



Authorised Distributors:-

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## Enclosed Limit Switches

## ZE/ZV/ZV2

Large Switching Capacity and Long Service Life

- 15-amp, 125 VAC switching capacity
- Wide selection of actuators
- Rugged diecast housing
- Sealed (booted) switches meet NEMA types 1, 2, 3, 4 and 5
- Three mounting styles available:
  - Side mounting (ZE)
  - Diagonal side mounting (ZV2) is ideal for gang mounting several switches
  - Flanged base mounting (ZV )



## Ordering Information

### ■ SIDE MOUNTING SWITCHES

Actuators	General-purpose	Sealed (booted)
Plunger	<b>ZE-Q-2S</b>	<b>ZE-N-2S</b>
Roller plunger	<b>ZE-Q22-2S</b>	<b>ZE-N22-2S</b>
Cross roller plunger	<b>ZE-Q21-2S</b>	<b>ZE-N21-2S</b>
Roller arm lever	<b>ZE-QA2-2S</b>	<b>ZE-NA2-2S</b>
One-way action arm lever	<b>ZE-QA277-2S</b>	<b>ZE-NA277-2S</b>
Rod lever	<b>ZE-QCL-2S</b>	<b>ZE-NCL-2S</b>
Coil spring	—	<b>ZE-NJ-2S</b>

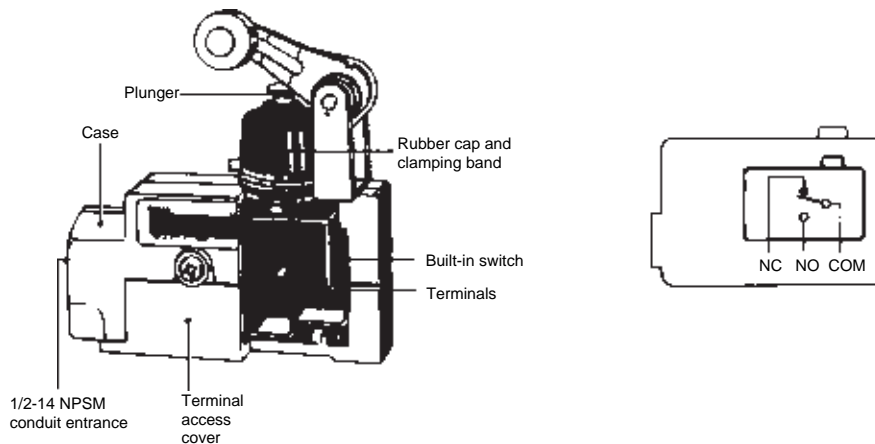
### ■ DIAGONAL SIDE MOUNTING SWITCHES

Actuators	General-purpose	Sealed (booted)
Plunger	<b>ZV2-Q-2S</b>	<b>ZV2-N-2S</b>
Roller plunger	<b>ZV2-Q22-2S</b>	<b>ZV2-N22-2S</b>
Cross roller plunger	<b>ZV2-Q21-2S</b>	<b>ZV2-N21-2S</b>
Roller arm lever	<b>ZV2-QA2-2S</b>	<b>ZV2-NA2-2S</b>
One-way action arm lever	<b>ZV2-QA277-2S</b>	<b>ZV2-NA277-2S</b>
Rod lever	<b>ZV2-QCL-2S</b>	<b>ZV2-NCL-2S</b>
Coil spring	—	<b>ZV2-NJ-2S</b>

### ■ FLANGED BASE MOUNTING SWITCHES

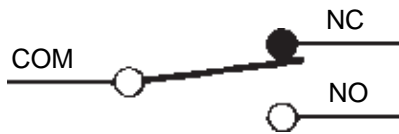
Actuators	General-purpose	Sealed (booted)
Plunger	<b>ZV-Q-2S</b>	<b>ZV-N-2S</b>
Roller plunger	<b>ZV-Q22-2S</b>	—
Cross roller plunger	<b>ZV-Q21-2S</b>	—
Roller arm lever	<b>ZV-QA2-2S</b>	<b>ZV-NA2-2S</b>
One-way action arm lever	<b>ZV-QA277-2S</b>	<b>ZV-NA277-2S</b>
Rod lever	<b>ZV-QCL-2S</b>	<b>ZV-NCL-2S</b>
Coil spring	—	<b>ZV-NJ-2S</b>

# Construction

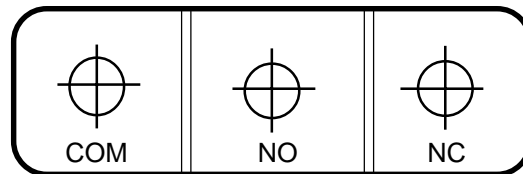


# Specifications

## CONTACT CONFIGURATION



## TERMINAL ARRANGEMENT



## ELECTRICAL SPECIFICATIONS

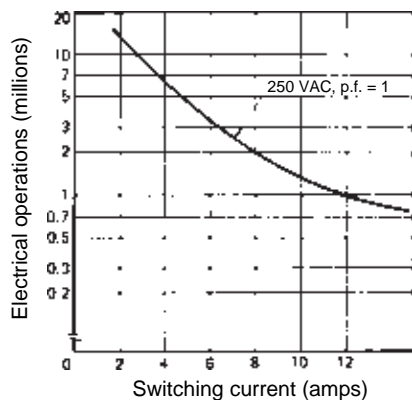
### Maximum Carrying Currents

Rated voltage	Non-inductive load (amps)				Inductive load (amps)				Inrush current (amps)	
	Resistive load		Lamp load		Inductive load		Motor load		NC	NO
	NC	NO	NC	NO	NC	NO	NC	NO		
125 VAC	15	15	3	1.5	15	15	5	2.5	30 max.	15 max.
250 VAC	15	15	2.5	1.25	15	15	3	1.5		
480 VAC	10	10	1.5	0.75	6	6	1.5	0.75		
125 VDC	0.5	0.5	0.5	0.5	0.05	0.05	0.05	0.05		
250 VDC	0.25	0.25	0.25	0.25	0.03	0.03	0.03	0.03		

Note:

1. Inductive load has a power factor of 0.4 minimum (AC) and a time constant of 7 msec (DC).
2. Lamp load has an inrush current of 10 times the steady-state current, while motor load has an inrush current of 6 times the steady-state current.

