## Safety Limit Switch D4B-D

## Snap-action contact with approved direct opening operation certification $\Theta$.

## Maintenance, seal, and resistance to shock increased and direct opening mechanism added. <br> Three-conduit switches and 2NC switches are also available.

- Direct opening mechanism (NC contacts only) added to enable opening contacts when faults occur, such as fused contacts.
- Wide standard operating temperature range: $-40^{\circ} \mathrm{C}$ to $80^{\circ} \mathrm{C}$ (standard type).
- Safety of lever settings ensured using a mechanism that engages a gear between the operating position indicator plate and the lever.
- Equipped with a mechanism that indicates the applicable operating zone, as well as push-button switching to control left and right motion.



## Model Number Structure

## ■ Model Number Legend

## D4B- $-\square \frac{\square}{1} \frac{\square}{3}$

1. Conduit

1: PG13.5 (1-conduit)
2: G1/2 (PF1/2) (1-conduit)
3: 1/2-14NPT (1-conduit)
5: PG13.5 (3-conduit)
6: G1/2 (PF1/2) (3-conduit)
7: 1/2-14NPT (3-conduit)
2. Built-in Switch

1: 1NC/1NO (snap-action)
3: 1NC/1NO (slow-action) gold-plated contacts
5: $1 \mathrm{NC} / 1 \mathrm{NO}$ (slow-action) (see note)
6: $1 \mathrm{NC} / 1 \mathrm{NO}$ (slow-action) gold-plated contacts (see note)
A: 2NC (slow-action)
B: 2NC (slow-action) gold-plated contacts
Note: Excluding D4B- $\square \square 81 \mathrm{~N}$ and D4B- $-\square 87 \mathrm{~N}$ models.

## 3. Actuator

00: Switch box (without head)
11: Roller lever (resin roller)
15: Roller lever (stainless steel roller)
1R:Roller lever (conventional D4B-compatible)
16: Adjustable roller lever
17: Adjustable rod lever
70: Top plunger
71: Top roller plunger
81: Coil spring
87: Plastic rod

## Ordering Information

## $\square$ Set Model Numbers

## Safety Limit Switches

|  | Actuator | Conduit openings | Model |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  | $\begin{gathered} \text { 1NC/1NO } \\ \text { (Snap-action) } \end{gathered}$ | 1NC/1NO (Slow-action) | 2NC (Slow-action) |
|  | Roller lever (resin roller) | Pg13.5 | D4B-1111N | D4B-1511N | D4B-1A11N |
|  |  | G1/2 (PF1/2) | D4B-2111N | D4B-2511N | D4B-2A11N |
|  |  | 1/2-14NPT | D4B-3111N | D4B-3511N | D4B-3A11N |
|  |  | Pg13.5 (3-conduit) | D4B-5111N | D4B-5511N | D4B-5A11N |
| $\begin{aligned} & \text { ㅁ } \\ & \text { 㽞 } \\ & \square \\ & \dot{Z} \end{aligned}$ |  | G1/2 (3-conduit) | D4B-6111N | D4B-6511N | D4B-6A11N |
|  |  | 1/2-14NPT (3-conduit) | D4B-7111N | D4B-7511N | D4B-7A11N |
|  | Roller lever (stainless steel roller) | Pg13.5 | D4B-1115N | D4B-1515N | D4B-1A15N |
|  |  | G1/2 (PF1/2) | D4B-2115N | D4B-2515N | D4B-2A15N |
|  |  | 1/2-14NPT | D4B-3115N | D4B-3515N | D4B-3A15N |
|  |  | Pg13.5 (3-conduit) | D4B-5115N | D4B-5515N | D4B-5A15N |
|  | Top plunger | Pg13.5 | D4B-1170N | D4B-1570N | D4B-1A70N |
|  |  | G1/2 (PF1/2) | D4B-2170N | D4B-2570N | D4B-2A70N |
|  |  | 1/2-14NPT | D4B-3170N | D4B-3570N | D4B-3A70N |
|  |  | Pg13.5 (3-conduit) | D4B-5170N | D4B-5570N | D4B-5A70N |
|  |  | G1/2 (3-conduit) | D4B-6170N | D4B-6570N | D4B-6A70N |
|  |  | 1/2-14NPT (3-conduit) | D4B-7170N | D4B-7570N | D4B-7A70N |
|  | Top roller plunger | Pg13.5 | D4B-1171N | D4B-1571N | D4B-1A71N |
|  |  | G1/2 (PF1/2) | D4B-2171N | D4B-2571N | D4B-2A71N |
|  |  | 1/2-14NPT | D4B-3171N | D4B-3571N | D4B-3A71N |
|  |  | Pg13.5 (3-conduit) | D4B-5171N | D4B-5571N | D4B-5A71N |
|  |  | G1/2 (3-conduit) | D4B-6171N | D4B-6571N | D4B-6A71N |
|  |  | 1/2-14NPT (3-conduit) | D4B-7171N | D4B-7571N | D4B-7A71N |

