

## The Limit Switch with Better Seal, Shock Resistance, and Strength

- A double seal on the head, a complete gasket cover, and other features ensure a better seal (meets UL NEMA 3, 4, 4X, 6P, 12, 13).
- Wide standard operating temperature range: -40°C to +100°C (standard type).
- Models with fluoro-rubber available for greater resistance to chemicals.
- Block mounting method also reduces downtime for maintenance.
- DPDT, double-break models available for complex operations.
- Approved by UL, CSA, and CCC (Chinese standard). (Ask your OMRON representative for information on approved model.)



For the most recent information on models that have been certified for safety standards, refer to your OMRON website.

 Be sure to read *Safety Precautions* on page 14 to 15 and *Safety Precautions for All Limit Switches*.

## Model Number Structure

**Model Number Legend** (Not all combinations are possible. Ask your OMRON representative for details.)

**D4A-□□□□N (Set model number)**

(1) (2) (3)

### (1) Receptacle box

- 1 : 1/2-14 NPT conduit (SPDT, double-break)
- 2 : 1/2-14 NPT conduit (DPDT, double-break)
- 3 : G 1/2 conduit (SPDT, double-break)
- 4 : G 1/2 conduit (DPDT, double-break)

### (2) Switch Box

- 1 : SPDT, double-break, without indicator
- 3 : SPDT, double-break, neon lamp
- E : SPDT, double-break, LED (24 VDC, leakage current: 1.3 mA)
- 5 : DPDT, double-break, simultaneous operation, without indicator
- 7 : DPDT, double-break, sequential operation, without indicator \*1
- 9 : DPDT, double-break, center neutral operation, without indicator \*2
- L : DPDT, double-break, simultaneous operation, neon lamp
- P : DPDT, double-break, simultaneous operation, LED

### (3) Head

- 01 : Roller lever, standard
- 02 : Roller lever, high-sensitivity
- 03 : Roller lever, low torque
- 04 : Roller lever, high-sensitivity, low torque
- 05 : Roller lever, maintained
- 17 : Roller lever, sequential operation
- 18 : Roller lever, center neutral operation
- 06 : Side plunger, standard
- 07-V : Side plunger, vertical roller
- 07-H : Side plunger, horizontal roller
- 08 : Side plunger, adjustable
- 09 : Top plunger, standard
- 10 : Top plunger, roller
- 11 : Top plunger, adjustable
- 12 : Flexible rod, spring wire
- 14 : Flexible rod, plastic rod
- 15 : Flexible rod, cat whisker
- 16 : Flexible rod, coil spring

\*1. Use the D4A-0017N Special Head.

\*2. Use the D4A-0018N Special Head.

Note: Fluoro-rubber sealed type is also available.

## Ordering Information

### Set model number

#### SPDT, Double-break Switches

| Receptacle box<br>Indicator |                              |                                                                                     | G 1/2 Conduit     |                    |                               |                    |                         |
|-----------------------------|------------------------------|-------------------------------------------------------------------------------------|-------------------|--------------------|-------------------------------|--------------------|-------------------------|
|                             |                              |                                                                                     | Without indicator |                    | With neon lamp indicator (AC) |                    | With LED indicator (DC) |
|                             |                              |                                                                                     | Model             | Approved standards | Model                         | Approved standards | Model                   |
| Roller lever *1             | Standard                     |    | D4A-3101N         | UL, CSA            | D4A-3301N                     | UL, CSA            | D4A-3E01N               |
|                             | High-sensitivity             |    | D4A-3102N         | UL, CSA            | D4A-3302N                     | UL, CSA            | D4A-3E02N               |
|                             | Low-torque                   |    | D4A-3103N         | UL, CSA            | ---                           | ---                | ---                     |
|                             | High-sensitivity, Low-torque |    | D4A-3104N         | UL, CSA            | D4A-3304N                     | UL, CSA            | ---                     |
|                             | Maintained *2                |    | D4A-3105N         | UL, CSA            | D4A-3305N                     | UL, CSA            | D4A-3E05N               |
| Side plunger                | Standard                     |    | D4A-3106N         | UL, CSA            | ---                           | ---                | ---                     |
|                             | Vertical roller              |    | D4A-3107-VN       | UL, CSA            | D4A-3307-VN                   | UL, CSA            | D4A-3E07-VN             |
|                             | Horizontal roller            |    | D4A-3107-HN       | UL, CSA            | D4A-3307-HN                   | UL, CSA            | ---                     |
|                             | Adjustable                   |    | D4A-3108N         | UL, CSA            | D4A-3308N                     | UL, CSA            | D4A-3E08N               |
| Top plunger                 | Standard                     |    | D4A-3109N         | UL, CSA            | D4A-3309N                     | UL, CSA            | ---                     |
|                             | Roller                       |    | D4A-3110N         | UL, CSA            | D4A-3310N                     | UL, CSA            | ---                     |
|                             | Adjustable                   |   | D4A-3111N         | UL, CSA            | D4A-3311N                     | UL, CSA            | ---                     |
| Flexible rod                | Spring wire                  |  | D4A-3112N         | UL, CSA            | D4A-3312N                     | UL, CSA            | D4A-3E12N               |
|                             | Plastic rod                  |  | D4A-3114N         | UL, CSA            | D4A-3314N                     | UL, CSA            | D4A-3E14N               |
|                             | Cat whisker                  |  | D4A-3115N         | UL, CSA            | D4A-3315N                     | UL, CSA            | D4A-3E15N               |
|                             | Coil spring                  |  | D4A-3116N         | UL, CSA            | D4A-3316N                     | UL, CSA            | D4A-3E16N               |

Note: 1. Switches are also available with □1/2-14 NPT conduits. The model numbers correspond as follows:

(Examples) G 1/2 Conduits      1/2-14 NPT Conduits  
 D4A-3□□□N      D4A-1□□□N  
 D4A-4□□□N      D4A-2□□□N

2. Switches are also available with fluoro-rubber seals for higher resistance to chemicals. (The operating temperature range for these Switches, however, is -10 to +120°C.) Add "-F" to the model number. (Example: D4A-3101N becomes D4A-3101N-F.) Ask your nearest OMRON representative for details. Not all combinations are possible. Ask your OMRON representative for details.

\*1. The lever is not included with the Roller Level Models. Select the lever from those listed in this data sheet and order it separately (refer to Levers on page 12).

\*2. The Maintained Switches have a lock mechanism for the switch operation and thus use a Fork Lever Lock.

## DPDT, Double-break Switches

| Receptacle box<br>Indicator |                                                                                                                   | G 1/2 Conduit     |                    |                               |                         |
|-----------------------------|-------------------------------------------------------------------------------------------------------------------|-------------------|--------------------|-------------------------------|-------------------------|
|                             |                                                                                                                   | Without indicator |                    | With neon lamp indicator (AC) | With LED indicator (DC) |
| Actuator                    |                                                                                                                   | Model             | Approved standards | Model                         | Model                   |
| Roller lever *1             | Standard                         | D4A-4501N         | UL, CSA            | D4A-4L01N                     | D4A-4P01N               |
|                             | High-sensitivity                 | D4A-4502N         | UL, CSA            | —                             | —                       |
|                             | Low-torque                       | D4A-4503N         | UL, CSA            | —                             | —                       |
|                             | High-sensitivity,<br>Low-torque  | D4A-4504N         | UL, CSA            | —                             | —                       |
|                             | Maintained *2                    | D4A-4505N         | UL, CSA            | —                             | —                       |
|                             | Sequential operation             | D4A-4717N         | UL, CSA            | —                             | —                       |
|                             | Center neutral<br>operation      | D4A-4918N         | UL, CSA            | —                             | —                       |
| Side plunger                | Standard                         | D4A-4506N         | UL, CSA            | —                             | —                       |
|                             | Vertical roller                  | D4A-4507-VN       | UL, CSA            | —                             | —                       |
|                             | Horizontal roller                | D4A-4507-HN       | UL, CSA            | —                             | —                       |
|                             | Adjustable                       | D4A-4508N         | UL, CSA            | —                             | —                       |
| Top plunger                 | Standard                         | D4A-4509N         | UL, CSA            | —                             | —                       |
|                             | Roller                           | D4A-4510N         | UL, CSA            | D4A-4L10N                     | D4A-4P10N               |
|                             | Adjustable                       | D4A-4511N         | UL, CSA            | —                             | —                       |
| Flexible rod                | Spring wire                    | D4A-4512N         | UL, CSA            | —                             | —                       |
|                             | Plastic rod                    | D4A-4514N         | UL, CSA            | —                             | —                       |
|                             | Cat whisker                    | D4A-4515N         | UL, CSA            | —                             | —                       |
|                             | Coil spring                    | D4A-4516N         | UL, CSA            | —                             | —                       |

Note: 1. Switches are also available with □1/2-14 NPT conduits. The model numbers correspond as follows:

(Examples) G 1/2 Conduits 1/2-14 NPT Conduits  
D4A-3□□□N D4A-1□□□N  
D4A-4□□□N D4A-2□□□N

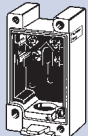
2. Switches are also available with fluoro-rubber seals for higher resistance to chemicals. (The operating temperature range for these Switches, however, is -10 to +120°C.) Add "-F" to the model number. (Example: D4A-4501N becomes D4A-4501N-F.) Ask your nearest OMRON representative about delivery times and prices.

\*1. The lever is not included with the Roller Level Models. Select the lever from those listed in this data sheet and order it separately (refer to Levers on page 12).

