

MOUJEN USA

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Welcome

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.

All Product Series Quick Compare

Last update dt: 19 / Jul / 2021

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moujen

Limit Switch	Positive Opening	Terminal Type	Contact Points	Contact Form(s)	Poles & Throws	Actuation Sequence(s)	Moujen Test			Operating Temp.	AC options	DC options	min. size (mm)	Materials		Recognition
							IP rating	Oil resist	Dust resist					Water resist	Electrical Contact	
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	Aluminum Alloy	Aluminum Alloy	ul,oe,ccc
MJ-1-6	X	Screw	3	C	SPDT	Break(1)-Make(2)	60, 65	✓	✓	-10 to 80 C	15A 125-250V	0.5A 125V, 0.25A 250V	44.5x86x25.4	Aluminum Alloy	Aluminum Alloy	ul,oe,ccc
MJ-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	Aluminum Alloy	Aluminum Alloy	csa,ce,ccc
MJ-2-1	X	Screw	3	C	SPDT	Break(1)-Make(2)	40	✓	✓	-15 to 80 C	15A 125-250V	0.5A 125V, 0.25A 250V	25.5x49.2x17.5	PBT plastic + glass fiber, or Phenolic resin (PF)	PBT plastic + glass fiber	ul,oe,ccc,vde
MJ-3-5	✓	Screw or Quick(250)	3	C	SPDT	Break(1)-Make(2)	40, 65	✓	✓	-25 to 80 C	5A 250V	4A 24V, 1.1A 125V, 0.4A 250V	26.5x49.2x17.5	PBT plastic + glass fiber	PBT plastic + glass fiber	ce
MN-5	X	Screw	3	C	SPDT	Break(1)-Make(2)	65	✓	✓	-10 to 80 C	10A 250V	0.5A 125V	42x70.5x24.1	PBT plastic	PBT plastic	ul,oe,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	Zinc Alloy	Zinc Alloy	ul,oe,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	PA66 Nylon + glass fiber	PA66 Nylon + glass fiber	ul,oe,ccc
M6-8	✓, X	Clamp	4	Multiple (see catalog)	DPST	Multiple (see catalog)	65, 66	✓	✓	-25 to 70 C	6A 24-240V, 1A 110V, 4A 415V	10A 24V, 1A 110V, 0.5A 220V	55x31x33.5	Zinc Alloy	Zinc Alloy	ce
MACZ-4	✓	Wire	3	C	SPDT	Break(1)-Make(2)	67	✓	✓	-20 to 70 C	1.5A 250V	0.4A 125V	50x31x17	PFS plastic + glass fiber	PFS plastic + glass fiber	ce,ccc
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	-25 to 120 C	5A 250V, 15A 250V	0.5A 125V	15.9x28.5x10.3	PC + ABS	PC + ABS	ul,oe,ccc,csa
MVS-3	✓	Screw or Quick(250)	3	C	SPDT	Break(1)-Make(2)	40	✓	✓	-40 to 85 C	6A 250V	0.5A 125V	19x30.1x10.3	PC plastic	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	PC plastic	PC plastic	vde,en,ul
MZ-7	✓	Quick(110) or Wire	3	C	SPDT	Break(1)-Make(2)	40, 60, 67	✓	✓	-25 to 80 C	1.5A 250V	0.4A 125V	13.79x20x6.6	PC plastic	PC plastic	csa,ce
MFS	X	Wire	3 or 6	1 or 2C	SPDT or DPDT	Break(1)-Make(2), or DB(1)-DM(2)	40	X	X	-15 to 80 C	15A 250V	0.5A 125V	82x80.3x34.5, 171.5x83.4x56	ABS or Aluminum	ABS or Aluminum	ce
Pushbutton																
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	PC plastic, PBT plastic + glass fiber	PC plastic, 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-NC, or SPST-NO/NC, or DPST-NO, or 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	PA66(nylon) + glass fiber, Trans. parts: PC plastic.	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	-25 to 70 C	6A 230V	3A 24V	29.3x37x10	nylon + glass fiber	nylon + glass fiber	ce
Signal Tower																
MST	X	Wire	5	n/a	n/a	n/a	65	✓	✓	-20 to 50 C	100-240V	12V, 24V	ø70	PC plastic Base, Zinc alloy	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	PC plastic Base, Zinc alloy	PC plastic Base, Zinc alloy	ce

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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

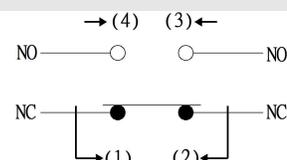
Operation Frequency	Contact Resistance	Insulation Resistance	Vibration
Mechanically: 120/min Electrically: 30/min	15mΩ max. (initial)	100MΩ min. (500VDC)	1.5mm amplitude at 10-55Hz

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

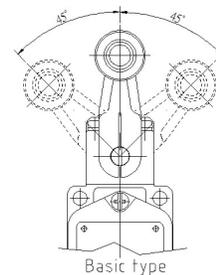
Series:	Actuator:	Through hole:
MJ -	7101 -	

- 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, ø50mm rubber roller, 45° travel
- 7106 = Metallic spring 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 ø50mm rubber roller, 45° travel
- 7126 = Metallic spring coil with solid stainless-steel tip

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

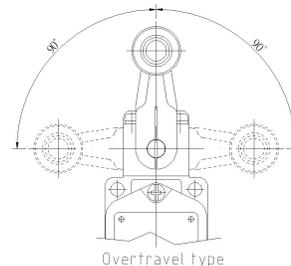
Side Rotary, Fork Lever Lock (Yoke)

- 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
- 3241-M = Front/Back Facing metallic rollers, 90° travel
- 3242-M = Front/Back Facing metallic rollers, 90° travel
- 3243-M = Front Facing metallic rollers, 90° travel
- 3244-M = Back Facing metallic rollers, 90° travel



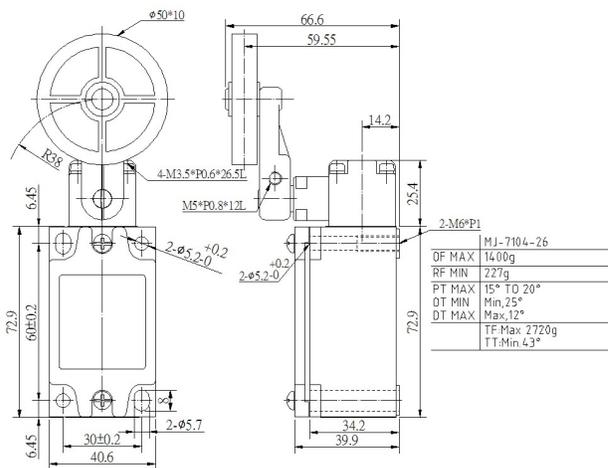
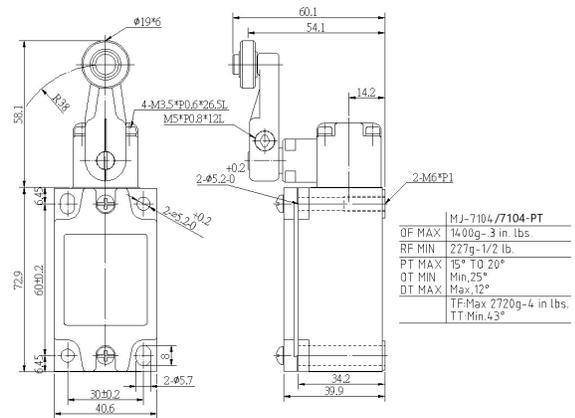
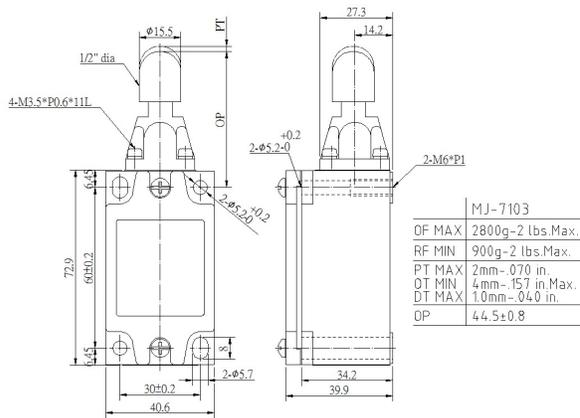
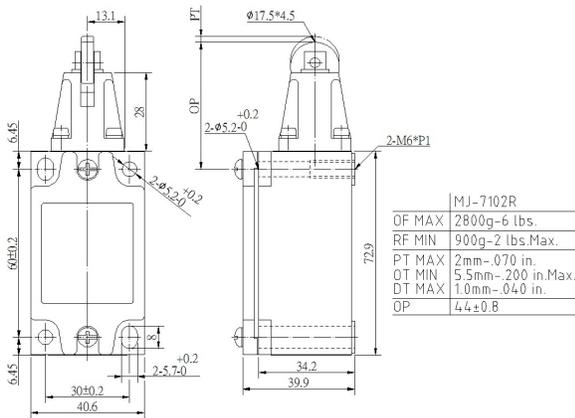
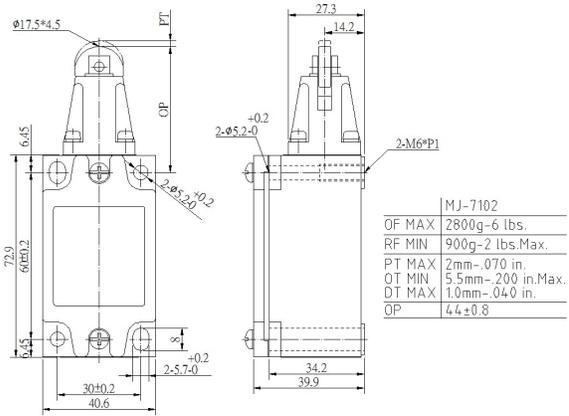
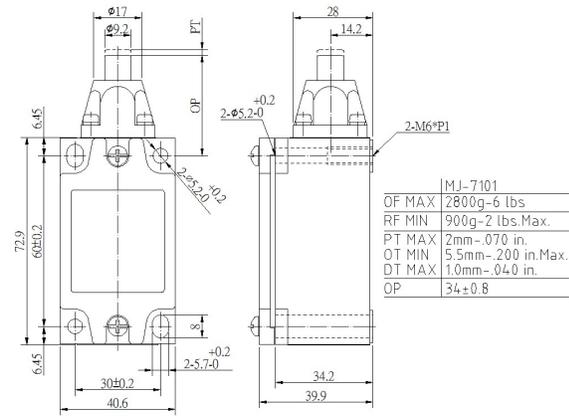
Over Travel, 90° travel

- 7204 = Side rotary, metallic roller
- 7204-PT = Side rotary, Teflon roller
- 7204-26 = Side rotary, ø50mm rubber roller
- 7207 = Side rotary, adjustable metallic rod
- 7207L = Side rotary, adjustable metallic rod, long
- 7208 = Side rotary, adjustable metallic roller
- 7208-PT = Side rotary, adjustable Teflon roller
- 7208-26 = Side rotary, adjustable ø50mm rubber roller



◆ Dimensions & Operating Characteristics

*Measurements in millimeters



MJ-7101



MJ-7102



MJ-7102R



MJ-7103

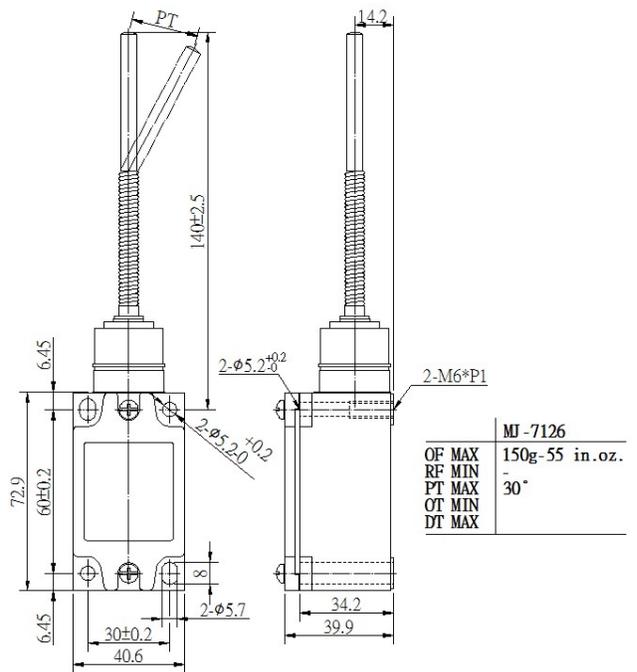
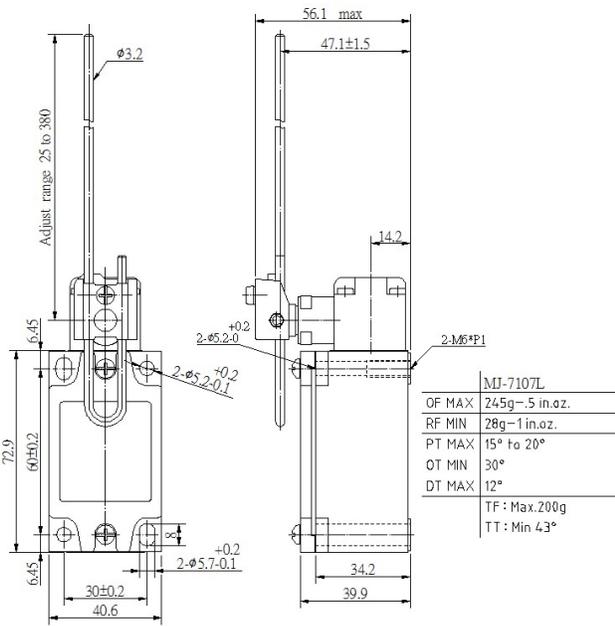
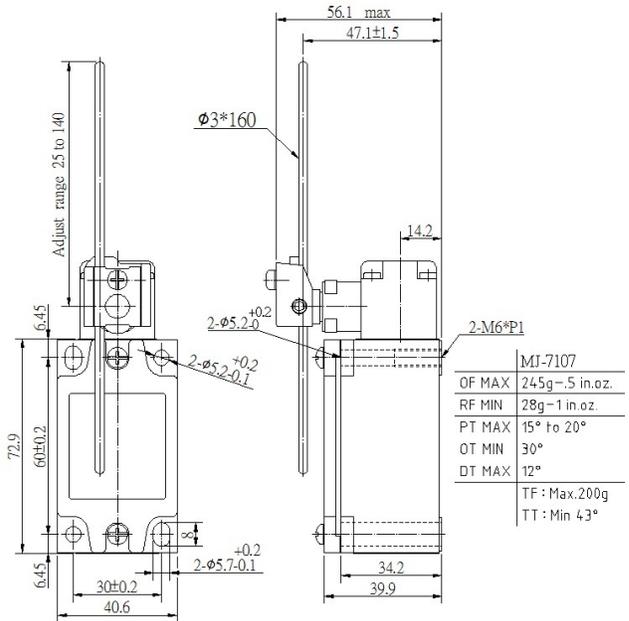
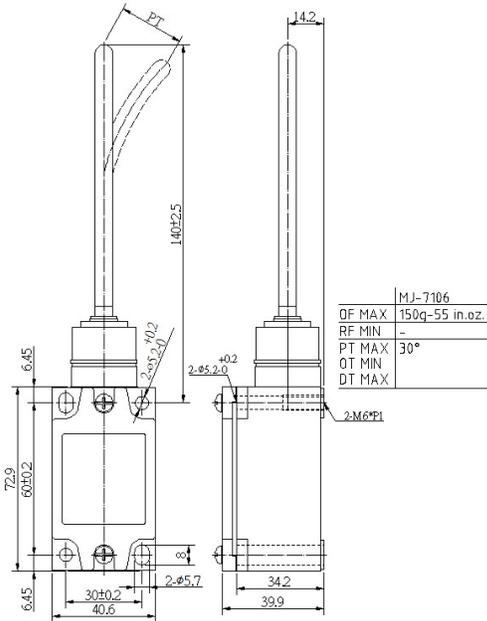