## General-purpose Limit Switches

| Actuator | Conduit openings | Model |  |  |
| :---: | :---: | :---: | :---: | :---: |
|  |  | 1NC/1NO (Snap-action) | 1NC/1NO (Slow-action) | $\begin{gathered} \text { 2NC } \\ \text { (Slow-action) } \end{gathered}$ |
| Adjustable roller lever | Pg13.5 | D4B-1116N | D4B-1516N | D4B-1A16N |
|  | G1/2 (PF1/2) | D4B-2116N | D4B-2516N | D4B-2A16N |
|  | 1/2-14NPT | D4B-3116N | D4B-3516N | D4B-3A16N |
|  | Pg13.5 (3-conduit) | D4B-5116N | D4B-5516N | D4B-5A16N |
|  | G1/2 (3-conduit) | D4B-6116N | D4B-6516N | D4B-6A16N |
|  | 1/2-14NPT (3-conduit) | D4B-7116N | D4B-7516N | D4B-7A16N |
| Adjustable rod lever | Pg13.5 | D4B-1117N | D4B-1517N | D4B-1A17N |
|  | G1/2 (PF1/2) | D4B-2117N | D4B-2517N | D4B-2A17N |
|  | 1/2-14NPT | D4B-3117N | D4B-3517N | D4B-3A17N |
|  | Pg13.5 (3-conduit) | D4B-5117N | D4B-5517N | D4B-5A17N |
|  | G1/2 (3-conduit) | D4B-6117N | D4B-6517N | D4B-6A17N |
|  | 1/2-14NPT (3-conduit) | D4B-7117N | D4B-7517N | D4B-7A17N |
| Coil spring (non-directional) | Pg13.5 | D4B-1181N | --- | D4B-1A81N |
|  | G1/2 (PF1/2) | D4B-2181N |  | D4B-2A81N |
|  | 1/2-14NPT | D4B-3181N |  | D4B-3A81N |
|  | Pg13.5 (3-conduit) | D4B-5181N |  | D4B-5A81N |
|  | G1/2 (3-conduit) | D4B-6181N |  | D4B-6A81N |
|  | 1/2-14NPT (3-conduit) | D4B-7181N |  | D4B-7A81N |
| Plastic rod(non-directional) | Pg13.5 | D4B-1187N |  | D4B-1A87N |
|  | G1/2 (PF1/2) | D4B-2187N |  | D4B-2A87N |
|  | 1/2-14NPT | D4B-3187N |  | D4B-3A87N |
|  | Pg13.5 (3-conduit) | D4B-5187N |  | D4B-5A87N |
|  | G1/2 (3-conduit) | D4B-6187N |  | D4B-6A87N |
|  | 1/2-14NPT (3-conduit) | D4B-7187N |  | D4B-7A87N |

Note: In addition to the above models, models compatible with the previous D4B Switches (with standard rotary levers) are available. Model number examples: D4B-1 $\square 1 \mathrm{RN}(\mathrm{Pg} 13.5)$ or D4B-2 $\square 1 \mathrm{RN}(\mathrm{PF} 1 / 2)$

## ■ Ordering Switches

Because the D4B- $\square$ N employs a block mounting construction, parts may be ordered as a complete assembled set or individually as replacement parts. Switches ordered as sets are assembled before shipping.
Note: Do not order combinations of only a Side Rotary Lever and Head or a Side Rotary Lever and Switch Box.


