

D4NS/D4JL-mounting Slide Keys D4NS-SK/D4JL-SK

CSM_D4NS-SK_D4JL-SK_DS_E_2_1

- Safety-door Switch attachments fit doors on aluminum frames as small as 20 mm² and frames that are large enough to enclose robotics.
- Shortens the lead time for Safety-door Switch mounting design.
- Enables applications in compliance with ANSI/RIA U.S. robot standards. (Excluding the D4NS-SK01.)

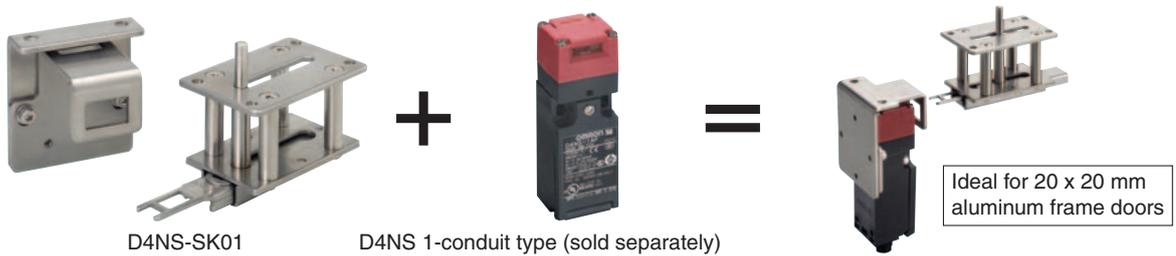


Note: Safety-door Switches are sold separately.

 Be sure to read the "Safety Precautions" on page 9 and the "Precautions for All Safety Door Switches".

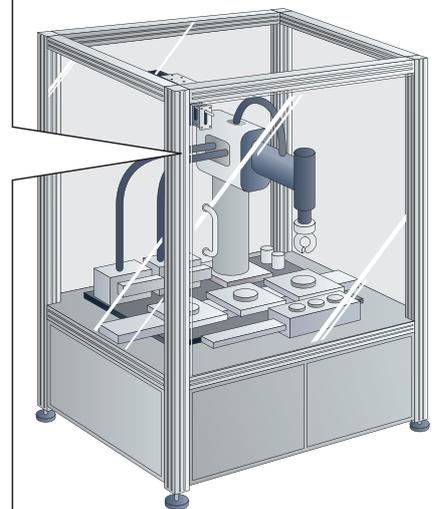
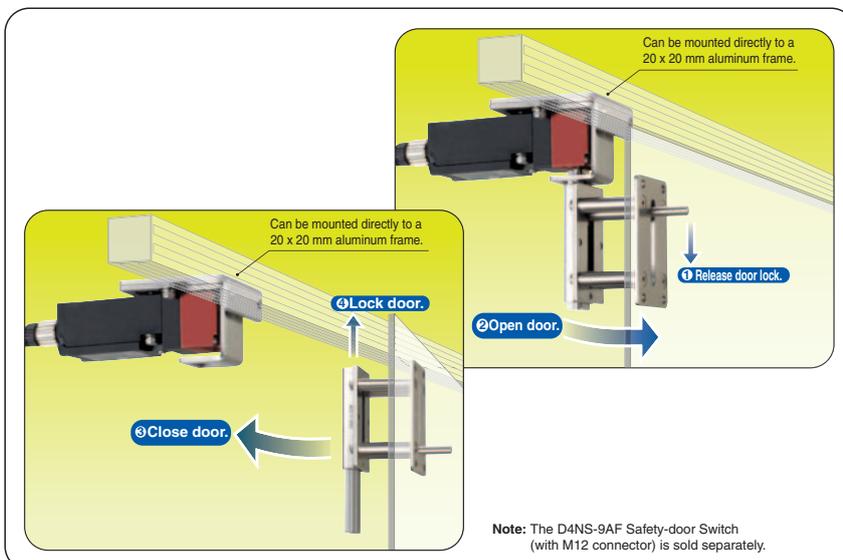
D4NS-SK01

Configuration



Features

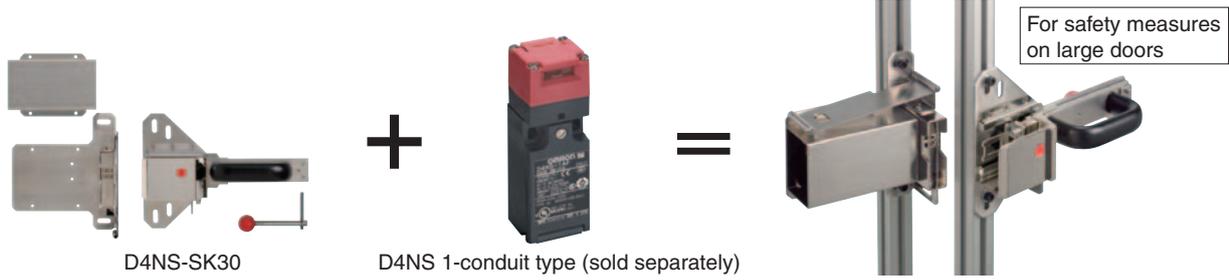
Mounts directly to 20 x 20 mm aluminum frames.



