Introduction to Moujen

Moujen began in 1961 in Taiwan, specializing in the manufacturing of electromechanical products. These include limit switches, micro switches, and pushbutton switches.

With Moujen products tested to ensure its service life to be more than half a million correct operations minimum, we pride ourselves in achieving a less than 1% global defect rate; which many global brands rely on. Moujen's products are certificated by many recognizable regulations in the world. These include TUV, UL, CE, CSA, CCC, and CE.

With over 60 years of experience supplying engineers and technicians all over the world, customers can confidently rely on Moujen's high quality products.

Commitment to Continuous Improvement

Moujen is an ISO registered company; we aim for the greatest customer satisfaction through continuous research and development and strict internal auditing. Our ongoing training programs and efficient operating procedures ensure that Moujen may operate lean while maintaining superior qualities.

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Last updated: 19 / Jul / 2021

All Product Series Quick Compare

Limit Switch		Positive Opening	Terminal Type	Contact Points	Contact Form(s)	Poles & Throws	Actuation Sequence(s)	Moujen Test: IP rating	Moujen Test: Oil resist	Moujen Test: Dust resist	Moujen Test: Water resist	Operating Temp.	AC options	DC options	min. size (mm)	Materials: Electrical Contact	Materials: Enclosure	Recognition
Heavy Duty	MJ-7	X	Screw	4	Z	SPDT-NC/NO	DB(1)-DM(2)	65	✓	✓	✓	-10 to 80 C	10A 125~300V	0.8A 125V, 0.4A 250V	72.9x40.6x39.9	99.9% Silver	Aluminum Alloy	ul,ce,ccc
	MJ1-6	X	Screw	3	C	SPDT	Break(1)-Make(2)	60, 65	X, ✓	✓	X, ✓	-10 to 80 C	15A 125~250V	0.5A 125V, 0.25A 250V	44.5x86x25.4	99.9% Silver	Aluminum Alloy	ul,ce,ccc
	M4-4	✓, X	Wire	3	C	SPDT	Break(1)-Make(2)	67	✓	✓	✓	-20 to 70 C	5A 125~250V	3A 30V, 0.4A 125V	48.5x40x16	99.9% Silver	Aluminum Alloy	csa,ce,ccc
Basic	MJ2-1	X	Screw	3	C	SPDT	Break(1)-Make(2)	40	X, ✓	X	X	-15 to 80 C	15A 125~250V	0.5A 125V, 0.25A 250V	25.5x49.2x17.5	99.9% Silver	PBT plastic + glass fiber, or Phenolic resin (PF)	ul,ce,ccc,vde
	MJ3-5	✓	Screw or Quick(250)	3	C	SPDT	Break(1)-Make(2)	40, 65	X, ✓	X, ✓	X, ✓	-25 to 80 C	5A 250V	4A 24V, 1.1A 125V, 0.4A 250V	26.5x49.2x17.5	99.9% Silver	PBT plastic + glass fiber	ce
Enclosed Basic	MN-5	X	Screw	3	C	SPDT	Break(1)-Make(2)	65	✓	✓	✓	-10 to 80 C	10A 250V	0.5A 125V	42x70.5x24.1	Silver-Nickel Alloy	PBT plastic	ul,ce,ccc
	ME-8	X	Screw	4	Z	SPDT-NC/NO	DB(1)-DM(2)	65	✓	✓	✓	-15 to 70 C	5A 250V	0.4A 125V	100.3x28x25	99.9% Silver	Zinc Alloy	ul,ce,ccc
	MEA-9	X	Screw	4	Z	SPDT-NC/NO	DB(1)-DM(2)	65	✓	✓	✓	-15 to 70 C	6A 125~250V	0.4A 125V	97x30x32	99.9% Silver	PA66 Nylon + glass fiber	ul,ce,ccc
	M8-8	✓, X	Clamp	4	Multiple (see catalog)	DPST	Multiple (see catalog)	65, 66	✓	✓	✓	-25 to 70 C	6A 24~240V, 4A 415V	10A 24V, 1A 110V, 0.5A 220V	55x31x33.5	99.9% Silver	Zinc Alloy	ce
	M4CZ-4	✓	Wire	3	C	SPDT	Break(1)-Make(2)	67	✓	✓	✓	-20 to 70 C	1.5A 250V	0.4A 125V	50x31x17	99.9% Silver	PPS plastic + glass fiber	ce,ccc
Miniature	MV-3	X	Quick(187)	2 or 3	A, or B, or C	SPDT, or SPST-NO or SPST-NC	Break(1)-Make(2), or Single Make, or Single Break	40	X	X	X	-25 to 120 C	5A 250V, 15A 250V	0.5A 125V	15.9x28.5x10.3	Silver-Nickel Alloy	PC + ABS	ul,ce,ccc,csa
	MVS-3	✓	Screw or Quick(250)	3	C	SPDT	Break(1)-Make(2)	40	X	X	X	-40 to 85 C	6A 250V	0.5A 125V	19x30.1x10.3	Silver-Nickel Alloy	PC plastic	csa,ce
	MVS-36	✓	Wire	2 or 3	A, or B, or C	SPDT, or SPST-NO or SPST-NC	Break(1)-Make(2), or Single Make, or Single Break	67	✓	✓	✓	-40 to 80 C	1.5A 230V	0.5A 60V	16x22.2x10.6	99.9% Silver	PC plastic	vde,en,ul
Micro	MZ-7	✓	Quick(110) or Wire	3	C	SPDT	Break(1)-Make(2)	40, 60, 67	X, ✓	X, ✓	X, ✓	-25 to 80 C	1.5A 250V	0.4A 125V	13.79x20x6.6	99.9% Silver	PC plastic	csa,ce
Foot	MFS	X	Wire	3 or 6	1 or 2C	SPDT or DPDT	Break(1)-Make(2), or DB(1)-DM(2)	40	X	X	X	-15 to 80 C	15A 250V	0.5A 125V	82x80.3x34.5, 171.5x83.4x56	Silver-Nickel Alloy	ABS or Aluminum	ce

Pushbutton	Positive Opening	Terminal Type	Contact Points	Contact Form(s)	Poles & Throws	Actuation Sequence(s)	Moujen Test: IP rating	Moujen Test: Oil resist	Moujen Test: Dust resist	Moujen Test: Water resist	Operating Temp.	AC options	DC options	min. size (mm)	Materials: Electrical Contact	Materials: Enclosure	Recognition
M6	X, ✓	Quick(110) or PCB	max 8 (2 contact modules with 1 lamp module)	1 or 2C, or B, or 2B	2xSPDT, or DPDT, or SPST-NC, or DPST-NC	Break(1)-Make(2), or DB(1)-DM(2), or Single Break, or Double Break	65	✓	✓	✓	-25 to 55 C	Switch: 2A 250V Neon: 1.2mA 220V	Switch: 0.4A 125V LED: 25mA 24V	ø16	99.9% Gold	Lens: PC plastic, Body: PBT plastic + glass fiber	csa,ce,ccc
M22	X, ✓	Screw or PCB	max 6 on 1 layer (2 contact blocks with 1 lamp block)	A, or B, or A+B, or 2A, or 2B	SPST-NO, SPST-NC, DPST-NO/NC, DPST-NO, DPST-NC	Single Make, or Single Break, or Make & Break, or Double Make, or Double Break	65	✓	✓	✓	-25 to 70 C	Switch: 6A 230V LED: 14mA 30~230V	Switch: 3A 24V LED: 14mA 30V	ø22	Silver-Nickel Alloy	PA66(nylon) + glass fiber, Trans. parts: PC plastic.	ul,ce
M22 Modular Contact Block	X, ✓	Screw or PCB	2	A, or B	SPST-NO or SPST-NC	Single Make, or Single Break	40	X	X	X	-25 to 70 C	6A 230V	3A 24V	29.3x37x10	Silver-Nickel Alloy	nylon + glass fiber	

Signal Tower		Positive Opening	Terminal Type	Contact Points	Contact Form(s)	Poles & Throws	Actuation Sequence(s)	Moujen Test: IP rating	Moujen Test: Oil resist	Moujen Test: Dust resist	Moujen Test: Water resist	Operating Temp.	AC options	DC options	min. size (mm)	Materials: Electrical Contact	Materials: Enclosure	Recognition
	MST	X	Wire	5	n/a	n/a	n/a	65	✓	✓	✓	-20 to 50 C	100~240V	12V, 24V	ø70	n/a	Unit: PC plastic Base: Zinc alloy	ce
	MST (3in1)	X	Wire	5	n/a	n/a	n/a	65	✓	✓	✓	-20 to 50 C	n/a	24V	ø70	n/a	Unit: PC plastic Base: Zinc alloy	ce

Table of Contents (i)

Table of Contents (ii)

Table of Contents (iii)

MJ-7 Series

Heavy Duty Limit Switch

Features

- ✓ Heavy duty aluminum limit switch
- ✓ Dust, water, and oil resistant; IP65
- ✓ PF1/2" or M20 threaded hole at bottom of switch
- ✓ 2-circuits in-1 switch
  - ⚠ Be extremely cautious when planning & installing 2 circuits!
- ✓ 45° and 90° actuator travel types
- ✓ Terminals protected with protruding plastic insulation fins on sides

Recognition(s)

- ✓ CE – EN60947
- ✓ UL – UL-508
- ✓ CCC – GB14048.5-2008
- ✓ RoHS Compliant
- ✓ Reach Unaffected

Characteristics

Positive Opening	Electrical Contact	Terminal Type	Contact Form(s)	Poles & Throws	Actuation Sequence(s)
No	4 Points	Screw	Form Z	SPDT-NC-NO	Double Break(1) Double Make(2)

Operating Temp.	AC Rated	DC Rated	IP	Oil Resist	Dust Resist	Water Resist	Operating Speed
-10 to 80 Celsius	10A 125-300V	0.4A 250V, 0.8A 125V	65	Yes	Yes	Yes	1mm to 2m/sec

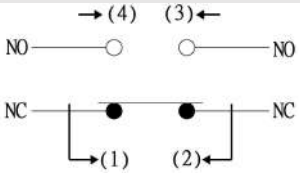
Operation Frequency	Contact Resistance	Insulation Resistance	Vibration
Mechanically: 120/min Electrically: 30/min	15mΩ max. (initial)	100MΩ min. (500VDC)	1.5mm amplitude at 10-55Hz

Storage Humidity	Service Life (min.)	Dielectric Strength
85% RH max	Mechanically: 15,000,000 operations Electrically: 500,000 operations	1000VAC, 50/60Hz for 1 minute between non-continuous terminals

Recommended tightening forces

Purpose	Screw type	Tightening
Mounting	M5	4.9~5.88 N·m
Enclosure cover		1.18±0.15 N·m
Screw terminal		0.25±0.05 N·m

Circuitry



◆ Materials

Actuation touch part	Electrical contact point	Enclosure
Nylon, or Stainless Steel, or Plastic	Silver 99.9%	Aluminum alloy

◆ Nomenclature

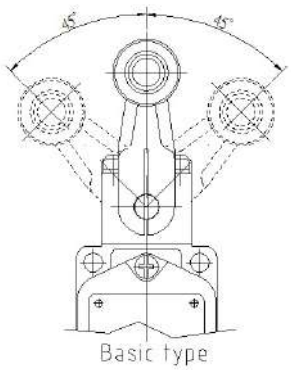
Series:	Actuator:	Through hole:
MJ –	**7101 –**	

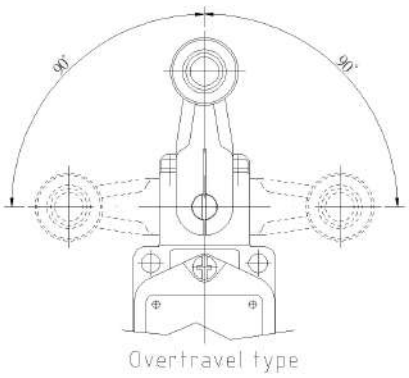
7101=Metallic Pin plunger
7102=Metallic Roller plunger
7102R=Cross metallic roller plunger
7103=Metallic Ball bearing plunger
7104=Side rotary, metallic roller, 45° travel
7104-PT=Side rotary, Teflon roller, 45° travel
7104-26= Side rotary, ⌀50mm rubber roller, 45° travel
7106=Spring, metallic coil
7107=Side rotary, adjustable metallic rod, 45° travel
7107L=Side rotary, adjustable metallic rod, long, 45° travel
7108=Side rotary, adjustable metallic roller, 45° travel
7108-PT=Side rotary, adjustable Teflon roller, 45° travel
7108-26= Side rotary, adjustable ⌀50mm rubber roller, 45° travel

Blank=PF1/2”
M20=M20 thread
(cable gland excluded)

Side Rotary, Fork Lever Lock (Yoke), Nylon rollers
3241=Front/Back Facing nylon rollers, 90° travel
3242=Front/Back Facing nylon rollers, 90° travel
3243=Front Facing nylon rollers, 90° travel
3244=Back Facing nylon rollers, 90° travel

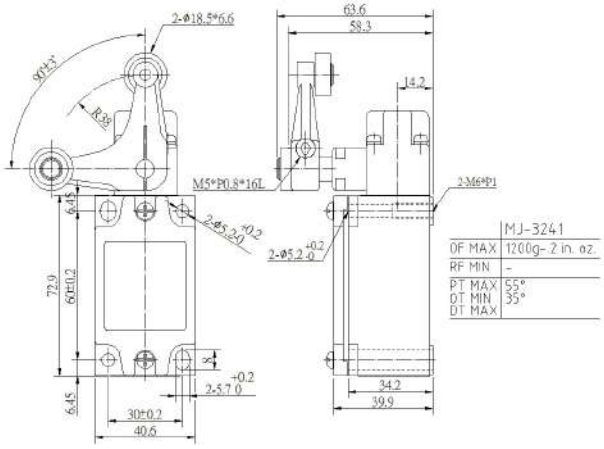
Over Travel, 90° travel
7204=Side rotary, metallic roller
7204-26=Side rotary, ⌀50mm rubber roller
7207=Side rotary, adjustable metallic rod
7207L=Side rotary, adjustable metallic rod, long
7208=Side rotary, adjustable metallic roller
7208-26= Side rotary, adjustable ⌀50mm rubber roller



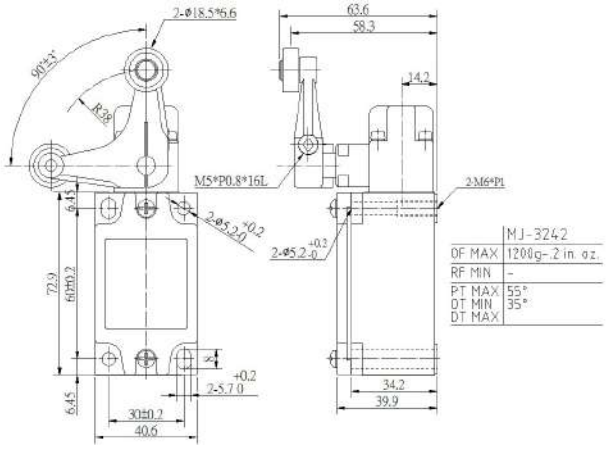


◆ Dimensions & Operating Characteristics

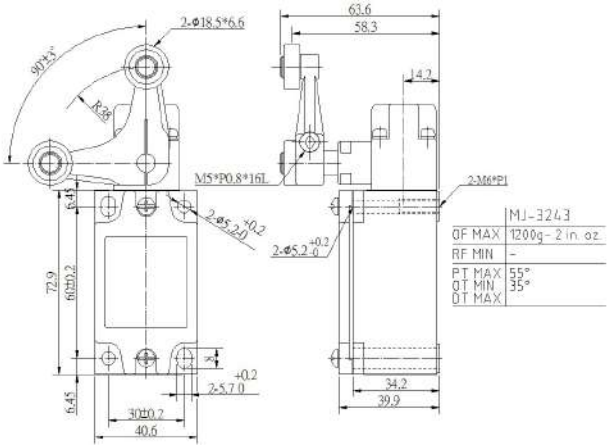
*Measurements in *millimeters*



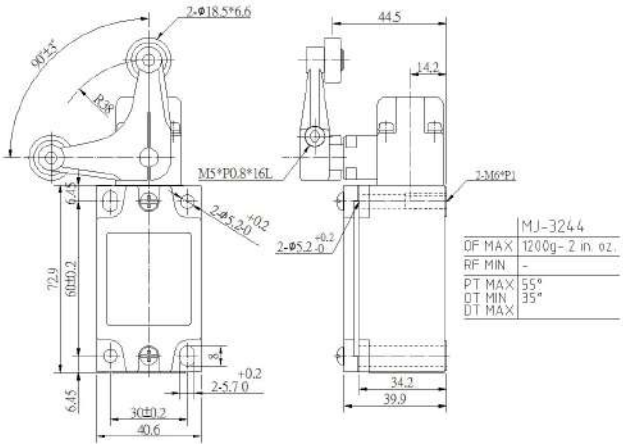
	MJ-3241
OF MAX	1200g-.2 in. oz.
RF MIN	-
PT MAX	55°
OT MIN	35°
DT MAX	



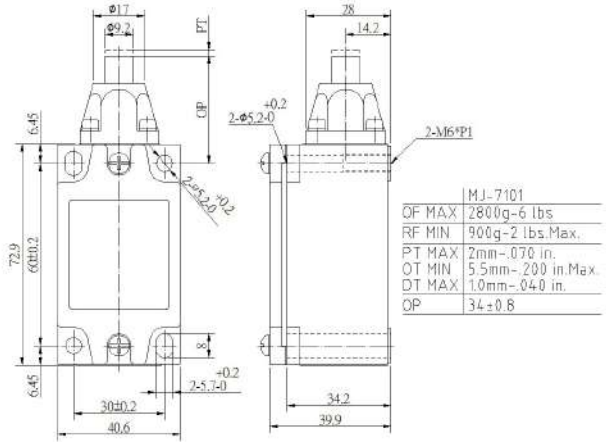
	MJ-3242
OF MAX	1200g-.2 in. oz.
RF MIN	-
PT MAX	55°
OT MIN	35°
DT MAX	



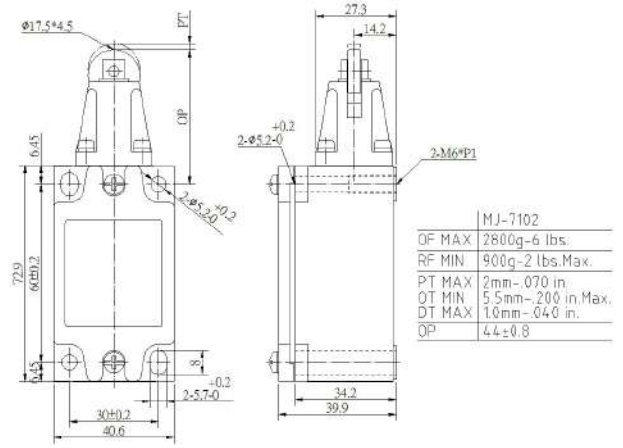
	MJ-3243
OF MAX	1200g-.2 in. oz.
RF MIN	-
PT MAX	55°
OT MIN	35°
DT MAX	



	MJ-3244
OF MAX	1200g-.2 in. oz.
RF MIN	-
PT MAX	55°
OT MIN	35°
DT MAX	



	MJ-7101
OF MAX	2800g-6 lbs.
RF MIN	900g-2 lbs.Max.
PT MAX	2mm-.070 in.
OT MIN	5.5mm-.200 in.Max.
DT MAX	1.0mm-.040 in.
OP	34±0.8



	MJ-7102
OF MAX	2800g-6 lbs.
RF MIN	900g-2 lbs.Max.
PT MAX	2mm-.070 in.
OT MIN	5.5mm-.200 in.Max.
DT MAX	1.0mm-.040 in.
OP	44±0.8

MJ-3241

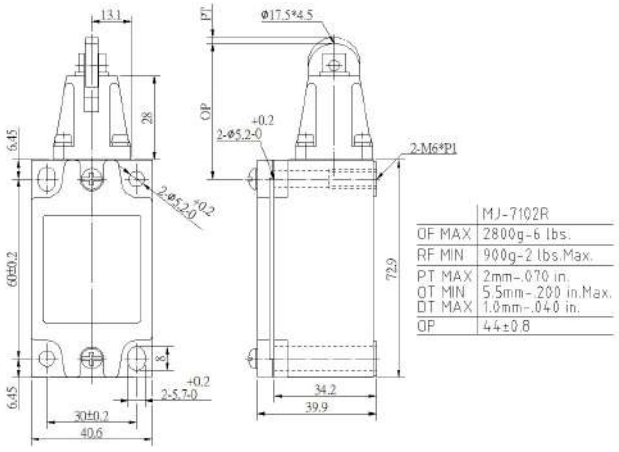
MJ-3242

MJ-3243

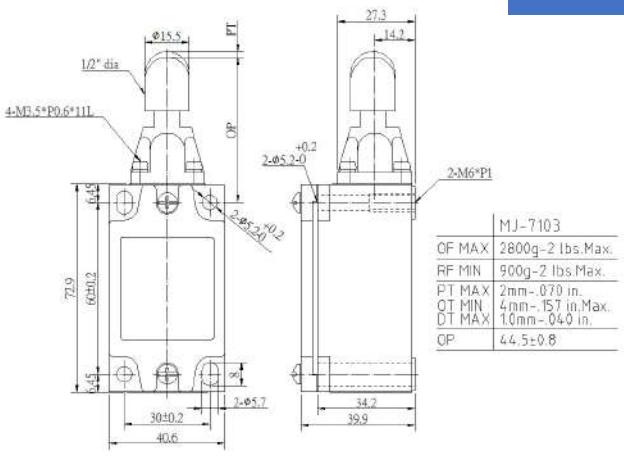
MJ-3244

MJ-7101

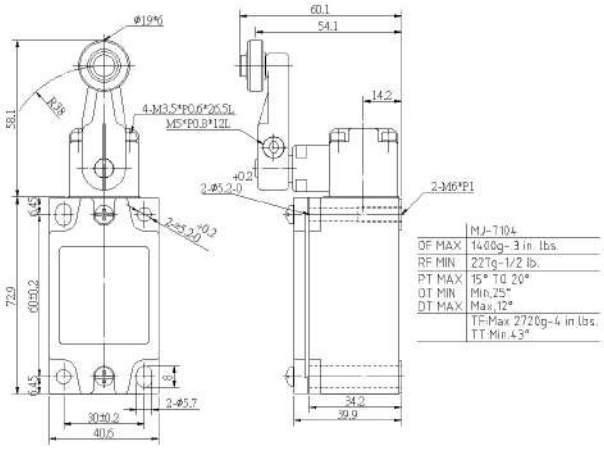
MJ-7102



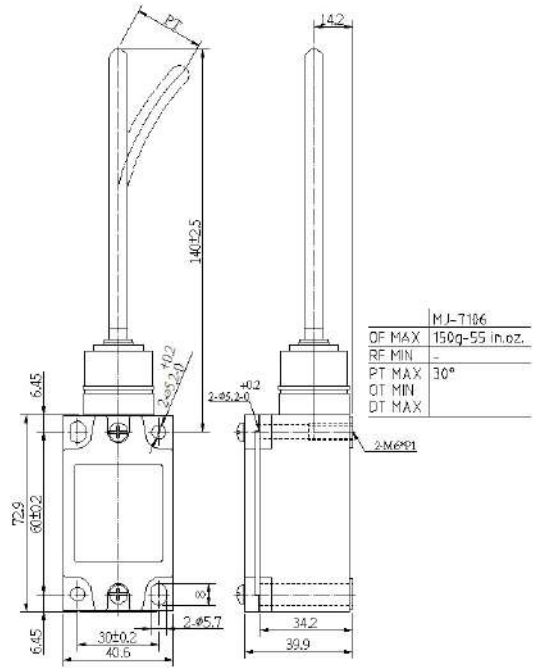
	MJ-7102R
OF MAX	2800g-6 lbs.
RF MIN	900g-2 lbs.Max.
PT MAX	2mm-.070 in.
OT MIN	5.5mm-.200 in.Max.
DT MAX	1.0mm-.040 in.
OP	44±0.8



	MJ-7103
OF MAX	2800g-2 lbs.Max.
RF MIN	900g-2 lbs.Max.
PT MAX	2mm-.070 in.
OT MIN	4mm-.157 in.Max.
DT MAX	1.0mm-.040 in.
OP	44.5±0.8



	MJ-7104
OF MAX	1400g-3 in lbs.
RF MIN	227g-1/2 lb.
PT MAX	15° TO 20°
OT MIN	Min.25°
DT MAX	Max.12°
	TF:Max 2720g-4 in.lbs. TT:Min.43°



	MJ-7106
OF MAX	150g-55 in.oz.
RF MIN	-
PT MAX	30°
OT MIN	
DT MAX	

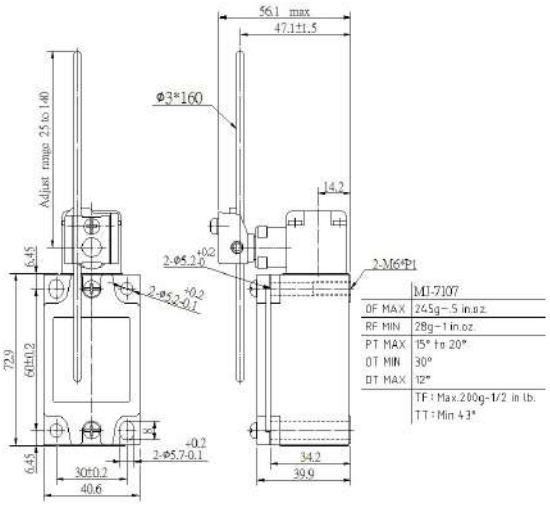
MJ-7102R

MJ-7103

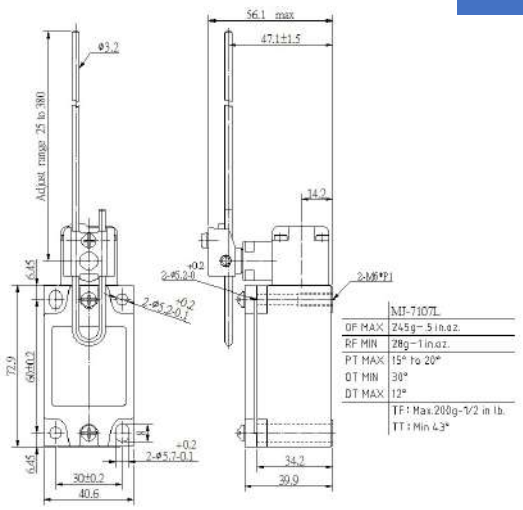
MJ-7104

MJ-7106

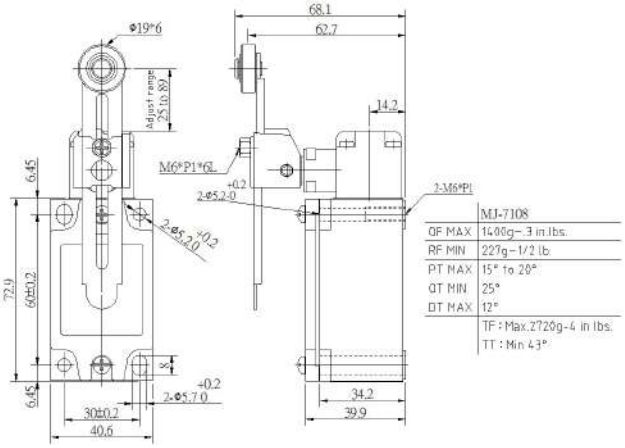
MJ-7



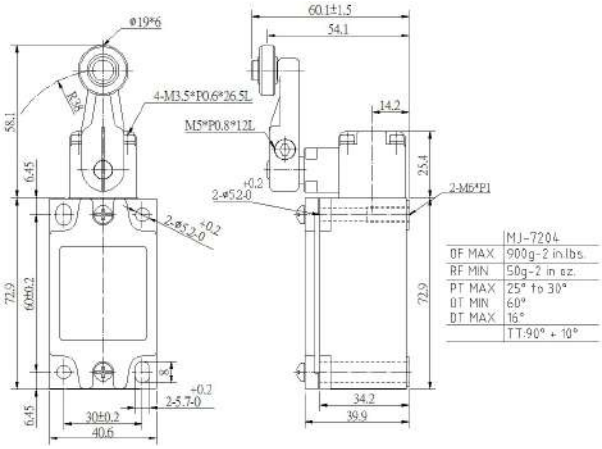
	MJ-7107
OF MAX	245g-.5 in.oz.
RF MIN	28g-1 in.oz.
PT MAX	15° to 20°
OT MIN	30°
DT MAX	12°
	TF : Max.200g-1/2 in lb.
	TT : Min 43°



	MJ-7107L
OF MAX	245g-.5 in.oz.
RF MIN	28g-1 in.oz.
PT MAX	15° to 20°
OT MIN	30°
DT MAX	12°
	TF : Max.200g-1/2 in lb.
	TT : Min 43°



	MJ-7108
OF MAX	1400g-.3 in.lbs.
RF MIN	227g-1/2 lb.
PT MAX	15° to 20°
OT MIN	25°
DT MAX	12°
	TF : Max.2720g-4 in lbs.
	TT : Min 43°



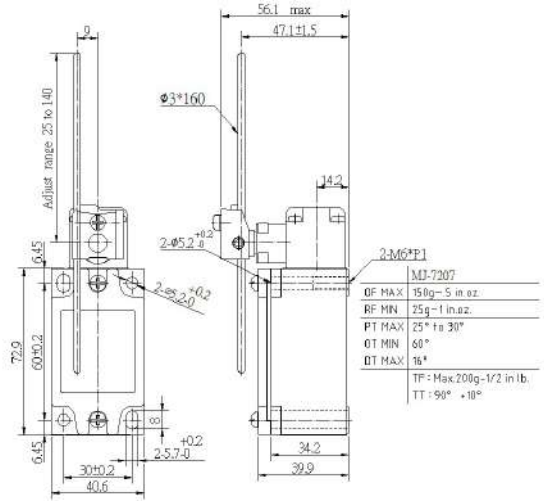
	MJ-7204
OF MAX	900g-2 in.lbs.
RF MIN	50g-2 in.oz.
PT MAX	25° to 30°
OT MIN	60°
DT MAX	16°
	TT 90° + 10°

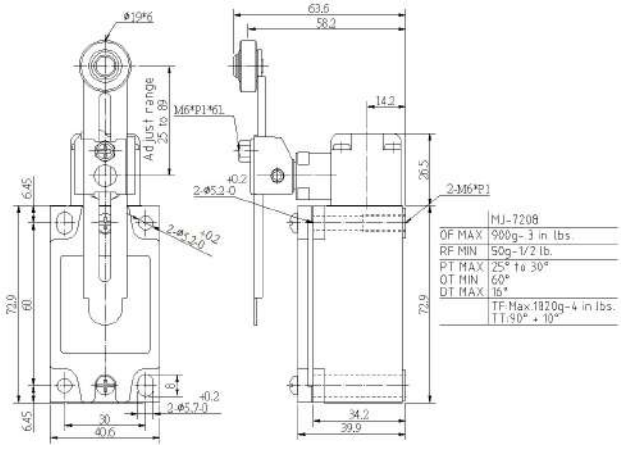
MJ-7107

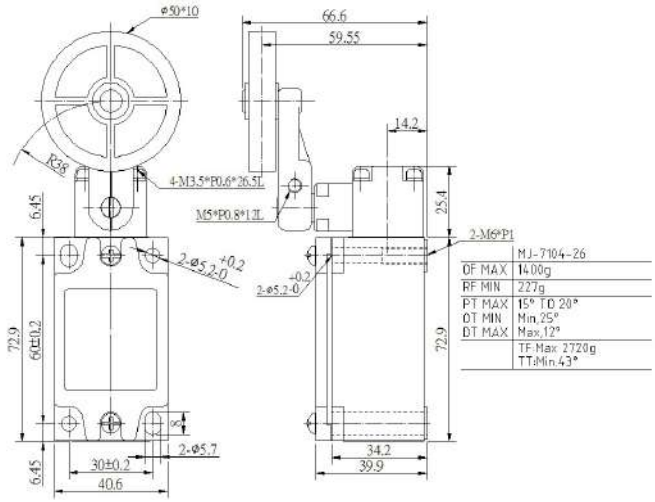
MJ-7107L

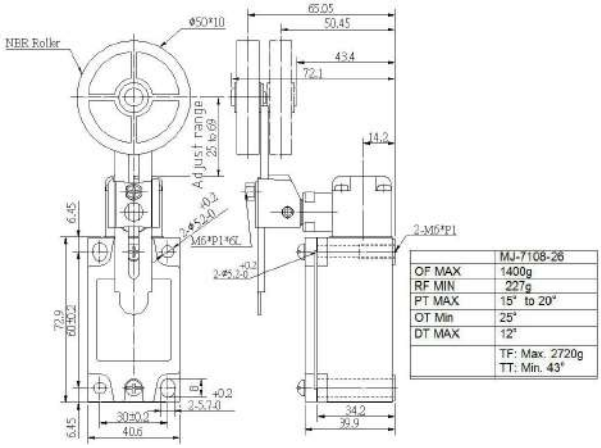
MJ-7108

MJ-7204









MJ-7207

MJ-7208

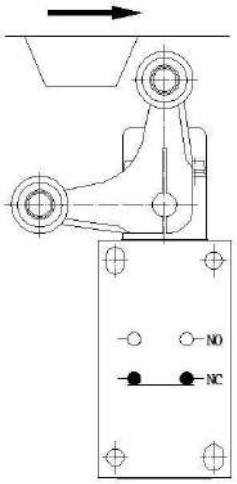
MJ-7104-26

MJ-7108-26

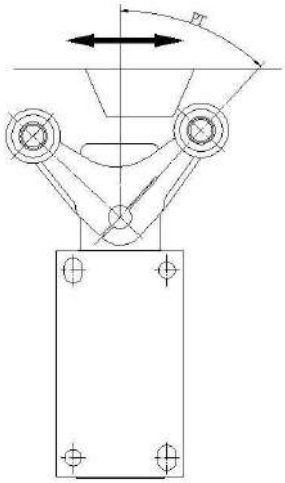
◆ Handling and Usage

Operation of Fork Lock Lever switches:

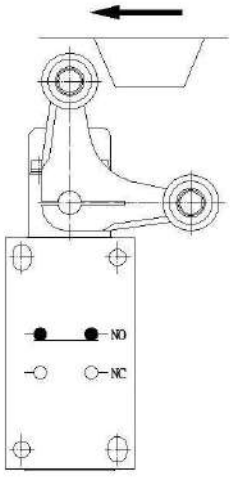
NC terminal: ON



NO terminal: ON

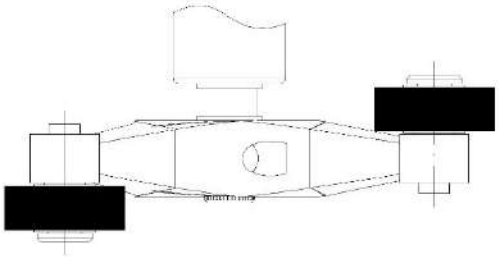


NO terminal: ON

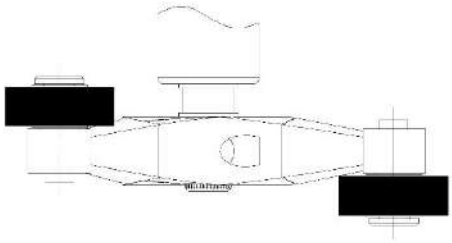


Fork Lock Lever roller positions:

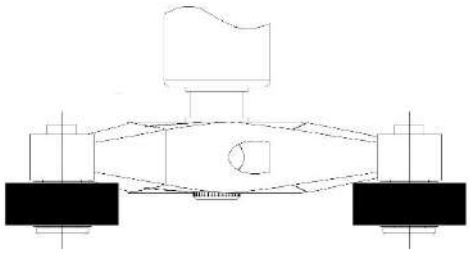
MJ-3241



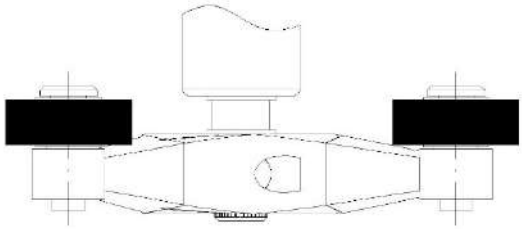
MJ-3242



MJ-3243



MJ-3244



M4-4 Series

Compact Heavy Duty Limit Switch

◆ Features

- ✓ Compact heavy duty aluminum limit switch
- ✓ Complete seal; IP67-rated
- ✓ Positive-opening type available
- ✓ VCTF or SJTO(18 AWG) bottom cable-out 2 or 3 meters; optional side-out
- ✓ AC or DC M12 quick connect type available

◆ Recognition(s)

- ✓ CE – EN60947
- ✓ UL – UL-508
- ✓ CCC – GB14048.5-2008
- ✓ RoHS Compliant
- ✓ Reach Unaffected

◆ Characteristics

Positive Opening	Electrical Contact	Terminal Type	Contact Form(s)	Poles & Throws	Actuation Sequence(s)
Yes & No	3 Points	Wire	Form C	SPDT	Break(1) Make(2)

Operating Temp.	AC Rated	DC Rated	IP	Oil Resist	Dust Resist	Water Resist	Operating Speed
-20 to 70 Celsius	5A 125-250V	0.4A 125V,	67	Yes	Yes	Yes	0.1mm to 0.5m/sec

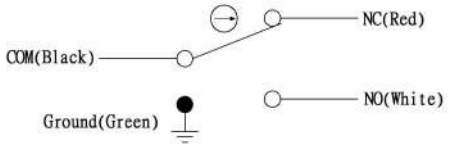
Operation Frequency	Contact Resistance	Insulation Resistance	Vibration
Mechanically: 120/min Electrically: 30/min	300mΩ max. (initial)	100MΩ min. (500VDC)	1.5mm amplitude at 10-55Hz

Storage Humidity	Service Life (min.)	Dielectric Strength
85% RH max	Mechanically: 2,000,000 operations 500,000 (positive opening) Electrically: 200,000 operations	1000VAC, 50/60Hz for 1 minute between non-continuous terminals

Recommended tightening forces

Purpose	Screw type	Tightening
Mounting	M5	4.9~5.88N·m

Circuitry

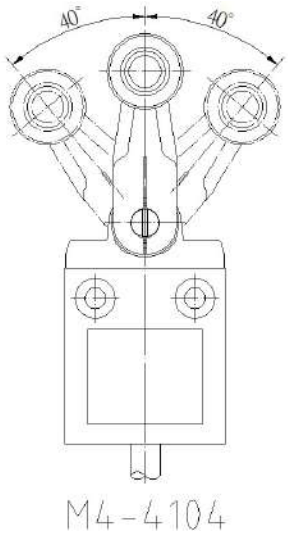


◆ Materials

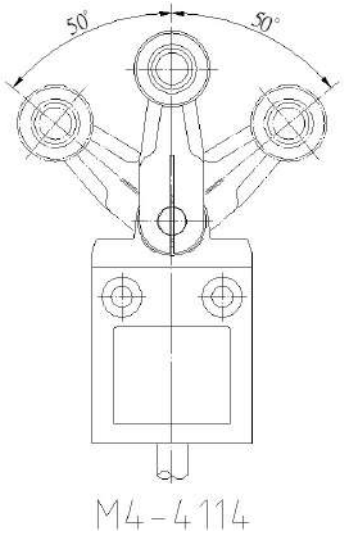
Actuation touch part	Electrical contact point	Enclosure
Stainless Steel	Silver 99.9%	Aluminum alloy

◆ Nomenclature

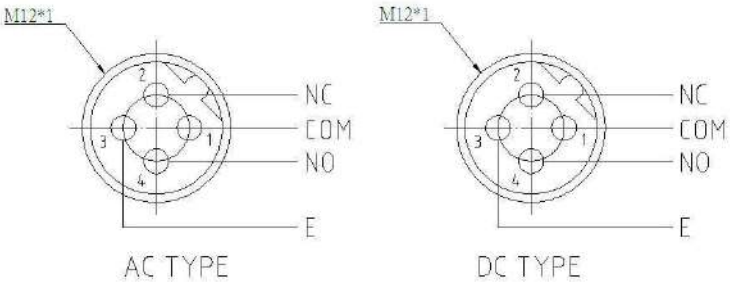
Series:	Actuator:	Connection type:	Positive opening:	Cable:
M4 –	**4101 –**	**Q –**	**Z –**	**AC**
	4101=Plunger 4102=Roller plunger 4102R=Cross roller plunger 4103=Bevel plunger 4104=Side rotary, roller 40° 4114=Side rotary, roller 50° 4106=Spring, coil Actuator with rubber boot 4111=Plunger 4112=Roller plunger 4112R=Cross roller plunger Panel mount actuator 4310=Plunger 4311=Roller plunger 4312=Cross roller plunger	*Blank*=Bottom cable-out S=Side cable-out Q=M12 Quick connect	*Blank*=None Z=Yes	2=2m VCTF 2L=2m SJTO 3=3m VCTF 3L=3m SJTO AC=AC Type (only applicable for suffix "Q" M12 quick connect type) DC=DC Type (only applicable for suffix "Q" M12 quick connect type)