## Replacement Parts

## Switch Boxes

|  |  | 1-conduit type |  |  | 3-conduit type |  |  |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
|  |  | PG13.5 | G1/2 | 1/2-14NPT | PG13.5 | G1/2 | 1/2-14NPT |
| 1NC/1NO <br> (Snap-action) | $\ddots$ | D4B-1100N | D4B-2100N | D4B-3100N | D4B-5100N | D4B-6100N | D4B-7100N |
| 1NC/1NO <br> (Slow-action) | $\ddots$ | D4B-1500N | D4B-2500N | D4B-3500N | D4B-5500N | D4B-6500N | D4B-7500N |
| 2NC <br> (Slow-action) | $\rightarrow$ | D4B-1A00N | D4B-2A00N | D4B-3A00N | D4B-5A00N | D4B-6A00N | D4B-7A00N |

## Operating Heads

| Actuator | Type | Model |
| :--- | :--- | :--- |
| Side rotary | Standard | D4B-0010N |
| Top plunger | Plain | D4B-0070N |
|  | Roller | D4B-0071N |
|  | Coil spring | D4B-0081N |
|  | Plastic rod | D4B-0087N |

## Levers (for Side Rotary Switches)

| Actuator | Length (mm) | Diameter of roller | Model |
| :--- | :--- | :--- | :--- |
| Standard | 31.5 | 17.5 dia. | D4B-0001N |
| Stainless steel roller lever | 31.5 | 17.5 dia. | D4B-0005N |
| Adjustable roller lever | 25 to 89 | 19 dia. | D4B-0006N |
| Adjustable rod lever | 145 max. | --- | D4B-0007N |
| Interchangeable with D4B-0001 | 33.7 | 19 dia. | D4B-000RN |

Note: Other types of lever are also available.

## Specifications

## - Standards and EC Directives

- Conforms to the following EC Directives:

Machinery Directive
Low Voltage Directive
EN1088
EN50041

## Approved Standards

Snap-action Models

| Agency | Standard | File No. |
| :--- | :--- | :--- |
| TÜV Rheinland | EN60947-5-1 <br> (approved direct <br> opening mechanism) | J9851083 $\Theta$ |
|  | EN60947-5-1 <br> (unapproved direct <br> opening mechanism) | J50005477 <br> (See note 1.) |
| UL | UL508 | E76675 |
| CSA | C22.2 No. 14 | LR45746 |
| BIA (See note 2.) | GS-ET-15 | 1 1-conduit: 9202158 <br> 3-conduit: 9309655 |
| CQC (CCC) | GB14048.5 | 2003010305077612 |

Note: 1. Adjustable roller lever, adjustable rod lever, coil spring, and plastic rod models only.
2. Not including adjustable roller lever, adjustable rod lever, coil spring, and plastic rod models.

Slow-action Models

| Agency | Standard | File No. |
| :--- | :--- | :--- |
| TÜV Rheinland | EN60947-5-1 <br> (approved direct <br> opening mechanism) | J9851083 |
|  | EN60947-5-1 <br> (unapproved direct <br> opening mechanism) | J50005477 <br> (See note 1.) |
|  | UL508 | E76675 |
|  | C22.2 No. 14 | LR45746 |
| BIA (See note.) | GS-ET-15 | 1 -conduit: 9202158 <br> 3-conduit: 9309655 |
| SUVA (See note.) | SUVA | $1-c o n d u i t: ~ E 6188 / 1 . d ~$ <br> 3-conduit: E6189/1.d |
| CQC (CCC) | GB14048.5 | 2003010305077612 |

Note: 1. Adjustable roller lever, adjustable rod lever, coil spring, and plastic rod models only.
2. Not including adjustable roller lever, adjustable rod lever, coil spring, and plastic rod models.

