DZ

CSM_DZ_DS_E_4_3

DPDT Basic Switch for Two Independent Circuit Control

- Ideal for switching the circuits operating on two different voltages, and for controlling two independent circuits.
- Interchangeable with OMRON Z Basic Switches, as both switches are identical in mounting hole dimensions, mounting pitch and pin plunger position.

⚠ Be sure to read *Safety Precautions* on page 7 and *Safety Precautions for All Basic Switches.*

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

Model Number Structure

Model Number Legend

DZ-10G□-1□
(1) (2)(3) (4)(5)

(1) Ratings
10 : 10 A (250 VAC)

(2) Contact Gap
G : 0.5 mm

(3) Actuator
None : Pin plunger
V : Hinge lever
V22 : Short hinge roller lever
V2 : Hinge roller lever
W : Hinge lever
W22 : Short hinge roller lever
W2 : Hinge roller lever

(4) Contact Form
1 : DPDT

(5) Terminals
A : Solder terminal
B : Screw terminal

Ordering Information

Actuator	Terminal		Solder terminal (-1A) Model	Screw terminal (-B) Model
Pin plunger			DZ-10G-1A	DZ-10G-1B
Hinge lever		High OT	DZ-10GW-1A	DZ-10GW-1B
		Low OT	DZ-10GV-1A	DZ-10GV-1B
Short hinge roller lever		High OT	DZ-10GW22-1A	DZ-10GW22-1B
		Low OT	DZ-10GV22-1A	DZ-10GV22-1B
Hinge roller lever		High OT	DZ-10GW2-1A	DZ-10GW2-1B
		Low OT	DZ-10GV2-1A	DZ-10GV2-1B

Specifications

Ratings

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
125 VAC	10		2	1	6		3	1.5
250 VAC	10		1.5	0.7	4		2	1
8 VDC	10		3	1.5	6		5	2.5
14 VDC	10		3	1.5	6		5	2.5
30 VDC	10		3	1.5	4		3	1.5
125 VAC	0.5		0.5		0.05		0.05	
250 VDC	0.25		0.25		0.03		0.03	

Note: 1. The above values are for steady-state current.
2. Inductive load has a power factor of 0.4 min. (AC) and a time constant of 7 ms max. (DC).
3. Lamp load has an inrush current of 10 times the steady-state current.
4. Motor load has an inrush current of 6 times the steady-state current.
5. The ratings values apply under the following test conditions:
(1) Ambient temperature: 20±2°C
(2) Ambient humidity: 65±5%RH
(3) Operating frequency: 20 operations/min

Certified Standard Ratings

Ask your OMRON representative for information on certified models.

UL/CSA

Rated voltage	DZ-10G
125 VAC	10 A 1/8 HP
250 VAC	10 A 1/4 HP
480 VAC	2 A
125 VDC	0.5 A
250 VDC	0.25 A

Characteristics

Operating speed		0.1 mm to 1 m/s *1
Operating frequency	**Mechanical**	240 operations/min
	Electrical	20 operations/min
Insulation resistance		100 MΩ min. (at 500 VDC)
Contact resistance		15 mΩ max. (initial value)
Dielectric strength		1,000 VAC, 50/60 Hz for 1 min between non-continuous terminals 1,500 VAC, 50/60 Hz for 1 min between current-carrying metal parts and non-current-carrying metal part, and between current-carrying metal part and ground and between switches
Vibration resistance	**Malfunction**	10 to 55 Hz, 1.5-mm double amplitude *2
Shock resistance	**Destruction**	1,000 m/s² max.
	Malfunction	300 m/s² max. *1 *2
Durability	**Mechanical**	1,000,000 operations min.
	Electrical	500,000 operations min.
Degree of protection		IP00
Degree of protection against electric shock		Class I
Proof tracking index (PTI)		175
Ambient operating temperature		–25°C to 80°C (with no icing)
Ambient operating humidity		35% to 85%RH
Weight		Approx. 30 to 50 g

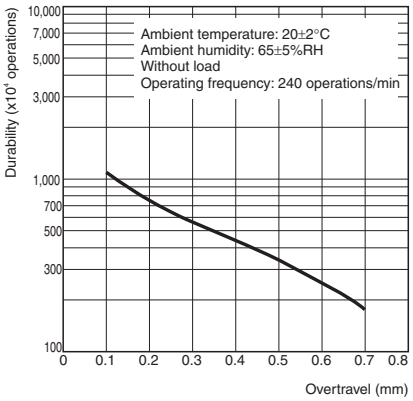
*1. The values are for pin plunger models. (Contact your OMRON representative for other models.)
*2. Malfunction: 1 ms max.

