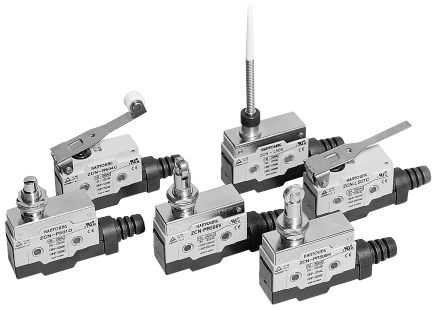
ZCN-500 series

Limit switch

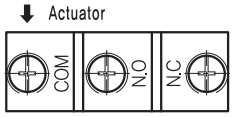
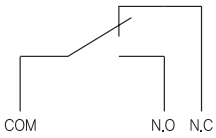


- Gap of installation cutout dimension is same as micro switch (HY-P700)
- Certain operation and long life expectancy by applying Beryllium copper and running spring to the strong chemical resistance case.
- Compact size and light weight. (Strong mechanical durability)
- 9 types of actuators which provide wide usages
- Less force required to run the operation comparing to the normal limit switch.
- Excellent sealing

Specification

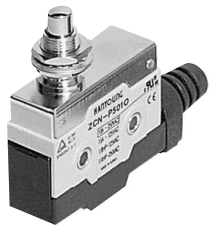
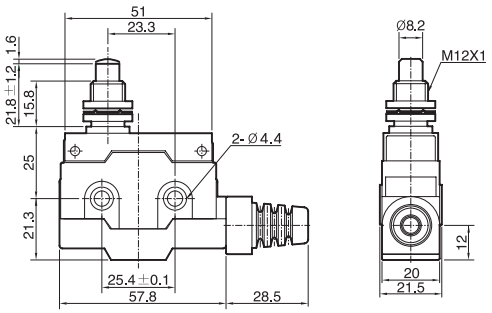
Contact structure		M4 screw tightening, 1c contact
Contact material		AgCdO
Protective structure		IP 54
Rated current(Ie)		10 A 250 V a.c
Dielectric strength		2,000 V a.c 50/60 Hz for 1 min (between the terminal and non-recharging metal part)
Insulation resistance		Min 100 MΩ (500 V d.c insulated ohmmeter)
Contact resistance		Max 50 MΩ (default value)
Rated voltage(Ue)		250 V a.c
Actuator intensity		5 times larger than O.F (force required to operate), operating direction 1 min
Vibration		Double amplitude 1.5 mm, frequency 10 ~ 55 Hz, continuously 2 hour
Shock		1,000 ㎨ (durability), 300 ㎨ (malfunction)
Allowable operation speed		0.1 ~ 1 ㎝ (without damaging the actuator)
Life expectancy	Mechanical	Min 1 million times (less than open/close frequency 120 times/min)
	Electrical	Min 300 thousand times (less than open/close frequency 20 times/min)
Ambient temperature		-10 ~ 80 ℃
Ambient humidity		25 ~ 95 % R.H.
Weight		Approx 1010 g (10 ZCN-PR508H 1 box)

Terminal arrangement

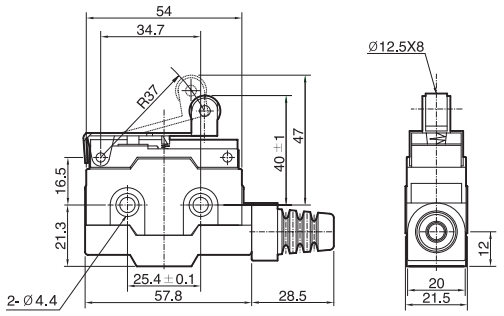
Appearance	Connection diagram
	

Dimension (unit : ㎜)