MJ-7104



MJ-7104-26

MJ-7



MJ-7106



MJ-7107

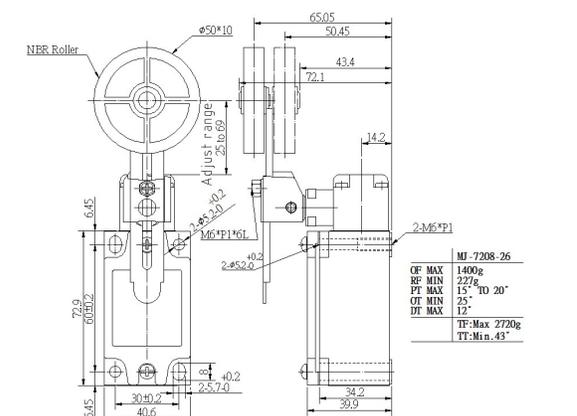
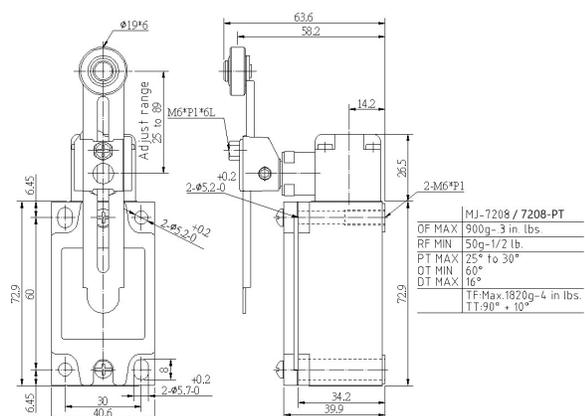
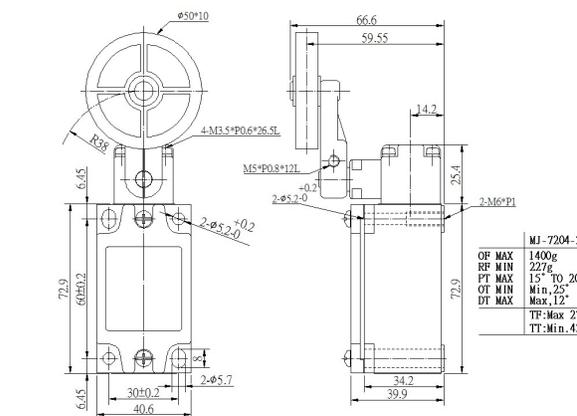
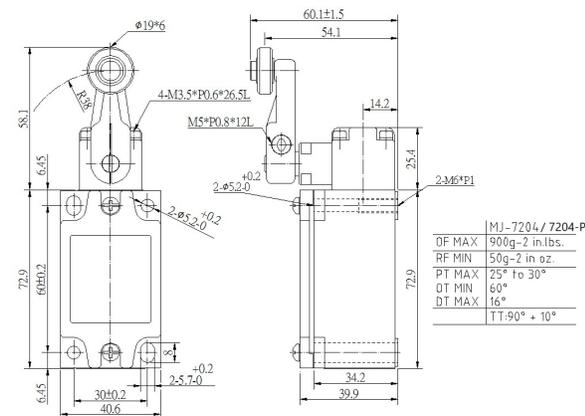
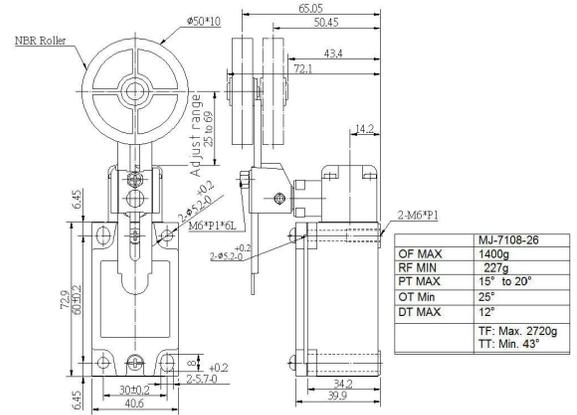
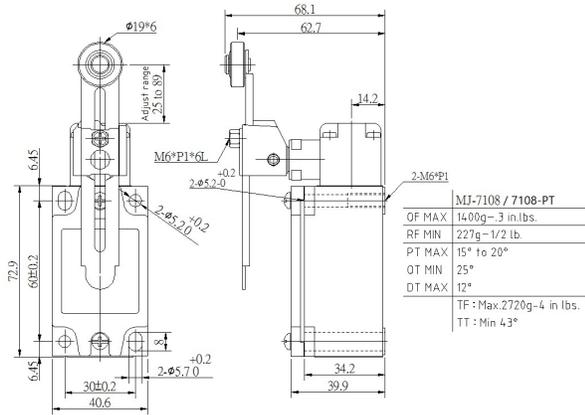


MJ-7107L



MJ-7126

MJ-7



MJ-7108



MJ-7108-26



MJ-7204



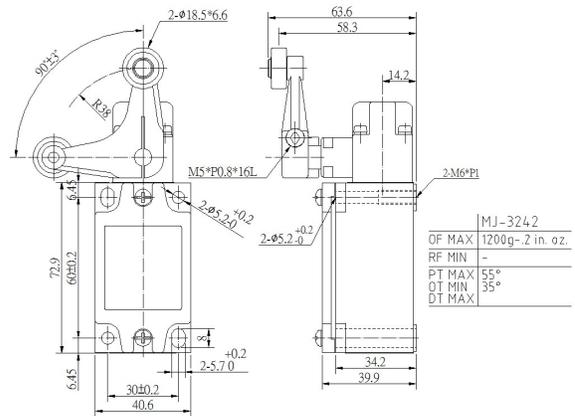
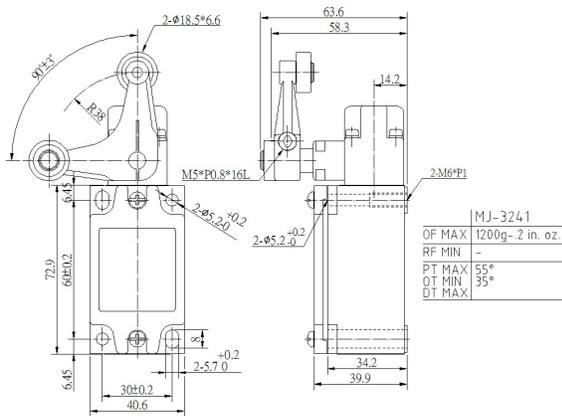
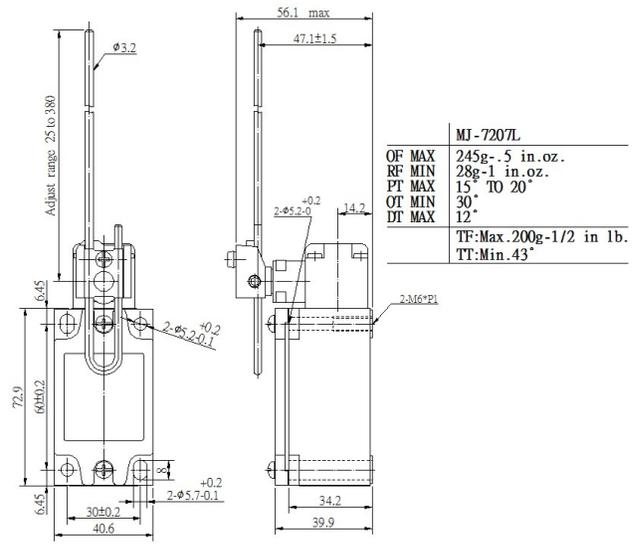
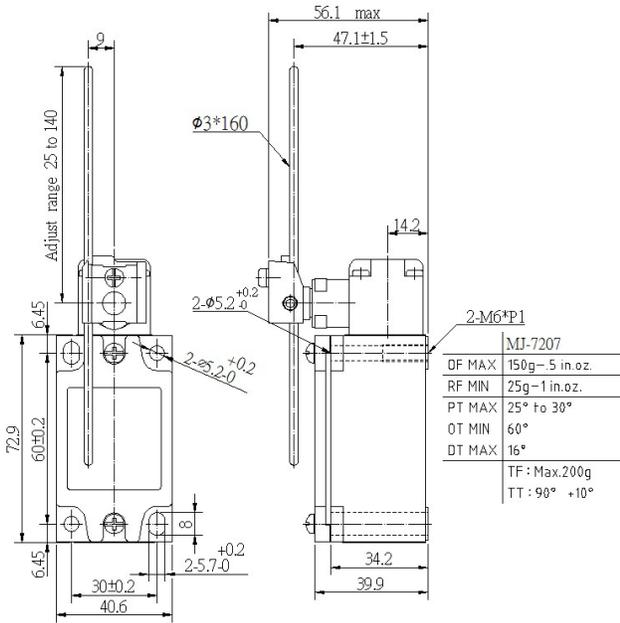
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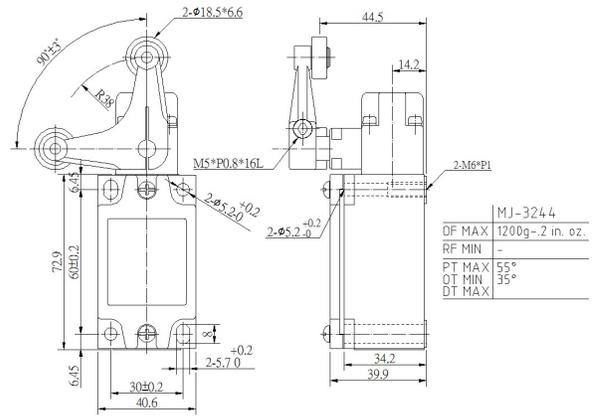
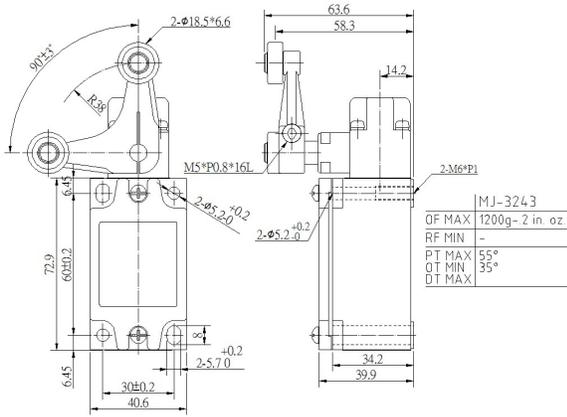
MJ-7208