Contact Specifications

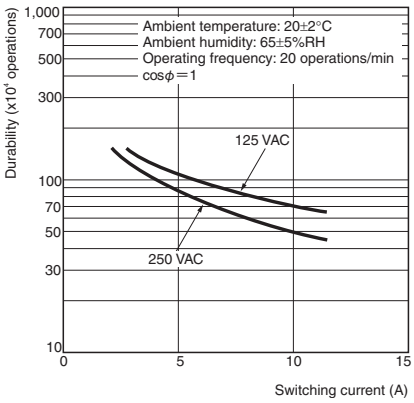
Contacts	**Material**	Silver alloy
	Gap (standard value)	0.5 mm
Inrush current	**NC**	30 A max.
	NO	15 A max.

Engineering Data

Mechanical Durability (DZ-10G-1B)

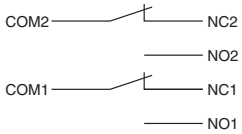


Electrical Durability (DZ-10G-1B)



Structure

Contact Form (DPDT)

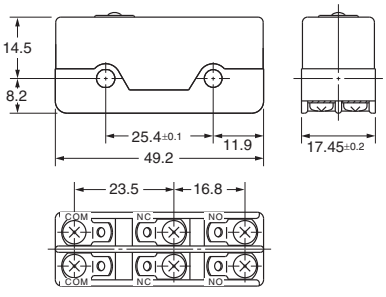


Dimensions

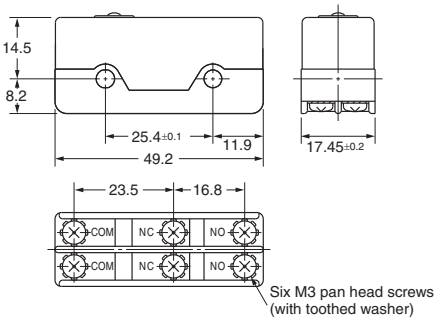
(Unit: mm)

Terminals

Solder Terminals (-1A)



Screw Terminals (-1B)

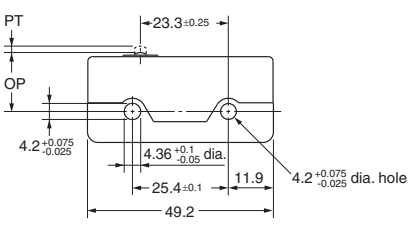


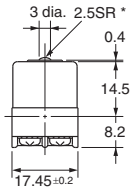
Dimensions and Operating Characteristics

The solder terminal model has a suffix "-1A" in its model number and its omitted dimensions are the same as the corresponding dimensions of the pin plunger model.

Pin Plunger

DZ-10G-1B



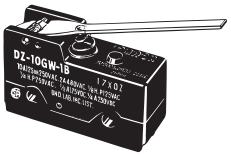


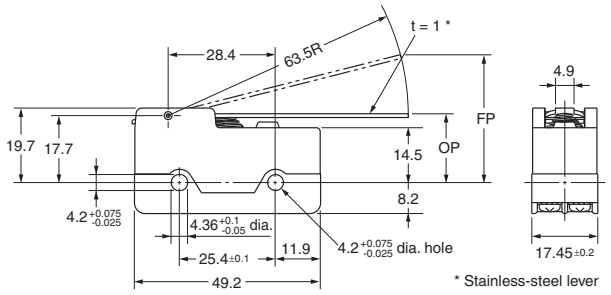
* Stainless-steel pin plunger

Operating force	**OF**	**max.**	5.59 N
Release force	**RF**	**min.**	0.56 N
Pretravel	**PT**	**max.**	1.7 mm
Overtravel	**OT**	**min.**	0.13 mm
Movement Differential	**MD**	**max.**	0.4 mm
Operating Position	**OP**		15.6±0.4 mm

Hinge Lever

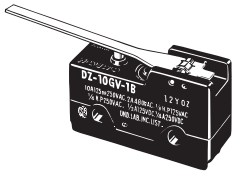
DZ-10GW-1B

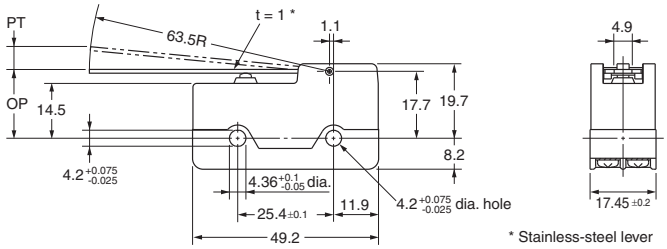




OF	**max.**	1.67 N
RF	**min.**	0.27 N
OT	**min.**	1.6 mm
MD	**max.**	4 mm
FP	**max.**	46.3 mm
OP		21.8±1 mm

