General-purpose Limit Switch

D4A-□N

CSM_D4A-_N_DS_E_4_7

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

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. 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

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.

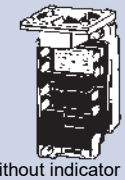
Individual Parts

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	 (Without indicator lamp)	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	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)	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	
	250 VDC *	0.4		0.1	0.1	0.4		0.1	
DPDT double-break (without indicator)	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	
	250 VAC	0.2		0.05		0.2		0.05	
DPDT double-break (with indicator)	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 240 VAC 480 VAC 600 VAC	10 A	60 30 15 12	6 3 1.5 1.2	7,200	720

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 240 VAC	10 A	60 30	6 3	7,200	720

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 240 VAC 480 VAC 600 VAC	5 A	30 15 7.5 6.0	3 1.5 0.75 0.6	3,600	360

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. 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
Shock resistance	Destruction:	1,000 m/s² max.
	Malfunction: *4	SPDT, double-break, roller lever: 600 m/s² max. DPDT, double-break, roller lever: 300 m/s² max.
Ambient operating humidity		35% to 95%RH (with no icing)
Weight		Approx. 290 g (in case of D4A-3101N)

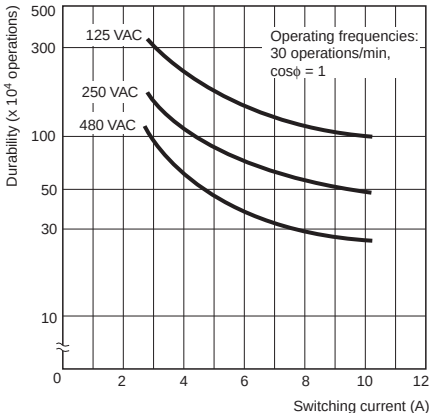
Note: The above figures are initial values.
*1. Excluding maintained models.
*2. The values are calculated at an operating temperature of +5°C to +35°C, and an operating humidity of 40% to 70%RH. Contact your OMRON sales representative for more detailed information on other operating environments.
*3. 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).

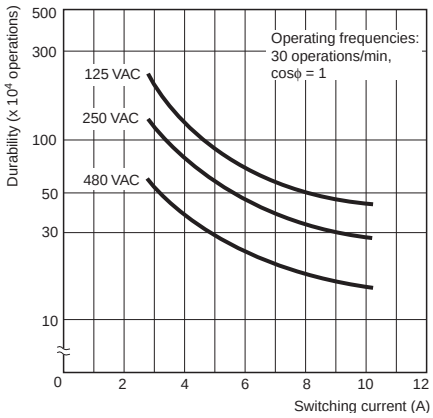
Item / Type	Roller lever *1	Plunger, flexible rod *2	With indicator
Ambient temperature	–40°C to +100°C	–20°C to +100°C	–10°C to +80°C

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

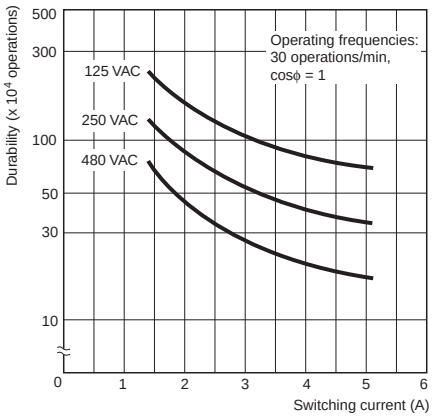
Engineering Data

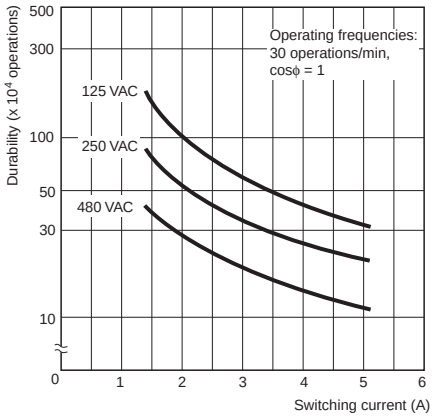
Electrical Durability (SPDT Double-break) (Ambient temperature: +5°C to +35°C; ambient humidity: 40% to 70%RH)





Electrical Durability (DPDT Double-break)



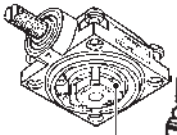


Structure and Nomenclature

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 loosing 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.

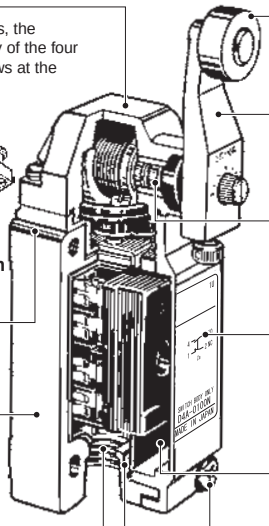


Operating Position Mark (arrow)

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).

