


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.)



 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

| Actuator | | Receptacle box 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.

*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

| Actuator | Receptacle box Indicator | G 1/2 Conduit | | | |
|-----------------|---|-------------------|--------------------|-------------------------------|-------------------------|
| | | Without indicator | | With neon lamp indicator (AC) | With LED indicator (DC) |
| | | 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, Low-torque  | D4A-4504N | UL, CSA | --- | --- |
| | Maintained *2  | D4A-4505N | UL, CSA | --- | --- |
| | Sequential operation  | D4A-4717N | UL, CSA | --- | --- |
| | Center neutral 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 Appearance | G1/2 conduit *1 | | 1/2-14NPT conduit *2 | |
|-------------------|---|-----------------|--------------------|----------------------|--------------------|
| | | Model | Approved standards | Model | Approved standards |
| SPDT double-break |  | D4A-3000N | UL, CSA | D4A-1000N | UL, CSA |
| DPDT double-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 |
| DPDT double-break |  | (Without indicator lamp) | Sequential operation | | D4A-0700N | UL, CSA | --- | --- | --- |
| | | | Center neutral operation | | D4A-0900N | UL, CSA | --- | --- | --- |

Heads

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

*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 | UL, CSA |
| |  | Roller | D4A-0010N | UL, CSA |
| |  | Adjustable | D4A-0011N | UL, CSA |
| Flexible rod |  | Spring wire | D4A-0012N | UL, CSA |
| |  | Plastic rod | D4A-0014N | UL, CSA |
| |  | Cat whisker | D4A-0015N | UL, CSA |
| |  | Coil spring | D4A-0016N | UL, CSA |

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) | GB14048.5 | 2003010305077615 |

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 | |
| DPDT double-break (without indicator) | 30 VDC | 6 | | 4 | 3 | 6 | | 4 | |
| | 125 VDC * | 0.8 | | 0.2 | 0.2 | 0.8 | | 0.2 | |
| | 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 | |
| DPDT double-break (with indicator) | 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 | | | | | | | |
| DPDT double-break (with indicator) | 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 Models with Indicators and Indicator Replacement

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 (GB14048.5)

| 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. 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. 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 | |
| | Destruction: | 1,000 m/s ² min. | |
| Shock resistance | Malfunction: *4 | SPDT, double-break, roller lever: 600 m/s ² min. DPDT, double-break, roller lever: 300 m/s ² min. | |
| | | | |
| 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).

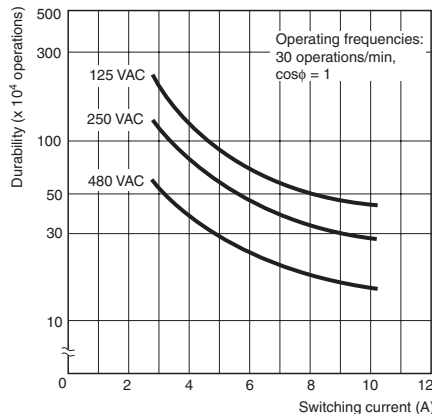
| Item | Type | Roller lever *1 | Plunger, flexible rod *2 | With indicator |
|---------------------|------|-----------------|--------------------------|----------------|
| Ambient temperature | | -40°C to +100°C | -20°C to +100°C | -10°C to +80°C |

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

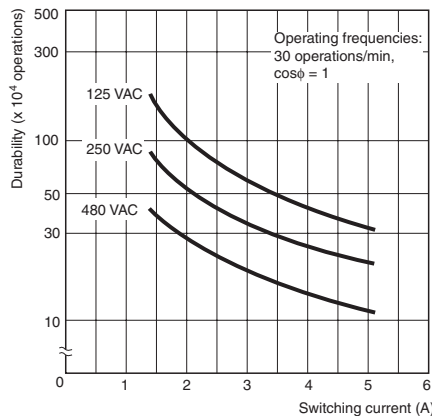
*2. Including roller lever low-torque and high-sensitivity operating models.

