# Limit and Enclosed Switches

## Miniature Pre-Wired Enclosed Switches



### FEATURES

- Miniature size
- Wide selection of actuators
- Precision characteristics
- Zinc die cast housing
- Optional mounting bracket
- Fluorocarbon seal available
- Preleaded or connector versions
- Temperature range 35° to 160°F (2° to 71°C)
- UL Recoginized, file #E41859
- CSA Certified, file #LR15775
- CE Certified
- Low temp. versions available (-40 °C & °F)

NOTE: Bushing seal shown refers to ''K'' roller plunger and cross-roller plunger listings only.

Factory pre-wiring with industrial quality cable (type SJTO) allows for miniaturization of the connection and eliminates the need to wire at the switch. This allows the 9 14CE to be used in limited access areas.

The cable electrical connection and basic switch terminals are encapsulated in an epoxy compound. An elastomer seal between the plunger and switch housing, plus mounting screw holes with continuous walls, keep liquids from entering the switch cavity. The seal boot offered on the 9 14CE18 and 9 14CE20 prevents contaminants from impeding plunger movement.

A full range of actuators is available, including plain plungers, roller plungers, side rotary, multi-directional wire, and manual. Any of the LS or HDLS limit switch levers may be used with the side rotary 9 14CE16. Pages A37 & A39.

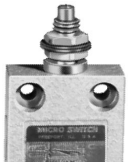
914CE's may be specified with 3-foot (0,9 m), 6-foot ( 1,83 m), or 9-foot (2,74 m) cable.

A 90° steel bracket (Catalog Listing 933PA is available for mounting a switch in various planes relative to the mounting surface. See page A92.

### PLUNGER ACTUATED SWITCHES



1



2



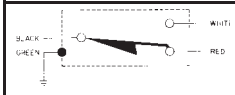
3



4

For rapid response – off the shelf service, all **bold face** listings are normally stocked items.

### ELECTRICAL RATING

| Circuitry | | Load | Amps Make | Amps Break |
|---|---|---|---|---|
|  Single-pole Double-throw | A | 240 VAC, ind.<br>240 VAC, res.<br>28 VDC, res.<br>28 VDC, ind.<br>UL/CSA: 5 amps, 1/10 Hp, 125 or 250 VAC | 1.2<br>5<br>3<br>3 | 0.2<br>5<br>3<br>3 |
| | B | 1 amp res., 0.5 amp ind., 30 VDC<br>UL Rating:<br>1 amp, 125 VAC | | |
| | C | UL/CSA Rating<br>3 amp, 125 or 250 VAC | | |

### CABLE TERMINATION



Side Exit

1

1)

### GANG MOUNT TO BUILD MULTIPLE-PLUNGER SWITCH

.63 in. ( 16mm) between plungers.



Bottom Exit

### ORDER GUIDE

| Description (Bottom exit cable unless otherwise noted) | Catalog Listing* | NEMA | Elec. Rating | O.F. max. N lbs. | P.T. max. mm in. | O.T. min. mm in. | D.T. max. mm |
|---|---|---|---|---|---|---|---|
| Plunger[1] | **914CE1-3** | 1,3 | A | 12,2<br>2.75 | 1,8<br>.071 | 3,0<br>.118 | 0,1<br>.004 |
| Plunger[1] Gold Contacts | 914CE1-3G | 1,3 | B | 12,2<br>2.75 | 1,8<br>.071 | 3,0<br>.118 | 0,1<br>.004 |
| Plunger[1] (Side exit cable) | **914CE1-3A** | 1,3 | A | 12,2<br>2.75 | 1,8<br>.071 | 3,0<br>.118 | 0,1<br>.004 |
| Bushing mount Plunger[2] | 914CE27-3 | 1,3 | A | 12,2<br>2.75 | 1,8<br>.071 | 3,0<br>.118 | 0,1<br>.004 |
| Adjustable Plunger[3] | **914CE19-3** | 1,3,4<br>12,13 | A | 22,2<br>5 | 1,8<br>.071 | 3,0<br>.118 | 0,1<br>.004 |
| Boot sealed Plunger[4] | **914CE18-3** | 1,3,4<br>12,13 | A | 22,3<br>5 | 1,8<br>.071 | 3,0<br>.118 | 0,1<br>.004 |
| Side exit cable | 914CE18-3A | 1,3,4<br>12,13 | A | 22,3<br>5 | 1,8<br>.071 | 3,0<br>.118 | 0,1<br>.004 |
| Fluorocarbon Seals | 914CE18-3V | | | | | | |