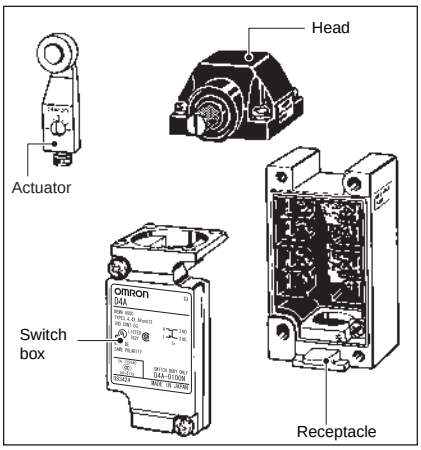
Oil Seal
Improved sealing property is ensured with a double-seal construction (a oil seal plus an X-ring seal).

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.

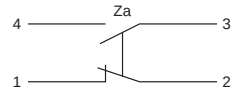
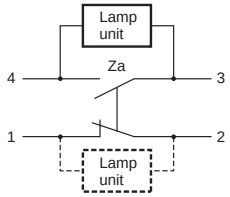
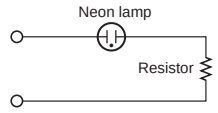
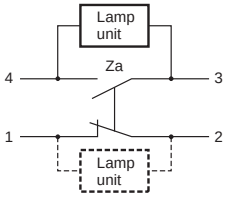
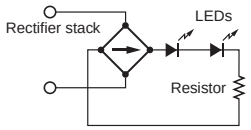
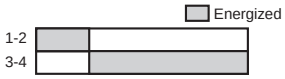


Note: 1. NBR is used in rubber components.
Fluoro-rubber sealed types use fluoro-rubber.
2. For Roller Levers, there is some lever play in the free position (about 2 mm), but this is due to the structure of the head and does not interfere with performance.

*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.

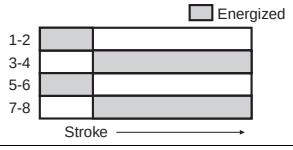
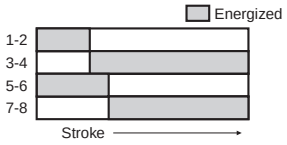
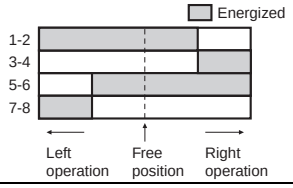
Contact Forms (Switch Boxes)
STDP Double-break Switches

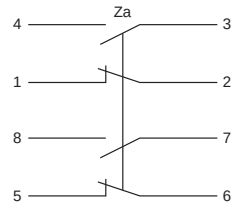
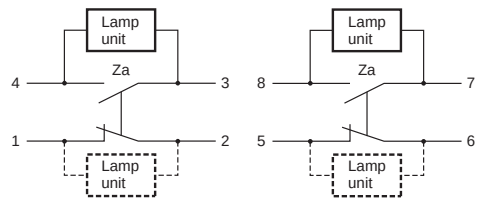
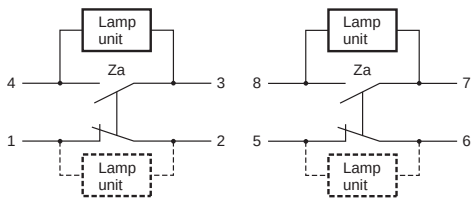
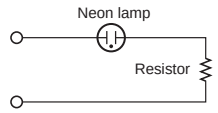
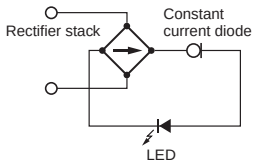
Type	Contact model			Operating pattern
	Without indicator	With neon lamp indicator *	With LED indicator *	
1NC/1NO snap-action	D4A-0100N 	D4A-0300N  Lamp Unit Internal Circuits 	D4A-0E00N  Lamp Unit Internal Circuits 	