### Electrical Service Life



### Contact Ratings

15 A at 125, 250 and 480 VAC  
 1/8 HP at 125 VAC, 1/4 HP at 250 VAC  
 0.5 A at 125 VDC, 0.25 A at 250 VDC

### Contact Resistance

15 mΩ max. (initial)

### Electrical Approvals

UL Recognized, File No. E76675  
 CSA Certified, File No. LR21642  
 Germanischer Lloyd, File No. 91819HH

## MECHANICAL CHARACTERISTICS

Enclosure rating	UL	—
	NEMA	Types 1, 2, 3, 4, 5 for "-N types"; Type 1 for "-Q" types; Type 13 for ZV2-Q models
	IEC 144	IP65 for "-N types"; IP50 for "-Q types"
Mechanical life		10 million operations min.; 100,000 operations min. for ZE-NRN-S and ZV-NRN-S
Ambient operating temperature		-10° to 80°C (14° to 176°F)
Vibration	Malfunction durability	10 to 55 Hz, 1.5 mm (0.06 in) double amplitude
Shock	Malfunction durability	20 G
	Mechanical durability	100 G

## OPERATING CHARACTERISTICS

**Legend:** OF = Operating Force (max.); RF = Reset Force (min.); OT = Overtravel (min.); PT = Pretravel;

MD = Movement Differential (max.); OP = Operating Position

### ZE-Q General Purpose and ZE-N Sealed, Side Mounting Switches

Part number	Description	OF	RF	OT	PT	MD	OP
ZE-Q-2S	Pin plunger	250 to 350 g (8.8 to 12.3 oz.)	114 g (4.0 oz.)	5.5 mm (0.217 in)	0.4 mm (0.016 in)	0.05 mm (0.002 in)	38.2 ±0.8 mm (1.50 ±0.03 in)
ZE-Q22-2S	Roller plunger	250 to 350 g (8.8 to 12.3 oz.)	114 g (4.0 oz.)	3.6 mm (0.142 in)	0.5 mm (0.020 in)	0.05 mm (0.002 in)	49.7 ±1 mm (1.96 ±0.04 in)
ZE-Q21-2S	Cross roller plunger	250 to 350 g (9.8 to 12.3 oz.)	114 g (4.0 oz.)	3.6 mm (0.142 in)	0.5 mm (0.020 in)	0.05 mm (0.002 in)	49.7 ±1 mm (1.96 ±0.04 in)
ZE-QA2-2S	Roller arm lever	570 g (20.1 oz.)	170 g (6.0 oz.)	6 mm (0.236 in)	4 mm (0.157 in)	0.4 mm (0.016 in)	—
ZE-QA277-2S	One-way action arm lever	570 g (20.1 oz.)	170 g (6.0 oz.)	6 mm (0.236 in)	4 mm (0.157 in)	0.4 mm (0.016 in)	—
ZE-QCL-2S	Rod lever	153 g (5.4 oz.)	45 g (1.6 oz.)	22 mm (0.866 in)	15 mm (0.591 in)	1.5 mm (0.059 in)	—
ZE-N-2S	Sealed pin plunger	800 g (28.2 oz.)	240 g (8.5 oz.)	5 mm (0.197 in)	2 mm (0.079 in)	0.1 mm (0.004 in)	45.8 ±0.8 mm (1.80 ±0.03 in)
ZE-N22-2S	Sealed roller plunger	500 g (17.6 oz.)	100 g (3.5 oz.)	3.5 mm (0.138 in)	1 mm (0.039 in)	0.12 mm (0.005 in)	49.7 ±0.8 mm (1.96 ±0.03 in)
ZE-N21-2S	Sealed cross roller plunger	500 g (17.6 oz.)	100 g (3.5 oz.)	3.5 mm (0.138 in)	1 mm (0.039 in)	0.12 mm (0.005 in)	49.7 ±0.8 mm (1.96 ±0.03 in)
ZE-NA2-2S	Sealed roller arm lever	640 g (22.6 oz.)	230 g (8.1 oz.)	6 mm (0.236 in)	5 mm (0.197 in)	0.4 mm (0.016 in)	—
ZE-NA277-2S	Sealed one-way action arm lever	640 g (22.6 oz.)	230 g (8.1 oz.)	6 mm (0.236 in)	5 mm (0.197 in)	0.4 mm (0.016 in)	—
ZE-NCL-2S	Sealed rod lever	170 g (6.0 oz.)	60 g (2.1 oz.)	22 mm (0.866 in)	18.5 mm (0.728 in)	1.5 mm (0.059 in)	—
ZE-NJ-2S	Sealed coil spring	150 g (5.3 oz.)	—	—	15°	—	—

**OPERATING CHARACTERISTICS continued**

**Legend:** OF = Operating Force (max.); RF = Reset Force (min.); OT = Overtravel (min.); PT = Pretravel;  
MD = Movement Differential (max.); OP = Operating Position