MJ-7208-26

MJ-7


MJ-7



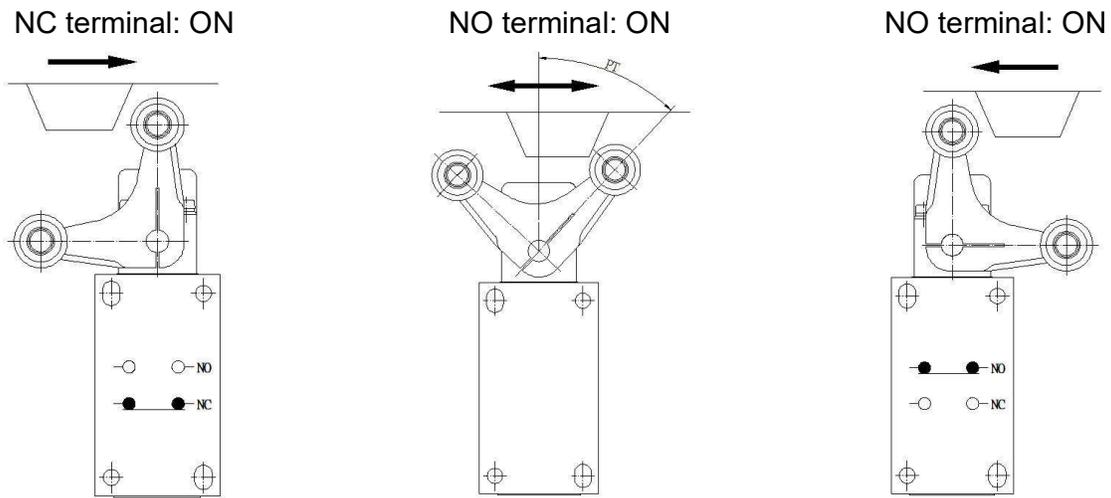
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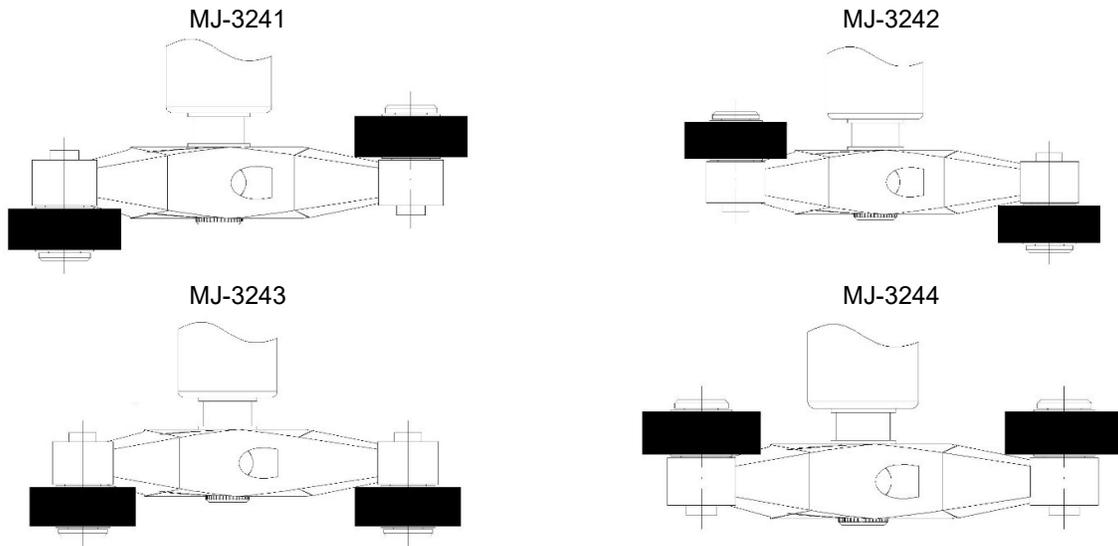
MJ-3244

◆ Handling and Usage

Operation of Fork Lock Lever switches:



Fork Lock Lever roller positions:



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

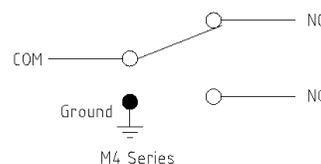
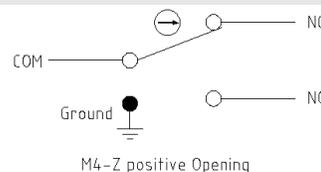
Operation Frequency	Contact Resistance	Insulation Resistance	Vibration
Mechanically: 120/min Electrically: 30/min	300mΩ max. (initial)	100MΩ min. (500VDC)	1.5mm amplitude at 10-55Hz

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

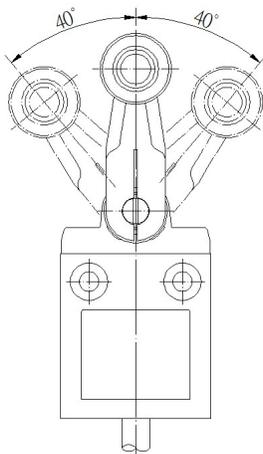


◆ Materials

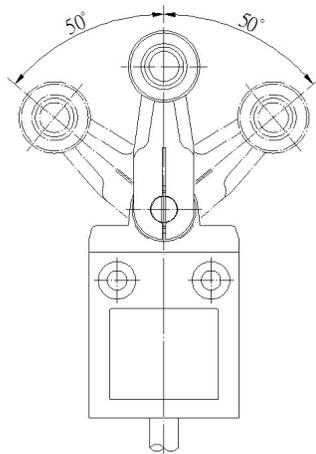
Actuation touch part	Electrical contact point	Enclosure
Stainless Steel	Silver 99.9%	Aluminum alloy

◆ Nomenclature

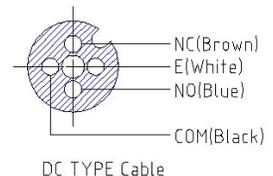
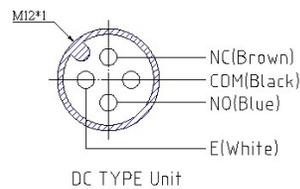
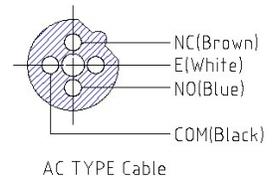
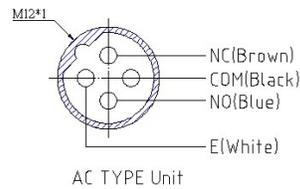
Series:	Actuator:	Connection type:	Positive opening:	Cable:
M4 -	4101 -	Q -	Z -	AC
	4101=Plunger 4102=Roller plunger 4102R=Cross roller plunger 4103=Bevel plunger 4104=Side rotary, roller 40° 4114=Side rotary, roller 50° 4106=Spring, coil <u>Actuator with rubber boot</u> 4111=Plunger 4112=Roller plunger 4112R=Cross roller plunger <u>Panel mount actuator</u> 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)

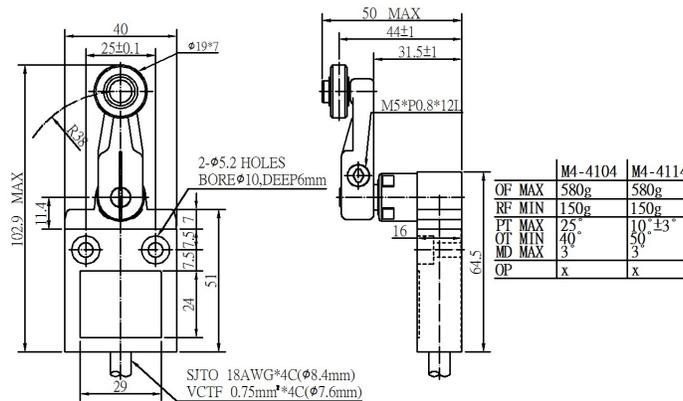
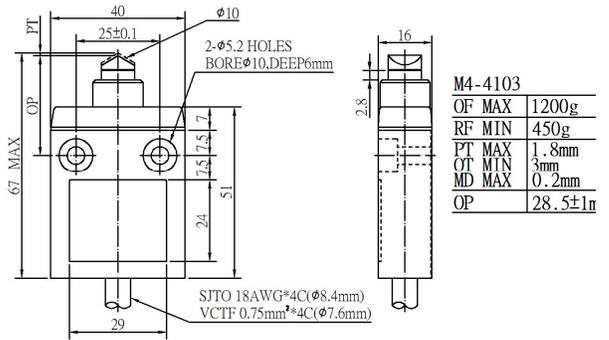
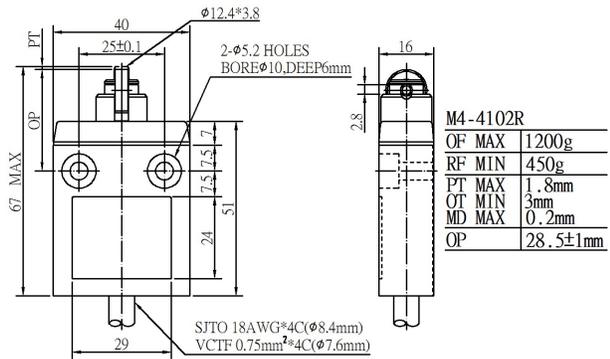
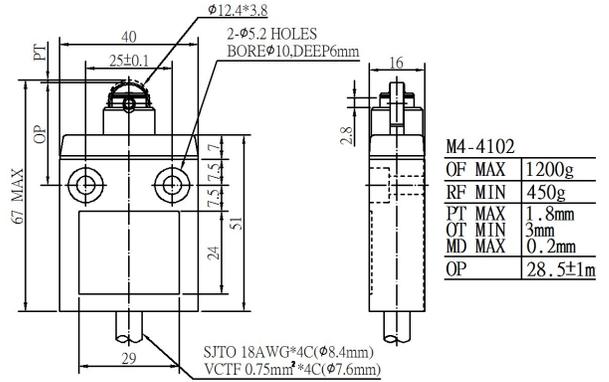
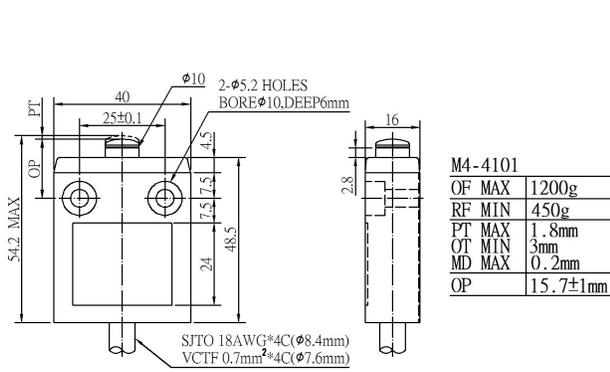
M4-4

◆ Dimensions & Operating Characteristics

*Measurements are in *millimeters*

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

*MD=Movement Differential=DT=Differential Travel



M4-4101



M4-4102



M4-4102R

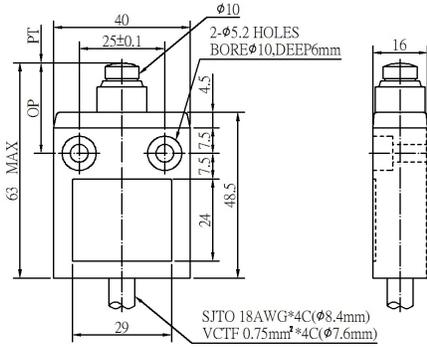


M4-4103



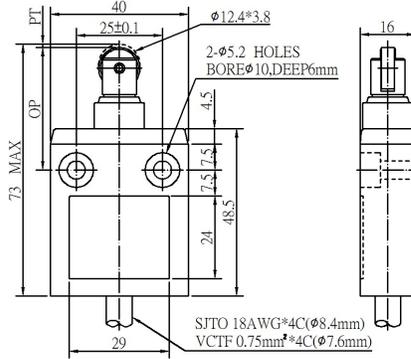
M4-4104/4114

M4-4



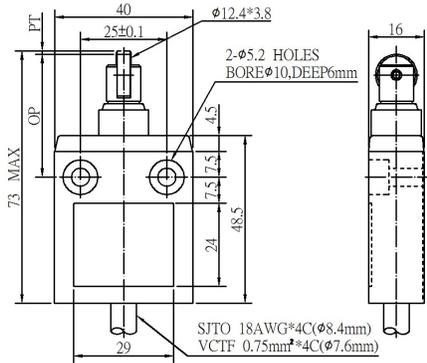
M4-4111

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



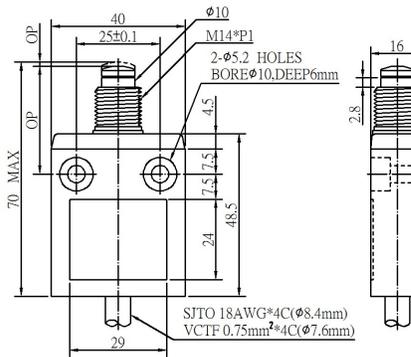
M4-4112

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



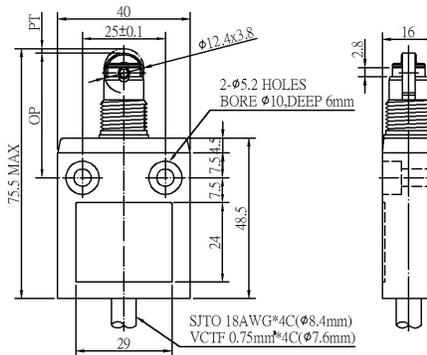
M4-4112R

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



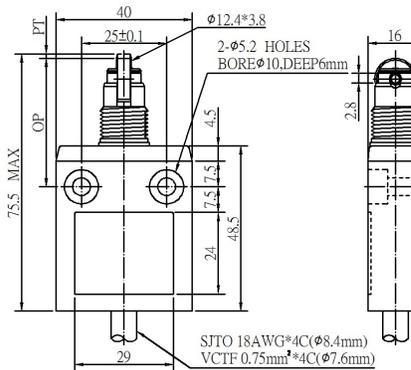
M4-4310

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



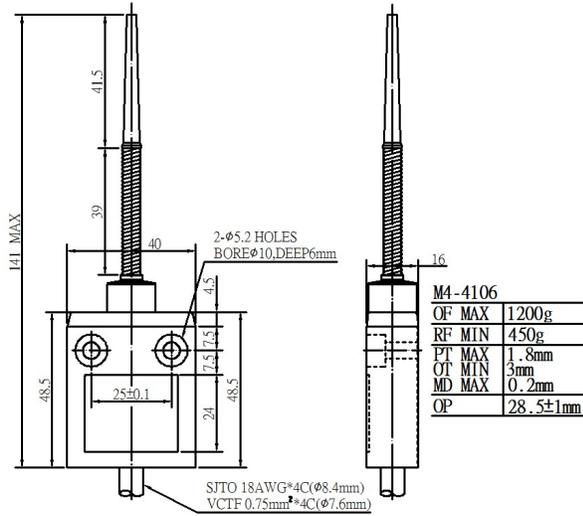
M4-4310



M4-4311



M4-4312

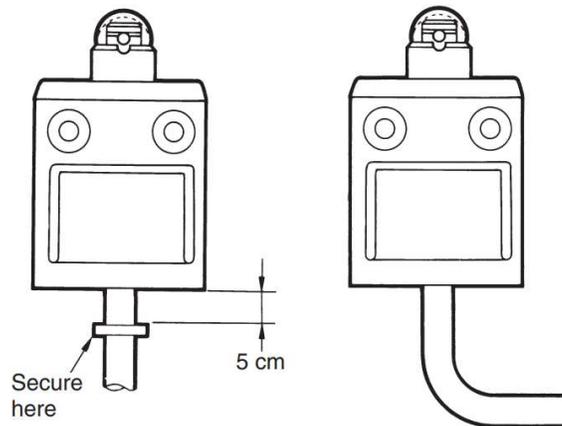


M4-4106

◆ 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)