* 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

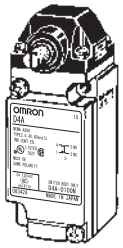
High-sensitivity
D4A-3□02N, D4A-4□02N

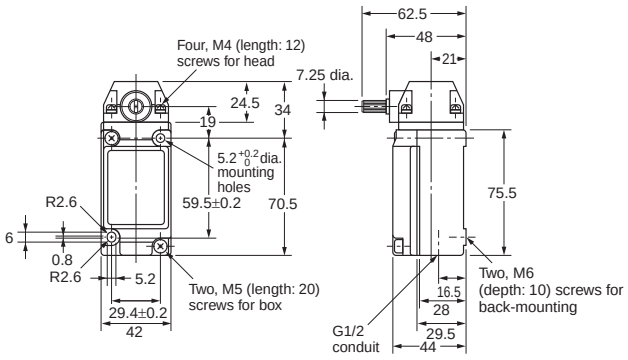
Low-torque
D4A-3□03N, D4A-4□03N

High-sensitivity/Low-torque
D4A-3□04N, D4A-4□04N

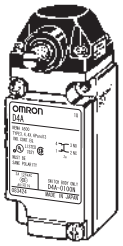
Sequential Operation
D4A-4□17N

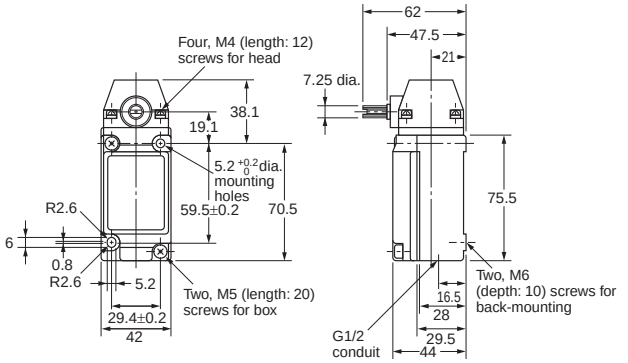
Center Neutral Operating
D4A-4□18N





Maintained
D4A-3□05N, D4A-4□05N





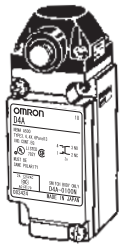
Note: Unless otherwise specified, a tolerance of ±0.4 mm applies to all dimensions.

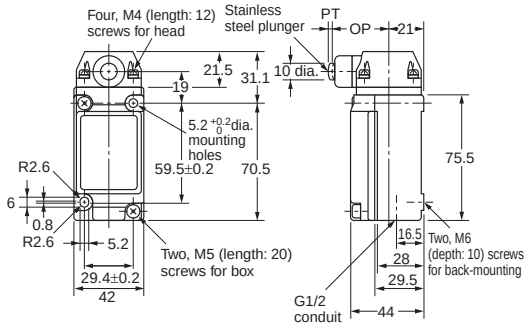
Operating characteristics \ Model	SPDT Double-break					DPDT Double-break						
	D4A-3□01N	D4A-3□02N	D4A-3□03N	D4A-3□04N	D4A-3□05N	D4A-4□01N	D4A-4□02N	D4A-4□03N	D4A-4□04N	D4A-4□05N	D4A-4□17N	D4A-4□18N
Operating force OF max.	0.39 N·m	0.39 N·m	0.2 N·m	0.2 N·m	0.39 N·m	0.39 N·m	0.39 N·m	0.2 N·m	0.2 N·m	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.

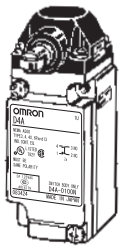
Side Plunger Switches

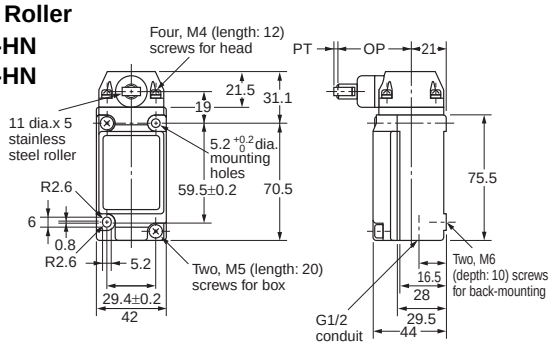
Standard
D4A-3□06N
D4A-4□06N



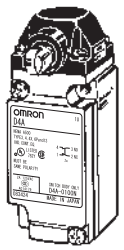


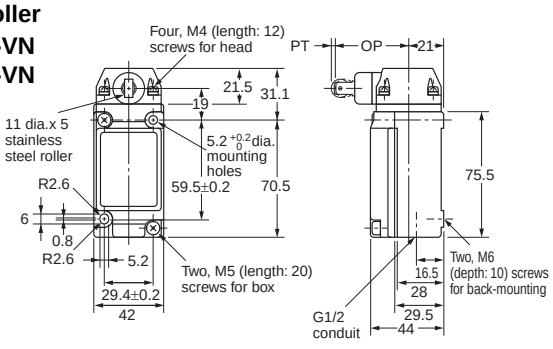
Horizontal Roller
D4A-3□07-HN
D4A-4□07-HN



