

Small, High-Precision Switches  
Ideal for Gang Mounting

- Requires less operating force than conventional limit switches for improved precision
- Highly accurate repeatability to 0.01 mm (0.0004 inches)
- Prewired types with molded terminals available on special request
- Long service life, economical
- UL/CSA and CE approvals



## Ordering Information

### STANDARD SWITCHES

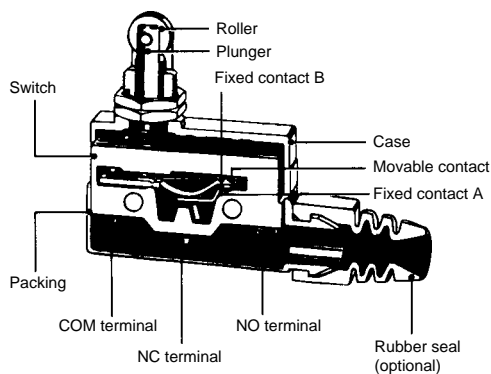
| Actuator type                    | Part number | Actuator type                           | Part number |
|----------------------------------|-------------|---|-------------|
| Pin plunger                      | ZC-D55      | Short hinge lever                       | ZC-W55      |
| Panel mount plunger              | ZC-Q55      | Hinge lever                             | ZC-W155     |
| Panel mount roller plunger       | ZC-Q2255    | Short hinge roller lever                | ZC-W255     |
| Panel mount cross roller plunger | ZC-Q2155    | Hinge roller lever                      | ZC-W2155    |
| Sealed roller plunger            | ZC-N2255    | One-way action short hinge roller lever | ZC-W355     |
| Sealed cross roller plunger      | ZC-N2155    | One-way action hinge roller lever       | ZC-W3155    |

Note: All models include a rubber seal.

### ACCESSORIES

| Description | Part number |
|-------------|-------------|
| Rubber seal | SC-R40      |

## Construction



# Specifications

## ■ RATINGS

### 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       | 10                        | 10   | 3         | 1.5  | 10                    | 10   | 5          | 2.5  | 30 max.               | 15 max. |
| 250 VAC       | 10                        | 10   | 2.5       | 1.25 | 10                    | 10   | 3          | 1.5  |                       |         |
| 480 VAC       | 3                         | 3    | 1.5       | 0.75 | 2.5                   | 2.5  | 1.5        | 0.75 |                       |         |
| 8 VDC         | 10                        | 10   | 3         | 1.5  | 6                     | 6    | 5          | 2.5  |                       |         |
| 14 VDC        | 10                        | 10   | 3         | 1.5  | 6                     | 6    | 5          | 2.5  |                       |         |
| 30 VDC        | 6                         | 6    | 3         | 1.5  | 5                     | 5    | 5          | 2.5  |                       |         |
| 125 VDC       | 0.5                       | 0.5  | 0.4       | 0.4  | 0.05                  | 0.05 | 0.05       | 0.05 |                       |         |
| 250 VDC       | 0.25                      | 0.25 | 0.2       | 0.2  | 0.03                  | 0.03 | 0.03       | 0.03 |                       |         |

Note:

1. Inductive load has a power factor of 0.4 (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.

## ■ CHARACTERISTICS

|                               |                               |   |
|-------------------------------|-------------------------------|---|
| Enclosure rating              | UL                            | —   |
|                               | NEMA                          | Types 1, 2, 3, 4, 5, and 13 (-N models); Types 1, 2, 3 and 4 all others |
|                               | IEC 144                       | IP67 (-N models); IP60 all others                                       |
| Mechanical life               | 10,000,000 operations minimum |   |
| 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        | 30 G for plunger types, 20 G for lever types                            |
|                               | Mechanical durability         | 100 G   |