Note: Assess risk before implementing safety measures for the equipment.

D4NS-SK30

Configuration

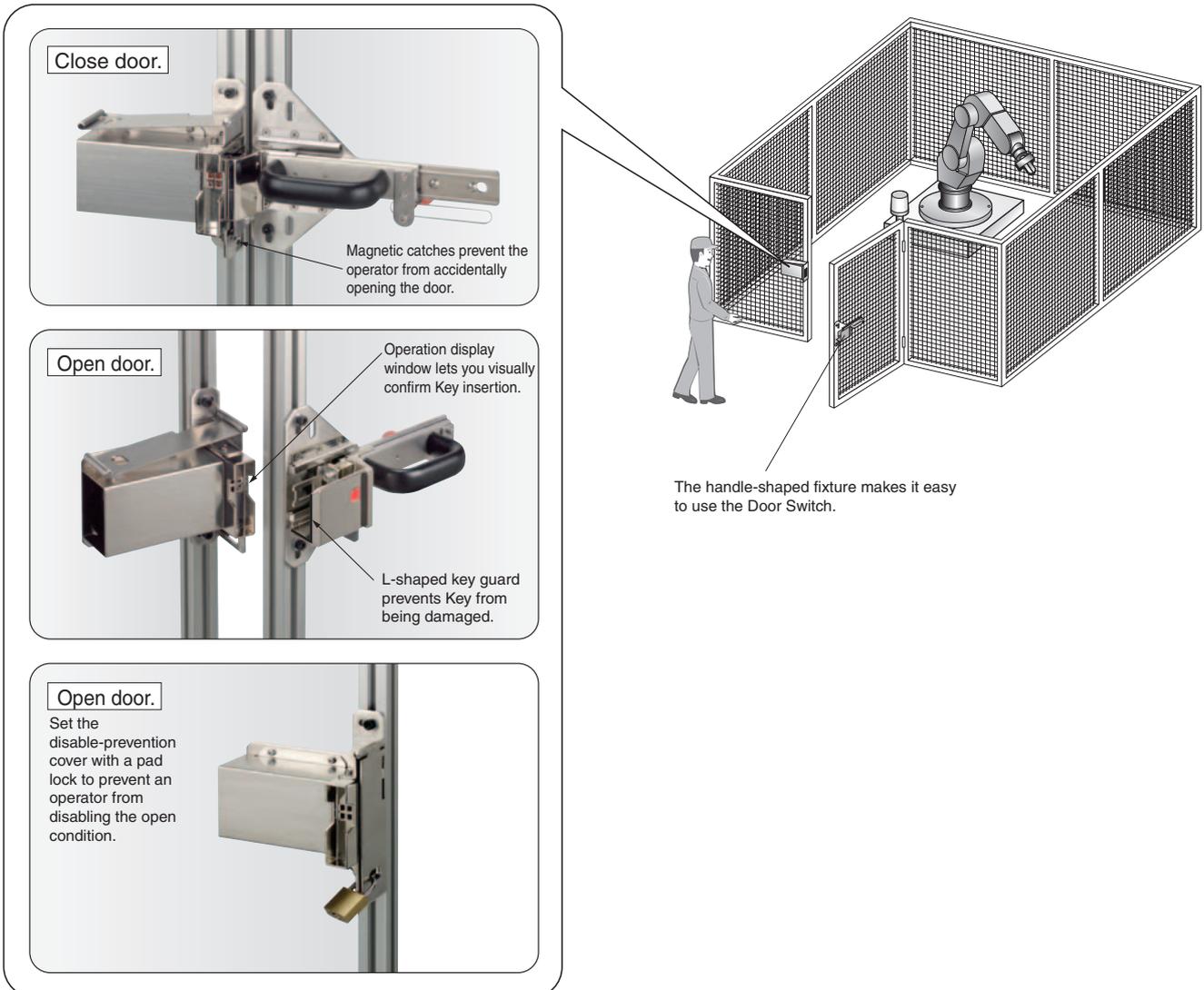


Features

- The L-shaped key guard prevents the Key from being damaged, and helps to guide the Key in smoothly.
- When the door is opened, the key hole can be covered by the disable-prevention cover, and a padlock can be attached. The operator's safety is then assured because the door cannot be closed until the padlock is removed.