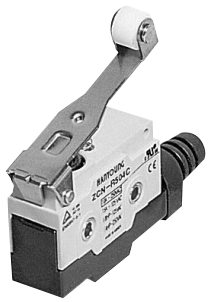
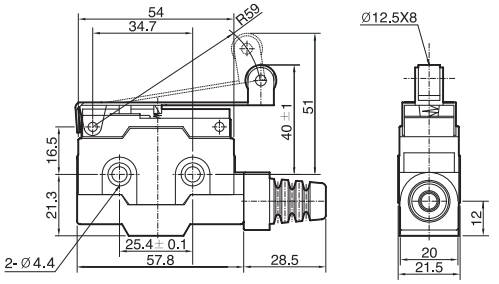
■ Plunger type

Appearance	Dimension	Operation characteristic
 ZCN-P501O		O.F max : 5.88 N (600 gf) R.F min : 0.98 N (100 gf) P.T max : 1.6 ㎜ O.T min : 5 ㎜ M.D max : 0.2 ㎜ O.P : 21.8 ㎜

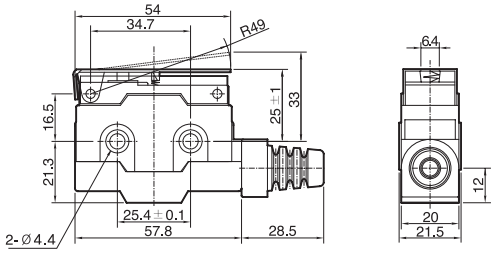
■ Hinge roller short lever type

Appearance	Dimension	Operation characteristic
 ZCN-R504A		O.F max : 5.88 N (600 gf) R.F min : 0.78 N (80 gf) O.T min : 2 ㎜ M.D max : 1.5 ㎜ F.P max : 47 ㎜ O.P : 40 ㎜

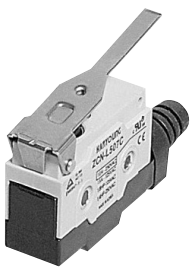
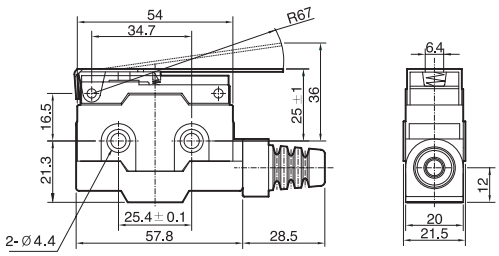
■ Hinge roller long lever type

Appearance	Dimension	Operation characteristic
 ZCN-R504C		O.F max : 2.74 N (280 gf) R.F min : 0.95 N (60 gf) O.T min: 5 ㎜ M.D max : 3 ㎜ F.P max : 51 ㎜ O.P : 40 ㎜

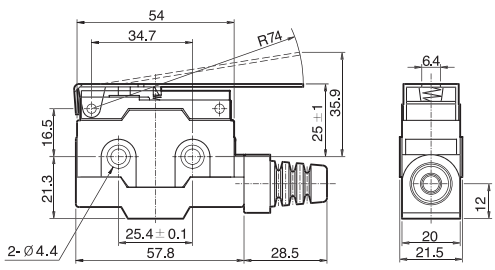
■ Hinge short lever type

Appearance	Dimension	Operation characteristic
 ZCN-L507A		O.F max : 3.92 N (400 gf) R.F min : 0.78 N (80 gf) O.T min : 2.5 ㎜ M.D max : 1 ㎜ F.P max : 33 ㎜ O.P : 25 ㎜

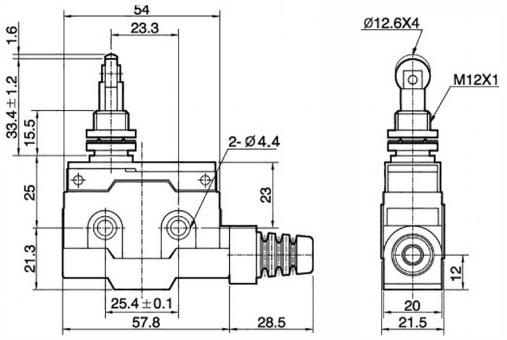
■ Hinge long lever type

Appearance	Dimension	Operation characteristic
 ZCN-L507C		O.F max : 2.74 N (280 gf) R.F min : 0.59 N (60 gf) O.T min : 4 ㎜ M.D max : 1.4 ㎜ F.P max : 36 ㎜ O.P : 25 ㎜