DZ-10GV-1B

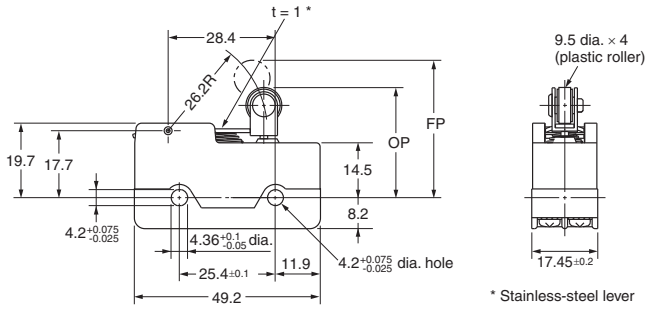




OF	**max.**	1.96 N
RF	**min.**	0.13 N
PT	**max.**	6 mm
OT	**min.**	0.4 mm
MD	**max.**	1.7 mm
OP		18.3±1 mm

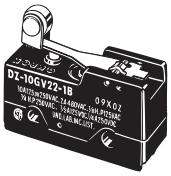
Short Hinge Roller Lever

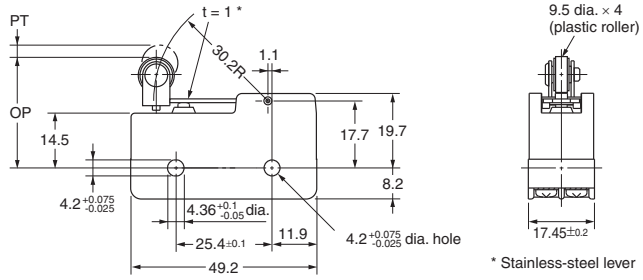
DZ-10GW22-1B



OF	**max.**	3.92 N
RF	**min.**	0.83 N
OT	**min.**	0.9 mm
MD	**max.**	2.4 mm
FP	**max.**	39.7 mm
OP		30.2±0.8 mm

DZ-10GV22-1B

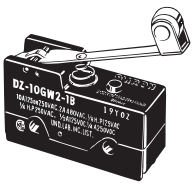


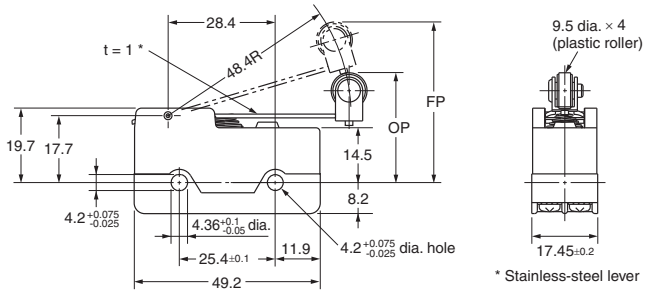


OF	**max.**	4.22 N
RF	**min.**	0.41 N
PT	**max.**	3 mm
OT	**min.**	0.13 mm
MD	**max.**	0.6 mm
OP		29.4±0.8 mm

Hinge Roller Lever

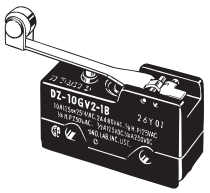
DZ-10GW2-1B

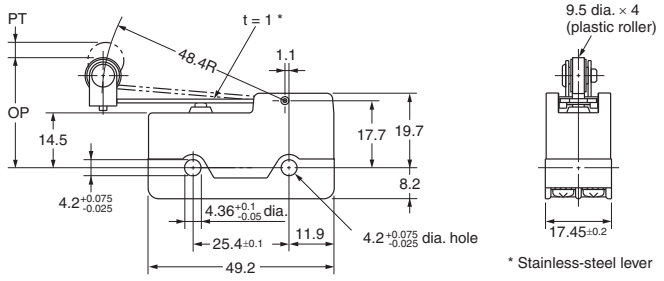




OF	**max.**	2.09 N
RF	**min.**	0.41 N
OT	**min.**	1.2 mm
MD	**max.**	3.3 mm
FP	**max.**	47.6 mm
OP		31.8±0.8 mm

DZ-10GV2-1B





OF	**max.**	2.65 N
RF	**min.**	0.33 N
PT	**max.**	4 mm
OT	**min.**	0.26 mm
MD	**max.**	1.1 mm
OP		29.4±0.8 mm

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

Accessories (Order separately)

A Terminal Protective Cover, Actuators, and a Separator are available.