ANSI/RIA R15.06-1999 8.4 Protection of personnel within the safeguarded space
 Personnel required to perform tasks within the safeguarded space shall be protected by:
 a) Preventing the re-initiation of any motion or hazardous process while personnel are within the safeguarded space, for example locking a gate open;

- The operation display window lets you visually confirm that the Key has been inserted.
- Magnetic catches prevent the door from opening if the operator accidentally bumps into it.



D4JL-SK40

Configuration



Features

- Can be combined with the D4JL Guard Lock Safety-door Switch to prevent locked doors from being too easily opened.
- Even if an operator were to be trapped inside a hazardous area, the D4JL model with rear release button would allow the operator to unlock the door from the inside with the lever.

ANSI/RIA R15.06-1999 11.2.2 Interlocking portion
 b) The interlocking portion of the interlocked barrier shall be installed, applied, and maintained so that:
 8) Be capable of being easily unlocked from the inside of the safeguarded space with or without power available, when the possibility of full body access exists;

Close door.

Door inner side

Press the rear release button to unlock the Guard Lock Safety-door Switch.

Open door.

The door can be opened from inside the hazardous area by using the inner lever.

The handle-shaped fixture makes it easy to use the Door Switch.

Door Opening to the Left

Application is also possible on doors that open to the left.

Open door.

Set the disable-prevention cover with a pad lock to prevent an operator from disabling the open condition.

Ordering Information

Appearance	Specifications	Contents	Model	Applicable Door Switch
	Weight: 422 g Mechanical durability: 20,000 operations min.	Slide Key: 1 Auxiliary mounting bracket: 1 Receptacle bracket: 1	D4NS-SK01	D4NS 1-conduit type
	Weight: 2,800 g Mechanical durability: 20,000 operations min.	Slide Key: 1 D4NS mounting tool: 1 Inner lever: 1 Inner lever mounting screws: 2 Door Switch mounting one-way screws: 2 Switch protective cover: 1 Switch protective cover screws: 4 Disable-prevention cover (already mounted on Slide Key): 1	D4NS-SK30	D4NS 1-conduit type
	Weight: 3,400 g Mechanical durability: 20,000 operations min.	Slide Key: 1 D4JL mounting tool: 1 Inner lever: 1 Inner lever mounting screws: 2 Door Switch mounting one-way screws: 3 Switch protective cover: 1 Switch protective cover screws: 4 Disable-prevention cover (already mounted on Slide Key): 1	D4JL-SK40	D4JL-□□F□-□6 rear release button type

- Note:**
1. The Door Switch is not included. Select the Door Switch depending on the necessary number of contacts and the conduit size.
 2. Perform risk assessment for the equipment in question, configure relay units and other safety circuits, and use properly.
 3. Ask your OMRON representative for information on the D4JL-SK30.

Applicable Door Switches

Guard Lock Safety-door Switch D4JL



- Two safety circuits and two monitor contacts provide an array of monitoring patterns.
- Standard gold-clad contacts enable use with ordinary loads and microloads.
- Models with rear release buttons allow people to unlock the Switch and escape if they are locked into hazardous areas.
- IP67 degree of protection

List of Models

Models with Rear Release Buttons

Release key type	Indicator	Lock and release types	Contact configuration (door open/closed detection switch and lock monitor switch contacts)	Conduit opening	Model
Special release key	Green	Mechanical lock Solenoid release	2NC/1NO+2NC/1NO	PG13.5	D4JL-1NFA-C6
				G1/2	D4JL-2NFA-C6
				1/2-14NPT	D4JL-3NFA-C6
				M20	D4JL-4NFA-C6
			2NC/1NO+3NC	PG13.5	D4JL-1PFA-C6
				G1/2	D4JL-2PFA-C6
				1/2-14NPT	D4JL-3PFA-C6
				M20	D4JL-4PFA-C6
			3NC+2NC/1NO	PG13.5	D4JL-1QFA-C6
				G1/2	D4JL-2QFA-C6
				1/2-14NPT	D4JL-3QFA-C6
				M20	D4JL-4QFA-C6
3NC+3NC	PG13.5	D4JL-1RFA-C6			
	G1/2	D4JL-2RFA-C6			
	1/2-14NPT	D4JL-3RFA-C6			
	M20	D4JL-4RFA-C6			

- Note:**
1. To order models with an orange indicator, replace the "C6" at the end of the model number D4JL-□□FA-C6 with "D6".
 2. For details on the D4JL, refer to the "D4JL".
 3. Ordinary D4JL types can also be mounted. However, because persons trapped inside the hazardous area cannot unlock the Switch from the inside, ordinary D4JL types do not satisfy ANSI requirements.