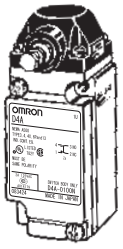


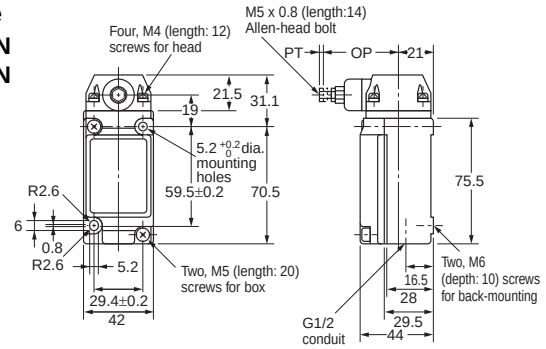
Vertical Roller
D4A-3□07-VN
D4A-4□07-VN





Adjustable
D4A-3□08N
D4A-4□08N



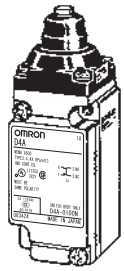


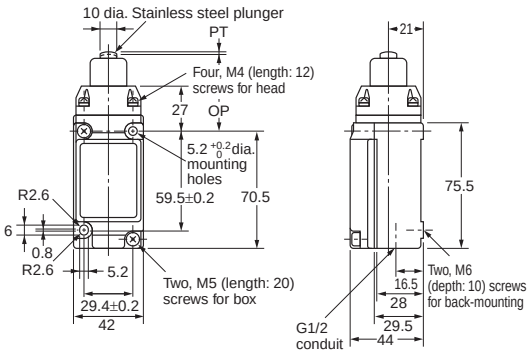
Model		SPDT Double-break				DPDT Double-break			
Operating characteristics		D4A-3□06N	D4A-3□07-HN	D4A-3□07-VN	D4A-3□08N	D4A-4□06N	D4A-4□07-HN	D4A-4□07-VN	D4A-4□08N
Operating force	OF max.	19.61 N	19.61 N	19.61 N	19.61 N	19.61 N	19.61 N	19.61 N	19.61 N
Release force	RF min.	4.90 N	4.90 N	4.90 N	4.90 N	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
Overtravel	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

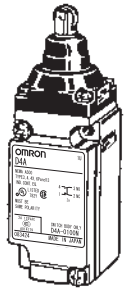
Top Plunger Switches

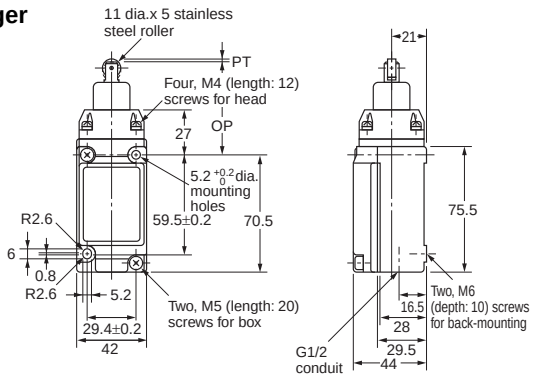
Standard
D4A-3□09N
D4A-4□09N



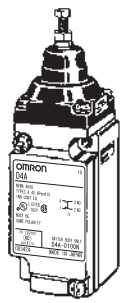


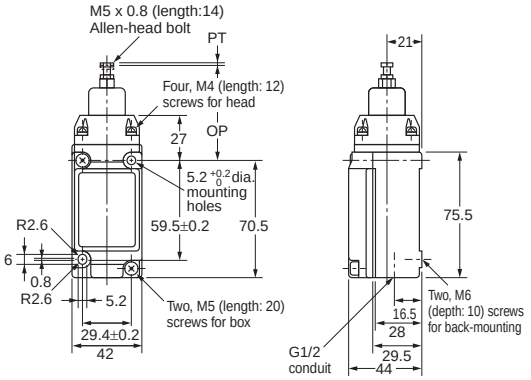
Roller Plunger
D4A-3□10N
D4A-4□10N





Adjustable
D4A-3□11N
D4A-4□11N





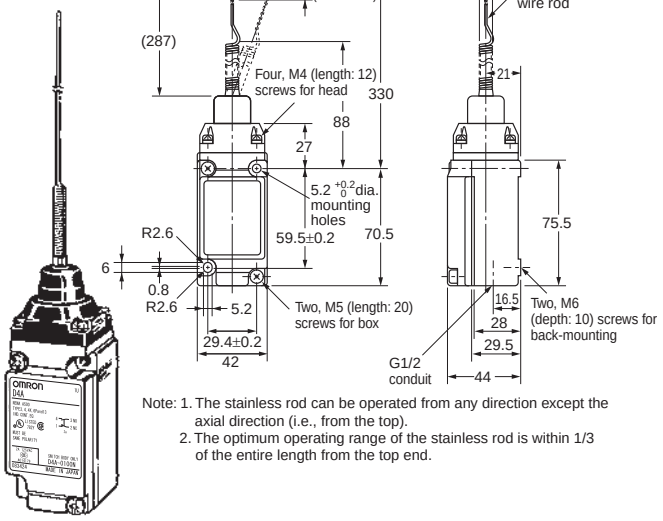
Model	SPDT double-break			DPDT double-break		
Operating character-istics	D4A -3□09N	D4A -3□10N	D4A -3□11N	D4A -4□09N	D4A -4□10N	D4A -4□11N
OF max.	17.65 N	17.65 N	17.65 N	17.65 N	17.65 N	17.65 N
RF min.	4.90 N	4.90 N	4.90 N	4.90 N	4.90 N	4.90 N
PT max.	1.6 mm	1.6 mm	1.6 mm	1.6 mm	1.6 mm	1.6 mm
OT min.	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.