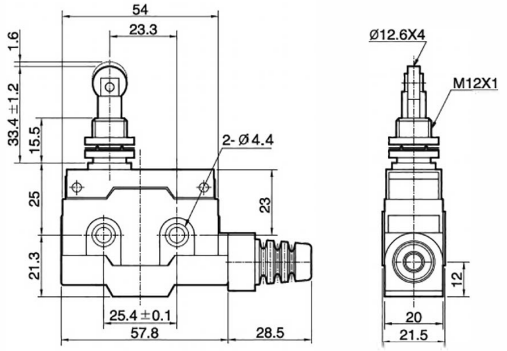
■ Hinge long lever type

Appearance	Dimension	Operation characteristic
 ZCN-L507D		O.F max : 2.74 N (280 gf) R.F min : 0.59 N (60 gf) O.T min : 4 ㎜ M.D max : 1.4 ㎜ F.P max : 36 ㎜ O.P : 25 ㎜

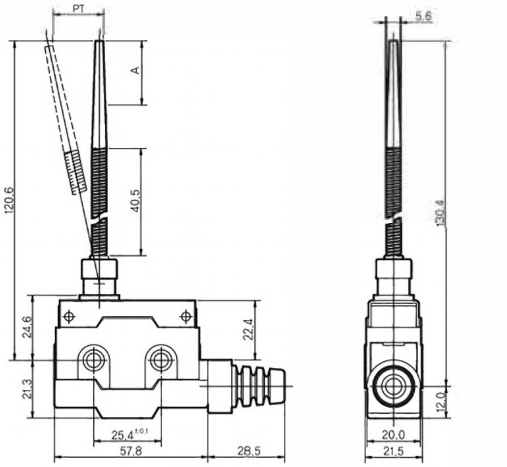
■ (Vertical) roller plunger type

Appearance	Dimension	Operation characteristic
 ZCN-PR508V		O.F max : 5.88 N (600 gf) R.F min : 0.98 N (100 gf) P.T max : 1.6 ㎜ O.T min : 5 ㎜ M.D max : 0.2 ㎜ O.P : 33.4 ㎜

■ (Horizontal) roller plunger type

Appearance	Dimension	Operation characteristic
 ZCN-PR508H		O.F max : 5.88 N (600 gf) R.F min : 0.98 N (100 gf) P.T max : 1.6 ㎜ O.T min : 5 ㎜ M.D max : 0.2 ㎜ O.P : 33.4 ㎜

■ Resin road coil spring type

Appearance	Dimension	Operation characteristic
 ZCN-L509		O.F max : 5.88 N (600gf) P.T max : 19 ㎜ T.T max : 40 ㎜

A : Optimum operating range of the resin rod is within 1/3 of the entire length from the top end

ZCN-500 series

Micro switch

- Gap of installation cutout dimension is same as micro switch (HY-P700)
- Certain operation and long life expectancy by applying Beryllium copper and running spring to the strong chemical resistance case.
- Compact size and light weight. (Strong mechanical durability)
- 9 types of actuators which provide wide usages
- Less force required to run the operation comparing to the normal limit switch.
- Excellent sealing

Specification

Model	ZCN-P501O	ZCN-R504A	ZCN-R504C
Shape			
Type	Plunger type	Hinge Roller Short Lever type	Hinge Roller Long Lever type

Model	ZCN-L507A	ZCN-L507C	ZCN-L507D
Shape			
Type	Hinge Short Lever type	Hinge Lever type	Hinge Long Lever type

Model	ZCN-PR508V	ZCN-PR508H	ZCN-L509
Shape			
Type	Roller Plunger type (vertical)	Roller Plunger type (horizontal)	Resin Road spring type