Safety-door Switch D4NS



- Lineup includes three contact models with 2NC/1NO and 3NC contact forms in addition to the previous contact forms 1NC/1NO, and 2NC.
- M12-connector models are available, saving on labor and simplifying replacement.
- Standard gold-clad contacts provide high contact reliability. Applicable to both standard loads and microloads.
- Free of lead, cadmium, and hexavalent chrome, reducing the burden on the environment.

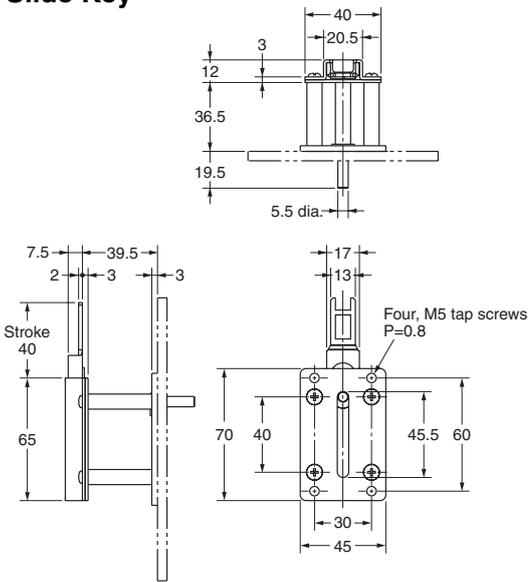
List of Models

Type	Contact configuration	Conduit opening/ Connector	Model
1-conduit	1NC/1NO	Pg13.5	D4NS-1AF
		G1/2	D4NS-2AF
		1/2-14NPT	D4NS-3AF
		M20	D4NS-4AF
	2NC	Pg13.5	D4NS-1BF
		G1/2	D4NS-2BF
		1/2-14NPT	D4NS-3BF
		M20	D4NS-4BF
	2NC/1NO	Pg13.5	D4NS-1CF
		G1/2	D4NS-2CF
		1/2-14NPT	D4NS-3CF
		M20	D4NS-4CF
	3NC	Pg13.5	D4NS-1DF
		G1/2	D4NS-2DF
		1/2-14NPT	D4NS-3DF
		M20	D4NS-4DF
Slow-action	1NC/1NO	Pg13.5	D4NS-1EF
		G1/2	D4NS-2EF
		1/2-14NPT	D4NS-3EF
		M20	D4NS-4EF
	2NC/1NO	Pg13.5	D4NS-1FF
		G1/2	D4NS-2FF
		1/2-14NPT	D4NS-3FF
		M20	D4NS-4FF
Slow-action MBB contact	1NC/1NO	M12 connector	D4NS-9AF
	2NC		D4NS-9BF
Slow-action MBB contact	1NC/1NO	M12 connector	D4NS-9EF
	1NC/1NO		D4NS-9FF

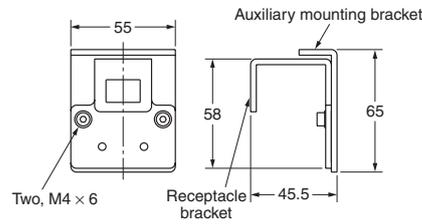
Dimensions

D4NS-SK01

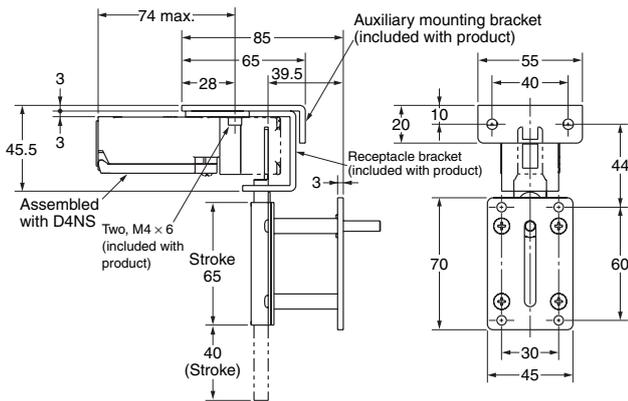
Slide Key



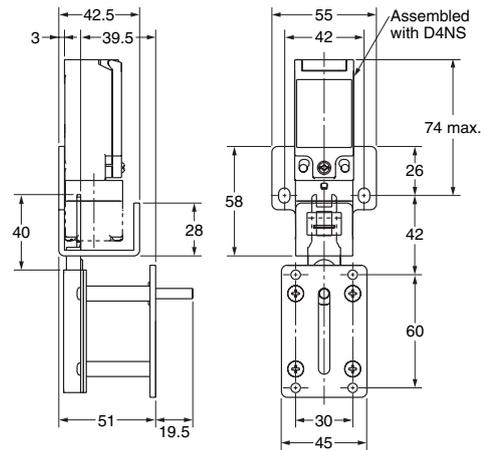
Auxiliary Mounting Bracket and Receptacle Bracket