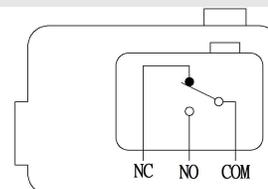
Operating Temp.	AC Rated	DC Rated	IP	Oil Resist	Dust Resist	Water Resist	Operating Speed
-10 to 80 Celsius	15A 125-250V	0.5A 125V	60, 65	Yes & No	Yes	Yes & No	0.01mm to 1m/sec

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

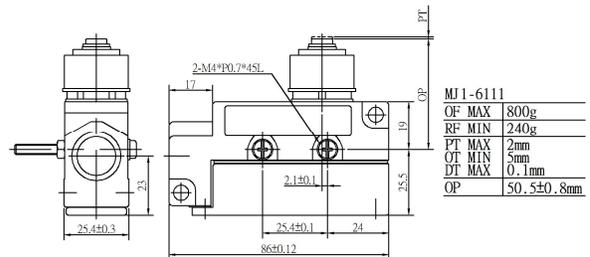
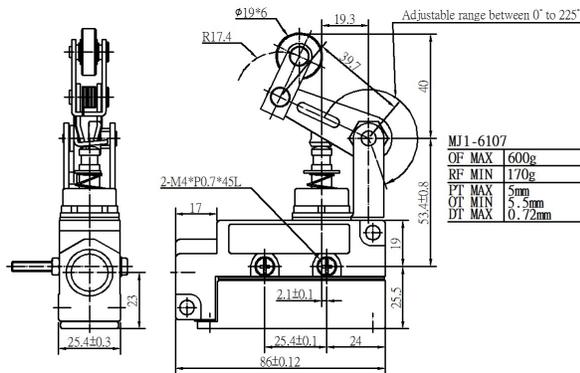
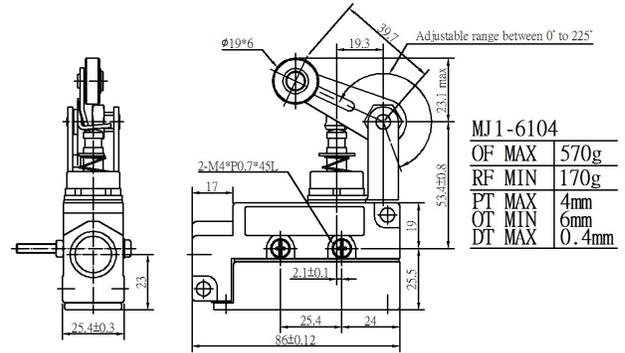
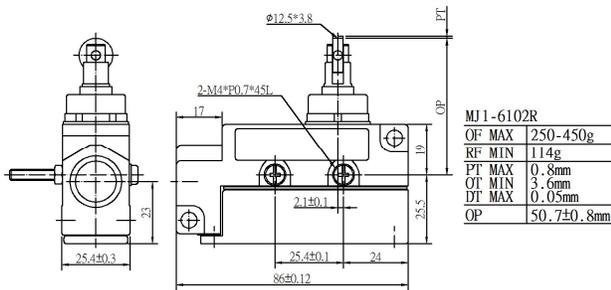
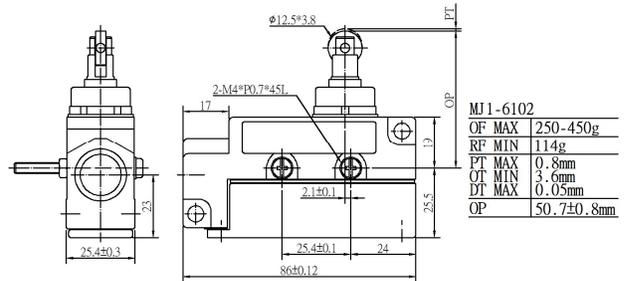
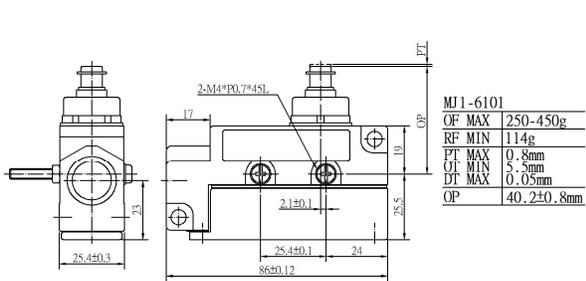
Actuation touch part	Electrical contact point	Enclosure
Stainless Steel	Silver 99.9%	Aluminum alloy

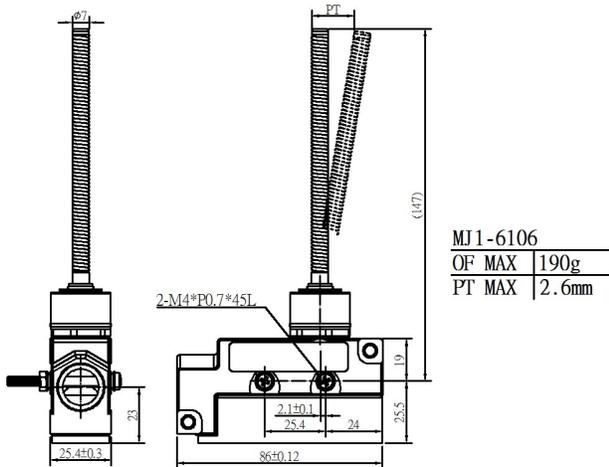
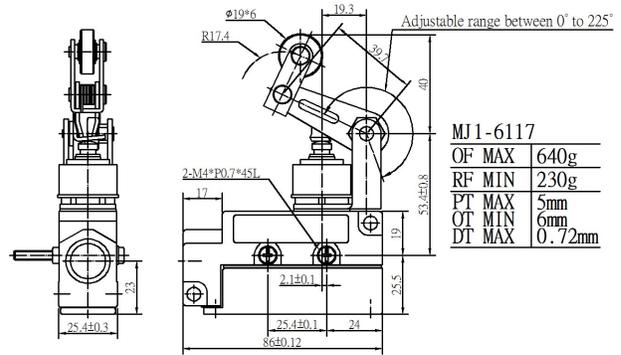
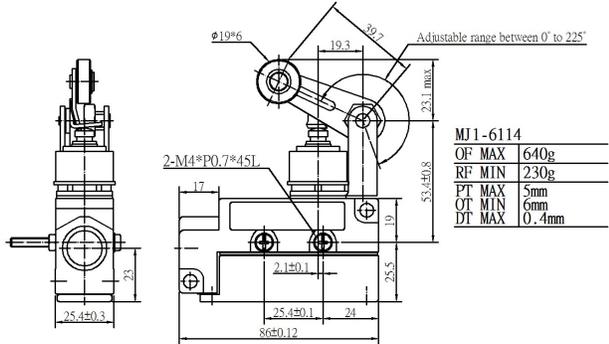
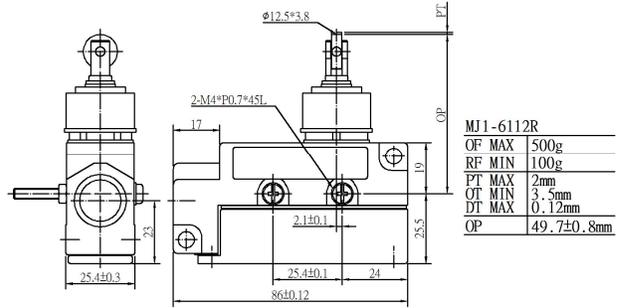
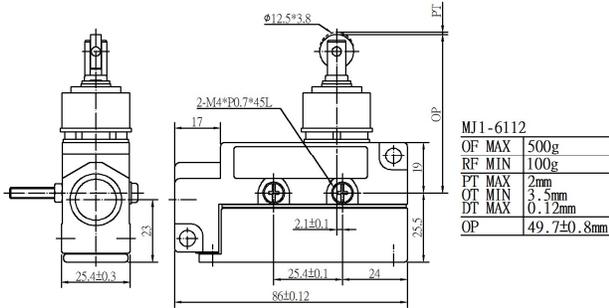
◆ Nomenclature

Series:	Actuator:	Through hole:
MJ1 -	6101 -	
	<u>With-out actuator seal boot (IP60)</u> 6101=Pin plunger 6102=Roller plunger 6102R=Cross roller plunger 6104=Arm lever, roller 6107=Arm lever, arm roller, 1-way action	Blank=PF1/2" thread M20=M20 thread (cable gland excluded)
	<u>With actuator seal boot (IP65)</u> 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	

MJ1-6
◆ Dimensions & Operating Characteristics

*Measurements in millimeters





MJ1-6112



MJ1-6112R



MJ1-6114



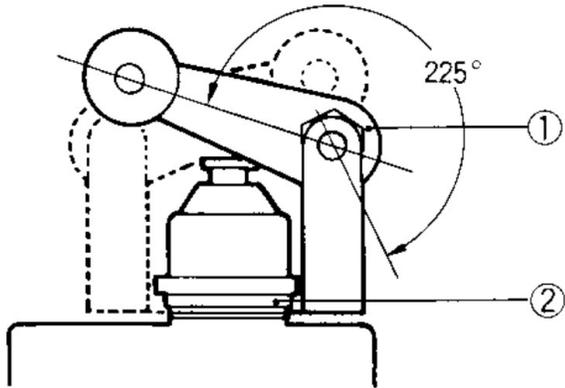
MJ1-6117



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)

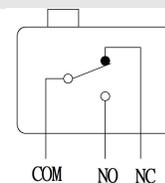
Operating Temp.	AC Rated	DC Rated	IP	Oil Resist	Dust Resist	Water Resist	Operating Speed
-15 to 80 C -15 to 150 C (phenolic)	15A 125V-250V, 20A 125V-250V	0.5A 125V, 0.25A 250V	40	Yes or No	No	No	0.01mm to 1m/sec

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

Blank=Screw
A=Quick
 (250, t=6.37mm)
S=Soldering

Blank=Plastic
PH=Phenolic
 (T385J)
FR=Phenolic
 (T200HF)

Blank=15A
20=20A
 (only applicable to
 Phenolic
 enclosure types)

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

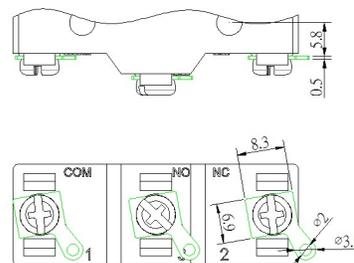
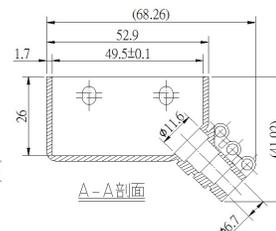
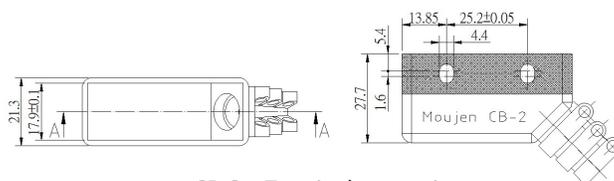
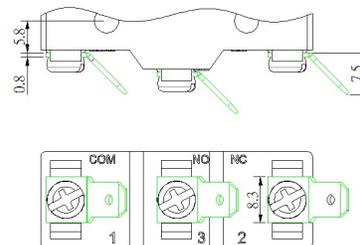
1701=Straight metal Lever, r63.5mm
 1702=Straight metal Lever, r38.2mm
 1703=POM Roller metal lever, r48.5mm
 1704=POM Roller metal lever, r26.6mm
 1705=POM Roller metal lever, r37.2mm
 1706=Straight metal Lever, r28.7mm
 1707=Straight metal Lever, r53mm
 1708=PBT plastic lever, Red push lever type
 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 (no panel mount)
 1336=Teflon Plunger, short
 1337=Teflon Plunger, tall