## Approved Standard Ratings

## TÜV (EN60947-5-1), CCC (GB14048.5)

| Utilization category | AC-15 |
| :--- | :--- |
| Rated operating current $\left(\mathbf{I}_{\mathbf{e}}\right)$ | 2 A |
| Rated operating voltage $\left(\mathbf{U}_{\mathrm{e}}\right)$ | 400 V |

Note: As protection against short-circuiting, use either a gI-type or gG-type 10-A fuse that conforms to IEC60269.
UL/CSA: (UL508, CSA C22.2 No. 14)
A600

| Rated voltage | Carry current | Current |  | Volt-amperes |  |
| :--- | :---: | :---: | :--- | :--- | :--- |
|  |  | Make | Break | Make | Break |
| 120 VAC | 10 A | 60 A | 6 A | $7,200 \mathrm{VA}$ | 720 VA |
| 240 VAC | 30 A | 3 A |  |  |  |
| 480 VAC |  | 15 A | 1.5 A |  |  |
|  |  | 12 A | 1.2 A |  |  |

## Ratings

| Rated voltage (V) | Non-inductive load (A) |  |  |  | Inductive load (A) |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Resistive load |  | Lamp load |  | Inductive load |  | Motor load |  |
|  | NC | NO | NC | NO | NC | NO | NC | NO |
| 125 VAC | 10 |  | 3 | 1.5 | 10 |  | 5 | 2.5 |
| 250 | 10 |  | 2 | 1 | 10 |  | 3 | 1.5 |
| 400 | 10 |  | 1.5 | 0.8 | 3 |  | 1.5 | 0.8 |
| 8 VDC | 10 |  | 6 | 3 | 10 |  | 6 |  |
| 14 | 10 |  | 6 | 3 | 10 |  | 6 |  |
| 30 | 6 |  | 4 | 3 | 6 |  | 4 |  |
| 125 | 0.8 |  | 0.2 | 0.2 | 0.8 |  | 0.2 |  |
| 250 | 0.4 |  | 0.1 | 0.1 | 0.4 |  | 0.1 |  |

2. Inductive loads have a power factor of 0.4 or higher (AC) or a time constant of 7 ms or lower (DC).
3. Lamp loads have a inrush current of 10 times the normal current.
4. Motor loads have a inrush current of 6 times the normal current.