N = Newtons

Characteristics: O.F. – Operating Force; P.T. – Pretravel; O.T. – Overtravel; D.T. – Differential Travel.

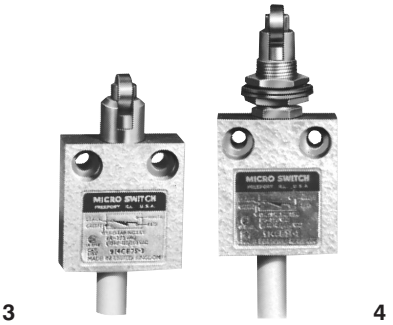
* These listings have 0,9 1m (3 ft.) cable. To order 1.8m (6 ft.) cable, change the – 3 to – 6. To order 2,74m (9 ft.) cable, change the – 3 to – 9.

## Miniature Pre-Wired Enclosed Switches

### ROLLER PLUNGER ACTUATED SWITCHES



1 2



3 4



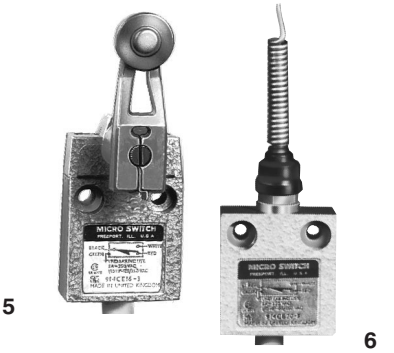
5 6

**NOTE:**
Switches held depressed for extended periods of time at temperature extremes may experience retarded plunger return upon deactuation. Where such a condition exists in the application, contact the 800 number.

### ORDER GUIDE

| Description** (Bottom exit cable unless otherwise noted.) | Catalog Listing | NEMA | Elec. Rating | O.F. max. N lbs. | P.T. max. mm in. | O.T. min. mm in. | D.T. max. mm in. |
|---|---|---|---|---|---|---|---|
| Roller Plunger[1] | **914CE2-3** | 1,3 | A | 12,2 2.75 | 1,8 .071 | 3,0 .118 | 0,1 .004 |
| | 914CE2-3K | 1,3,4,6 6P,12,13 | A | 22,3 5 | 1,8 .071 | 3,0 .118 | 0,1 .004 |
| | 914CE2-3C | 1,3 | A SPDTDB | 17,8 4 | 1,8 .071 | 3,0 .118 | 0,51 .020 |
| Roller Plunger[1] Gold Contacts | **914CE2-3G** | 1,3 | B | 12,2 2.75 | 1,8 .071 | 3,0 .118 | 0,1 .004 |
| Roller Plunger[1] (Side exit cable | **914CE2-3A** | 1,3 | A | 12,2 2.75 | 1,8 .071 | 3,0 .118 | 0,1 .004 |
| | 914CE2-3AK | 1,3,4,6 6P,12,13 | A | 22,3 5 | 1,8 .071 | 3,0 .118 | 0,1 .004 |
| Bushing Mount Roller Plunger[2] | **914CE28-3** | 1,3 | A | 12,2 2.75 | 1,8 .071 | 3,0 .118 | 0,1 .004 |
| Cross Roller Plunger[3] | **914CE3-3** | 1,3 | A | 12,2 2.75 | 1,8 .071 | 3,0 .118 | 0,1 .004 |
| | **914CE3-3K** | 1,3,4,6 6P,12,13 | A | 22,3 5 | 1,8 .071 | 3,0 .118 | 0,1 .004 |
| Cross Roller Plunger[3] Gold Contacts | 914CE3-3G | 1,3 | B | 12,2 2.75 | 1,8 .071 | 3,0 .118 | 0,1 .004 |
| Cross Roller Plunger[3] (Side exit cable). | 914CE3-3A<br>914CE3-3AK | 1,3<br>1,3,4,6 6P,12,13 | A<br>A | 12,2 2.75<br>22,3 5 | 1,8 .071<br>1,8 .071 | 3,0 .118<br>3,0 .118 | 0,1 .004<br>0,1 .004 |
| Bushing Mount Cross-Roller Plunger[4] | **914CE29-3** | 1,3 | A | 12,2 2.75 | 1,8 .071 | 3,0 .118 | 0,1 .004 |
| Boot Sealed Roller Plunger[5] Fluorocarbon Seals | 914CE31-3<br>914CE31-3V | 1,3,4,6 6P,12,13 | A | 22,3 5 | 1,8 .071 | 3,0 .118 | 0,1 .004 |
| Boot Sealed Cross Roller Plunger | 914CE55-3 | 1,3,4,6 6P,12,13 | A | 22,3 5 | 1,8 .071 | 3,0 .118 | 0,1 .004 |
| Ball Bearing[6] | 914CE66-3 | 1,3 | A | 12,2 2.75 | 1,8 .071 | 3,0 .118 | 0,1 .004 |