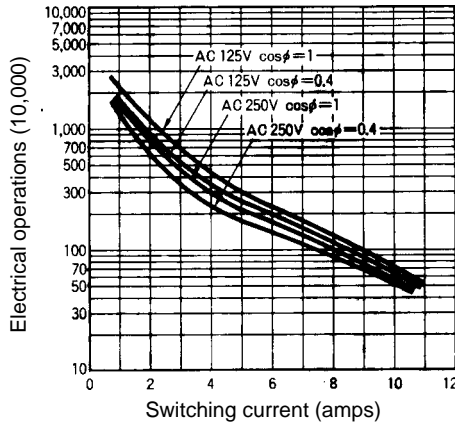
## ■ OPERATING CHARACTERISTICS

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

| Part number | Description                       | OF                   | RF                  | OT                   | PT                   | MD                   | OP                              |
|-------------|-----------------------------------|----------------------|---------------------|----------------------|----------------------|----------------------|---------------------------------|
| ZC-D55      | Pin plunger                       | 1200 g<br>(42.3 oz.) | 500 g<br>(17.6 oz.) | 2.4 mm<br>(0.094 in) | 1.5 mm<br>(0.059 in) | 0.2 mm<br>(0.008 in) | 32.4 ±0.8 mm<br>(1.29 ±0.03 in) |
| ZC-Q55      | Panel mount pin plunger           | 1200 g<br>(42.3 oz.) | 500 g<br>(17.6 oz.) | 3 mm<br>(0.118 in)   | 1.5 mm<br>(0.059 in) | 0.2 mm<br>(0.008 in) | 38.2 ±0.8 mm<br>(1.50 ±0.03 in) |
| ZC-Q2255    | Panel mount roller plunger        | 1200 g<br>(42.3 oz.) | 500 g<br>(17.6 oz.) | 3 mm<br>(0.118 in)   | 1.5 mm<br>(0.059 in) | 0.2 mm<br>(0.008 in) | 47.4 ±0.8 mm<br>(1.87 ±0.03 in) |
| ZC-Q2155    | Panel mount cross roller plunger  | 1200 g<br>(42.3 oz.) | 500 g<br>(17.6 oz.) | 3 mm<br>(0.118 in)   | 1.5 mm<br>(0.059 in) | 0.2 mm<br>(0.008 in) | 47.4 ±0.8 mm<br>(1.87 ±0.03 in) |
| ZC-N2255    | Sealed roller plunger             | 700 g<br>(24.7 oz.)  | 170 g<br>(6.0 oz.)  | 2.5 mm<br>(0.098 in) | 1.5 mm<br>(0.059 in) | 0.2 mm<br>(0.008 in) | 47.7 ±0.8 mm<br>(1.87 ±0.03 in) |
| ZC-N2155    | Sealed cross roller plunger       | 700 g<br>(24.7 oz.)  | 170 g<br>(6.0 oz.)  | 2.5 mm<br>(0.098 in) | 1.5 mm<br>(0.059 in) | 0.2 mm<br>(0.008 in) | 47.4 ±0.8 mm<br>(1.87 ±0.03 in) |
| ZC-W55      | Short hinge lever                 | 400 g<br>(14.1 oz.)  | 80 g<br>(2.8 oz.)   | 6 mm<br>(0.236 in)   | 5 mm<br>(0.197 in)   | 1 mm<br>(0.039 in)   | 29.5 ±1.2 mm<br>(1.12 ±0.05 in) |
| ZC-W155     | Hinge lever                       | 280 g<br>(9.9 oz.)   | 60 g<br>(2.1 oz.)   | 8.4 mm<br>(0.331 in) | 7 mm<br>(0.276 in)   | 1.4 mm<br>(0.055 in) | 29.5 ±1.2 mm<br>(1.12 ±0.05 in) |
| ZC-W255     | Short hinge roller lever          | 400 g<br>(14.1 oz.)  | 80 g<br>(2.8 oz.)   | 6 mm<br>(0.236 in)   | 5 mm<br>(0.197 in)   | 1 mm<br>(0.039 in)   | 43 ±1.2 mm<br>(29.5 ±0.05 in)   |
| ZC-W2155    | Hinge roller lever                | 280 g<br>(9.9 oz.)   | 60 g<br>(2.1 oz.)   | 8.4 mm<br>(0.331 in) | 7 mm<br>(0.276 in)   | 1.4 mm<br>(0.055 in) | 43 ±1.2 mm<br>(1.69 ±0.05 in)   |
| ZC-W355     | One-way action short hinge lever  | 400 g<br>(14.1 oz.)  | 80 g<br>(2.8 oz.)   | 6 mm<br>(0.236 in)   | 5 mm<br>(0.197 in)   | 1 mm<br>(0.039 in)   | 53 ±1.2 mm<br>(2.1 ±0.05 in)    |
| ZC-W3155    | One-way action hinge roller lever | 280 g<br>(9.9 oz.)   | 60 g<br>(2.1 oz.)   | 8.4 mm<br>(0.331 in) | 7 mm<br>(0.276 in)   | 1.4 mm<br>(0.055 in) | 53 ±1.2 mm<br>(2.1 ±0.05 in)    |

# Engineering Data

## ■ ELECTRICAL SERVICE LIFE



## ■ CONTACT RATINGS

10 A at 125 and 250 VAC  
 0.5 A at 125 VDC, 0.25 A at 250 VDC  
 NEMA A300C

## ■ CONTACT RESISTANCE

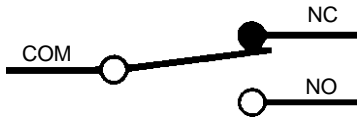
15 mΩ max. (initial)