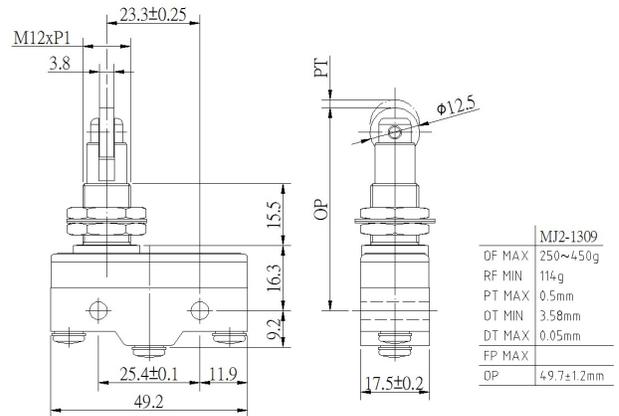
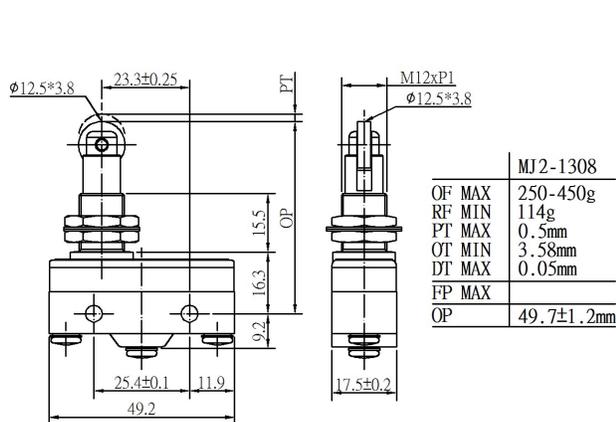
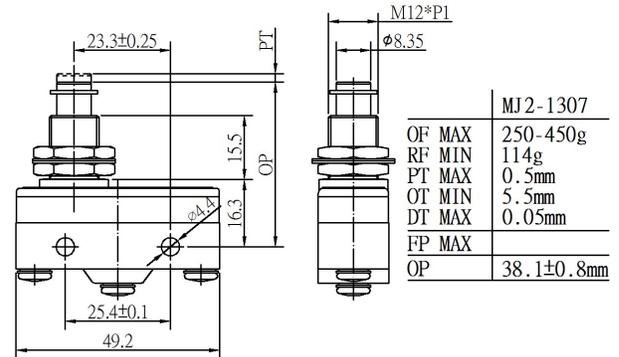
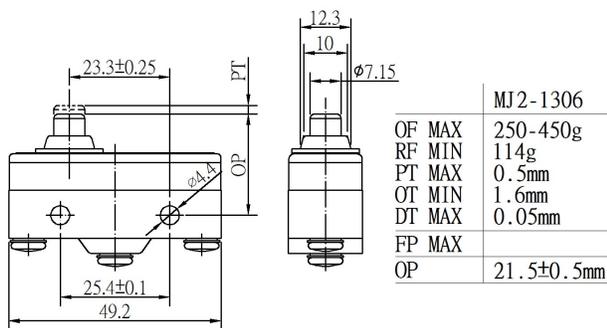
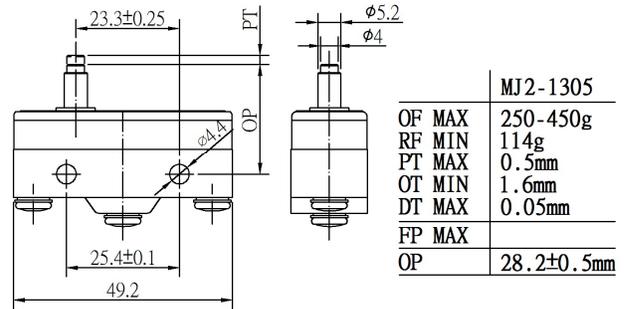
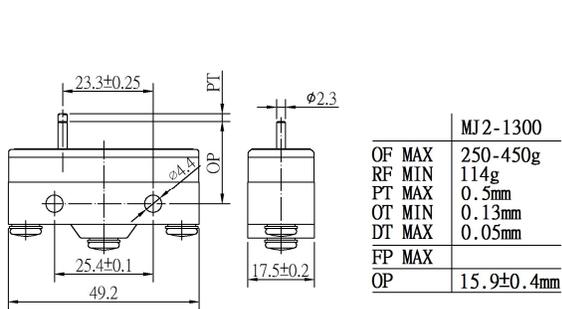
1513=POM Roller metal lever, r31.9mm, 1-way action
 1514=POM Roller metal lever, r53.8mm, 1-way action
 1516=Simulated roller metal lever, r28.1mm
 1533=SUS303 Roller metal lever, r31.9mm, 1-way act
 1534=SUS303 Roller metal lever, r53.8mm, 1-way act

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

S – Soldering Terminal

A – Quick Connect Terminal

CB-2 – Terminal protection cover

◆ Dimensions & Operating Characteristics

*Measurements in millimeters



MJ2-1300



MJ2-1305



MJ2-1306



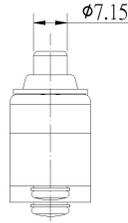
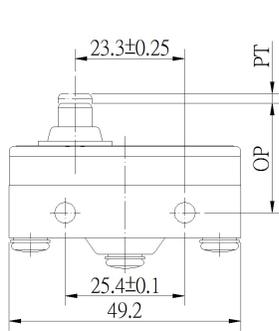
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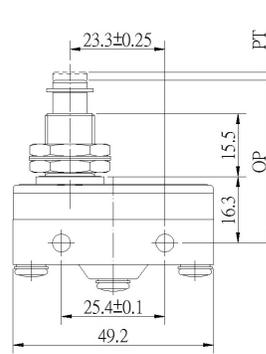
MJ2-1308



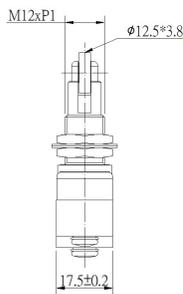
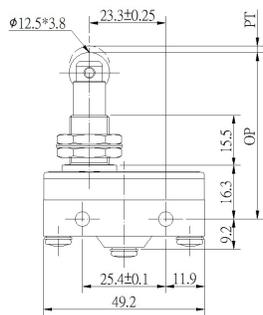
MJ2-1309



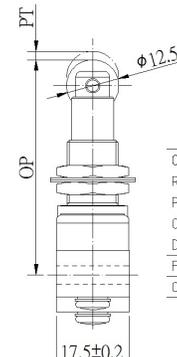
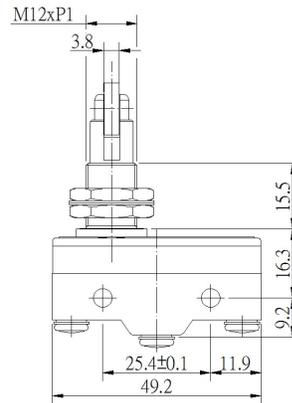
MJ2-1326	
OF MAX	250-450g
RF MIN	114g
PT MAX	0.5mm
OT MIN	1.6mm
DT MAX	0.05mm
FP MAX	
OP	21.5±0.5mm



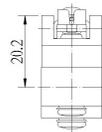
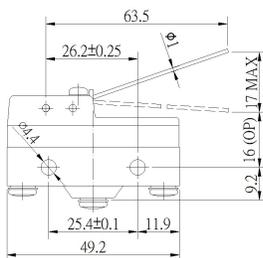
MJ2-1327	
OF MAX	250-450g
RF MIN	114g
PT MAX	0.5mm
OT MIN	5.5mm
DT MAX	0.05mm
FP MAX	
OP	38.1±0.8mm



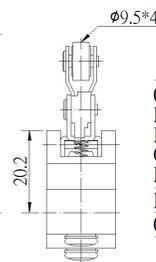
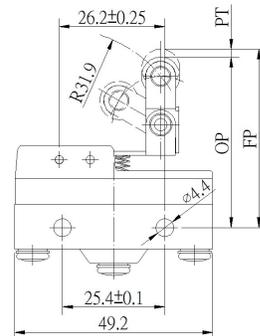
MJ2-1328	
OF MAX	250-450g
RF MIN	114g
PT MAX	0.5mm
OT MIN	3.58mm
DT MAX	0.05mm
FP MAX	
OP	49.7±1.2mm



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



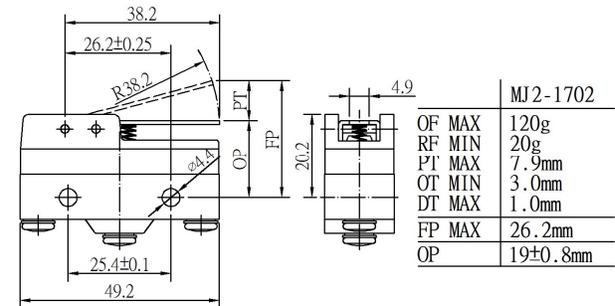
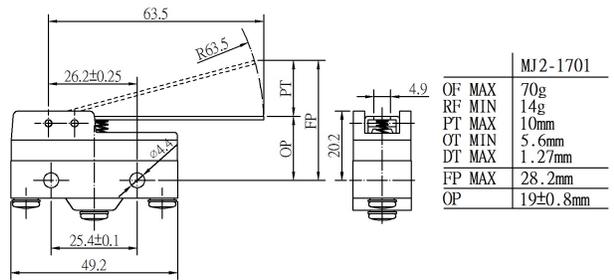
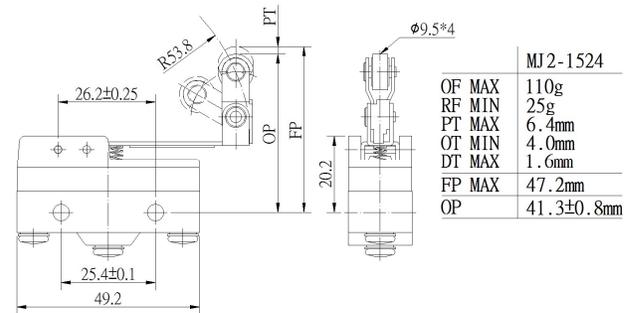
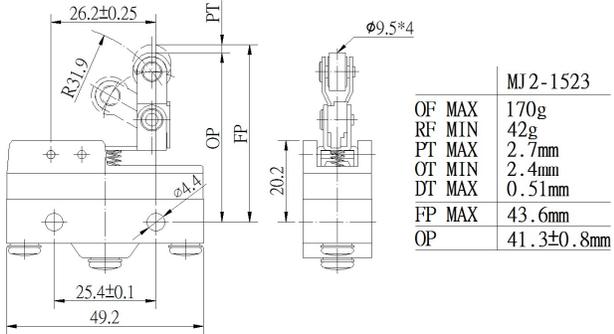
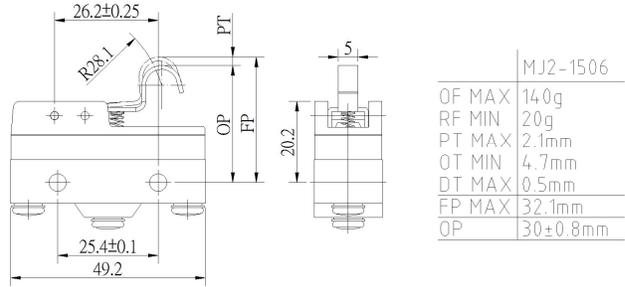
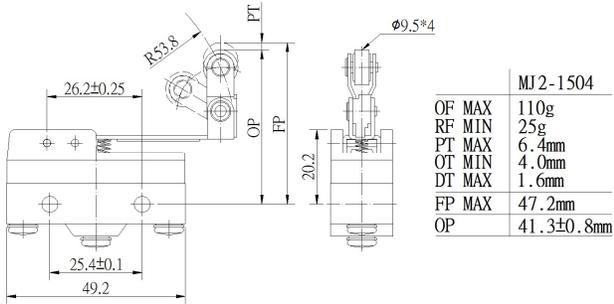
MJ2-1329



MJ2-1500



MJ2-1503



MJ2-1504



MJ2-1506



MJ2-1523



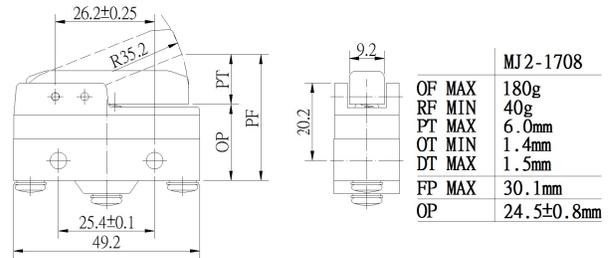
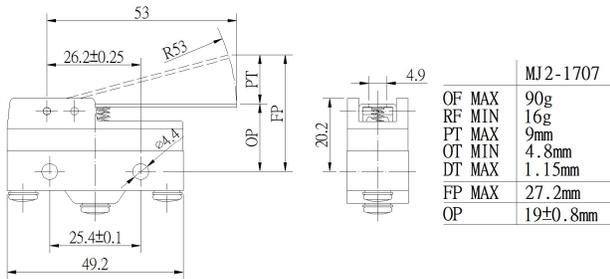
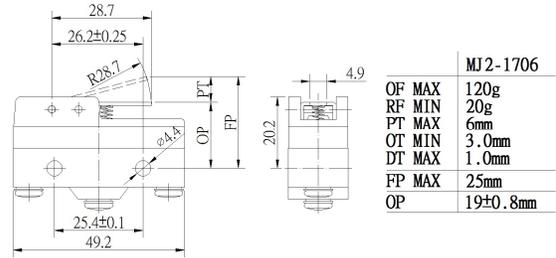
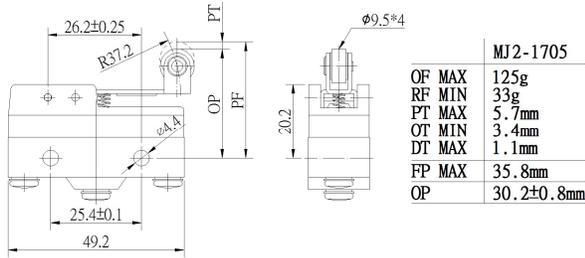
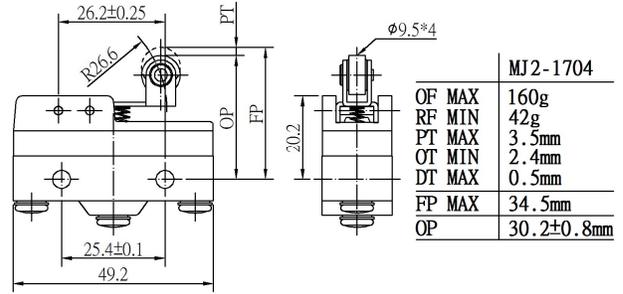
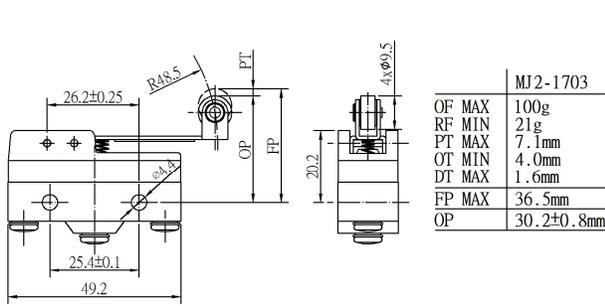
MJ2-1524