### SIDE ROTARY AND WOBBLE ACTUATED SWITCHES



5 6

### ORDER GUIDE

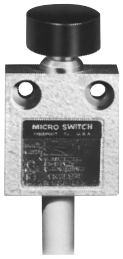
Lever not **included on side rotary versions. Any LS or HDLS lever may be used. See pages A37 to A39.**

| Description (Bottom exit) | Catalog Listing | NEMA | Elec. Rating | O.F. max. | P.T. max. | O.T. min. | D.T. max. |
|---|---|---|---|---|---|---|---|
| Side*** rotary[5] | **914CE16-3** | 1,3,4,6 6P,12,13 | A | 0,34 Nm 3 in. lbs. | 30° | 40° | 3° |
| Side rotary[5] Side exit cable | 914CE16-3A | 1,3,4,6 6P,12,13 | A | 0,34 Nm 3 in. lbs. | 30° | 40° | 3° |
| Multidirectional spring wire wobble actuator[6] | **914CE20-3** | 1,3,4,6 6P,12,13 | A | 0,56 N 2 oz. | — | — | — |
| | 9PA86-CE | Replacement Actuator | | | | | |

N = Newtons
* These listings have 0,91m (3 ft.) cable. To order 1,83m (6 ft.) cable, change the –3 to –6. For other cable lengths, contact the 800 number.
** Snap release not recommended on these devices.
*** Switch operates on clockwise and counterclockwise rotation of the lever shaft.
Characteristics: O.F. – Operate Force; P.T. – Pretravel; O.T. – Overtravel; D.T. – Differential Travel

## Miniature Pre-Wired Enclosed Switches

### MANUALLY OPERATED SWITCHES



**ORDER GUIDE**

| Description (Bottom exit cable) | Catalog Listing* | NEMA | Elec. Rating | O.F. max. N lbs. | P.T. max. mm in. | O.T. min. mm in. | D.T. max. mm in. |
|---|---|---|---|---|---|---|---|
| .94 in. (23,9mm) dia. button | **914CE22-3** | 1,3 | A | 8,9<br>2 | 1,8<br>.071 | 3,0<br>.118 | 0,1<br>.004 |

N = Newtons

*These listings have 0,91m (3 ft.) cable. To order 1,83m (6 ft.) cable, change the –3 to –6. For other cable lengths, contact the 800 number.

