# IDEM Micro Switches

## Lever Series Limit Switches

- A high-precision, 15A-rated micro switch available in a wide variety of styles
- Lever Series models are available with a choice of actuator types including lever, hinge lever, and roller lever
- Screw terminals for easy connection
- Suitable for a wide range of operating conditions
- Terminal enclosure available

| IDEM Lever Series Micro Switches | | | | | | | |
|---|---|---|---|---|---|---|---|
| ***Part Number*** | ***Price*** | ***Drawing Link*** | ***Actuator Type*** | ***Snap Action Contacts*** | ***Pretravel (max)*** | ***Over Travel*** | ***Force to Operate Contacts*** |
| ***176102-1*** | | PDF | Lever | 1 N.O., 1 N.C. | 4 mm (0.157 in) | 1.6 mm (0.063 in) | 141g (0.31 lb) |
| ***176102-5*** | | PDF | Lever (pack of 5) | | | | |
| ***176103-1*** | | PDF | Lever with steel roller | 1 N.O., 1 N.C. | 4 mm (0.157 in) | 1.6 mm (0.063 in) | 141g (0.31 lb) |
| ***176103-5*** | | PDF | Lever with steel roller (pack of 5) | | | | |
| ***176109-1*** | | PDF | Lever hinge long | 1 N.O., 1 N.C. | 10 mm (0.394 in)) | 5.6 mm (0.220 in)` | 70g (0.15 lb) |
| ***176109-5*** | | PDF | Lever hinge long (pack of 5) | | | | |
| ***176110-1*** | | PDF | Lever hinge | 1 N.O., 1 N.C. | 7 mm (0.276 in) | 3.5 mm 0.138 in) | 90g (0.2 lb) |
| ***176110-5*** | | PDF | Lever hinge (pack of 5) | | | | |
| ***176111-1*** | | PDF | Lever hinge long with steel roller | 1 N.O., 1 N.C. | 7.1 mm (0.280 in) | 4 mm (0.157 in) | 100g (0.22 lb) |
| ***176111-5*** | | PDF | Lever hinge long with steel roller (pack of 5) | | | | |
| ***176112-1*** | | PDF | Lever hinge with steel roller | 1 N.O., 1 N.C. | 2.7 mm (0.106 in) | 2.4 mm (0.094 in) | 160g (0.35 lb) |
| ***176112-5*** | | PDF | Lever hinge with steel roller (pack of 5) | | | | |
| ***176113-1*** | | PDF | One-way horizontal hinge lever with steel roller | 1 N.O., 1 N.C. | 2.7 mm (0.106 in) | 2.4 mm (0.094 in) | 170g (0.37 lb) |
| ***176113-5*** | | PDFw | One-way horizontal hinge lever with steel roller (pack of 5) | | | | |

| | | | |
|---|---|---|---|
| ***176000-1*** | | PDF | Terminal enclosure for IDEM micro limit switches. Polyvinyl chloride (PVC). |
| ***176000-5*** | | PDF | Terminal enclosure for IDEM micro limit switches (pack of 5). Polyvinyl chloride (PVC). |

176102-1

176103-1

176109-1

176110-1

176111-1

176112-1

176113-1

176000-1

# IDEM Micro Switches, Lever Series

## Operating Characteristics

***Lever (176102)***

| Operating Characteristics | |
|---|---|
| ***Operating Force*** | 141g (0.31 lb) |
| ***Release Force (min)*** | 14g (0.03 lb) |
| ***Pre-Travel (max)*** | 4 mm (0.157 in) |
| ***Over-Travel (min)*** | 1.6 mm (0.063 in) |
| ***MD (max)*** | 1.3 mm (0.051 in) |
| ***FP (max)*** | 20.8 mm (0.819 in) |
| ***Operating Position*** | 17.4 ± 0.8mm (0.685 ± 0.031 in) |

***Lever With Steel Roller (176103)***

| Operating Characteristics | |
|---|---|
| ***Operating Force*** | 141g (0.31 lb) |
| ***Release Force (min)*** | 14g (0.03 lb) |
| ***Pre-Travel (max)*** | 4 mm (0.157 in) |
| ***Over-Travel (min)*** | 1.6 mm (0.063 in) |
| ***MD (max)*** | 1.3 mm (0.051 in) |
| ***FP (max)*** | 31.8 mm (1.252 in) |
| ***Operating Position*** | 28.6 ± 0.8 mm (1.126 ± 0.031 in) |

***Lever Hinge Long (176109)***

| Operating Characteristics | |
|---|---|
| ***Operating Force*** | 70g (0.15 lb) |
| ***Release Force (min)*** | 14g (0.03 lb) |
| ***Pre-Travel (max)*** | 10 mm (0.394 in)) |
| ***Over-Travel (min)*** | 5.6 mm (0.220 in) |
| ***MD (max)*** | 1.27 mm (0.050 in) |
| ***FP (max)*** | 28.2 mm (1.110 in) |
| ***Operating Position*** | 19 ± 0.8 mm (0.748 ± 0.031 in) |

***Lever Hinge (176110)***

| Operating Characteristics | |
|---|---|
| ***Operating Force*** | 90g (0.2 lb) |
| ***Release Force (min)*** | 18g (0.04 lb) |
| ***Pre-Travel (max)*** | 7 mm (0.276 in) |
| ***Over-Travel (min)*** | 3.5 mm 0.138 in) |
| ***MD (max)*** | 1 mm (0.039 in) |
| ***FP (max)*** | 26.2 mm (1.031 in) |
| ***Operating Position*** | 19.8 ±0.8 mm (0.780 ±0.032 in) |