| Inrush current | 30 A max. |
| :--- | :--- |

## Characteristics

| Item |  | Snap-action | Slow-action |
| :---: | :---: | :---: | :---: |
| Degree of protection |  | IP67 (EN60947-5-1) |  |
| Durability (see note 4) | Mechanical | 30,000,000 operations min. | 10,000,000 operations min. |
|  | Electrical | 500,000 operations min. (at a 250 VAC, $10-\mathrm{A}$ resistive load) |  |
| Operating speed |  | $1 \mathrm{~mm} / \mathrm{s}$ to $0.5 \mathrm{~m} / \mathrm{s}$ |  |
| Operating frequency |  | Mechanical: 120 operations/min Electrical: 30 operations/min |  |
| Rated frequency |  | $50 / 60 \mathrm{~Hz}$ |  |
| Insulation resistance |  | $100 \mathrm{M} \Omega \mathrm{min}$. (at 500 VDC ) between terminals of the same polarity and between each terminal and non-current-carrying part |  |
| Contact resistance |  | $25 \mathrm{~m} \Omega$ max. (initial value) |  |
| Dielectric strength ( $\mathrm{U}_{\text {imp }}$ ) |  |  |  |
| Between terminals of same polarity |  | $\mathrm{U}_{\mathrm{imp}} 2.5 \mathrm{kV}$ | $\mathrm{U}_{\mathrm{imp}} 4 \mathrm{kV}$ |
| Between terminals of different polarity |  | --- | $\mathrm{U}_{\mathrm{imp}} 4 \mathrm{kV}$ |
| Between current-carrying metal parts and ground |  | $\mathrm{U}_{\mathrm{imp}} 4 \mathrm{kV}$ | $\mathrm{U}_{\mathrm{imp}} 4 \mathrm{kV}$ |
| Between each terminal and non-current-carrying parts |  | $\mathrm{U}_{\mathrm{imp}} 4 \mathrm{kV}$ | $\mathrm{U}_{\mathrm{imp}} 4 \mathrm{kV}$ |
| Rated insulation voltage ( $\mathrm{U}_{\mathrm{i}}$ ) |  | 600 VAC (EN60947-5-1) |  |
| Counter electromotive voltage at switching |  | 1,500 VAC max. (EN60947-5-1) |  |
| Operating environmental pollution level |  | 3 (EN60947-5-1) |  |
| Conditional short-circuit current |  | 100 A (EN60947-5-1) |  |
| Conventional enclosed thermal current ( $\mathrm{I}_{\text {the }}$ ) |  | 20 A (EN60947-5-1) |  |
| Electric shock protection class |  | Class I (with ground terminal) |  |
| Vibration resistance |  | Malfunction: 10 to $55 \mathrm{~Hz}, 0.75 \mathrm{~mm}$ single amplitude |  |
| Shock resistance |  | Destruction: $1,000 \mathrm{~m} / \mathrm{s}^{2} \mathrm{~min}$. Malfunction: $300 \mathrm{~m} / \mathrm{s}^{2} \mathrm{~min}$. |  |
| Ambient temperature |  | Operating: $-40^{\circ} \mathrm{C}$ to $80^{\circ} \mathrm{C}$ (with no icing) (see note 5) |  |
| Ambient humidity |  | Operating: 95\% max. |  |
| Weight |  | Approx. 250 g |  |

Note: 1. The above values are initial values.
2. The above values may vary depending on the model. Consult your OMRON sales representative for details.
3. The degree of protection is tested using the method specified by the standard (EN60947-5-1). Confirm that sealing properties are sufficient for the operating conditions and environment beforehand.
4. The durability is for an ambient temperature of $5^{\circ} \mathrm{C}$ to $35^{\circ} \mathrm{C}$ and ambient humidity of $40 \%$ to $70 \%$. For further conditions, consult your OMRON sales representative.
5. $-25^{\circ} \mathrm{C}$ to $80^{\circ} \mathrm{C}$ for the flexible-rod type.

## Connections

## ■ Contact Form (EN50013)



Note: Terminal numbers are according to EN50013; contact symbols are according to IEC60947-5-1.

## Operation

## Direct Opening Mechanism

## 1NO/1NC Contact (Snap-action)

Conforms to EN60947-5-1 Direct Opening $\Theta$ (Only NC contact has a direct opening mechanism.)


## 1NC/1NO Contact (Slow-action)



## 2NC Contact (Slow-action)



## Nomenclature

The roller lever switch employs a system which allows selection of operation on only one side (left or right)
or both sides without the use of any tools.


Seal Ring
Sealing properties improved by using a $X$ ring and bearing-free structure.
 Note: NBR is used for rubber parts.

Head
Can be connected in any of four directions (except for Roller Plunger Models, which can be connected at either of 2 directions that differ by $90^{\circ}$ )

## Roller

Nylon rollers used for superior resistance to wear

Lever (Form Lock Structure)
The lever has an operating position indication plate and grooves that mate every $90^{\circ}$ to prevent slipping between the rotary axis and lever.

## Built-in Switch

Direct opening mechanism used for NC contact to separate contact for faults, such as contact welding The heights of the NC and NO terminals are different to enable easier wiring.

Cover

Ground Screw
Ground screws are provided on all models for increased safety.