M4-4104



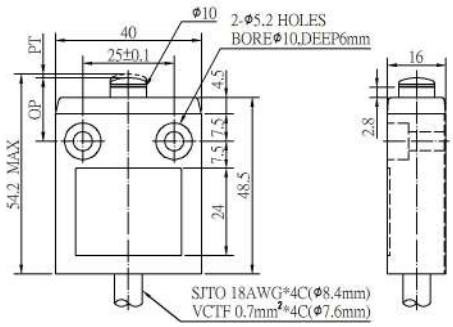
M4-4114



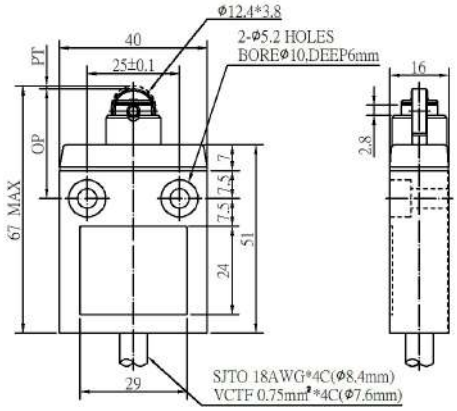
M12 Quick Connectors (AC/DC)

◆ Dimensions & Operating Characteristics

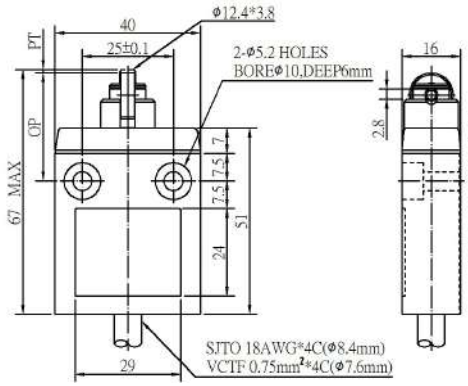
*Measurements in *millimeters*
*Connection types and cable lengths do not affect dimensions and operating characteristics



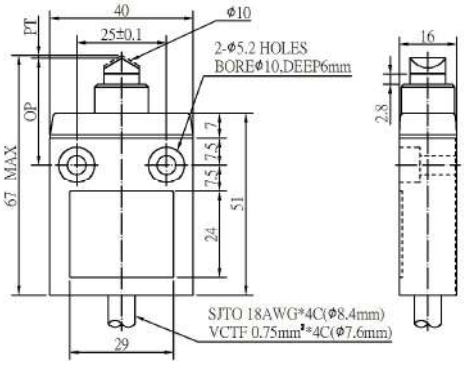
M4-4101	
OF MAX	1200g
RF MIN	450g
PT MAX	1.8mm
OT MIN	3mm
MD MAX	0.2mm
OP	15.7±1mm



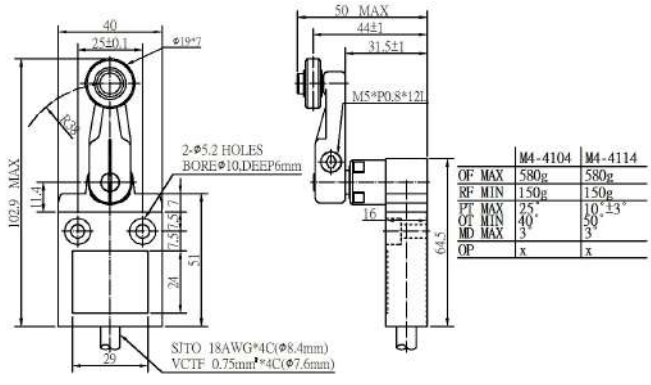
M4-4102	
OF MAX	1200g
RF MIN	450g
PT MAX	1.8mm
OT MIN	3mm
MD MAX	0.2mm
OP	28.5±1mm



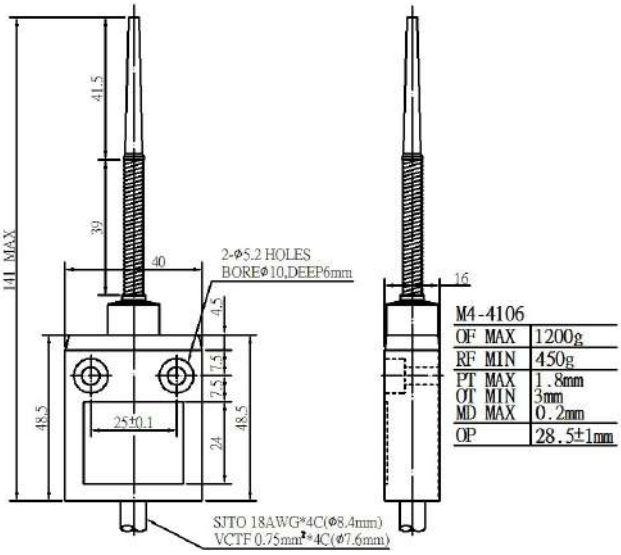
M4-4102R	
OF MAX	1200g
RF MIN	450g
PT MAX	1.8mm
OT MIN	3mm
MD MAX	0.2mm
OP	28.5±1mm



M4-4103	
OF MAX	1200g
RF MIN	450g
PT MAX	1.8mm
OT MIN	3mm
MD MAX	0.2mm
OP	28.5±1mm



	M4-4104	M4-4114
OF MAX	580g	580g
RF MIN	150g	150g
PT MAX	25°	10°±3°
OT MIN	40°	50°
MD MAX	3°	3°
OP	x	x



M4-4106	
OF MAX	1200g
RF MIN	450g
PT MAX	1.8mm
OT MIN	3mm
MD MAX	0.2mm
OP	28.5±1mm

M4-4101

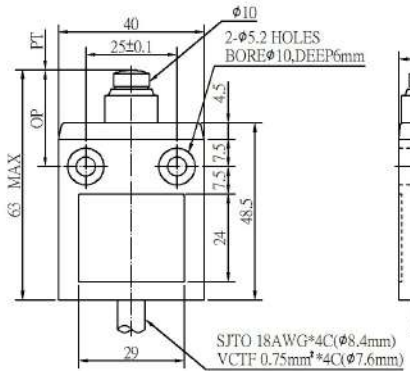
M4-4102

M4-4102R

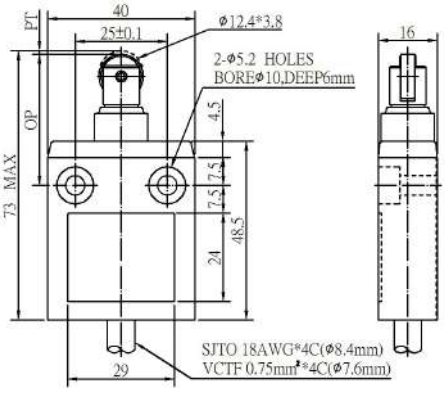
M4-4103

M4-4104/4114

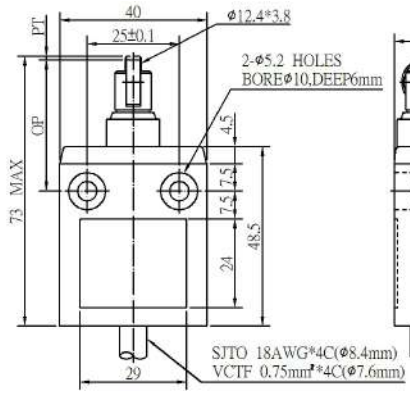
M4-4106



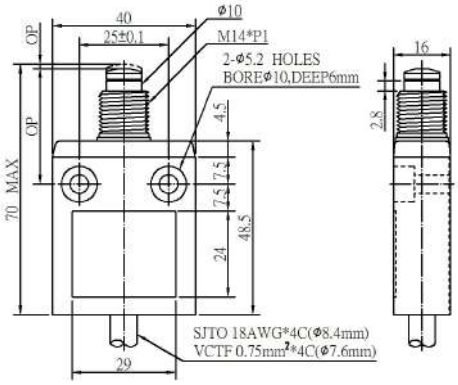
M4-4111	
OF MAX	1200g
RF MIN	450g
PT MAX	1.8mm
OT MIN	3mm
MD MAX	0.2mm
OP	28.5±1mm



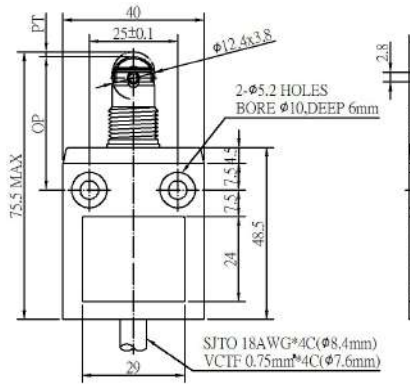
M4-4112	
OF MAX	1800g
RF MIN	450g
PT MAX	1.8mm
OT MIN	3mm
MD MAX	0.2mm
OP	34.3±1mm



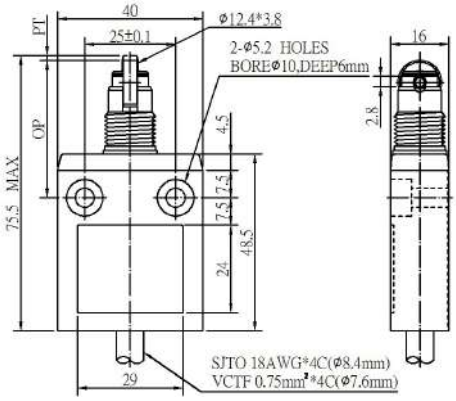
M4-4112R	
OF MAX	1800g
RF MIN	450g
PT MAX	1.8mm
OT MIN	3mm
MD MAX	0.2mm
OP	34.3±1mm



M4-4310	
OF MAX	1200g
RF MIN	450g
PT MAX	1.8mm
OT MIN	3mm
MD MAX	0.2mm
OP	31.2±1mm



M4-4311	
OF MAX	1200g
RF MIN	450g
PT MAX	1.8mm
OT MIN	3mm
MD MAX	0.2mm
OP	36.8±1mm



M4-4312	
OF MAX	1200g
RF MIN	450g
PT MAX	1.8mm
OT MIN	3mm
MD MAX	0.2mm
OP	36.8±1mm

M4-4111

M4-4112

M4-4112R

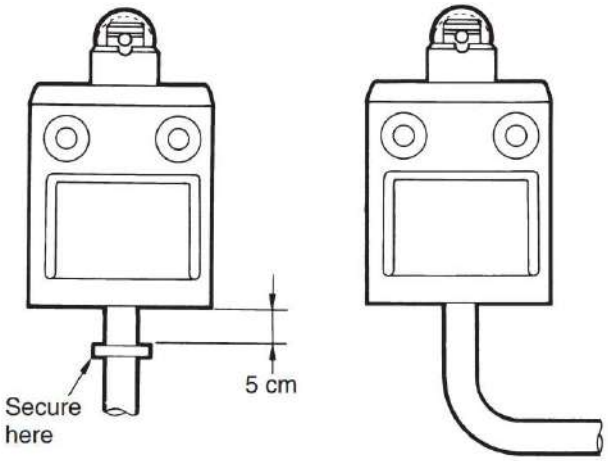
M4-4310

M4-4311

M4-4312

◆ Handling and Usage

The bottom of the Switch at the cable outlet is resin-molded. Secure the cable at a point 5 cm from the Switch bottom to prevent exertion of excess force on the cable.
When bending the cable, provide a bending radius of 45 mm min. so as not to damage the cable insulation or sheath. Excessive bending may cause fire or leakage current.



MJ1-6 Series

Heavy Duty Limit Switch

◆ Features

- ✓ Heavy duty aluminum limit switch
- ✓ Dust, water, and oil resistant on select models
- ✓ PF 1/2 inch threaded hole at side of switch
- ✓ Includes two M4 screws for side mounting

◆ Recognition(s)

- ✓ CE – EN60947
- ✓ UL – UL-508
- ✓ CCC – GB14048.5-2008
- ✓ RoHS Compliant
- ✓ Reach Unaffected

◆ Characteristics

Positive Opening	Electrical Contact	Terminal Type	Contact Form(s)	Poles & Throws	Actuation Sequence(s)
No	3 Points	Screw	Form C	SPDT	Break(1) Make(2)

Operating Temp.	AC Rated	DC Rated	IP	Oil Resist	Dust Resist	Water Resist	Operating Speed
-10 to 80 Celsius	15A 125-250V	0.5A 125V	60, 65	Yes & No	Yes	Yes & No	0.01mm to 1m/sec

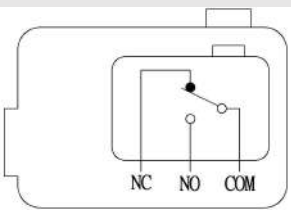
Operation Frequency	Contact Resistance	Insulation Resistance	Vibration
Mechanically: 240/min Electrically: 20/min	15mΩ max. (initial)	100MΩ min. (500VDC)	1.5mm amplitude at 10-55Hz

Storage Humidity	Service Life (min.)	Dielectric Strength
85% RH max	Mechanically: 20,000,000 operations Electrically: 500,000 operations	1000VAC, 50/60Hz for 1 minute between non-continuous terminals

Recommended tightening forces

Purpose	Screw type	Tightening
Mounting	M4	1.18~1.37 N·m
Enclosure cover		1.18±0.15 N·m
Screw terminal		0.25±0.05 N·m

Circuitry



◆ Materials

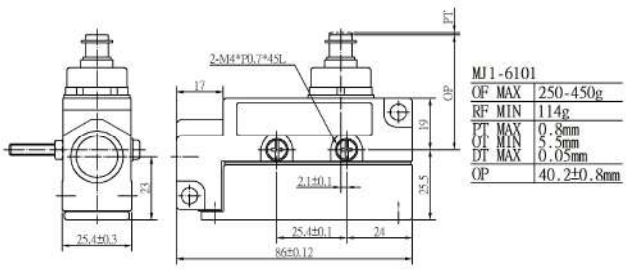
Actuation touch part	Electrical contact point	Enclosure
Stainless Steel	Silver 99.9%	Aluminum alloy

◆ Nomenclature

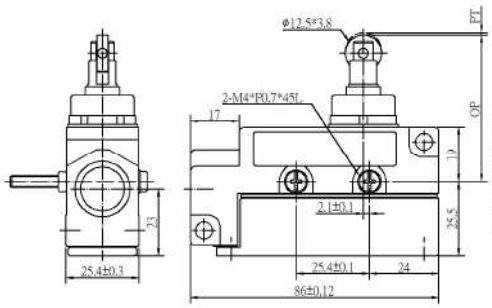
Series:	Actuator:	Through hole:
MJ1 –	**6101 –**	
	With-out actuator seal boot (IP60) 6101=Pin plunger 6102=Roller plunger 6102R=Cross roller plunger 6104=Arm lever, roller 6107=Arm lever, arm roller, 1-way action With actuator seal boot (IP65) 6111=Sealed pin plunger 6112=Sealed roller plunger 6112R=Sealed cross roller plunger 6114=Sealed arm lever, roller 6106=Sealed spring, coil 6117=Sealed arm lever, roller, 1-way action	*Blank*=PF1/2” thread M20=M20 thread (cable gland excluded)

◆ Dimensions & Operating Characteristics

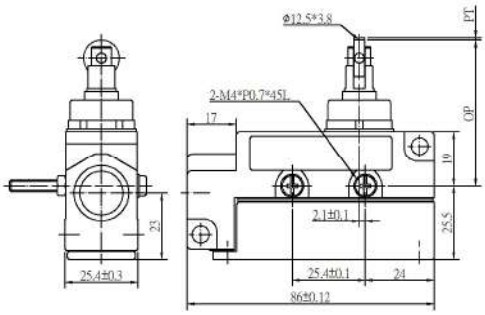
*Measurements in *millimeters*



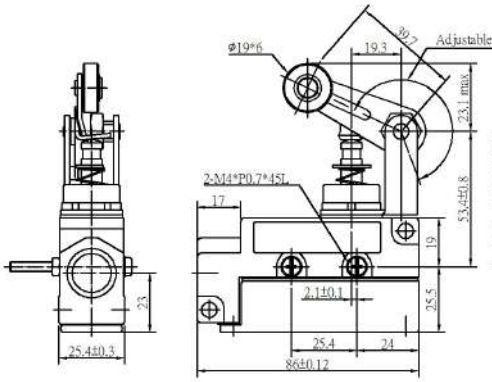
MJ1-6101	
OF MAX	250-450g
RF MIN	114g
PT MAX	0.8mm
OT MIN	3.5mm
DT MAX	0.05mm
OP	40.2±0.8mm



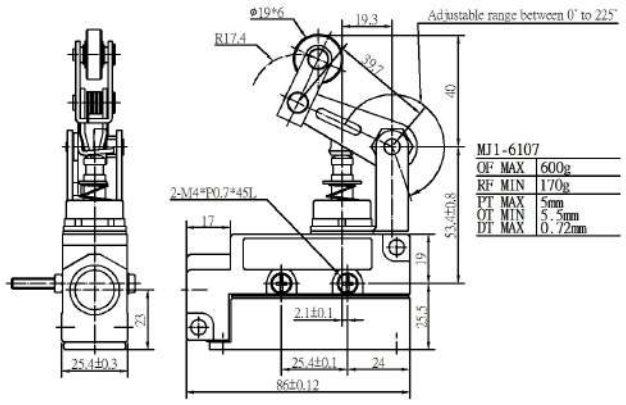
MJ1-6102	
OF MAX	250-450g
RF MIN	114g
PT MAX	0.8mm
OT MIN	3.6mm
DT MAX	0.05mm
OP	50.7±0.8mm



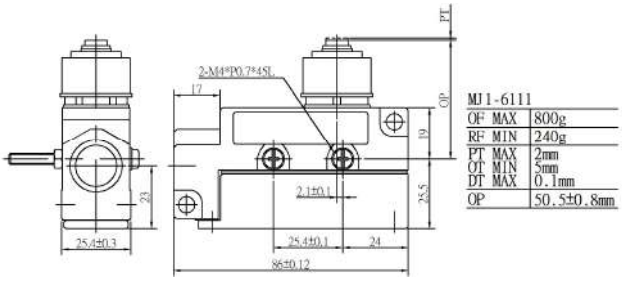
MJ1-6102R	
OF MAX	250-450g
RF MIN	114g
PT MAX	0.8mm
OT MIN	3.6mm
DT MAX	0.05mm
OP	50.7±0.8mm



MJ1-6104	
OF MAX	570g
RF MIN	170g
PT MAX	4mm
OT MIN	6mm
DT MAX	0.4mm



MJ1-6107	
OF MAX	600g
RF MIN	170g
PT MAX	5mm
OT MIN	5.5mm
DT MAX	0.72mm



MJ1-6111	
OF MAX	800g
RF MIN	240g
PT MAX	2mm
OT MIN	5mm
DT MAX	0.1mm
OP	50.5±0.8mm


MJ1-6101

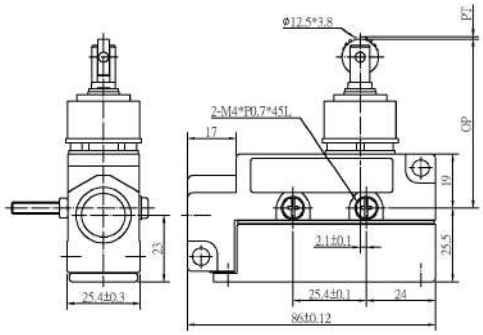

MJ1-6102


MJ1-6102R

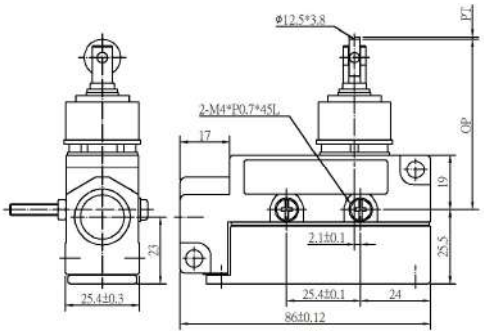

MJ1-6104


MJ1-6107

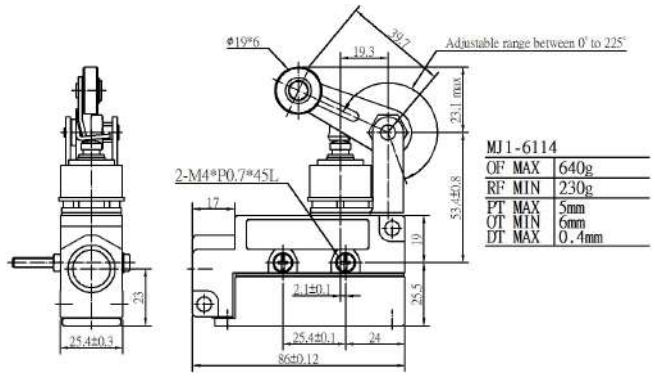

MJ1-6111



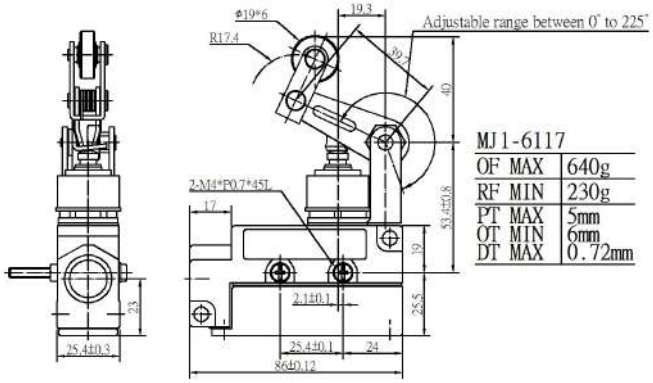
MJ1-6112	
OF MAX	500g
RF MIN	100g
PT MAX	2mm
OT MIN	3.5mm
DT MAX	0.12mm
OP	49.7±0.8mm



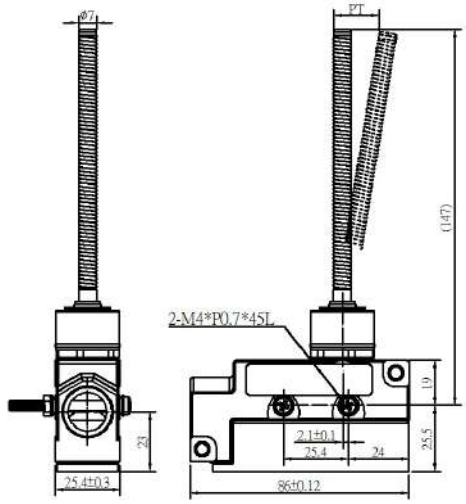
MJ1-6112R	
OF MAX	500g
RF MIN	100g
PT MAX	2mm
OT MIN	3.5mm
DT MAX	0.12mm
OP	49.7±0.8mm



MJ1-6114	
OF MAX	640g
RF MIN	230g
PT MAX	5mm
OT MIN	6mm
DT MAX	0.4mm



MJ1-6117	
OF MAX	640g
RF MIN	230g
PT MAX	5mm
OT MIN	6mm
DT MAX	0.72mm



MJ1-6106	
OF MAX	190g
PT MAX	2.6mm

MJ1-6112

MJ1-6112R

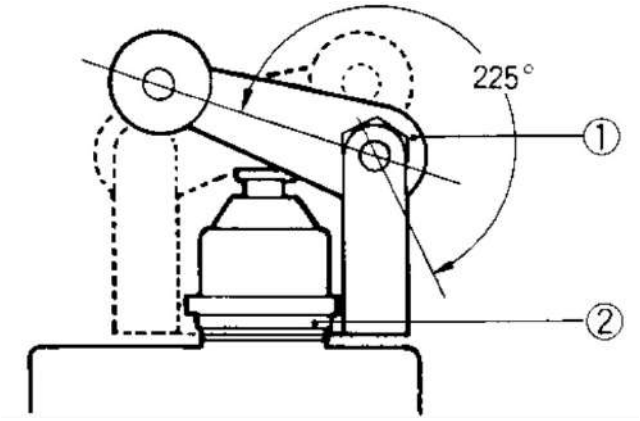
MJ1-6114

MJ1-6117

MJ1-6106

◆ Handling and Usage

Adjusting the arm lever roller:



1. The roller arm can be set freely within a range of 225° after loosening the nut.
2. The roller arm mounting bracket can be set in any direction after loosening the nut.

MJ2-1 Series

Basic Limit Switch

◆ Features

- ✓ Sealed actuator variants for better oil resistance
- ✓ High temp. resistant phenolic enclosure types (T385J)
- ✓ Fire resistant phenolic enclosure types (T200HF)

◆ Recognition(s)

- ✓ CE – EN61058-1
- ✓ UL – UL-508
- ✓ CCC – GB14048.5-2008
- ✓ VDE – 0630/04.86
- ✓ RoHS Compliant
- ✓ Reach Unaffected

◆ Characteristics

Positive Opening	Electrical Contact	Terminal Type	Contact Form(s)	Poles & Throws	Actuation Sequence(s)
No	3 Points	Screw	Form C	SPDT	Break(1) Make(2)

Operating Temp.	AC Rated	DC Rated	IP	Oil Resist	Dust Resist	Water Resist	Operating Speed
-15 to 80 C -15 to 150 C (phenolic)	15A 125V-250V, 20A 125V-250V	0.5A 125V, 0.25A 250V	40	Yes or No	No	No	0.01mm to 1m/sec

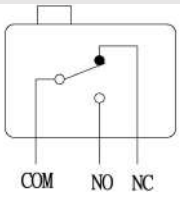
Operation Frequency	Contact Resistance	Insulation Resistance	Vibration
Mechanically: 240/min Electrically: 20/min	15mΩ max. (initial)	100MΩ min. (500VDC)	1.5mm amplitude at 10-55Hz

Storage Humidity	Service Life (min.)	Dielectric Strength
85% RH max	Mechanically: 20,000,000 operations Electrically: 500,000 operations	1000VAC, 50/60Hz for 1 minute between non-continuous terminals 2000VAC, 50/60Hz for 1 minute between current-carry part and ground

Recommended tightening forces

Purpose	Screw type	Tightening
Mounting	M4	1.18~1.37 N·m
Panel Mount Screw Nut		2.94~4.92 N·m
Screw terminal		0.25±0.05 N·m

Circuitry



◆ Materials

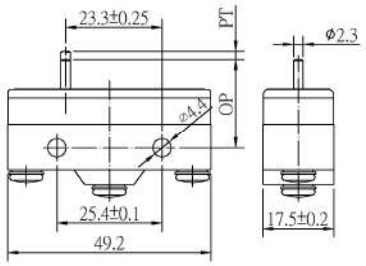
Actuation touch part	Electrical contact point	Enclosure
Nylon, Stainless Steel, Teflon, POM, Nickel plated copper or brass	Silver 99.9%	PBT plastic with glass fiber, or Phenolic resin (T385J or T200HF)

◆ Nomenclature

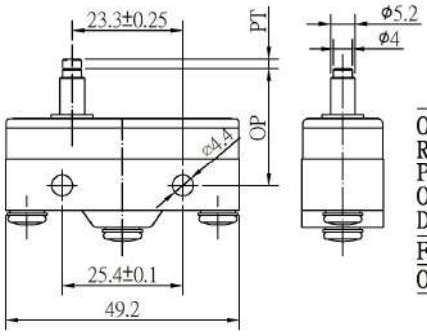
Series:	Actuator:	Terminal:	Enclosure Material:	Amps:
MJ2 –	**1704 –**		**PH –**	**20**
	1300=Nickel plated copper Pin plunger 1305=Nickel plated copper Pin plunger, tall 1306=Nickel plated copper Plunger, short 1307=Nickel plated copper Plunger, tall, panel mount 1308=SUS303 Roller metal plunger, panel mount 1309=SUS303 Cross roller metal plunger, panel mount 1326=Teflon Plunger, short 1327=Teflon Plunger, tall, panel mount 1328=Teflon Roller metal plunger, panel mount 1329=Teflon Cross roller metal plunger, panel mount 1500=Cat whisker metal lever 1503=POM Roller metal lever, r31.9mm, 1-way action 1504=POM Roller metal lever, r53.8mm, 1-way action 1506=Simulated roller metal lever, r28.1mm 1523=SUS303 Roller metal lever, r31.9mm, 1-way act 1524=SUS303 Roller metal lever, r53.8mm, 1-way act 1701=Straight metal Lever, r63.5mm 1702=Straight metal Lever, r38.2mm 1703=POM Roller metal lever, r48.5mm 1704=POM Roller metal lever, r26.6mm 1705=POM Roller metal lever, r37.2mm 1706=Straight metal Lever, r28.7mm 1707=Straight metal Lever, r53mm 1708=PBT plastic lever, Red pushbutton type 1723=Nickel plated brass Roller metal lever, r48.5mm 1724=Nickel plated brass Roller metal lever, r26.6mm 1725=Nickel plated brass Roller metal lever, r37.2mm With Oil Resist Boot Seals 1315=Nickel plated copper Pin plunger, tall 1316=Nickel plated copper Plunger, short 1317=Nickel plated copper Plunger, tall 1336=Teflon Plunger, short 1337=Teflon Plunger, tall 1513=POM Roller metal lever, r31.9mm, 1-way action 1514=POM Roller metal lever, r53.8mm, 1-way action 1516=Simulated roller metal lever, r28.1mm 1533=SUS303 Roller metal lever, r31.9mm, 1-way act 1534=SUS303 Roller metal lever, r53.8mm, 1-way act 1711=Straight metal lever, r63.5mm 1712=Straight metal lever, r38.2mm 1713=POM Roller metal lever, r48.5mm 1714=POM Roller metal lever, r26.6mm 1733=Nickel plated brass Roller metal lever, r48.5mm 1734=Nickel plated brass Roller metal lever, r26.6mm	*Blank*=Screw A=Fast (250, t=6.37mm) S=Soldering	*Blank*=Plastic PH=Phenolic (T385J) FR=Phenolic (T200HF)	*Blank*=15A 20=20A (only applicable to Phenolic enclosure types)

◆ Dimensions & Operating Characteristics

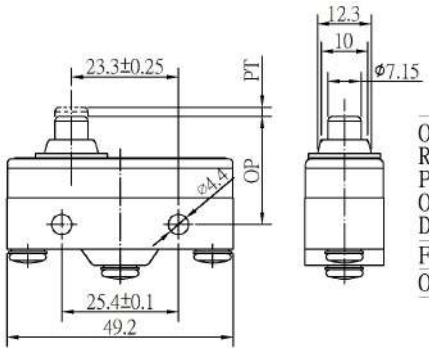
*Measurements in *millimeters*



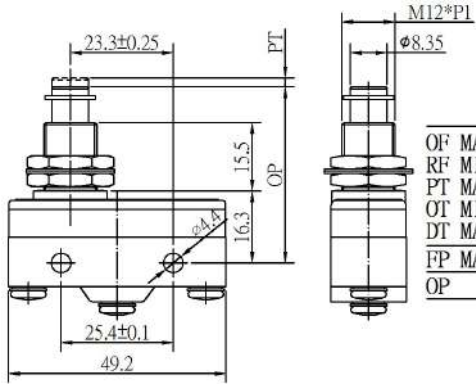
	MJ2-1300
OF MAX	250-450g
RF MIN	114g
PT MAX	0.5mm
OT MIN	0.13mm
DT MAX	0.05mm
FP MAX	
OP	15.9±0.4mm



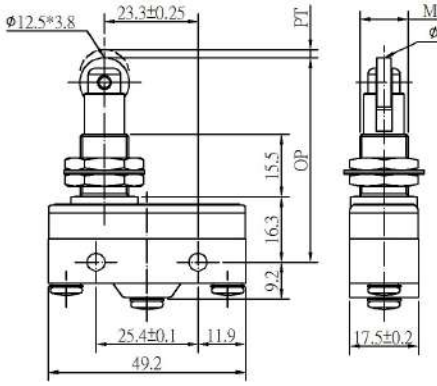
	MJ2-1305
OF MAX	250-450g
RF MIN	114g
PT MAX	0.5mm
OT MIN	1.6mm
DT MAX	0.05mm
FP MAX	
OP	28.2±0.5mm



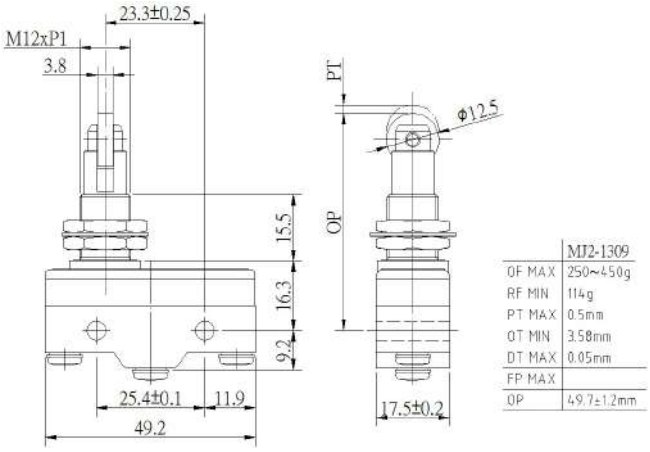
	MJ2-1306
OF MAX	250-450g
RF MIN	114g
PT MAX	0.5mm
OT MIN	1.6mm
DT MAX	0.05mm
FP MAX	
OP	21.5±0.5mm



	MJ2-1307
OF MAX	250-450g
RF MIN	114g
PT MAX	0.5mm
OT MIN	5.5mm
DT MAX	0.05mm
FP MAX	
OP	38.1±0.8mm



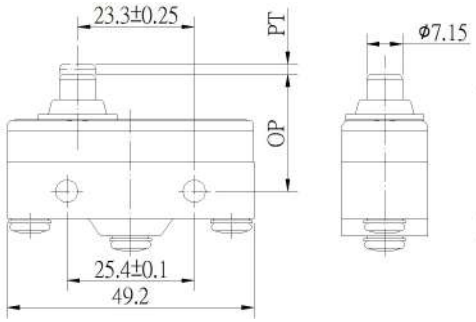
	MJ2-1308
OF MAX	250-450g
RF MIN	114g
PT MAX	0.5mm
OT MIN	3.58mm
DT MAX	0.05mm
FP MAX	
OP	49.7±1.2mm



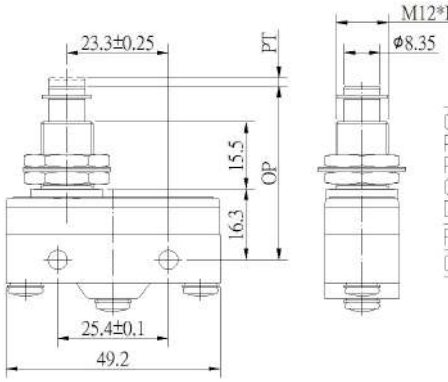
	MJ2-1309
OF MAX	250~450g
RF MIN	114g
PT MAX	0.5mm
OT MIN	3.58mm
DT MAX	0.05mm
FP MAX	
OP	49.7±1.2mm

MJ2-1300 MJ2-1305 MJ2-1306 MJ2-1307 MJ2-1308 MJ2-1309

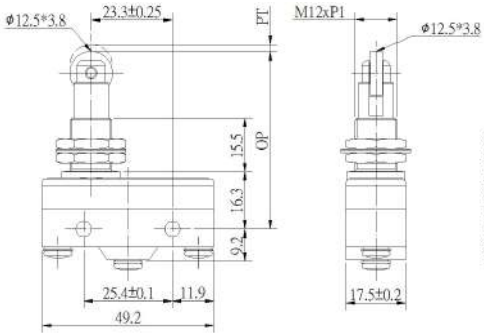
MJ2-1



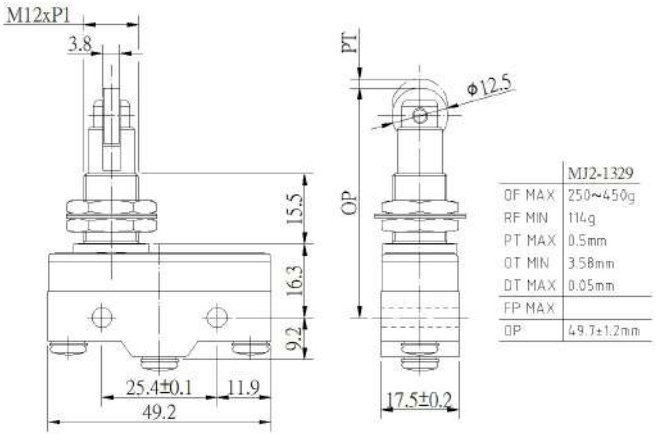
	MJ2-1326
OF MAX	250-450g
RF MIN	114g
PT MAX	0.5mm
OT MIN	1.6mm
DT MAX	0.05mm
FP MAX	
OP	21.5±0.5mm



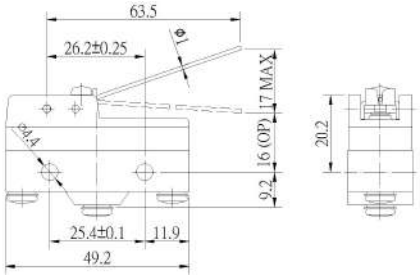
	MJ2-1327
OF MAX	250-450g
RF MIN	114g
PT MAX	0.5mm
OT MIN	5.5mm
DT MAX	0.05mm
FP MAX	
OP	38.1±0.8mm



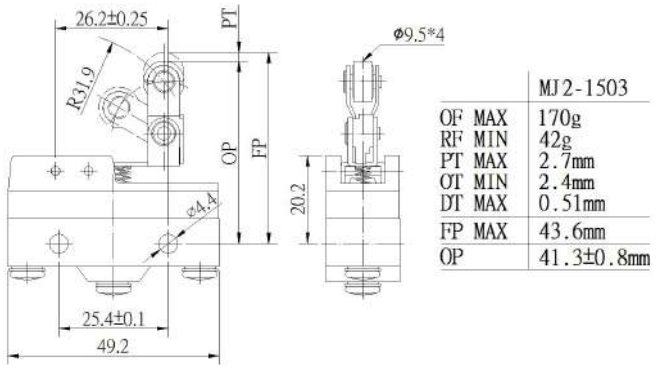
	MJ2-1328
OF MAX	250-450g
RF MIN	114g
PT MAX	0.5mm
OT MIN	3.58mm
DT MAX	0.05mm
FP MAX	
OP	49.7±1.2mm



	MJ2-1329
OF MAX	250~450g
RF MIN	114g
PT MAX	0.5mm
OT MIN	3.58mm
DT MAX	0.05mm
FP MAX	
OP	49.7±1.2mm



	MJ2-1500
OF MAX	10g
RF MIN	5g
PT MAX	10mm
OT MIN	6mm
DT MAX	3mm
FP MAX	
OP	20±1mm



	MJ2-1503
OF MAX	170g
RF MIN	42g
PT MAX	2.7mm
OT MIN	2.4mm
DT MAX	0.51mm
FP MAX	43.6mm
OP	41.3±0.8mm


MJ2-1326

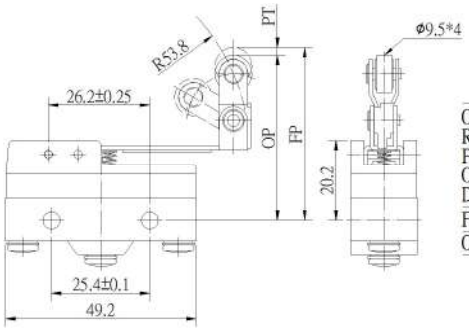

MJ2-1327


MJ2-1328

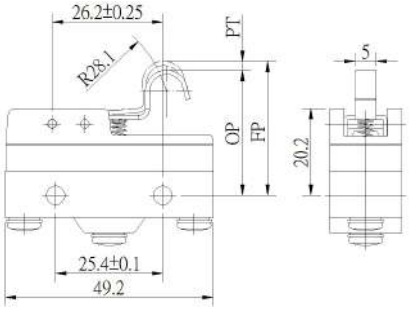

MJ2-1329


MJ2-1500

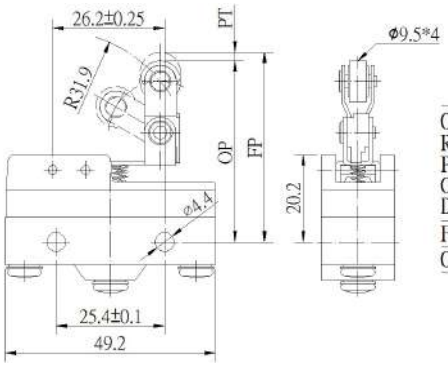

MJ2-1503



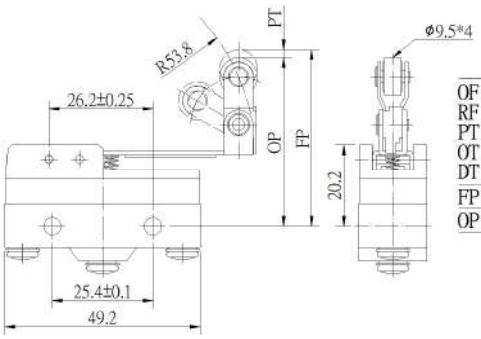
	MJ2-1504
OF MAX	110g
RF MIN	25g
PT MAX	6.4mm
OT MIN	4.0mm
DT MAX	1.6mm
FP MAX	47.2mm
OP	41.3±0.8mm



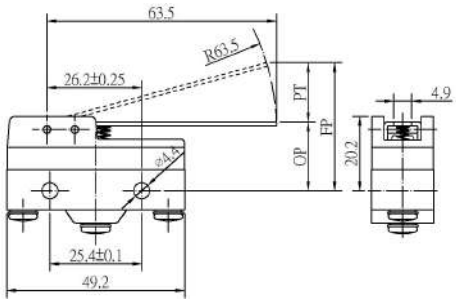
	MJ2-1506
OF MAX	140g
RF MIN	20g
PT MAX	2.1mm
OT MIN	4.7mm
DT MAX	0.5mm
FP MAX	32.1mm
OP	30±0.8mm