\*2. The Maintained Switches have a lock mechanism for the switch operation and thus use a Fork Lever Lock.

## Individual Parts

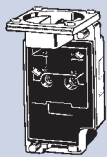
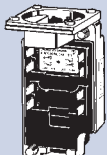
## Receptacle box

| Type<br>Appearance                                                                                         |  | G1/2 conduit *1 |                    | 1/2-14NPT conduit *2 |                    |
|------------------------------------------------------------------------------------------------------------|--|-----------------|--------------------|----------------------|--------------------|
|                                                                                                            |  | Model           | Approved standards | Model                | Approved standards |
| SPDT dou-<br>ble-break  |  | D4A-3000N       | UL, CSA            | D4A-1000N            | UL, CSA            |
| DPDT dou-<br>ble-break  |  | D4A-4000N       | UL, CSA            | D4A-2000N            | UL, CSA            |

\*1. M6-screw mounting  
(standard mounting)

\*2. 10-32UNF-screw mounting  
(standard mounting)

## Switch Box

| Appearance        |                                                                                   | Indicator                | Without indicator |                    | With neon lamp indicator (AC) |                    | With LED indicator (DC) |
|-------------------|-----------------------------------------------------------------------------------|--------------------------|-------------------|--------------------|-------------------------------|--------------------|-------------------------|
|                   |                                                                                   |                          | Model             | Approved standards | Model                         | Approved standards | Model                   |
| SPDT double-break |  | (Without indicator lamp) | D4A-0100N         | UL, CSA            | D4A-0300N                     | UL, CSA            | D4A-0E00N               |
| DPDT double-break |  | Simultaneous operation   | D4A-0500N         | UL, CSA            | D4A-0L00N                     | ---                | D4A-0P00N               |
|                   |                                                                                   | Sequential operation     | D4A-0700N         | UL, CSA            | ---                           | ---                | ---                     |
|                   |                                                                                   | Center neutral operation | D4A-0900N         | UL, CSA            | ---                           | ---                | ---                     |

## Heads

| Appearance      |                                                                                     | Model                        | Approved standards |
|-----------------|-------------------------------------------------------------------------------------|------------------------------|--------------------|
| Roller lever *1 |    | Standard                     | D4A-0001N          |
|                 |                                                                                     | High-sensitivity             | D4A-0002N          |
|                 |                                                                                     | Low-torque *2                | D4A-0003N          |
|                 |                                                                                     | Sequential operation: *3     | D4A-0017N          |
|                 |                                                                                     | Center neutral operation: *3 | D4A-0018N          |
| Side plunger    |  | Maintained                   | D4A-0005N          |
|                 |                                                                                     | Standard                     | D4A-0006N          |
|                 |                                                                                     | Vertical roller              | D4A-0007-VN        |
|                 |                                                                                     | Horizontal roller            | D4A-0007-HN        |
|                 |  | Side adjustable              | D4A-0008N          |

\*1. Levers for Roller Lever Switches are optionally available. Select the lever from those listed in this data sheet and order (refer to Levers on page 12).

\*2. The D4A-C00 adjustable roller lever is too heavy and long for these heads and it should not be used or mechanical malfunction will result.

\*3. These heads cannot be used for double break operations.

| Appearance   | Type                                                                                 | Model       | Approved standards |
|--------------|--------------------------------------------------------------------------------------|-------------|--------------------|
| Top plunger  |    | Standard    | D4A-0009N          |
|              |   | Roller      | D4A-0010N          |
|              |  | Adjustable  | D4A-0011N          |
| Flexible rod |  | Spring wire | D4A-0012N          |
|              |  | Plastic rod | D4A-0014N          |
|              |  | Cat whisker | D4A-0015N          |
|              |  | Coil spring | D4A-0016N          |

## Levers

| Actuator                | Model   |
|-------------------------|---------|
| Roller Lever            | D4A-A00 |
|                         | D4A-A10 |
|                         | D4A-A20 |
|                         | D4A-A30 |
|                         | D4A-B06 |
| Adjustable Roller Lever | D4A-C00 |
|                         | D4A-D00 |
| Resin Loop Lever        | D4A-F00 |
| Fork Lever Lock         | D4A-E30 |
|                         | D4A-E20 |
|                         | D4A-E10 |
|                         | D4A-E00 |

Note: Refer to page 12 for Lever shapes and applicable models.

## Specifications

### Approved Standards

| Agency    | Standard        | File No.                                       |
|-----------|-----------------|------------------------------------------------|
| UL        | UL508           | E76675                                         |
| CSA       | CSA C22.2 No.14 | LR45746                                        |
| CCC (CQC) | GB/T14048.5     | Contact your OMRON representative for details. |

Note: Ask your OMRON representative for information on approved models.

### Ratings

| Type                                       | Rated voltage | Non-inductive load (A) |     |           |     | Inductive load (A) |      |            |    |
|--------------------------------------------|---------------|------------------------|-----|-----------|-----|--------------------|------|------------|----|
|                                            |               | Resistive load         |     | Lamp load |     | Inductive load     |      | Motor load |    |
|                                            |               | NC                     | NO  | NC        | NO  | NC                 | NO   | NC         | NO |
| SPDT double-break (with/without indicator) | 125 VAC *     | 10                     | 10  | 3         | 1.5 | 10                 | 5    | 2.5        |    |
|                                            | 250 VAC *     | 10                     | 10  | 2         | 1   | 10                 | 3    | 1.5        |    |
|                                            | 480 VAC       | 10                     | 10  | 1.5       | 0.8 | 3                  | 1.5  | 0.8        |    |
|                                            | 600 VAC       | 3                      | 1   | 1         | 0.5 | 1.5                | 1    | 0.5        |    |
|                                            | 8 VDC         | 10                     |     | 6         | 3   | 10                 | 6    |            |    |
|                                            | 14 VDC        | 10                     |     | 6         | 3   | 10                 | 6    |            |    |
|                                            | 30 VDC        | 6                      |     | 4         | 3   | 6                  | 4    |            |    |
|                                            | 125 VDC *     | 0.8                    |     | 0.2       | 0.2 | 0.8                | 0.2  |            |    |
| DPDT double-break (without indicator)      | 250 VDC *     | 0.4                    |     | 0.1       | 0.1 | 0.4                | 0.1  |            |    |
|                                            | 125 VAC       | 5                      |     | 2         |     | 4                  | 3    |            |    |
|                                            | 250 VAC       | 3                      |     | 1         |     | 2                  | 1.5  |            |    |
|                                            | 480 VAC       | 1.5                    |     | 0.5       |     | 1                  | 0.8  |            |    |
|                                            | 600 VAC       | 1                      |     | 0.4       |     | 0.7                | 0.5  |            |    |
|                                            | 14 VDC        | 5                      |     | 2         |     | 4                  | 3    |            |    |
|                                            | 30 VDC        | 3                      |     | 1         |     | 2                  | 1.5  |            |    |
|                                            | 125 VDC       | 0.4                    |     | 0.1       |     | 0.4                | 0.1  |            |    |
| DPDT double-break (with indicator)         | 250 VAC       | 0.2                    |     | 0.05      |     | 0.2                | 0.05 |            |    |
|                                            | 125 VAC       | 5                      |     | 2         |     | 4                  | 3    |            |    |
|                                            | 250 VAC       | 3                      |     | 1         |     | 2                  | 1.5  |            |    |
|                                            | 12 VDC        | 5                      |     |           |     |                    |      |            |    |
|                                            | 24 VDC        | 3                      | --- | ---       |     | ---                | ---  |            |    |
|                                            | 48 VDC        | 1                      |     |           |     |                    |      |            |    |

\* For those with indicators, refer to the following rated voltages.

| Item           | Type            | SPDT, Double-break |                | DPDT, Double-break |                |
|----------------|-----------------|--------------------|----------------|--------------------|----------------|
|                |                 | Without indicator  | With indicator | Without indicator  | With indicator |
| Inrush current | Normally closed | 30 A max.          |                |                    |                |
|                | Normally open   | 20 A max.          |                |                    |                |

- Note: 1. The above current ratings are for steady-state current.  
 2. Inductive loads have a power factor of 0.4 min. (AC) and a time constant of 7 ms max. (DC).  
 3. Lamp loads have an inrush current of 10 times the steady-state current.  
 4. Motor loads have an inrush current of 6 times the steady-state current.