**ZV2-Q General Purpose and ZV2-N Sealed, Diagonal Side Mounting Switches**

Part number	Description	OF	RF	OT	PT	MD	OP
ZV2-Q-2S	Pin plunger	250 to 350 g (8.8 to 12.3 oz.)	114 g (4.0 oz.)	5.5 mm (0.217 in)	0.4 mm (0.016 in)	0.05 mm (0.002 in)	63.7 ±0.8 mm (2.51 ±0.03 in)
ZV2-Q22-2S	Roller plunger	250 to 350 g (8.8 to 12.3 oz.)	114 g (4.0 oz.)	3.6 mm (0.142 in)	0.5 mm (0.020 in)	0.05 mm (0.002 in)	75.2 ±0.8 mm (2.96 ±0.03 in)
ZV2-Q21-2S	Cross roller plunger	250 to 350 g (9.8 to 12.3 oz.)	114 g (4.0 oz.)	3.6 mm (0.142 in)	0.5 mm (0.020 in)	0.05 mm (0.002 in)	75.2 ±0.8 mm (2.96 ±0.03 in)
ZV2-QA2-2S	Roller arm lever	570 g (20.1 oz.)	170 g (6.0 oz.)	6 mm (0.236 in)	4 mm (0.157 in)	0.4 mm (0.016 in)	—
ZV2-QA277-2S	One-way action arm lever	570 g (20.1 oz.)	170 g (6.0 oz.)	6 mm (0.236 in)	4 mm (0.157 in)	0.4 mm (0.016 in)	—
ZV2-QCL-2S	Rod lever	153 g (5.4 oz.)	45 g (1.6 oz.)	22 mm (0.866 in)	15 mm (0.591 in)	1.5 mm (0.059 in)	—
ZV2-N-2S	Sealed pin plunger	800 g (28.2 oz.)	240 g (8.5 oz.)	5 mm (0.197 in)	2 mm (0.079 in)	0.1 mm (0.004 in)	71.4 ±0.8 mm (2.81 ±0.03 in)
ZV2-N22-2S	Sealed roller plunger	500 g (17.6 oz.)	100 g (3.5 oz.)	3.5 mm (0.138 in)	1 mm (0.039 in)	0.12 mm (0.005 in)	35.7 ±0.8 mm (1.41 ±0.03 in)
ZV2-N21-2S	Sealed cross roller plunger	500 g (17.6 oz.)	100 g (3.5 oz.)	3.5 mm (0.138 in)	1 mm (0.039 in)	0.12 mm (0.005 in)	35.7 ±0.8 mm (1.41 ±0.03 in)
ZV2-NA2-2S	Sealed roller arm lever	640 g (22.6 oz.)	230 g (8.1 oz.)	6 mm (0.236 in)	5 mm (0.197 in)	0.4 mm (0.016 in)	—
ZV2-NA277-2S	Sealed one-way action arm lever	640 g (22.6 oz.)	230 g (8.1 oz.)	6 mm (0.236 in)	5 mm (0.197 in)	0.4 mm (0.016 in)	—
ZV2-NCL-2S	Sealed rod lever	170 g (6.0 oz.)	60 g (2.1 oz.)	22 mm (0.866 in)	18.5 mm (0.728 in)	1.5 mm (0.059 in)	—
ZV2-NJ-2S	Sealed coil spring	150 g (5.3 oz.)	—	—	15°	—	—

**ZV-Q General Purpose and ZV-N Sealed, Flanged Base Mounting Switches**

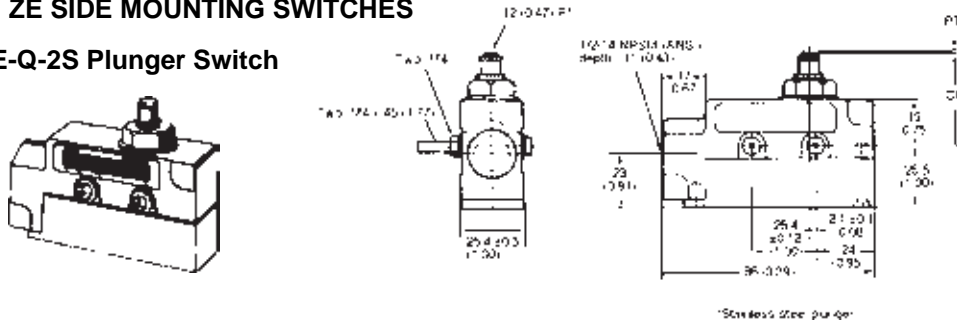
Part number	Description	OF	RF	OT	PT	MD	OP
ZV-Q-2S	Pin plunger	250 to 350 g (8.8 to 12.3 oz.)	114 g (4.0 oz.)	5.5 mm (0.217 in)	0.4 mm (0.016 in)	0.05 mm (0.002 in)	63.7 ±0.8 mm (2.51 ±0.03 in)
ZV-Q22-2S	Roller plunger	250 to 350 g (8.8 to 12.3 oz.)	114 g (4.0 oz.)	3.6 mm (0.142 in)	0.5 mm (0.020 in)	0.05 mm (0.002 in)	75.2 ±0.8 mm (2.96 ±0.03 in)
ZV-Q21-2S	Cross roller plunger	250 to 350 g (9.8 to 12.3 oz.)	114 g (4.0 oz.)	3.6 mm (0.142 in)	0.5 mm (0.020 in)	0.05 mm (0.002 in)	75.2 ±0.8 mm (2.96 ±0.03 in)
ZV-QA2-2S	Roller arm lever	570 g (20.1 oz.)	170 g (6.0 oz.)	6 mm (0.236 in)	4 mm (0.157 in)	0.4 mm (0.016 in)	—
ZV-QA277-2S	One-way action arm lever	570 g (20.1 oz.)	170 g (6.0 oz.)	6 mm (0.236 in)	4 mm (0.157 in)	0.4 mm (0.016 in)	—
ZV-QCL-2S	Rod lever	153 g (5.4 oz.)	45 g (1.6 oz.)	22 mm (0.866 in)	15 mm (0.591 in)	1.5 mm (0.059 in)	—
ZV-N-2S	Sealed pin plunger	800 g (28.2 oz.)	240 g (8.5 oz.)	5 mm (0.197 in)	2 mm (0.079 in)	0.1 mm (0.004 in)	71.4 ±0.8 mm (2.81 ±0.03 in)
ZV-NA2-2S	Sealed roller arm lever	640 g (22.6 oz.)	230 g (8.1 oz.)	6 mm (0.236 in)	5 mm (0.197 in)	0.4 mm (0.016 in)	—
ZV-NA277-2S	Sealed one-way action arm lever	640 g (22.6 oz.)	230 g (8.1 oz.)	6 mm (0.236 in)	5 mm (0.197 in)	0.4 mm (0.016 in)	—
ZV-NCL-2S	Sealed rod lever	170 g (6.0 oz.)	60 g (2.1 oz.)	22 mm (0.866 in)	18.5 mm (0.728 in)	1.5 mm (0.059 in)	—
ZV-NJ-2S	Sealed coil spring	150 g (5.3 oz.)	—	—	15°	—	—