Switch Mounting Pattern 1

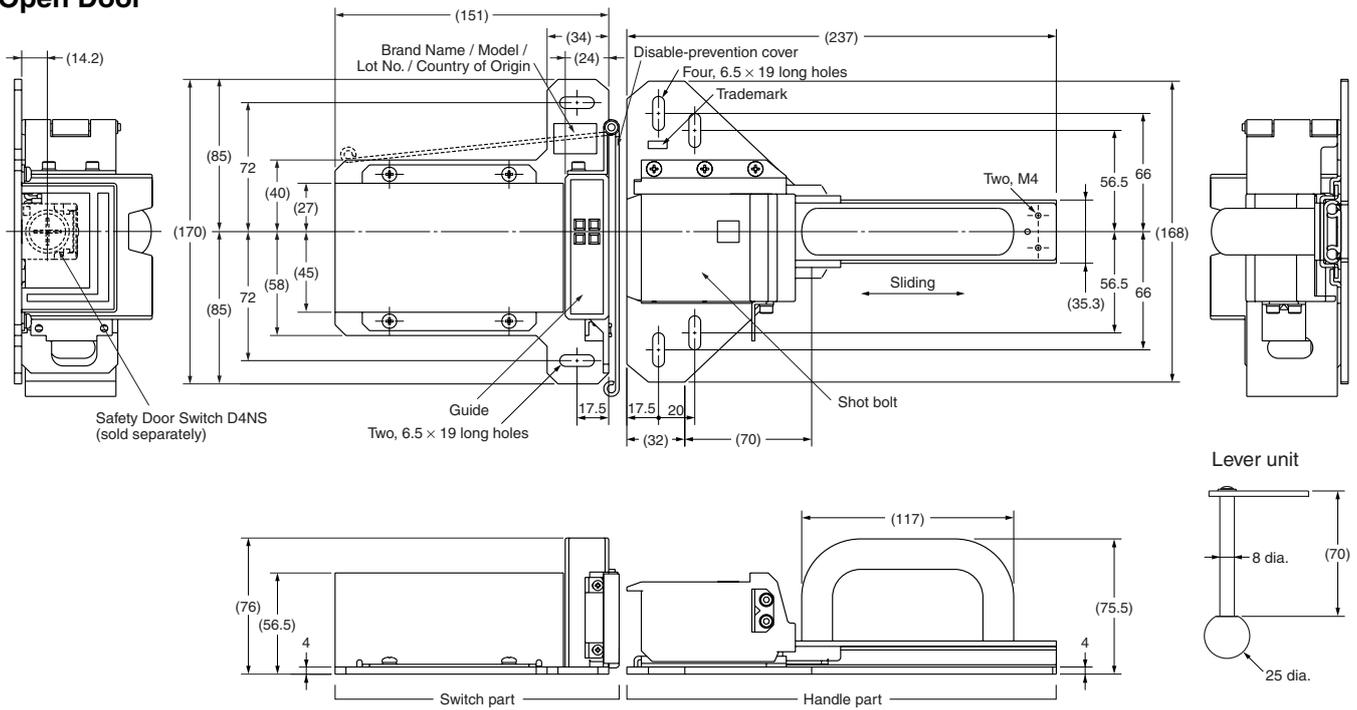


Switch Mounting Pattern 2

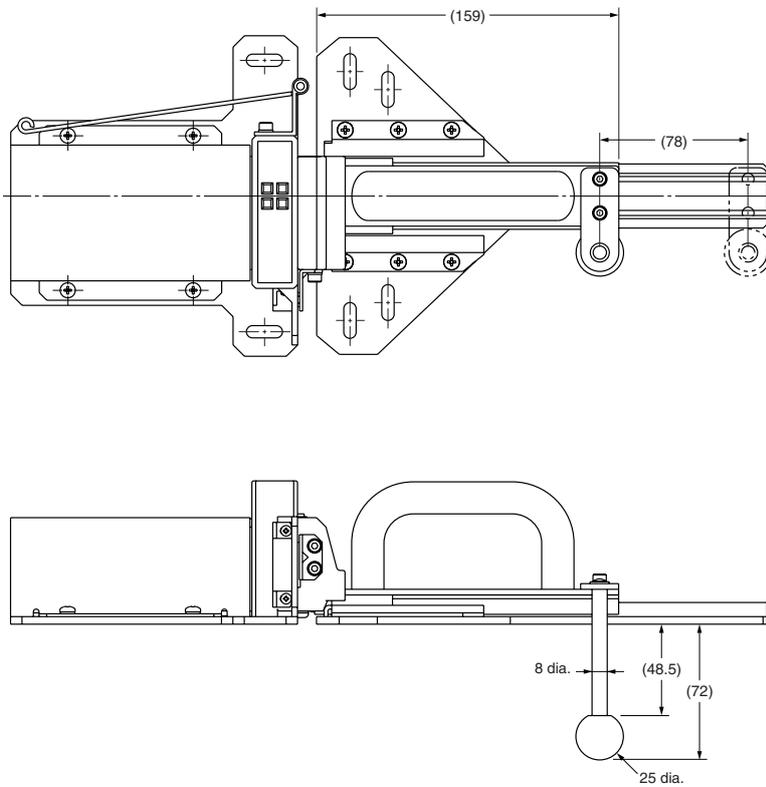


D4NS-SK30

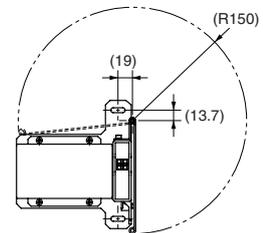
Open Door



Closed Door

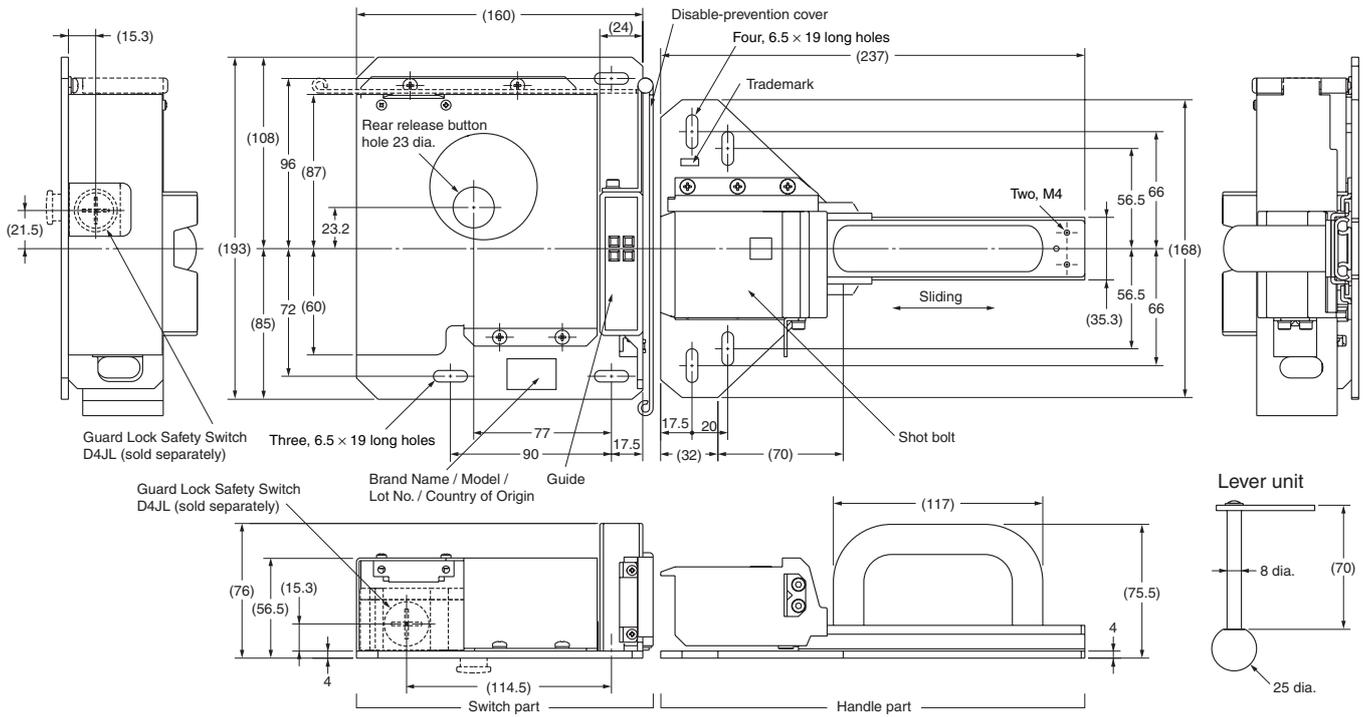


Turning radius of disable-prevention cover

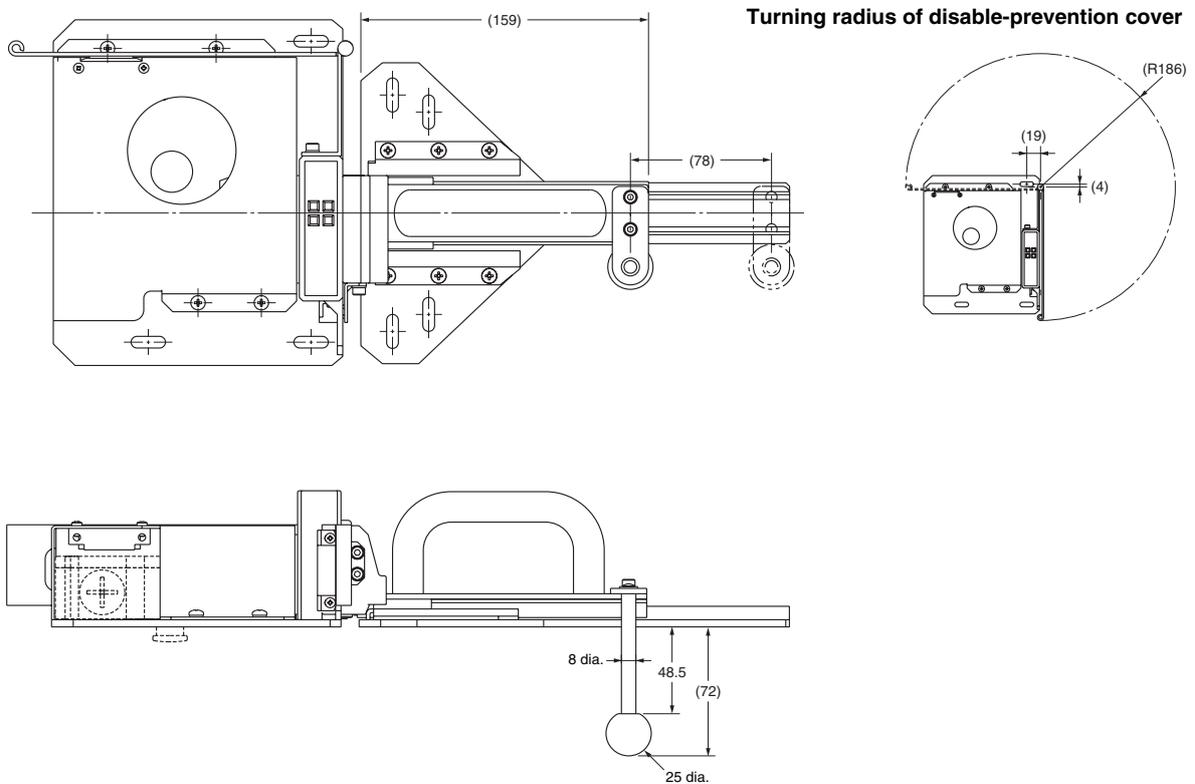


D4JL-SK40

Open Door



Closed Door



Safety Precautions

Refer to the “*Precautions for All Switches*” and “*Precautions for All Safety Door Switches*”.

CAUTION

Incorrect operation may cause injury. Also, the product is designed to be mounted so that it slides horizontally. Do not mount the product in a vertically sliding configuration. (excluding the D4NS-SK01)



Precautions for Safe Use

- Do not drop the Switch. Doing so may prevent the Switch from functioning to full capacity.