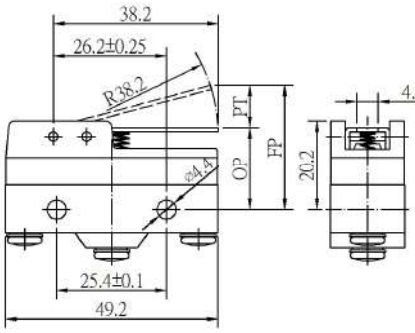
	MJ2-1523
OF MAX	170g
RF MIN	42g
PT MAX	2.7mm
OT MIN	2.4mm
DT MAX	0.51mm
FP MAX	43.6mm
OP	41.3±0.8mm



	MJ2-1524
OF MAX	110g
RF MIN	25g
PT MAX	6.4mm
OT MIN	4.0mm
DT MAX	1.6mm
FP MAX	47.2mm
OP	41.3±0.8mm



	MJ2-1701
OF MAX	70g
RF MIN	14g
PT MAX	10mm
OT MIN	5.6mm
DT MAX	1.27mm
FP MAX	28.2mm
OP	19±0.8mm



	MJ2-1702
OF MAX	120g
RF MIN	20g
PT MAX	7.9mm
OT MIN	3.0mm
DT MAX	1.0mm
FP MAX	26.2mm
OP	19±0.8mm

MJ2-1504

MJ2-1506

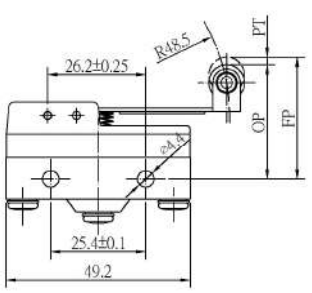
MJ2-1523

MJ2-1524

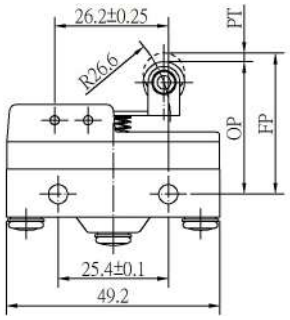
MJ2-1701

MJ2-1702

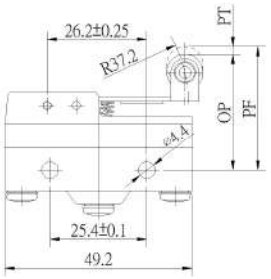
MJ2-1



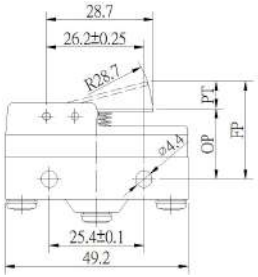
	MJ2-1703
OF MAX	100g
RF MIN	21g
PT MAX	7.1mm
OT MIN	4.0mm
DT MAX	1.6mm
FP MAX	36.5mm
OP	30.2±0.8mm



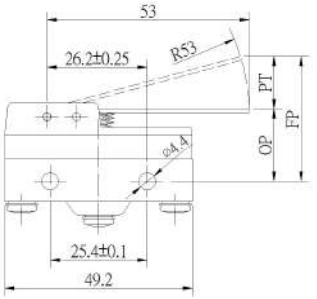
	MJ2-1704
OF MAX	160g
RF MIN	42g
PT MAX	3.5mm
OT MIN	2.4mm
DT MAX	0.5mm
FP MAX	34.5mm
OP	30.2±0.8mm



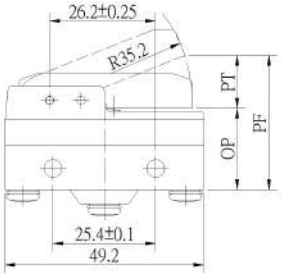
	MJ2-1705
OF MAX	125g
RF MIN	33g
PT MAX	5.7mm
OT MIN	3.4mm
DT MAX	1.1mm
FP MAX	35.8mm
OP	30.2±0.8mm



	MJ2-1706
OF MAX	120g
RF MIN	20g
PT MAX	6mm
OT MIN	3.0mm
DT MAX	1.0mm
FP MAX	25mm
OP	19±0.8mm



	MJ2-1707
OF MAX	90g
RF MIN	16g
PT MAX	9mm
OT MIN	4.8mm
DT MAX	1.15mm
FP MAX	27.2mm
OP	19±0.8mm



	MJ2-1708
OF MAX	180g
RF MIN	40g
PT MAX	6.0mm
OT MIN	1.4mm
DT MAX	1.5mm
FP MAX	30.1mm
OP	24.5±0.8mm

MJ2-1703

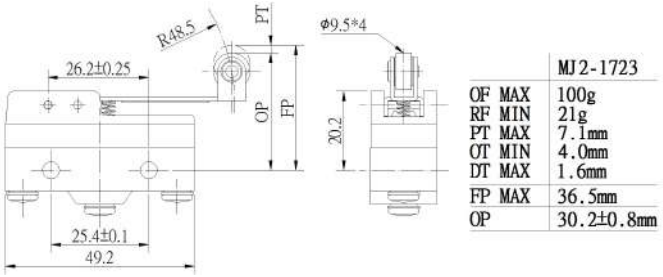
MJ2-1704

MJ2-1705

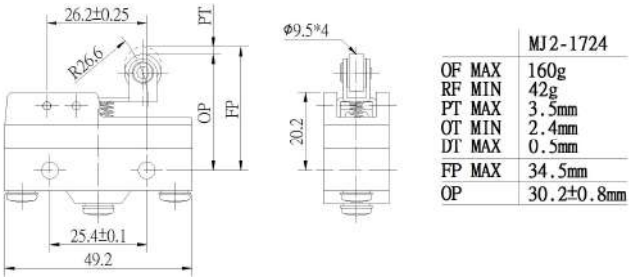
MJ2-1706

MJ2-1707

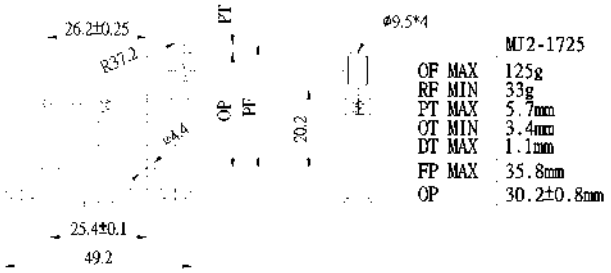
MJ2-1708



	MJ2-1723
OF MAX	100g
RF MIN	21g
PT MAX	7.1mm
OT MIN	4.0mm
DT MAX	1.6mm
FP MAX	36.5mm
OP	30.2±0.8mm



	MJ2-1724
OF MAX	160g
RF MIN	42g
PT MAX	3.5mm
OT MIN	2.4mm
DT MAX	0.5mm
FP MAX	34.5mm
OP	30.2±0.8mm



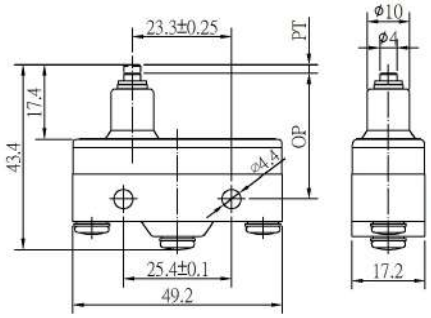
	MJ2-1725
OF MAX	125g
RF MIN	33g
PT MAX	5.7mm
OT MIN	3.4mm
DT MAX	1.1mm
FP MAX	35.8mm
OP	30.2±0.8mm

MJ2-1723

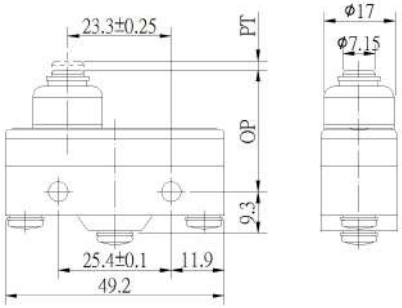
MJ2-1724

MJ2-1725

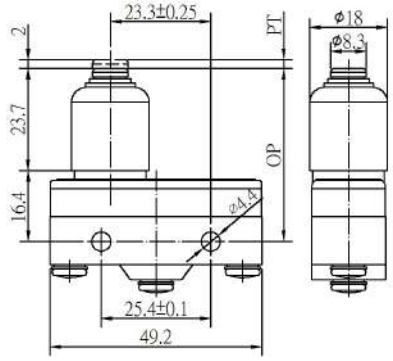
With Oil Resist Boot Seals



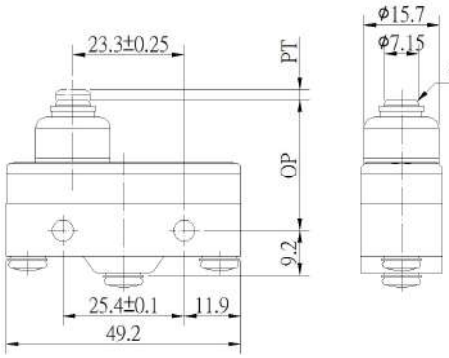
	MJ2-1315
OF MAX	540g
RF MIN	114g
PT MAX	1.9mm
OT MIN	1.6mm
DT MAX	0.06mm
FP MAX	
OP	28.2±0.5mm



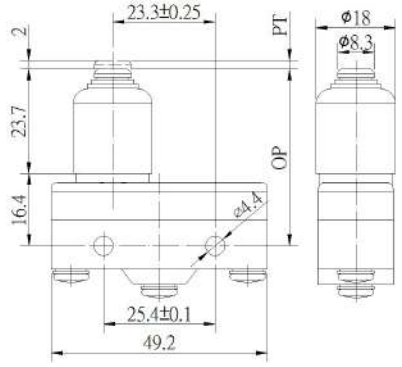
	MJ2-1316
OF MAX	540g
RF MIN	114g
PT MAX	2.3mm
OT MIN	1.6mm
DT MAX	0.06mm
FP MAX	
OP	28.2±0.5mm



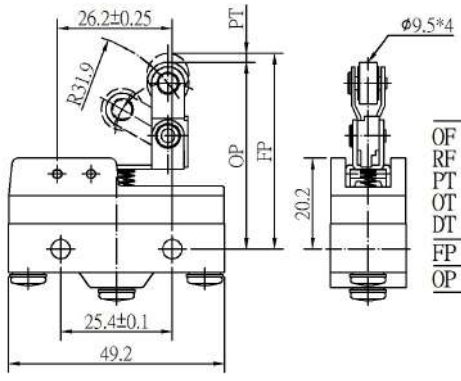
	MJ2-1317
OF MAX	540g
RF MIN	114g
PT MAX	2.4mm
OT MIN	35mm
DT MAX	0.06mm
FP MAX	
OP	38.1±1.2mm



	MJ2-1336
OF MAX	540g
RF MIN	114g
PT MAX	2.3mm
OT MIN	1.6mm
DT MAX	0.06mm
FP MAX	
OP	28.2±0.5mm



	MJ2-1337
OF MAX	540g
RF MIN	114g
PT MAX	2.4mm
OT MIN	35mm
DT MAX	0.06mm
FP MAX	
OP	38.1±1.2mm



	MJ2-1513
OF MAX	180g
RF MIN	50g
PT MAX	2.7mm
OT MIN	2.4mm
DT MAX	0.8mm
FP MAX	43.6mm
OP	41.3±0.8mm

MJ2-1315

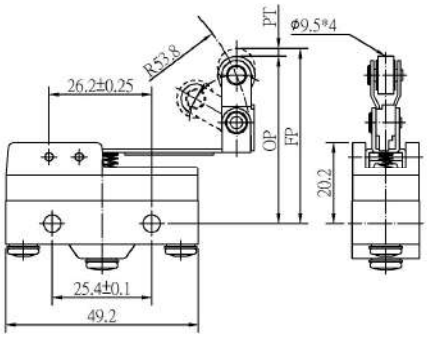
MJ2-1316

MJ2-1317

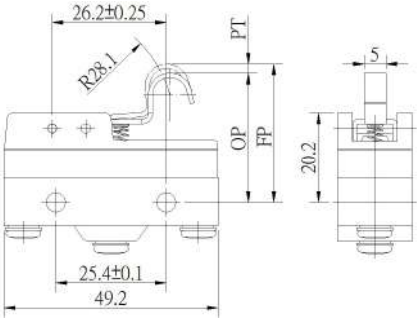
MJ2-1336

MJ2-1337

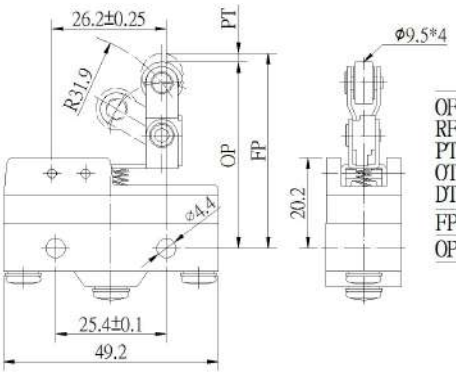
MJ2-1513



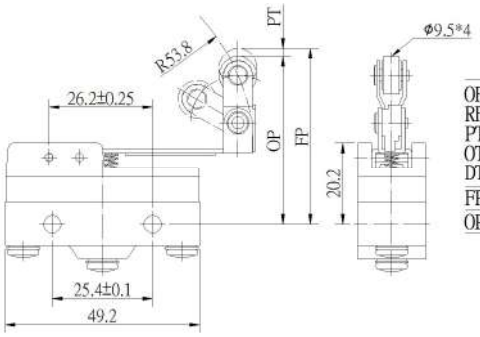
	MJ2-1514
OF MAX	150g
RF MIN	25g
PT MAX	6.4mm
OT MIN	4.0mm
DT MAX	1.6mm
FP MAX	47.2mm
OP	41.3±0.8mm



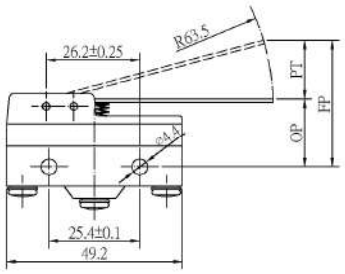
	MJ2-1516
OF MAX	140g
RF MIN	20g
PT MAX	2.1mm
OT MIN	4.7mm
DT MAX	0.5mm
FP MAX	32.1mm
OP	30±0.8mm



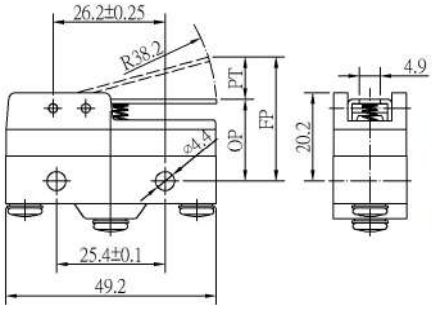
	MJ2-1533
OF MAX	170g
RF MIN	42g
PT MAX	2.7mm
OT MIN	2.4mm
DT MAX	0.51mm
FP MAX	43.6mm
OP	41.3±0.8mm



	MJ2-1534
OF MAX	110g
RF MIN	25g
PT MAX	6.4mm
OT MIN	4.0mm
DT MAX	1.6mm
FP MAX	47.2mm
OP	41.3±0.8mm



	MJ2-1711
OF MAX	100g
RF MIN	14g
PT MAX	10mm
OT MIN	5.6mm
DT MAX	2.0mm
FP MAX	28.2mm
OP	19±0.8mm



	MJ2-1712
OF MAX	150g
RF MIN	23g
PT MAX	7.9mm
OT MIN	3.0mm
DT MAX	1.5mm
FP MAX	26.2mm
OP	19±0.8mm

MJ2-1514

MJ2-1516

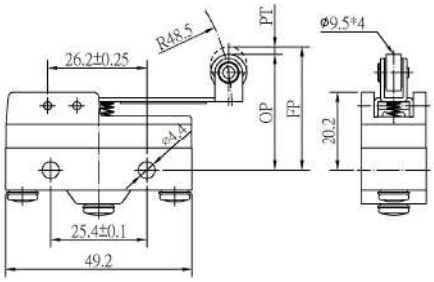
MJ2-1533

MJ2-1534

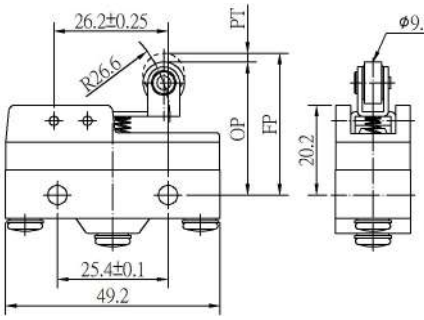
MJ2-1711

MJ2-1712

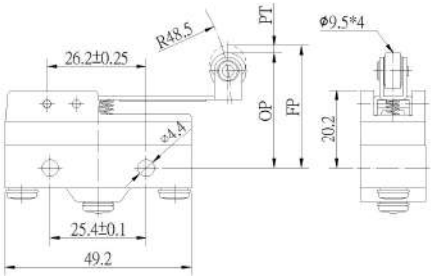
MJ2-1



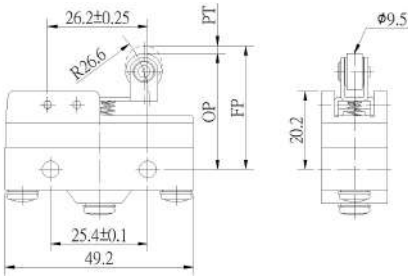
	MJ2-1713
OF MAX	130g
RF MIN	21g
PT MAX	7.1mm
OT MIN	4mm
DT MAX	1.6mm
FP MAX	36.5mm
OP	30.2±0.8mm



	MJ2-1714
OF MAX	200g
RF MIN	42g
PT MAX	3.5mm
OT MIN	2.4mm
DT MAX	0.5mm
FP MAX	34.5mm
OP	30.2±0.8mm



	MJ2-1733
OF MAX	130g
RF MIN	21g
PT MAX	7.1mm
OT MIN	4mm
DT MAX	1.6mm
FP MAX	36.5mm
OP	30.2±0.8mm



	MJ2-1734
OF MAX	200g
RF MIN	42g
PT MAX	3.5mm
OT MIN	2.4mm
DT MAX	0.5mm
FP MAX	34.5mm
OP	30.2±0.8mm

MJ2-1713

MJ2-1714

MJ2-1733

MJ2-1734

MJ3-5 Series

Basic Limit Switch

◆ Features

- ✓ Positive Opening Basic Switch
- ✓ IP65 products have rubber O-ring installed in actuator
- ✓ Optional MJ3-CB5 or MJ3-CB6 bottom terminal covers
- ✓ Dual silver-nickel alloy contacts
- ✓ Side mountable

◆ Recognition(s)

- ✓ CE – EN60947
- ✓ RoHS compliant
- ✓ Reach Unaffected

◆ Characteristics

Positive Opening	Electrical Contact	Terminal Type	Contact Form(s)	Poles & Throws	Actuation Sequence(s)
Yes	3 Points	Screw or Quick connect (#250)	Form C	SPDT	Break(1) Make(2)

Operating Temp.	AC Rated	DC Rated	IP	Oil Resist	Dust Resist	Water Resist	Operating Speed
-25 to 80 C	5A 250V	4A 24V, 1.1A 125V, 0.4A 250V	40, 65	Yes & No	Yes & No	Yes & No	0.01mm to 1m/sec

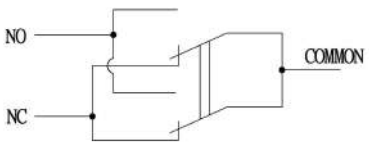
Operation Frequency	Contact Resistance	Insulation Resistance	Vibration
Mechanically: 60/min Electrically: 30/min	15mΩ max. (initial)	100MΩ min. (500VDC)	1.5mm amplitude at 55Hz

Storage Humidity	Service Life (min.)	Dielectric Strength
85% RH max	Mechanically: 10,000,000 operations Electrically: 500,000 operations	1000VAC, 50/60Hz for 1 minute between non-continuous terminals 2000VAC, 50/60Hz for 1 minute between current-carry part and ground

Recommended tightening forces

Purpose	Screw type	Tightening
Mounting	M4	0.8~1.2 N·m
Panel Mount Screw Nut		2.94~4.92 N·m
Screw terminal		0.25±0.05 N·m

Circuitry



◆ Materials

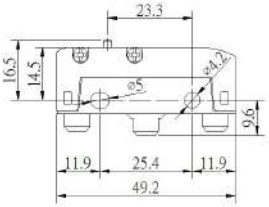
Actuation touch part	Electrical contact point	Enclosure
Stainless Steel, or Teflon, or POM	Silver 99.9%	PBT plastic with glass fiber

◆ Nomenclature

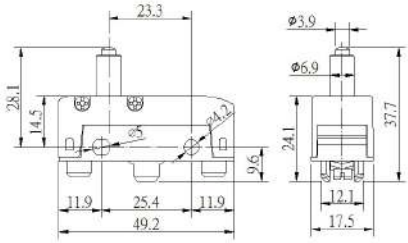
Series:	Terminal Type:	Protection:	Actuator:
MJ3 –	**51**	**1**	**101**
	51 = Screw 52 = Quick connect #250 53 = *bent* Quick connect #250	1 = IP40 2 = IP65	101 = Metallic pin plunger 102 = Metallic plunger, slim 103 = Metallic plunger, short 104 = Metallic plunger 105 = Metallic plunger, sealed (only IP65) 106 = Metallic Lever, short 107 = Metallic Lever 108 = Metallic Lever, long 109 = Metallic roller lever, short 110 = Metallic roller lever 111 = Metallic roller lever, long 112 = Simulated metallic roller lever 113 = Teflon plunger, short 114 = Teflon plunger 115 = Teflon plunger, sealed (only IP65) 119 = POM roller lever, short 120 = POM roller lever 121 = POM roller lever, long 122 = Metallic roller plunger 123 = Metallic roller plunger, cross 124 = POM roller lever, short, 1-way act 125 = Metallic Lever w/ adjustable plunger 126 = Metallic cat whisker wire lever 132 = Nylon roller plunger 133 = Nylon roller plunger, cross 134 = POM roller lever, long, 1-way act

◆ Dimensions & Operating Characteristics

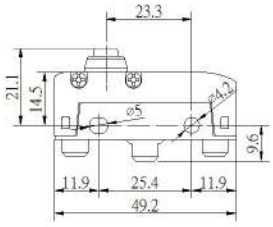
*Terminal type, actuator material, and protection class does not affect operating characteristics
*Measurements in *millimeters*



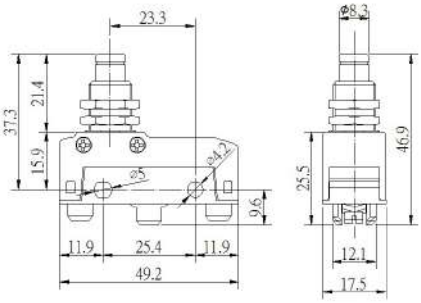
	MJ3-511101
OF MAX	400g
RF MIN	300g
PT MAX	0.5mm
OT MIN	1.5mm
DT MAX	0.05mm
FP MAX	16.5mm
OP	16±1mm



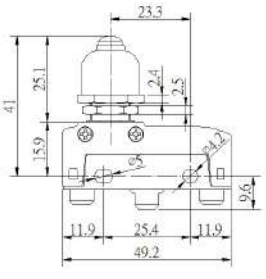
	MJ3-511102
OF MAX	400g
RF MIN	300g
PT MAX	0.5mm
OT MIN	2mm
DT MAX	0.05mm
FP MAX	28.1mm
OP	27.6±1mm



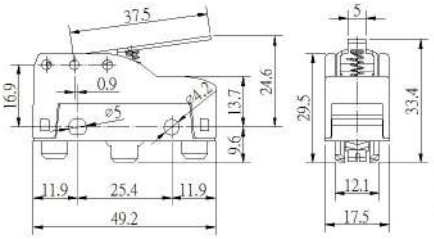
	MJ3-511103
OF MAX	400g
RF MIN	300g
PT MAX	0.5mm
OT MIN	2mm
DT MAX	0.05mm
FP MAX	31mm
OP	30.5±1mm



	MJ3-511104
OF MAX	400g
RF MIN	300g
PT MAX	0.5mm
OT MIN	2mm
DT MAX	0.05mm
FP MAX	37.3mm
OP	36.8±1mm



	MJ3-512105
OF MAX	600g
RF MIN	400g
PT MAX	0.6mm
OT MIN	5.4mm
DT MAX	0.05mm
FP MAX	41mm
OP	40.4±1mm



	MJ3-511106
OF MAX	95g
RF MIN	82g
PT MAX	5.5mm
OT MIN	6.1mm
DT MAX	0.6mm
FP MAX	24.6mm
OP	19±1mm

MJ3-511101

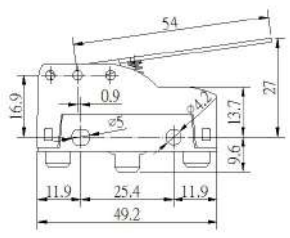
MJ3-511102

MJ3-511103

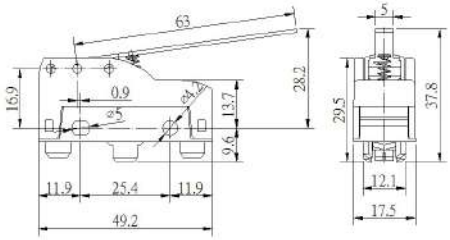
MJ3-511104

MJ3-512105

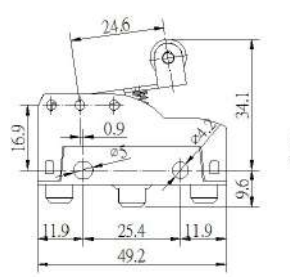
MJ3-511106



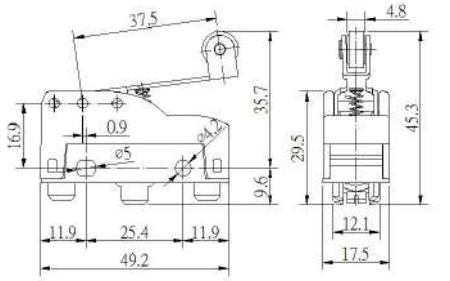
	MJ3-511107
OF MAX	76g
RF MIN	58g
PT MAX	7.7mm
OT MIN	8.3mm
DT MAX	0.9mm
FP MAX	27mm
OP	19.3±1mm



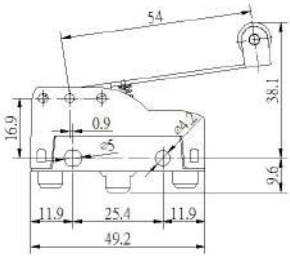
	MJ3-511108
OF MAX	65g
RF MIN	50g
PT MAX	9mm
OT MIN	10mm
DT MAX	1.1mm
FP MAX	28.2mm
OP	19.2±1mm



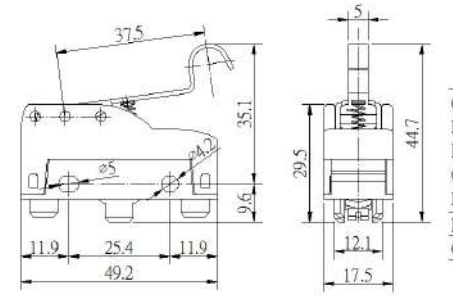
	MJ3-511109
OF MAX	166g
RF MIN	128g
PT MAX	3.5mm
OT MIN	4.5mm
DT MAX	0.4mm
FP MAX	34.1mm
OP	30.6±1mm



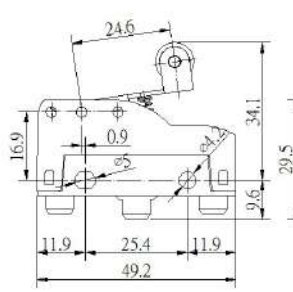
	MJ3-511110
OF MAX	109g
RF MIN	84g
PT MAX	5.3mm
OT MIN	5.7mm
DT MAX	0.6mm
FP MAX	35.7mm
OP	30.4±1mm



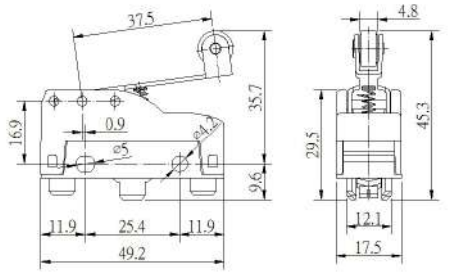
	MJ3-511111
OF MAX	76g
RF MIN	58g
PT MAX	7.7mm
OT MIN	8.9mm
DT MAX	0.9mm
FP MAX	38.1mm
OP	30.4±1mm



	MJ3-511112
OF MAX	160g
RF MIN	135g
PT MAX	3.5mm
OT MIN	5.6mm
DT MAX	0.4mm
FP MAX	35.1mm
OP	30.6±1mm



	MJ3-511119
OF MAX	166g
RF MIN	128g
PT MAX	3.5mm
OT MIN	4.5mm
DT MAX	0.4mm
FP MAX	34.1mm
OP	30.6±1mm



	MJ3-511120
OF MAX	109g
RF MIN	84g
PT MAX	5.3mm
OT MIN	5.7mm
DT MAX	0.6mm
FP MAX	35.7mm
OP	30.4±1mm

MJ3-511107

MJ3-511108

MJ3-511119

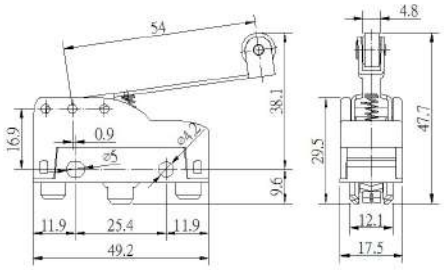
MJ3-511110

MJ3-511111

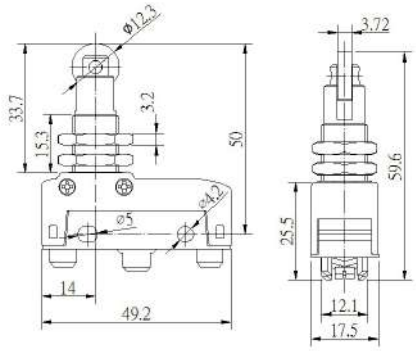
MJ3-511112

MJ3-511119

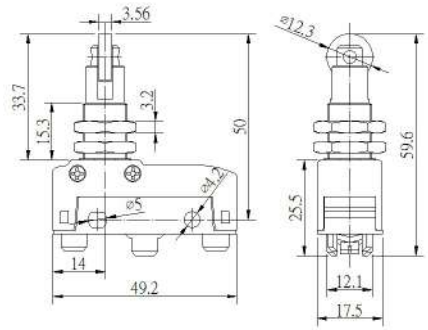
MJ3-511120



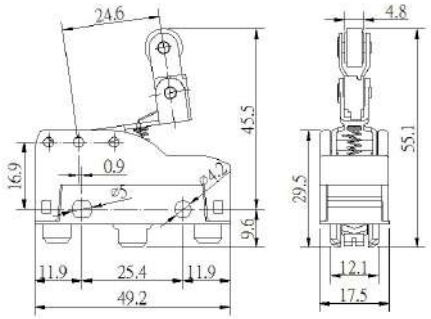
	MJ3-511121
OF MAX	76g
RF MIN	58g
PT MAX	7.7mm
OT MIN	8.9mm
DT MAX	0.9mm
FP MAX	38.1mm
OP	30.4±1mm



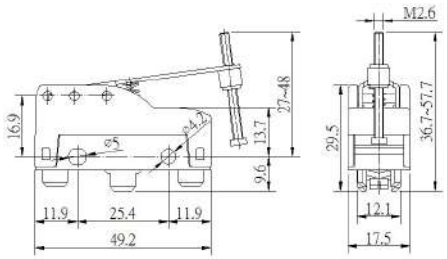
	MJ3-511122
OF MAX	400g
RF MIN	300g
PT MAX	0.5mm
OT MIN	5.5mm
DT MAX	0.05mm
FP MAX	50mm
OP	49.5±1mm



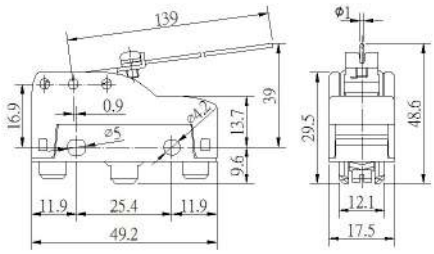
	MJ3-511123
OF MAX	400g
RF MIN	300g
PT MAX	0.5mm
OT MIN	5.5mm
DT MAX	0.05mm
FP MAX	50mm
OP	49.5±1mm



	MJ3-511124
OF MAX	166g
RF MIN	128g
PT MAX	3.5mm
OT MIN	4.5mm
DT MAX	0.4mm
FP MAX	34.1mm
OP	30.6±1mm



	MJ3-511125
OF MAX	76g
RF MIN	58g
PT MAX	7.7mm
OT MIN	8.3mm
DT MAX	0.9mm
FP MAX	27~48mm
OP	31±10mm



	MJ3-511126
OF MAX	8g
RF MIN	4g
PT MAX	19mm
OT MIN	9.5mm
DT MAX	2.3mm
FP MAX	39mm
OP	20±1mm

MJ3-511121

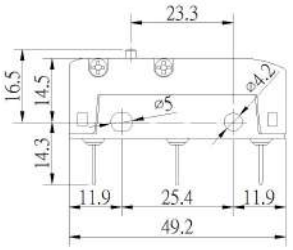
MJ3-511122

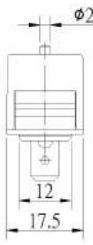
MJ3-511123

MJ3-511124

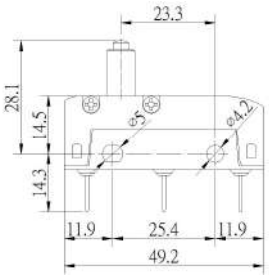
MJ3-511125

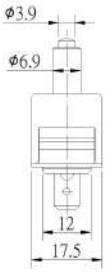
MJ3-511126



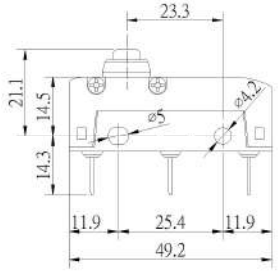


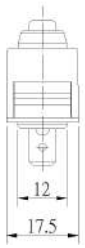
	MJ3-521101
OF MAX	400g
RF MIN	300g
PT MAX	0.5mm
OT MIN	1.5mm
DT MAX	0.05mm
FP MAX	16.5mm
OP	16±1mm



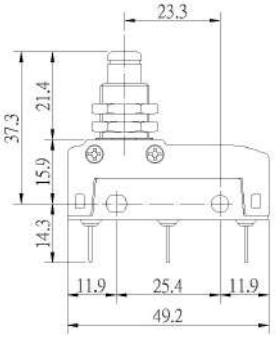


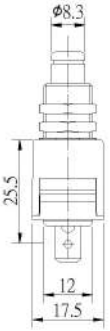
	MJ3-521102
OF MAX	400g
RF MIN	300g
PT MAX	0.5mm
OT MIN	1.5mm
DT MAX	0.05mm
FP MAX	16.5mm
OP	16±1mm



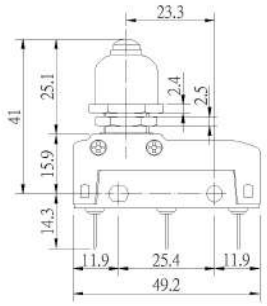


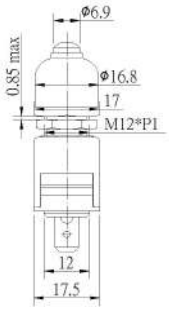
	MJ3-521103
OF MAX	400g
RF MIN	300g
PT MAX	0.5mm
OT MIN	1.5mm
DT MAX	0.05mm
FP MAX	16.5mm
OP	16±1mm



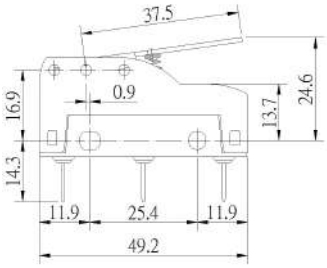


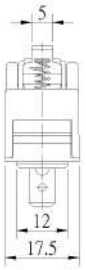
	MJ3-521104
OF MAX	400g
RF MIN	300g
PT MAX	0.5mm
OT MIN	2mm
DT MAX	0.05mm
FP MAX	37.3mm
OP	36.8±1mm



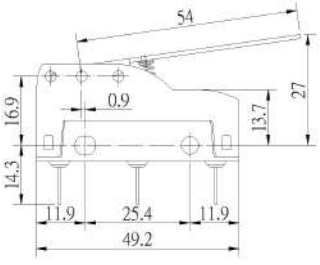


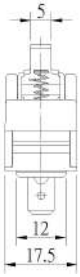
	MJ3-522105
OF MAX	600g
RF MIN	400g
PT MAX	0.6mm
OT MIN	5.4mm
DT MAX	0.05mm
FP MAX	41mm
OP	40.4±1mm



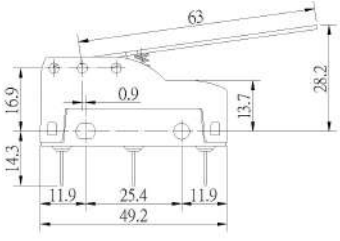


	MJ3-521106
OF MAX	95g
RF MIN	82g
PT MAX	5.5mm
OT MIN	6.1mm
DT MAX	0.6mm
FP MAX	24.6mm
OP	19±1mm





	MJ3-521107
OF MAX	76g
RF MIN	58g
PT MAX	7.7mm
OT MIN	8.3mm
DT MAX	0.9mm
FP MAX	27mm
OP	19.3±1mm



	MJ3-521108
OF MAX	65g
RF MIN	50g
PT MAX	9mm
OT MIN	10mm
DT MAX	1.1mm
FP MAX	28.2mm
OP	19.2±1mm

MJ3-521101

MJ3-521102

MJ3-521103

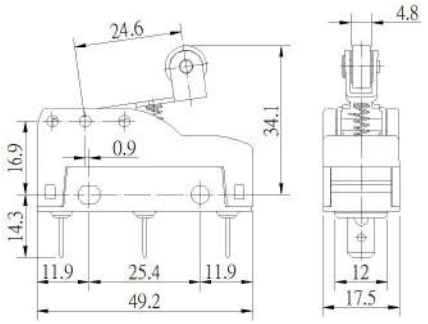
MJ3-521104

MJ3-522105

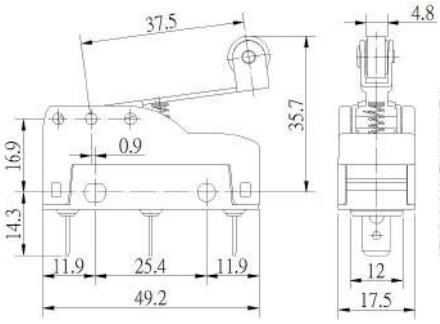
MJ3-521106

MJ3-521107

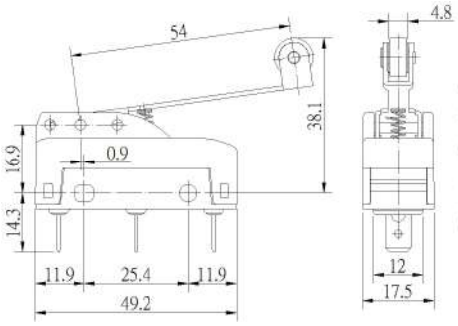
MJ3-521108



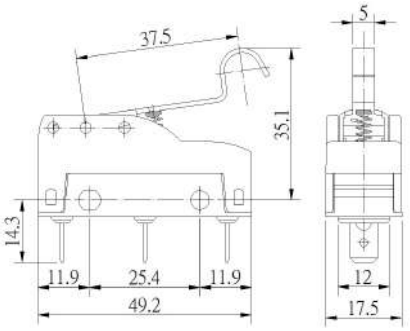
	MJ3-521109
OF MAX	166g
RF MIN	128g
PT MAX	3.5mm
OT MIN	4.5mm
DT MAX	0.4mm
FP MAX	34.1mm
OP	30.6±1mm



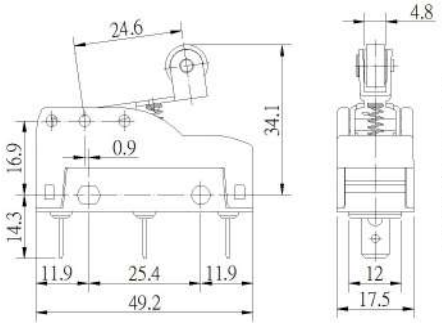
	MJ3-521110
OF MAX	109g
RF MIN	84g
PT MAX	5.3mm
OT MIN	5.7mm
DT MAX	0.6mm
FP MAX	35.7mm
OP	30.4±1mm