# Dimensions

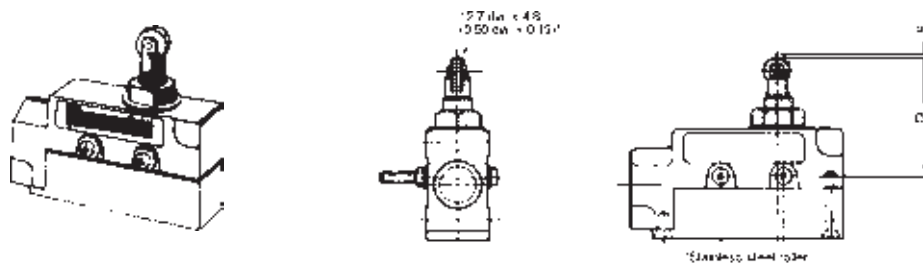
Unit: mm (inch)

## ■ ZE SIDE MOUNTING SWITCHES

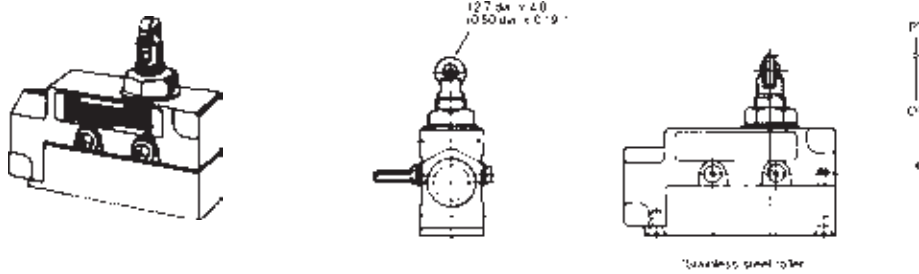
### ZE-Q-2S Plunger Switch



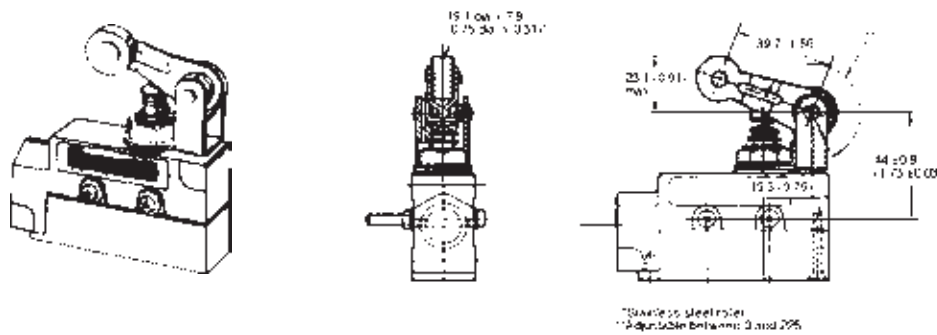
### ZE-Q22-2S Roller Plunger Switch



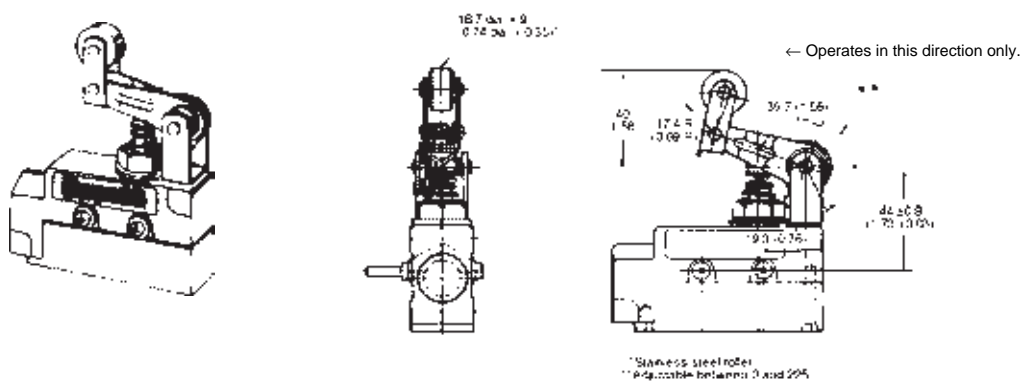
### ZE-Q21-2S Cross Roller Plunger Switch



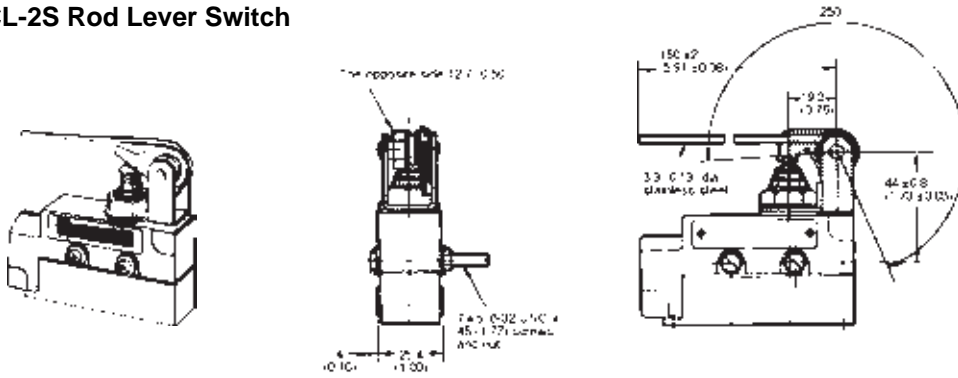
### ZE-QA2-2S Roller Arm Lever Switch



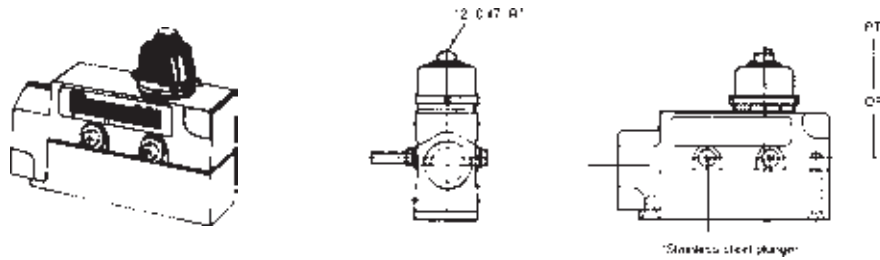
### ZE-QA277-2S One-Way Action Arm Lever Switch