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 | D4A-0300N | D4A-0E00N | |
| | | Lamp Unit Internal Circuits | Lamp Unit Internal Circuits | |

* 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 D4A-0700N D4A-0900N | D4A-0L00N | D4A-0P00N |
| 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

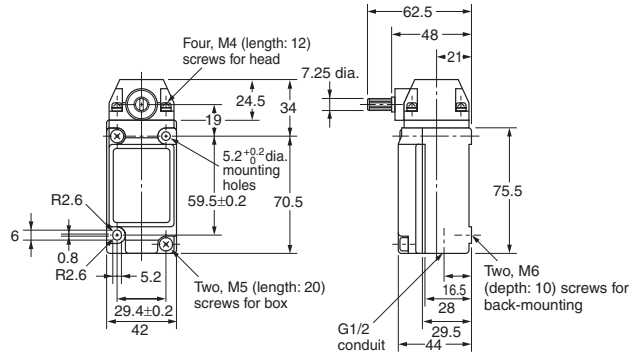
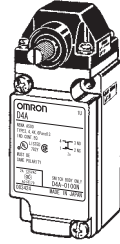
D4A-3□04N, D4A-4□04N

Sequential Operation

D4A-4□17N

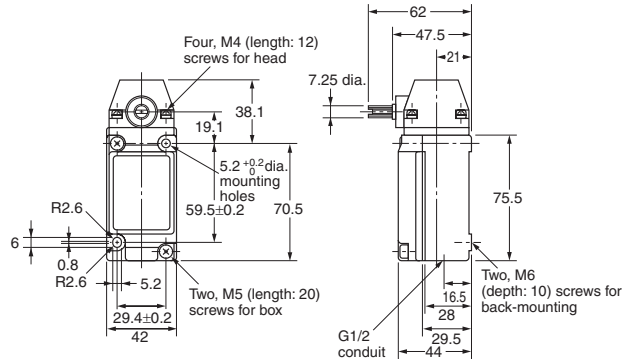
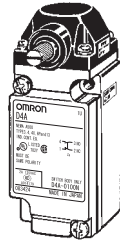
Center Neutral Operating

D4A-4□18N



Maintained

D4A-3□05N, D4A-4□05N



Note: Unless otherwise specified, a tolerance of ±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: 12° (10°) 2-stage: 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

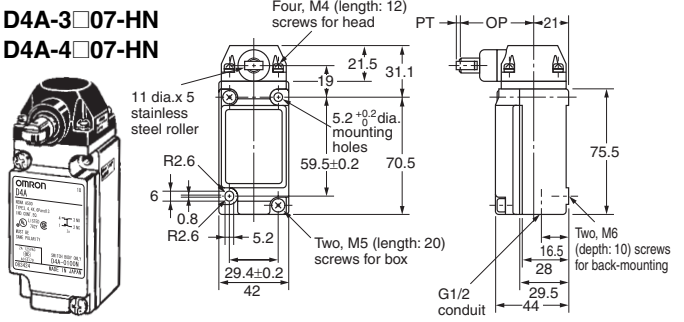
Standard

D4A-3□06N
D4A-4□06N



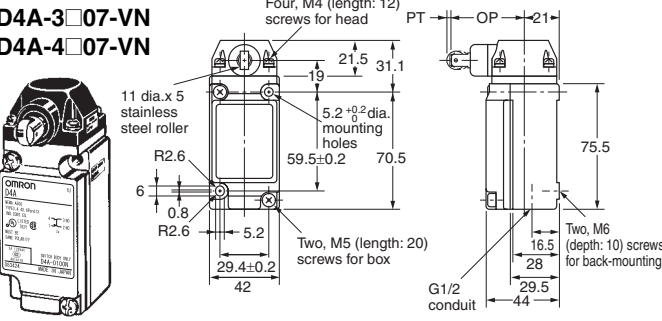
Horizontal Roller

D4A-3□07-HN
D4A-4□07-HN



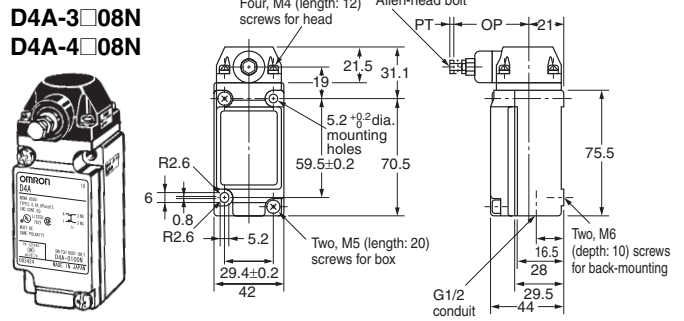
Vertical Roller

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 force | OF max. | 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 | |
| Pretravel | PT max. | 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 | |
| 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 | |
| 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