Common specification

Allowable operating speed		0.1 ㎜ - 0.5 m/s
Frequency	Mechanical	120 times/min
	Electrical	20 times/min
Insulation resistance		100 ㏁ min (500 V d.c.)
Contact resistance		25 ㏁ max (initial value), 100 ㏁ max
Dielectric strength		Among terminals : 1,000 V a.c. 50/60 ㎐ for 1 min, Among unfilled metal parts: 1,500 V a.c. 50/60 ㎐ for 1 min
Vibration resistance	Malfunction	10 - 55 ㎐ double amplitude 1.5 ㎜
Shock resistance	Mechanical	1000 m/s² min (100G min)
	Malfunction	300 m/s² min (30G min)
Life	Mechanical	1,000,000 times min
	Electrical	300,000 times min
Ambient temperature and humidity		10 ~ 80 °C, 25 ~ 95 % RH
Approval		
Weight		Approx. 1010 g (1 box of 10 ZCN-PR508H)

Suffix code

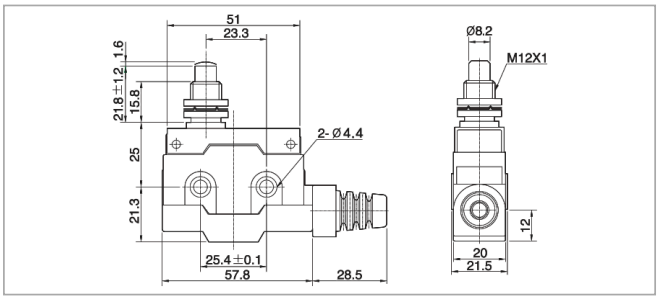
Model	Code	Description
ZCN-	☐	Micro limit switch (ZCN series)
Actuators (operating part)	P501O	Plunger Type

R504A	Hinge Rroller Short Lever type
R504C	Hinge Roller Long Lever type
L507A	Hinge Short Lever type
L507C	Hinge Lever type
L507D	Hinge Llong Lever type
PR508V	Roller Plunger type (vertical)
PR508H	Roller Plunger type (horizontal)
L509	Resin Road Spring type

Dimension

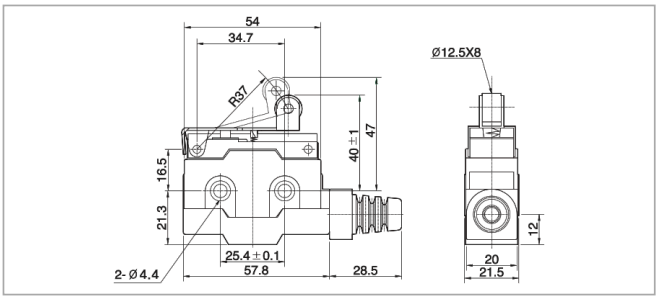
[Unit : ㎜]

▪ ZCN-P501O



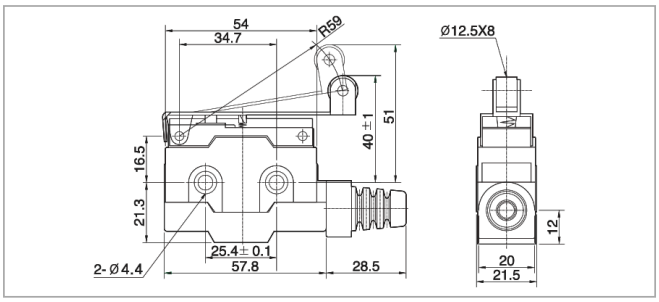
Operating characteristics	O.F	max : 5.88 N (600 gf)	R.F	min : 0.98 N (100 gf)
	P.T	max : 1.6 ㎜	O.T	min : 5 ㎜
	M.D	max : 0.2 ㎜	O.P	21.8 ㎜