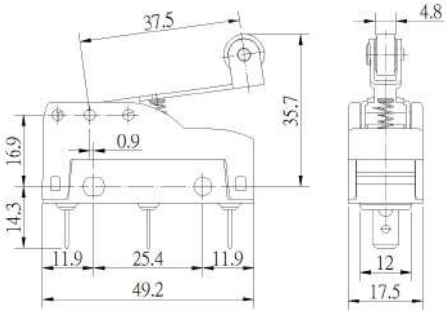
	MJ3-521111
OF MAX	76g
RF MIN	58g
PT MAX	7.7mm
OT MIN	8.9mm
DT MAX	0.9mm
FP MAX	38.1mm
OP	30.4±1mm



	MJ3-521112
OF MAX	160g
RF MIN	135g
PT MAX	3.5mm
OT MIN	5.6mm
DT MAX	0.4mm
FP MAX	35.1mm
OP	30.6±1mm



	MJ3-521119
OF MAX	166g
RF MIN	128g
PT MAX	3.5mm
OT MIN	4.5mm
DT MAX	0.4mm
FP MAX	34.1mm
OP	30.6±1mm



	MJ3-521120
OF MAX	109g
RF MIN	84g
PT MAX	5.3mm
OT MIN	5.7mm
DT MAX	0.6mm
FP MAX	35.7mm
OP	30.4±1mm

MJ3-521109

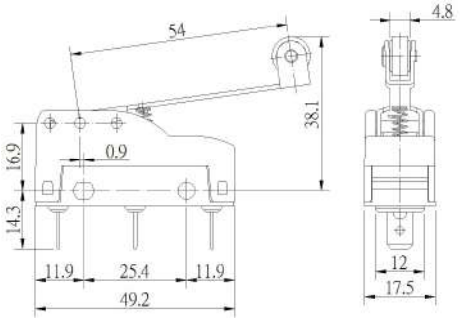
MJ3-521110

MJ3-521111

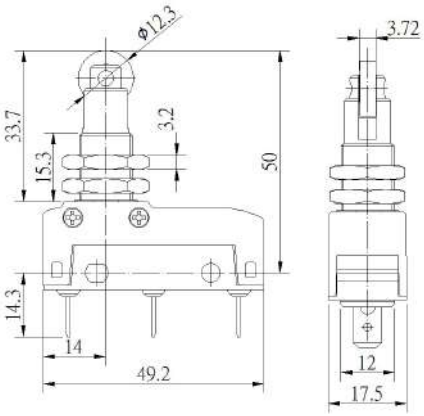
MJ3-521112

MJ3-521119

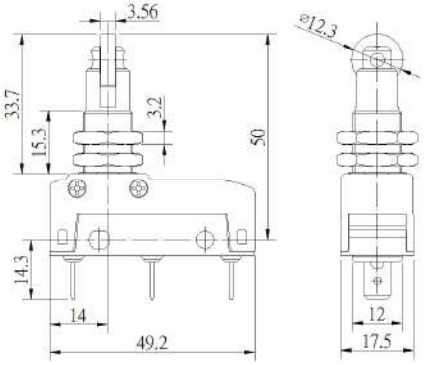
MJ3-521120



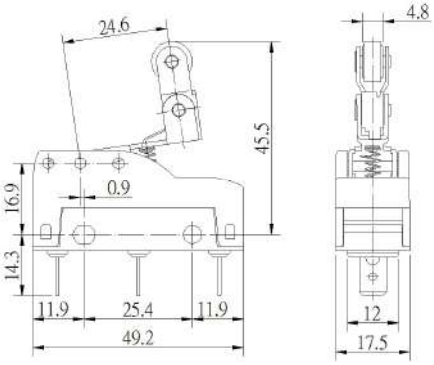
	MJ3-521121
OF MAX	76g
RF MIN	58g
PT MAX	7.7mm
OT MIN	8.9mm
DT MAX	0.9mm
FP MAX	38.1mm
OP	30.4±1mm



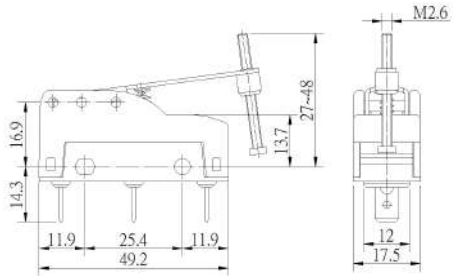
	MJ3-521122
OF MAX	400g
RF MIN	300g
PT MAX	0.5mm
OT MIN	5.5mm
DT MAX	0.05mm
FP MAX	50mm
OP	49.5±1mm



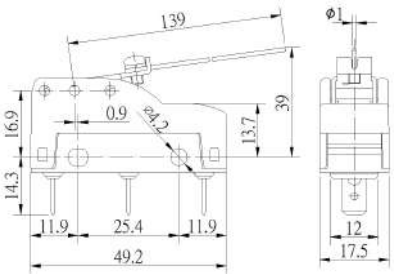
	MJ3-521123
OF MAX	400g
RF MIN	300g
PT MAX	0.5mm
OT MIN	5.5mm
DT MAX	0.05mm
FP MAX	50mm
OP	49.5±1mm



	MJ3-521124
OF MAX	166g
RF MIN	128g
PT MAX	3.5mm
OT MIN	4.5mm
DT MAX	0.4mm
FP MAX	34.1mm
OP	30.6±1mm



	MJ3-521125
OF MAX	76g
RF MIN	58g
PT MAX	7.7mm
OT MIN	8.3mm
DT MAX	0.9mm
FP MAX	27~48mm
OP	31±10mm



	MJ3-521126
OF MAX	8g
RF MIN	4g
PT MAX	19mm
OT MIN	9.5mm
DT MAX	2.3mm
FP MAX	39mm
OP	20±1mm

MJ3-521121

MJ3-521122

MJ3-521123

MJ3-521124

MJ3-521125

MJ3-521126

ME-8 Series

Enclosed Basic Switch

◆ Features

- ✓ Basic switch with Plastic cover and Zinc alloy bottom enclosure.
- ✓ Dust, water, and oil resistant
- ✓ Strain relief suitable for SJT18/4 18AWG cables
- ✓ Field adjustable actuator heads

◆ Recognition(s)

- ✓ CE – EN60947
- ✓ UL – UL-508
- ✓ CCC – GB14048.5-2008
- ✓ RoHS Compliant
- ✓ Reach Unaffected

◆ Characteristics

Positive Opening	Electrical Contact	Terminal Type	Contact Form(s)	Poles & Throws	Actuation Sequence(s)
No	4 Points	Screw	Form Z	SPDT-NC-NO	Double Break(1) Double Make(2)

Operating Temp.	AC Rated	DC Rated	IP	Oil Resist	Dust Resist	Water Resist	Operating Speed
-15 to 70 Celsius	5A 250V	0.4A 115V	65	Yes	Yes	Yes	0.5mm to 50cm/sec

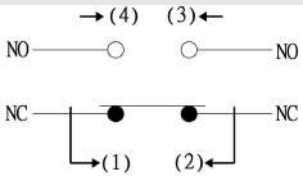
Operation Frequency	Contact Resistance	Insulation Resistance	Vibration
Mechanically: 120/min Electrically: 30/min	15mΩ max. (initial)	100MΩ min. (500VDC)	1.5mm amplitude at 10-55Hz

Storage Humidity	Service Life (min.)	Dielectric Strength
85% RH max	Mechanically: 10,000,000 operations Electrically: 300,000 operations	1000VAC, 50/60Hz for 1 minute between non-continuous terminals

Recommended tightening forces

Purpose	Screw type	Tightening
Mounting	M4	1.18~1.37 N·m
Enclosure cover		0.44±0.05 N·m
Screw terminal		0.25±0.05 N·m

Circuitry



◆ Materials

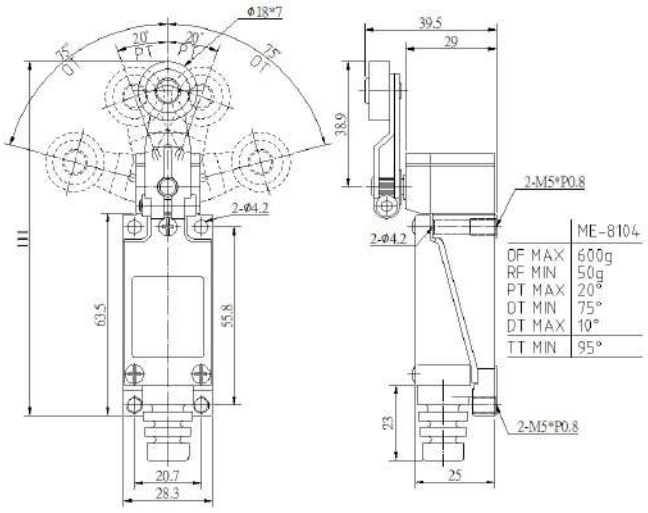
Actuation touch part	Electrical contact point	Enclosure
Nylon, or Stainless Steel, or Teflon	Silver 99.9%	Plastic top with Zinc alloy bottom

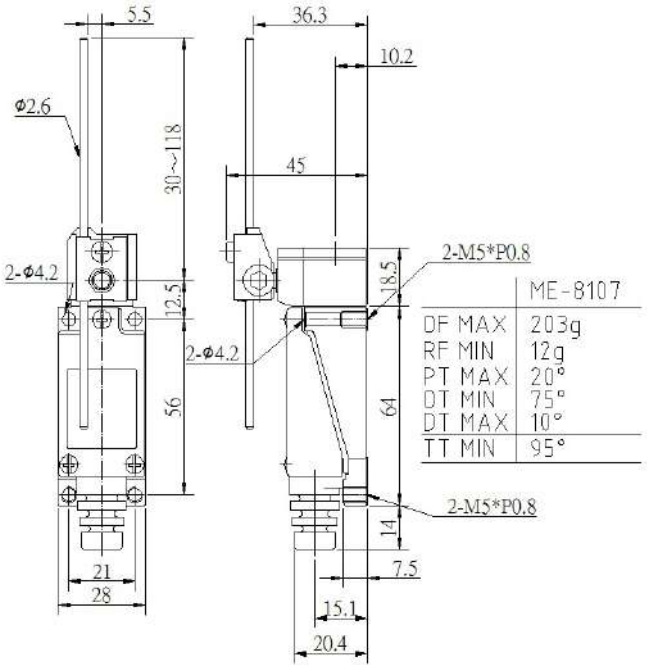
◆ Nomenclature

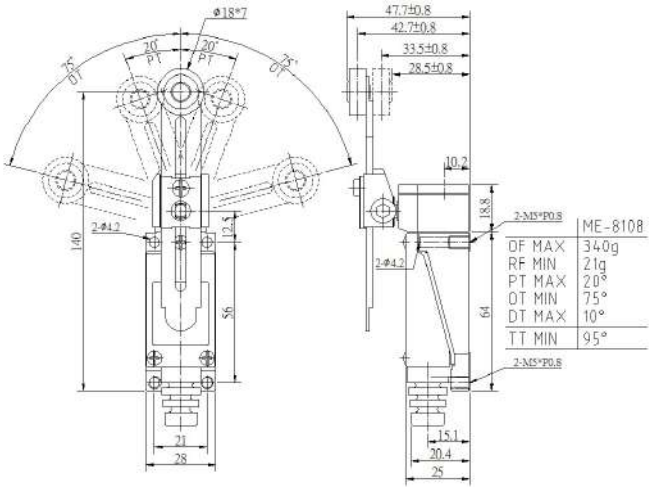
Series:	Actuator (and material):
ME –	**8104 –**
	8104 = Side rotary, nylon roller 8104-L = Side rotary, ⌀50mm rubber roller 8104-M = Side rotary, metallic roller 8107 = Side rotary, adjustable metallic rod 8108 = Side rotary, adjustable nylon roller 8108-L = Side rotary, adjustable ⌀50mm rubber roller 8108-M = Side rotary, adjustable metallic roller 8111 = Metallic plunger 8112 = Metallic roller plunger 8112-P = Nylon roller plunger 8112-PT = Teflon roller plunger 8122 = Cross metallic roller plunger 8122-P = Cross nylon roller plunger 8122-PT = Cross Teflon roller plunger 8166 = Spring, metallic rod 8169 = Spring, metallic wire 9101 = Spring, metallic coil

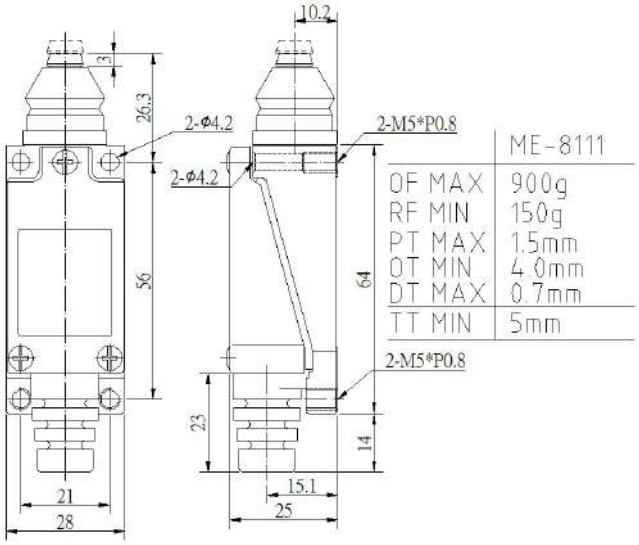
◆ Dimensions & Operating Characteristics

*Measurements in *millimeters*







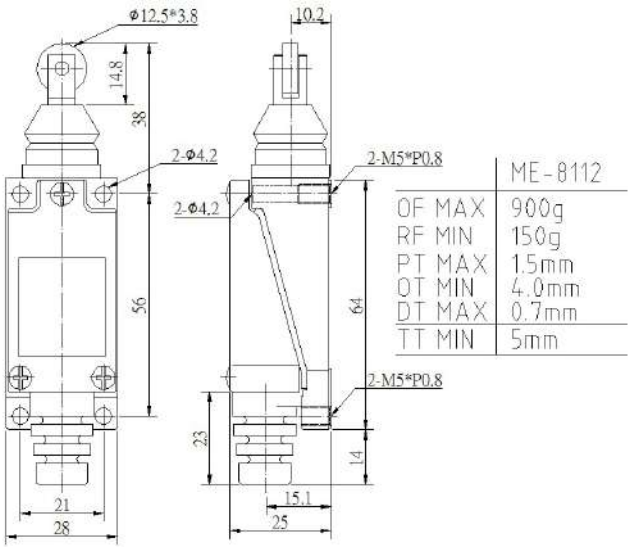


ME-8104

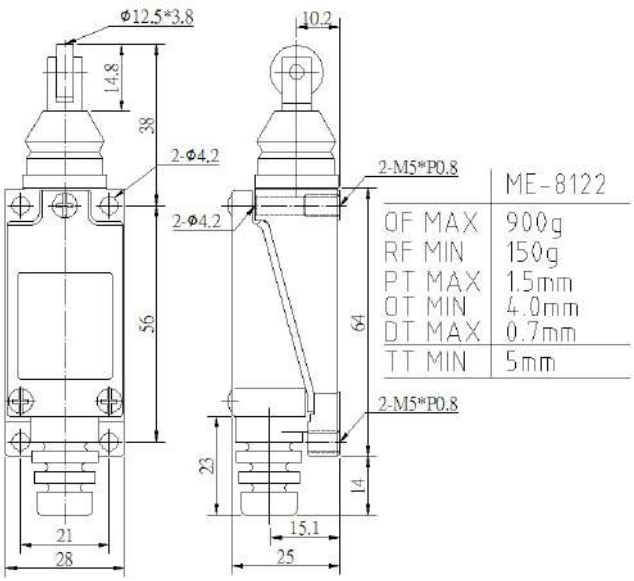
ME-8107

ME-8108

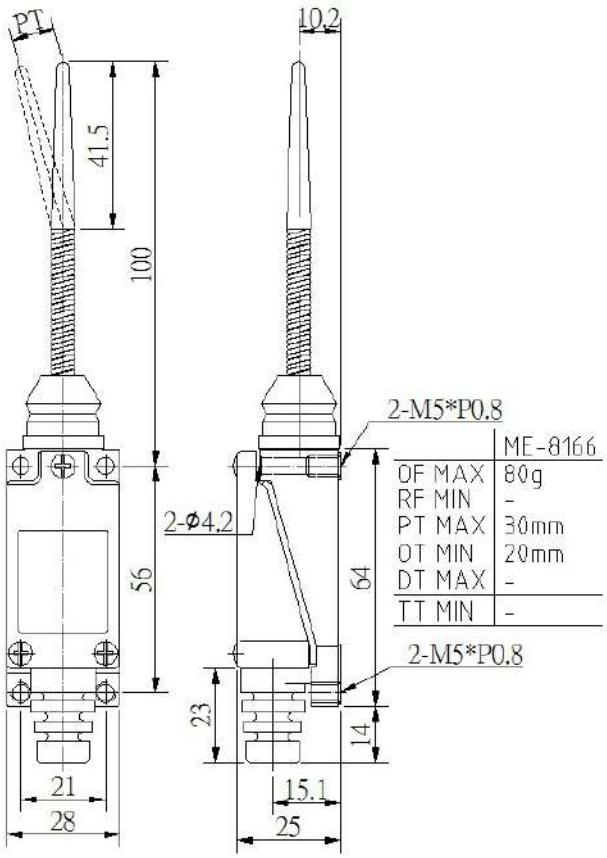
ME-8111



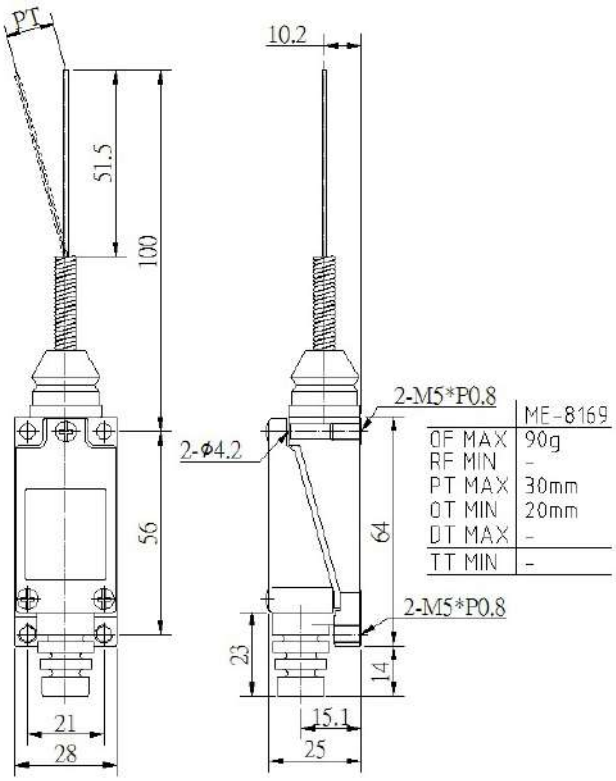
ME-8112	
OF MAX	900g
RF MIN	150g
PT MAX	1.5mm
OT MIN	4.0mm
DT MAX	0.7mm
TT MIN	5mm



ME-8122	
OF MAX	900g
RF MIN	150g
PT MAX	1.5mm
OT MIN	4.0mm
DT MAX	0.7mm
TT MIN	5mm



ME-8166	
OF MAX	80g
RF MIN	-
PT MAX	30mm
OT MIN	20mm
DT MAX	-
TT MIN	-



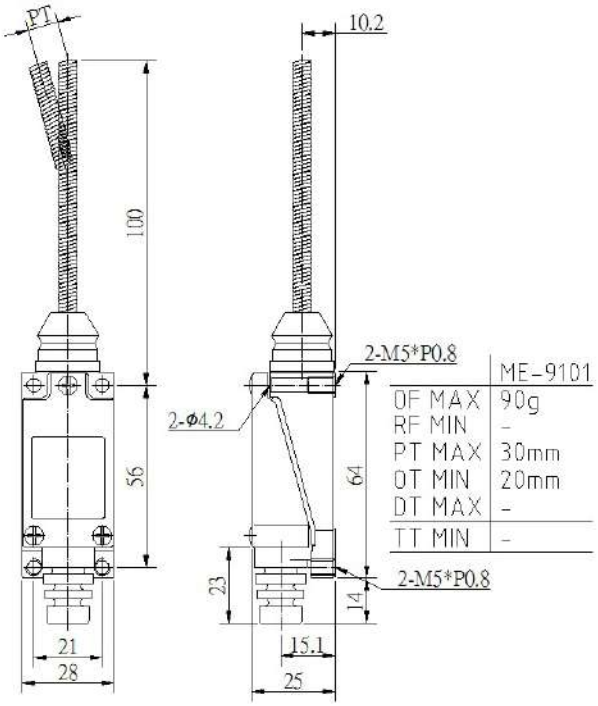
ME-8169	
OF MAX	90g
RF MIN	-
PT MAX	30mm
OT MIN	20mm
DT MAX	-
TT MIN	-

ME-8112

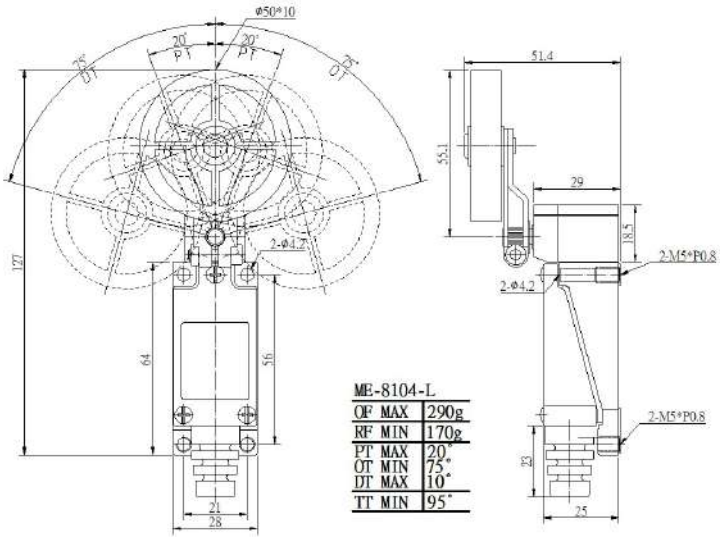
ME-8122

ME-8166

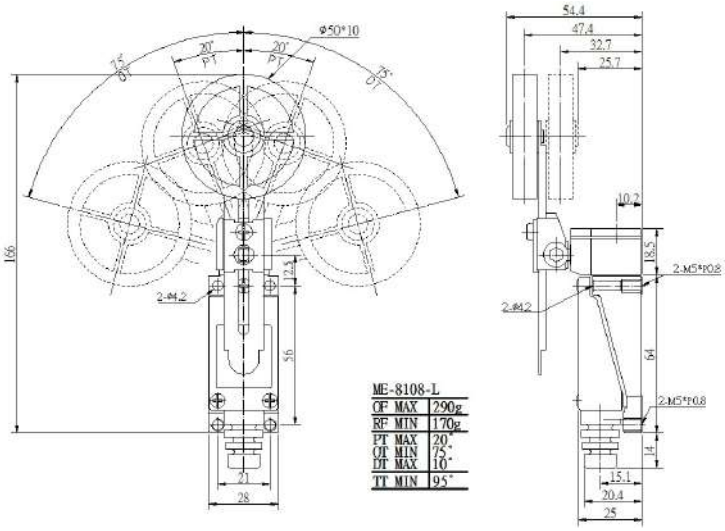
ME-8169



	ME-9101
OF MAX	90g
RF MIN	-
PT MAX	30mm
OT MIN	20mm
DT MAX	-
TT MIN	-



ME-8104-L	
OF MAX	290g
RF MIN	170g
PT MAX	20°
OT MIN	75°
DT MAX	10°
TT MIN	95°



ME-8108-L	
OF MAX	290g
RF MIN	170g
PT MAX	20°
OT MIN	75°
DT MAX	10°
TT MIN	95°

ME-9101

ME-8104-L

ME-8108-L

MEA-9 Series

Enclosed Basic Switch

◆ Features

- ✓ Basic switch with strong but economical nylon fiber glass enclosure.
- ✓ Dust, water, and oil resistant
- ✓ Strain relief suitable for SJT18/4 18AWG cables
- ✓ Through hole: PF1/2" and M20 threads
- ✓ Field adjustable actuator heads

◆ Recognition(s)

- ✓ CE – EN60947
- ✓ UL – UL-508
- ✓ RoHS Compliant
- ✓ Reach Unaffected

Standard type with strain relief

"G" & "M20" type

◆ Characteristics

Positive Opening	Electrical Contact	Terminal Type	Contact Form(s)	Poles & Throws	Actuation Sequence(s)
No	4 Points	Screw	Form Z	SPDT-NC-NO	Double Break(1) Double Make(2)

Operating Temp.	AC Rated	DC Rated	IP	Oil Resist	Dust Resist	Water Resist	Operating Speed
-15 to 70 Celsius	6A 125-250V	0.4A 125V	65	Yes	Yes	Yes	0.5mm to 50cm/sec

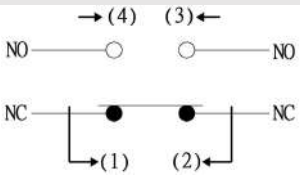
Operation Frequency	Contact Resistance	Insulation Resistance	Vibration
Mechanically: 120/min Electrically: 30/min	15mΩ max. (initial)	100MΩ min. (500VDC)	1.5mm amplitude at 10-55Hz

Storage Humidity	Service Life (min.)	Dielectric Strength
85% RH max	Mechanically: 10,000,000 operations Electrically: 500,000 operations	1000VAC, 50/60Hz for 1 minute between non-continuous terminals

Recommended tightening forces

Purpose	Screw type	Tightening
Mounting	M4	1.18~1.37 N·m
Enclosure cover		0.44±0.05 N·m
Screw terminal		0.29±0.05 N·m

Circuitry



◆ Materials

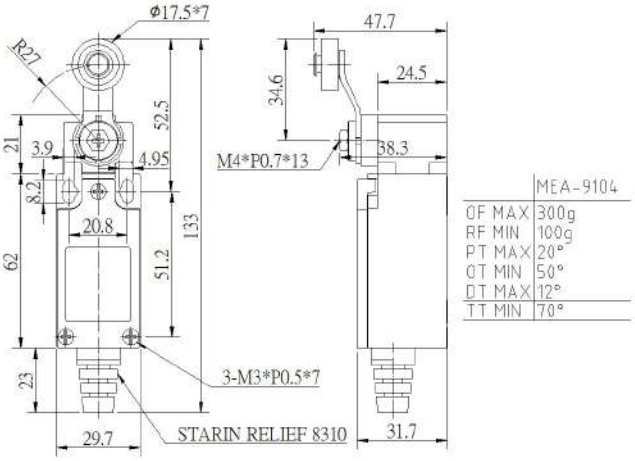
Actuation touch part	Electrical contact point	Enclosure
Nylon, or Stainless Steel, or Teflon	Silver 99.9%	Nylon with glass fiber

◆ Nomenclature

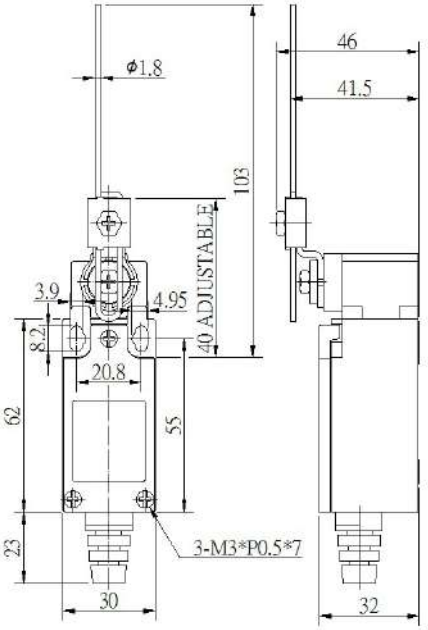
Series:	Actuator (and material):	Through hole:
MEA –	**9104 –**	
	9104 = Side rotary, nylon roller 9104-L = Side rotary, ⌀50mm rubber roller 9107 = Side rotary, adjustable metallic rod 9108 = Side rotary, adjustable nylon roller 9108-L = Side rotary, adjustable ⌀50mm rubber roller 9111 = Metallic plunger 9111-PT = Teflon plunger 9112 = Metallic roller plunger 9112-P = Nylon roller plunger 9112-PT = Teflon roller plunger 9122 = Cross metallic roller plunger 9122-PT = Cross Teflon roller plunger 9161 = Spring, metallic coil 9166 = Spring, metallic rod 9169 = Spring, metallic wire	*Blank*=strain relief (SJT18/4 18AWG) G=PF1/2” thread M20=M20 thread (cable gland excluded)

◆ Dimensions & Operating Characteristics

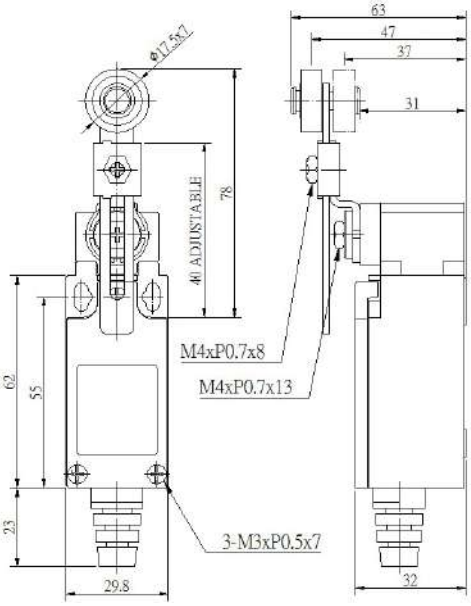
*Measurements in *millimeters*
*Different through-hole types do not affect operating characteristics



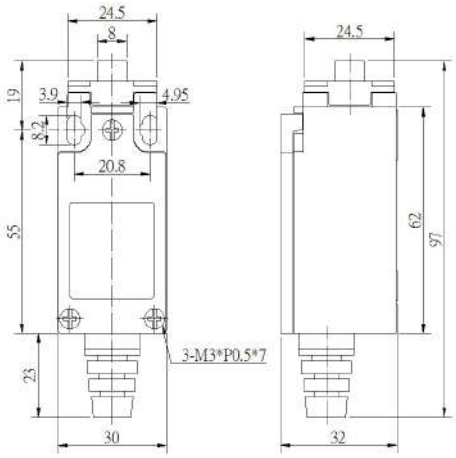
MEA-9104	
OF MAX	300g
RF MIN	100g
PT MAX	20°
OT MIN	50°
DT MAX	12°
TT MIN	70°



MEA-9107	
OF MAX	100g
RF MIN	40g
PT MAX	20°
OT MIN	50°
DT MAX	12°
TT MIN	70°



MEA-9108	
OF MAX	100g
RF MIN	40g
PT MAX	20°
OT MIN	50°
DT MAX	12°
TT MIN	70°



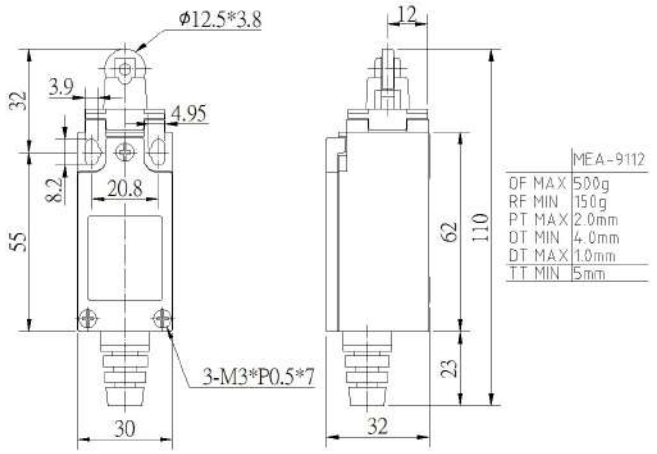
MEA-9111	
OF MAX	500g
RF MIN	150g
PT MAX	2.0mm
OT MIN	4.0mm
DT MAX	10mm
TT MIN	5mm

MEA-9104

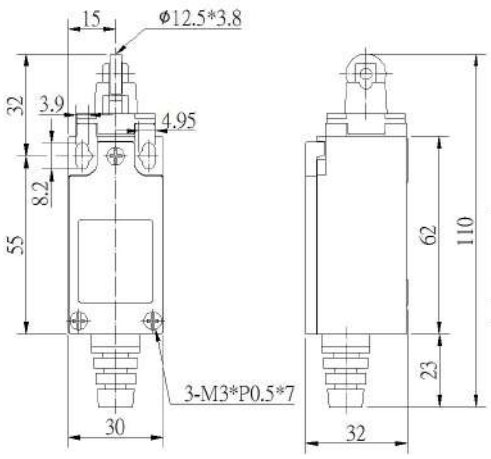
MEA-9107

MEA-9108

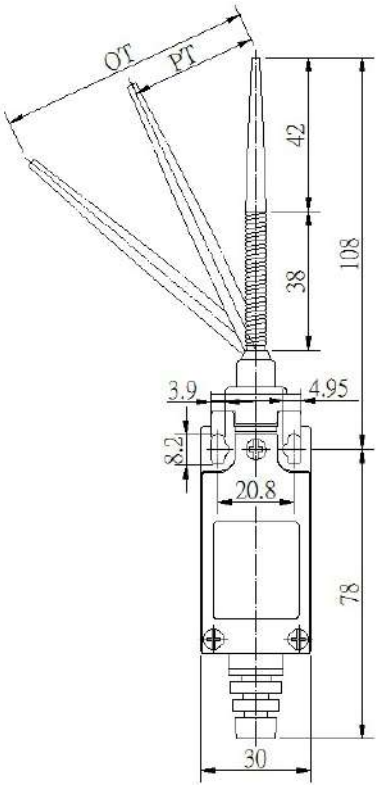
MEA-9111



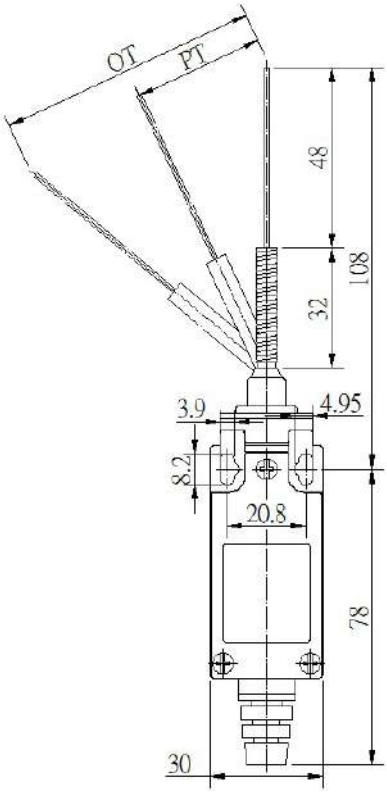
	MEA-9112
OF MAX	500g
RF MIN	150g
PT MAX	2.0mm
OT MIN	4.0mm
DT MAX	1.0mm
TT MIN	5mm



	MEA-9122
OF MAX	500g
RF MIN	150g
PT MAX	2.0mm
OT MIN	4.0mm
DT MAX	1.0mm
TT MIN	5mm



	MEA-9166
OF MAX	60g
RF MIN	–
PT MAX	25°
OT MIN	50°
DT MAX	–
TT MIN	70°



	MEA-9169
OF MAX	60g
RF MIN	–
PT MAX	25°
OT MIN	50°
DT MAX	–
TT MIN	70°

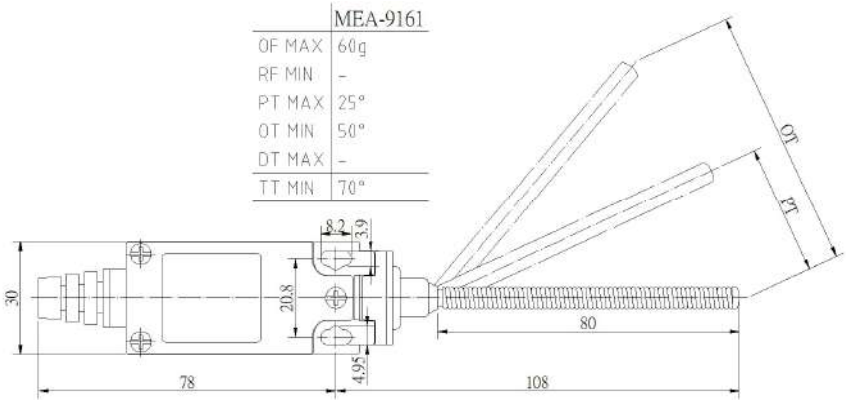
MEA-9112

MEA-9122

MEA-9166

MEA-9169

	MEA-9161
OF MAX	60g
RF MIN	–
PT MAX	25°
OT MIN	50°
DT MAX	–
TT MIN	70°



MEA-9161

MN-5 Series

Enclosed Basic Switch

◆ Features

- ✓ Basic switch made with additional durable enclosure
- ✓ Sealed actuators
- ✓ With terminal cover for IP65 rating

◆ Recognition(s)

- ✓ CE – EN60947
- ✓ UL – UL-508
- ✓ CCC – GB14048.5-2008
- ✓ RoHS Compliant
- ✓ Reach Unaffected

◆ Characteristics

Positive Opening	Electrical Contact	Terminal Type	Contact Form(s)	Poles & Throws	Actuation Sequence(s)
No	3 Points	Screw	Form C	SPDT Snap	Break(1) Make(2)

Operating Temp.	AC Rated	DC Rated	IP	Oil Resist	Dust Resist	Water Resist	Operating Speed
-10 to 80 Celsius	10A 250V	0.5A 125V	65	Yes	Yes	Yes	0.01mm to 50cm/sec

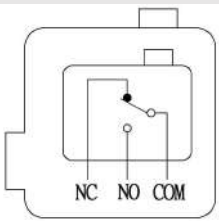
Operation Frequency	Contact Resistance	Insulation Resistance	Vibration
Mechanically: 120/min Electrically: 60/min	25mΩ max. (initial)	100MΩ min. (500VDC)	1.5mm amplitude at 10-55Hz

Storage Humidity	Service Life (min.)	Dielectric Strength
85% RH max	Mechanically: 10,000,000 operations Electrically: 500,000 operations	1000VAC, 50/60Hz for 1 minute between non-continuous terminals

Recommended tightening forces

Purpose	Screw type	Tightening
Mounting	M4	1.18~1.37 N·m
Panel Mount Screw Nut		2.94~4.92 N·m
Screw terminal		0.25±0.05 N·m

Circuitry



◆ Materials

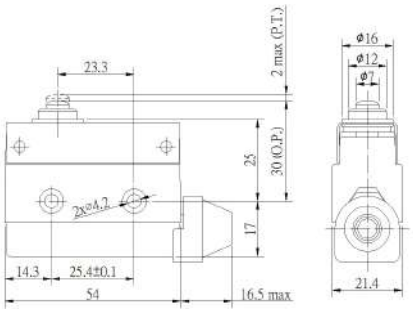
Actuation touch part	Electrical contact point	Enclosure
Nylon, or Stainless Steel, or Teflon	Silver-Nickel alloy	PBT plastic and stainless steel

◆ Nomenclature

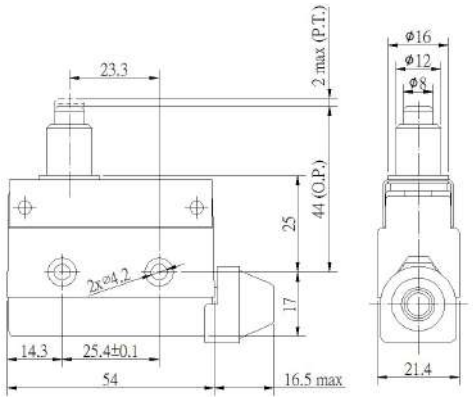
Series:	Actuator (and material):
MN –	**5100**
	5100 = Metallic plunger, short 5100-PT = Teflon plunger, short 5110 = Metallic Plunger 5110-PT = Teflon Plunger 5110L = Metallic Plunger, long 5110XL = Metallic Plunger, extra-long 5120 = Lever, straight, long 5121 = Lever, nylon roller, long 5124 = Lever, nylon roller, long, 1-way action 5140 = Lever, straight 5141 = Lever, nylon roller 5144 = Lever, nylon roller, 1-way action 5161 = Spring, metallic coil 5166 = Spring rod, Teflon tip 5169 = Spring, cat whisker 5310 = Metallic Plunger, panel mount 5310-PT = Teflon Plunger, panel mount 5311 = Metallic Roller plunger, panel mount 5311-P = Nylon Roller plunger, panel mount 5311-PT = Teflon Roller plunger, panel mount 5312 = Cross metallic roller plunger 5312-P = Nylon Roller plunger, panel mount 5312-PT = Teflon Roller plunger, panel mount

◆ Dimensions & Operating Characteristics

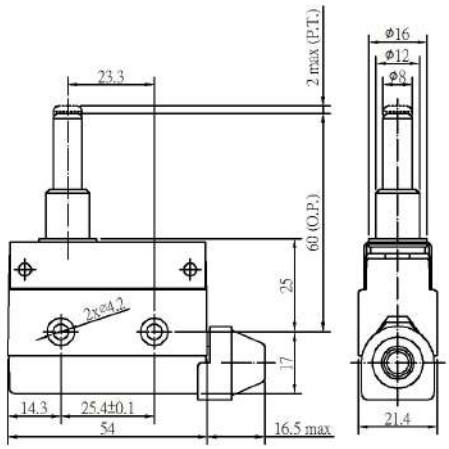
*Measurements in *millimeters*
*Actuation touch part materials does not affect operating characteristics