Terminal Covers (Sold Separately)

The Terminal Covers can be attached to Z, A, X, and DZ Switches.
The Terminal Cover is secured with mounting screws and protects the casing and terminal wires from dust, vibration, or fingers, thus preventing terminal short-circuiting, ground faults, wire disconnection or improper connection, and electric shock accidents.
Terminal Covers made of phenol resin have five or six thin wall sections. These sections can be torn open for providing holes for lead cables at desired points.
A terminal cover can't be used in the case of using an actuator sold separately.

Operation Information

Material	Application: Mounting direction	Soldering terminal use: Model	Screw terminal use: Model	Remarks
Phenol resin	Side mounting	AP-A	AP-B	---
Metal press mold	Side mounting	AP1-A	AP1-B	Used for AP-A and AP-B
Vinyl chloride	Side mounting	AP-Z		---

Note: Use a Terminal Cover for screw terminals fir DZ-series Switches with soldering terminals.

Separator (Sold Separately)

Use a Separator when it is difficult to provide a sufficient insulation distance or when using the Switch near metal parts or copper wires.

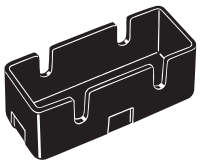
Operation Information

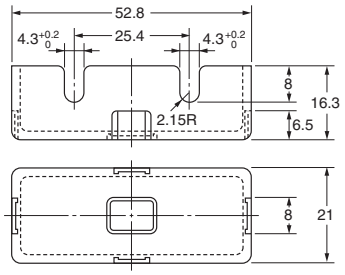
Model
SEPARATOR FOR Z

Dimensions (Unit: mm)

Terminal Covers

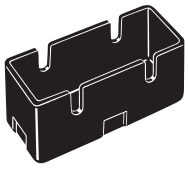
AP-A
Soldering Terminal Use
(Phenol Resin)

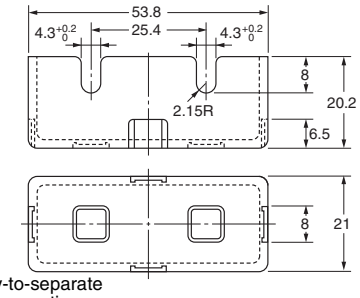




Note: The Cover has five thin, easy-to-separate portions for easy lead wire connections.

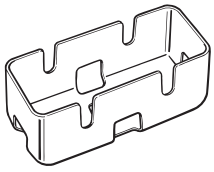
AP-B
Screw Terminal Use
(Phenol Resin)

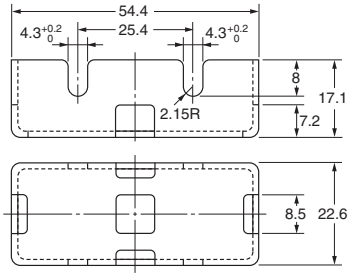




Note: The Cover has six thin, easy-to-separate portions for easy lead wire connections.

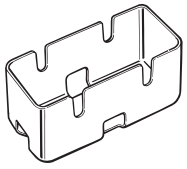
AP1-A
Soldering Terminal Use
(Metal Press Mold)

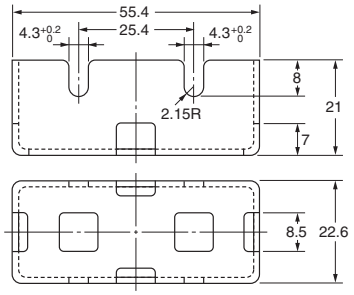




Note: The Cover has five holes for easy lead wire connections.

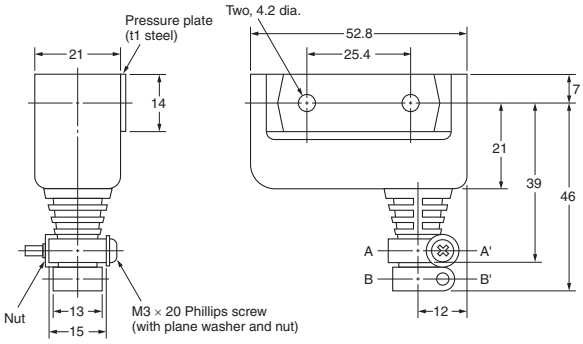
AP1-B
Screw Terminal Use
(Metal Press Mold)



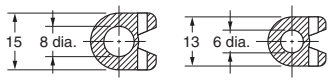


Note: The Cover has six holes for easy lead wire connections.