▪ ZCN-R504A



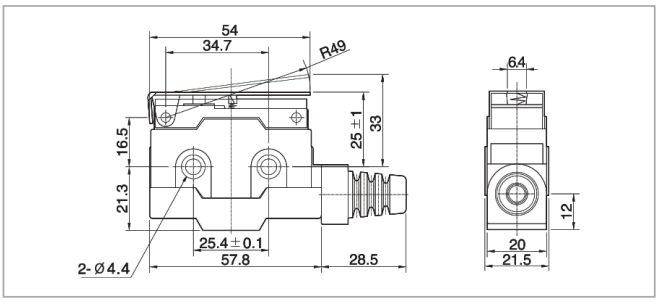
Operating characteristics	O.F	max : 5.88 N (600 gf)	R.F	min : 0.78 N (80 gf)
	O.T	min : 2 ㎜	M.D	max : 1.5 ㎜
	F.P	max : 47 ㎜	O.P	40 ㎜

▪ ZCN-R504C



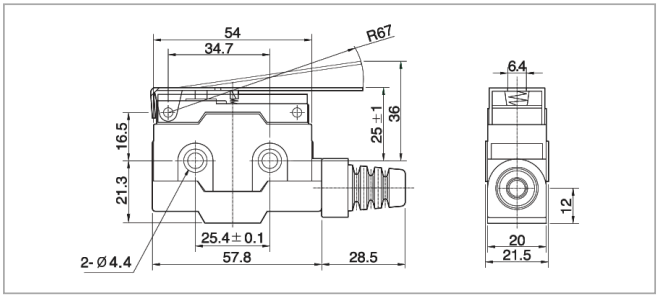
Operating characteristics	O.F	max : 2.74 N (280 gf)	R.F	min : 0.95 N (60 gf)
	O.T	min : 5 ㎜	M.D	max : 3 ㎜
	F.P	max : 51 ㎜	O.P	40 ㎜

▪ ZCN-L507A



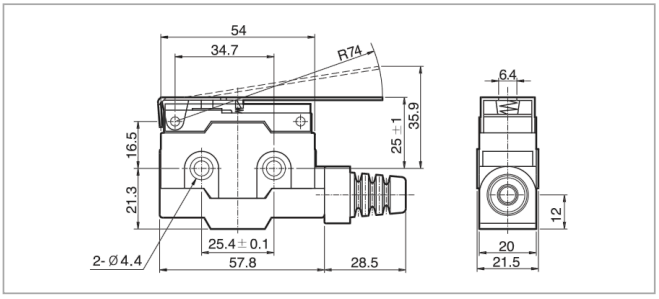
Operating characteristics	O.F	max : 3.92 N (400 gf)	R.F	min : 0.78 N (80 gf)
	O.T	min : 2.5 ㎜	M.D	max : 1 ㎜
	F.P	max : 33 ㎜	O.P	25 ㎜

▪ ZCN-L507C



Operating characteristics	O.F	max : 2.74 N (280 gf)	R.F	min : 0.59 N (60 gf)
	O.T	min : 4 ㎜	M.D	max : 1.4 ㎜

▪ ZCN-L507D

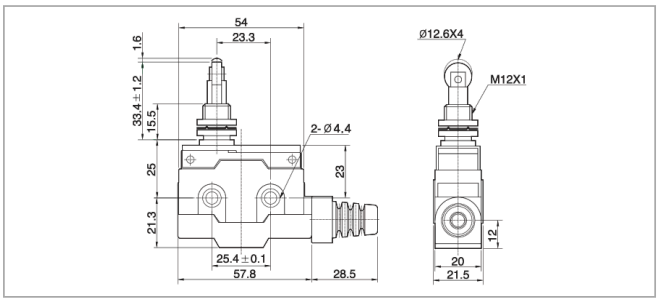


Operating characteristics	O.F	max : 2.74 N (280 gf)	R.F	min : 0.59 N (60 gf)
	O.T	min : 4 ㎜	M.D	max : 1.4 ㎜