Characteristics: O.F. – Operate Force; P.T. – Pretravel; O.T. – Overtravel; D.T. – Differential Travel



### MINIATURE ENCLOSED SWITCHES WITH CONNECTORS

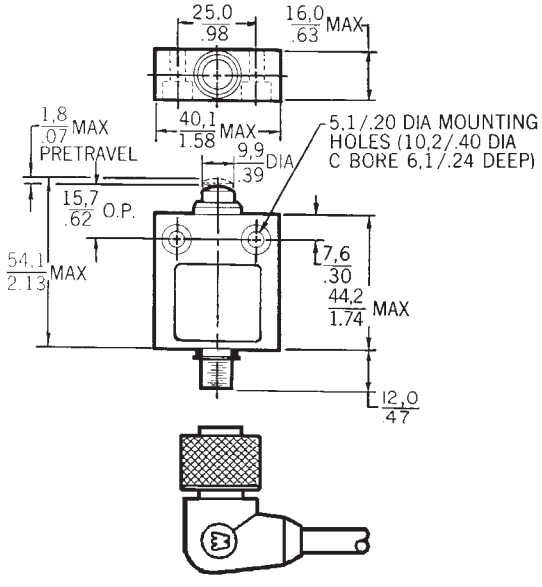


**ORDER GUIDE WITH AC STYLE CONNECTORS**

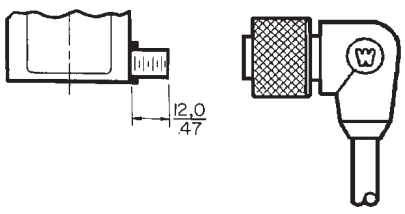
| Description | Connector Exit | Catalog Listing | NEMA | Elec. Rating | O.F. max. N lbs. | P.T. max. mm in. | O.T. min. mm in. | D.T. max. mm in. |
|---|---|---|---|---|---|---|---|---|
| Plunger | Bottom | **914CE1-Q1** | 1, 3 | C | 12,2<br>2.75 | 1,8<br>.071 | 3,0<br>.118 | 0,1<br>.004 |
| Boot sealed plunger | Bottom | 914CE18-Q1 | 1, 3, 4, 6 | C | 22,3 | 1,8 | 3,0 | 0,1 |
| | Side | 914CE18-AQ1 | 12, 13 | | 5 | .071 | .118 | .004 |
| Roller plunger | Bottom | 914CE2-Q1 | 1, 3 | C | 12,2 | 1,8 | 3,0 | 0,1 |
| | Bottom | 914CE2-KQ1 | 1, 3, 4, 6, 12, 13 | | 2.75 | .071 | .118 | .004 |
| Cross roller plunger | Bottom | 914CE3-Q1 | 1, 3 | C | 12,2 | 1,8 | 3,0 | 0,1 |
| | Bottom | 914CE3-KQ1 | 1, 3, 4, 6, 12, 13 | | 2.75 | .071 | .118 | .004 |
| Side rotary (w/o lever) | Bottom | 914CE16-Q1 | 1, 3, 4, 6 | C | 0,34 Nm | 30° | 40° | 3° |
| | Side | 914CE16-AQ1 | 12, 13 | | 3 in. lb. | | | |
| Bushing mount Roller plunger | Bottom | 914CE28-Q1 | 1, 3 | C | 12,2<br>2.75 | 1,8<br>.071 | 3,0<br>.118 | 0,1<br>.004 |

**For DC style connectors, delete the "1" at the end of the catalog listing. Example: 914CE1-Q1 (AC); 914CE1-Q (DC).**

### MOUNTING DIMENSIONS
### PLAIN PLUNGER/RECEPTACLE




**Bottom Exit Connector**



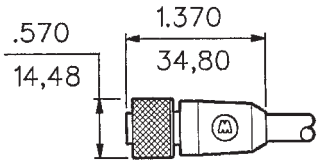

**Side Exit Connector**

## Miniature pre-wired enclosed switches

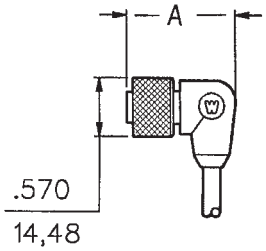
**QUICK-CONNECT CABLES**

914CE switches mate with the quick-connect cables listed below. The cable has PVC sheathing and #22 AWG leadwires.