### Ratings for Indicators

| Classification    | Indicator | Model     | Rated voltage    | Leakage current | Internal resistance |
|-------------------|-----------|-----------|------------------|-----------------|---------------------|
| SPDT double-break | Neon lamp | D4A-0300N | 125 VAC, 250 VAC | Approx. 0.47 mA | 150 kΩ              |
|                   | LED       | D4A-0E00N | 24 VDC           | Approx. 1.3 mA  | 15 kΩ               |
| DPDT double-break | Neon lamp | D4A-0L00N | 125 VAC, 250 VAC | Approx. 0.28 mA | 240 kΩ              |
|                   | LED       | D4A-0P00N | 48 VDC           | Approx. 1.4 mA  | ---                 |

## Approved Standard Ratings

UL/CSA

A600

D4A-□1□□N (SPDT, Double-break, Without Indicator)

| Rated voltage | Carry current | Current (A) |       | Volt-amperes (VA) |       |
|---------------|---------------|-------------|-------|-------------------|-------|
|               |               | Make        | Break | Make              | Break |
| 120 VAC       | 10 A          | 60          | 6     | 7,200             | 720   |
| 240 VAC       |               | 30          | 3     |                   |       |
| 480 VAC       |               | 15          | 1.5   |                   |       |
| 600 VAC       |               | 12          | 1.2   |                   |       |

A300

D4A-□3□□N (SPDT, Double-break, With Neon Lamp)

| Rated voltage | Carry current | Current (A) |       | Volt-amperes (VA) |       |
|---------------|---------------|-------------|-------|-------------------|-------|
|               |               | Make        | Break | Make              | Break |
| 120 VAC       | 10 A          | 60          | 6     | 7,200             | 720   |
| 240 VAC       |               | 30          | 3     |                   |       |

B600

D4A-□5□□N (DPDT, Double-break, Simultaneous Operation)

D4A-□7□□N (DPDT, Double-break, Sequential Operation)

D4A-□9□□N (DPDT, Double-break, Center Neutral Operation)

| Rated voltage | Carry current | Current (A) |       | Volt-amperes (VA) |       |
|---------------|---------------|-------------|-------|-------------------|-------|
|               |               | Make        | Break | Make              | Break |
| 120 VAC       | 5 A           | 30          | 3     | 3,600             | 360   |
| 240 VAC       |               | 15          | 1.5   |                   |       |
| 480 VAC       |               | 7.5         | 0.75  |                   |       |
| 600 VAC       |               | 6.0         | 0.6   |                   |       |

CCC (GB/T14048.5)

| Applicable category and ratings |
|---------------------------------|
| AC-15 2 A/125 VAC               |

## Characteristics

|                                            |                                                           |                                                                                                                                                                                 |
|--------------------------------------------|-----------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Degree of protection (reference standards) |                                                           | IP67 and NEMA 1, 2, 3, 4X, 5, 6P, 12, and 13                                                                                                                                    |
| Durability *2                              | Mechanical: *1                                            | SPDT, double-break, roller lever: 50,000,000 operations min.<br>DPDT, double-break, roller lever: 30,000,000 operations min.                                                    |
|                                            | Electrical:                                               | SPDT, double-break: for 125 VAC, 10 A resistive load: 1,000,000 operations min.<br>DPDT, double-break: for 125 VAC, 5 A resistive load: 750,000 operations min.                 |
| Operating speed                            |                                                           | 1 mm/s to 2 m/s (in case of D4A-3101N roller lever model)                                                                                                                       |
| Operating frequency                        | Mechanical:                                               | 300 operations/minute                                                                                                                                                           |
|                                            | Electrical:                                               | 30 operations/minute                                                                                                                                                            |
| Rated frequency                            |                                                           | 50/60 Hz                                                                                                                                                                        |
| Insulation resistance                      |                                                           | 100 MΩ min. (at 500 VDC) between terminals of the same polarity, between current-carrying metal parts and ground, and between each terminal and non-current-carrying metal part |
| Contact resistance                         |                                                           | 25 mΩ max. (initial value)                                                                                                                                                      |
| Temperature rise                           |                                                           | 50°C max.                                                                                                                                                                       |
| Dielectric strength                        | Between terminals of same polarity                        | 1,000 VAC, 50/60 Hz for 1 min.                                                                                                                                                  |
|                                            | Between current-carrying metal parts and ground           | 2,200 VAC, 50/60 Hz for 1 min. *3                                                                                                                                               |
|                                            | Between each terminal and non-current-carrying metal part | 2,200 VAC, 50/60 Hz for 1 min. *3                                                                                                                                               |
| Pollution degree (operating environment)   |                                                           | 3                                                                                                                                                                               |
| Protection against electric shock          |                                                           | Class I (with grounding terminal)                                                                                                                                               |
| Vibration resistance                       | Malfunction: *4                                           | 10 to 55 Hz, 1.5-mm double amplitude                                                                                                                                            |
| Shock resistance                           | Destruction:                                              | 1,000 m/s <sup>2</sup> max.                                                                                                                                                     |
|                                            | Malfunction: *4                                           | SPDT, double-break, roller lever: 600 m/s <sup>2</sup> max.<br>DPDT, double-break, roller lever: 300 m/s <sup>2</sup> max.                                                      |
| Ambient operating humidity                 |                                                           | 35% to 95%RH (with no icing)                                                                                                                                                    |
| Weight                                     |                                                           | Approx. 290 g (in case of D4A-3101N)                                                                                                                                            |

Note: The above figures are initial values.

\*1. Excluding maintained models.

\*2. The values are calculated at an operating temperature of +5°C to +35°C, and an operating humidity of 40% to 70%RH. Contact your OMRON sales representative for more detailed information on other operating environments.

\*3. 1,500 VAC is applied to the indicator lamp type.

\*4. Not including Flexible rods (cat whisker, plastic rod, coil spring, and spring wire types).

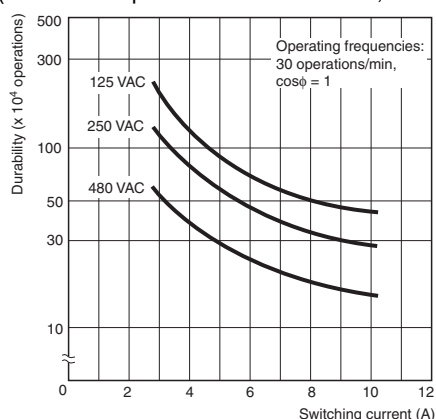
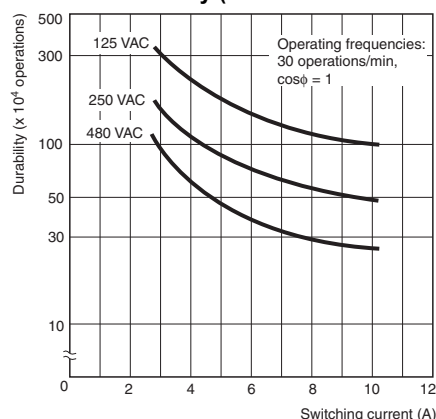
| Item                | Type | Roller lever *1 | Plunger, flexible rod *2 | With indicator |
|---------------------|------|-----------------|--------------------------|----------------|
| Ambient temperature |      | −40°C to +100°C | −20°C to +100°C          | −10°C to +80°C |

\*1. Excluding low-torque and high-sensitivity models.

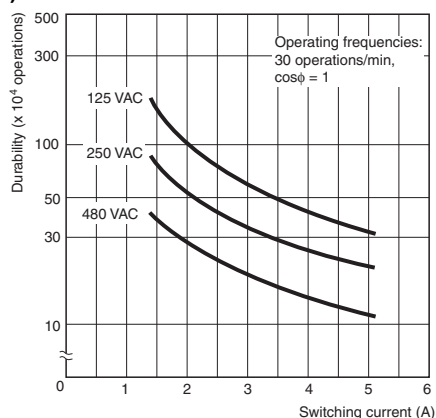
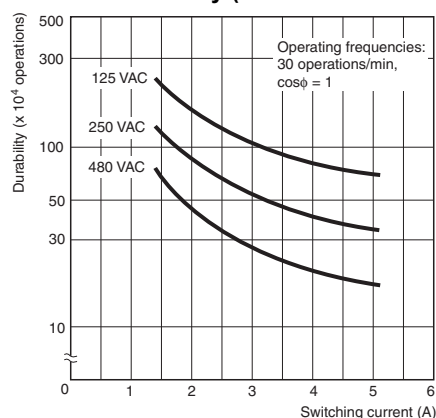
\*2. Including roller lever low-torque and high-sensitivity operating models.

## Engineering Data

**Electrical Durability (SPDT Double-break)** (Ambient temperature: +5°C to +35°C; ambient humidity: 40% to 70%RH)



## Electrical Durability (DPDT Double-break)



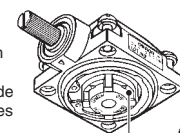
## Structure and Nomenclature

### Structure (DPDT Double-break)

#### Head

With the Roller Lever and Side Plunger Switches, the direction of the switch head can be varied to any of the four directions by loosening the roller lever switch screws at the four corners of the head.

The Roller Lever Switch employs a system which allows selection of the operation of only one side (left or right) or both sides without use of any tools.



**Operating Position Mark (arrow)**

#### Bearings

The copper-alloy bearings ensure long life expectancy.

#### Receptacle

The plug-in type receptacle provides adequate space for wiring.

#### Conduit Opening \*1, \*2

G 1/2 conduit threads featuring high sealing property are used. (Refer to *Limit Switch Connectors* for details on SC connectors). A terminal box with 1/2-14NPT conduit threads is also available on request.

#### Sealed Gasket

The employed full-cover method prevents the gasket from direct exposure to oil or water spray.

#### Roller

The roller actuator is made of hardened stainless steel and excels in resistance to wear.

#### Lever

With the Roller Lever Switch, the lever can be installed anywhere in a 360° range (180° if the lever is reversed and attached to the shaft).

#### Oil Seal

Improved sealing property is ensured with a double-seal construction (a oil seal plus an X-ring seal).

#### Switch Box

Boasts long life expectancy (50 million mechanical operations or more with the 2-pole Double-break Switches and 30 million mechanical operations or more with the DPDT Double-break Switches).

#### Ground Terminal Screw

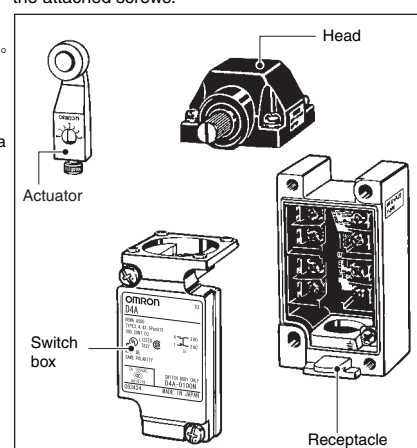
A ground terminal is provided to enhance safety.