	F.P	max : 36 ㎜	O.P	25 ㎜

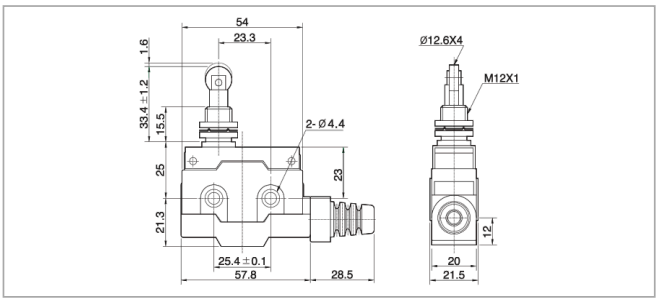
	F.P	max : 36 ㎜	O.P	25 ㎜

▪ ZCN-PR508V



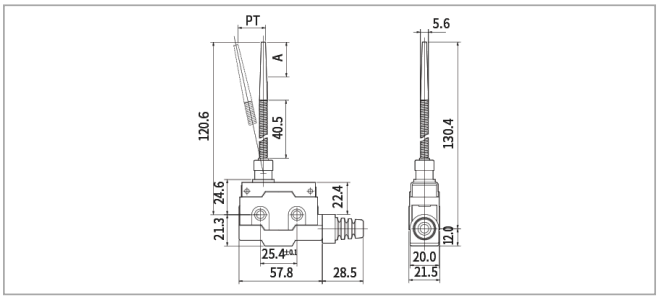
Operating characteristics	O.F	max : 5.88 N (600 gf)	R.F	min : 0.98 N (100 gf)
	P.T	max : 1.6 ㎜	O.T	min : 5 ㎜
	M.D	max : 0.2 ㎜	O.P	33.4 ㎜

▪ ZCN-PR508H



Operating characteristics	O.F	max : 5.88 N (600 gf)	R.F	min : 0.98 N (100 gf)
	P.T	max : 1.6 ㎜	O.T	min : 5 ㎜
	M.D	max : 0.2 ㎜	O.P	33.4 ㎜

▪ ZCN-L509



Operating characteristics	O.F	max : 5.88 N (600gf)	P.T	max : 19 ㎜
	T.T	max : 40 ㎜		

Rating

Rated voltage (V)		Non-inductive load(A)		Inductive load(A)			
		Resistive load		Inductive load		Electric motor load	
		NC	NO	NC	NO	NC	NO
AC	125	15		10		3	1.5
	250	10		6		2	1
	600	3		2		1.5	0.75
DC	8	15		10		-	-
	14	15		10		-	-
	30	6		5		-	-
	125	0.4		0.05		-	-
	250	0.2		0.03		-	-

Terminology explanation

+ Micro switch

It has a small contact gap and snap action tool. Also the contact tools that open/close with the rated movement and rated force are covered with the case and have an actuator on the outside. This is a compact size switch.

+ Limit switch

Limit Switch is enclosed in a case to protect a built-in basic switch from the external force, water, oil, gas, and dust.

+ Rating

+ Operation part

Value that insures the characteristic and function of limit switch.

+ Inverting spring

Inverting spring is mechanical parts that switch the contact of limit switch. Sometimes called as running spring.

+ Actuator

Depending on the various usages, it forms electrical input/output circuit of contact. There are 2 types in the limit switch just like an image below.

+ Electrical life expectancy

Opening/closing life in the rated load (resistive load) (After setting the rated value with the operation time)

Mechanical device part that operates the actuator of limit switch.

+ Detecting object

The object, product, part and etc that operate the limit switch other than mechanical device.