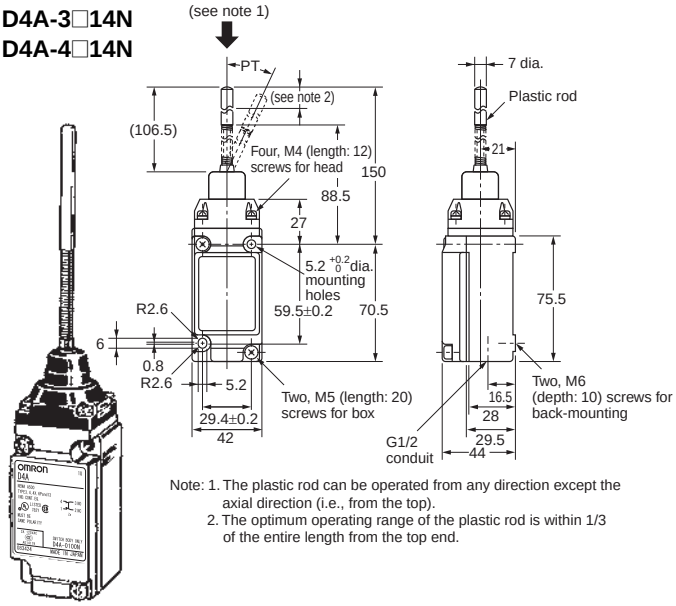
Flexible Rod

Spring wire
D4A-3□12N
D4A-4□12N



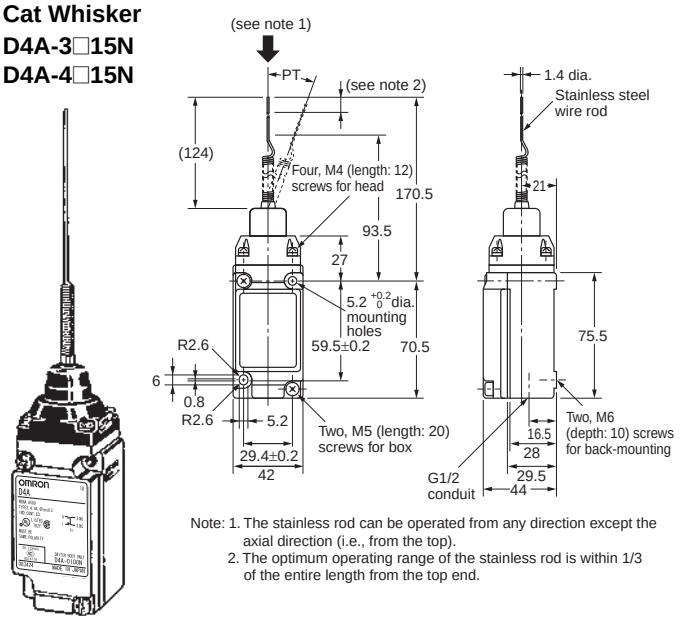
Note: 1. The stainless rod can be operated from any direction except the axial direction (i.e., from the top).
2. The optimum operating range of the stainless rod is within 1/3 of the entire length from the top end.

Plastic Rod
D4A-3□14N
D4A-4□14N



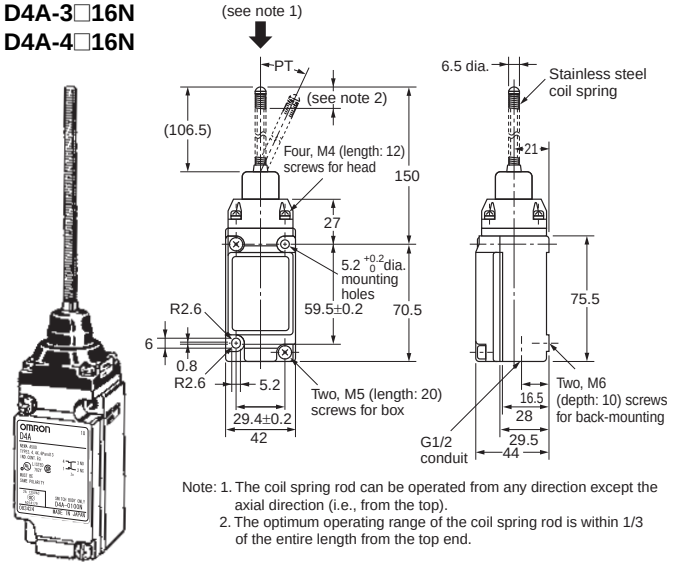
Note: 1. The plastic rod can be operated from any direction except the axial direction (i.e., from the top).
2. The optimum operating range of the plastic rod is within 1/3 of the entire length from the top end.

Cat Whisker
D4A-3□15N
D4A-4□15N



Note: 1. The stainless rod can be operated from any direction except the axial direction (i.e., from the top).
2. The optimum operating range of the stainless rod is within 1/3 of the entire length from the top end.

Coil Spring
D4A-3□16N
D4A-4□16N



Note: 1. The coil spring rod can be operated from any direction except the axial direction (i.e., from the top).
2. The optimum operating range of the coil spring rod is within 1/3 of the entire length from the top end.