**MOUNTING DIMENSIONS**



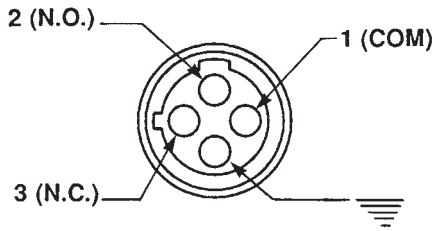

**Straight Style Connector**




**Right Angle (90°) Style Connector**

Dimension "A"
DC Style – 1.050 (26,7)

**AC Style Pin Configuration (male receptacle)**



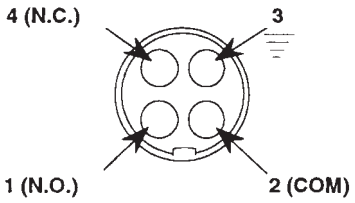

**Pin Layout**

**No Cable Available For AC Style Connectors**

**DC STYLE CABLES**

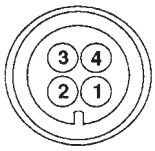
| Connector Style | Cable Length | Catalog Listing |
|---|---|---|
| Straight | 2 M | 804000A09M020 |
| | 5 M | 804000A09M050 |
| Right angle (90°) | 2 M | 804001A09M020 |
| | 5 M | 804001A09M050 |

**DC Style Pin Configuration (male receptacle)**




**Pin Layout**

**DC Style Pin Configuration (cable plug)**
(Face view of female connector)

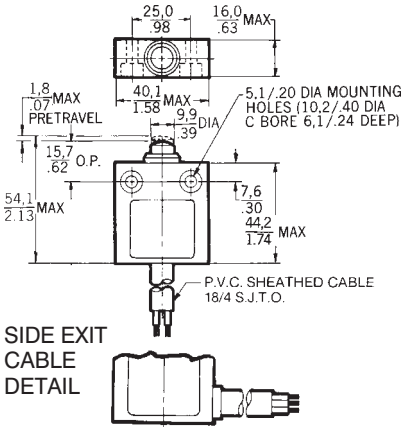



Pin #1 = Brown leadwire/Normally opened
Pin #2 = White leadwire/Common
Pin #3 = Blue leadwire/Ground
Pin #4 = Black leadwire/Normally closed

