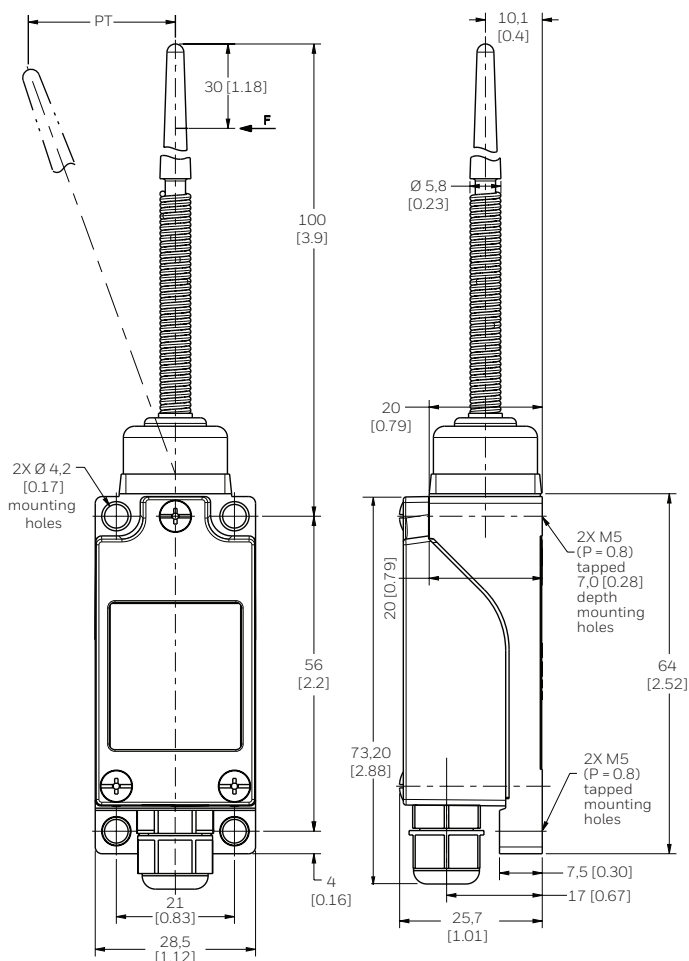


Figure 16. SZL-VL Coil Wobble (Wire Tip) Limit Switch

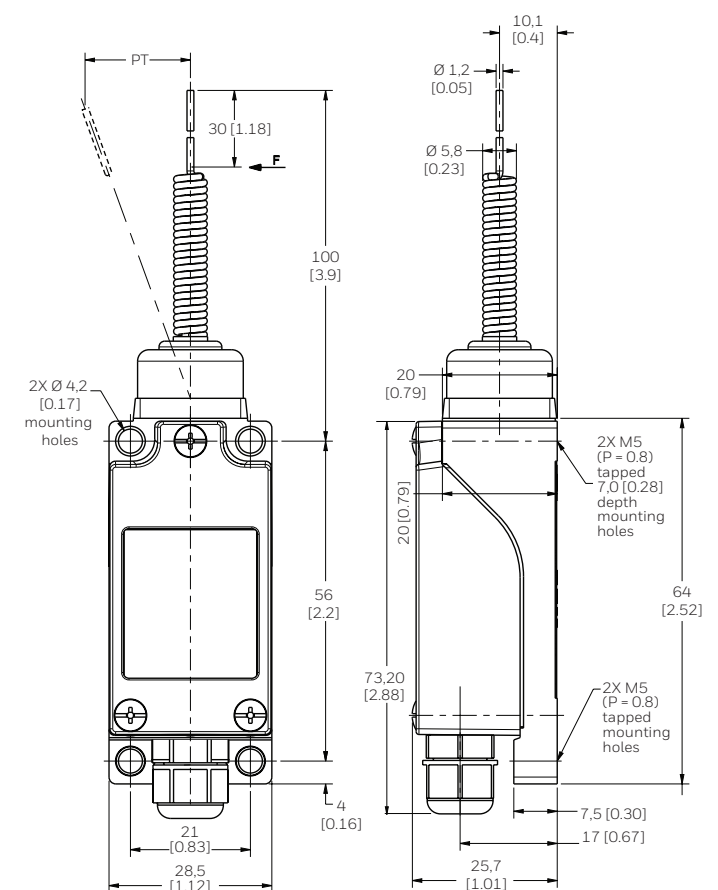


Figure 17. SZL-VL Coil Wobble Limit Switch