- Mount the Switch securely to prevent it from falling. Otherwise, injuries may occur.
- Do not attempt to disassemble or modify the Switch. Doing so may cause the Switch to malfunction.
- Make sure that the gap between the shot bolt and guide is ± 3 mm. Otherwise, excessive wear or damage may cause malfunction.
- To ensure safety, do not operate the Switch with anything other than a Slide Key.
- Be careful to avoid pinching your hand when operating the Switch.
- Be sure to mount the Switch protective cover. Otherwise, your hand may be injured by being pinched between the shot bolt and Switch when closing the door with your hand on the Switch.
- When opening the door, be sure to lower the disable-prevention cover into position, attach a padlock, or take other steps to prevent other people from operating the Switch.
- The durability of the Switch is greatly influenced by the switching conditions. Always test the Switch under actual working conditions before application and use it in a switching circuit for which there are no problems with performance.
- The user must not maintain or repair equipment incorporating the Switch. Contact the manufacturer of the equipment for any maintenance or repairs required.
- Refer to the D4JL Guard Lock Safety-door Switch, D4NS Safety-door Switch Datasheet, Instruction Sheet for details and handling information on the Switch.
- Do not shut the door while the shot bolt is extended. The Switch may be damaged, preventing proper operation.
- Do not apply excessive force in the direction of the slide. This may damage the product and cause it to malfunction.