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

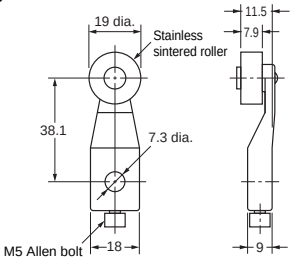
Model	SPDT Double-break				DPDT Double-break			
Operating characteristics	D4A-3□12N	D4A-3□14N	D4A-3□15N	D4A-3□16N	D4A-4□12N	D4A-4□14N	D4A-4□15N	D4A-4□16N
Operating force OF max.	0.98 N	1.47 N			0.98 N	1.47 N		
Pretravel PT max.	15° (5°)	15° (5°)			15° (5°)	15° (5°)		

Note: The figures in the parentheses are average values.

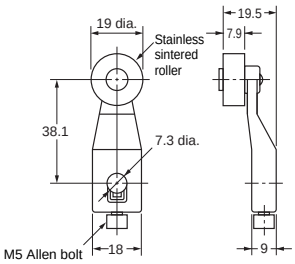
Levers (for Roller Lever Switches)

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.

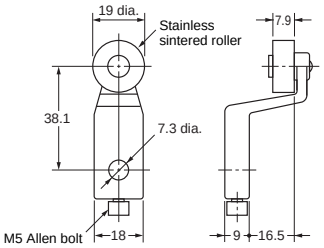
Roller Lever D4A-A00



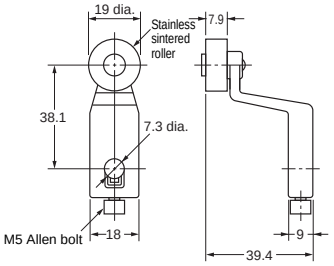
Roller Lever D4A-A10



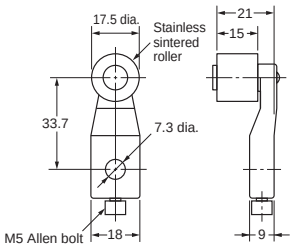
Roller Lever D4A-A20



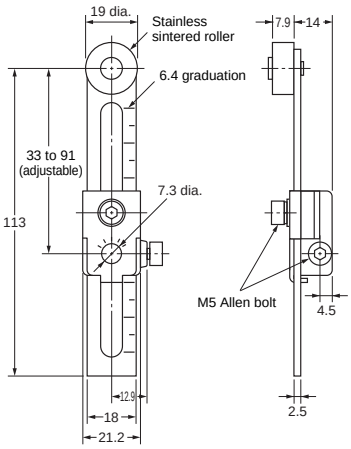
Roller Lever D4A-A30



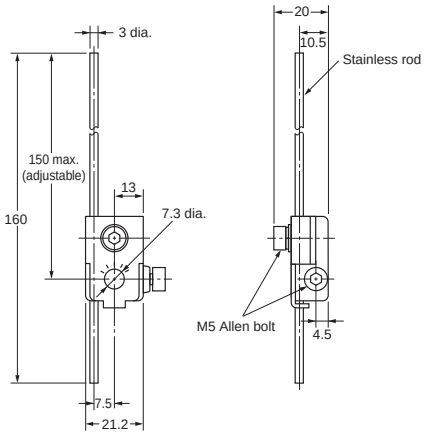
Roller Lever D4A-B06



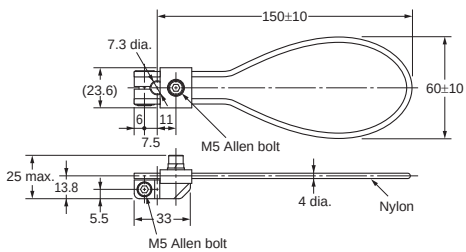
Adjustable Roller Lever D4A-C00



Adjustable Rod Lever D4A-D00

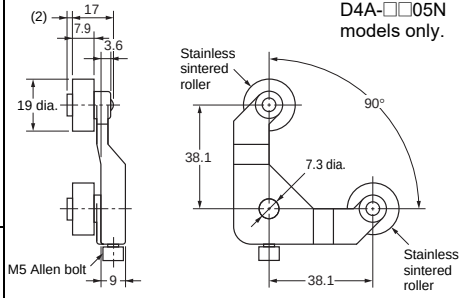


Nylon Loop Lever D4A-F00



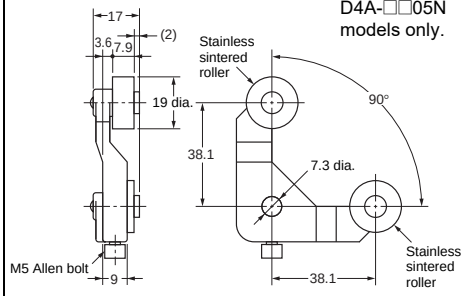
Fork Lever Lock D4A-E30

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



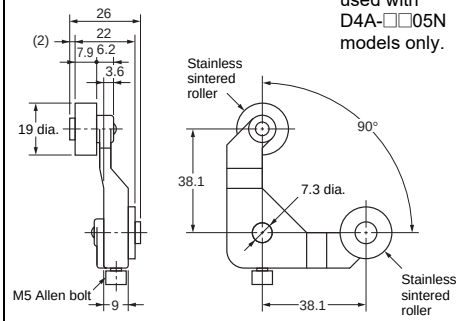
Fork Lever Lock D4A-E20

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



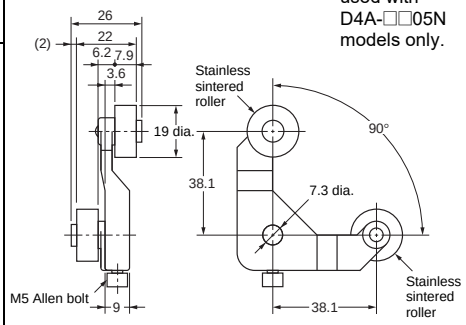
Fork Lever Lock D4A-E10

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



Fork Lever Lock D4A-E00