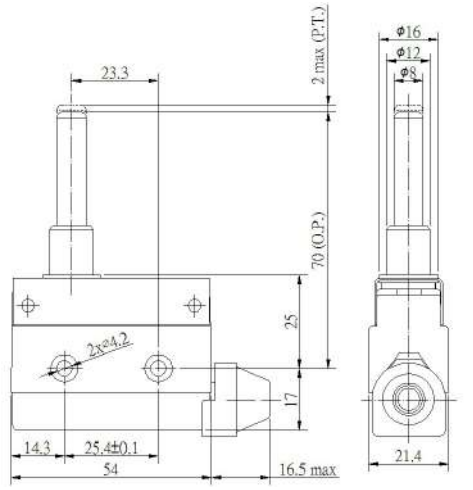
MN-5100	
OF MAX	600g
RF MIN	100g
PT MAX	2.0mm
OT MIN	0.8mm
OT MIN	0.8mm
OP	30±1.5mm



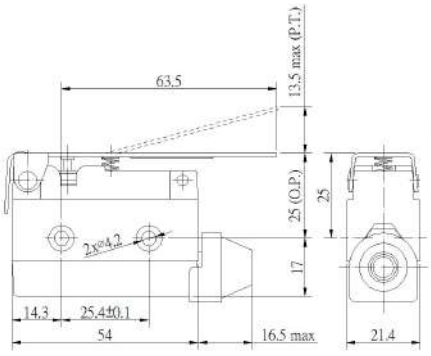
MN-5110	
OF MAX	600g
RF MIN	100g
PT MAX	2.0mm
OT MIN	5.0mm
PT MAX	2.0mm
OP	46.8±1.5mm



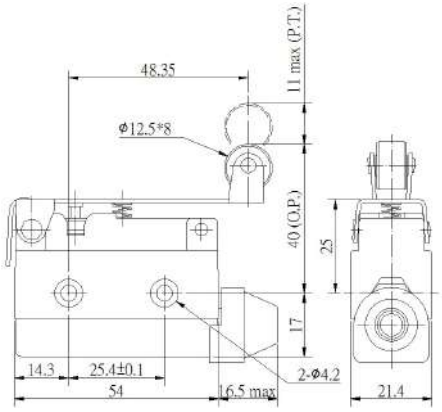
MN-5110L	
OF MAX	600g
RF MIN	100g
PT MAX	2.0mm
OT MIN	5.0mm
DT MAX	0.5mm
OP	60±1.5mm



MN-5110XL	
OF MAX	600g
RF MIN	100g
PT MAX	2.0mm
OT MIN	5.0mm
DT MAX	0.8mm
OP	70±1.5mm



MN-5120	
OF MAX	150g
RF MIN	40g
PT MAX	13.5mm
OT MIN	4.0mm
DT MAX	3.2mm
OP	25±2.0mm



MN-5121	
OF MAX	180g
RF MIN	50g
PT MAX	11.0mm
OT MIN	3.0mm
DT MAX	2.4mm
OP	40±1.9mm


MN-5100

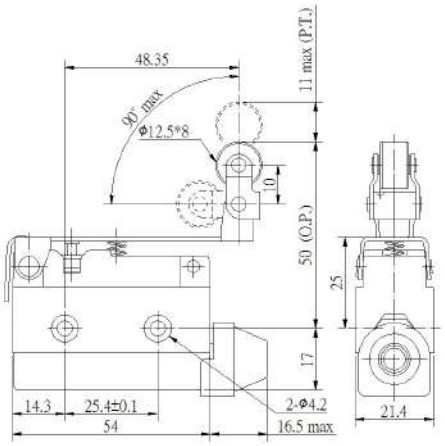

MN-5110


MN-5110L

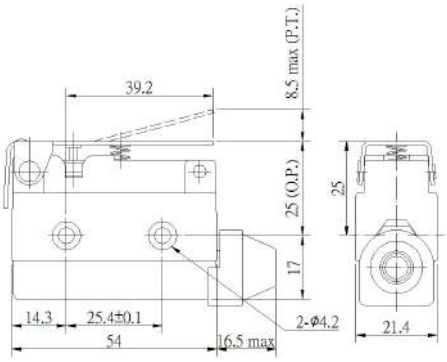

MN-5110XL


MN-5120

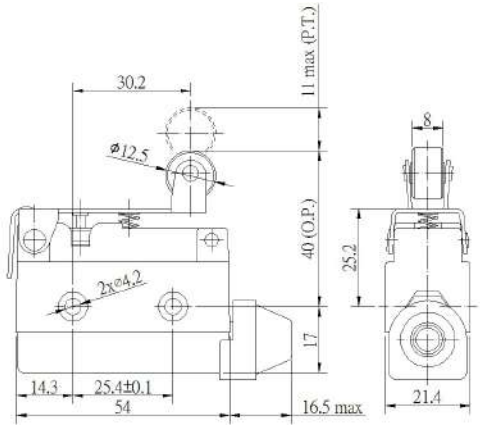

MN-5121



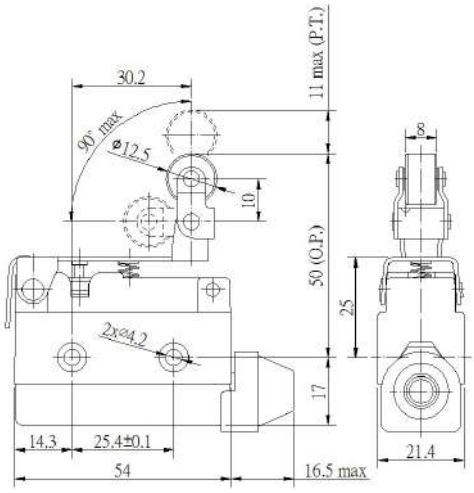
MN-5124	
OF MAX	200g
RF MIN	60g
PT MAX	11.0mm
OT MIN	3.0mm
DT MAX	2.4mm
OP	50±1.9mm



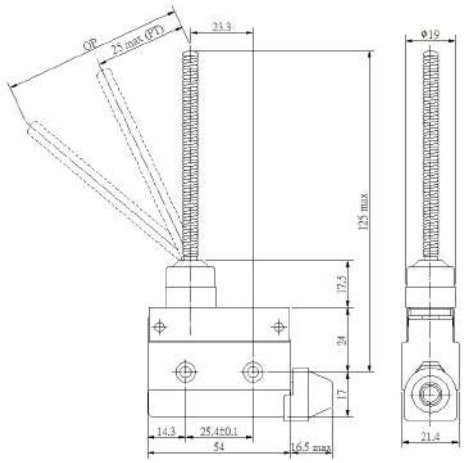
MN-5140	
OF MAX	220g
RF MIN	60g
PT MAX	8.5mm
OT MIN	2.5mm
DT MAX	2mm
OP	25±1.3mm



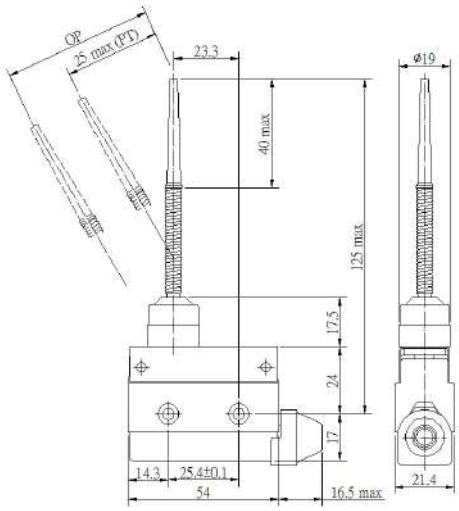
MN-5141	
OF MAX	240g
RF MIN	80g
PT MAX	6.5mm
OT MIN	2.0mm
DT MAX	1.5mm
OP	40±1.6mm



MN-5144	
OF MAX	280g
RF MIN	100g
PT MAX	6.5mm
OT MIN	2.0mm
DT MAX	1.5mm
OP	50±1.6mm

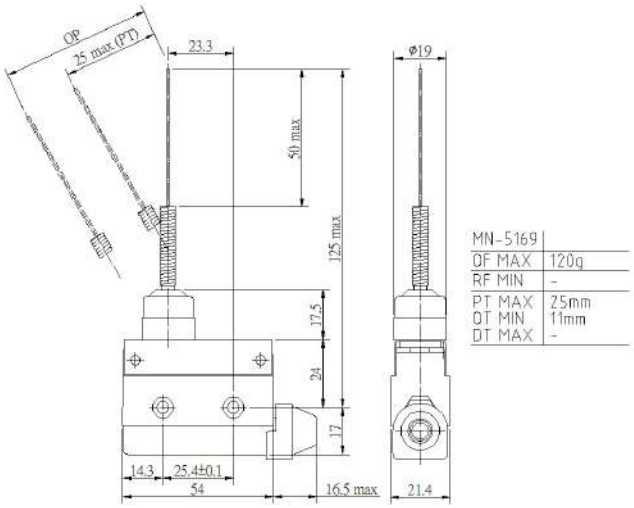


MN-5161	
OF MAX	120g
RF MIN	-
PT MAX	25mm
OT MIN	11mm
DT MAX	-

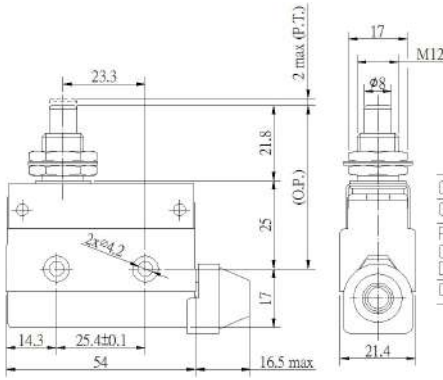


MN-5166	
OF MAX	120g
RF MIN	-
PT MAX	25mm
OT MIN	11mm
DT MAX	-

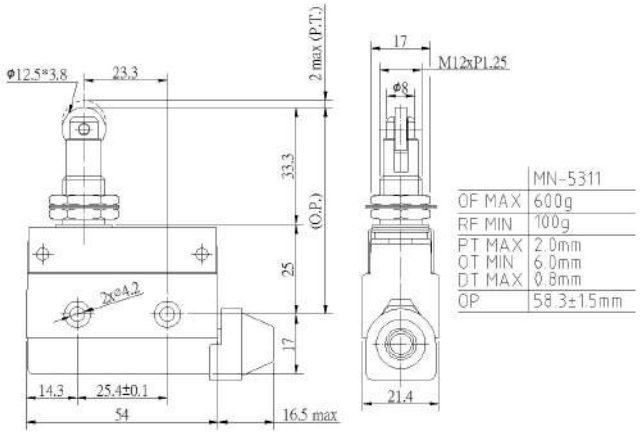
MN-5124 MN-5140 MN-5141 MN-5144 MN-5161 MN-5166



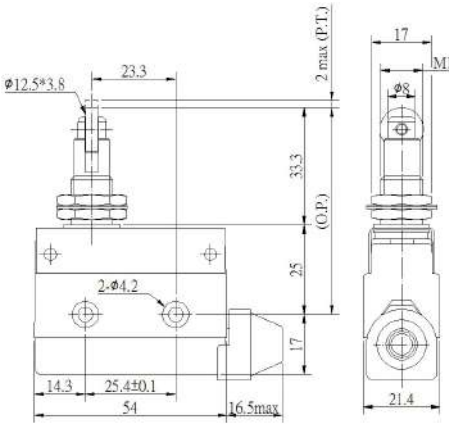
MN-5169	
OF MAX	120g
RF MIN	-
PT MAX	25mm
OT MIN	11mm
DT MAX	-



	MN-5310
OF MAX	600g
OF MIN	100g
PT MAX	2.0mm
OT MIN	6.0mm
DT MAX	0.8mm
OP	46.8±1.5mm



	MN-5311
OF MAX	600g
RF MIN	100g
PT MAX	2.0mm
OT MIN	6.0mm
DT MAX	0.8mm
OP	58.3±1.5mm



	MN-5312
OF MAX	600g
RF MIN	100g
PT MAX	2.0mm
OT MIN	6.0mm
DT MAX	0.8mm
OP	58.3±1.5mm

MN-5169

MN-5310

MN-5311

MN-5312

M4CZ Series

Enclosed Basic Switch

◆ Features

- ✓ Basic switch made with additional durable enclosure
- ✓ Completely sealed, Positive Opening switch
- ✓ Plastic PPS enclosure material helps resist against corrosive chemicals
- ✓ IP67 rated
- ✓ SVT cable type (UL approved)

◆ Recognition(s)

- ✓ CE – EN60947
- ✓ CCC – GB14048.5-2017
- ✓ RoHS Compliant
- ✓ Reach Unaffected

◆ Characteristics

Positive Opening	Electrical Contact	Terminal Type	Contact Form(s)	Poles & Throws	Actuation Sequence(s)
Yes	3 Points	Wire	Form C	SPDT	Break(1) Make(2)

Operating Temp.	AC Rated	DC Rated	IP	Oil Resist	Dust Resist	Water Resist	Operating Speed
-20 to 70 Celsius	1.5A 250V	0.4A 125V	67	Yes	Yes	Yes	0.1mm to 0.5m/sec

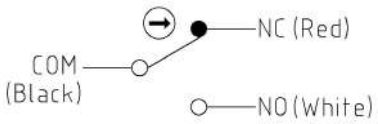
Operation Frequency	Contact Resistance	Insulation Resistance	Vibration
Mechanically: 120/min Electrically: 30/min	300mΩ max. (initial)	100MΩ min. (500VDC)	1.5mm amplitude at 10-55Hz

Storage Humidity	Service Life (min.)	Dielectric Strength
85% RH max	Mechanically: 2,000,000 operations Electrically: 500,000 operations	1000VAC, 50/60Hz for 1 minute between non-continuous terminals

Recommended tightening forces

Purpose	Screw type	Tightening
Mounting	M4	1.18~1.37N·m

Circuitry



◆ Materials

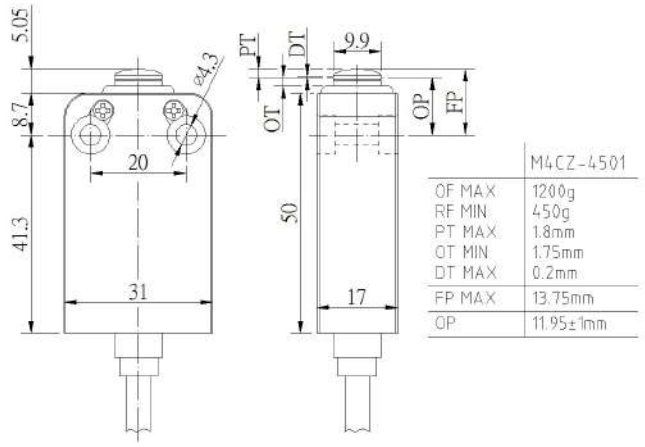
Actuation touch part	Electrical contact point	Enclosure
Nylon, or Stainless Steel	Silver 99.9%	PPC plastic with glass fiber

◆ Nomenclature

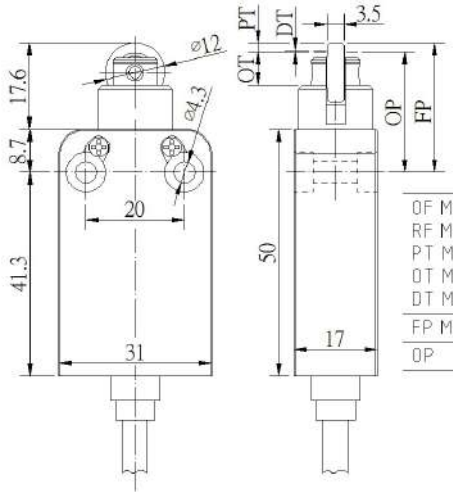
Series:	Cable direction	Actuator:	Cable Length:
M4CZ –	**45**	**01 –**	**1L**
	45=Bottom out	Stainless Steel Touch Part 01=Plunger 02=Roller plunger 03=Cross roller plunger 04=Side rotary, roller 06=Spring, coil 07=Side rotary, adjustable rod 08=Side rotary, adjustable roller 11=Plunger, sealed boot Nylon Touch Part 12=Roller plunger 13=Cross roller plunger 14=Side rotary, roller 16=Spring, coil 18=Side rotary, adjustable roller	1L=1m SVT 2L=2m SVT 3L=3m SVT

◆ Dimensions & Operating Characteristics

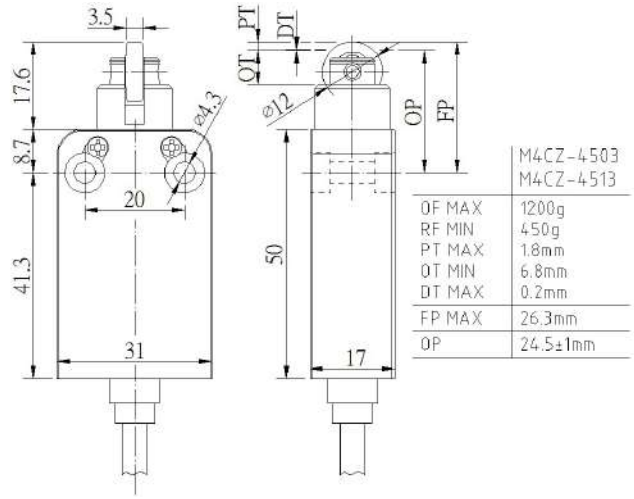
*Measurements in *millimeters*
*Actuation touch part materials does not affect operating characteristics



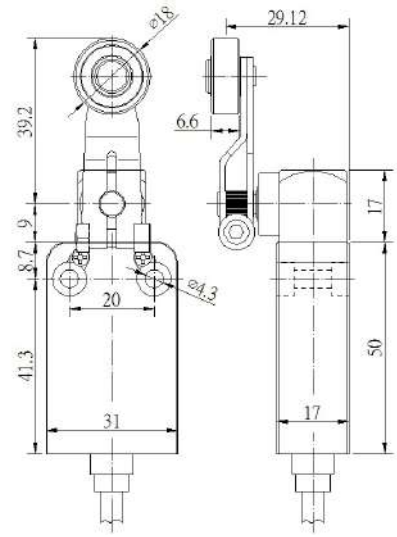
	M4CZ-4501
OF MAX	1200g
RF MIN	450g
PT MAX	1.8mm
OT MIN	1.75mm
DT MAX	0.2mm
FP MAX	13.75mm
OP	11.95±1mm



	M4CZ-4502 M4CZ-4512
OF MAX	1200g
RF MIN	450g
PT MAX	1.8mm
OT MIN	6.8mm
DT MAX	0.2mm
FP MAX	26.3mm
OP	24.5±1mm



	M4CZ-4503 M4CZ-4513
OF MAX	1200g
RF MIN	450g
PT MAX	1.8mm
OT MIN	6.8mm
DT MAX	0.2mm
FP MAX	26.3mm
OP	24.5±1mm



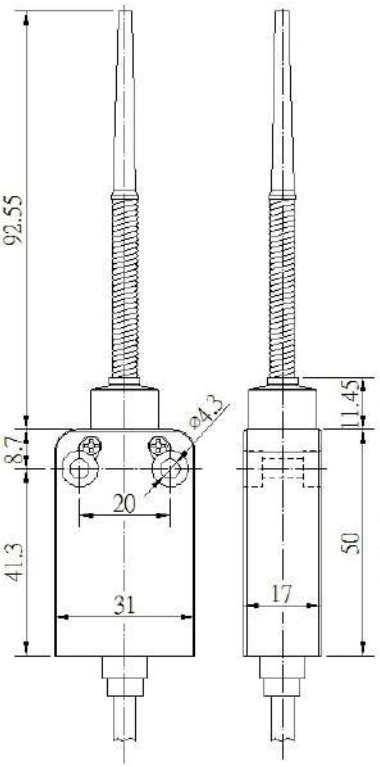
	M4CZ-4504 M4CZ-4514
OF MAX	580g
RF MIN	150g
PT MAX	25°
OT MIN	40°
DT MAX	3°
FP MAX	×
OP	×


M4CZ-4501

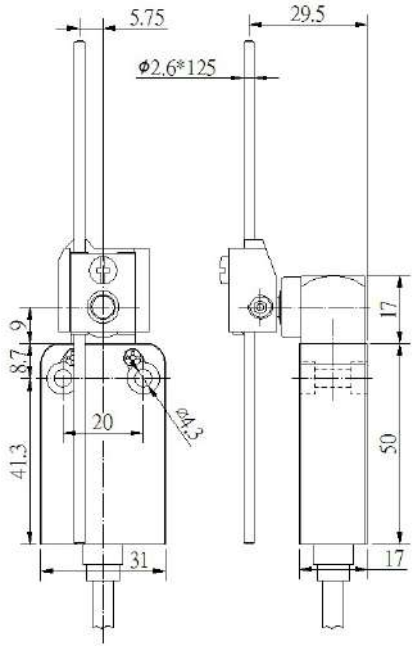

M4CZ-4502/4512


M4CZ-4503/4513

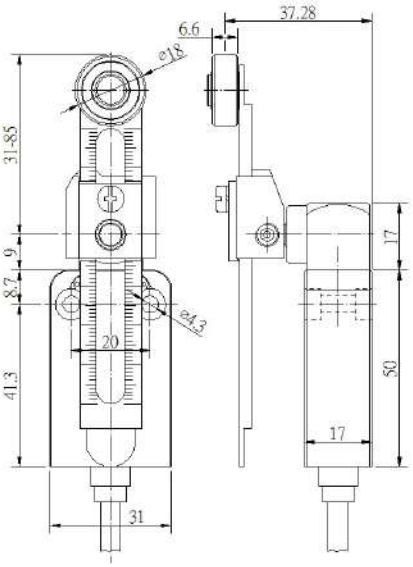

M4CZ-4504/4514



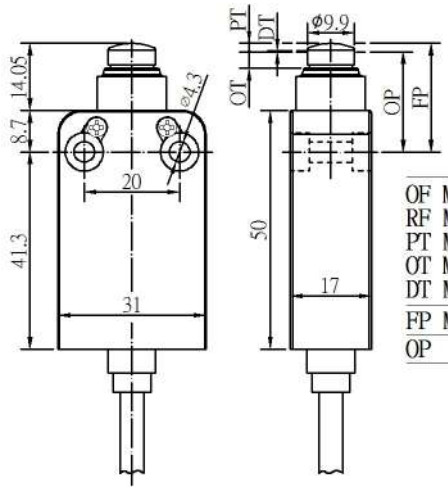
	M4CZ-4506 M4CZ-4516
OF MAX	90g
RF MIN	×
PT MAX	×
OT MIN	×
DT MAX	×
FP MAX	×
OP	×



	M4CZ-4507
OF MAX	200g
RF MIN	12g
PT MAX	20°
OT MIN	75°
DT MAX	10°
FP MAX	×
OP	×



	M4CZ-4508 M4CZ-4518
OF MAX	340g
RF MIN	21g
PT MAX	20°
OT MIN	75°
DT MAX	10°
FP MAX	×
OP	×



	M4CZ-4511
OF MAX	1200g
RF MIN	450g
PT MAX	1.8mm
OT MIN	5.2mm
DT MAX	0.2mm
FP MAX	22.75mm
OP	20.95±1mm

M4CZ-4506/4516

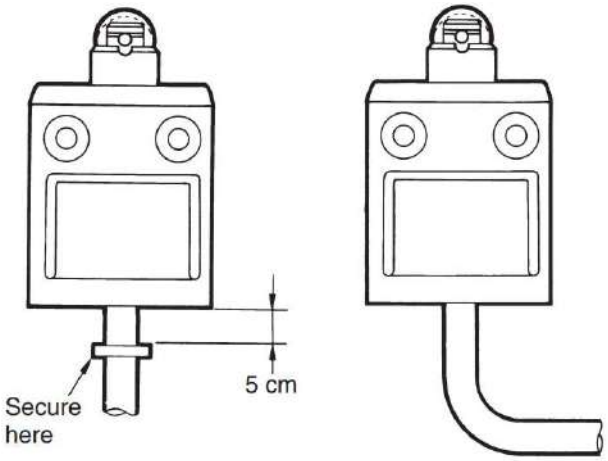
M4CZ-4507

M4CZ-4508/4518

M4CZ-4511

◆ Handling and Usage

The bottom of the Switch at the cable outlet is resin-molded. Secure the cable at a point 5 cm from the Switch bottom to prevent exertion of excess force on the cable.
When bending the cable, provide a bending radius of 45 mm min. so as not to damage the cable insulation or sheath. Excessive bending may cause fire or leakage current.



MV-3 Series

Miniature Basic Switch

◆ Features

- ✓ Standard miniature, and durable, switch for mass application
- ✓ High temperature enclosure material is rated for V-0 fire resist
- ✓ Forms C, A, and B contact variations available

◆ Recognition(s)

- ✓ CE – EN61058-1
- ✓ UL – UL-508
- ✓ CCC – GB14048.5-2008
- ✓ CSA – 6241 90
- ✓ RoHS Compliant
- ✓ Reach Unaffected

◆ Characteristics

Positive Opening	Electrical Contact	Terminal Type	Contact Form(s)	Poles & Throws	Actuation Sequence(s)
No	2 or 3 Points	Quick connect (#187)	Form(s) C, A or B	SPDT, or SPST-NO, or SPST-NC	Break(1) Make(2) or single make or single break

Operating Temp.	AC Rated	DC Rated	IP	Oil Resist	Dust Resist	Water Resist	Operating Speed
-25 to 80 Celsius, -25 to 120 Celsius	5A 125V-250V, 15A 125V-250V	0.5A 125V	40	No	No	No	0.01mm to 1m/sec

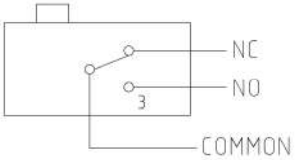
Operation Frequency	Contact Resistance	Insulation Resistance	Vibration
Mechanically: 600/min Electrically: 60/min	15mΩ max. (initial)	100MΩ min. (500VDC)	1.5mm amplitude at 10-55Hz

Storage Humidity	Service Life (min.)	Dielectric Strength
85% RH max	Mechanically: 5,000,000 operations Electrically: 500,000 operations	1000VAC, 50/60Hz for 1 minute between non-continuous terminals

Recommended tightening forces

Purpose	Screw type	Tightening
Mounting	M3	0.39~0.59N·m

Circuitry



◆ Materials

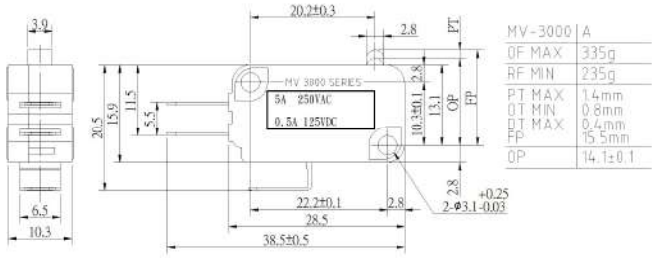
Actuation touch part	Electrical contact point	Enclosure
Stainless Steel, or Phenolic, or POM thermoplastic, or Nickel-plated brass	Silver-Nickel Alloy	PC plastic with ABS

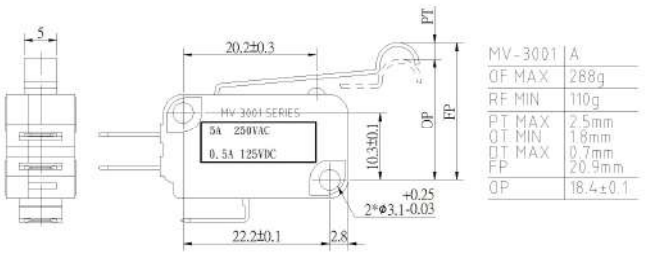
◆ Nomenclature

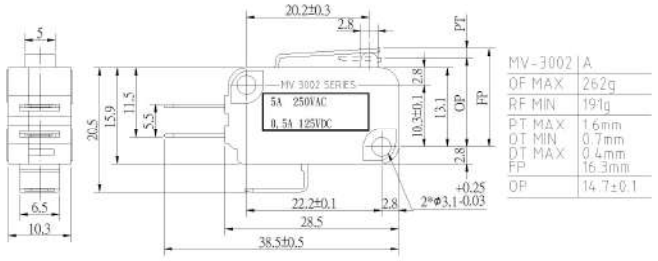
Series:	Actuator (and material):	Operating Force:	Amp code:	Contact Form:
MV –	**3103**	**A**	**20**	
	3000 = Phenolic Plunger 3001 = Metallic Lever, simulated roller 3002 = Metallic Lever, straight 3003 = Metallic Lever, straight long 3004 = Lever, nickel-plated brass roller 3005 = Lever, nickel-plated brass roller, long 3004PM = Lever, POM roller 3005PM = Lever, POM roller, long V-0 fire resist (120C temp.) 3100 = Phenolic Plunger 3101 = Metallic Lever, simulated roller 3102 = Metallic Lever, straight 3103 = Metallic Lever, straight long 3104 = Lever, nickel-plated brass roller 3105 = Lever, nickel-plated brass roller, long	A=Standard	*Blank*=5 Amps 20=15 Amps	*Blank*=Form C NO=Form A NC=Form B

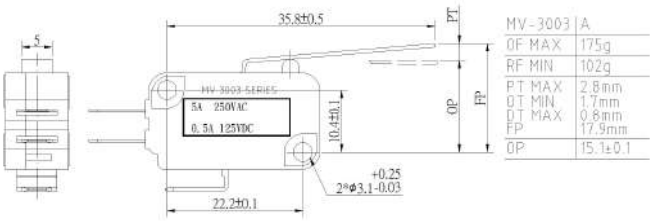
◆ Dimensions & Operating Characteristics

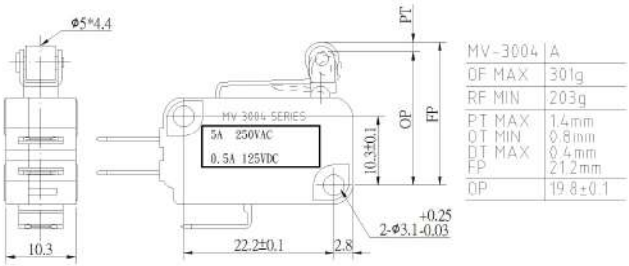
*Measurements in *millimeters*

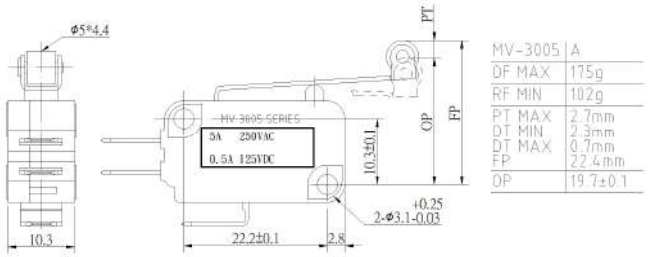




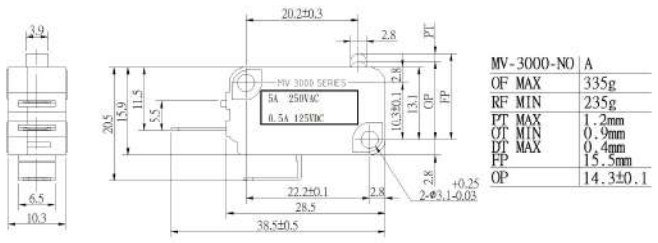


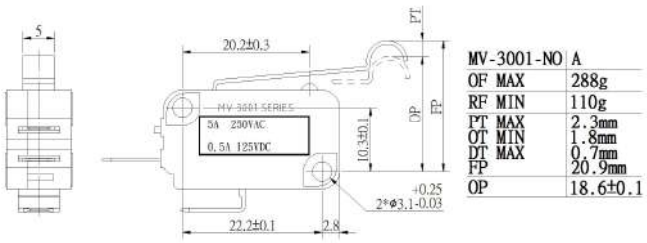


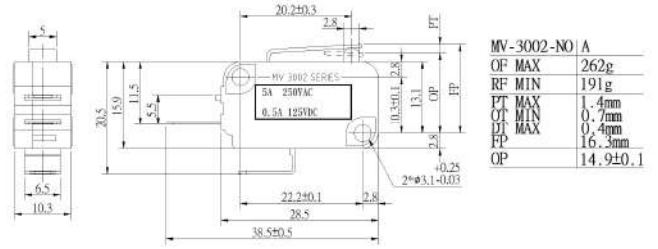


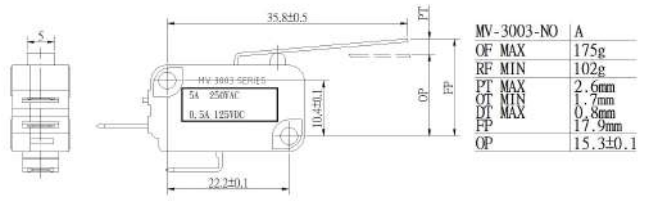


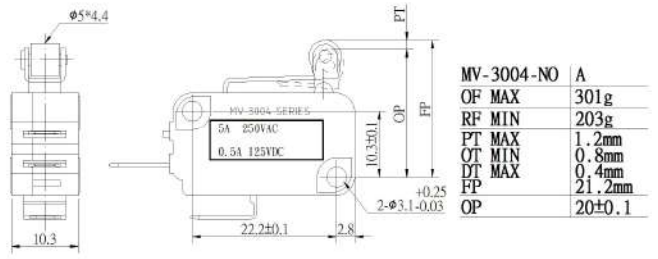
MV-3000 MV-3001 MV-3002 MV-3003 MV-3004 MV-3005

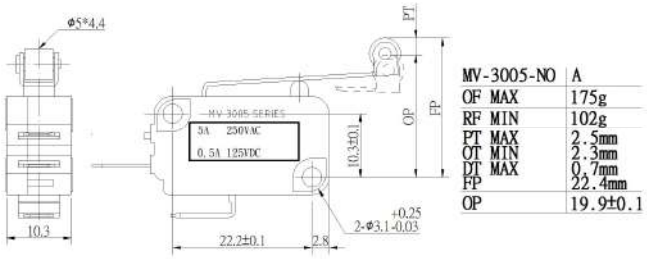












MV-3000-NO

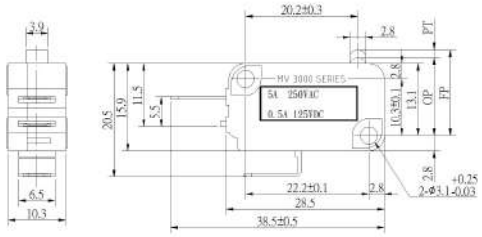
MV-3001-NO

MV-3002-NO

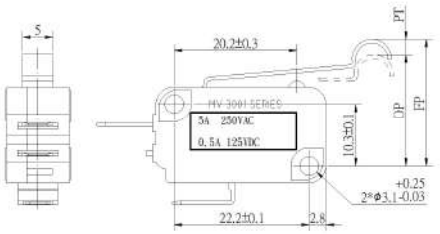
MV-3003-NO

MV-3004-NO

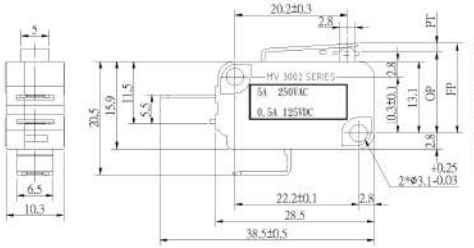
MV-3005-NO



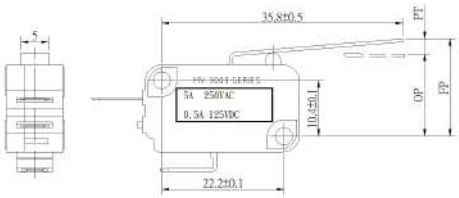
MV-3000-NC	A
OF MAX	335g
RF MIN	235g
PT MAX	1.2mm
OT MIN	0.9mm
DT MAX	0.4mm
FP	15.5mm
OP	14.3±0.1



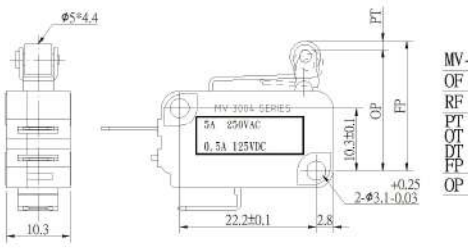
MV-3001-NC	A
OF MAX	288g
RF MIN	110g
PT MAX	2.3mm
OT MIN	1.8mm
DT MAX	0.7mm
FP	20.9mm
OP	18.6±0.1



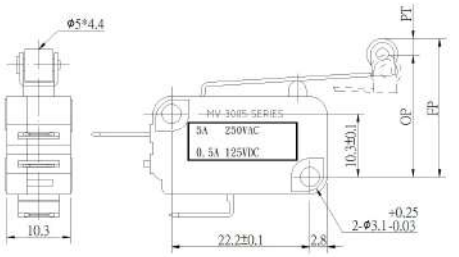
MV-3002-NC	A
OF MAX	262g
RF MIN	191g
PT MAX	1.4mm
OT MIN	0.7mm
DT MAX	0.4mm
FP	16.3mm
OP	14.9±0.1



MV-3003-NC	A
OF MAX	175g
RF MIN	102g
PT MAX	2.6mm
OT MIN	1.7mm
DT MAX	0.8mm
FP	17.9mm
OP	15.3±0.1



MV-3004-NC	A
OF MAX	301g
RF MIN	203g
PT MAX	1.2mm
OT MIN	0.8mm
DT MAX	0.4mm
FP	21.2mm
OP	20±0.1



MV-3005-NC	A
OF MAX	175g
RF MIN	102g
PT MAX	2.5mm
OT MIN	2.3mm
DT MAX	0.7mm
FP	22.4mm
OP	19.9±0.1

MV-3000-NC MV-3001-NC MV-3002-NC MV-3003-NC MV-3004-NC MV-3005-NC

MVS-32/33/34 Series

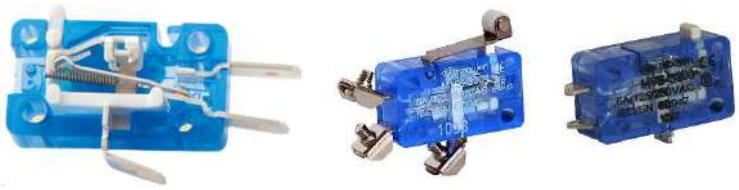
Miniature Basic Switch

◆ Features

- ✓ Standard transparent miniature, and durable, switch for mass application
- ✓ Positive Opening contacts
- ✓ #250 Quick connect, M3 Screw, and Solder terminals
- ✓ Tin-plated brass terminals for better oxidation resistance

◆ Recognition(s)

- ✓ CE – EN60947
- ✓ CSA – 6241 90
- ✓ RoHS Compliant
- ✓ Reach Unaffected



◆ Characteristics

Positive Opening	Electrical Contact	Terminal Type	Contact Form(s)	Poles & Throws	Actuation Sequence(s)
Yes	3 Points	Screw (M3), or Quick Connect (#250), or solder	Form C	SPDT Snap	Break(1) Make(2)

Operating Temp.	AC Rated	DC Rated	IP	Oil Resist	Dust Resist	Water Resist	Operating Speed
-40 to 85 Celsius	6A 125V-250V	0.5A 125V	40	No	No	No	0.01mm to 1m/sec

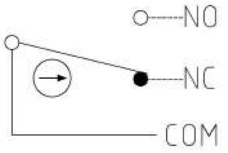
Operation Frequency	Contact Resistance	Insulation Resistance	Vibration
Mechanically: 60/min Electrically: 30/min	30mΩ max. (initial)	100MΩ min. (500VDC)	1.5mm amplitude at 10-55Hz

Storage Humidity	Service Life (min.)	Dielectric Strength
85% RH max	Mechanically: 10,000,000 operations Electrically: 500,000 operations	1000VAC, 50/60Hz for 1 minute between non-continuous terminals

Recommended tightening forces

Purpose	Screw type	Tightening
Mounting	M3	0.39~0.59 N·m
Screw terminals	M3	0.25±0.05 N·m

Circuitry



◆ Materials

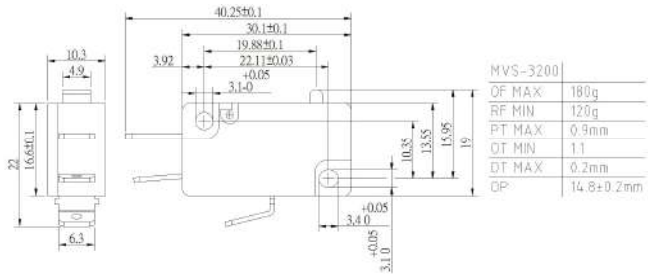
Actuation touch part	Electrical contact point	Enclosure
Stainless Steel SUS304 (levers), or Nylon+glass fiber (plungers), or POM (rollers)	Silver-Nickel Alloy Custom: Gold-plated Silver-Nickel Alloy	PC Plastic

◆ Nomenclature

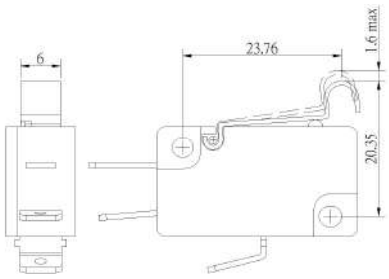
Series:	Terminal Type:	Actuator:
MVS –	**32**	**00**
	32=#250 Quick Connect 33=M3 Screw 34=Solder	Touch part, Plastic 00=Nylon pin plunger 04=POM roller lever 05=POM roller lever, long Touch part, Stainless Steel 01=SUS304 simulated roller lever 02=SUS304 lever 03=SUS304 lever long