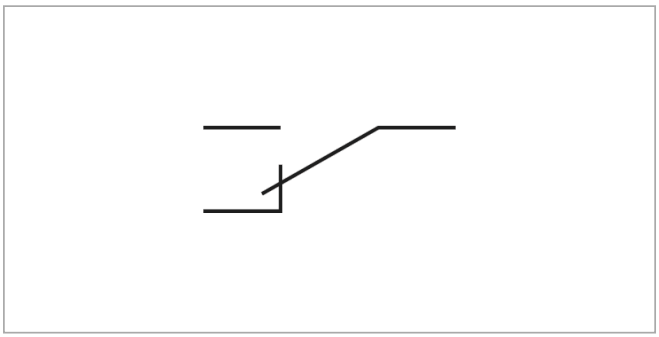
+ Mechanical life expectancy

Opening/closing life in the non electro state (After setting the rated value with the operation time)

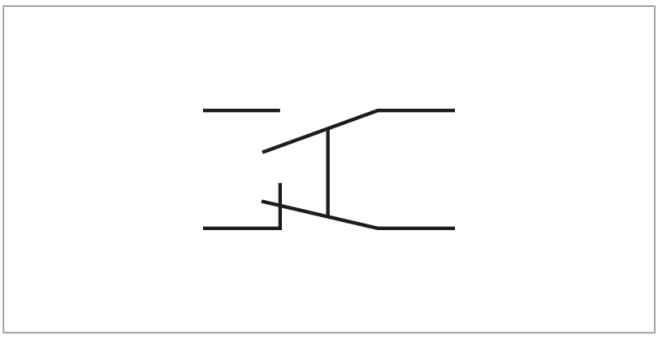
+ Contact composition

Depending on the various usages, it forms electrical input/output circuit of contact.
There are 2 types in the limit switch just like an image below.

- SPDT (C contact)

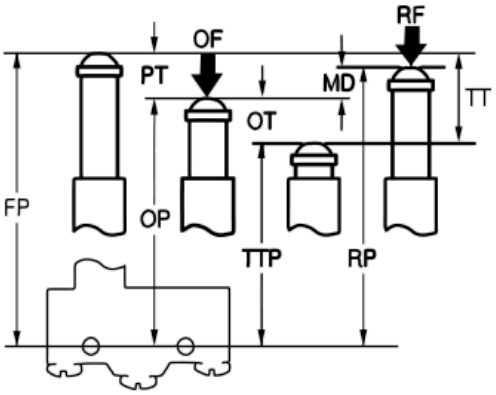


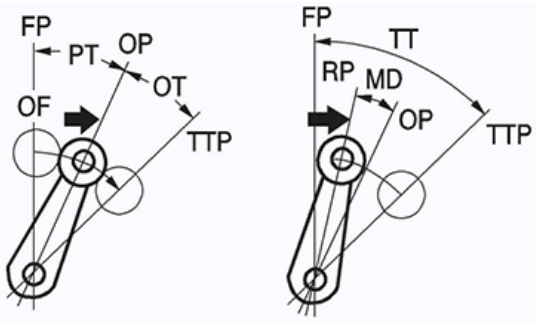
- 2 circuit double positions (1a1b)



+ Operation characteristic

- Definition of operation characteristic





Categories	Terminology	Symbol	Definition
Force	Operating Force	O.F	Force that applied to the actuator in order to move from free position to the operation switch.
	Release Force	R.F	Force that applied to the actuator in order to move from operation limit position to the returning position
	Total travel Force	T.F	Force that applied to the actuator in order to move from operation position to the operation limit position.
Movement	Pretravel	P.T	Travel distance or travel angle from free position of actuator to the operation position.

	Over travel	O.T	Travel distance or travel angle from operation position of actuator to the operation limit position.
	Movement Differential	M.D	Travel distance or travel angle from operation position of actuator to the returning position.
	Total travel	T.T	Travel distance or travel angle from free position of actuator to the operation limit position.
Position	Free Position	F.P	the position of actuator before applying force to the actuator from the outside.
	Operating Position	O.P	the position of actuator when running contact is accurately reversed in the free position state once external force is applied to the actuator.
	Release Position	R.P	the position of actuator when running contact is accurately reversed from operation position state to the free position state by decreasing force applied to the actuator.
	Total travel Position	T.T.P	the position of actuator when actuator reaches the actuator stopper.