#### Switch Box Screw

A Phillips screw is used to secure the switch housing for ease of use, and features a measure to prevent the screw from coming off.

### Easy-maintenance Block Mounting

Block mounting makes it possible to easily assemble or disassemble the head, switch body, and receptacle of the D4A-□N by tightening or loosening the attached screws.



Note: 1. NBR is used in rubber components.

Fluoro-rubber sealed types use fluoro-rubber.

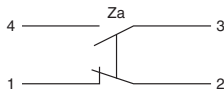
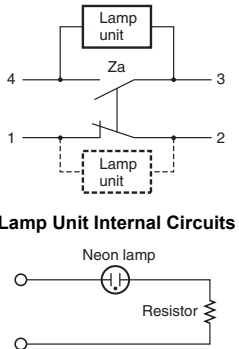
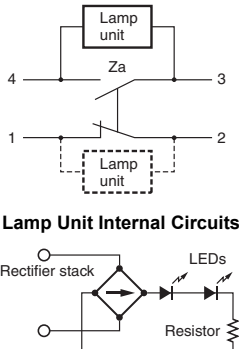
2. For Roller Levers, there is some lever play in the free position (about 2 mm), but this is due to the structure of the head and does not interfere with performance.

\*1. A Receptacle and Terminal Box with 1/2-14NPT conduit threads are also available for the North America market.

\*2. The conduit thread indication has been changed from "PF1/2" to "G1/2" accompanying the JIS B 0202 revision.

This changes applies only to the indication; thread sizes and pitches have not been affected.

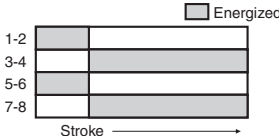
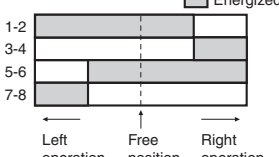
## Contact Forms (Switch Boxes) STDP Double-break Switches

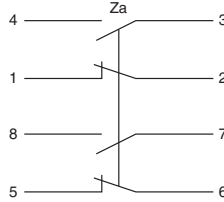
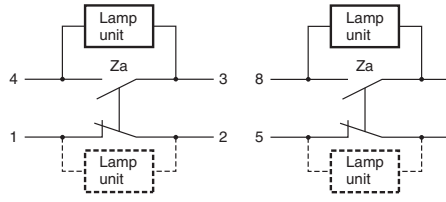
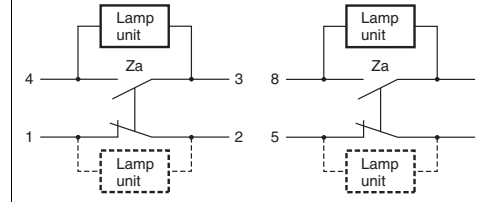
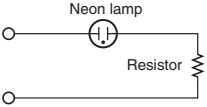
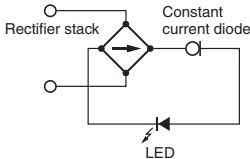
| Type                | Contact model                                                                                  |                                                                                                                                                        |                                                                                                                                                                       | Operating pattern                                                                   |
|---------------------|------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
|                     | Without indicator                                                                              | With neon lamp indicator *                                                                                                                             | With LED indicator *                                                                                                                                                  |                                                                                     |
| 1NC/1NO snap-action | D4A-0100N<br> | D4A-0300N<br><br>Lamp Unit Internal Circuits<br>Neon lamp<br>Resistor | D4A-0E00N<br><br>Lamp Unit Internal Circuits<br>Rectifier stack<br>LEDs<br>Resistor |  |
|                     |                                                                                                |                                                                                                                                                        |                                                                                                                                                                       |                                                                                     |

\* Switches with indicators are factory-set to light when the switch is not operated.

## DTDP Double-break Switches

Each of these Switches can be used to replace two limit switches in applications, such as high-speed control in machine tools and switching motors between forward and reverse, that previously required 2 limit switches. This simplifies wiring, saves space, and reduces costs.

| Type                                                         | Contact model     |                            |                      | Operating pattern                                                                     | Remarks                                                                                             |
|--------------------------------------------------------------|-------------------|----------------------------|----------------------|---------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------|
|                                                              | Without indicator | With neon lamp indicator * | With LED indicator * |                                                                                       |                                                                                                     |
| 2NC/2NO snap-action, simultaneous operation                  | D4A-0500N         | D4A-0L00N                  | D4A-0P00N            |  | Head is compatible with double-break head. Can be switched for operation on both sides of actuator. |
| 2NC/2NO snap-action, sequential operation (2-step operation) | D4A-0700N         | —                          | —                    |  | Use the D4A-0017N Special Head.                                                                     |
| 2NC/2NO snap-action, central neutral operation               | D4A-0900N         | —                          | —                    |  | Use the D4A-0018N Special Head.                                                                     |

| Item                       | Without indicator                                                                                                          | With neon lamp indicator *                                                                       | With LED indicator *                                                                               |
|----------------------------|----------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------|
| Contact form               | D4A-0500N<br>D4A-0700N<br>D4A-0900N<br> | D4A-0L00N<br> | D4A-0P00N<br> |
| Lamp unit internal circuit | —                                                                                                                          |               |               |

\* Switches with indicators are factory-set to light when the switch is not operated, but the setting can be changed to light for operation (dotted lines).



## Dimensions and Operating Characteristics

(Unit: mm)

### Set Model Numbers

(The box in a model number indicates the switch box type.)

**Roller Lever Switches Note: Levers of the side rotary type are optionally available.**

#### Standard

D4A-3□01N, D4A-4□01N

#### High-sensitivity

D4A-3□02N, D4A-4□02N

#### Low-torque

D4A-3□03N, D4A-4□03N

#### High-sensitivity/Low-torque

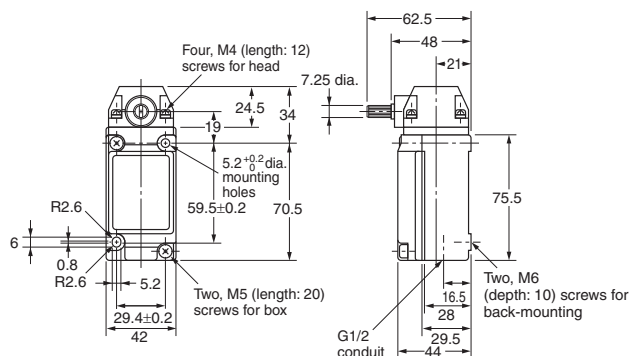
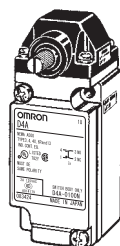
D4A-3□04N, D4A-4□04N

#### Sequential Operation

D4A-4□17N

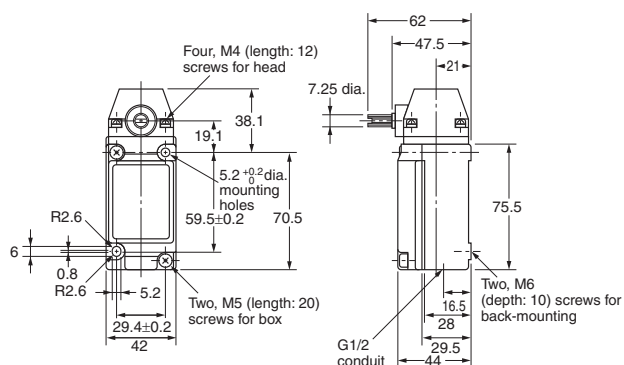
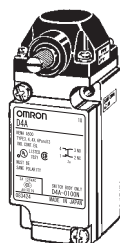
#### Center Neutral Operating

D4A-4□18N



#### Maintained

D4A-3□05N, D4A-4□05N



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

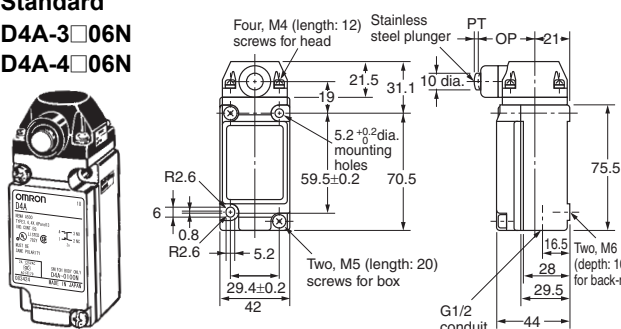
| Operating characteristics | Model   | SPDT Double-break |           |           |           |           | DPDT Double-break |           |           |           |           |                                                |           |
|---------------------------|---------|-------------------|-----------|-----------|-----------|-----------|-------------------|-----------|-----------|-----------|-----------|------------------------------------------------|-----------|
|                           |         | D4A-3□01N         | D4A-3□02N | D4A-3□03N | D4A-3□04N | D4A-3□05N | D4A-4□01N         | D4A-4□02N | D4A-4□03N | D4A-4□04N | D4A-4□05N | D4A-4□17N                                      | D4A-4□18N |
| Operating force           | OF max. | 0.39 N·m          | 0.39 N·m  | 0.2 N·m   | 0.2 N·m   | 0.39 N·m  | 0.39 N·m          | 0.39 N·m  | 0.2 N·m   | 0.2 N·m   | 0.39 N·m  | 0.39 N·m                                       | 0.39 N·m  |
| Release force             | RF min. | 0.05 N·m          | 0.05 N·m  | ---       | ---       | ---       | 0.05 N·m          | 0.05 N·m  | ---       | ---       | ---       | 0.05 N·m                                       | 0.02 N·m  |
| Pretravel                 | PT max. | 15° (12°)         | 7° (6°)   | 15° (12°) | 7° (6°)   | 65° (60°) | 15° (12°)         | 7° (6°)   | 15° (12°) | 7° (6°)   | 65° (60°) | 1-stage:<br>12° (10°)<br>2-stage:<br>20° (17°) | 19° (15°) |
| Overtravel                | OT min. | 70°               | 75°       | 70°       | 75°       | 20°       | 70°               | 75°       | 70°       | 75°       | 20°       | 65°                                            | 65°       |
| Movement Differential     | MD max. | 5° (4°)           | 4° (3°)   | 5° (4°)   | 4° (3°)   | 35° (30°) | 7° (6°)           | 5° (4°)   | 7° (6°)   | 5° (4°)   | 35° (30°) | 6° (5°)                                        | 5° (4°)   |

Note: The figures in the parentheses are average values.