***Lever Hinge Long With Steel Roller (176111)***

| Operating Characteristics | |
|---|---|
| ***Operating Force*** | 100g (0.22 lb) |
| ***Release Force (min)*** | 22g (0.05 lb) |
| ***Pre-Travel (max)*** | 7.1 mm (0.280 in) |
| ***Over-Travel (min)*** | 4 mm (0.157 in) |
| ***MD (max)*** | 1.02 mm (0.040 in) |
| ***FP (max)*** | 36.5 mm (1.437 in) |
| ***Operating Position*** | 30.2 ± 0.4 mm (1.189 ± 0.016 in) |

***Operating Characteristics definitions:***

Operating Force: Force required to cause "snap."

Release Force: Force still applied to plunger or lever when the contacts snap back from the operated position.

Pre-Travel: Distance from free position to operating position.

Over-Travel: The extra travel for the plunger or lever to travel safely beyond the operating position.

MD (Max): Maximum differential (plunger or lever travel from the point where the contacts snap to the point where they snap back).

FP (max): Extra distance relative to mounting holes that the plunger or lever travels to the snap position, including loose flex.

Operating Position: Distance relative to mounting holes that the plunger or lever travels to the snap position.

# IDEM Micro Switches, Lever Series

## Operating Characteristics (continued)

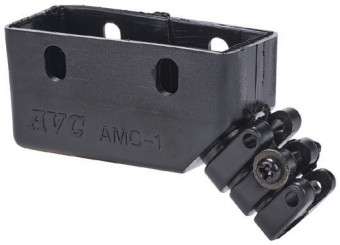
***Lever Hinge With Steel Roller (176112)***

| Operating Characteristics | |
|---|---|
| ***Operating Force*** | 160g (0.35 lb) |
| ***Release Force (min)*** | 42g (0.09 lb) |
| ***Pre-Travel (max)*** | 2.7 mm (0.106 in) |
| ***Over-Travel (min)*** | 2.4 mm (0.094 in) |
| ***MD (max)*** | 0.5 mm (0.020 in) |
| ***FP (max)*** | 32.5 mm (1.280 in) |
| ***Operating Position*** | 30.2 ± 0.4 mm (1.189 ± 0.016 in) |

***One-way Horizontal Hinge Lever With Steel Roller (176113)***

| Operating Characteristics | |
|---|---|
| ***Operating Force*** | 170g (0.37 lb) |
| ***Release Force (min)*** | 42g (0.09 lb) |
| ***Pre-Travel (max)*** | 2.7 mm (0.106 in) |
| ***Over-Travel (min)*** | 2.4 mm (0.094 in) |
| ***MD (max)*** | 0.51 mm (0.020 in) |
| ***FP (max)*** | 43.6 mm (1.717 in) |
| ***Operating Position*** | 41.3 ± 0.8 mm (1.626 ± 0.031 in) |

***Terminal Enclosure for IDEM Micro Limit Switches (176000)***




| Operating Characteristics |
|---|
| Designed to cover and protect all varieties of IDEM Micro Switches |

***Operating Characteristics definitions:***

Operating Force: Force required to cause "snap."

Release Force: Force still applied to plunger or lever when the contacts snap back from the operated position.

Pre-Travel: Distance from free position to operating position.

Over-Travel: The extra travel for the plunger or lever to travel safely beyond the operating position.

MD (Max): Maximum differential (plunger or lever travel from the point where the contacts snap to the point where they snap back).

FP (max): Extra distance relative to mounting holes that the plunger or lever travels to the snap position, including loose flex.

Operating Position: Distance relative to mounting holes that the plunger or lever travels to the snap position.

# IDEM Micro Switches General Specifications

| IDEM Micro Switches General Specifications | |
|---|---|
| ***Environmental*** | |
| ***Degree of Protection*** | None |
| ***Temperature Range*** | -25 to 80°C (-13 to 176°F) |
| ***Mechanical Ratings*** | |
| ***Mechanical Life*** | 1,000,000 operations minimum |
| ***Switch Body*** | Phenolic (composite resin) |
| ***Enclosure (Part Number 176000)*** | Polyvinyl chloride (PVC) |
| ***Contact Blocks Rating*** | |
| ***Contact Resistance*** | 15m Ohms max (initial) |
| ***Electrical Ratings*** | 0.5 A 125VDC<br>0.25 A 250VDC<br>0.125 hp 125VDC<br>0.25 hp 250VDC<br>20A @ 250VAC EN61058-1 and 15A @ 125VAC or 250VAC UL61058-1 |
| | Make: 0.25 A at 120VDC; 0.125 A at 240VDC |
| ***Dielectric Strength*** | Between terminals of same polarity 100VAC (50/60 Hz for 1 minute) |
| ***Electrical Life*** | 100,000 operations at full load |
| ***Wiring Connections*** | M4x5.5 terminal screw |
| ***Torque Requirements*** | Mounting screws: 1.5 N•m (1.11 lb•ft)<br>Connector screws: 1.0 to 1.2 N•m (0.74 to 0.89 lb•ft) |
| ***Agency Approvals*** | cULus 482215 (Exception: 176000 not UL listed)<br>CE/Reach compliant |