## ■ ELECTRICAL APPROVALS

UL Recognized, File No. E76675

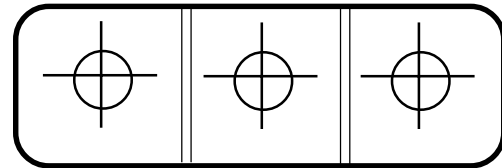
# Operation

## ■ CONTACT FORM



## ■ TERMINAL AND WIRE DESIGNATIONS

Standard  
 Prewired



COM  
 Black

NO  
 White

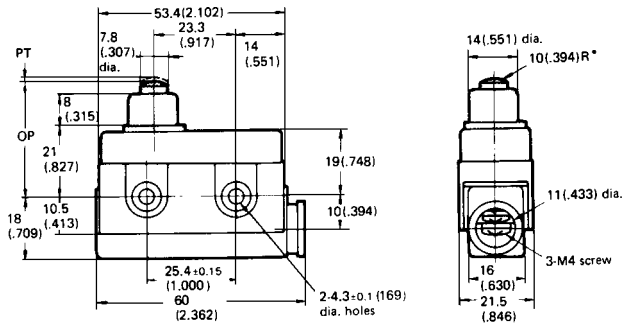
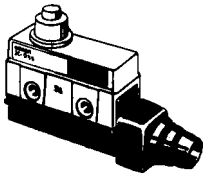
NC  
 Red

# Dimensions

Unit: mm (inch)

## ■ LIMIT SWITCHES

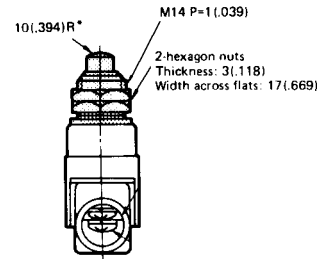
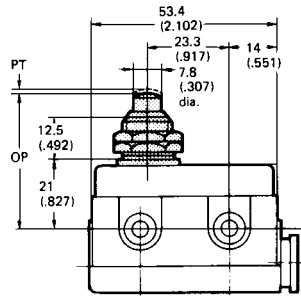
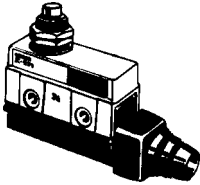
### ZC-D55 Pin Plunger Switch



\* Stainless steel plunger

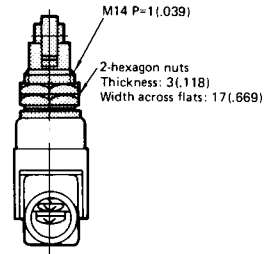
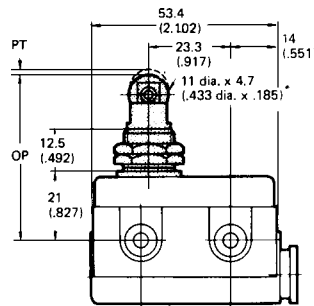
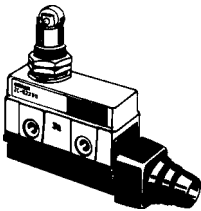
Unit: mm (inch)

**ZC-Q55 Panel Mount Plunger Switch**



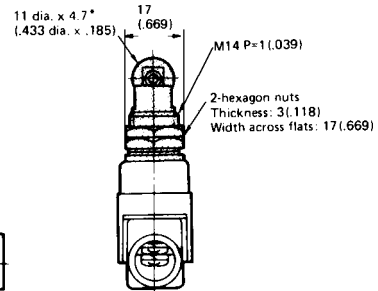
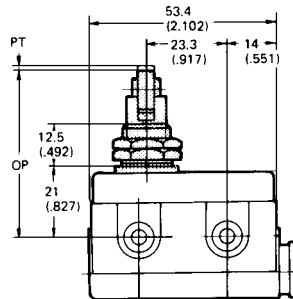
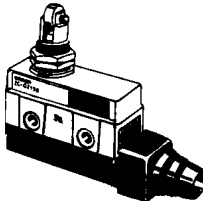
\* Stainless steel plunger

**ZC-Q2255 Panel Mount Roller Plunger Switch**



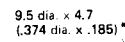
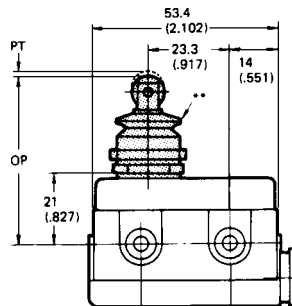
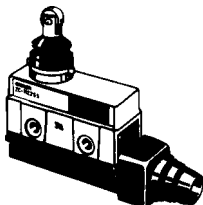
\* Sintered stainless alloy roller

**ZC-Q2155 Panel Mount Cross Roller Plunger Switch**



\* Sintered stainless alloy roller

**ZC-N2255 Sealed Roller Plunger Switch**



\* Sintered stainless alloy roller  
\*\* Rubber boot (N.B.R)