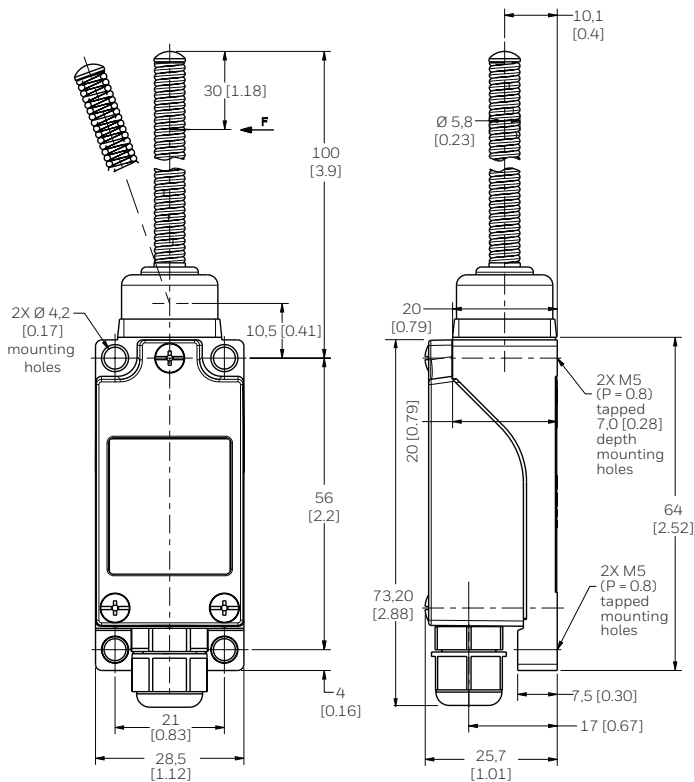
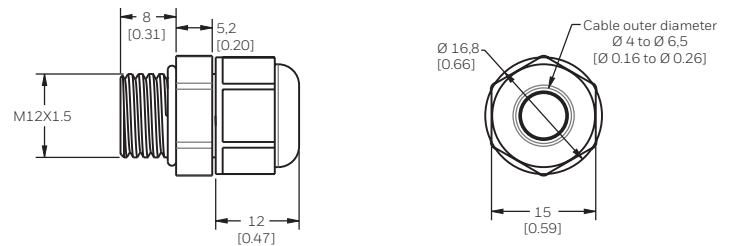


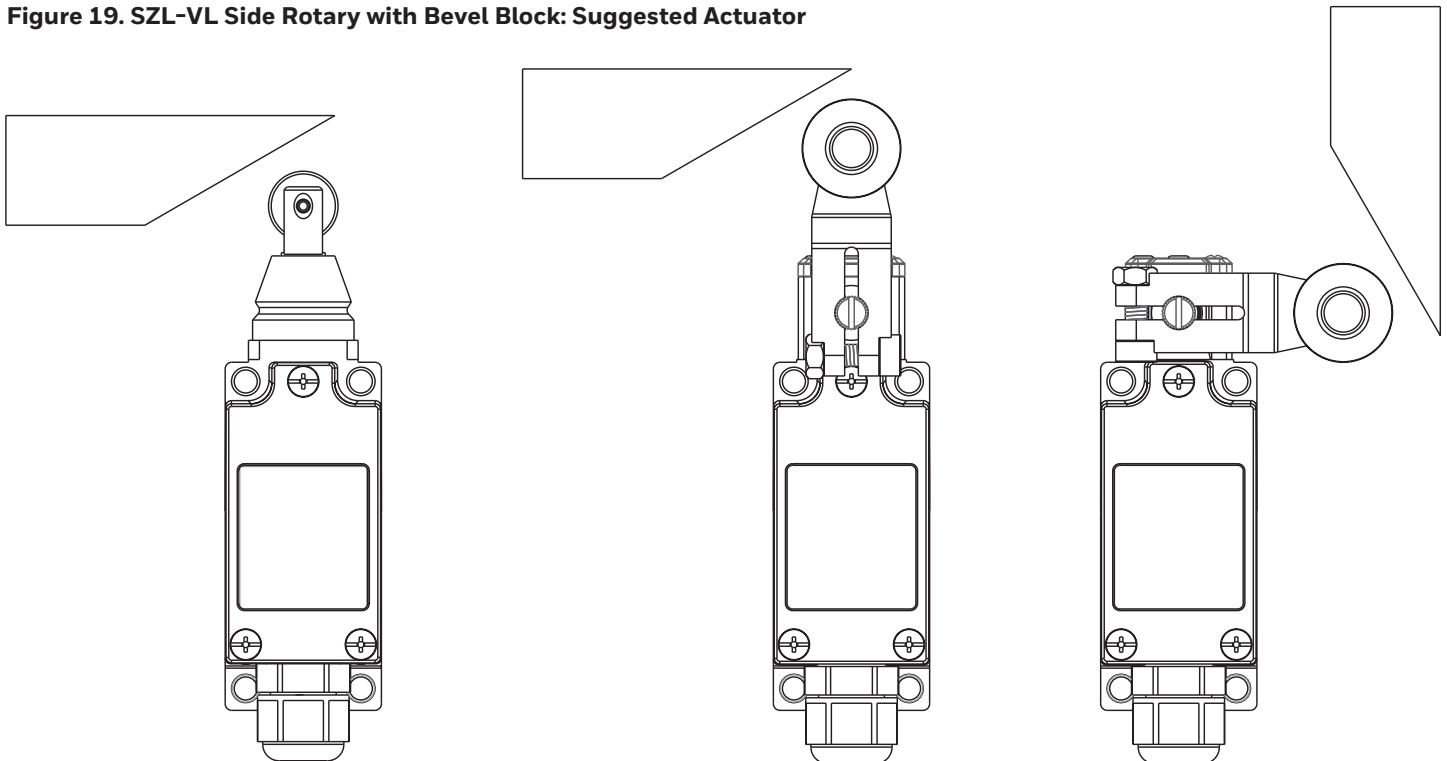
Figure 18. SZL-VL M12 Cable Gland (A1-LSC-F)