MJ2-1701



MJ2-1702



MJ2-1703



MJ2-1704



MJ2-1705



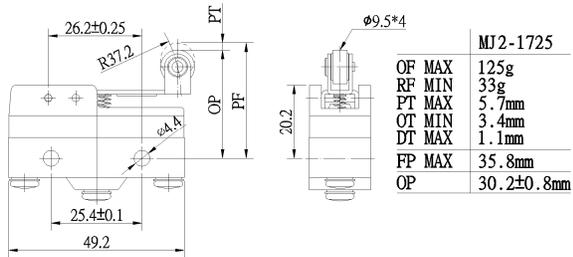
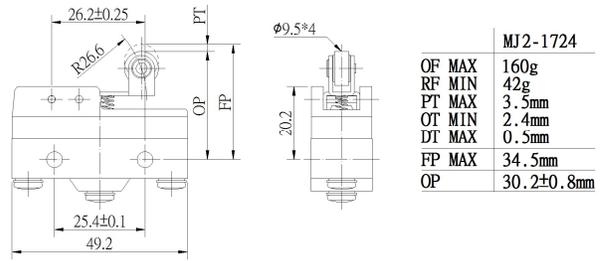
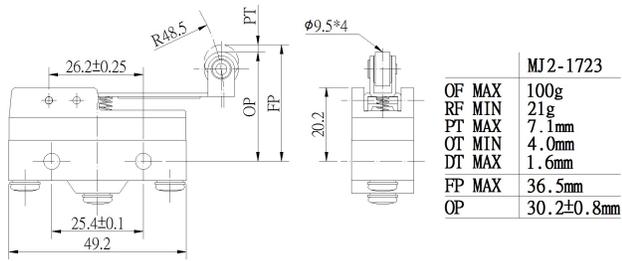
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MJ2-1707



MJ2-1708



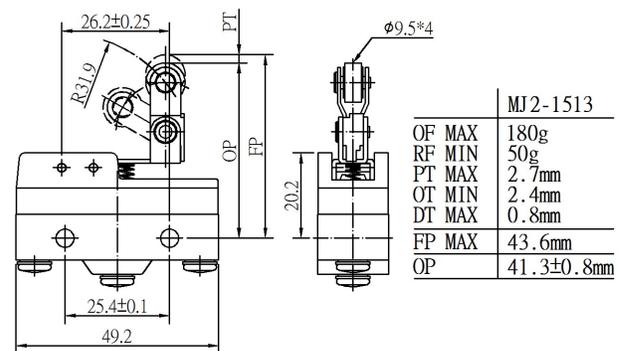
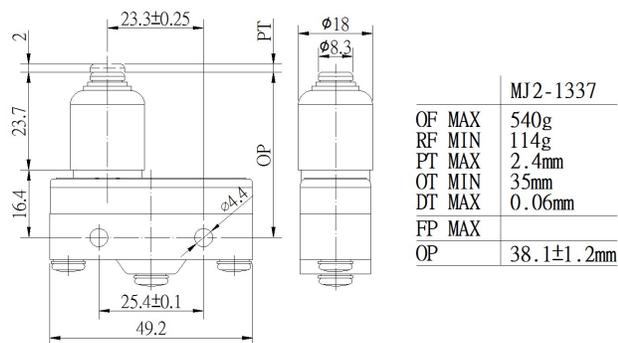
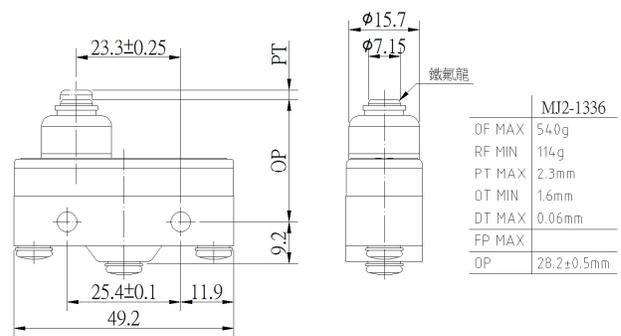
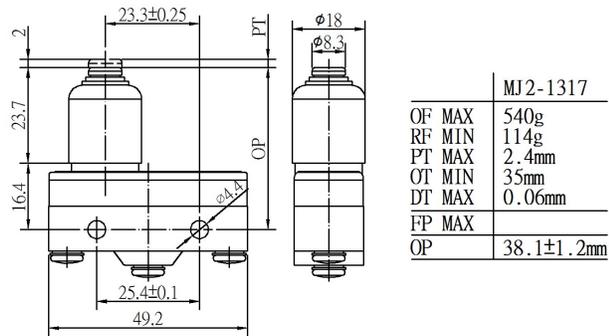
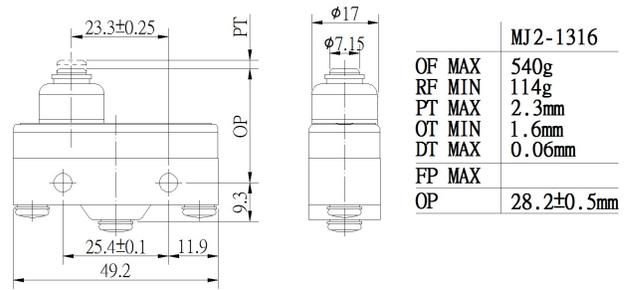
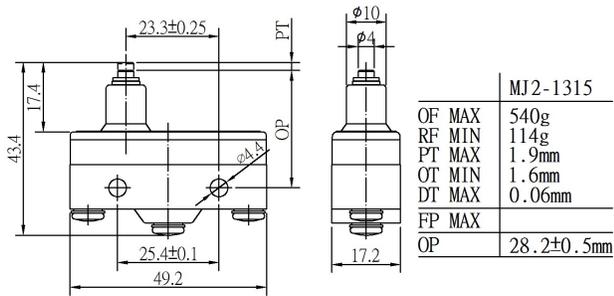
MJ2-1723



MJ2-1724



MJ2-1725

With Oil Resist Boot Seals


MJ2-1315



MJ2-1316



MJ2-1317



MJ2-1336

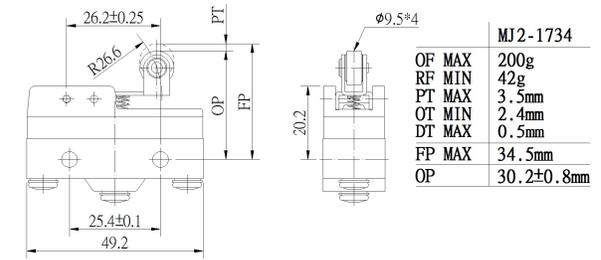
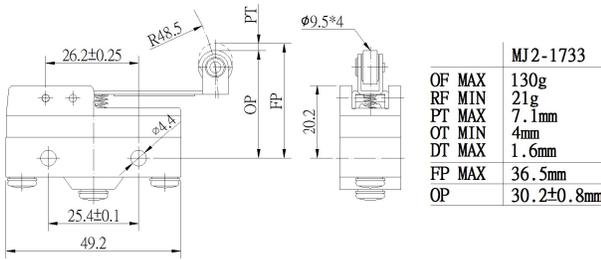
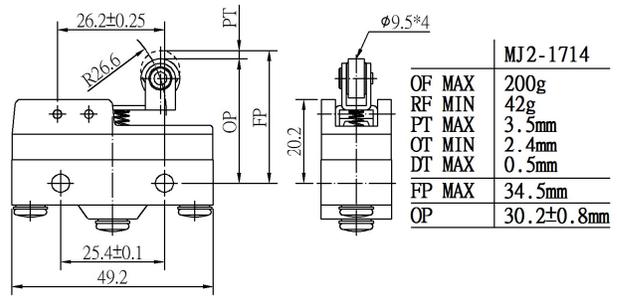
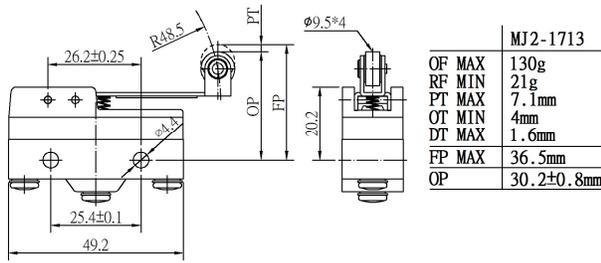


MJ2-1337



MJ2-1513

MJ2-1



MJ2-1713



MJ2-1714



MJ2-1733



MJ2-1734

MJ3-5 Series
Basic Limit Switch
◆ Features

- ✓ Positive Opening Basic Switch
- ✓ Small and compact body type
- ✓ Sturdy hard plastic enclosure with glass fiber mix
- ✓ Double silver-nickel alloy contacts; lower chance of failure
- ✓ IP65 variants have additional O-ring seal installed inside actuator; prevents elements from seeping in via actuator head

⚠ Products are not guaranteed IP65 if using WITHOUT fitting terminal covers (sold separately).

◆ 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)

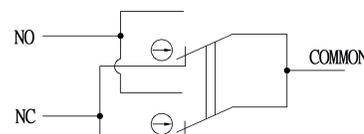
Operating Temp.	AC Rated	DC Rated	IP	Oil Resist	Dust Resist	Water Resist	Operating Speed
-25 to 80 C	5A 250V	4A 24V, 1.1A 125V, 0.4A 250V	40, 65	Yes & No	Yes & No	Yes & No	0.01mm to 1m/sec

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

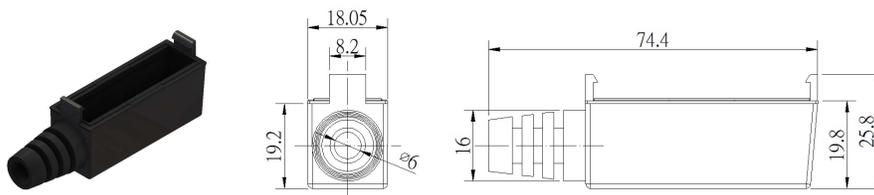
Circuitry


◆ Materials

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

◆ Nomenclature

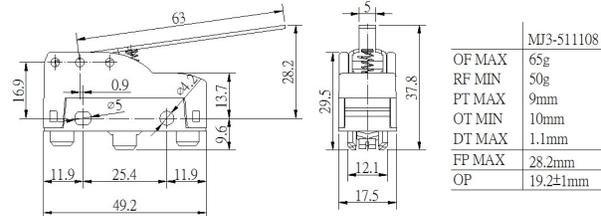
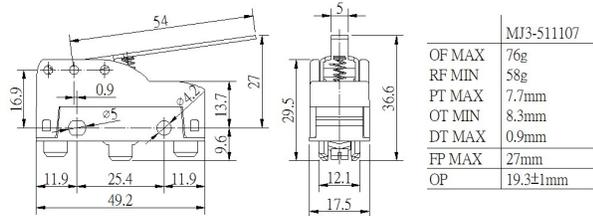
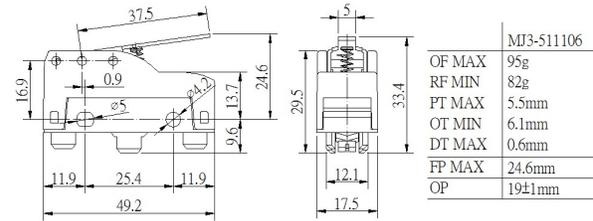
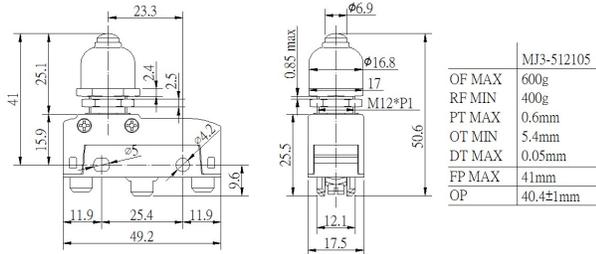
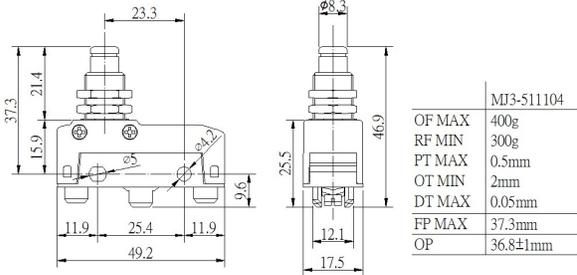
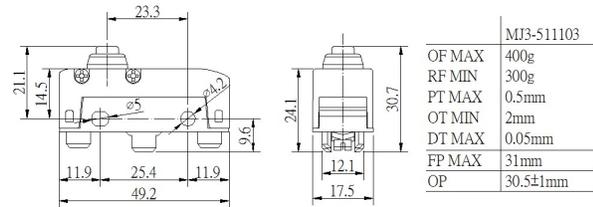
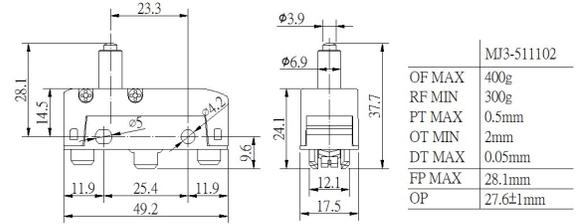
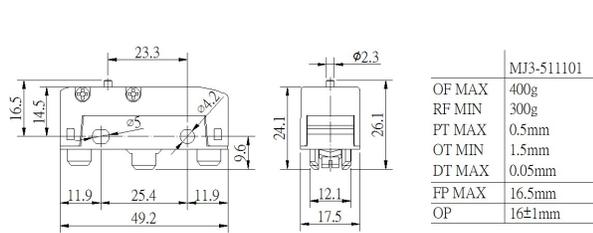
Series:	Terminal Type:	Actuator Protection:	Actuator:
MJ3 –	51	1	101
	51 = Screw 52 = Quick connect #250 53 = <i>bent</i> Quick connect #250	1 = IP40 2 = IP65	101 = Metallic pin plunger 102 = Metallic plunger, slim 103 = Metallic plunger, short 104 = Metallic plunger 105 = Metallic plunger, sealed (IP65) 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 (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