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

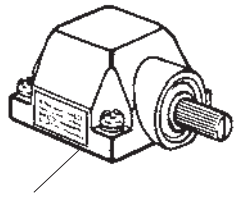


Note: Unless otherwise specified, a tolerance of ±0.4 mm applies to all dimensions.

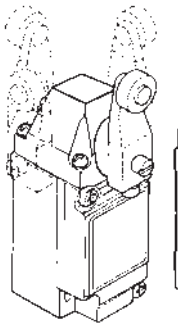
Head and Lever Positions

- 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.

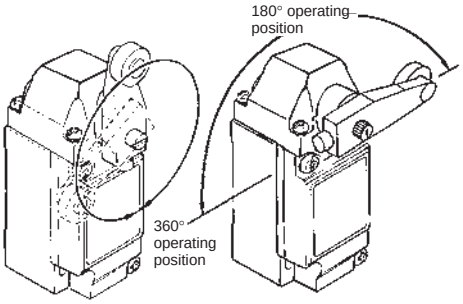
Remove the head from the Switch by loosening the screws (the screws can be loosened but not removed from the head).



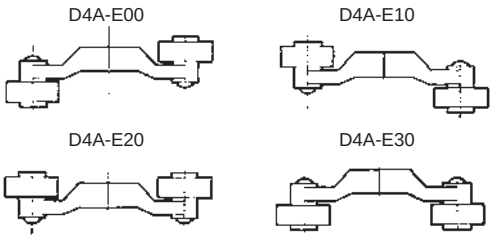
The operating head can be positioned and locked in any of four 90° positions.



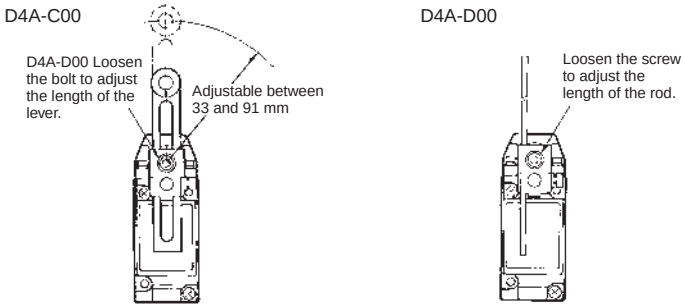
The lever can lock in any position through 360° around the shaft. The lever can be reversed and attached to the shaft, in which case the switching operation should complete in a range of 0° to 180°.



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.

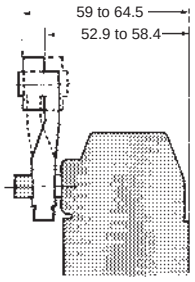


By loosening the Allen-head bolt on an adjustable roller lever or rod lever, the length of the lever can be adjusted.

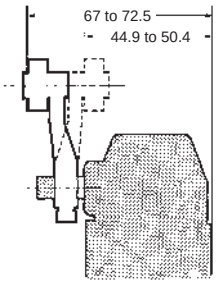


Lever Position

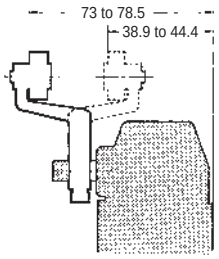
D4A-A00



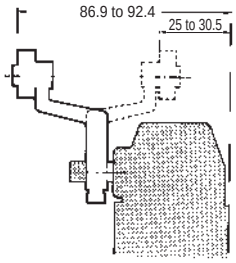
D4A-A10



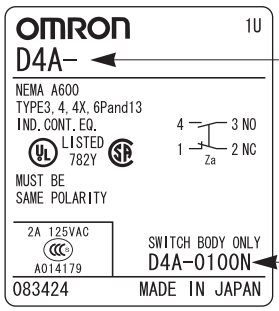
D4A-A20



D4A-A30



Nameplate



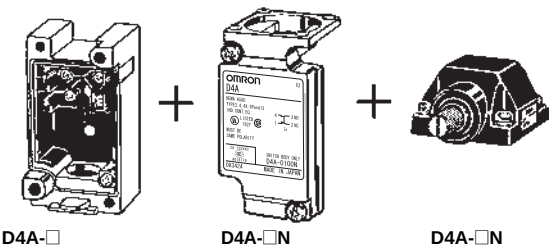
The whole switch model without lever is printed.

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.