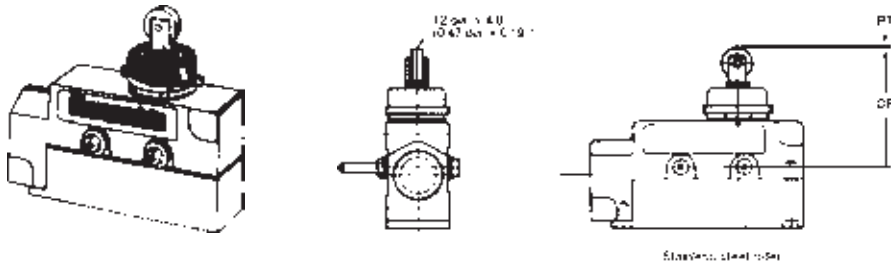
ZE-QCL-2S Rod Lever Switch



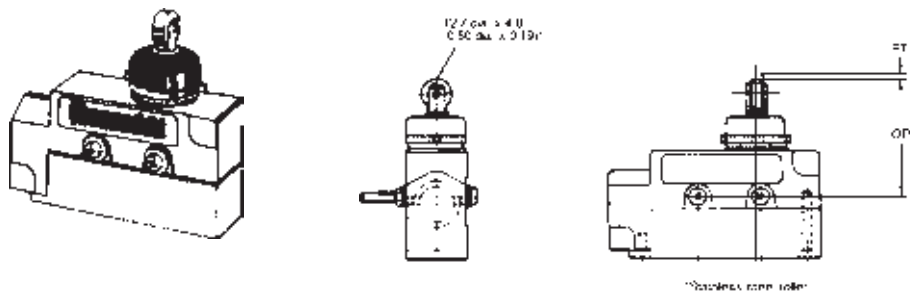
ZE-N-2S Sealed Plunger Switch



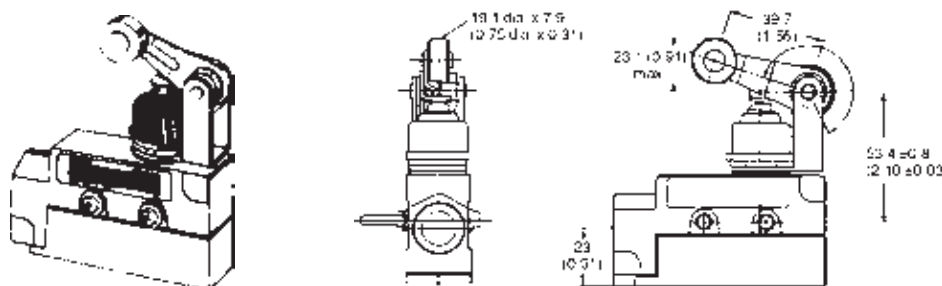
ZE-N22-2S Sealed Roller Plunger Switch



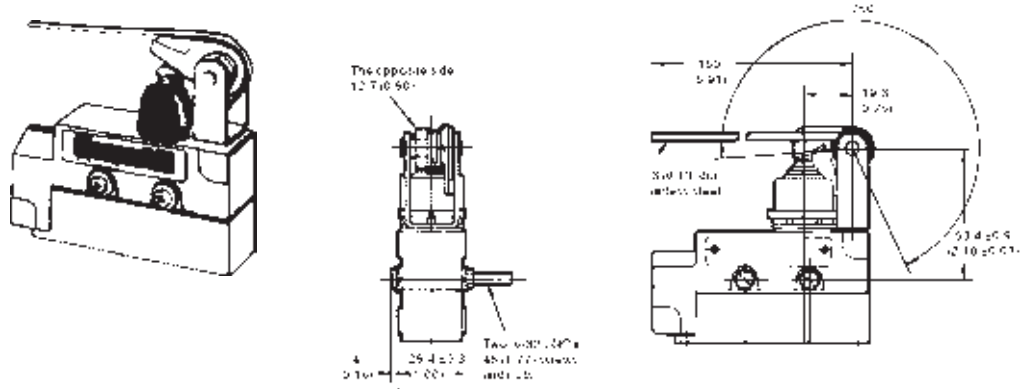
ZE-N21-2S Sealed Cross Roller Plunger Switch



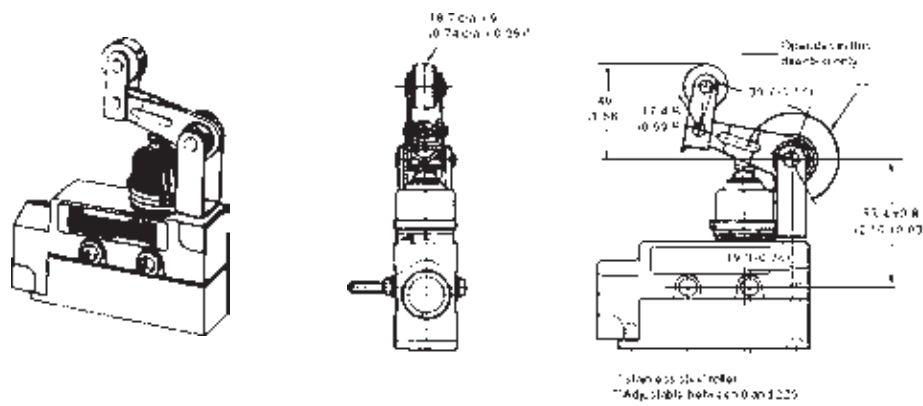
ZE-NA2-2S Sealed Roller Arm Lever Switch