# Side Plunger Switches

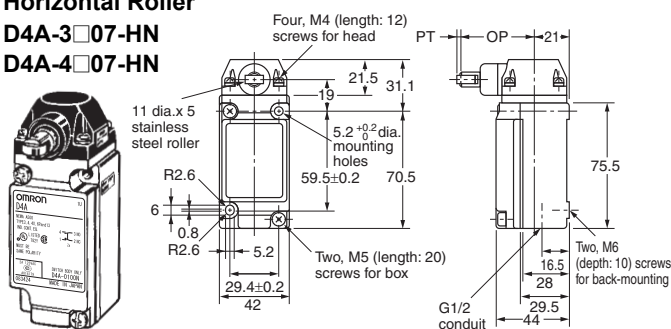
## Standard

D4A-3□06N  
D4A-4□06N



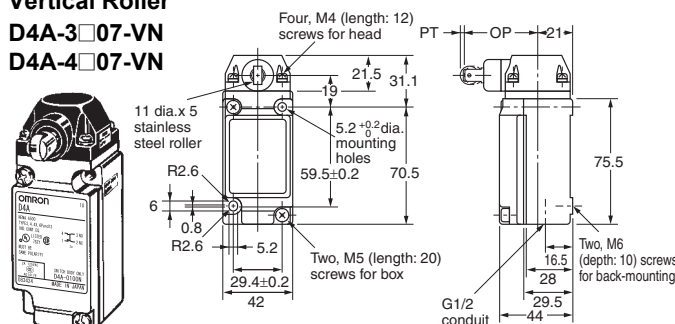
## Horizontal Roller

D4A-3□07-HN  
D4A-4□07-HN



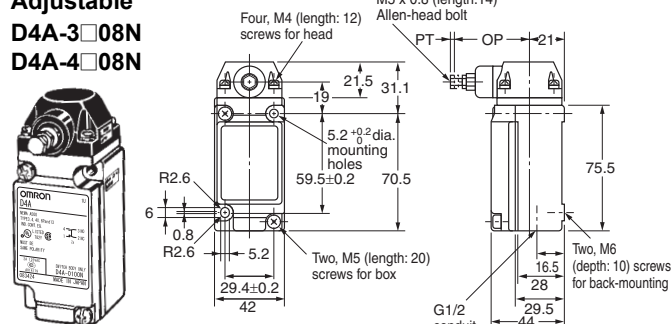
## Vertical Roller

D4A-3□07-VN  
D4A-4□07-VN



## Adjustable

D4A-3□08N  
D4A-4□08N



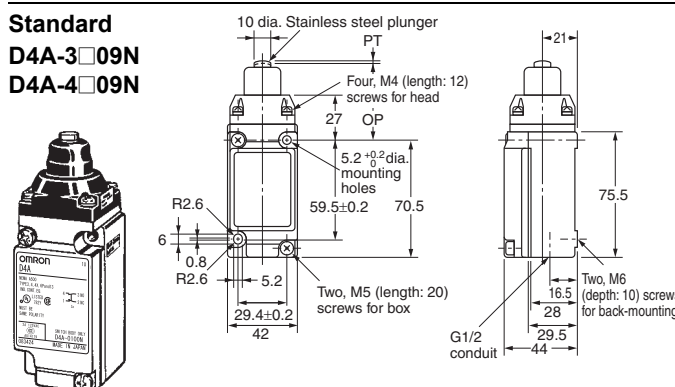
| Model                         | SPDT Double-break |             |             |               | DPDT Double-break |             |             |               |
|-------------------------------|-------------------|-------------|-------------|---------------|-------------------|-------------|-------------|---------------|
|                               | D4A-3□06N         | D4A-3□07-HN | D4A-3□07-VN | D4A-3□08N     | D4A-4□06N         | D4A-4□07-HN | D4A-4□07-VN | D4A-4□08N     |
| Operating characteristics     |                   |             |             |               |                   |             |             |               |
| Operating force OF max.       | 19.61 N           | 19.61 N     | 19.61 N     | 19.61 N       | 19.61 N           | 19.61 N     | 19.61 N     | 19.61 N       |
| Release force RF min.         | 4.90 N            | 4.90 N      | 4.90 N      | 4.90 N        | 4.90 N            | 4.90 N      | 4.90 N      | 4.90 N        |
| Pretravel PT max.             | 2.4 mm            | 2.4 mm      | 2.4 mm      | 2.4 mm        | 2.4 mm            | 2.4 mm      | 2.4 mm      | 2.4 mm        |
| Overtavel OT min.             | 5.1 mm            | 5.1 mm      | 5.1 mm      | 5.1 mm        | 5.1 mm            | 5.1 mm      | 5.1 mm      | 5.1 mm        |
| Movement Differential MD max. | 0.6 mm            | 0.6 mm      | 0.6 mm      | 0.6 mm        | 1.0 mm            | 1.0 mm      | 1.0 mm      | 1.0 mm        |
| OP *                          | 34±0.8 mm         | 44±0.8 mm   | 44±0.8 mm   | 41 to 47.5 mm | 34±0.8mm          | 44±0.8 mm   | 44±0.8 mm   | 41 to 47.5 mm |