D4A-□ Receptacle box + **D4A-□N Switch box** + **D4A-□N Head**

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

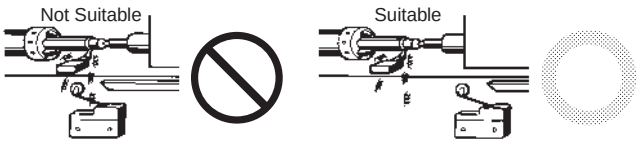
Safety Precautions

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.
- 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:

(1) Use M3.5-nylon insulation covered crimp terminals (round type) for wiring.

(2) 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.

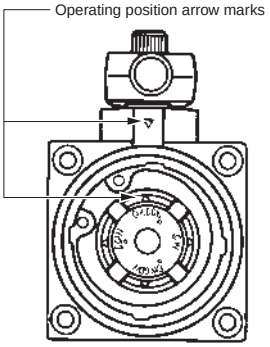
(3) Use OMRON SC Series connectors.

* 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

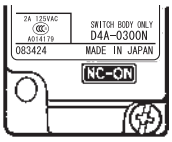
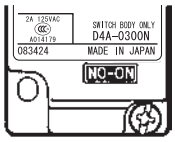
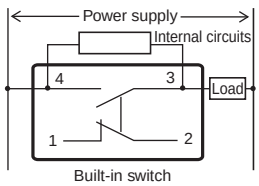
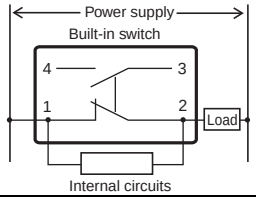
Roller Lever Switch

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.

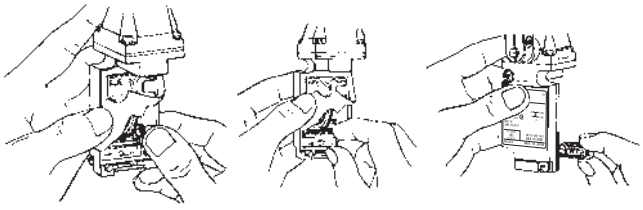
Lights When Not Operating *1	Lights When Operating *2
	
	

*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.

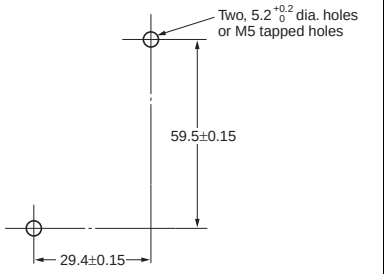
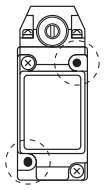
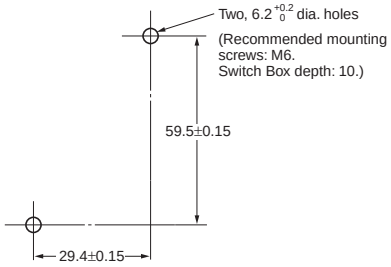
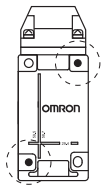
Change the lighting mode as follows:

1. Push the claw securing the lamp section to the right (do not push strongly).
2. Remove the lamp section.
3. 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		

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.

Connectors

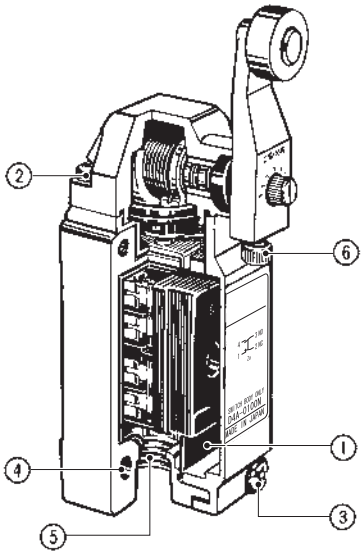
To satisfy IP67, apply sealing tape to the connector conduit.
Appropriate external diameter of cables is 5.5 to 14 dia.
Use OMRON's SC-□M Series.
Tighten the Connectors to a torque of 1.8 to 2.2 N·m.

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.

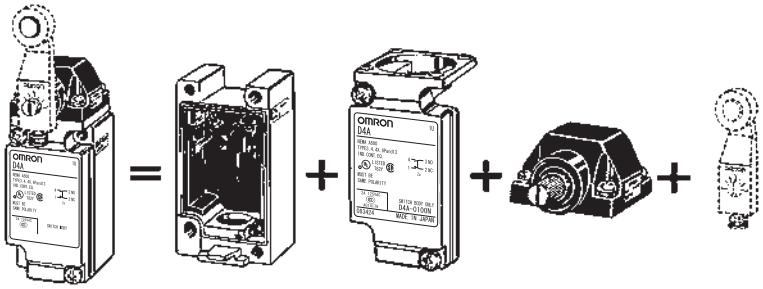
How to Order

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

Individual model numbers

Set model numbers = Receptacle + Switch box + Head + Lever

Example: D4A- 3101N* = D4A- 3 000N + D4A-0 1 00N + D4A-00 01 N + D4A-A00



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

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