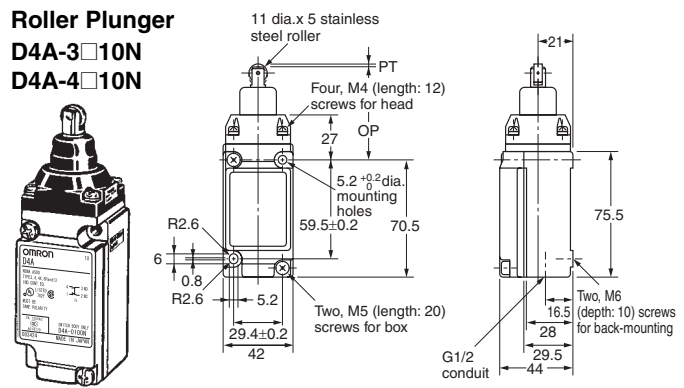
Standard

D4A-3□09N
D4A-4□09N



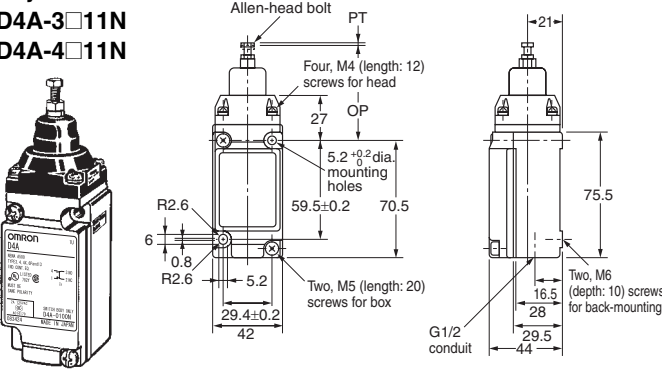
Roller Plunger

D4A-3□10N
D4A-4□10N



Adjustable

D4A-3□11N
D4A-4□11N



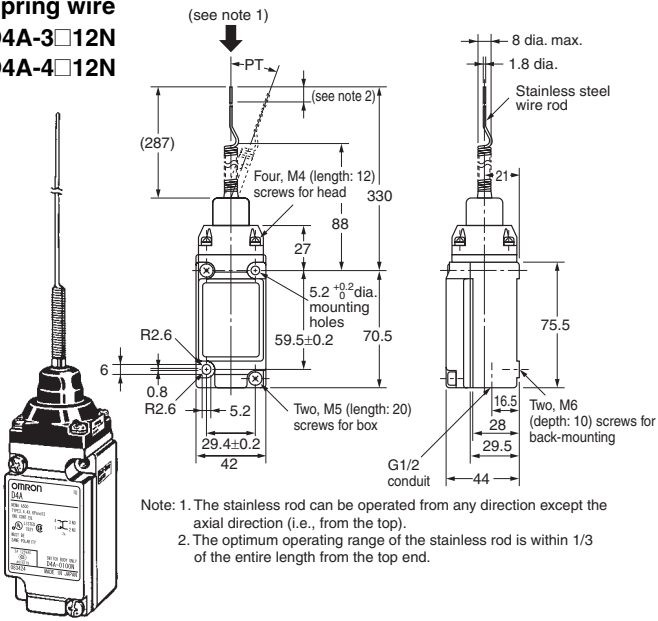
| Model | SPDT double-break | | | DPDT double-break | | | |
|-----------------------|-------------------|-----------|-----------|-------------------|-----------|-----------|---------------|
| | D4A-3□09N | D4A-3□10N | D4A-3□11N | D4A-4□09N | D4A-4□10N | D4A-4□11N | |
| Operating force | OF max. | 17.65 N | 17.65 N | 17.65 N | 17.65 N | 17.65 N | |
| Release force | RF min. | 4.90 N | 4.90 N | 4.90 N | 4.90 N | 4.90 N | |
| Pretravel | PT max. | 1.6 mm | 1.6 mm | 1.6 mm | 1.6 mm | 1.6 mm | |
| Overtavel | OT min. | 5.1 mm | 5.1 mm | 5.1 mm | 5.1 mm | 5.1 mm | |
| Movement Differential | MD max. | 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

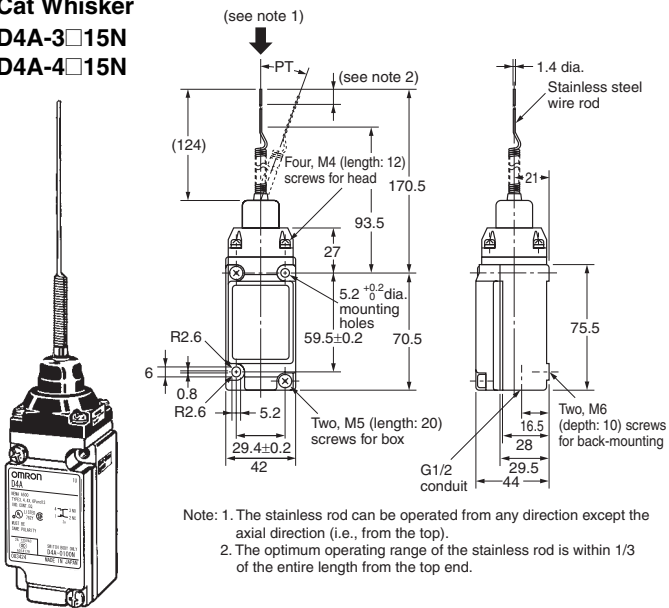
Spring wire D4A-3□12N D4A-4□12N



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 ± 0.4 mm applies to all dimensions.