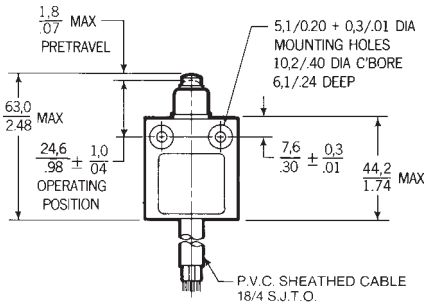
# Mounting Dimensions



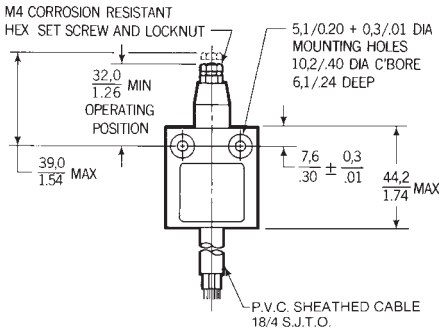
### PLUNGER/CABLE



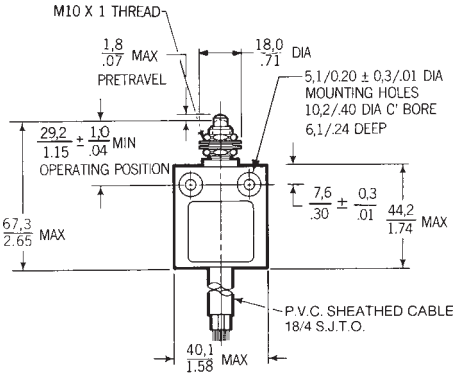

### PLUNGER (With seal boot)



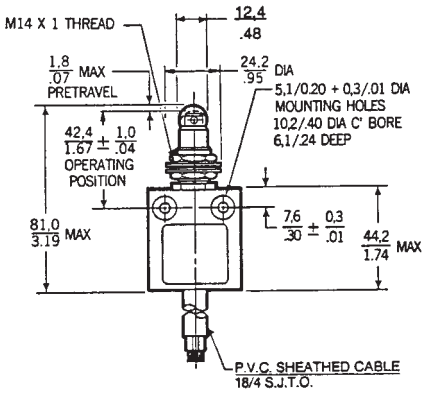

### ADJUSTABLE PLUNGER



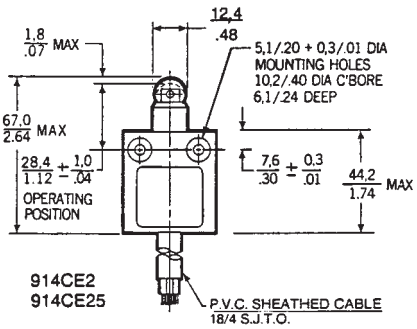

### PLUNGER (Bushing mount)



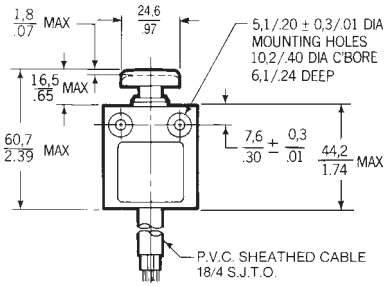

### ROLLER PLUNGER (Bushing mount)



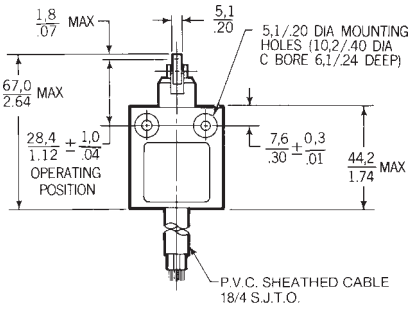

### ROLLER PLUNGER



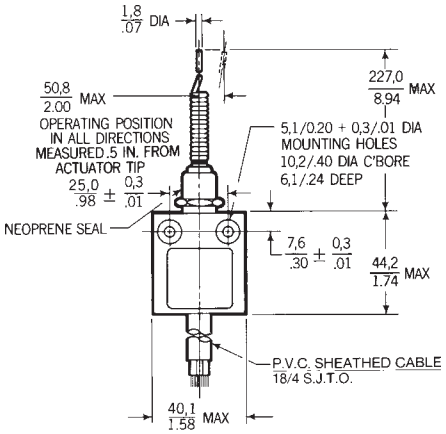

### MANUAL OPERATOR




### CROSS ROLLER PLUNGER

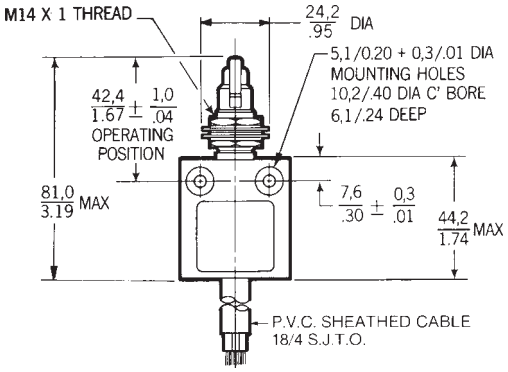