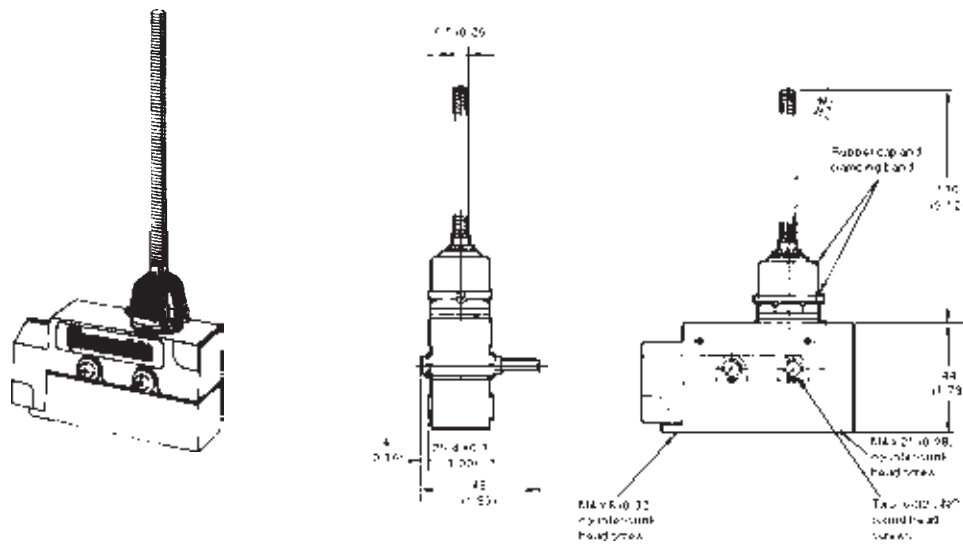
**ZE-NCL-2S Sealed Rod Lever Switch**



**ZE-NA277-2S Sealed One-Way Action Arm Lever Switch**



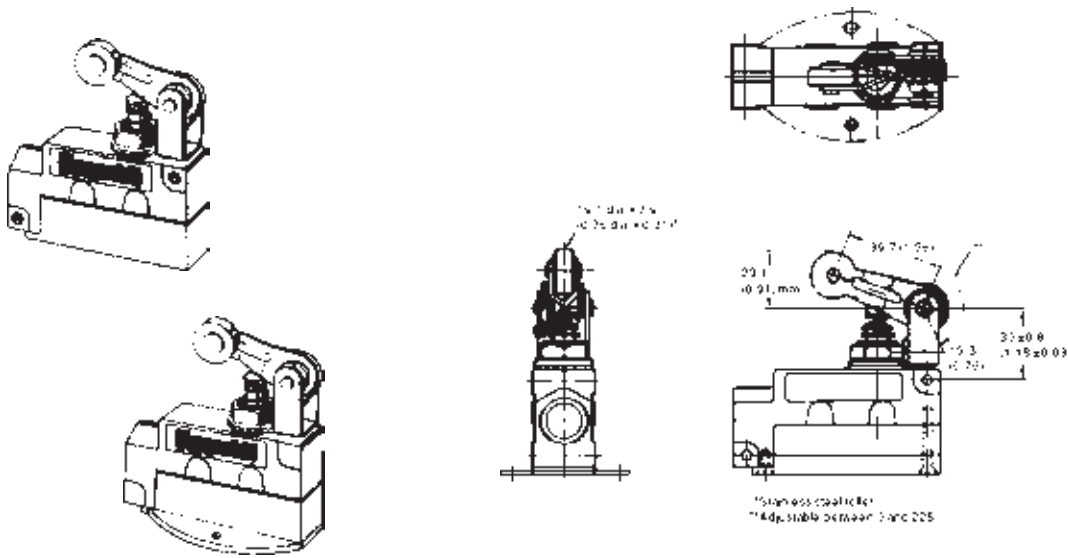
**ZE-NJ-2S Sealed Coil Spring Switch**



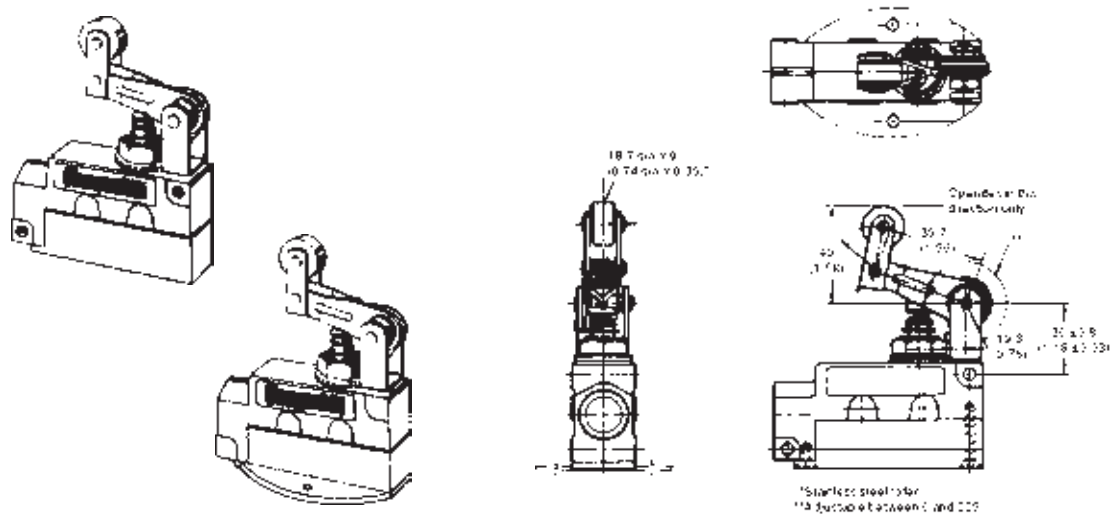




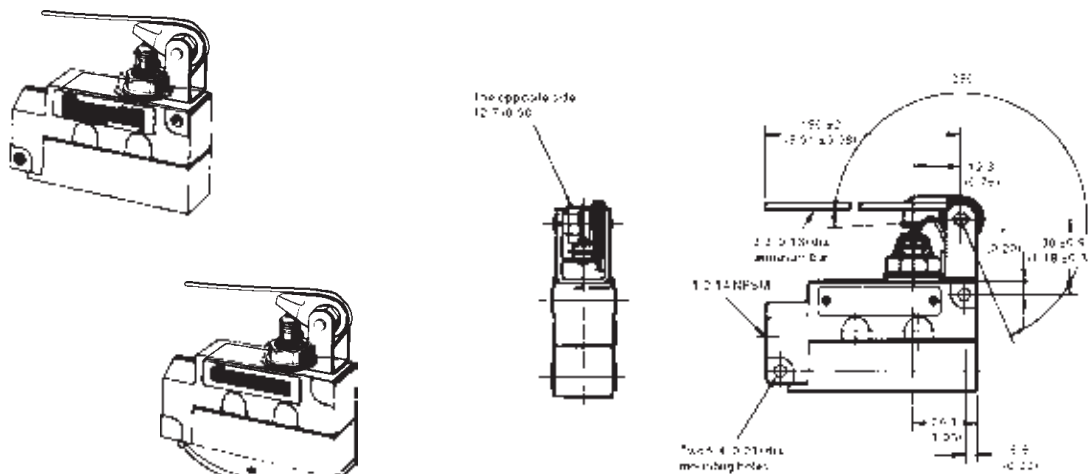
ZV2-QA2-2S and ZV-QA2-2S Roller Arm Lever Switches