Precautions for Correct Use

- Insert the slide handle until the red operation indicator is completely displayed in the operation display window.



Normal



Insufficient insertion

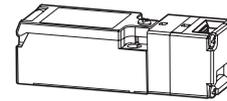
Operation display window

- Loose screws may result in malfunction. Use washers and tighten the screws to the specified torques. Also, when mounting the Switch to a door for disable-prevention purposes, purchase and use tamper-resistant screws.

Appropriate Tightening Torque

Slide Key mounting screw (M6)		6.0 to 7.0 N·m
Switch mounting screw (included with product)	For D4JL	3.2 to 3.8 N·m
	For D4NS	0.5 to 0.7 N·m
Switch protective cover mounting screw (included with product)		1.2 to 1.4 N·m
Lever mounting screw (included with product)		1.2 to 1.4 N·m

- Use the D4NS-SK30 only with the D4NS Safety-door Switch head in the direction shown below.



Operation Key

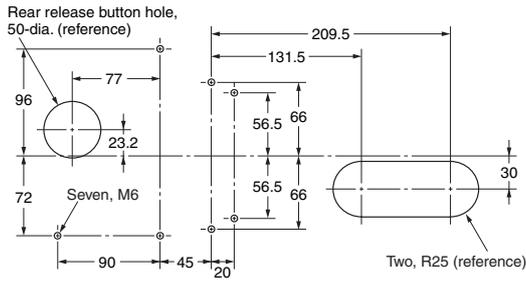
Technical Specifications

	D4JL-SK40	D4NS-SK30
Ambient operating temperature	-10 to 55°C (with no icing)	
Ambient operating humidity	95% max.	
Mechanical durability	20,000 operations min.	
Weight	Approx. 3.4 kg (not including D4JL Guard Lock Safety-door Switch)	Approx. 2.8 kg (not including D4NS Safety-door Switch)

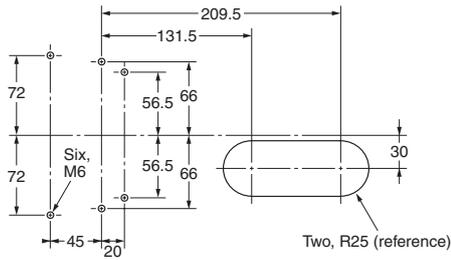
- Do not store the Switch where corrosive gases (e.g., H₂S, SO₂, NH₃, HNO₃, or Cl₂) or dust are present, or in locations subject to high temperature or humidity.
- Perform maintenance inspections periodically.
- This product is for use only with OMRON Safety-door Switches. Do not use it with door switches made by other manufacturers.

Mounting Holes (Unit: mm)

D4JL-SK40

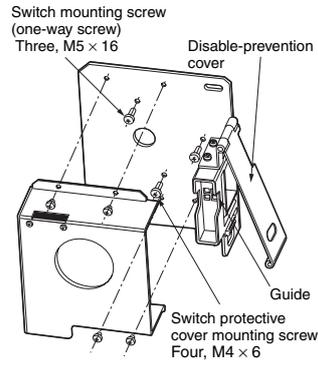


D4NS-SK30

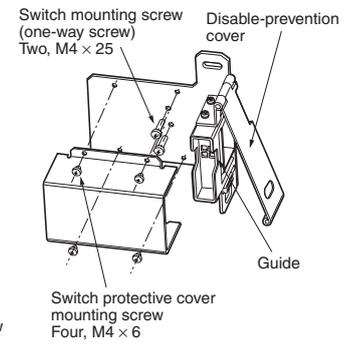


Assembly

Switch part
D4JL-SK40

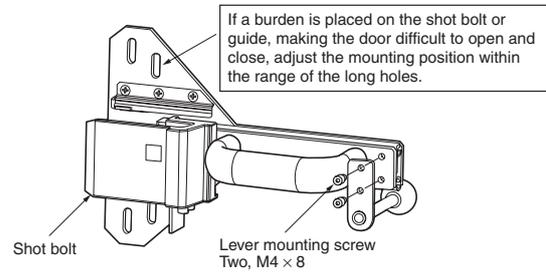


D4NS-SK30



Handle part

D4JL-SK40/D4NS-SK30



Read and Understand This Catalog

Please read and understand this catalog before purchasing the products. Please consult your OMRON representative if you have any questions or comments.

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- Outdoor use, uses involving potential chemical contamination or electrical interference, or conditions or uses not described in this catalog.
- Nuclear energy control systems, combustion systems, railroad systems, aviation systems, medical equipment, amusement machines, vehicles, safety equipment, and installations subject to separate industry or government regulations.
- Systems, machines, and equipment that could present a risk to life or property.

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2008.12

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