### MULTIDIRECTIONAL WIRE

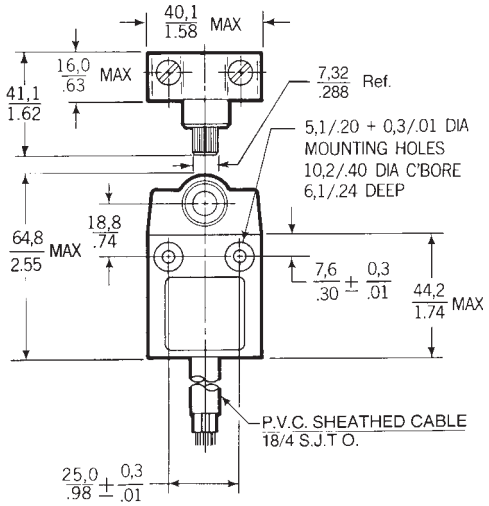


# Mounting Dimensions

**CROSS ROLLER PLUNGER** (Bushing mount)

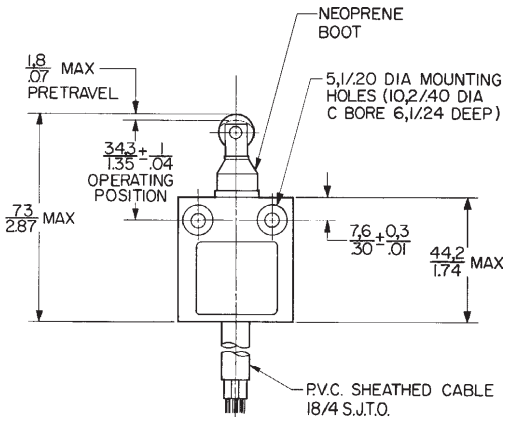



**SIDE ROTARY***

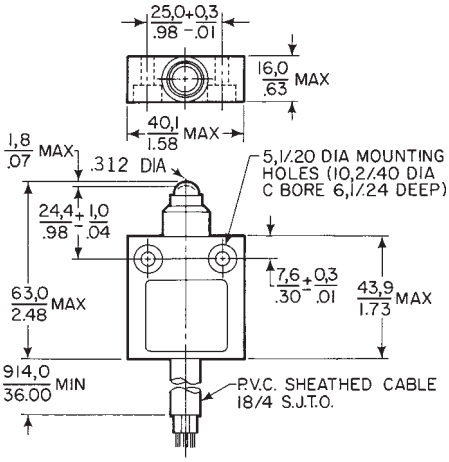



* Any LS or HDLS limit switch lever can be used with this switch.

**BOOT SEALED ROLLER PLUNGER**

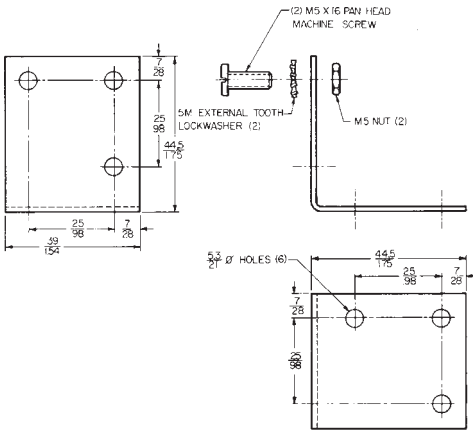



**BALL BEARING**

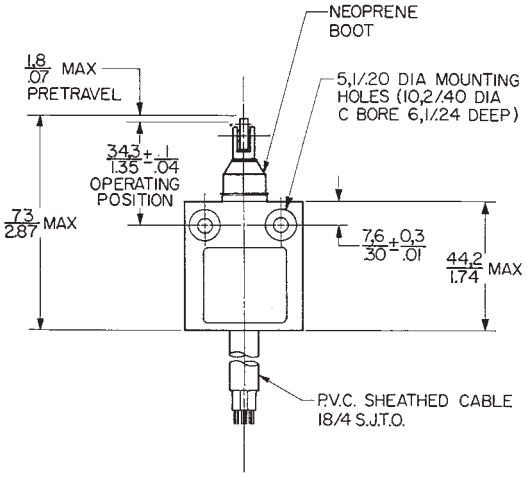



MOUNTS THRU .517/13,13 DIA. HOLE IN PANEL .165/4,19 MAX. THICK

**MOUNTING BRACKET**
**933PA1**




**BOOT SEALED CROSS ROLLER PLUNGER**




Key: 0,0 = mm / 0.00 = inches