INSTALLATION INFORMATION

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

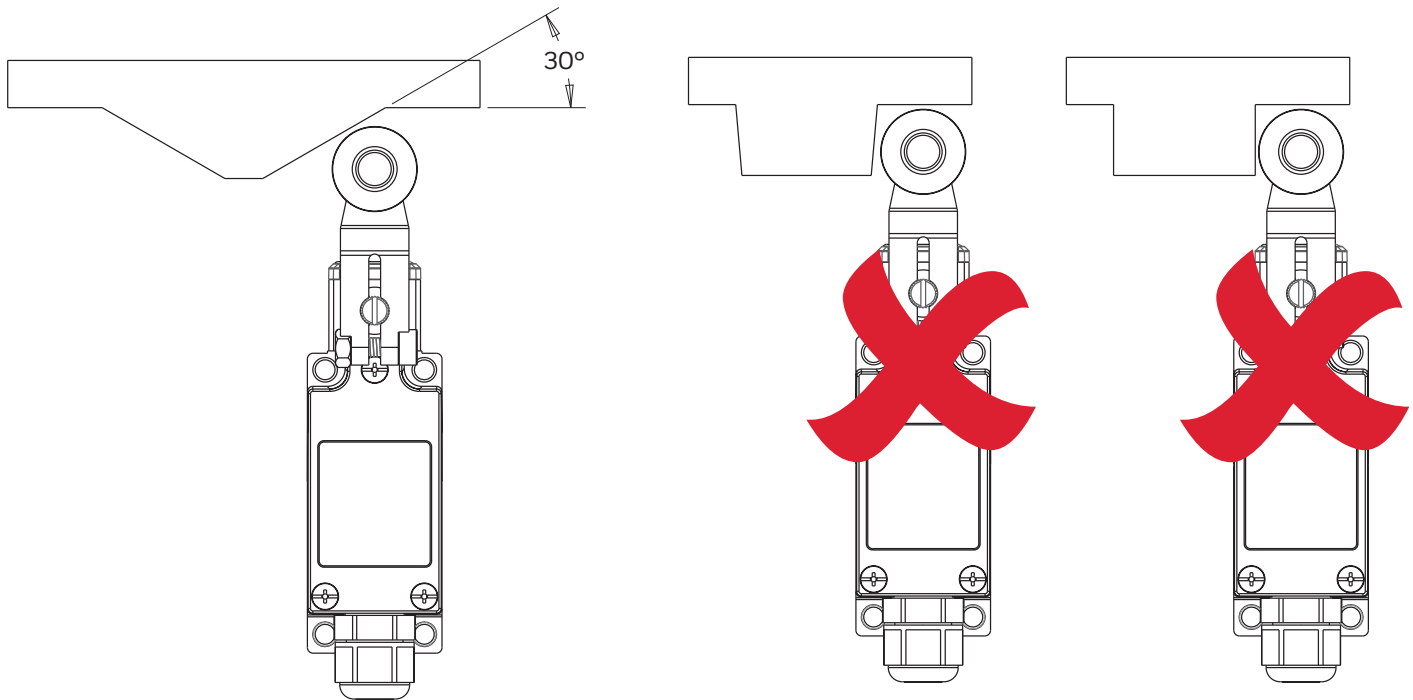
Figure 19. SZL-VL Side Rotary with Bevel Block: Suggested Actuator