AP-Z
Soldering or Screw Terminal Use
(Vinyl Chloride)



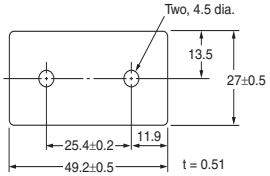
Cable Pull-out Dimension



Note: A 6-dia. or 8-dia. cable can be used by cutting the cable pull-out hole to the size of the cable to be used.

Note: Each dimension has a tolerance of ±0.4 mm unless otherwise specified. (±0.8 mm for the AP-Z)

Separator



Note: 1. Each dimension has a tolerance of ±0.4 mm unless otherwise specified.
2. The material is EAVTC (Epoxide Alkyd Varnished Tetron Cloth) and its heat-resisting temperature is 130°C.

Actuators (Sold Separately)

A Switch can be actuated by a cam or an appropriate object, in which case, use one of the following Actuators according to the application.

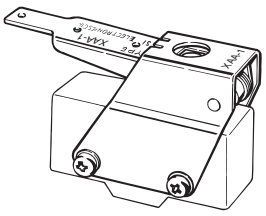
Ordering Information

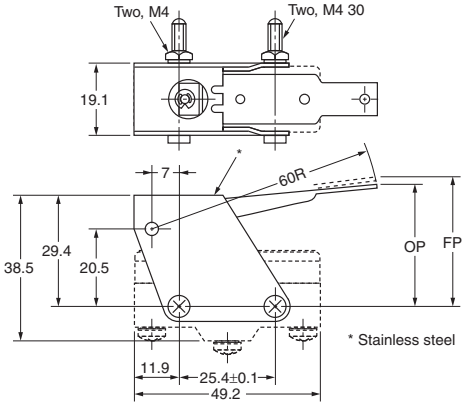
Actuator	Application	Common to Z and X models
Hinge lever		XAA-1
Hinge roller lever		ZAA-2
Panel mount plunger	Short	ZAQ-3
	Medium	ZAQ-2
	Long	ZAQ-1
Panel mount roller plunger		ZAQ-22

Dimensions (Unit: mm) and Operating Characteristics

Note: These Actuators are not provided with Switches.

Hinge Lever
XAA-1

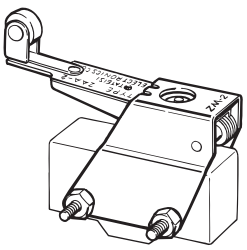


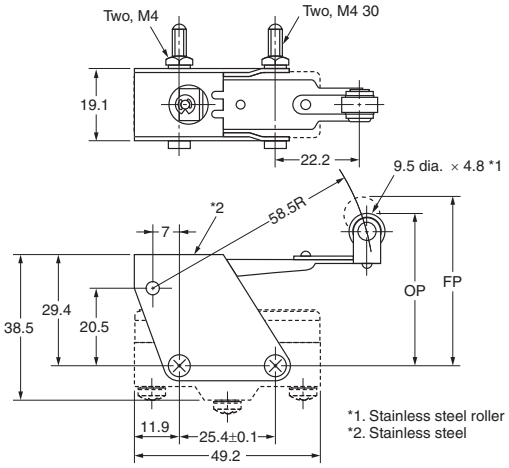


Operating characteristics \ Model	Z-15G-B	X-10G-B
Operating force OF max.	4.90 N	4.90 N
Release force RF min.	1.67 N	1.67 N
Overtravel OT min.	12.7 mm	12.7 mm
Movement Differential MD max.	2.2 mm	3.3 mm
Free Position FP max.	32.9±1.6 mm	
Operating Position OP	28.9±1.6 mm	

Note: This Actuator can be used with the Z-15G(-B) and X-10G(-B). When mounting the Switch, set the overtravel to between 32% and 100%, taking into consideration the operating body and the distance between the Actuator and the dog.