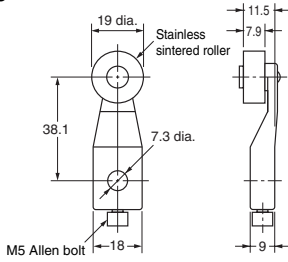
| Model | SPDT Double-break | | | | DPDT Double-break | | | |
|-------------------------|-------------------|-----------|-----------|-----------|-------------------|-----------|-----------|-----------|
| | D4A-3□12N | D4A-3□14N | D4A-3□15N | D4A-3□16N | D4A-4□12N | D4A-4□14N | D4A-4□15N | D4A-4□16N |
| 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.

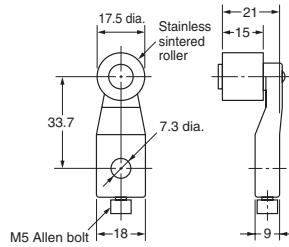
Levers (for Roller Lever Switches)

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



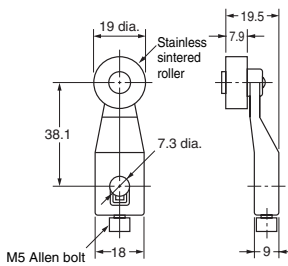
Roller Lever D4A-B06



Fork Lever Lock D4A-E30



Roller Lever D4A-A10



Adjustable Roller Lever D4A-C00



Fork Lever Lock D4A-E20



Roller Lever D4A-A20



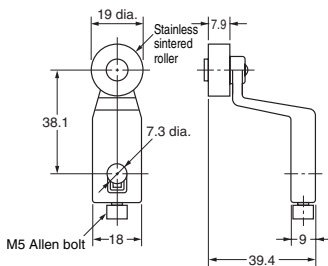
Adjustable Rod Lever D4A-D00



Fork Lever Lock D4A-E10



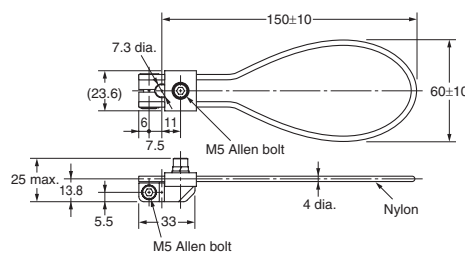
Roller Lever D4A-A30



Fork Lever Lock D4A-E00



Nylon Loop Lever D4A-F00



Note: Unless otherwise specified, a tolerance of ± 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.

Remove the head from the Switch by loosening the screws (the screws can be loosened but not removed from the head).

Four, M4 x 12

The operating head can be positioned and locked in any of four 90° positions.

360° operating position

The lever can lock in any position through 360° around the shaft. The lever can be reversed and attached to the shaft, in which case the switching operation should complete in a range of 0° to 180°.

180° operating position

There are four kinds of fork lever locks. The position of each roller is different. It is possible to use D4A-E00 through D4A-E30 levers instead, if they are reversed before attaching. They can be used with D4A-□□05N models only.

D4A-E00

D4A-E10

D4A-E20

D4A-E30

By loosening the Allen-head bolt on an adjustable roller lever or rod lever, the length of the lever can be adjusted.

D4A-C00

D4A-D00 Loosen the bolt to adjust the length of the lever.
Adjustable between 33 and 91 mm

D4A-D00

Loosen the screw to adjust the length of the rod.

Lever Position

D4A-A00

D4A-A10

D4A-A20

D4A-A30

Nameplate

OMRON 1U

D4A- ← The whole switch model without lever is printed.

NEMA A600
TYPE 3, 4, 4X, 6P and 13
IND. CONT. EQ.

4 — 3 NO
1 — 2 NC
Za

UL LISTED 782Y

MUST BE SAME POLARITY

2A 125VAC
A014179

SWITCH BODY ONLY
D4A-0100N ← The type of switch box is printed. (The type is also indicated on the head and receptacle.)