## Engineering Data

## Electrical Durability (Snap-action)




## Dimensions

Note: 1. All units are in millimeters unless otherwise indicated.
2. Unless otherwise specified, a tolerance of $\pm 0.4 \mathrm{~mm}$ applies to all dimensions.
3. When placing your order, specify the conduit type by adding a code from the list below to the blank box of the following model numbers as shown below.
Standard Switches 3-conduit Switches
1: PG 13.5 5: PG 13.5
2: G $1 / 2$
6: G 1/2
3: 1/2-14NPT
7: 1/2-14NPT
4. Omitted dimensions are the same as those for the Rotary Level Type Models D4B-1 $\square \square \square \mathrm{N}$ and $\mathrm{D} 4 \mathrm{~B}-5 \square \square \square \mathrm{~N}$ have a PG13.5 conduit opening. $\mathrm{D} 4 \mathrm{~B}-2 \square \square \square \mathrm{~N}$ and $\mathrm{D} 4 \mathrm{~B}-6 \square \square \square \mathrm{~N}$ have a G1/2 conduit opening. D4B$3 \square \square \square \mathrm{~N}$ and $\mathrm{D} 4 \mathrm{~B}-7 \square \square \square \mathrm{~N}$ have a 1/2-14NPT conduit opening.

## Switches

## Roller Lever

D4B- $\square \square 11 N$


Roller Lever
D4B-
15N


Adjustable Roller Lever
D4B- $\square 16 \mathrm{~N}$


## Adjustable Rod Lever <br> D4B- $\square \square 17 \mathrm{~N}$



Note: Unless otherwise specified, a tolerance of $\pm 0.4 \mathrm{~mm}$ applies to all dimensions.

| Operating characteristic |  | D4B- $\square \square \mathbf{1 1 N}$ | D4B- $\square \square$ 15N | D4B- $\square$ 16N <br> (See note 2.) | D4B- <br> (See note 3.) |
| :--- | :--- | :--- | :--- | :--- | :--- |
| Operating force | OF max. | 9.41 N | 9.41 N | 9.41 N | 2.12 N |
| Release force | RF min. | 1.47 N | 1.47 N | 1.47 N | 0.29 N |
| Positive travel | PT | $21^{\circ} \pm 3^{\circ}$ | $21^{\circ} \pm 3^{\circ}$ | $21^{\circ} \pm 3^{\circ}$ | $21^{\circ} \pm 3^{\circ}$ |
|  | PT (2nd) (See notes 4, 6.) | $\left(45^{\circ}\right)$ | $\left(45^{\circ}\right)$ | $\left(45^{\circ}\right)$ | $\left(45^{\circ}\right)$ |
| Overtravel | OT min. | $50^{\circ}$ | $50^{\circ}$ | $50^{\circ}$ | $50^{\circ}$ |
| Movement deviation | MD max. (See note 5.) | $12^{\circ}$ | $12^{\circ}$ | $12^{\circ}$ | $12^{\circ}$ |
| Direct opening travel | DOT min. (See notes 4, 7.) | $35^{\circ}$ | $35^{\circ}$ | $35^{\circ}$ | $35^{\circ}$ |
|  | (See notes 5, 7.) | $55^{\circ}$ | $55^{\circ}$ | $55^{\circ}$ | $55^{\circ}$ |
| Direct opening force | DOF min. (See note 7.) | 19.61 N | 19.61 N | 19.61 N | 19.61 N |
| Total travel | TT (See note 6.) | $\left(75^{\circ}\right)$ | $\left(75^{\circ}\right)$ | $\left(75^{\circ}\right)$ | $\left(75^{\circ}\right)$ |

Note: 1. Variation occurs in the simultaneity of contact opening/closing operations of $2 N C$ contacts. Check contact operation.
2. The operating characteristics of these Switches were measured with the roller level set at 31.5 mm .
3. The operating characteristics of these Switches were measured with the rod level set at 140 mm .
4. Only for slow-action models.
5. Only for snap-action models.
6. Reference values.
7. Must be provided to ensure safe operation.