\* Operating position

# Top Plunger Switches

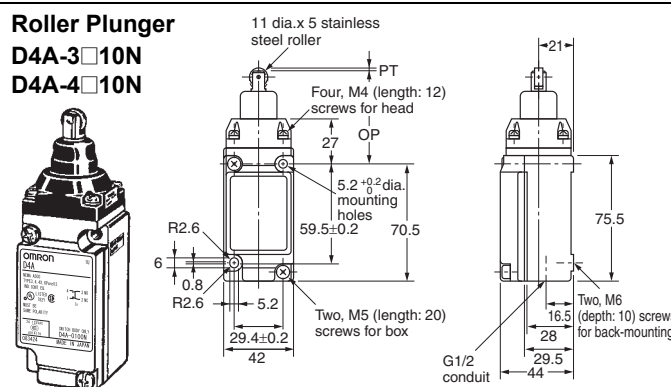
## Standard

D4A-3□09N  
D4A-4□09N



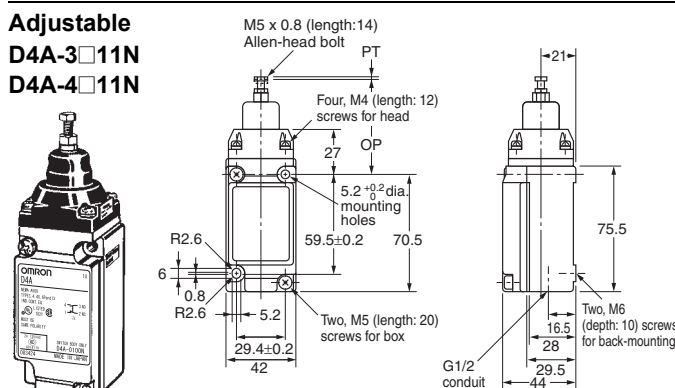
## Roller Plunger

D4A-3□10N  
D4A-4□10N



## Adjustable

D4A-3□11N  
D4A-4□11N



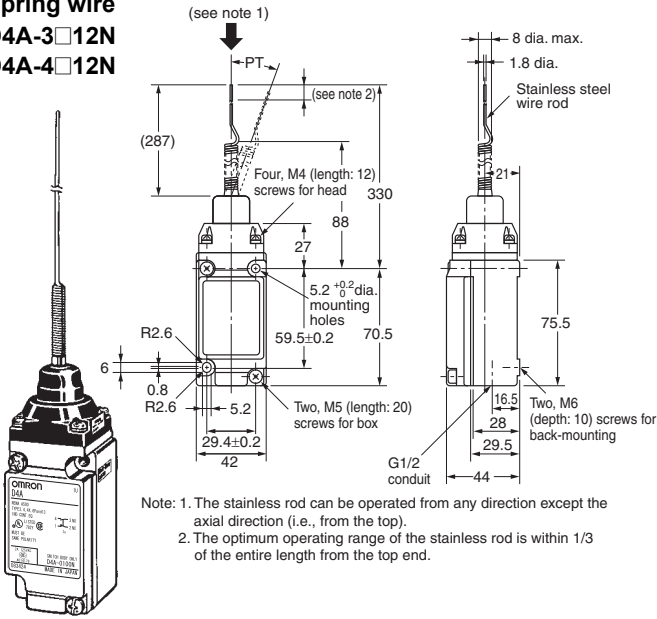
| Model                     | SPDT double-break |           |               | DPDT double-break |           |               |
|---------------------------|-------------------|-----------|---------------|-------------------|-----------|---------------|
|                           | D4A-3□09N         | D4A-3□10N | D4A-3□11N     | D4A-4□09N         | D4A-4□10N | D4A-4□11N     |
| Operating characteristics |                   |           |               |                   |           |               |
| OF max.                   | 17.65 N           | 17.65 N   | 17.65 N       | 17.65 N           | 17.65 N   | 17.65 N       |
| RF min.                   | 4.90 N            | 4.90 N    | 4.90 N        | 4.90 N            | 4.90 N    | 4.90 N        |
| PT max.                   | 1.6 mm            | 1.6 mm    | 1.6 mm        | 1.6 mm            | 1.6 mm    | 1.6 mm        |
| OT min.                   | 5.1 mm            | 5.1 mm    | 5.1 mm        | 5.1 mm            | 5.1 mm    | 5.1 mm        |
| MD max.                   | 0.4 mm            | 0.4 mm    | 0.4 mm        | 1.0 mm            | 1.0 mm    | 1.0 mm        |
| OP *                      | 46±0.8 mm         | 56±0.8 mm | 55.5 to 62 mm | 46±0.8 mm         | 56±0.8 mm | 55.5 to 62 mm |

\* Operating position

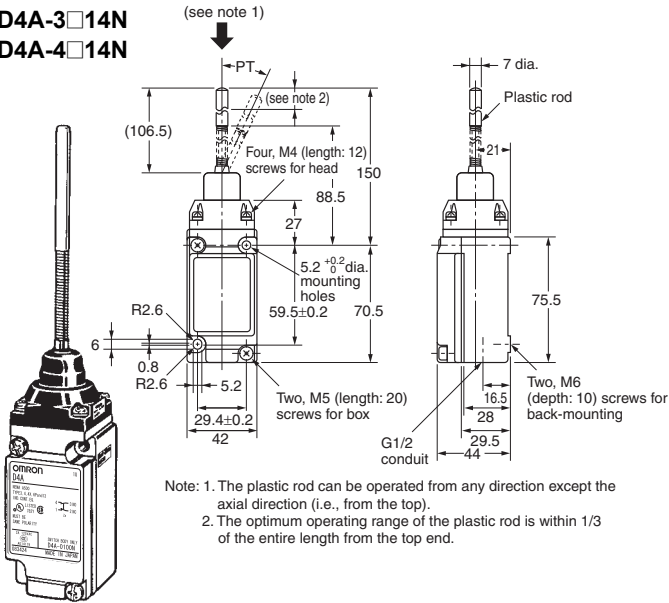
Note: A Fork Lever Lock can be used with D4A-□□05N models only.

# Flexible Rod

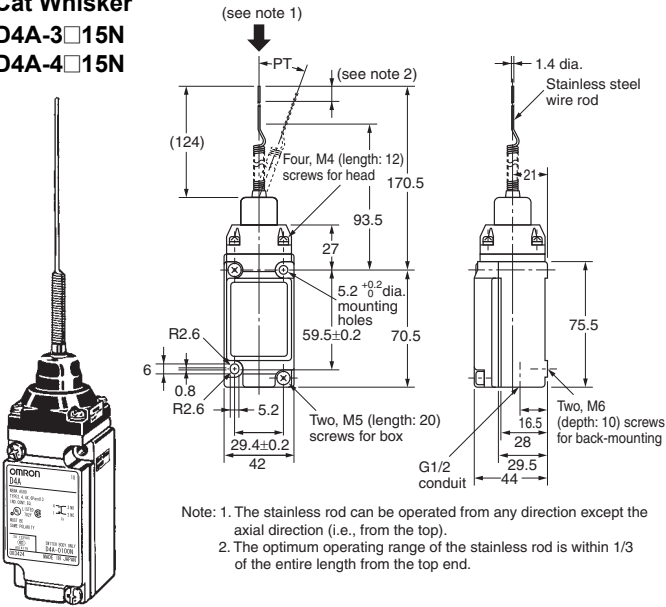
## Spring wire D4A-3□12N D4A-4□12N



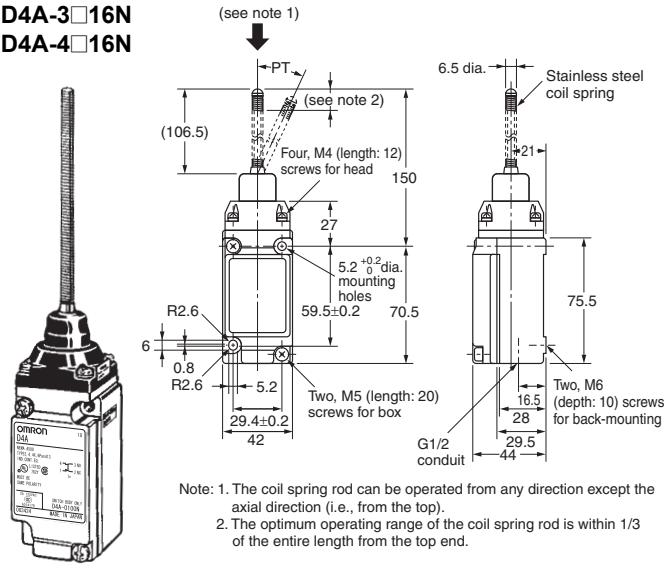
## Plastic Rod D4A-3□14N D4A-4□14N



## Cat Whisker D4A-3□15N D4A-4□15N



## Coil Spring D4A-3□16N D4A-4□16N



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

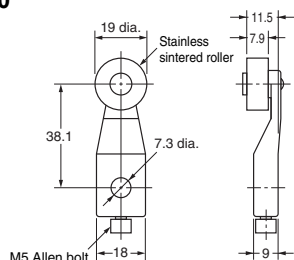
| Model                     | SPDT Double-break |           |           | DPDT Double-break |           |           |           |
|---------------------------|-------------------|-----------|-----------|-------------------|-----------|-----------|-----------|
| Operating characteristics | D4A-3□12N         | D4A-3□14N | D4A-3□15N | D4A-3□16N         | D4A-4□12N | D4A-4□14N | D4A-4□16N |
| Operating force OF max.   | 0.98 N            |           | 1.47 N    |                   | 0.98 N    |           | 1.47 N    |
| Pretravel PT max.         | 15° (5°)          |           | 15° (5°)  |                   | 15° (5°)  |           | 15° (5°)  |

Note: The figures in the parentheses are average values.

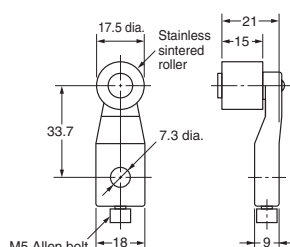
## Levers (for Roller Lever Switches)

Note: No D4A-0003N or D4A-0004N head should be used with the adjustable roller lever or mechanical malfunctioning could result because the total weight of the adjustable roller lever is comparatively large. Use a standard-load head (D4A-0001N or D4A-0002N) instead.