MJ3-CB5 terminal protection cover

◆ Dimensions & Operating Characteristics

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

*Measurements in *millimeters*


MJ3-511101

MJ3-511102

MJ3-511103

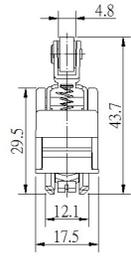
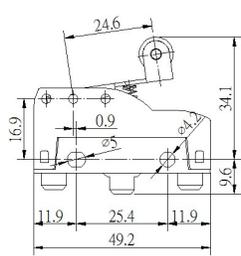
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MJ3-512105

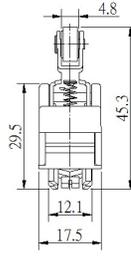
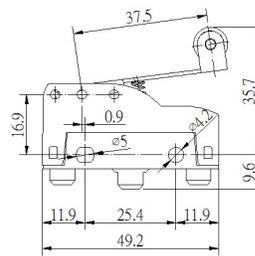
MJ3-511106

MJ3-511107

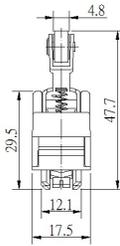
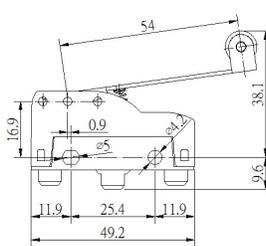
MJ3-511108

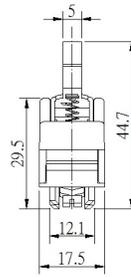
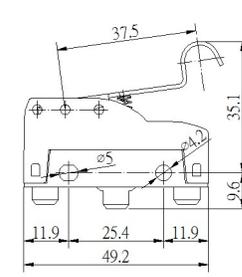
MJ3-511109	
OF MAX	166g
RF MIN	128g
PT MAX	3.5mm
OT MIN	4.5mm
DT MAX	0.4mm
FP MAX	34.1mm
OP	30.6±1mm



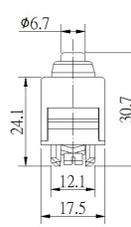
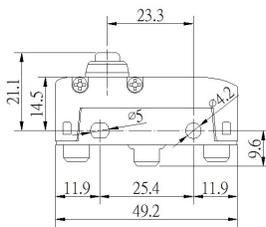
MJ3-511110	
OF MAX	109g
RF MIN	84g
PT MAX	5.3mm
OT MIN	5.7mm
DT MAX	0.6mm
FP MAX	35.7mm
OP	30.4±1mm



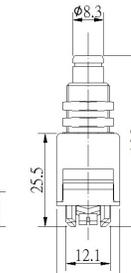
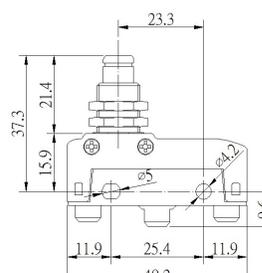
MJ3-511111	
OF MAX	76g
RF MIN	58g
PT MAX	7.7mm
OT MIN	8.9mm
DT MAX	0.9mm
FP MAX	38.1mm
OP	30.4±1mm



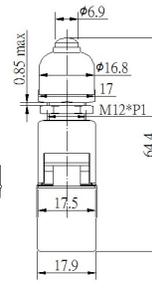
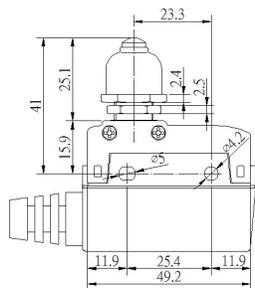
MJ3-511112	
OF MAX	160g
RF MIN	135g
PT MAX	3.5mm
OT MIN	5.6mm
DT MAX	0.4mm
FP MAX	35.1mm
OP	30.6±1mm



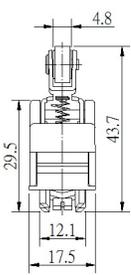
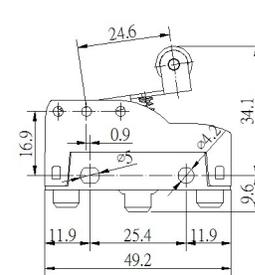
MJ3-511113	
OF MAX	400g
RF MIN	300g
PT MAX	0.5mm
OT MIN	2mm
DT MAX	0.05mm
FP MAX	31mm
OP	30.5±1mm



MJ3-511114	
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



MJ3-512115	
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



MJ3-511119	
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

MJ3-511109



MJ3-511110



MJ3-511111



MJ3-511112



MJ3-511113



MJ3-511114

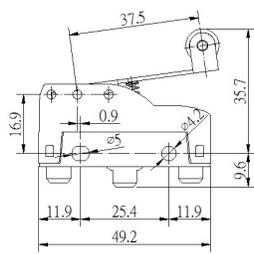


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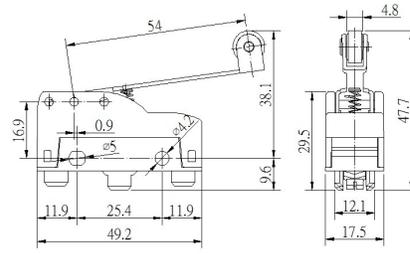


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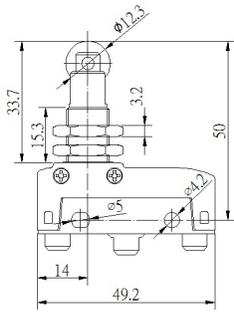




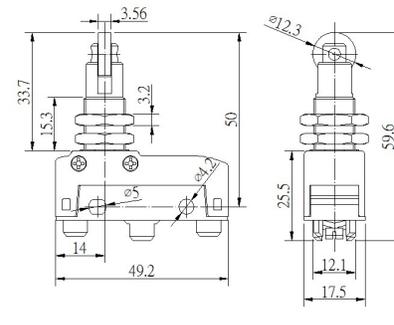
MJ3-511120	
OF MAX	109g
RF MIN	84g
PT MAX	5.3mm
OT MIN	5.7mm
DT MAX	0.6mm
FP MAX	35.7mm
OP	30.4±1mm



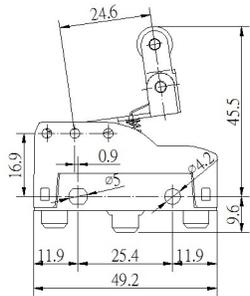
MJ3-511121	
OF MAX	76g
RF MIN	58g
PT MAX	7.7mm
OT MIN	8.9mm
DT MAX	0.9mm
FP MAX	38.1mm
OP	30.4±1mm



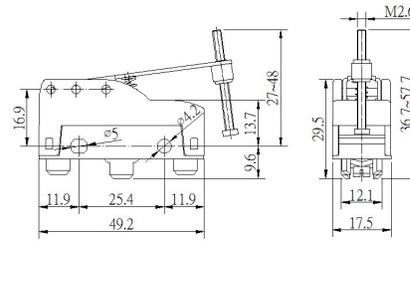
MJ3-511122	
OF MAX	400g
RF MIN	300g
PT MAX	0.5mm
OT MIN	5.5mm
DT MAX	0.05mm
FP MAX	50mm
OP	49.5±1mm



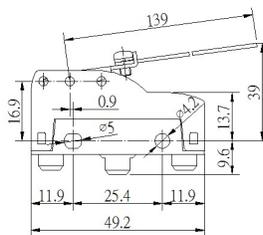
MJ3-511123	
OF MAX	400g
RF MIN	300g
PT MAX	0.5mm
OT MIN	5.5mm
DT MAX	0.05mm
FP MAX	50mm
OP	49.5±1mm



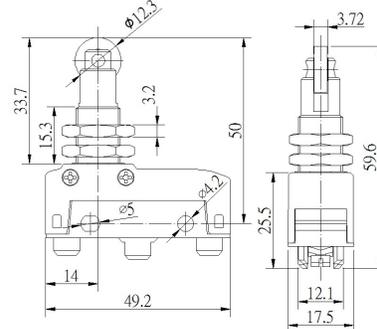
MJ3-511124	
OF MAX	166g
RF MIN	128g
PT MAX	3.5mm
OT MIN	4.5mm
DT MAX	0.4mm
FP MAX	34.1mm
OP	30.6±1mm



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



MJ3-511132	
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

MJ3-511120

MJ3-511121

MJ3-511122

MJ3-511123

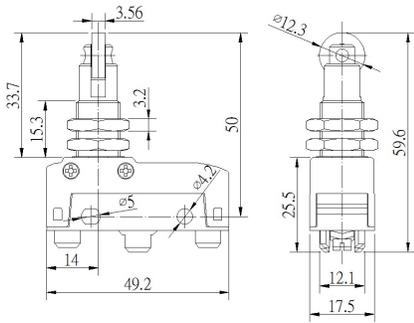
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MJ3-511125

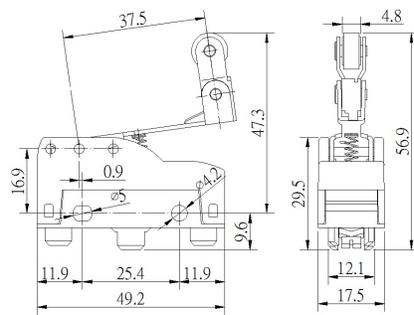
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MJ3-511132

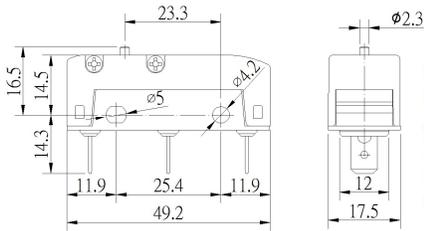

MJ3-5



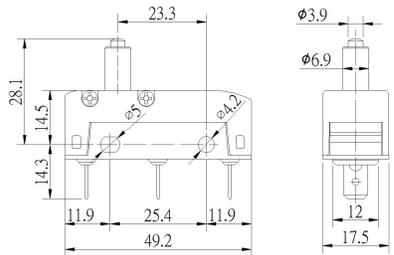
MJ3-511133	
OF MAX	400g
RF MIN	300g
PT MAX	0.5mm
OT MIN	5.5mm
DT MAX	0.05mm
FP MAX	50mm
OP	49.5±1mm



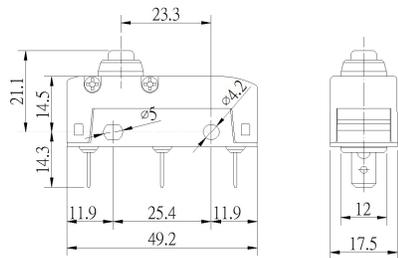
MJ3-511134	
OF MAX	166g
RF MIN	128g
PT MAX	3.5mm
OT MIN	4.5mm
DT MAX	0.4mm
FP MAX	34.1mm
OP	30.6±1mm



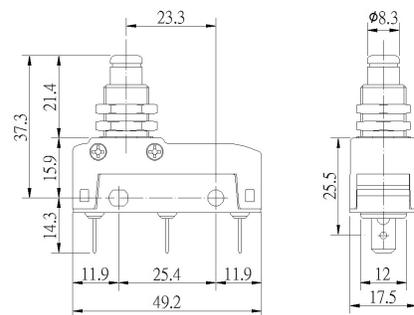
MJ3-521101	
OF MAX	400g
RF MIN	300g
PT MAX	0.5mm
OT MIN	1.5mm
DT MAX	0.05mm
FP MAX	16.5mm
OP	16±1mm



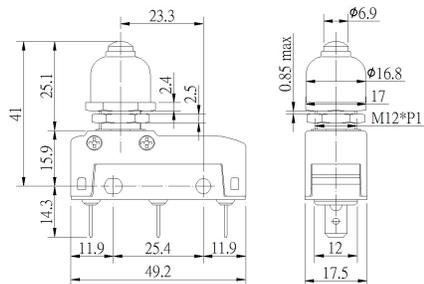
MJ3-521102	
OF MAX	400g
RF MIN	300g
PT MAX	0.5mm
OT MIN	1.5mm
DT MAX	0.05mm
FP MAX	16.5mm
OP	16±1mm



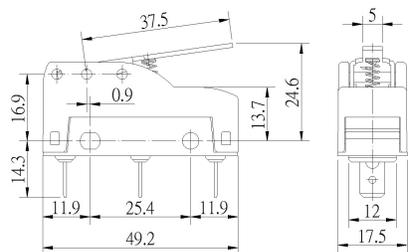
MJ3-521103	
OF MAX	400g
RF MIN	300g
PT MAX	0.5mm
OT MIN	1.5mm
DT MAX	0.05mm
FP MAX	16.5mm
OP	16±1mm