## Top Roller Plunger

 D4B- $\square$ 71N

12.7 dia. $\times 4.8$


Note: Unless otherwise specified, a tolerance of $\pm 0.4 \mathrm{~mm}$ applies to all dimensions.

|  | Operating characteristic |  | D4B- $\square \square 70 \mathrm{~N}$ | D4B- $\square \square 71 \mathrm{~N}$ |
| :---: | :---: | :---: | :---: | :---: |
|  | Operating force Release force Positive travel | ```OF max. RF min. PT PT (2nd) (See notes 2, 4.)``` | $\begin{aligned} & \hline 18.63 \mathrm{~N} \\ & 1.96 \mathrm{~N} \\ & 2 \mathrm{~mm} \\ & (3 \mathrm{~mm}) \end{aligned}$ | $\begin{array}{\|l\|} \hline 18.63 \mathrm{~N} \\ 1.96 \mathrm{~N} \\ 2 \mathrm{~mm} \\ (3 \mathrm{~mm}) \end{array}$ |
|  | Overtravel <br> Movement deviation Direct opening travel Direct opening force Total travel | OT min. <br> MD max. (See note 3.) <br> DOT min. (See notes 5.) <br> DOF min. (See note 5.) <br> TT (See note 4.) | 5 mm <br> 1 mm <br> 3.2 mm <br> 49.03 N <br> ( 7 mm ) | 5 mm <br> 1 mm <br> 3.2 mm <br> 49.03N <br> ( 7 mm ) |
|  | Free position Operating position | FP max. OP | $\begin{aligned} & 38 \mathrm{~mm} \\ & 35 \pm 1 \mathrm{~mm} \end{aligned}$ | $\begin{aligned} & 51 \mathrm{~mm} \\ & 48 \pm 1 \mathrm{~mm} \end{aligned}$ |

Note: 1. Variation occurs in the simultaneity of contact opening/closing operations of 2NC contacts. Check contact operation.
2. Only for slow-action models.
3. Only for snap-action models.
4. Reference values.
5. Must be provided to ensure safe operation.

Mechanically speaking, these models are general limit switches and not safety limit switches.

Note: Be sure to adjust the dog to within 40 mm from the top end of the coil spring.

Mechanically speaking, these models are general limit switches and not safety limit switches.


Note: Unless otherwise specified, a tolerance of $\pm 0.4 \mathrm{~mm}$ applies to all dimensions.

| Operating characteristic |  | D4B- $\square \square \mathbf{8 1 N}$ | D4B- $\square \square \mathbf{8 7 N}$ |
| :--- | :--- | :--- | :--- |
| Operating force | OF max. | 1.47 N | 1.47 N |
| Positive travel | PT max. | $15^{\circ}$ | $15^{\circ}$ |

Note: Variation occurs in the simultaneity of contact opening/closing operations of 2NC contacts. Check contact operation.

## 3-conduit Switches

## Roller Lever

D4B- $\square 11 \mathrm{~N}$


Roller Lever D4B- $\square \square 15 N$


Adjustable Roller Lever
D4B- $\square \square 16 \mathrm{~N}$




Note: Unless otherwise specified, a tolerance of $\pm 0.4 \mathrm{~mm}$ applies to all dimensions.

| Operating characteristic |  | D4B- $\square \square 11 \mathrm{~N}$ | D4B- $\square 15 \mathrm{~N}$ | $\begin{aligned} & \text { D4B- } \square 16 N \\ & \text { (See note 2.) } \end{aligned}$ | D4B- $\square \square 17 N$ <br> (See note 3.) |
| :---: | :---: | :---: | :---: | :---: | :---: |
| Operating force | OF max. | 9.41 N | 9.41 N | 9.41 N | 2.12 N |
| Release force | RF min. | 1.47 N | 1.47 N | 1.47 N | 0.29 N |
| Positive travel | PT | $21^{\circ} \pm 3^{\circ}$ | $21^{\circ} \pm 3^{\circ}$ | $21^{\circ} \pm 3^{\circ}$ | $21^{\circ} \pm 3^{\circ}$ |
|  | PT (2nd) (See notes 4, 6.) | (45 ${ }^{\circ}$ | (45 ${ }^{\circ}$ ) | (45 ${ }^{\circ}$ ) | (45 ${ }^{\circ}$ ) |
| Overtravel | OT min. | $50^{\circ}$ | $50^{\circ}$ | $50^{\circ}$ | $50^{\circ}$ |
| Movement deviation | MD max. (See note 5.) | $12^{\circ}$ | $12^{\circ}$ | $12^{\circ}$ | $12^{\circ}$ |
| Direct opening travel | DOT min. (See notes 4, 7.) | $35^{\circ}$ | $35^{\circ}$ | $35^{\circ}$ | $35^{\circ}$ |
|  | (See notes 5, 7.) | $55^{\circ}$ | $55^{\circ}$ | $55^{\circ}$ | $55^{\circ}$ |
| Direct opening force | DOF min. (See note 7.) | 19.61 N | 19.61 N | 19.61 N | 19.61 N |
| Total travel | TT (See note 6.) | (75 ${ }^{\circ}$ ) | (75 ${ }^{\circ}$ ) | (75 ${ }^{\circ}$ ) | (75 ${ }^{\circ}$ ) |