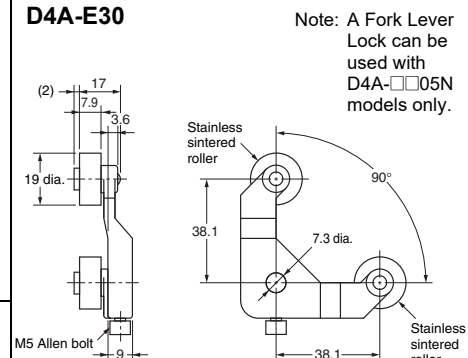
### Roller Lever D4A-A00



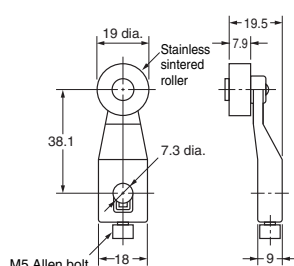
### Roller Lever D4A-B06



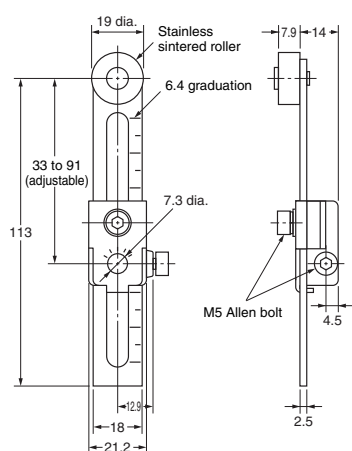
### Fork Lever Lock D4A-E30



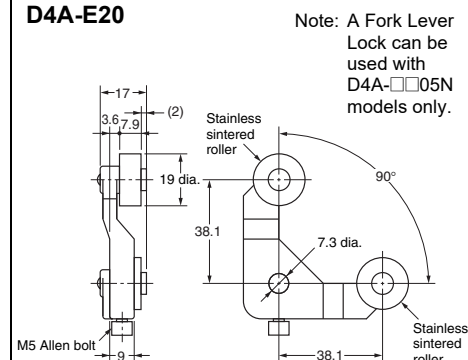
### Roller Lever D4A-A10



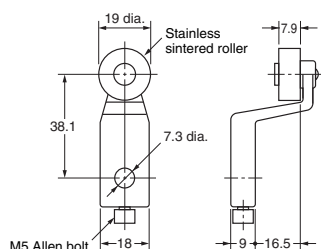
### Adjustable Roller Lever D4A-C00



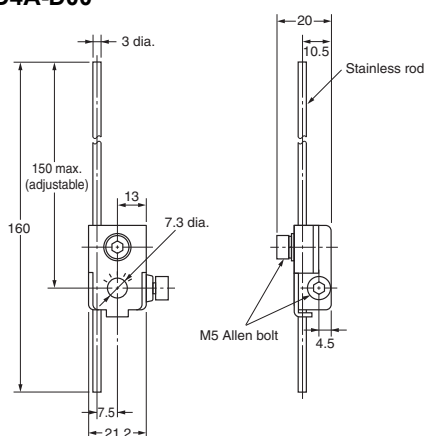
### Fork Lever Lock D4A-E20



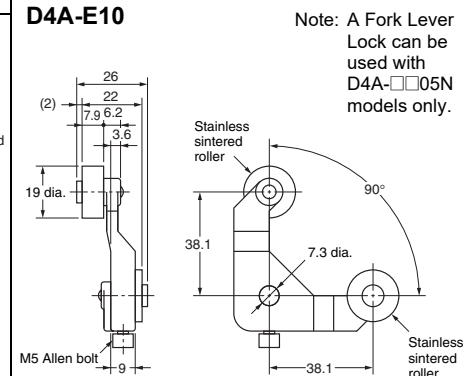
### Roller Lever D4A-A20



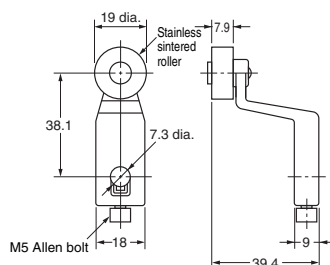
### Adjustable Rod Lever D4A-D00



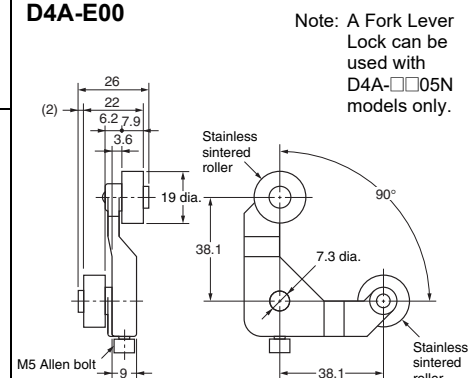
### Fork Lever Lock D4A-E10



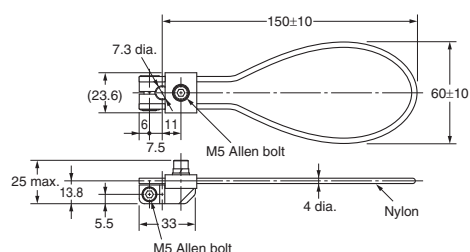
### Roller Lever D4A-A30



### Fork Lever Lock D4A-E00



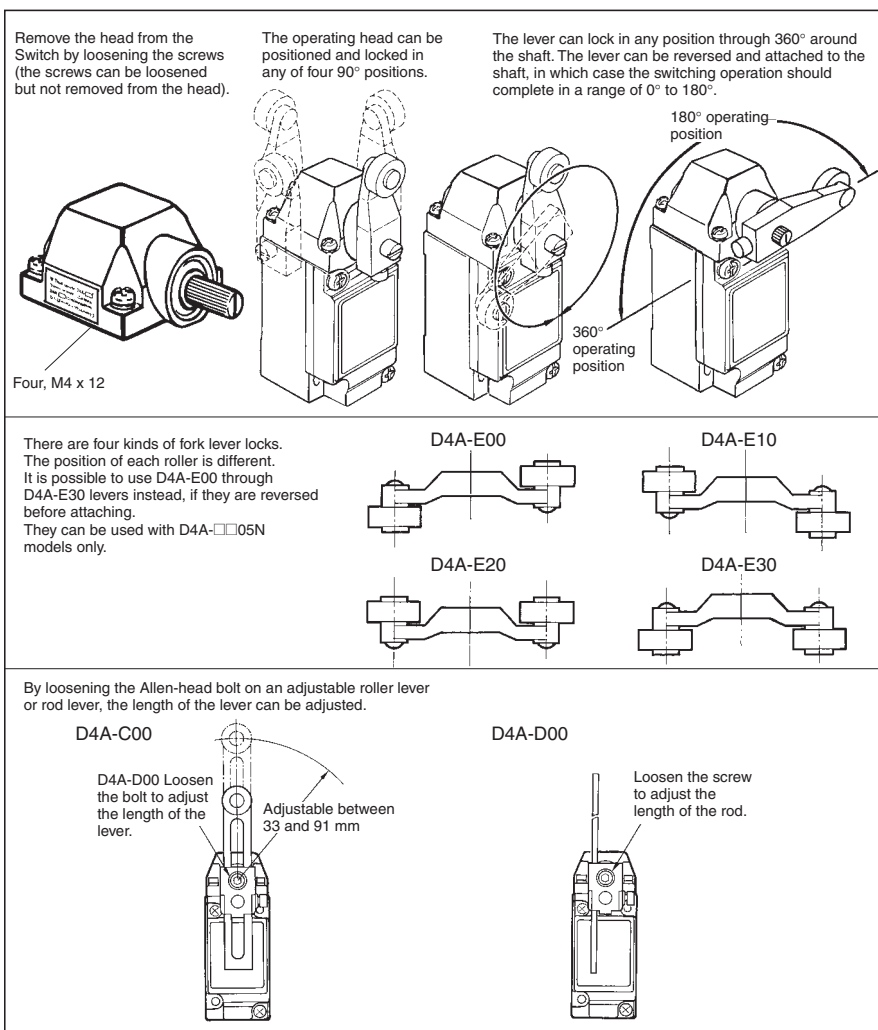
### Nylon Loop Lever D4A-F00



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

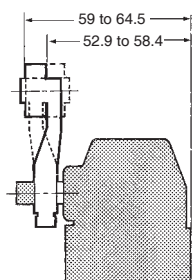
## Head and Lever Positions

- The operating head can be positioned and locked in any of four 90° positions and a lever can lock in any position through 360° around the shaft of the Limit Switch. Furthermore, the lever can be reversed and attached to the shaft (refer to the figures below on the right hand side). Therefore the roller is compatible with a wide movement range of a dog.
- A Fork Lever Lock can be used with maintained models (D4A-0005N) only.

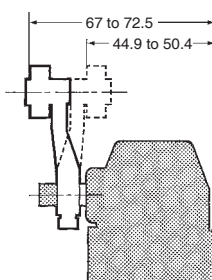


## Lever Position

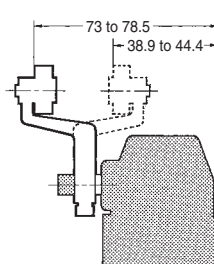
D4A-A00



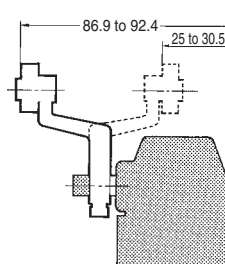
D4A-A10



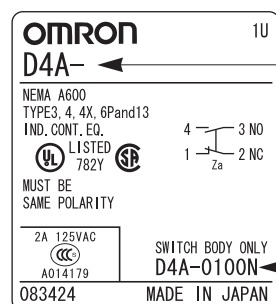
D4A-A20



D4A-A30



## Nameplate



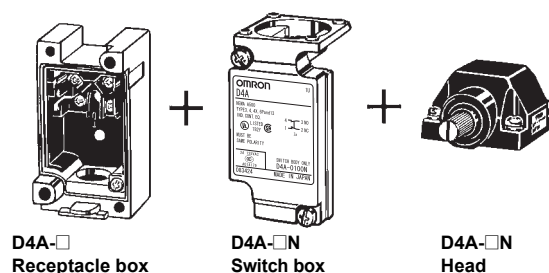
The whole switch model without lever is printed.

The type of switch box is printed. (The type is also indicated on the head and receptacle.)

When ordering, do not confuse set model numbers and model numbers for individual blocks.

## Compatibility with D4A-□

The D4A-□N is compatible with the D4A-□ when the following accessories are attached to the D4A-□N.



The D4A-□N without the above accessories is not compatible with the D4A-□.

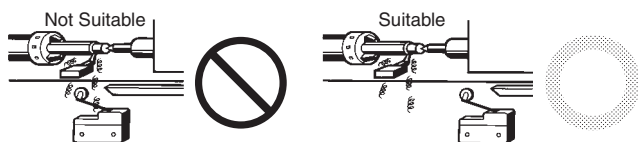
## Safety Precautions

Refer to *Safety Precautions for All Limit Switches*.

### Precautions for Correct Use

#### Operating Environment

- Seal material may deteriorate if a Switch is used outdoor or where subject to special cutting oils, solvents, or chemicals. Always appraise performance under actual application conditions and set suitable maintenance and replacement periods.
- Install Switches where they will not be directly subject to cutting chips, dust, or dirt. The Actuator and Switch must also be protected from the accumulation of cutting chips or sludge.