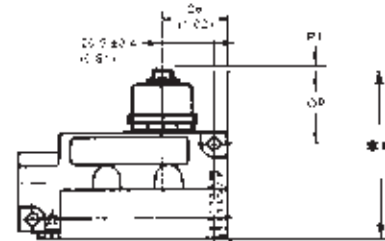
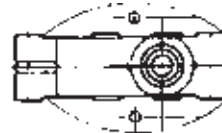
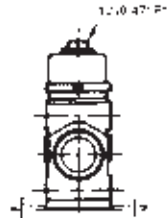
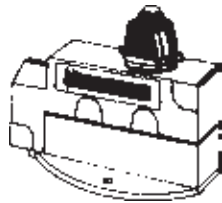
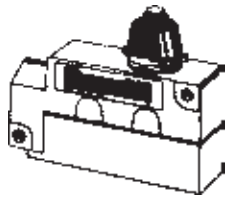
ZV2-QA277-2S and ZV-QA277-2S One-Way Action Arm Lever Switches



ZV2-QCL-2S and ZV-QCL-2S Rod Lever Switches

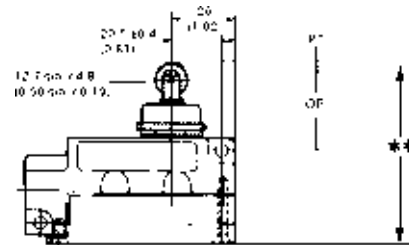
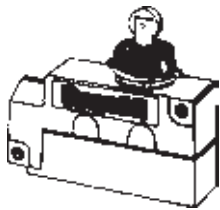


ZV2-N-2S and ZV-N-2S Sealed Plunger Switches



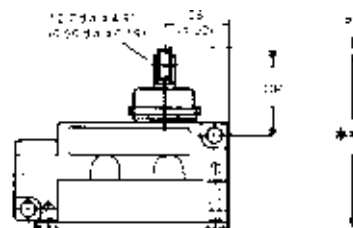
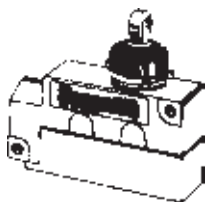
Stainless steel plunger  
TOP of ZV-N-2S: 12.0 ± 0.1 mm (2.51 ± 0.02 in)

ZV2-N22-2S Sealed Roller Plunger Switch



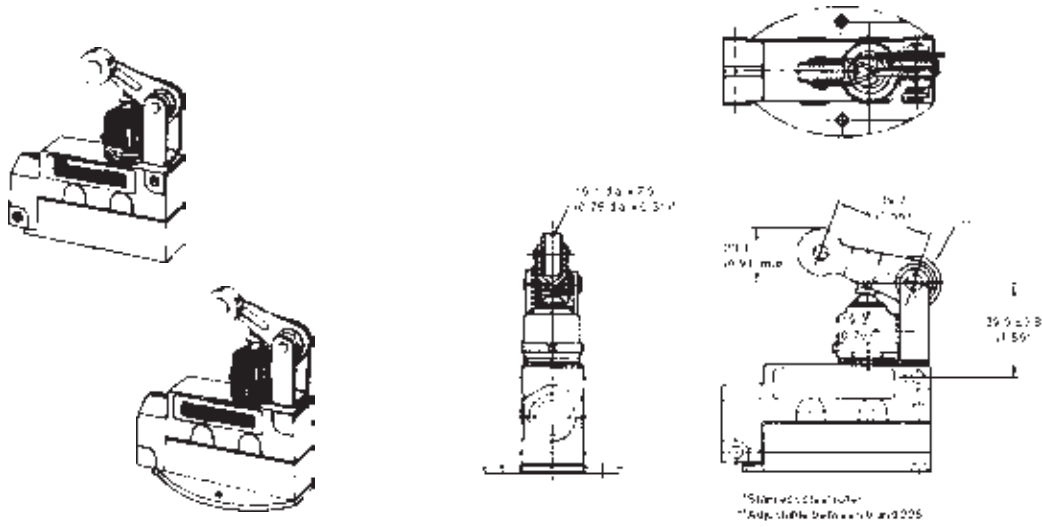
Stainless steel roller  
TOP of ZV-N22-2S: 12.7 ± 0.1 mm (2.56 ± 0.03 in)

ZV2-N21-2S Sealed Cross Roller Plunger Switch

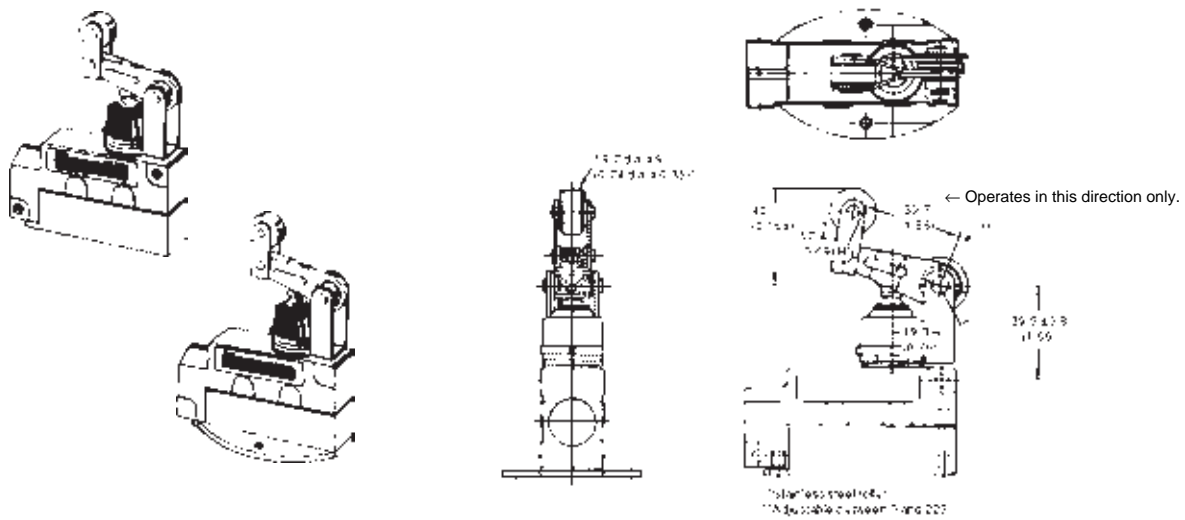


Stainless steel roller  
TOP of ZV-N21-2S: 12.7 ± 0.1 mm (2.56 ± 0.03 in)