Note: 1. Variation occurs in the simultaneity of contact opening/closing operations of 2NC contacts. Check contact operation.
2. The operating characteristics of these Switches were measured with the roller level set at 31.5 mm .
3. The operating characteristics of these Switches were measured with the rod level set at 140 mm .
4. Only for slow-action models.
5. Only for snap-action models.
6. Reference values.
7. Must be provided to ensure safe operation.


Note: Unless otherwise specified, a tolerance of $\pm 0.4 \mathrm{~mm}$ applies to all dimensions.

| Operating characteristic |  | D4B- $\square \square$ 70N | D4B- $\square \square \mathbf{7 1 N}$ |
| :--- | :--- | :--- | :--- |
| Operating force | OF max. | 18.63 N | 18.63 N |
| Release force | RF min. | 1.96 N | 1.96 N |
| Positive travel | PT | 2 mm | 2 mm |
|  | PT (2nd) (See notes 2, 4.) | $(3 \mathrm{~mm})$ | $(3 \mathrm{~mm})$ |
| Overtravel | OT min. | 5 mm | 5 mm |
| Movement deviation | MD max. (See note 3.) | 1 mm | 1 mm |
| Direct opening travel | DOT min. (See notes 5.) | 3.2 mm | 3.2 mm |
| Direct opening force | DOF min. (See note 5.) | 49.03 N | 49.03 N |
| Total travel | TT (See note 4.) | $(7 \mathrm{~mm})$ | $(7 \mathrm{~mm})$ |
| Free position | FP max. | 38 mm | 51 mm |
| Operating position | OP | $35 \pm 1 \mathrm{~mm}$ | $48 \pm 1 \mathrm{~mm}$ |

Note: 1. Variation occurs in the simultaneity of contact opening/closing operations of 2NC contacts. Check contact operation.
2. Only for slow-action models.
3. Only for snap-action models.
4. Reference values.
5. Must be provided to ensure safe operation.


Note: Unless otherwise specified, a tolerance of $\pm 0.4 \mathrm{~mm}$ applies to all dimensions.

| Operating characteristic | D4B- $\square \square \mathbf{8 1 N}$ | D4B- $\square \square \mathbf{8 7 N}$ |  |
| :--- | :--- | :--- | :--- |
| Operating force | OF max. | 1.47 N | 1.47 N |
| Positive travel | PT max. | $15^{\circ}$ | $15^{\circ}$ |
|  |  |  |  |

Note: Variation occurs in the simultaneity of contact opening/closing operations of 2NC contacts. Check contact operation.

Roller Lever WL-1A400

## Adjustable Rod Lever

## WL-3A100



Spring Rod Lever
WL-4A201

Resin Loop Lever
D4A-F00


Note: Reverse the indicator plate when mounting.

Note: 1. Unless otherwise specified, a tolerance of $\pm 0.4 \mathrm{~mm}$ applies to all dimensions.
2. Safety Limit Switch specifications are satisfied with D4B- $\square \square \square \square$ AN Levers only (example: D4B-0001N).