◆ Dimensions & Operating Characteristics

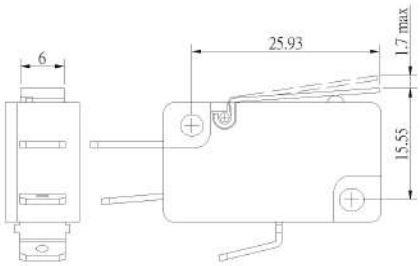
*Terminal types do not affect actuator operating characteristics
*Measurements in *millimeters*



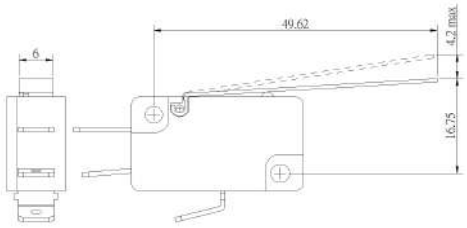
MVS-3200	
OF MAX	180g
RF MIN	120g
PT MAX	0.9mm
OT MIN	1.1
DT MAX	0.2mm
OP	14.8±0.2mm



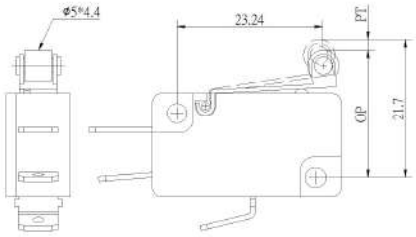
MVS-3201	
OF MAX	220g
RF MIN	50g
PT MAX	1.5mm
OT MIN	1.3mm
DT MAX	0.15mm
OP	20.6±0.3mm



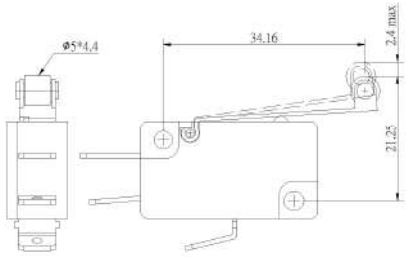
MVS-3202	
OF MAX	220g
RF MIN	50g
PT MAX	1.6mm
OT MIN	1.3mm
DT MAX	0.15mm
OP	15.8±0.3mm



MVS-3203	
OF MAX	140g
RF MIN	20g
PT MAX	3.8mm
OT MIN	3.0mm
DT MAX	0.5mm
OP	17.5±0.5mm



MVS-3204	
OF MAX	160g
RF MIN	120g
PT MAX	0.9mm
OT MIN	1.2mm
DT MAX	0.2mm
PD	20.65mm
OP	21.25±0.3mm



MVS-3205	
OF MAX	140g
RF MIN	250g
PT MAX	2.5mm
OT MIN	1.5mm
DT MAX	0.3mm
OP	21.7±0.5mm


MVS-3200

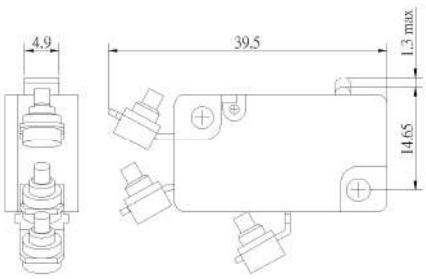

MVS-3201


MVS-3202

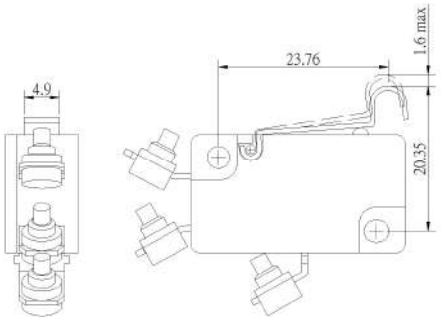

MVS-3203


MVS-3204

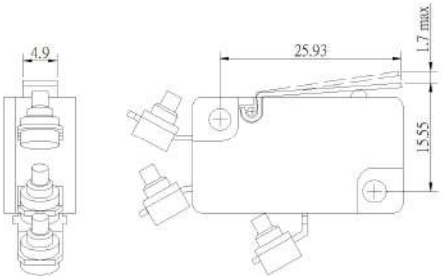

MVS-3205



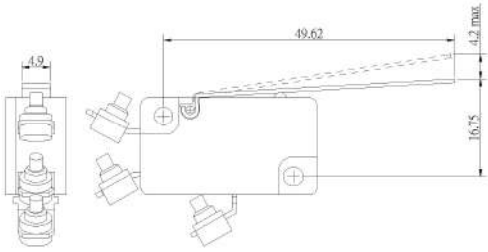
MVS-3300	
OF MAX	250g
RF MIN	50g
PT MAX	1.2mm
OT MIN	1.0mm
DT MAX	0.12mm
OP	14.8±0.2mm



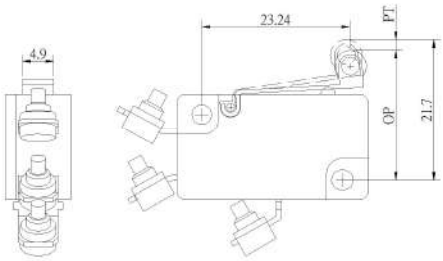
MVS-3301	
OF MAX	220g
RF MIN	50g
PT MAX	1.5mm
OT MIN	1.3mm
DT MAX	0.15mm
OP	20.6±0.3mm



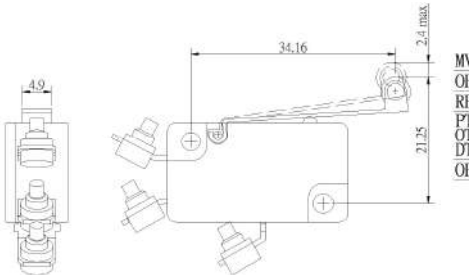
MVS-3302	
OF MAX	220g
RF MIN	50g
PT MAX	1.6mm
OT MIN	1.3mm
DT MAX	0.15mm
OP	15.8±0.3mm



MVS-3303	
OF MAX	140g
RF MIN	20g
PT MAX	3.8mm
OT MIN	3.0mm
DT MAX	0.5mm
OP	17.5±0.2mm



MVS-3304	
OF MAX	160g
RF MIN	120g
PT MAX	0.9mm
OT MIN	1.2mm
DT MAX	0.2mm
OP	21.25±0.3mm



MVS-3305	
OF MAX	140g
RF MIN	250g
PT MAX	2.5mm
OT MIN	1.5mm
DT MAX	0.3mm
OP	21.7±0.5mm

MVS-3300

MVS-3301

MVS-3302

MVS-3303

MVS-3304

MVS-3305

MVS-36 Series

Miniature Basic Switch

◆ Features

- ✓ Complete seal, IP67-rated, with 0.5 m wire-out (AWG20)
- ✓ Positive Opening contacts
- ✓ Forms C, A, and B contact variations available
- ✓ Tin-plated brass terminals for better oxidation resistance

◆ Recognition(s)

- ✓ CE – EN60947
- ✓ CSA – 6241 90
- ✓ RoHS Compliant
- ✓ Reach Unaffected

◆ Characteristics

Positive Opening	Electrical Contact	Terminal Type	Contact Form(s)	Poles & Throws	Actuation Sequence(s)
Yes	2 or 3 Points	Wire (0.5m)	Form C, A, or B	SPDT Snap or SPST-NO or SPST-NC	Break(1) Make(2) or Single Make or Single Break

Operating Temp.	AC Rated	DC Rated	IP	Oil Resist	Dust Resist	Water Resist	Operating Speed
-40 to 80 Celsius	1.5A 230V	0.5A 60V	67	Yes	Yes	Yes	0.01mm to 1m/sec

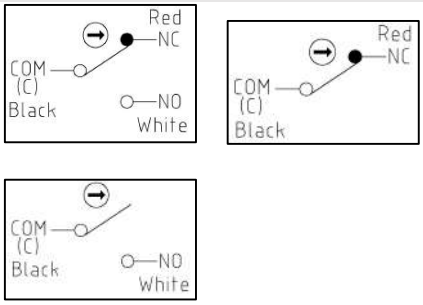
Operation Frequency	Contact Resistance	Insulation Resistance	Vibration
Mechanically: 60/min Electrically: 30/min	30mΩ max. (initial)	100MΩ min. (500VDC)	1.5mm amplitude at 10-55Hz

Storage Humidity	Service Life (min.)	Dielectric Strength
85% RH max	Mechanically: 5,000,000 operations Electrically: 50,000 operations	1000VAC, 50/60Hz for 1 minute between non-continuous terminals

Recommended tightening forces

Purpose	Screw type	Tightening
Mounting	M3	0.39~0.59N·m

Circuitry



◆ Materials

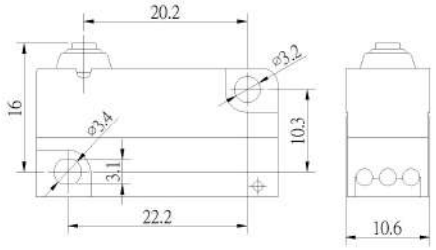
Actuation touch part	Electrical contact point	Enclosure
Stainless Steel SUS304 (levers), or POM+glass fiber (plunger & rollers)	Silver 99.9% Custom: Gold-plated Silver	PC Plastic

◆ Nomenclature

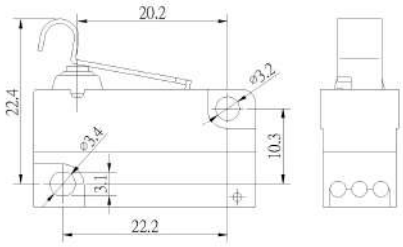
Series:	Terminal Type:	Actuator:	Contact Form:
MVS –	**36**	**00 –**	**NC**
	36=sealed wire-out	Touch part, Plastic 00=POM pin plunger 04=POM roller lever 05=POM roller lever, long Touch part, Stainless Steel 01=SUS304 simulated roller lever 02=SUS304 lever 03=SUS304 lever long	Blank=Form C (3 wires) NO=Form A (2 wires) NC=Form B (2 wires)

◆ Dimensions & Operating Characteristics

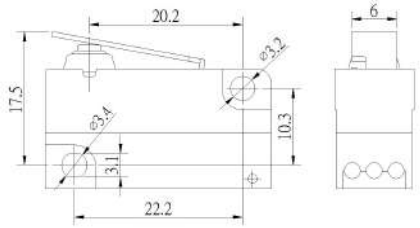
*Measurements in *millimeters*
*NO/NC contact forms do not affect operating characteristics; examples below are Form C contacts (3 wires)



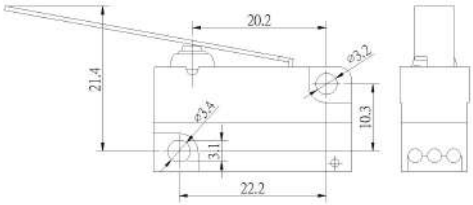
	MVS-3600
FP MAX	16+0.1mm
OP	14.8±0.2mm
RP	15.1±0.2mm
TTP MIN	13mm
DT MAX	0.3mm



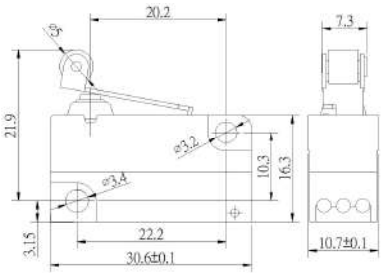
	MVS-3601
FP MAX	22.4±0.3mm
OP	21.1±0.4mm
RP	21.4±0.4mm
TTP MIN	19mm
DT MAX	0.3mm



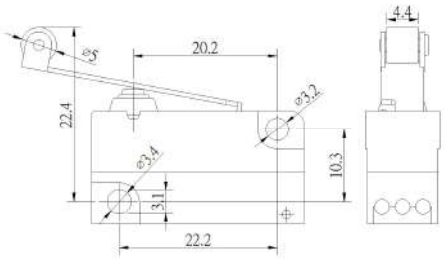
	MVS-3602
FP MAX	17.5+0.2mm
OP	15.9±0.3mm
RP	16.2±0.3mm
TTP MIN	13.4mm
DT MAX	0.3mm



	MVS-3603
FP MAX	21.4+0.3mm
OP	18±0.4mm
RP	18.8±0.4mm
TTP MIN	12.9mm
DT MAX	0.8mm



	MVS-3604
FP MAX	21.9±0.3mm
OP	20.7±0.4mm
RP	21±0.4mm
TTP MIN	19mm
DT MAX	0.3mm



	MVS-3605
FP MAX	22.4±0.3mm
OP	21.1±0.4mm
RP	21.4±0.4mm
TTP MIN	19mm
DT MAX	0.3mm


MVS-3600


MVS-3601


MVS-3602


MVS-3603


MVS-3604


MVS-3605

MZ-7 Series
Micro Switch

◆ Features
- ✓ Micro sized, with Positive Opening contacts
- ✓ IP40, 60, or 67 protection types
- ✓ Quick connect (#110) or wire (0.5m) terminals

◆ Recognition(s)
- ✓ CE – EN60947
- ✓ CSA – 6241 90
- ✓ RoHS Compliant
- ✓ Reach Unaffected

◆ Characteristics

Positive Opening	Electrical Contact	Terminal Type	Contact Form(s)	Poles & Throws	Actuation Sequence(s)
Yes	3 Points	Quick connect (#110) or wire (0.5m)	Form C	SPDT	Break(1) Make(2)

Operating Temp.	AC Rated	DC Rated	IP	Oil Resist	Dust Resist	Water Resist	Operating Speed
-25 to 80 Celsius	5A 250V	n/a	40, 60, 67	Yes or No	Yes or No	Yes or No	0.01mm to 1m/sec

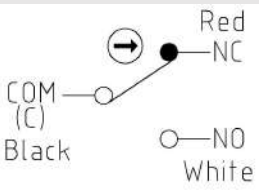
Operation Frequency	Contact Resistance	Insulation Resistance	Vibration
Mechanically: 200/min Electrically: 60/min	100mΩ max. (initial)	100MΩ min. (500VDC)	1.5mm amplitude at 10-55Hz

Storage Humidity	Service Life (min.)	Dielectric Strength
85% RH max	Mechanically: 500,000 operations Electrically: 50,000 operations	1000VAC, 50/60Hz for 1 minute between non-continuous terminals

Recommended tightening forces

Purpose	Screw type	Tightening
Mounting	M2	0.2 N·m MAX

Circuitry



◆ Materials

Actuation touch part	Electrical contact point	Enclosure
Stainless Steel SUS304 (Levers), or V-0 PC Plastic (Plunger), or POM, black (Rollers)	Silver 99.9% or Gold plated silver	PC Plastic

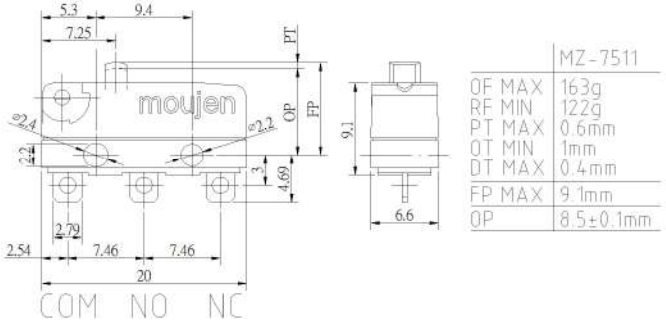
◆ Nomenclature

Series:	Actuator:	Contact material:	IP-rating:	Terminals:	Wire Specification:
MZ – 7	**5**	**1**	**3**	**R**	**U**
	5 = V-0 PC plastic plunger 6 = SUS304 Lever 7 = SUS304 Lever, long 8 = POM Roller lever 9 = POM Roller lever, long 0 = SUS304 Simulated roller lever	1=Silver 2=Gold plated silver	1=IP40 2=IP60 3=IP67 4=IP67 with PVC tube	*Blank*=Quick connect (#110) Only applicable for IP40, IP60 3C Wires Only applicable for IP67 R=Right side L=Left side B=Bottom	S=Standard U=UL

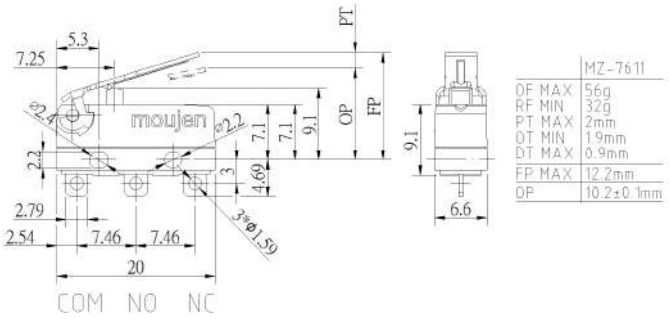
◆ Dimensions & Operating Characteristics

*Measurements in *millimeters*

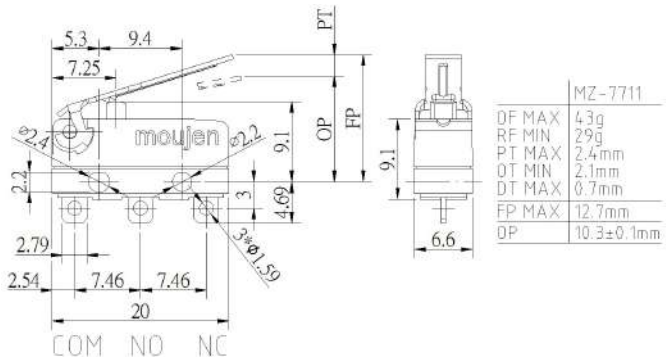
IP 40 Variants



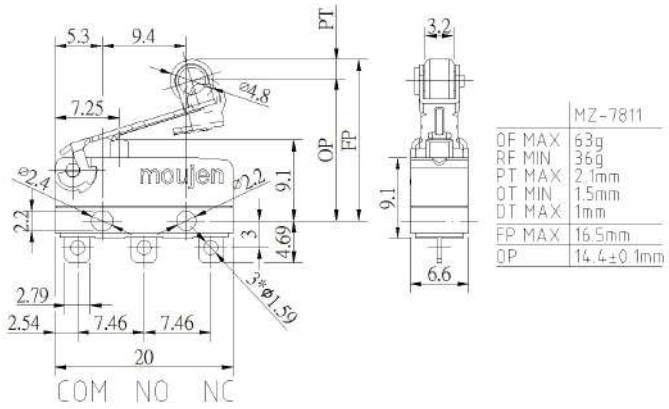
	MZ-7511
OF MAX	163g
RF MIN	122g
PT MAX	0.6mm
OT MIN	1mm
DT MAX	0.4mm
FP MAX	9.1mm
OP	8.5±0.1mm



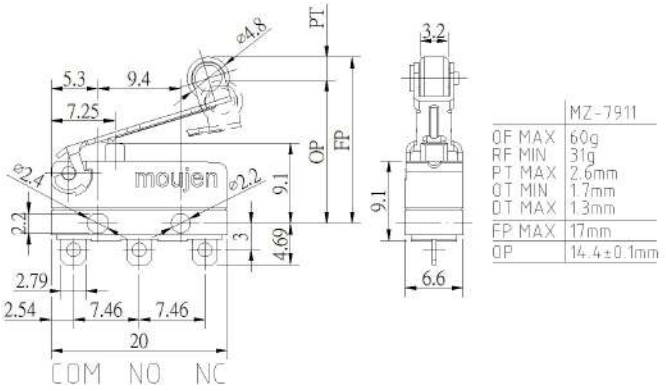
	MZ-7611
OF MAX	56g
RF MIN	32g
PT MAX	2mm
OT MIN	1.9mm
DT MAX	0.9mm
FP MAX	12.2mm
OP	10.2±0.1mm



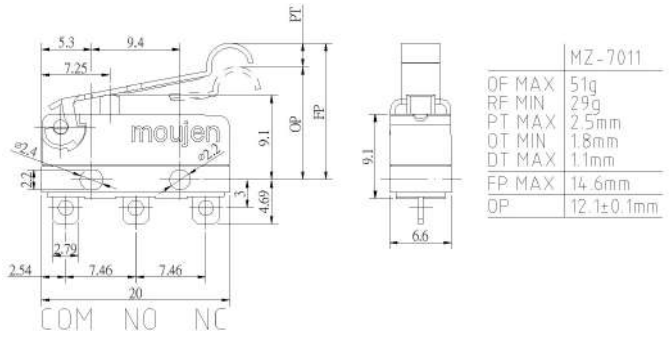
	MZ-7711
OF MAX	43g
RF MIN	29g
PT MAX	2.4mm
OT MIN	2.1mm
DT MAX	0.7mm
FP MAX	12.7mm
OP	10.3±0.1mm



	MZ-7811
OF MAX	63g
RF MIN	36g
PT MAX	2.1mm
OT MIN	1.5mm
DT MAX	1mm
FP MAX	16.5mm
OP	14.4±0.1mm



	MZ-7911
OF MAX	60g
RF MIN	31g
PT MAX	2.6mm
OT MIN	1.7mm
DT MAX	1.3mm
FP MAX	17mm
OP	14.4±0.1mm



	MZ-7011
OF MAX	51g
RF MIN	29g
PT MAX	2.5mm
OT MIN	1.8mm
DT MAX	1.1mm
FP MAX	14.6mm
OP	12.1±0.1mm

MZ-7511

MZ-7611

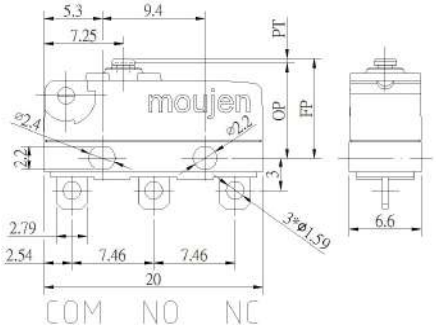
MZ-7711

MZ-7811

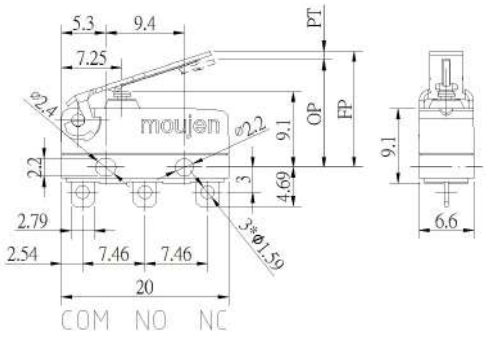
MZ-7911

MZ-7011

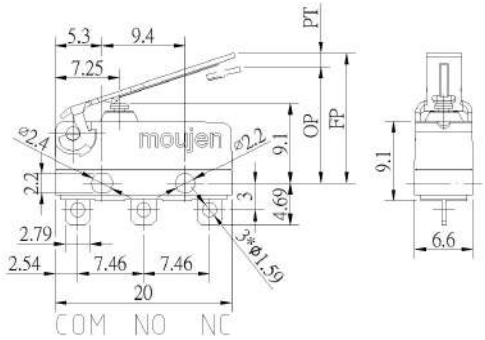
IP 60 Variants



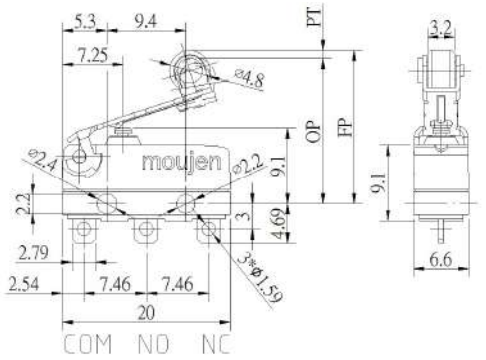
	MZ-7512
OF MAX	171g
RF MIN	145g
PT MAX	0.4mm
OT MIN	0.9mm
DT MAX	0.3mm
FP MAX	9.3mm
OP	8.9±0.1mm



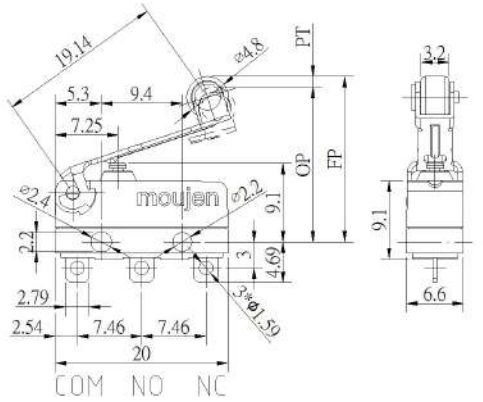
	MZ-7612
OF MAX	64g
RF MIN	35g
PT MAX	1mm
OT MIN	3mm
DT MAX	0.7mm
FP MAX	12.6mm
OP	11.6±0.1mm



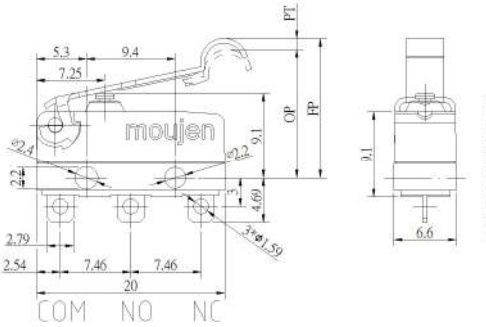
	MZ-7712
OF MAX	67g
RF MIN	31g
PT MAX	1.6mm
OT MIN	3.5mm
DT MAX	0.9mm
FP MAX	13.7mm
OP	12.1±0.1mm



	MZ-7812
OF MAX	73g
RF MIN	37g
PT MAX	0.9mm
OT MIN	2.7mm
DT MAX	0.7mm
FP MAX	17.2mm
OP	16.3±0.1mm



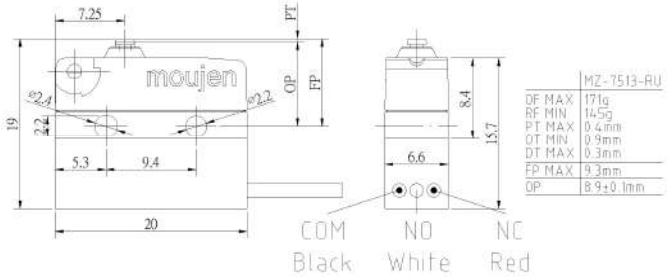
	MZ-7912
OF MAX	68g
RF MIN	34g
PT MAX	1.2mm
OT MIN	3.4mm
DT MAX	0.8mm
FP MAX	17.6mm
OP	16.4±0.1mm



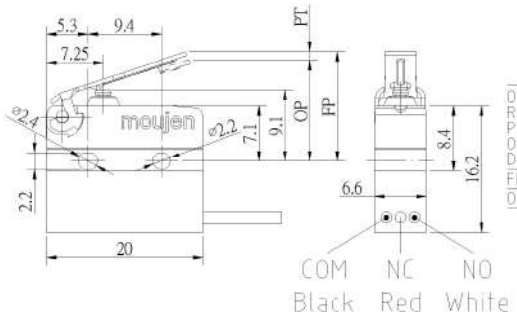
	MZ-7012
OF MAX	60g
RF MIN	32g
PT MAX	1.1mm
OT MIN	3.8mm
DT MAX	0.8mm
FP MAX	15.5mm
OP	14.4±0.1mm

MZ-7512 MZ-7612 MZ-7712 MZ-7812 MZ-7912 MZ-7012

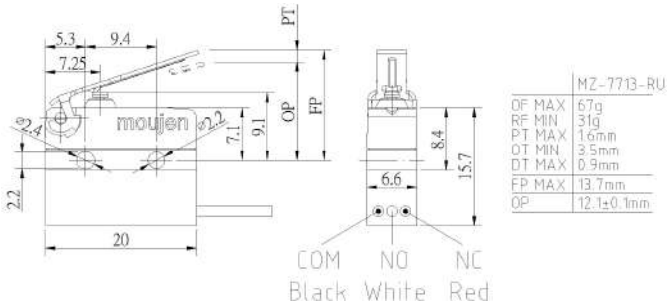
IP 67 Variants (right-side)



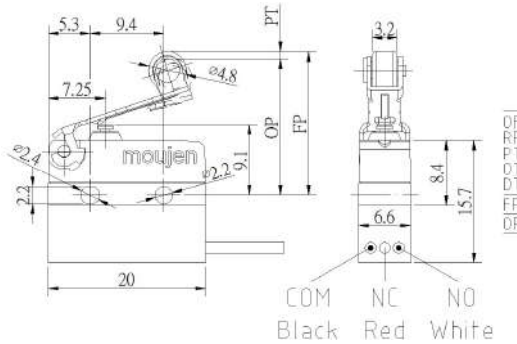
	MZ-7513-RU
OF MAX	171g
RF MIN	145g
PT MAX	0.4mm
OT MIN	0.9mm
DT MAX	0.3mm
FP MAX	9.3mm
OP	8.9±0.1mm



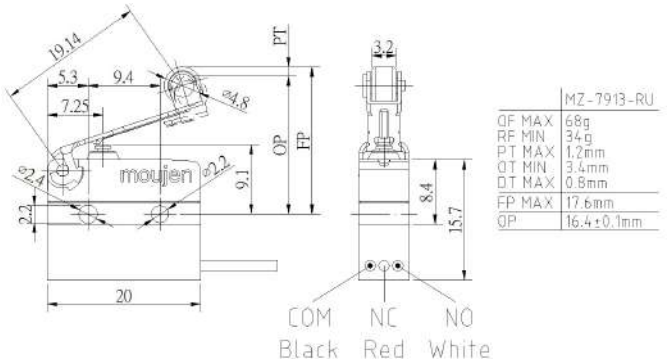
	MZ-7613-RU
OF MAX	64g
RF MIN	35g
PT MAX	1mm
OT MIN	3mm
DT MAX	0.7mm
FP MAX	12.6mm
OP	11.6±0.1mm



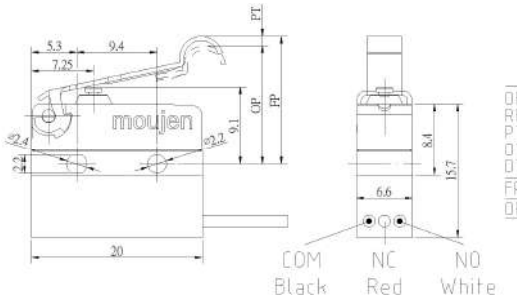
	MZ-7713-RU
OF MAX	67g
RF MIN	31g
PT MAX	1.6mm
OT MIN	3.5mm
DT MAX	0.9mm
FP MAX	13.7mm
OP	12.1±0.1mm



	MZ-7813-RU
OF MAX	73g
RF MIN	37g
PT MAX	0.9mm
OT MIN	2.7mm
DT MAX	0.7mm
FP MAX	17.2mm
OP	16.3±0.1mm



	MZ-7913-RU
OF MAX	68g
RF MIN	34g
PT MAX	1.2mm
OT MIN	3.4mm
DT MAX	0.8mm
FP MAX	17.6mm
OP	16.4±0.1mm



	MZ-7013
OF MAX	60g
RF MIN	32g
PT MAX	1.1mm
OT MIN	3.8mm
DT MAX	0.8mm
FP MAX	15.5mm
OP	14.4±0.1mm

MZ-7513-R MZ-7613-R MZ-7713-R MZ-7813-R MZ-7913-R MZ-7013-R

M6 Series
Pushbutton

Features
- ✓ For front panel cut-outs measuring ø16.2mm
- ✓ IP65 & V-0 rated enclosure
- ✓ Solder/plug-in #110 (2.8mm) terminals
- ✓ PCB (0.8w x 0.5t) terminals
- ✓ Tough and durable plastic body with fiber glass
- ✓ Positive opening E-Stop Pushbuttons


Pushbuttons (M6P)


Selectors (M6S)

Recognition(s)
- ✓ CE – EN60947
- ✓ CSA – 6241 90
- ✓ RoHS Compliant
- ✓ Reach Unaffected


Pilot lights (M6L)


Emergency Stop (M6E)


Key Selectors (M6K)


Buzzers (M6Z)

Characteristics

Positive Opening	Electrical Contact	Terminal Type	Contact Form(s)	Poles & Throws	Actuation Sequence(s)
Yes & No	Max 9	Solder/Plug-in (#110), or PCB (0.8w x 0.5t)	M6L=*not applicable* M6P=1 or 2 “C” M6S=1 or 2 “C” M6K=1 or 2 “C” M6Z=*not applicable* M6E=1 or 2 “B”	M6L=*not applicable* M6P=SPDT/DPDT M6S=SPDT/2*SPDT/DPDT M6K=SPDT/2*SPDT/DPDT M6Z=*not applicable* M6E=SPST-NC/DPST-NC	Break(1)-Make(2), DB(1)-DM(2), Single Break, Double Break

Operating Temp.	AC Rated	DC Rated	Oil Resist	Dust Resist	Water Resist	IP
-25 to 55 C	Switch=2A 250V	Switch=0.4A 125V	Yes	Yes	Yes	65

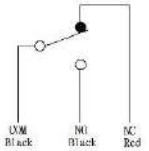
Operation Frequency	Service Life (min.)	Dielectric Strength
Momentary~1800/hr Alternate~1200/hr Selector~1200/hr E-Stop~600/hr	Momentary=2,000,000 Alternate=250,000 Selectors=250,000 E-Stop=100,000	Between live part and ground=2500Vac, 1min Between terminals of different poles=2500Vac, 1min Between terminals of the same poles=1000Vac, 1min

Operating Humidity	Contact Resistance	Insulation Resistance	Vibration
85% RH max	50mΩ max. (initial)	100MΩ min. (500VDC)	1.5mm amplitude at 10-55Hz

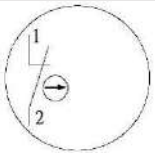
Recommended tightening forces

Purpose	Screw type	Tightening
Panel mount	Lock Ring	0.88 N·m MAX

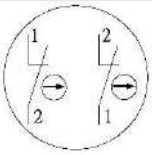
Circuitry



Single Form C



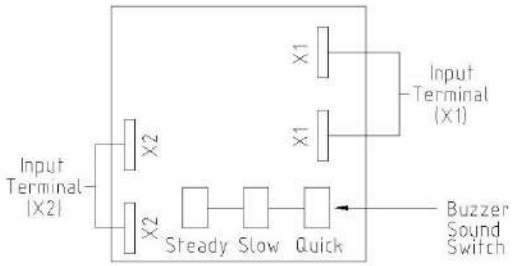
M6E-1NC



M6E-2NC

Additional Characteristics: Internal Illumination Lamps	
LED (DC)	6 Vdc 25mA
	12 Vdc 25mA
	24 Vdc 25mA
Neon (AC)	110 Vac 1.2mA
	220 Vac 1.2mA

Additional Characteristics: Buzzer (inside M6Z)	
Sound types: (select type at bottom of unit):	Steady sound, Quick cycle (600cycles/min), Slow cycle (100cycles/min)
Sound Pressure:	80dB min.
Sound Frequency:	2KHz±500HZ
Insulation Voltage:	60V AC/DC
Operating Voltage:	6V AC/DC, 12~24V AC/DC
Current Draw:	DC=7mA AC=20mA
Operating Temperature:	-25 to 55 C
Operating Humidity	85% RH max
Insulation Resistance	100MΩ min. (500VDC)
Dielectric Strength	Between live and dead part=1000Vac, 1min
Vibration	1.5mm amplitude at 10-55Hz
Service Life (min.)	1000 hours



Buzzer unit bottom view:

◆ Materials

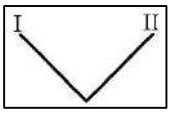
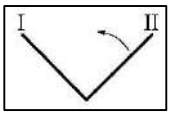
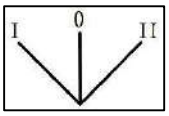
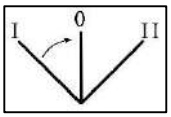
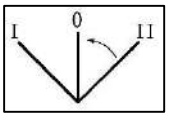
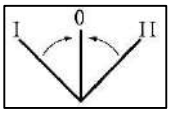
Actuation touch part	Electrical contact point	Enclosure
PC Plastic	Palladium plated silver(99%)	PBT Plastic+Glass fiber (V-0 rating)

◆ Nomenclature

Pilot Light	Frame:	Terminal:	Lamp:	Lens Color:
M6L –	**A**	**S**	**24E**	**G**
ø16mm	**A**=Circle (ø18mm) **B**=Square (18x18mm) **C**=Rectangular (18x24mm)	**S**=Solder/Plug-in (#110) **P**=PCB (0.5t)	Neon (AC) **110**=110Vac **220**=220Vac LED (DC) **06E**=6Vdc **12E**=12Vdc **24E**=24Vdc	**R**=Red **G**=Green **Y**=Yellow **O**=Orange **W**=White **B**=Blue

(illume & non-illume) Pushbuttons	Frame:	Actuation:	Terminal:	Contact Form(s):	Lamp:	Lens Color:
M6P –	**A**	**M**	**S**	**2 –**		**G**
ø16mm SPDT or DPDT	**A**=Circle (ø18mm) **B**=Square (18x18mm) **C**=Rectangular (18x24mm)	**M**=Momentary **A**=Alternate (maintained)	**S**=Solder/Plug-in (#110) **P**=PCB (0.8w x 0.5t)	**1**=1x Form C **2**=2x Form C	*Blank* =Non-illume Neon (AC) **110**=110Vac **220**=220Vac LED (DC) **06E**=6Vdc **12E**=12Vdc **24E**=24Vdc	**R**=Red **G**=Green **Y**=Yellow **O**=Orange **W**=White **B**=Blue

Note:
-Illumination colors from lamps are the same as lens colors; unless otherwise specified.

(illume & non-illume) **Selectors**	Frame:	Operation:	Terminal:	Contact Form(s):	Lamp:	Lens Color:
M6S –	**A**	**30**	**S**	**2 –**	**24E**	**G**
ø16mm SPDT, or DPDT, or 2*SPDT	**A**=Circle (ø18mm) **B**=Square (18x18mm) **C**=Rectangular (18x24mm)	Two Positions - 90° throw **20**=  Alternate (maintained) **22**=  Spring return from right ⚠ Only at position "II" will the switch actuate; max *two* form C may both energize simultaneously ⚠ SPDT or DPDT; depending on contact forms chosen. Three Positions - 45° throw **30**=  Alternate (maintained) **31**=  spring return from left, **32**=  spring return from right **33**=  spring return left & right ⚠ Positions "I" and "II" actuates the switch; only *one* form C energizes ⚠ Always and only 2*SPDT configuration possible.	**S**=Solder/ Plug-in (#110) **P**=PCB (0.5t)	**1**=1x Form C **2**=2x Form C	*Blank* =Non-illume Neon (AC) **110**=110Vac **220**=220Vac LED (DC) **06E**=6Vdc **12E**=12Vdc **24E**=24Vdc	**R**=Red **G**=Green **Y**=Yellow **O**=Orange **W**=White **B**=Blue **WO**= Opaque White (available only for Non-illumed)

Note:

-Illumination colors from lamps are the same as lens colors; unless otherwise specified.

Key Selectors	Frame:	Operation:	Terminal:	Contact Form(s):	Key Lock Limit(s):
M6K –	**B**	**30**	**S**	**2 –**	**A**

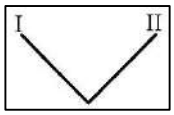
ø16 mm

SPDT, or DPDT, or 2*SPDT

A=Circle (ø18mm)
B=Square (18x18mm)
C=Rectangular (18x24mm)

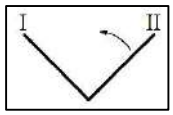
Two Positions - 90° throw

20=



Alternate (maintained)

22=



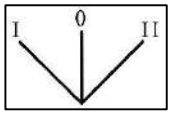
Spring return from right

⚠ Only at position "II" will the switch actuate; max *two* form C may both energize simultaneously

⚠ SPDT or DPDT; depending on contact forms chosen.

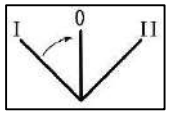
Three Positions - 45° throw

30=



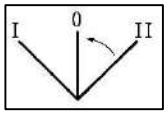
Alternate (maintained)

31=



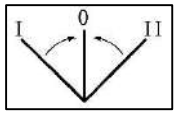
Spring return from left,

32=



Spring return from right

33=



Left & right spring return

⚠ Positions "I" and "II" actuates the switch; only *one* form C energizes

⚠ Always and only 2*SPDT configuration possible.

S=Solder/ Plug-in (#110)
P=PCB (0.5t)

1=1x Form C
2=2x Form C

Applicable for **two** or **three** positions

A=No lock limits
B=Right
C=Left

Applicable only for **three** positions

D=Right and left
E=Center
G=Center and right
H=Left and center

⚠ Keys are always non-removable and non-insertable at positions with spring-return function.

⚠ Key Lock Limit(s) means keys WILL BE NON-REMOVEABLE. But may still operate different positions.

Note:

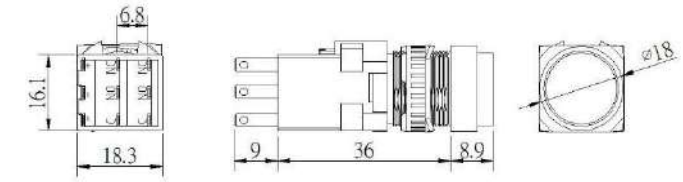
-Please be careful when matching Operations with Key Lock Limits. *Example*: Matching Operation "20" with Key Lock Limit "C" means operator(s) MAY NOT be able to remove the key; the switch contacts will still be energized. This may be hazardous with some applications.
-Additionally, *Example*: Matching Operation "33" with Key Lock Limit "E" is not possible, because impossible to insert key.