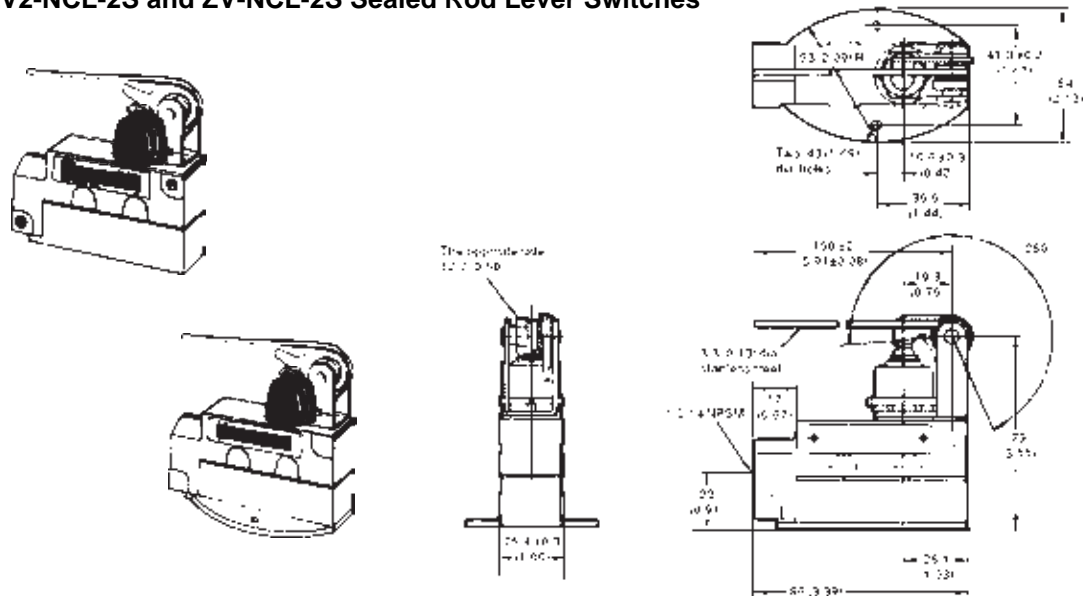
ZV2-NA2-2S and ZV-NA2-2S Sealed Roller Arm Lever Switches



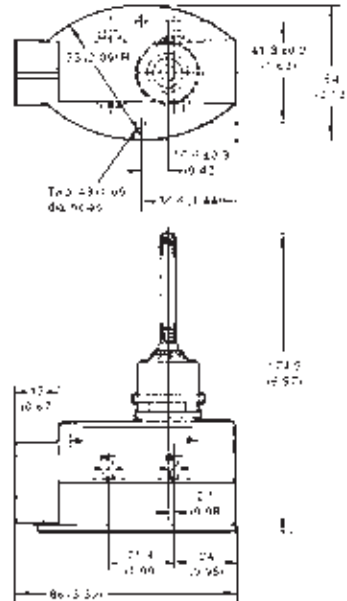
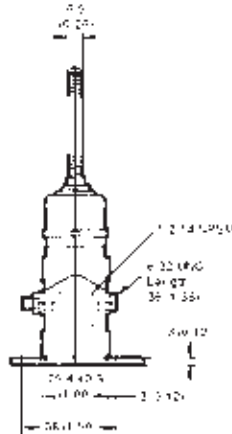
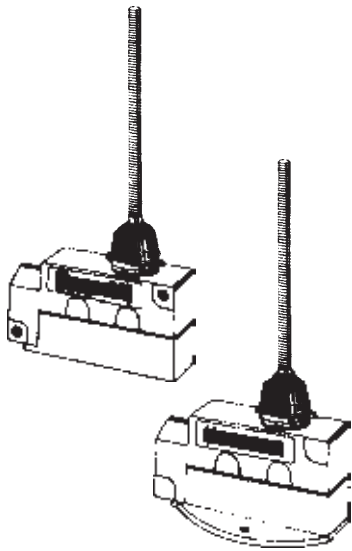
ZV2-NA277-2S and ZV-NA277-2S Sealed One-Way Action Arm Lever Switches



ZV2-NCL-2S and ZV-NCL-2S Sealed Rod Lever Switches



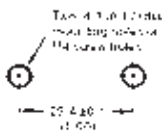
ZV2-NJ-2S and ZV-NJ-2S Sealed Coil Spring Switches



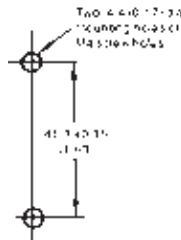
# Installation

## ■ MOUNTING HOLES

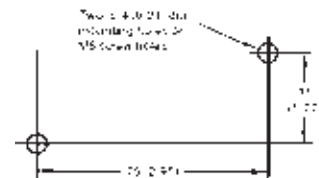
### ZE Side Mounting Switches



### ZV Flanged Base Mounting Switches



### ZV2 Diagonal Side Mounting Switches



## ■ INSTALLATION TIPS

Actuators on roller lever switches have been loosened for shipment so the position may be adjusted anywhere in 225°. Be sure to tighten the lever when mounting it.

To maintain the seals around the mounting screws, O-rings have been supplied with the switch. Insert each O-ring and secure it with a lock nut.

When routing wires into the conduit opening, be sure that no wire cuttings or other foreign matter enter the switch.

**NOTE: ALL DIMENSIONS ARE IN MILLIMETERS. To convert millimeters into inches divide by 25.4.**



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