Hinge Roller Lever
ZAA-2

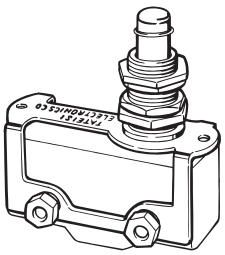


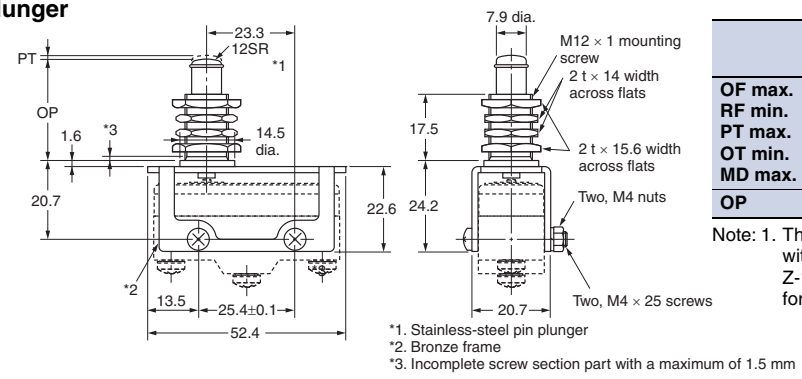


	Z-15G-B	X-10G-B
OF max.	4.90 N	4.90 N
RF min.	1.67 N	1.67 N
OT min.	12.7 mm	12.7 mm
MD max.	2.2 mm	3.3 mm
FP max.	44.5±1.6 mm	
OP	40.4±1.6 mm	

Note: This Actuator can be used with the Z-15G(-B) and ZX-10G(-B). When mounting the Switch, set the overtravel to between 32% and 100%, taking into consideration the operating body and the distance between the Actuator and the dog.

Short Panel Mount Plunger
ZAQ-3





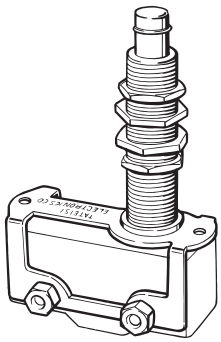
	ZAQ-3	
	Z-15E-B	X-10G-B
OF max.	8.34 N	5.39 N
RF min.	1.12 N	1.12 N
PT max.	0.8 mm	1 mm
OT min.	4.8 mm	4.5 mm
MD max.	0.15 mm	0.2 mm
OP	27.8±1.5 mm	

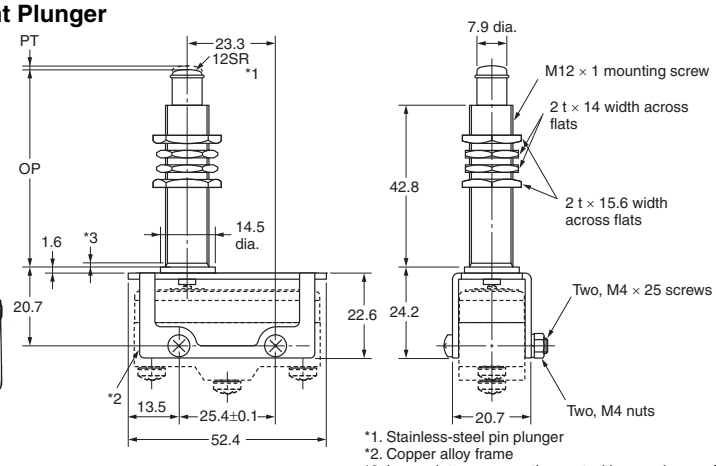
Note: 1. This Actuator (pin plunger) can be used with Standard Pin Plungers (Z-15G(-B), Z-15E(-B), X-10G(-B), DZ-10G-1A(-1B)) for the Z, X, and DZ models.

Note: Each dimension has a tolerance of ±0.4 mm unless otherwise specified.

Medium Panel Mount Plunger

ZAQ-2





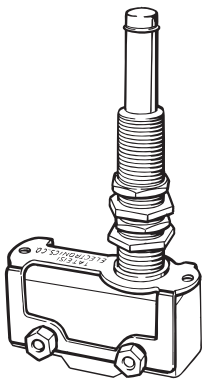
*1. Stainless-steel pin plunger
*2. Copper alloy frame
*3. Incomplete screw section part with a maximum of 1.5 mm