Buzzers	Frame:	Operating Voltage:	Terminal:
M6Z –		**24**	**S**
ø16mm	***Blank***=Rectangular (18x24mm)	**06**=6V AC/DC **24**=12~24V AC/DC	**S**=Solder/Plug-in (#110) **P**=PCB (0.8w x 0.5t)

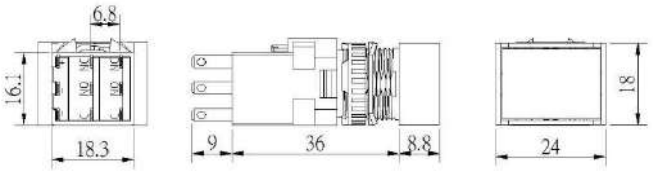
E-Stop Pushbuttons	Positive Opening:	Terminal:	Contact Form(s):	Button Size:	Lens Color:
M6E –	**P**	**S**	**1**	**40**	**R**
ø16mm SPST-NC or DPST-NC	**P**=Positive Opening	**S**=Solder/Plug-in (#110)	**1**=1x Form B (SPST) **2**=2x Form B (DPST)	**30**=ø30mm **40**=ø40mm	**R**=Red **Y**=Yellow

◆ Unit Dimensions

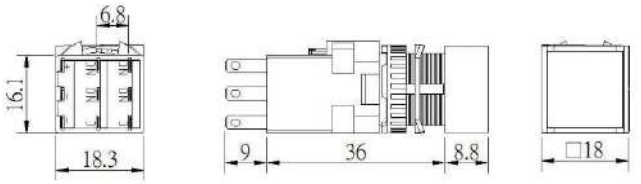
*Measurements in *millimeters*



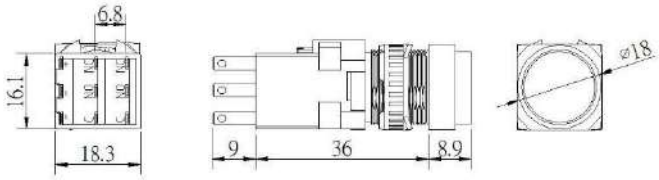
M6L-A (Round)



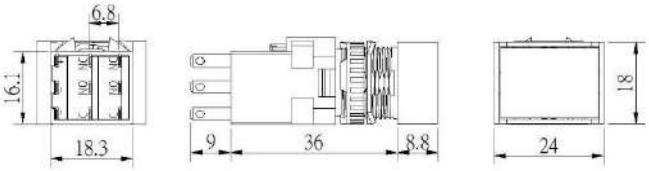
M6L-C (Rectangle)



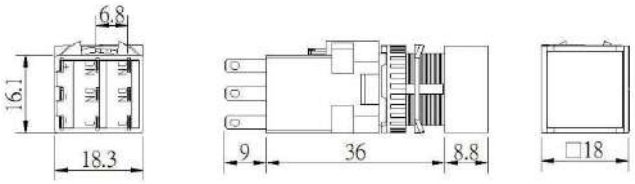
M6L-B (Square)



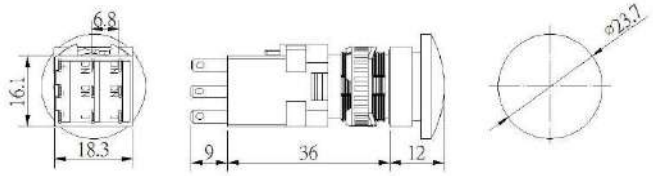
M6P-A (Round)



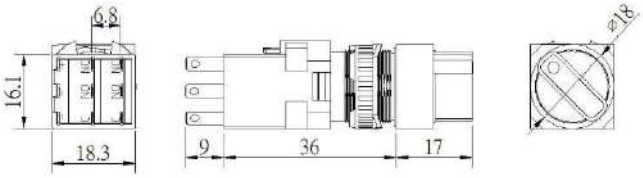
M6P-C (Rectangle)



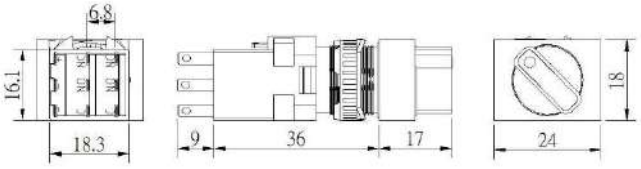
M6P-B (Square)



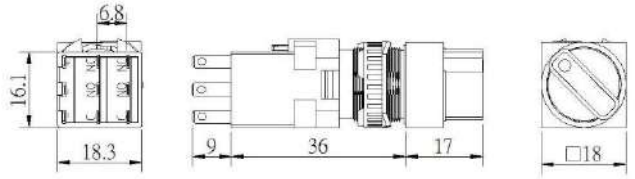
M6P-D (mushroom)



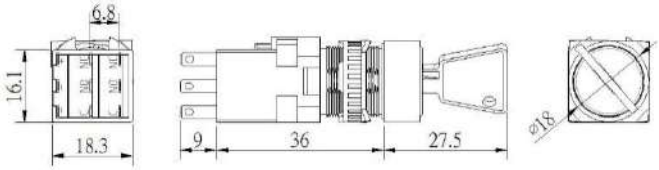
M6S-A (Round)



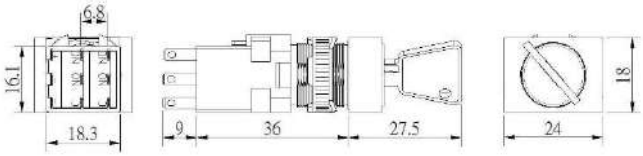
M6S-C (Rectangle)



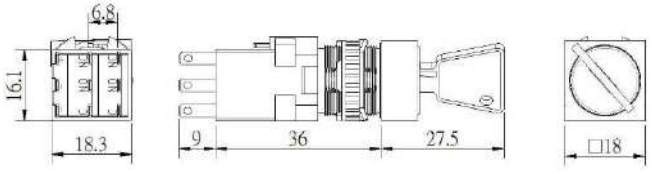
M6S-B (Square)



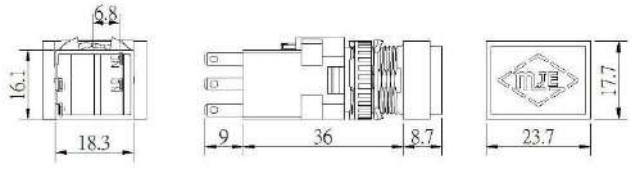
M6K-A (Round)



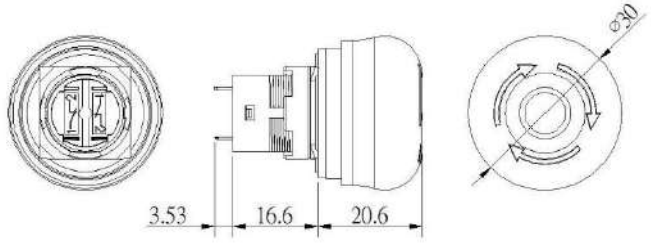
M6K-C (Rectangle)



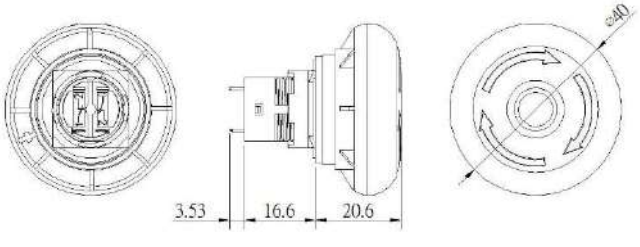
M6K-B (Square)



Buzzer M6Z



E-Stop M6E-30mm

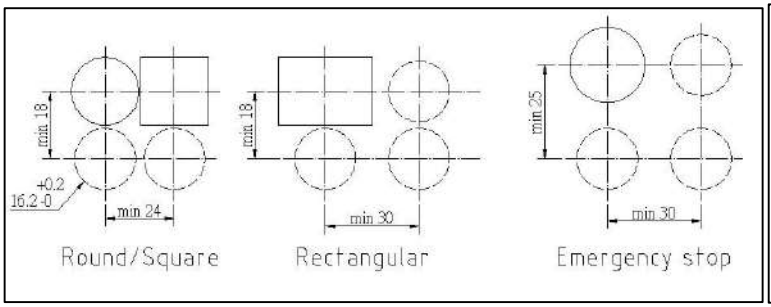


E-Stop M6E-40mm

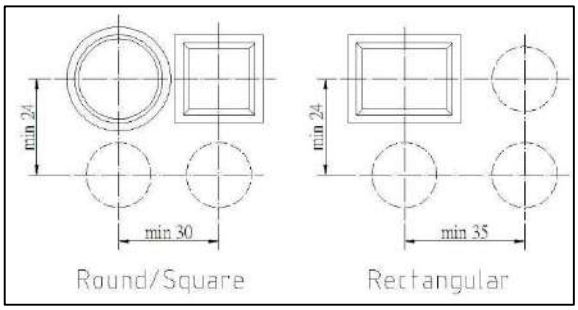
◆ Recommended Panel cut-outs

*Measurements in *millimeters*

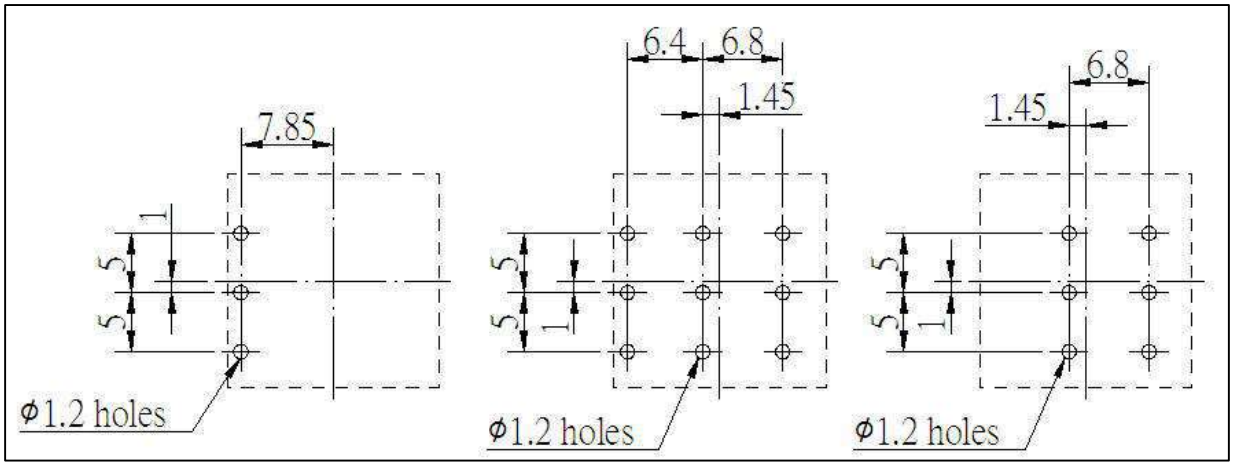
All M6-series products fits best in a circular panel cut out that measures 16.2mm in diameter.



With-out dust cover



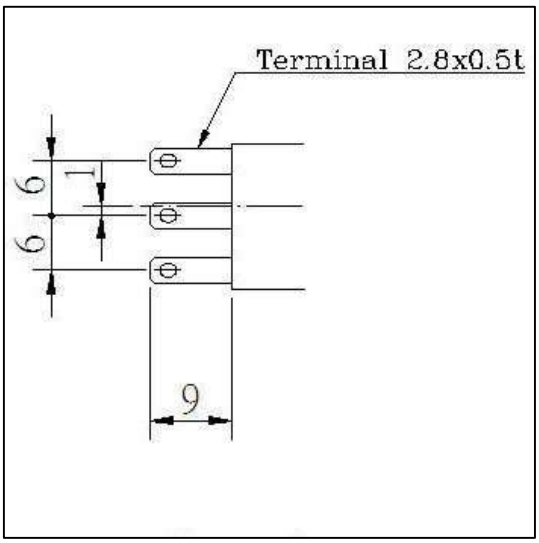
With dust cover



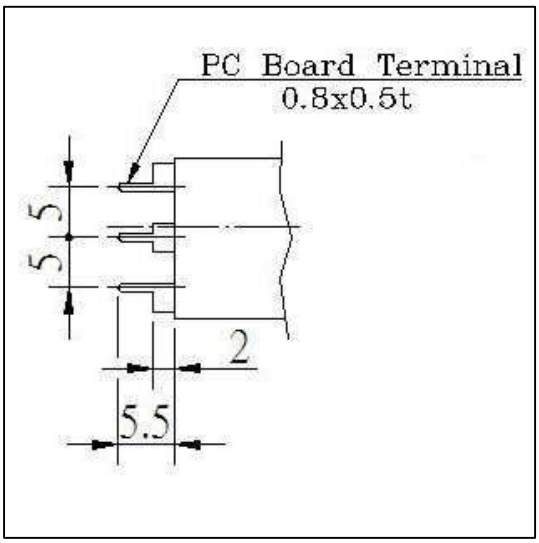
PCB panels

◆ Terminal Dimensions

*Measurements in *millimeters*



Solder, quick connect #110 terminal



PCB Pin terminal

M22 Series
Pushbuttons

Features
- ✓ For front panel cut-outs measuring ø22.3mm
- ✓ IP65 protection
- ✓ M3.5 screw terminals
- ✓ PCB (ø0.1t) terminals
- ✓ Tough and durable body material
- ✓ Available for multi-layer installations

Flathead (M22FP) | Extended head (M22XP) | Double Actuator (M22DP) | Selectors (M22S)

Recognition(s)
- ✓ CE – EN60947
- ✓ UL – UL508
- ✓ RoHS Compliant
- ✓ Reach Unaffected

Buzzer (M22BZ) | Pilot Lights (M22L/M22LC) | Emergency Stop (M22E/M22EL) | Key-operated (M22K) | Mushroom Actuator (M22MP/M22MPL) | Control Box (M22B)

Characteristics

Positive Opening	Electrical Contact	Terminal Type	(1-layer) Contact Form(s)	(1-layer) Possible Poles & Throws	(1-layer) Possible Actuation Sequence(s)
Yes(NC) & No(NO)	max 12 (2-layers: 4 contact blocks with 2 lamp blocks)	Screw(M3.5), or PCB	Each Block: A, B Two Blocks: A+B, 2A, 2B	SPST, 2*SPST, DPST-NO/NC, DPST	Single Make, or Single Break, or Make & Break, or Double Make, or Double Break

Operating Temp.	AC Rated	DC Rated	Oil Resist	Dust Resist	Water Resist	IP
-25 to 70 C	Switch: 6A 230V LED: 14mA 30~230V	Switch: 3A 24V LED: 14mA 30V	Yes	Yes	Yes	65

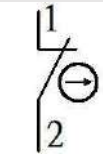
Operation Frequency	Service Life (min.ops)	Dielectric Strength
Momentary~3600/hr Alternate~1800/hr Selectors~2000/hr E-Stop~600/hr	Momentary=5,000,000 Alternate=1,000,000 Selectors=100,000 E-Stop=100,000	Between live part and ground=2500Vac, 1min Between terminals of different poles=2500Vac, 1min Between terminals of the same poles=1000Vac, 1min

Operating Humidity	Contact Resistance	Insulation Resistance	Vibration
85% RH max	50mΩ max. (initial)	100MΩ min. (500VDC)	1.5mm amplitude at 10-55Hz

Recommended tightening forces

Purpose	Screw type	Tightening
Control Box		8.5±0.5 kgf.cm
Panel Mount	Lock Ring	2.0 N·m

Circuitry



NC Block

NO Block

Additional Characteristics: LED blocks (no contacts)	
Codename in nomenclature = **E30**	12~30VAC/DC, 5~14mA, 0.25W/24V
Codename in nomenclature = **E230**	85~264VAC, 5~15mA, 0.33W/24V

Additional Characteristics: Buzzer (M22BZ)	
Sound types:	Slow pulse, Fast pulse
Dimensions	Surface=ø29.7mm Length=53mm
Sound Pressure:	80dB at rated voltage within 1 meter
Sound Frequency:	2.5KHz±300HZ
Insulation Voltage:	60V AC/DC
Operating Voltage:	AC=110V, 220V DC=24V
Current Draw:	AC/DC<50mA
Operating Temperature:	-30 to 85 C
Operating Humidity	85% RH max
Insulation Resistance	100MΩ min. (500VDC)
Dielectric Strength	Between live and dead part=1000Vac, 1min
Vibration	1.5mm amplitude at 10-55Hz
Service Life (min.)	10,000 hours

◆ Materials

Actuation touch part	Electrical contact point	Enclosure
PC Plastic	Silver-Nickel Alloy	Nylon+Glass fiber (V-0 rating)

◆ Nomenclature

Flathead	Actuation:	Type of Terminal:	Contact Block(s):	Lamp:	Lens Color:	Symbol:
M22FP –	**M**	**SF**	**01**		**G**	
ø22.3mm SPST, or DPST	**M**=Momentary **A**=Alternate (Maintained)	Front facing buckle (for use with A3 adapter) **SF**=Screw terminals **PF**=PCB terminals Back facing buckle (for use with control box) **SB**=Screw terminals	One block **10**=1x Form A **01**=1x Form B Two blocks **11**=1x Form A (&) 1x Form B **20**=2x Form A **02**=2x Form B	***Blank***= non-illume **E30**=LED30V **E230**=LED230V	**R**=Red **G**=Green **Y**=Yellow **W**=White **BL**=Blue Opaque **WO**=White **RO**=Red **BKO**=Black	***Blank***= *None*

Note:
-Illumination colors from lamps are the same as lens colors; unless otherwise specified.
-Please contact Moujen before production to customize symbols to your needs. Only applicable to select series.
-Please consider PCB terminal pins when designing your systems. Pins will conflict multi-layer designs if installed on top.

Extended Head	Actuation:	Type of Terminal:	Contact Block(s):	Lamp:	Lens Color:	Symbol:
M22XP –	**M**	**SF**	**01**		**G**	
ø22.3mm SPST, or DPST	**M**=Momentary **A**=Alternate (Maintained)	Front facing buckle (for use with A3 adapter) **SF**=Screw terminals **PF**=PCB terminals Back facing buckle (for use with control box) **SB**=Screw terminals	One block **10**=1x Form A **01**=1x Form B Two blocks **11**=1x Form A (&) 1x Form B **20**=2x Form A **02**=2x Form B	***Blank***=non-illume **E30**=LED30V **E230**=LED230V	**R**=Red **G**=Green **Y**=Yellow **W**=White **BL**=Blue	***Blank***=*None*

Double Actuator	Actuation:	Type of Terminal:	Contact Block(s):	Lamp:	Lens Color:	Symbol:
M22DP –		**SF**	**02**	**E30**	**GR**	**<I,O>**
ø22.3mm 2x SPST	***Blank***=Momentary (All M22DP are momentary)	Front facing buckle (for use with A3 adapter) **SF**=Screw terminals **PF**=PCB terminals Back facing buckle (for use with control box) **SB**=Screw terminals	Two blocks **11**=1x Form A (&) 1x Form B **20**=2x Form A **02**=2x Form B	***Blank***=non-illume **E30**=LED30V **E230**=LED230V	**GR**=Green & Red **WB**=White & Black	**<I,O>** **<Start,Stop>** **<+,->** ***Blank***=*None*

Note:
-Illumination colors from lamps are the same as lens colors; unless otherwise specified.
-Please contact Moujen before production to customize symbols to your needs. Only applicable to select series.
-Please consider PCB terminal pins when designing your systems. Pins will conflict multi-layer designs if installed on top.

Mushroom Actuator	Actuation:	Type of Terminal:	Contact Block(s):	Lamp:	Lens Color:	Symbol:
M22MP –	**M**	**SF**	**01**		**G**	**<O>**
ø22.3mm SPST, or DPST	**M**=Momentary **A**=Alternate (Maintained)	Front facing buckle (for use with A3 adapter) **SF**=Screw terminals **PF**=PCB terminals Back facing buckle (for use with control box) **SB**=Screw terminals	One block **10**=1x Form A **01**=1x Form B Two blocks **11**=1x Form A (&) 1x Form B **20**=2x Form A **02**=2x Form B	*(not applicable)*	**R**=Red **G**=Green **Y**=Yellow **W**=White **BL**=Blue	**<I,O>** **<Start,Stop>** **<+,->** ***Blank***= *None*

Illuminated Mushroom Actuator	Actuation:	Type of Terminal:	Contact Block(s):	Lamp:	Lens Color:	Symbol:
M22MPL –	**M**	**SF**	**01**	**E30**	**G**	**<O>**
ø22.3mm SPST, or DPST	**M**=Momentary **A**=Alternate (Maintained)	Front facing buckle (for use with A3 adapter) **SF**=Screw terminals **PF**=PCB terminals Back facing buckle (for use with control box) **SB**=Screw terminals	One block **10**=1x Form A **01**=1x Form B Two blocks **11**=1x Form A (&) 1x Form B **20**=2x Form A **02**=2x Form B	**E30**=LED30V **E230**=LED230V	**R**=Red **G**=Green **Y**=Yellow **W**=White **BL**=Blue	**<I,O>** **<Start,Stop>** **<+,->** ***Blank***= *None*

Note:
-Illumination colors from lamps are the same as lens colors; unless otherwise specified.
-Please contact Moujen before production to customize symbols to your needs. Only applicable to select series.
-Please consider PCB terminal pins when designing your systems. Pins will conflict multi-layer designs if installed on top.

Selector Actuator	Actuator Style:	Operation:	Type of Terminal:	Contact Block(s):	Lamp:	Lens Color:
M22S –	**R**	**30**	**SF**	**01**	**E30**	**G**

ø22.3mm

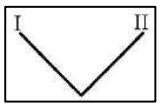
SPST, or DPST, or 2x SPST

R= Rotary

T= Thumb grip

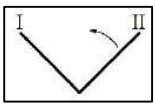
Two Positions

20=



Alternate (Maintained)

22=



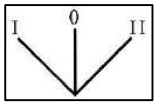
Spring-return from right

⚠ Only at position "II" will the switch actuate; max *two* form C energizes simultaneously

⚠ SPST or DPST; depending on contact blocks chosen.

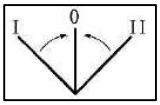
Three Positions

30=



Alternate (Maintained)

32=



Left & right spring return

⚠ Positions "I" or "II" may actuate the switch; but only *one* form C energizes.

⚠ 1 or 2 SPST; depending on contact blocks chosen.

Front facing buckle
(for use with A3 adapter)
SF=Screw terminals
PF=PCB terminals

Back facing buckle
(for use with control box)
SB=Screw terminals

One block
10=1x Form A
01=1x Form B

Two blocks
11=
1x Form A (&)
1x Form B
20=2x Form A
02=2x Form B

Blank=
non-illume

E30=
LED30V
E230=
LED230V
(Lamps only applicable for "T" thumb grip style)

R=Red
G=Green
Y=Yellow
BL=Blue

Opaque
W=White

Note:
-Illumination colors from lamps are the same as lens colors; unless otherwise specified.
-Please contact Moujen before production to customize symbols to your needs. Only applicable to select series.
-Please consider PCB terminal pins when designing your systems. Pins will conflict multi-layer designs if installed on top.

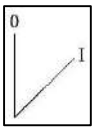
Key Actuator	Operation:	Type of Terminal:	Contact Block(s):	Key Removal Positions:
M22K –	**30**	**SF**	**01**	**3B**

ø22.3mm

SPST, or DPST, or 2x SPST

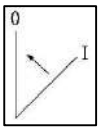
Two Positions

20=



Alternate (Maintained)

22=



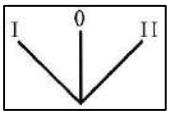
Spring-return from right

⚠ Only at position “I” will the switch actuate; max *two* form C energizes simultaneously

⚠ SPST or DPST; depending on contact blocks chosen.

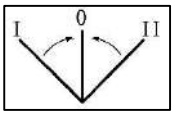
Three Positions

30=



Alternate (Maintained)

32=



Left & right spring return

⚠ Positions “I” or “II” may actuate the switch; but only *one* form C energizes.

⚠ 1 or 2 SPST; depending on contact blocks chosen.

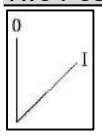
Front facing buckle
(for use with A3 adapter)
SF=Screw terminals
PF=PCB terminals

Back facing buckle
(for use with control box)
SB=Screw terminals

One block
10=1x Form A
01=1x Form B

Two blocks
11=
1x Form A (&)
1x Form B
20=2x Form A
02=2x Form B

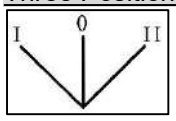
Two Positions



A=
Only at “O”

B=
Both “O” and “I”

Three Positions



A=
Only at “O”

B=
All three “I, O, II”

⚠ Keys are always non-removable and non-insertable at positions with spring-return function.

Note:
-Illumination colors from lamps are the same as lens colors; unless otherwise specified.
-Please contact Moujen before production to customize symbols to your needs. Only applicable to select series.
-Please consider PCB terminal pins when designing your systems. Pins will conflict multi-layer designs if installed on top.

Pilot light	Actuator Style:	Type of Terminal:	Lamp:	Lens Color:	Symbol:
M22L –	**F**	**SF**	**E30**	**G**	
ø22.3mm Only LED Blocks	**F**=Flathead **X**=Extended-head	Front facing buckle (for use with A3 adapter) **SF**=Screw terminals **PF**=PCB terminals Back facing buckle (for use with control box) **SB**=Screw terminals	**E30**=LED30V **E230**=LED230V	**R**=Red **G**=Green **Y**=Yellow **W**=White **BL**=Blue	***Blank***= *None*

Compact Pilot light	Actuator Style:	Lamp:	Lens Color:
M22LC –	**F**	**E24**	**G**
ø22.3mm No contact blocks needed	**F**=Flathead **X**=Extended-head	AC/DC **E06**=LED6V **E12**=LED12V **E24**=LED24V **E110**=LED110V **E220**=LED220V	**R**=Red **G**=Green **Y**=Yellow **W**=White **BL**=Blue

Note:
-Illumination colors from lamps are the same as lens colors; unless otherwise specified.
-Please contact Moujen before production to customize symbols to your needs. Only applicable to select series.
-Please consider PCB terminal pins when designing your systems. Pins will conflict multi-layer designs if installed on top.

Emergency Stop	Operation:	Type of Terminal:	Contact Block(s):	Lamp:	Lens Color:
M22E –	**T**	**SF**	**20**		**R**
ø22.3mm SPST, or DPST	**P**=Pull to release **K**=Key to release **T**=Turn to release	Front facing buckle (for use with A3 adapter) **SF**=Screw terminals **PF**=PCB terminals Back facing buckle (for use with control box) **SB**=Screw terminals	One block **10**=1x Form A **01**=1x Form B Two blocks **11**=1x Form A (&) 1x Form B **20**=2x Form A **02**=2x Form B	*(not applicable)*	**R**=Red



Illuminated Emergency Stop	Operation:	Type of Terminal:	Contact Block(s):	Lamp:	Lens Color:
M22EL –	**T**	**SF**	**20**	**E30**	**R**
ø22.3mm SPST, or DPST	**P**=Pull to release **T**=Turn to release	Front facing buckle (for use with A3 adapter) **SF**=Screw terminals **PF**=PCB terminals Back facing buckle (for use with control box) **SB**=Screw terminals	One block **10**=1x Form A **01**=1x Form B Two blocks **11**=1x Form A (&) 1x Form B **20**=2x Form A **02**=2x Form B	**E30**=LED30V **E230**=LED230V	**R**=Red


Note:
-Illumination colors from lamps are the same as lens colors; unless otherwise specified.
-Please contact Moujen before production to customize symbols to your needs. Only applicable to select series.
-Please consider PCB terminal pins when designing your systems. Pins will conflict multi-layer designs if installed on top.

Control Box	Box hole(s):	Color:
M22 –	**B2**	**YB**
ø22.3mm	**B1**=one hole **B2**=two holes **B3**=three holes	**YB**=Yellow top, black bottom **IB**=Ivory top, black bottom

Control Box alone does not come with actuators, illumination units, or contact blocks.

Control Box cable wire through holes are not pre-opened. M20 and M25 sizes possible.

4 sides; M20 or M25 sizes.

Conduit sold separately.

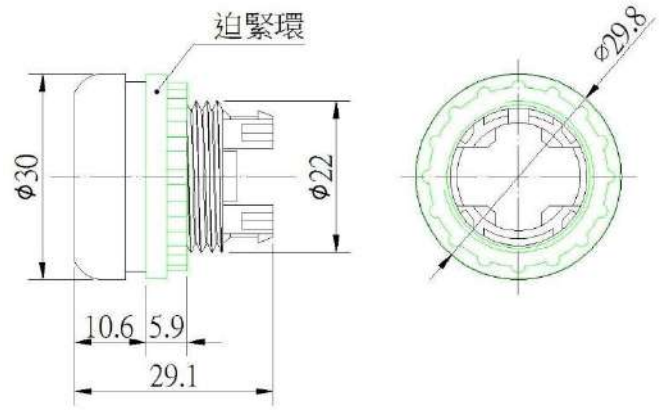
Buzzer	AC/DC Voltage:	Sound:	Illumination: (Optional only for 24VDC)
M22BZ –	**024DC**	**F**	**L**
ø22.3mm	**220AC**=220VAC **110AC**=110VAC **024DC**=24VDC	**S**=Slow pulse **F**=Fast pulse	**Blank**=none **L**=Red steady-light indication

Except illumination types, all else are opaque black.

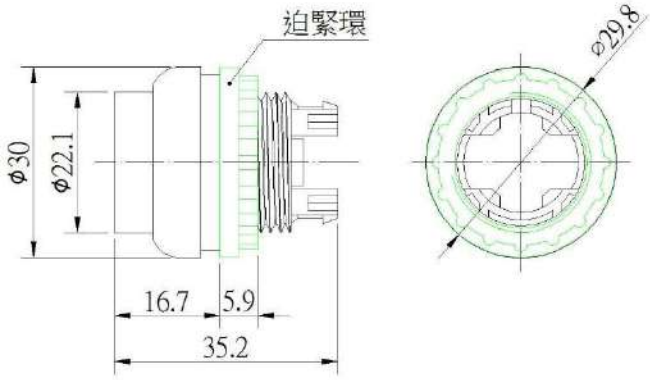
◆ Unit Dimensions

*Measurements in *millimeters*

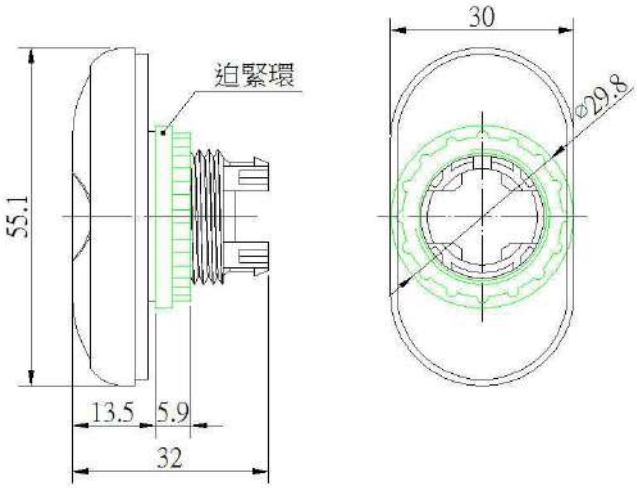
Flat head (FP)



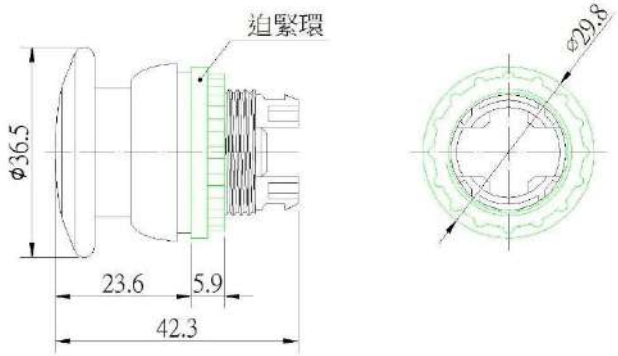
Extended head (XP)



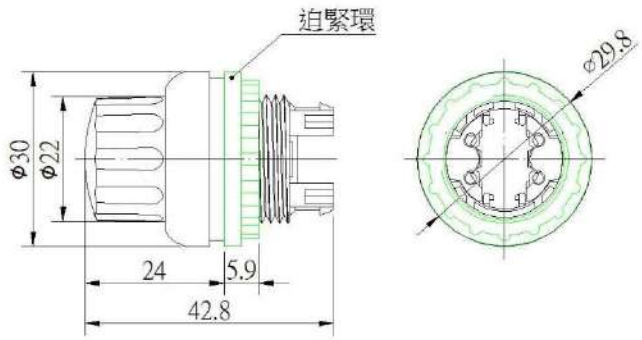
Double pushbutton (DP)



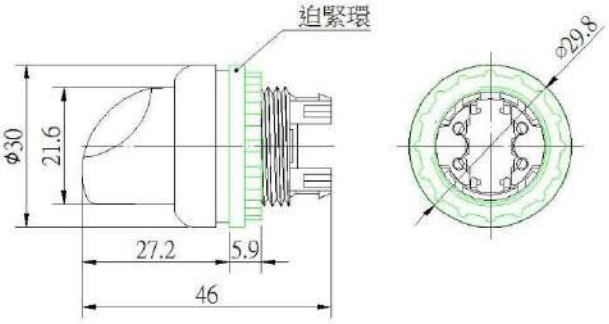
Mushroom pushbutton (MP, MPL)



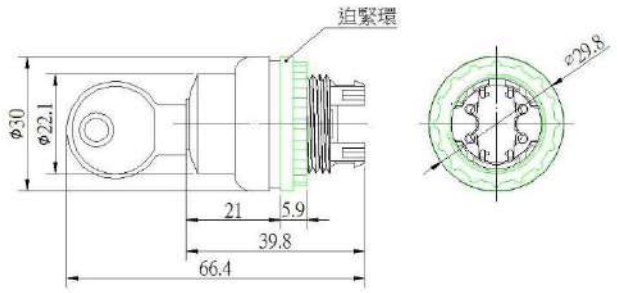
Selector (S) - *Rotary*



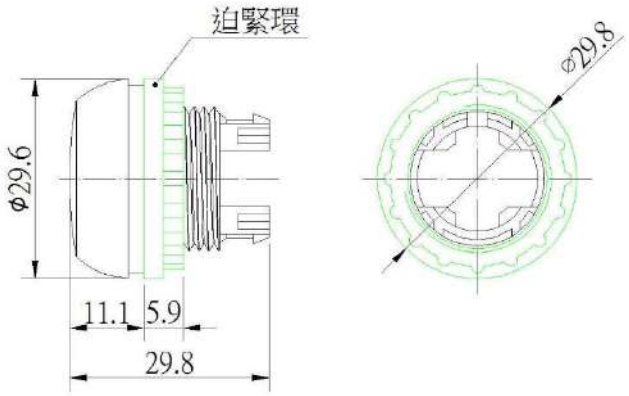
Selector (S) - *Thumb grip*



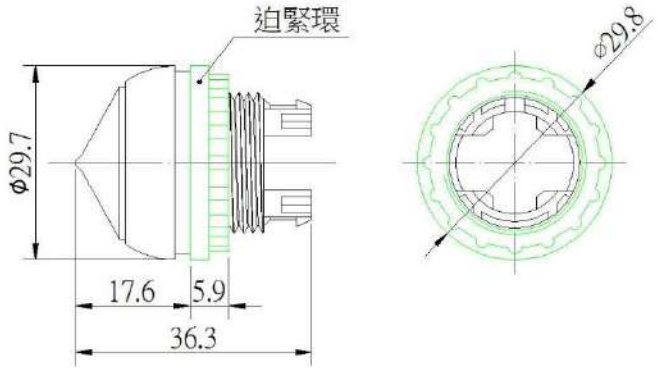
Key Selector (K)



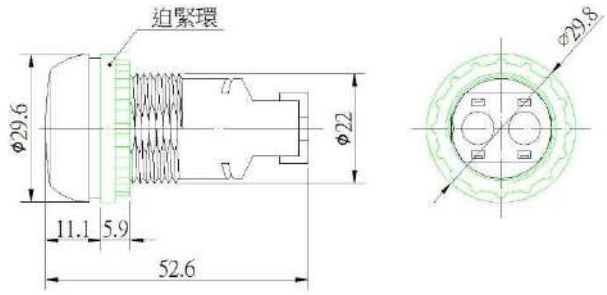
Pilot light (L) -*Flat head*



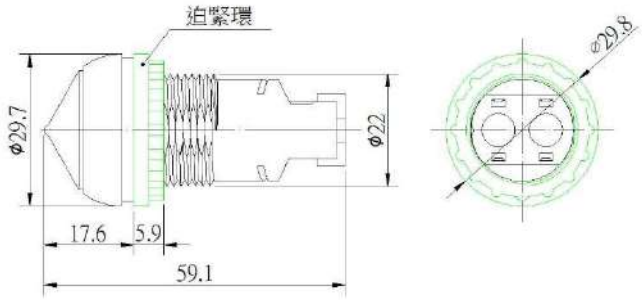
Pilot light (L) -*Extended head*



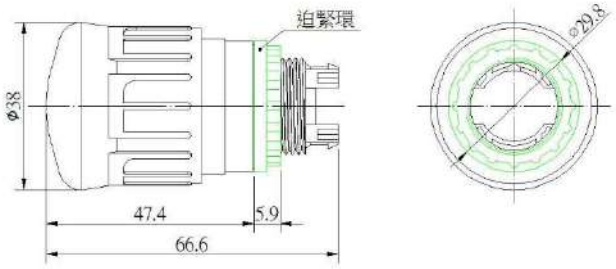
Compact pilot light (LC) - *Flat head*



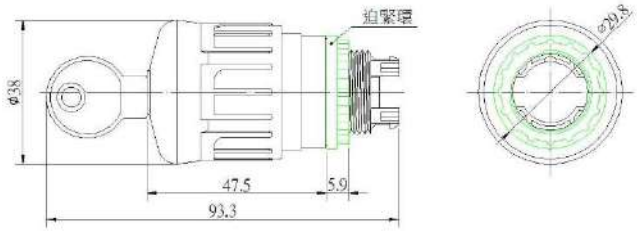
Compact pilot light (LC) - *Extended head*



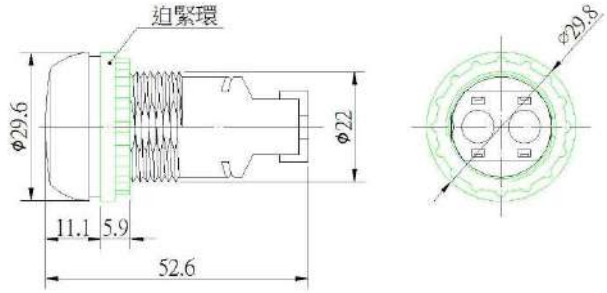
Emergency stop (E, EL) -*Pull or Turn to release*



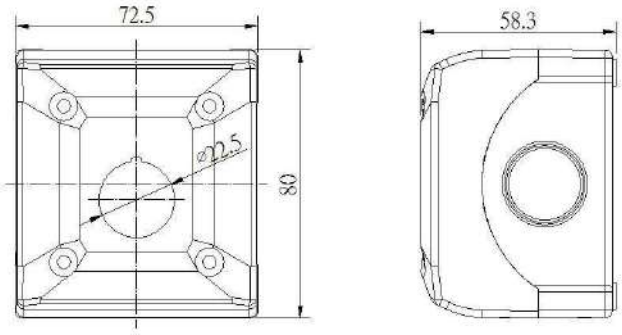
Emergency stop (E) -*Key to release*



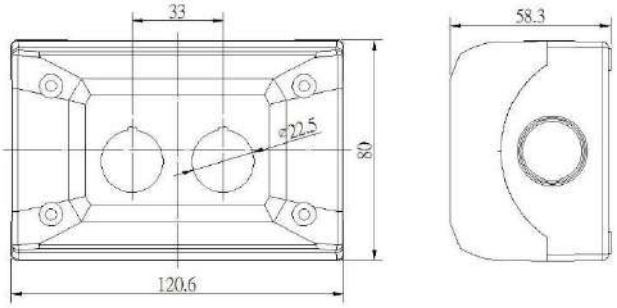
Buzzer (BZ)