083424 MADE IN JAPAN

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.

D4A-□
Receptacle box

+

D4A-□N
Switch box

+

D4A-□N
Head

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

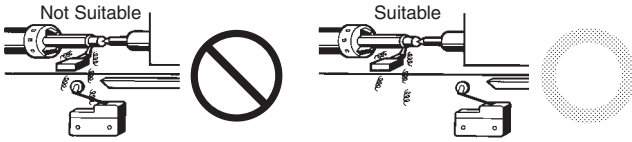
Safety Precautions

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.
- The Switches have physical contacts. Using them in environments containing silicon gas will result in the formation of silicon oxide (SiO₂) due to arc energy. If silicon oxide accumulates on the contacts, contact interference can occur. If silicon oil, silicon filling agents, silicon cables, or other silicon products are present near the Switch, suppress arcing with contact protective circuits (surge killers) or remove the source of silicon gas.

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 |
|-------------------------------|--|
| | <ol style="list-style-type: none"> Dismount the head by loosening the four screws that secure it. 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. 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)

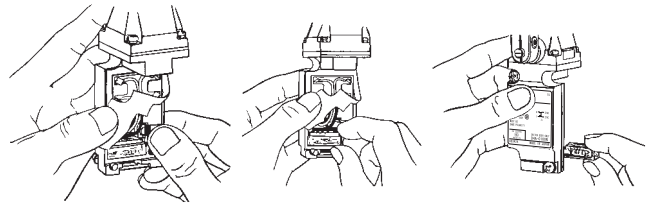
The lighting mode of the operation indicator can be changed easily between two modes: lighting when the Switch is operating and lighting when the Switch is not operating.

| 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 D4A-3□□N D4A-4□□N | Mounting locations |
|----------------|--------------------------------------|--------------------|
| Front Mounting | | |
| Rear Mounting | | |

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.

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.

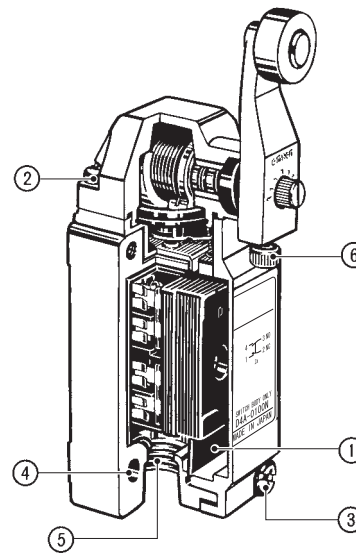
Tighten the Connectors to a torque of 1.8 to 2.2 N·m.

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.

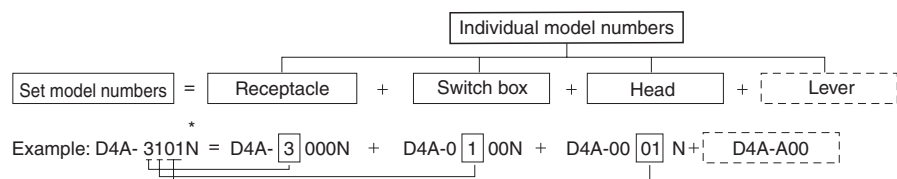


| No. | Type | Appropriate tightening torque |
|-----|---|-------------------------------|
| 1 | Terminal screws (M3.5 screws) (including grounding terminals) | 0.78 to 0.88 N·m |
| 2 | Head mounting screws | 1.18 to 1.37 N·m |
| 3 | Switch box mounting screws | 2.35 to 2.75 N·m |
| 4* | Body mounting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

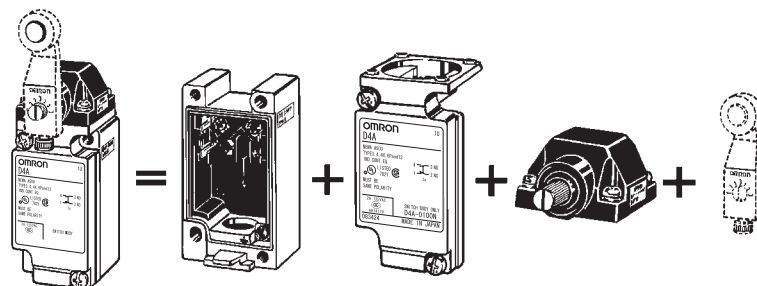
* When using M5 Allen-head bolts, particularly when the head direction has been changed, check the torque of each screw and make sure that the screws are free of foreign substances, and that each screw is tightened to the proper torque.

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-□.



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2008.11

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