INSTALLATION INFORMATION, CONTINUED

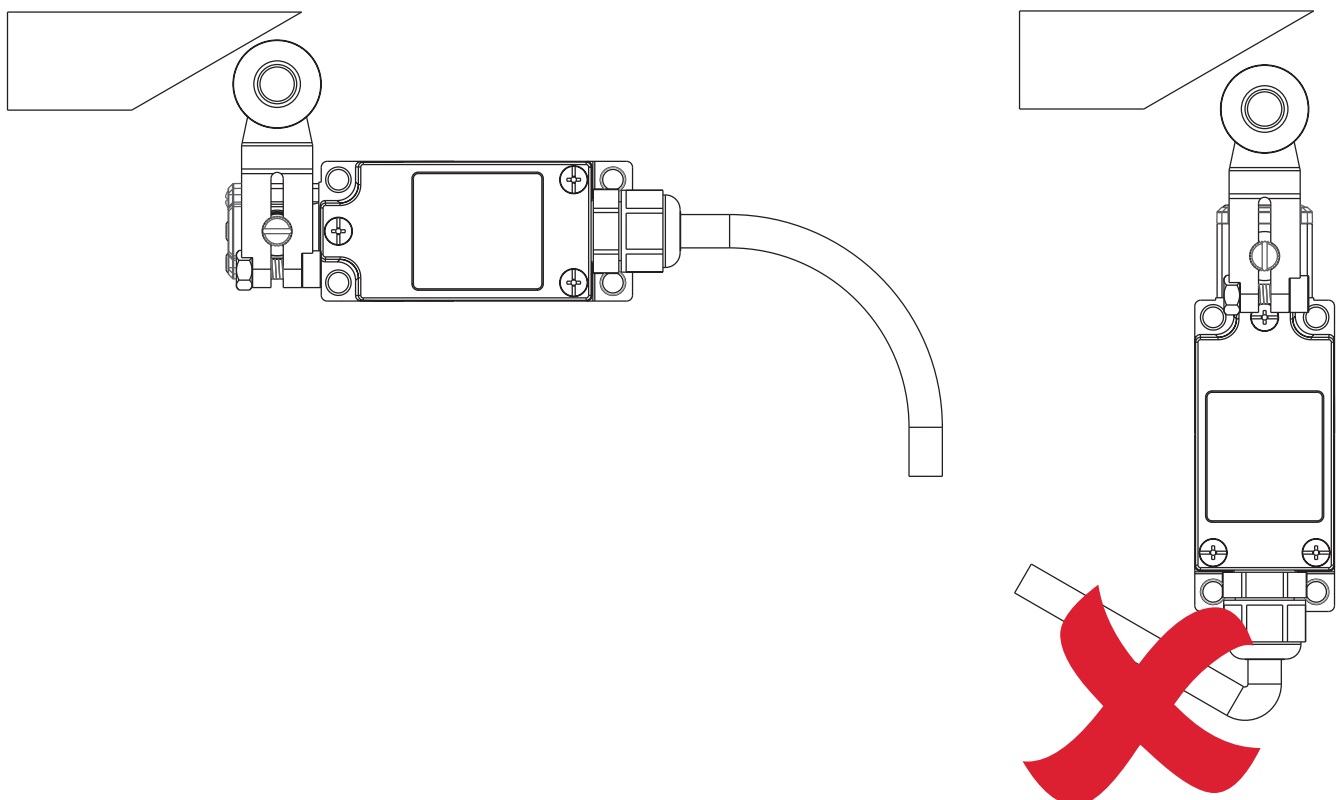
Actuator should use bevel block for fixed lever, adjustable lever and top roller plunger

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

Honeywell warrants goods of its manufacture as being free of defective materials and faulty workmanship during the applicable warranty period. Honeywell's standard product warranty applies unless agreed to otherwise by Honeywell in writing; please refer to your order acknowledgement or consult your local sales office for specific warranty details. If warranted goods are returned to Honeywell during the period of coverage, Honeywell will repair or replace, at its option, without charge those items that Honeywell, in its sole discretion, finds defective. **The foregoing is buyer's sole remedy and is in lieu of all other warranties, expressed or implied, including those of merchantability and fitness for a particular purpose. In no event shall Honeywell be liable for consequential, special, or indirect damages.**

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