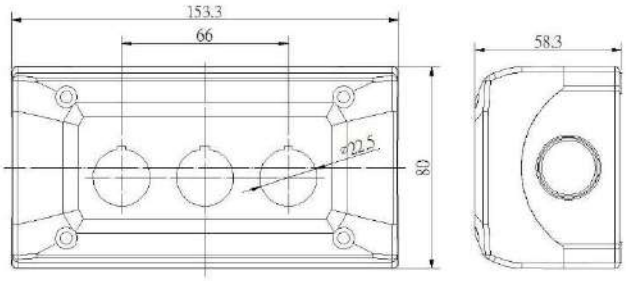
Control Box (M22B1) – *1 hole*



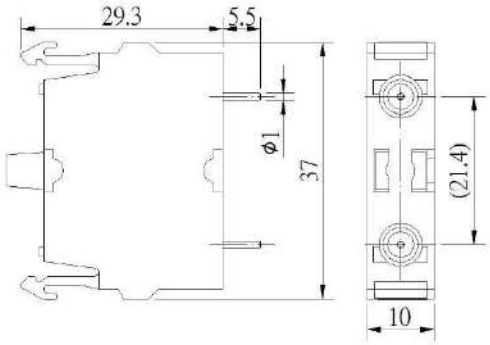
Control Box (M22B2) – *2 holes*



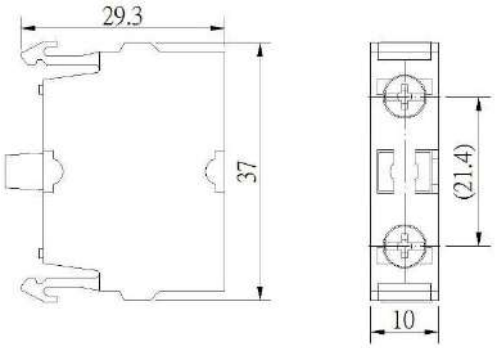
Control Box (M22B3) – *3 holes*



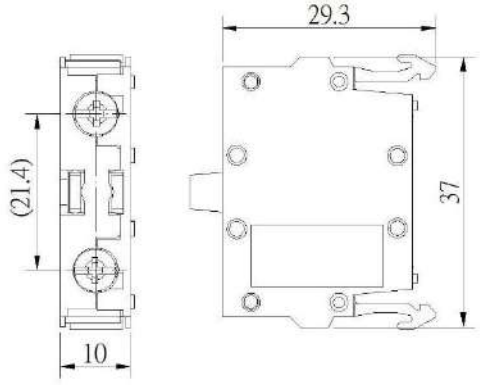
Contact Block (PF) -
PCB terminal, Front facing



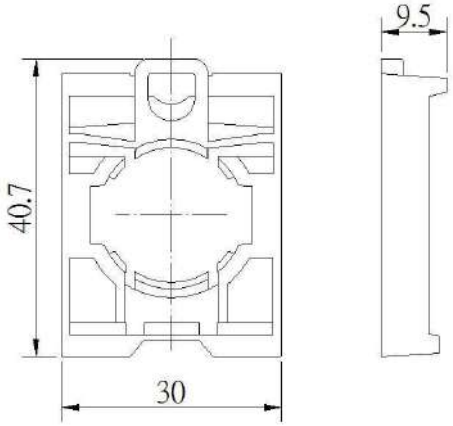
Contact Block (SF) -
Screw terminal, Front facing



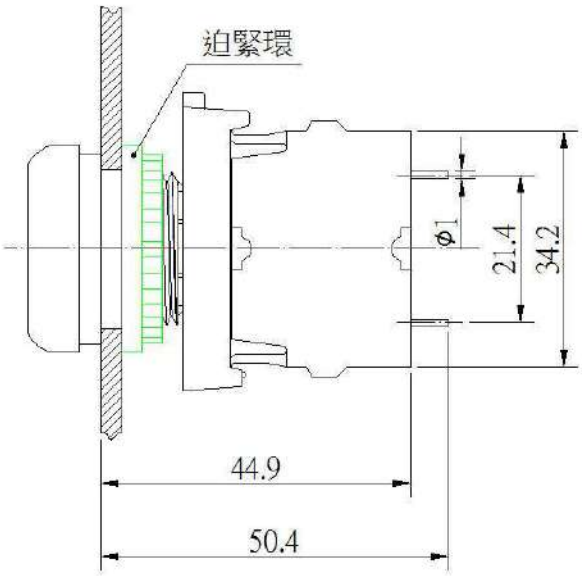
Contact Block (SB) -
Screw terminal, Back facing (for M22 Box)



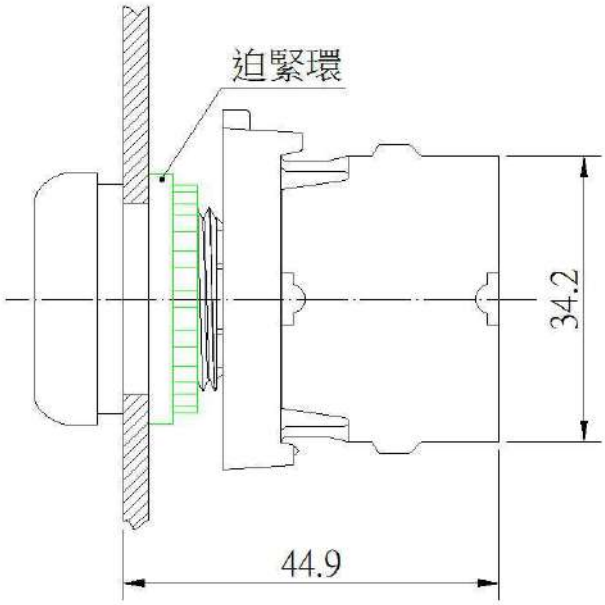
Adapter for front facing buckle contact blocks (A3)



Dimensions with front facing
PCB terminal contact block installation



Dimensions with front facing
Screw terminal contact block installation



MFS Series
Foot switch

◆ Features
- ✓ Single or dual MV-3000A20 miniature switch inside
- ✓ ABS plastic or aluminum enclosure
- ✓ IP40 protection
- ✓ E104879 AWM 18AWG cable

◆ Recognition(s)
- ✓ CE – EN60947
- ✓ RoHS Compliant
- ✓ Reach Unaffected

◆ Characteristics

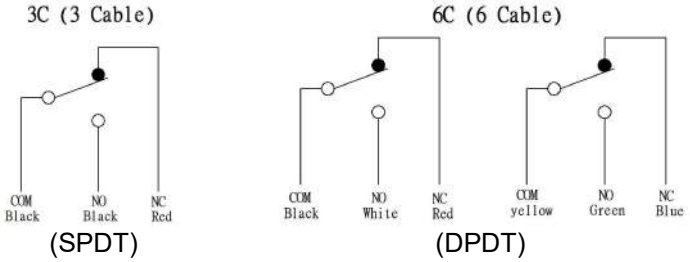
Positive Opening	Electrical Contact	Terminal Type	Contact Form(s)	Poles & Throws	Actuation Sequence(s)
No	3C or 6C	Wire (1m,2m) E104879 AWM 18AWG	1or 2 x C	SPDT, DPDT	Break(1)-Make(2), DB(1)-DM(2)

Operating Temp.	AC Rated	DC Rated	Oil Resist	Dust Resist	Water Resist	IP
-15 to 80 C	15A 125V-250V	0.5A 125V	No	No	No	40

Operation Frequency	Service Life (min.ops)	Dielectric Strength
Mechanically:600/min Electrically: 60/min	Mechanically: 5,000,000 Electrically: 500,000	1000VAC, 50/60Hz for 1 minute between non-continuous terminals

Operating Humidity	Contact Resistance	Insulation Resistance	Vibration
85% RH max	15mΩ max. (initial)	100MΩ min. (500VDC)	1.5mm amplitude at 10-55Hz

Recommended tightening forces	Circuitry



(SPDT) (DPDT)

◆ Materials

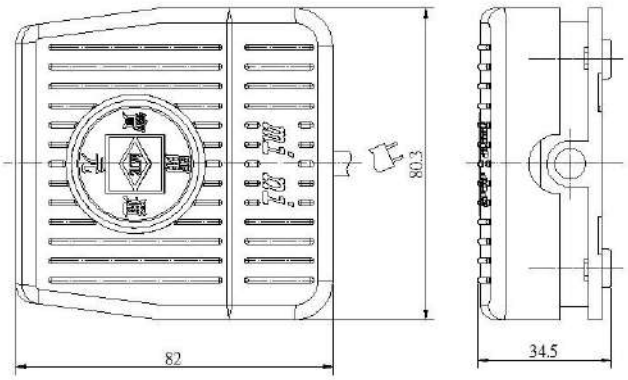
Actuation touch part	Electrical contact point	Enclosure
ABS Plastic, or Aluminum	Silver-Nickel Alloy	ABS Plastic, or Aluminum

◆ Nomenclature

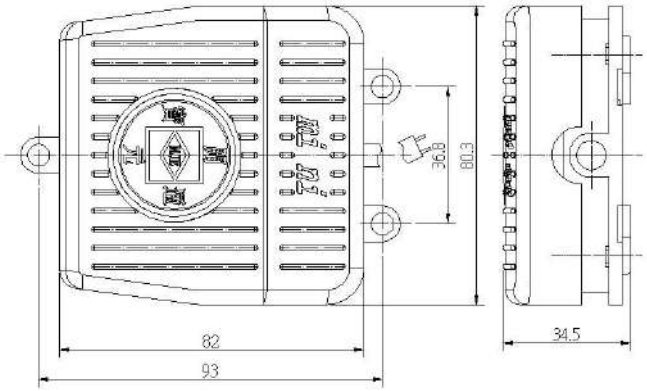
Series:	Type:	Cable Length:
MFS –	**1012 –**	**2**
	1011=miniature, SPDT 1012=miniature with fixture piece, SPDT 1021=large with fixture piece, SPDT 1022=large with fixture piece, DPDT	1=1 meter 2=2 meter

◆ Dimensions & Operating Characteristics

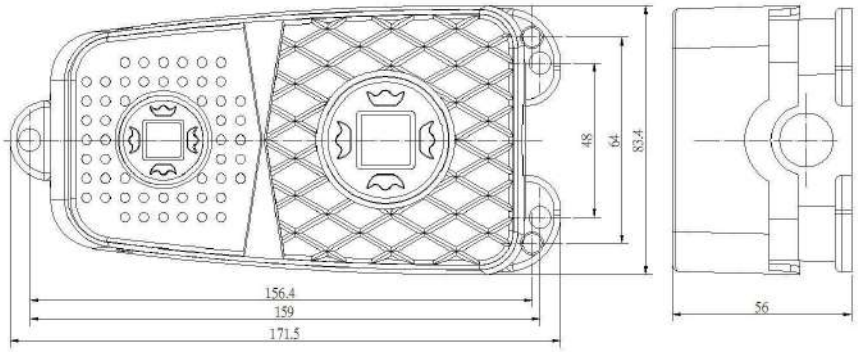
*Measurements in *millimeters*



MFS-1011
Actuation Force: 1kg



MFS-1012
Actuation Force: 1kg



MFS-1021 & 1022
Actuation Force: 3kg

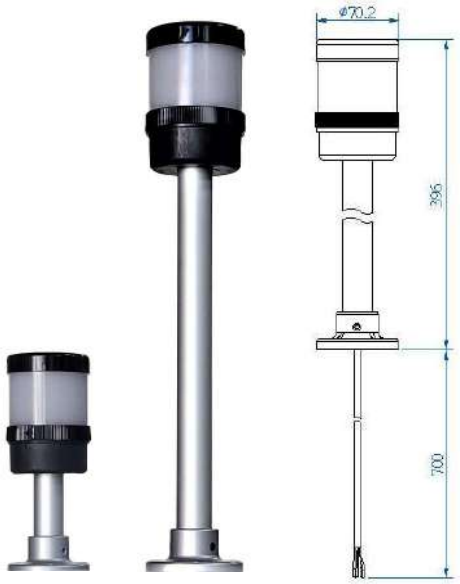
MFS-1011

MFS-1012

MFS-1021 & 1022

MST Series 4-in-1

Non-modular Tower Lights



◆ Features

- ✓ 3*LED colors plus buzzer in one preassembled unit
- ✓ Piezoelectric buzzer
- ✓ Multiple types of base mounting
- ✓ IP65 protection
- ✓ E250011 20AWG 6C cable

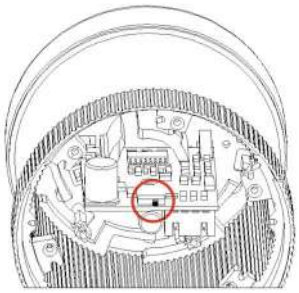
◆ Recognition(s)

- ✓ CE – EN60947
- ✓ RoHS Compliant
- ✓ Reach Unaffected

◆ Characteristics

	LED without buzzer		LED with buzzer	
LED lighting	Permanent	Blinking	Permanent	Blinking
Rated voltage	24VDC	24VDC	24VDC	24VDC
Green LED	≦73mA	33 to73mA	≦73mA	33 to73mA
Yellow LED	≦123mA	55 to123mA	≦123mA	55 to123mA
Red LED	≦125mA	33 to 135mA	≦140mA	33 to 156mA
Function switch position	Left	Right	Left	Right
Tone	n/a	n/a	2.8kHz	0.9kHz
Sound decibel	n/a	n/a	95 dB	95 dB

Life expectancy	100,000 hours
Operating temperature	-20℃ to +50℃
Unit only Dimensions	96mm Total
Unit w/ 1M, 2M cable	1096mm, 2096mm Total
Certified Standards	CE
Ingress protection	IP65

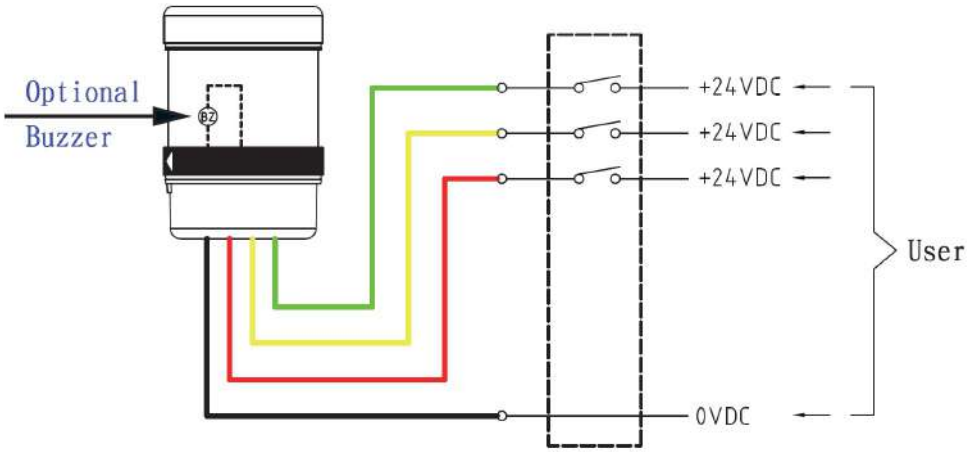


Function select switch

◆ Materials

Unit Enclosure (Lens & cap)	Unit Enclosure (base)	Pole
PC plastic	Nylon (PA66) + Glass Fiber	Aluminium

◆ Wiring Schematic



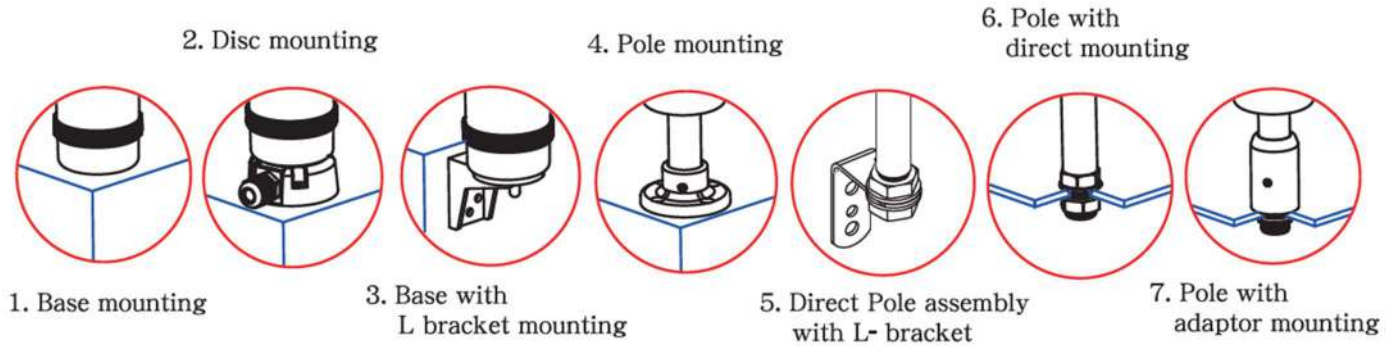
⚠Color of wire represents LED color illumination.

⚠Only one color illumines at one time.

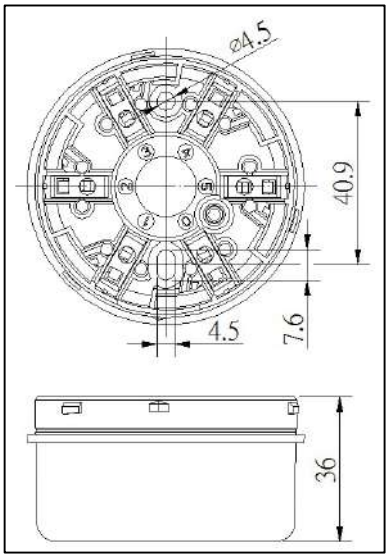
◆ Nomenclature

	Dimension:	Layers:	Voltage:	Mounting:	Function:	Unit base & cap color:	Lens type:	Colors	Cable Length:
MST –	**7**	**1**	**2**	**BM**	**53**	**K**	**7**	**RYG**	**2**
	4 = ⌀40mm 5 = ⌀50mm 6 = ⌀60mm 7 = ⌀70mm	1 = 1 layer	2 = 24VDC	BM = Base mount DM = Disc mount LB = Base w/ L bracket PM = Pole mount AL = Direct pole w/ L bracket PD = Pole w/ direct mount PA = Pole w/ Adapter	50 = 3in1, w/o pole, w/o buzzer 51 = 3in1+10cm pole, w/o buzzer 52 = 3in1+20cm pole, w/o buzzer 53 = 3in1+30cm pole, w/o buzzer 55 = 3in1, w/o pole, +buzzer 56 = 3in1+10cm pole+buzzer 57 = 3in1+20cm pole+buzzer 58 = 3in1+30cm pole+buzzer	W = White S = Dark silver K = Black *Mount color will be the same color as what's chosen here.	7 = Translucent 9 = Transparent	RYG = Red Yellow Green	1 = 1 meter 2 = 2 meter

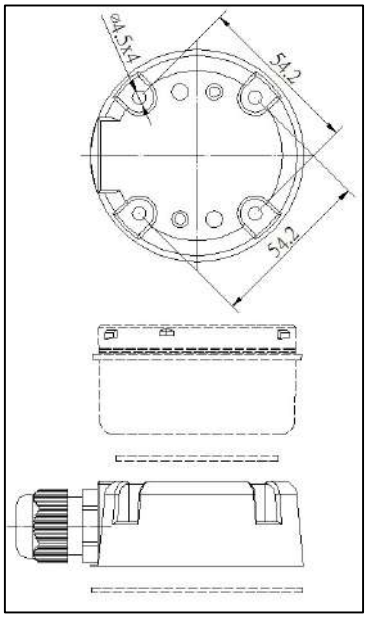
◆ Mounting Types & Dimensions



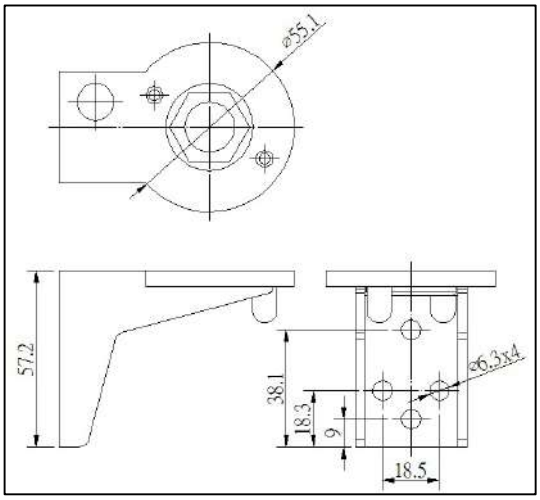
Mount materials			
1. BM = Base mounting = PA66+Glass fiber	2. DM = Disc mounting = PA66+Glass fiber	3. LB = Base w/ L bracket = PA66+Glass fiber	4. PM = Pole mounting = Zinc Alloy
5. AL = Direct pole w/ L bracket = Aluminium pole with steel L bracket		6. PD = Pole w/ direct mount = Aluminium	7. PA = Pole w/ adaptor = Aluminium



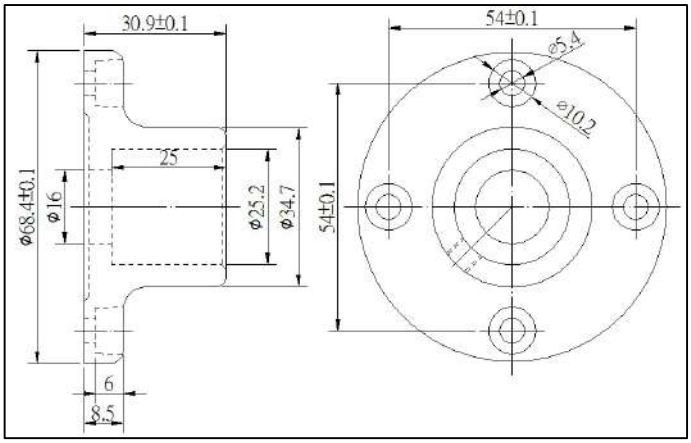
BM=Base Mount



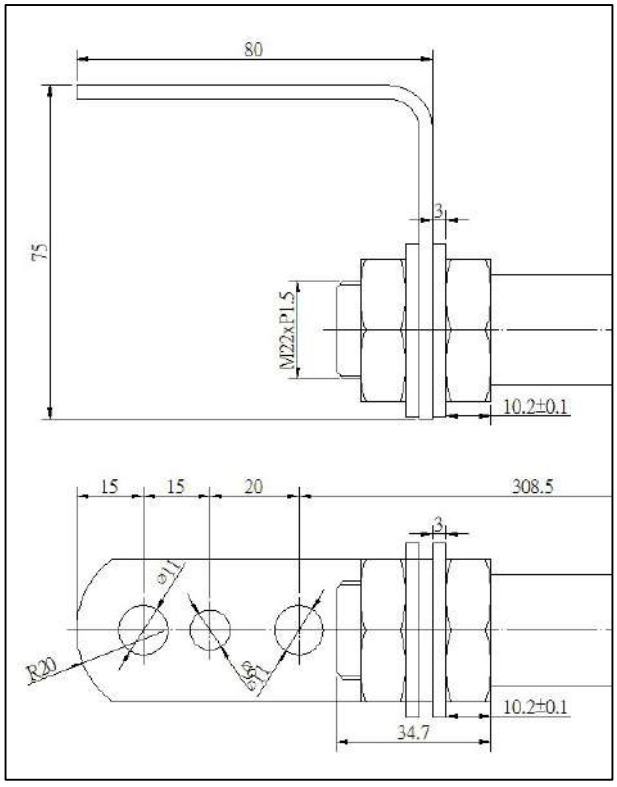
DM=Disc Mount



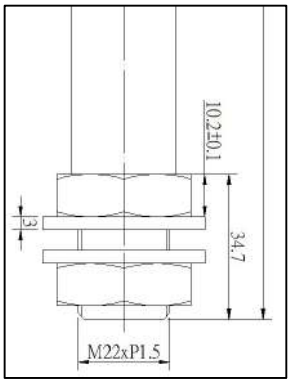
LB=Base w/ L bracket



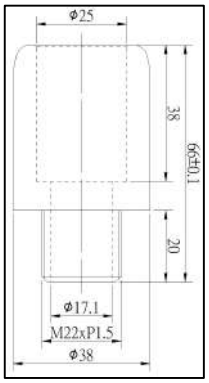
PM=Pole Mount



AL=Direct pole w/ L bracket

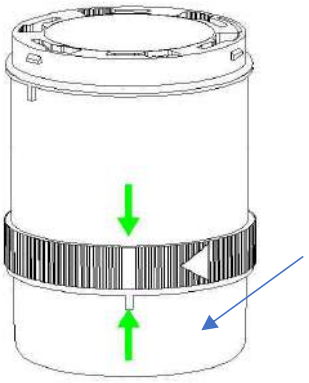


PD=Pole w/ direct mount

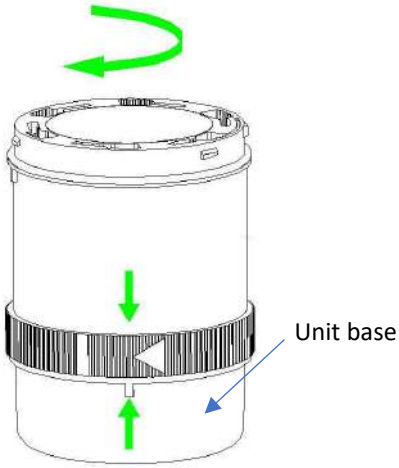


PA=Pole w/ adaptor

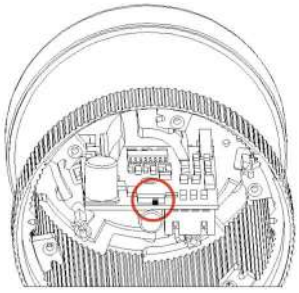
◆ Assembling and Disassembling the unit



1. Find the white line mark at the mid-section of the unit.



2. Twisting clockwise will loosen the unit for separation. Thus, exposing the internal components and wires for configurations.



Located here (red circle) is the selector to switch between different modes of function.

- Preforming these steps in reverse will tighten the unit
- Be sure not to over-tighten, otherwise damage to the unit might occur.
- Be sure not to over-tighten, otherwise the O-ring maybe damaged.

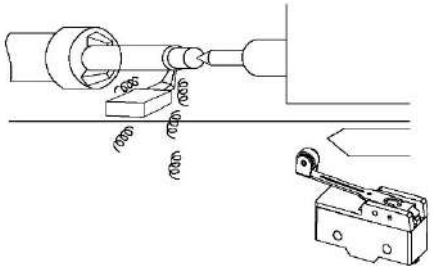
Precautions for Safe Use

• Be sure to ground. Otherwise electric shock may result.
• Do not touch charged switch terminals while the switch is carrying current, otherwise electric shock may result.
• Do not disassemble or touch the inside while the power is turned on, otherwise electric shock may result.
• Do not handle products without proper protective gears; doing so may result in injury.
• Connect a fuse which has 1.5 to 2 times higher breaking current than the product, in order to prevent products from short-circuit damage.
• On the occasion when using the switch with EN/IEC/GB ratings, use a 10 A fuse that complies IEC60269, either type gG or gL.
• Operating conditions will affect product durability. Be sure to check with actual using conditions before usage.
• Do not drop the switch.
• Do not connect a Single Limit Switch to two power supplies that are different in polarity or type. This may increase the risk of interference.
• Be sure to keep the load current less than the rated value. Otherwise, there is the possibility that the switch may be damaged and/or burnout.
• Do not use the Switch by itself in atmospheres containing flammable or explosive gases. Arcs and heat resulted from constant actuating may cause fire or explosion.
• Be sure to prevent foreign materials such as scrapped cable intrusion into the switch when wiring. Otherwise, there is the possibility of spoiling normal operations.
• Do not wire to the wrong terminals.
• Using the Switch in a pressed-in state for an extended period of time can accelerate part deterioration and also lead to failure to return to the original position. Check the Switch beforehand, and perform periodic inspection and replacement.
• Do not store or use the switch at the following places: (i)where the temperature fluctuates greatly. (ii)where the humidity is very high and condensation may occur. (iii)Where the vibration is great. (iv)Where there is direct sun light. (v)Where exposed to salty winds. (vi)Where exposed to cutting powder, machining chips, oil, and chemicals inside the protective doors. (vii)Where exposed to cleansers, thinners, and other solvents.
• Do not use or store the Switch in locations with corrosive gas, such as sulfuric gas (H_2S or SO_2), ammonium gas (NH_3), nitric gas (HNO_3), or chlorine gas (Cl_2), or high temperature and humidity. Otherwise, contact failure or corrosion damage may result.
• Do not disassemble and/or modify the switch at any time. Otherwise, there is the possibility of spoiling the normal operation.
• Do not apply deformative and/or degenerative forces to products.
• If products have been used over an extended period of time or uses stated in products datasheets, contact reliability may still degrade due to natural oxidation; resulting in inadequate conductivity, which may lead to an accident. Please swiftly preform inspections and insure proper replacements are carried out.
• Only allow certified professionals to preform installing and maintenance tasks.

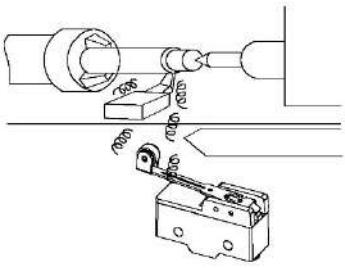
Precautions for Correct Use

Operating Environment

• This switch is only for indoor use. If it is used in outdoor, it may cause switch failure.
• Take special care if products are to be used at places where there is fine powder, mud and/or foreign materials accumulating. Check actual using conditions before using. If this is unavoidable, highly recommend integrating protective equipment. This is considered not Moujen's obligations.
• 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. This is considered not Moujen's obligations.
• 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.



✔ Correct



✕ Incorrect

• Constantly subjecting a Switch to vibration or shock can result in wear, which can lead to contact interference with contacts, operation failure, reduced durability, and other problems. Excessive vibration or shock can lead to false contact operation or damage. Install Switches in locations not subject to shock and vibration and in orientations that will not produce resonance.
• The Switches have physical contacts. Using them in environments containing silicon gas will result in the formation of silicon oxide (SiO_2) due to arc energy. If silicon oxide accumulates on the contacts, contact interference can occur. If silicon oil, silicon filling agents, silicon cables, or other silicon products are present near the Switch, suppress arcing with contact protective circuits (surge suppressor) or remove the source of silicon gas.
• If the Switch will be left in a location outside the storage environment conditions, if condensation has formed, or after long term storage exceeding one year, at the minimum, check the operating characteristics, contact resistance, insulation resistance, and dielectric strength. And conduct a check under the operating conditions.

Handling & Usage

• Do not remove or replace any built-in switches. Doing so may damage the product, resulting in increased risk of malfunctioning.
• Do not use excessive force to insert, remove or twist keys of key-selector products. Doing so may damage the product, resulting in increased risk of malfunctioning.
• Do not actuate products and hold its position for excessive amounts of time. Doing so will reduce the life of the internal spring as well as structural integrity; thus, increase risk of malfunctioning.
• Do not bend or twist cables with excessive force. When bending is required, provide a bending radius of 45 mm min. so as not to damage the cable insulation or sheath. Excessive bending may cause fire or leakage current.
• To change the installation position of the actuator: By loosening the Allen-head bolt on the actuator lever, the position of the actuator can be set anywhere within 360°.
• To change the orientation of the head: By removing the head screws (two or four screws), mounting in any of four orientations is possible. Be sure to change the plunger for internal operations at the same time. The roller plunger can be set in either of two positions at 90°.
• Flipping the roller to a different side: Loosen the Allen-head bolt, allows flipping the roller to the opposite side.
• Adjusting the length of the rod or lever: The length of the rod or lever can be adjusted by loosening the Allen-head bolt.
• Adjusting the rolling arm lever: (i) The roller arm can be set freely within a range of 225° after loosening the nut. (ii) The roller arm mounting bracket can be set in any direction after loosening the nut.

Mounting and Tightening

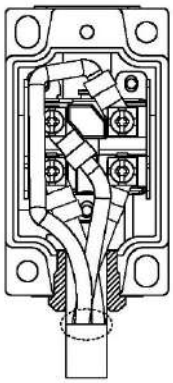
• Please view each individual product page's allowed parameters for details.
• Please follow these parameters diligently. Otherwise products may not function properly.

Wiring & Cabling

• Use M3.5-nylon insulation covered crimp terminals (round type)
• Appropriate wire size is AWG18.
• Do not supply electric power when wiring. Otherwise electric shock may result.
• Do not pull on the wires with excessive force.
• Avoid connecting the wires directly to the terminal. Instead, attach using a crimp terminal.
• Grounding is only installed on models with ground terminals.
• In the case of prewired connector and direct connector: Holding the connector certainly when pulling connector. Do not pull the cable with excessive force.

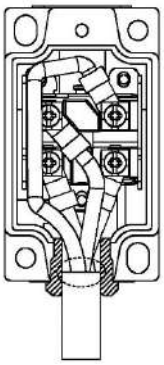
Conduit Installation

• The connector must be tightened at a suitable tightening torque. Tightening with excessive torque could damage the case.
• Select the connector based on the sealed rubber inner diameter for matching the cable outer diameter.
• When mounting the connector, use seal tape (not needed if the connector includes an O-ring) on the threaded section of the connector to ensure sealing performance.
• To ensure compliance of this Switch with the CSA standards, use of a waterproof connector compliant to CSA regulations.
• Using an inappropriate connector or assembling Switches incorrectly (assembly, tightening torque) can result in malfunction, leakage current, or fire. Be sure to read the connector instruction manual thoroughly beforehand.
• Even when the connector is assembled and set correctly, ends of the cable inside the Switch may come in contact. This can lead to malfunction, leakage current, or fire. Thus, be sure to protect the end of the cable from splashes of oil or water and corrosive gases.
• The following wiring is recommended for preventing the entry of fluids from the conduit opening.



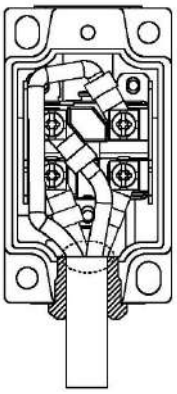
No envelopment of cable jacket in conduit. Exposed single wires.

✗ Incorrect



Partial/loose envelopment of cable jacket in conduit

✗ Incorrect

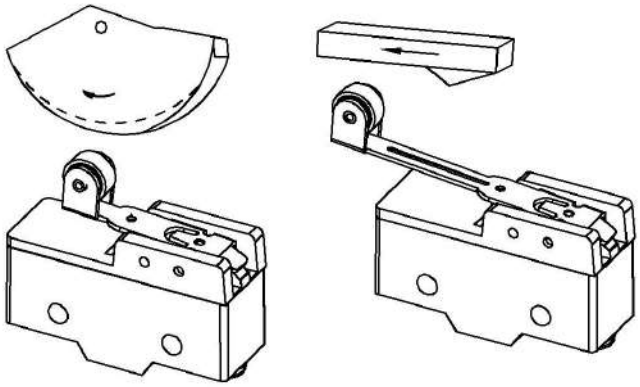


Full envelopment of cable jacket in conduit.

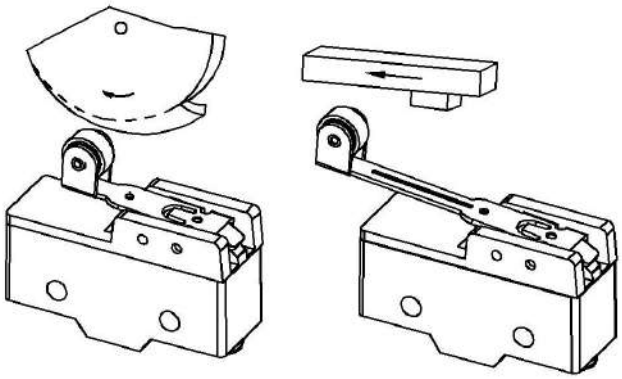
✓ Correct

Integrating into systems – Limit Switches

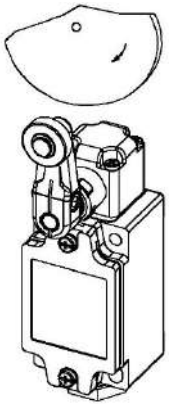
• Carefully determine the position and shape of the dog or cam so that the actuator will not abruptly snap back, thus causing shock. In order to operate the Limit Switch at a comparatively high speed, use a dog or cam that keeps the Limit Switch turned ON for a sufficient time so that the relay or valve will be sufficiently energized.
• The method of operation, the shape of the cam or dog, the operating frequency, and the travel after operation have a large influence on the durability and operating accuracy of the Limit Switch. The cam or dog must be smooth in shape.



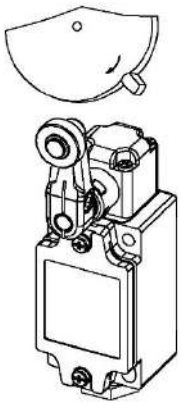
✔Correct



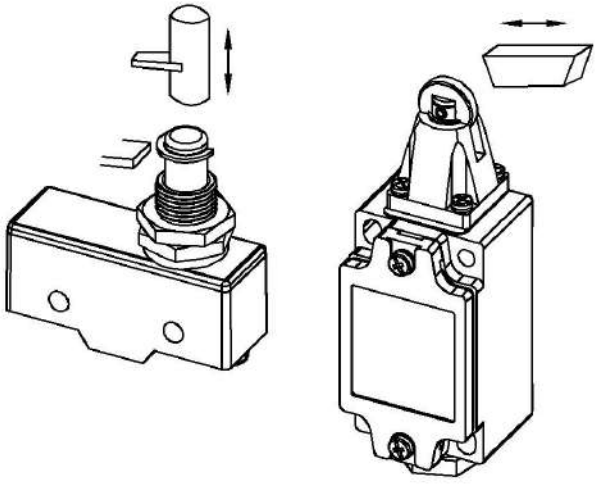
✕Incorrect



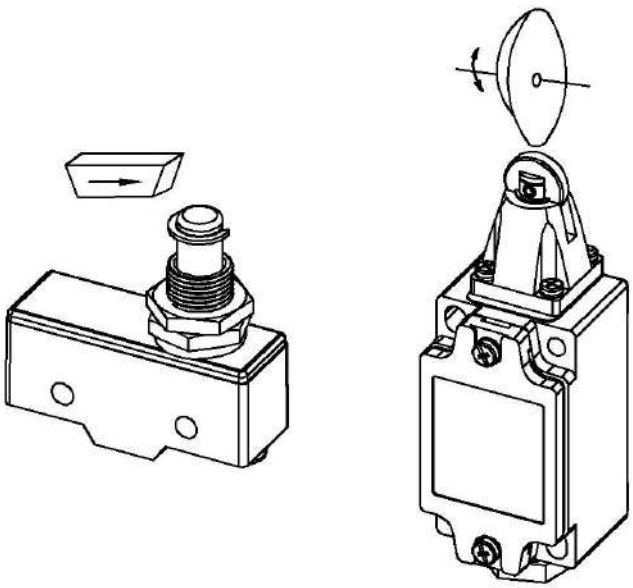
✔Correct



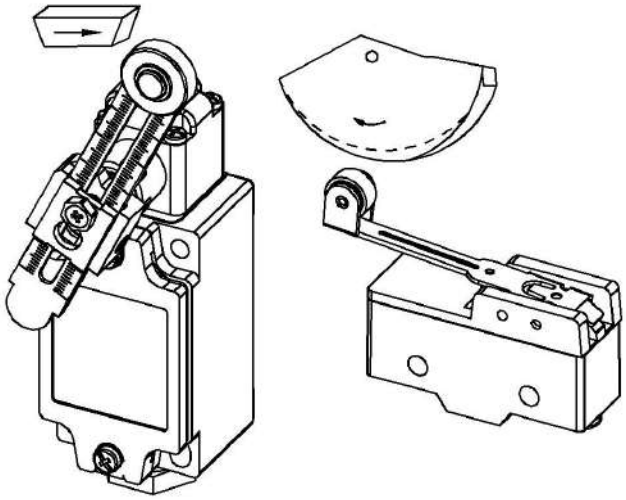
✕Incorrect



✔Correct



✕Incorrect



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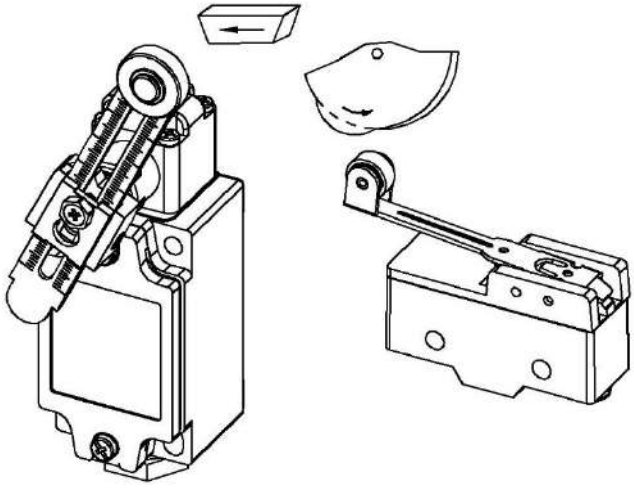
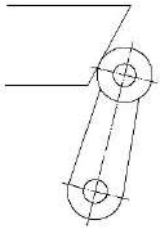
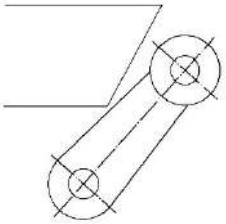


✕Incorrect

• Appropriate force must be imposed on the actuator by the cam or dog in both rotary operation and linear operation. If the dog touches the lever as shown below, the operating position will not be stable.

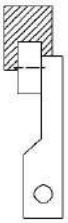


✔Correct

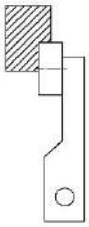


✕Incorrect

• Unbalanced force must not be imposed on the actuator. Otherwise, wear and tear on the actuator may result.

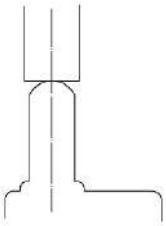


✔Correct



✕Incorrect

• Mount so that the actuator travel after operation (OT) is not exceeded. If the travel after operation (OT) exceeds the limit, switch failure could result. When mounting the Limit Switch, be sure to adjust the Limit Switch carefully while considering the whole movement of the actuator.
• When using a pin-plunger actuator, make sure that the stroke of the actuator and the movement of the dog are located along a single straight line.



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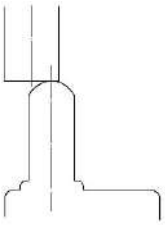

✕Incorrect

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