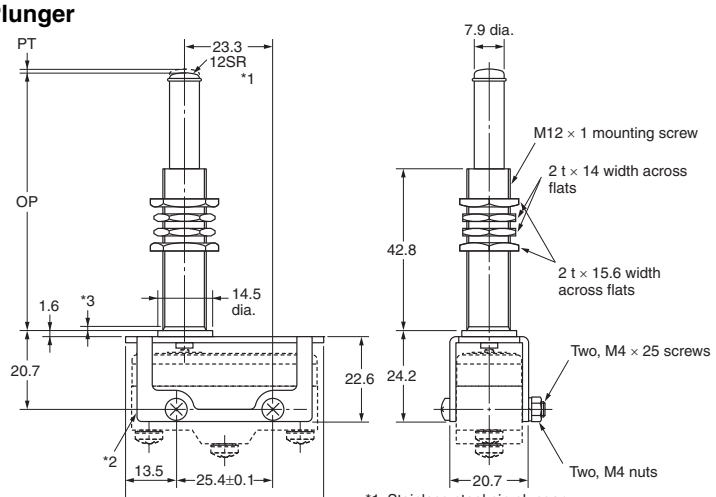
	ZAQ-2	
	Z-15E-B	X-10G-B
OF max.	8.34 N	5.39 N
RF min.	1.12 N	1.12 N
PT max.	0.8 mm	1 mm
OT min.	4.8 mm	4.5 mm
MD max.	0.15 mm	0.2 mm
OP	53.2±1.5 mm	

Note: This Actuator (pin plunger) can be used with Standard Pin Plungers (Z-15G(-B), Z-15E(-B), X-10G(-B), DZ-10G-1A(-1B)) for the Z, X, and DZ models.

Long Panel Mount Plunger

ZAQ-1





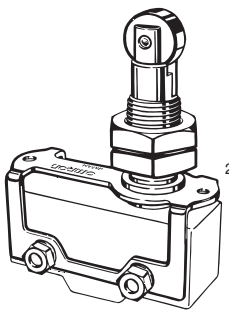
*1. Stainless-steel pin plunger
*2. Copper alloy frame
*3. Incomplete screw section part with a maximum of 1.5 mm

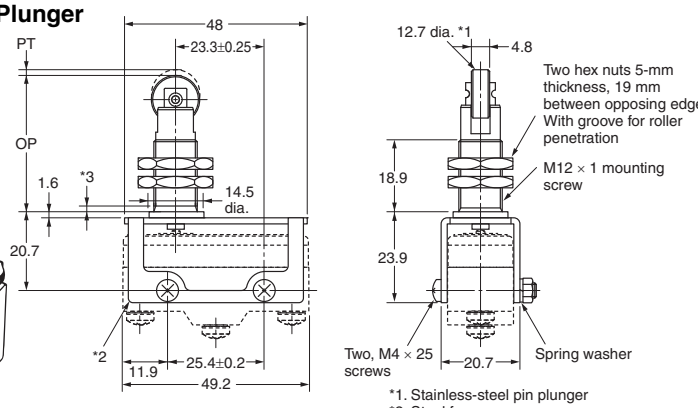
	ZAQ-1	
	Z-15E-B	X-10G-B
OF max.	8.34 N	5.39 N
RF min.	1.12 N	1.12 N
PT max.	0.8 mm	1 mm
OT min.	20.6 mm	20.4 mm
MD max.	0.15 mm	0.2 mm
OP	69.1±1.5 mm	

Note: This Actuator (pin plunger) can be used with Standard Pin Plungers (Z-15G(-B), Z-15E(-B), X-10G(-B), DZ-10G-1A(-1B)) for the Z, X, and DZ models.

Panel Mount Roller Plunger

ZAQ-22





*1. Stainless-steel pin plunger
*2. Steel frame
*3. Incomplete screw section part with a maximum of 1.5 mm

	ZAQ-22	
	Z-15E-B	DZ-10G-1B
OF max.	8.34 N	11.1 N
RF min.	1.12 N	1.12 N
PT max.	2 mm	2 mm
OT min.	3.58 mm	1 mm
MD max.	0.15 mm	0.46 mm
OP	37±0.8 mm	35.4±1.2 mm

Note: This Actuator (roller plunger) can be used with standard pin plungers (Z-15G(-B), Z-15E(-B), and DZ-10G-1A(-1B)). It cannot be used with X models.

Note: Each dimension has a tolerance of ±0.4 mm unless otherwise specified.

Safety Precautions

Refer to *Safety Precautions for All Basic Switches*.

Precautions for Safe Use

Terminal Connection

When soldering lead wires to the Switch, make sure that the capacity of the soldering iron is 60 W maximum. Do not take more than 5 s to solder any part of the Switch. The characteristics of the Switch will deteriorate if a soldering iron with a capacity of more than 60 W is applied to any part of the Switch for 5 s or more.