- Constantly subjecting a Switch to vibration or shock can result in wear, which can lead to contact interference with contacts, operation failure, reduced durability, and other problems. Excessive vibration or shock can lead to false contact operation or damage. Install Switches in locations not subject to shock and vibration and in orientations that will not produce resonance.
- If there are materials that contain silicon components or phosphorus components in the vicinity of where the Switch is being used, these components may be converted into gas due to the type of the material or the operating temperature or humidity, resulting in inadequate conductivity. Examples of sources of silicon and phosphorous gas are shown below. Refer to these examples and implement countermeasures.

#### Examples of silicon gas sources

##### Sources

Silicon-based coating agents, silicon-based adhesives, silicon rubber, silicon oil/grease, silicon-based mold release agents, silicon filling agents, silicone power cables

##### Countermeasure details:

When a source of silicon gas exists, you are asked to suppress arcing with contact protective circuits, to remove this source from the vicinity of the Switch, or to change to a different material. Also, if you cannot avoid using the Switch in an environment where a source of silicon gas is present, check the Switch in the actual environment where it will be used and periodically inspect and replace the Switch.

#### Examples of phosphorus compound gas sources

##### Sources

Heat-shrinking tubes, lead wires, connectors, resin materials including red phosphorus, oil, industrial waste, decaying materials (garbage), seawater, insecticides, smoking materials, chemicals

##### Countermeasure details:

When a source of phosphorus compound gas exists, you are asked to remove this source from the vicinity of the Switch or to change to a different material. Also, if you cannot avoid using the Switch in an environment where a material including phosphorus (ammonium dihydrogen phosphate-based) components is present, check the Switch in the actual environment where it will be used and periodically inspect and replace the Switch.

##### Examples of material changes:

- Use M3.5-nylon insulation covered crimp terminals (round type) for wiring.
- When using heat-shrinking tubes, select those that do not use phosphorous or that use water-resistant red phosphorus. You can make it difficult for the phosphorus reaction to progress and thereby suppress the generation of gas by using heat-shrinking tubes that have undergone surface (waterproofing) treatment.
- Use OMRON SC Series connectors.

\* The above examples do not guarantee the performance of the Switch. Handle situations as they arise according to your own judgment and evaluation of the actual device during use.

#### Changing the Operating Direction

##### Roller Lever Switch

The head of the side rotary type can be converted in seconds to CW, CCW, or both-way operation. Follow the procedures on the right hand side for conversion (not applicable to the Maintained, Sequential Operating, Center Neutral Operating Switches).

| Operating Part (Rear of Head) | Procedures                                                                                                                                                                                                                                 |
|-------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                               | 1. Dismount the head by loosening the four screws that secure it.                                                                                                                                                                          |
|                               | 2. Turn over the head to set the desired operation (CW, CCW, or both). The desired side can be selected by setting the mode selector knob shown in the figure. This knob is factory set to the "CW+CCW" (both-way operation) position.     |
|                               | 3. When set to the CW position, the head rotates in clockwise direction. When set to the CCW position, the head rotates in counterclockwise direction. In either case, be sure to accurately align the arrow mark to the setting position. |

#### Lighting Mode Selection of Indicators (SPDT only)

The lighting mode of the operation indicator can be changed easily between two modes: lighting when the Switch is operating and lighting when the Switch is not operating.

| Lights When Not Operating *1 | Lights When Operating *2 |
|------------------------------|--------------------------|
|                              |                          |
|                              |                          |

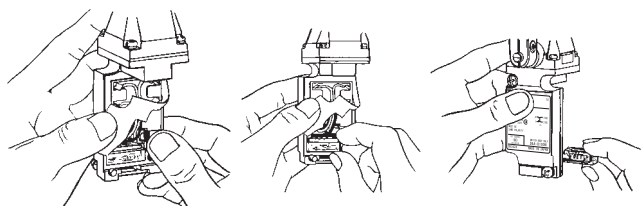
\*1. The lamp is lit when the actuator is at the free position.

The lamp will be off when the contacts of the Limit Switch have been actuated and snapped to each other at the operating position.

\*2. The lamp is lit when the contacts have been released and snapped only from the operating position.

Change the lighting mode as follows:

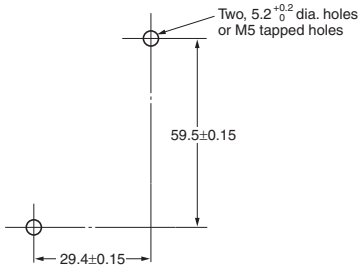
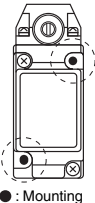
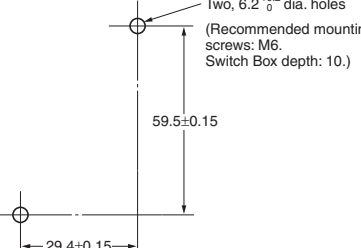
- Push the claw securing the lamp section to the right (do not push strongly).
- Remove the lamp section.
- Mount the lamp section so that legend "NC-ON" or "NO-ON" will appear in the display window.



In either case, the lamp will not light when the load is ON.



Mounting

| Model          | G1/2 Conduit                                                                      | Mounting locations                                                                |
|----------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
|                | D4A-3□□□N<br>D4A-4□□□N                                                            |                                                                                   |
| Front Mounting |  |  |
| Rear Mounting  |  |  |

Note: For 1/2-14NPT conduits, use Two, No.10-32UNF (depth: 10) back-mounting screws.

Screw Tightening Torques for Heads and Switch Boxes

To maintain the high sealing capability of the Limit Switch, tighten the screws for the head and switch box with the following torques:

- Head (four 12-mm M4 screws): 1.2 to 1.4 N·m
- Switch box (two 20-mm M5 screws): 2.4 to 2.7 N·m

Solderless Terminals

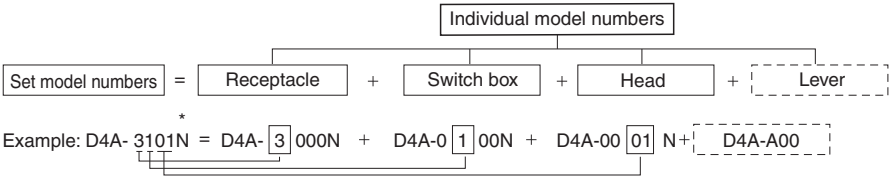
The D4A-□N with DPDT double-break incorporates solderless terminals.

Operation

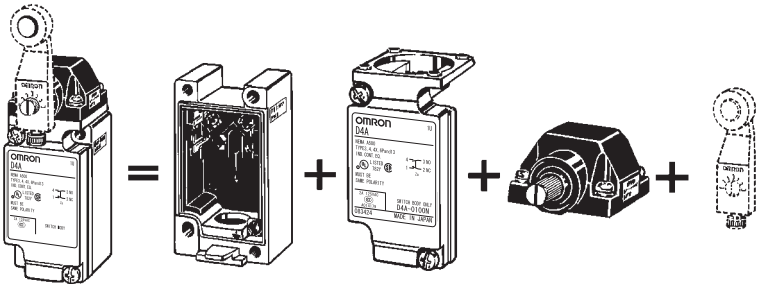
- The operating methods, cam and dog shapes, operating frequency, and overtravel (OT) have a significant effect on the service life and accuracy of the Limit Switch. The shape of the cam should be as smooth as possible.
- A marginal overtravel (OT) value should be set. The ideal value is the rated OT value x 0.7.
- The actuator should not be remodeled to change the operating position.

How to Order

The D4A-□N is compatible with the D4A-□ when the following accessories are attached to the D4A-□N.



\* The D4A-□N without the above accessories is not compatible with the D4A-□.



Connectors

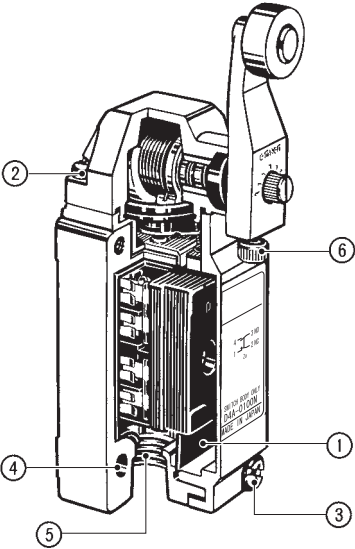
To satisfy IP67, apply sealing tape to the connector conduit. Appropriate external diameter of cables is 5.5 to 14 dia. Use OMRON's SC-□M Series. Tighten the Connectors to a torque of 1.8 to 2.2 N·m.

Maintenance and Repair

The user must not maintain or repair equipment incorporating any D4A-N model. Contact the manufacturer of the equipment for any maintenance or repairs required.

Appropriate Tightening Torque

A loose screw may cause malfunctions. Be sure to tighten each screw to the proper tightening torque as shown in the table.



| No. | Type                                                          | Appropriate tightening torque |
|-----|---------------------------------------------------------------|-------------------------------|
| 1   | Terminal screws (M3.5 screws) (including grounding terminals) | 0.78 to 0.88 N·m              |
| 2   | Head mounting screws                                          | 1.18 to 1.37 N·m              |
| 3   | Switch box mounting screws                                    | 2.35 to 2.75 N·m              |
| 4*  | Body mounting screws                                          | 4.90 to 5.88 N·m              |
| 5   | Connectors                                                    | 1.77 to 2.16 N·m              |
| 6   | Actuator mounting screws                                      | 2.45 to 2.65 N·m              |

\* When using M5 Allen-head bolts, particularly when the head direction has been changed, check the torque of each screw and make sure that the screws are free of foreign substances, and that each screw is tightened to the proper torque.

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