Operation

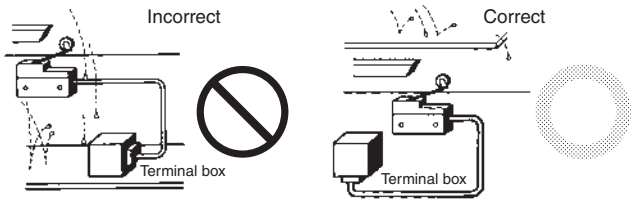
- Make sure that the switching frequency or speed is within the specified range.
  1. If the switching speed is extremely slow, the contact may not be switched smoothly, which may result in a contact failure or contact welding.
  2. If the switching speed is extremely fast, switching shock may damage the Switch soon. If the switching frequency is too high, the contact may not catch up with the speed.

  The rated permissible switching speed and frequency indicate the switching reliability of the Switch.
  The life of a Switch is determined at the specified switching speed. The life varies with the switching speed and frequency even when they are within the permissible ranges. In order to determine the life of a Switch model to be applied to a particular use, it is best to conduct an appropriate durability test on some samples of the model under actual conditions.
- Make sure that the actuator travel does not exceed the permissible OT position. The operating stroke must be set to 70% to 100% of the rated OT.

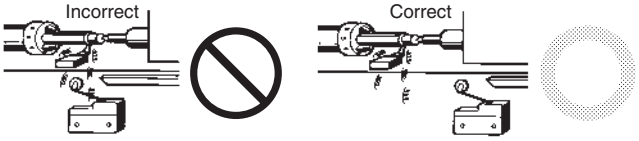
Precautions for Correct Use

Mounting Location

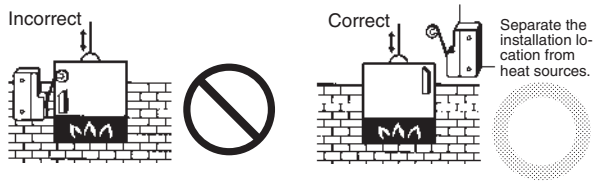
- Do not use the switch alone in atmospheres such as flammable or explosive gases. Arcing and heat generation associated with switching may cause fires or explosions.
- Switches are generally not constructed with resistance against water. Use a protective cover to prevent direct spraying if the switch is used in locations subject to splashing or spurting oil or water, dust adhering.



- Install the switch in a location that is not directly subject to debris and dust from cutting. The actuator and the switch body must be protected from accumulated cutting debris and dirt.



- Do not use the switch in locations subject to hot water (greater than 60°C) or in water vapor.
- Do not use the switch outside the specified temperature and atmospheric conditions.
  The permissible ambient temperature depends on the model. (Refer to the specifications in this catalog.) Sudden thermal changes may cause thermal shock to distort the switch and result in faults.



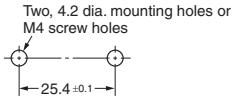
- Mount a cover if the switch is to be installed in a location where worker inattention could result in incorrect operation or accidents.

- Subjecting the switch to continuous vibration or shock may result in contact failure or faulty operation due to abrasion powder and in reduced durability. Excessive vibration or shock will cause the contacts to operate malfunction or become damaged. Mount the switch in a location that is not subject to vibration or shock and in a direction that does not subject the switch to resonance.
- If silver contacts are used with relatively low frequency for a long time or are used with microloads, the sulfide coating produced on the contact surface will not be broken down and contact faults will result. Use a microload switch that uses gold contacts.
- Do not use the switch in atmospheres with high humidity or heat or in harmful gases, such as sulfide gas (H_2S, SO_2), ammonia gas (NH_3), nitric acid gas (HNO_3), or chlorine gas (Cl_2). Doing so may impair functionality, such as with damage due to contacting faults or corrosion.
- The switch includes contacts. If the switch is used in an atmosphere with silicon gas, arc energy may cause silicon oxide (SiO_2) to accumulate on the contacts and result in contact failure. If there is silicon oil, silicon filling, silicon wiring, or other silicon products in the vicinity of the switch, use a contact protection circuit to limit arcing and remove the source of the silicon gas.

Mounting

Use M4 mounting screws with plane washers or spring washers to securely mount the Switch. Tighten the screws to a torque of 1.18 to 1.47 N·m.

Mounting Holes



Wiring

- Use wire sizes that are suitable to the applied voltage and carried current.
- If you use a soldering iron to solder the wires, do not allow the tip of the soldering iron to exceed 380°C. If a Switch is used with insufficient soldering, abnormal heat and burning may occur.
- Solder for no more than 5 s at 350°C and for no more than 3 s at 380°C. If heat is applied for too long, the case may melt, the lead wire coverings may be scorched, and other characteristics of the Switch may deteriorate.

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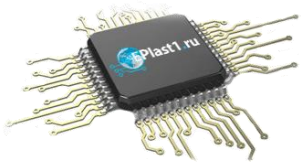

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