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

MJ3-511133



MJ3-511134



MJ3-521101



MJ3-521102



MJ3-521103



MJ3-521104

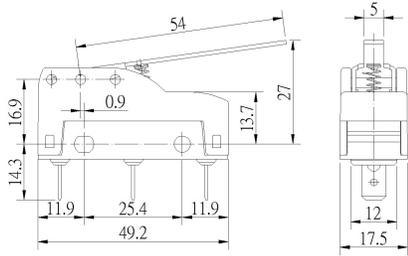


MJ3-522105

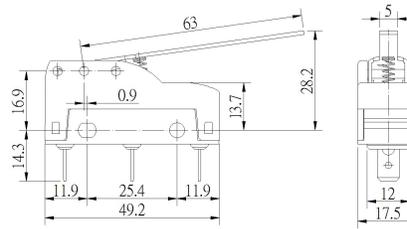


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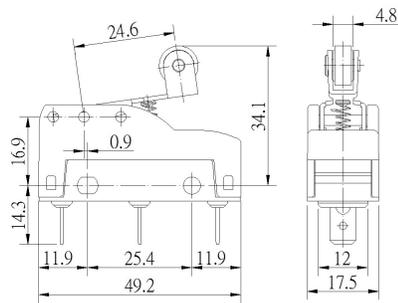




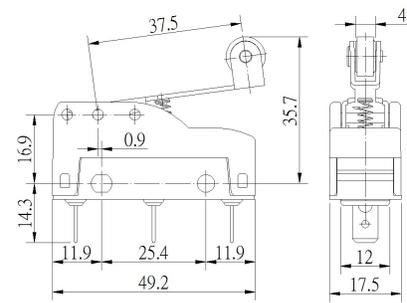
MJ3-521107	
OF MAX	76g
RF MIN	58g
PT MAX	7.7mm
OT MIN	8.3mm
DT MAX	0.9mm
FP MAX	27mm
OP	19.3±1mm



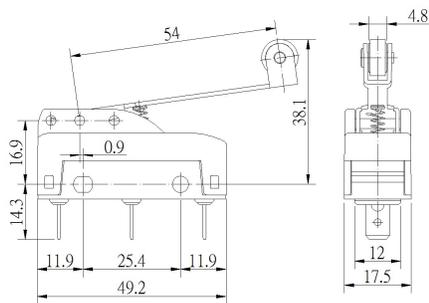
MJ3-521108	
OF MAX	65g
RF MIN	50g
PT MAX	9mm
OT MIN	10mm
DT MAX	1.1mm
FP MAX	28.2mm
OP	19.2±1mm



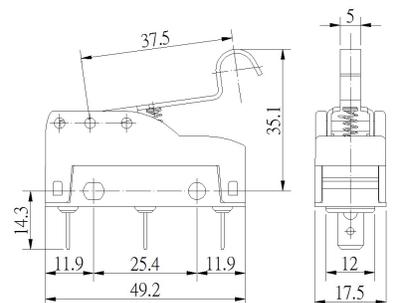
MJ3-521109	
OF MAX	166g
RF MIN	128g
PT MAX	3.5mm
OT MIN	4.5mm
DT MAX	0.4mm
FP MAX	34.1mm
OP	30.6±1mm



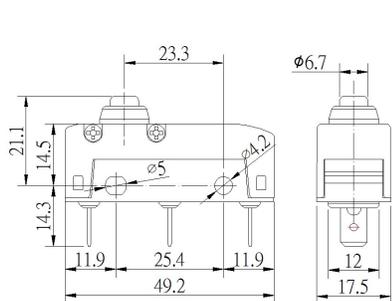
MJ3-521110	
OF MAX	109g
RF MIN	84g
PT MAX	5.3mm
OT MIN	5.7mm
DT MAX	0.6mm
FP MAX	35.7mm
OP	30.4±1mm



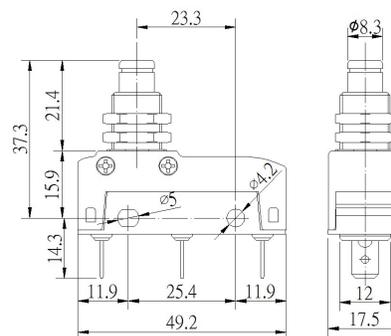
MJ3-521111	
OF MAX	76g
RF MIN	58g
PT MAX	7.7mm
OT MIN	8.9mm
DT MAX	0.9mm
FP MAX	38.1mm
OP	30.4±1mm



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



MJ3-521113	
OF MAX	400g
RF MIN	300g
PT MAX	0.5mm
OT MIN	2mm
DT MAX	0.05mm
FP MAX	31mm
OP	30.5±1mm



MJ3-521114	
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

MJ3-521107



MJ3-521108



MJ3-521109



MJ3-521110



MJ3-521111



MJ3-521112

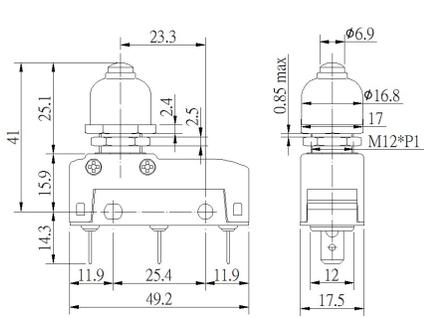


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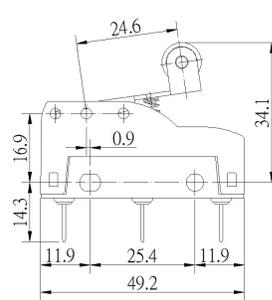


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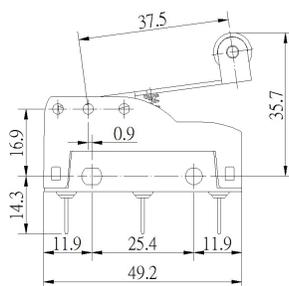
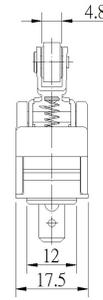




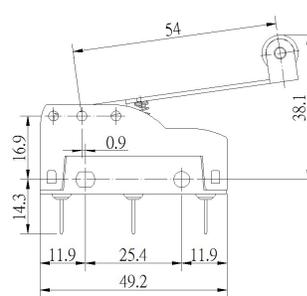
MJ3-522115	
OF MAX	600g
RF MIN	400g
PT MAX	0.6mm
OT MIN	5.4mm
DT MAX	0.05mm
FP MAX	41mm
OP	40.4±1mm



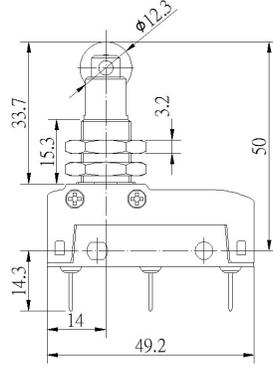
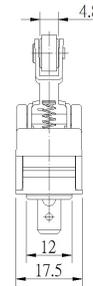
MJ3-521119	
OF MAX	166g
RF MIN	128g
PT MAX	3.5mm
OT MIN	4.5mm
DT MAX	0.4mm
FP MAX	34.1mm
OP	30.6±1mm



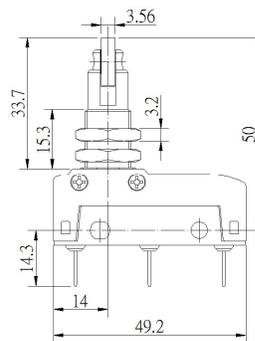
MJ3-521120	
OF MAX	109g
RF MIN	84g
PT MAX	5.3mm
OT MIN	5.7mm
DT MAX	0.6mm
FP MAX	35.7mm
OP	30.4±1mm



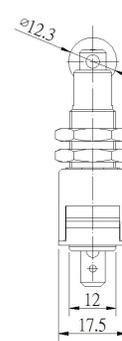
MJ3-521121	
OF MAX	76g
RF MIN	58g
PT MAX	7.7mm
OT MIN	8.9mm
DT MAX	0.9mm
FP MAX	38.1mm
OP	30.4±1mm



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


MJ3-522115

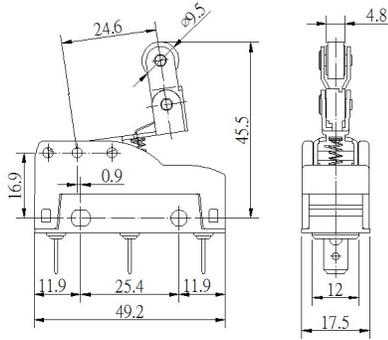
MJ3-521119

MJ3-521120

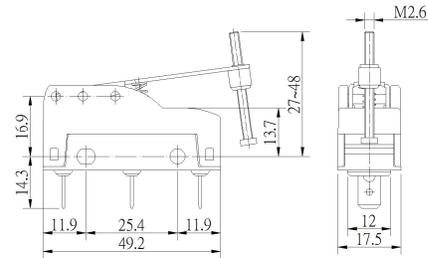
MJ3-521121

MJ3-521122

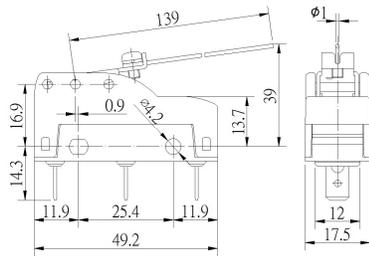
MJ3-521123

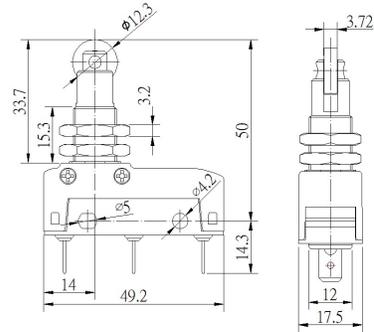
MJ2-521124	
OF MAX	166g
RF MIN	128g
PT MAX	3.5mm
OT MIN	4.5mm
DT MAX	0.4mm
FP MAX	34.1mm
OP	30.6±1mm



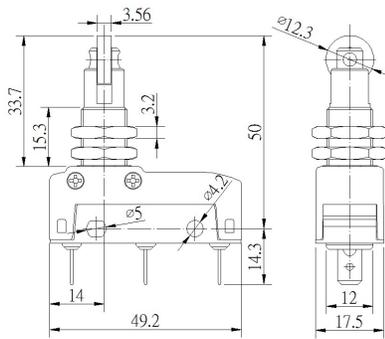
MJ3-521125	
OF MAX	76g
RF MIN	58g
PT MAX	7.7mm
OT MIN	8.3mm
DT MAX	0.9mm
FP MAX	27~48mm
OP	31±10mm



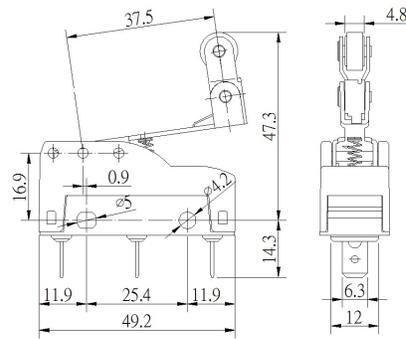
MJ3-521126	
OF MAX	8g
RF MIN	4g
PT MAX	19mm
OT MIN	9.5mm
DT MAX	2.3mm
FP MAX	39mm
OP	20±1mm



MJ3-521132	
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



MJ3-521133	
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



MJ3-521134	
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

MJ3-521124



MJ3-521125



MJ3-521126



MJ3-521132



MJ3-521133



MJ3-521134



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)

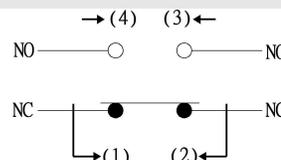
Operating Temp.	AC Rated	DC Rated	IP	Oil Resist	Dust Resist	Water Resist	Operating Speed
-15 to 70 Celsius	5A 250V	0.4A 115V	65	Yes	Yes	Yes	0.5mm to 50cm/sec

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

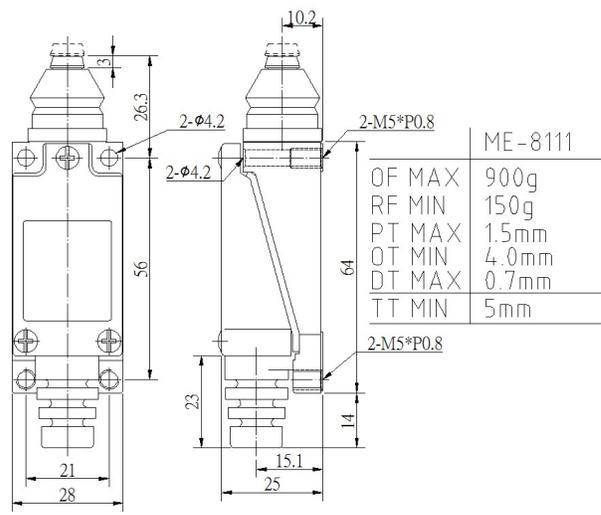
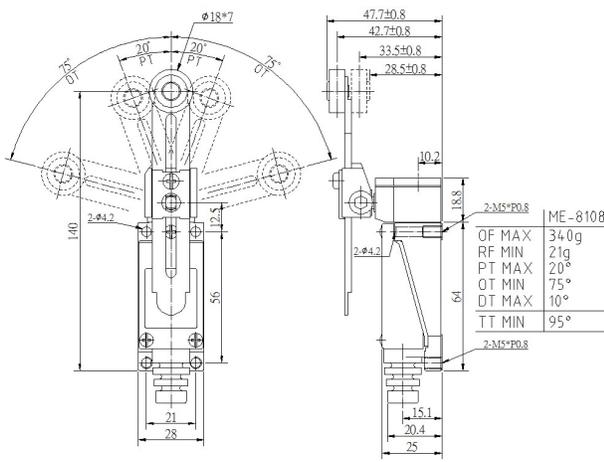
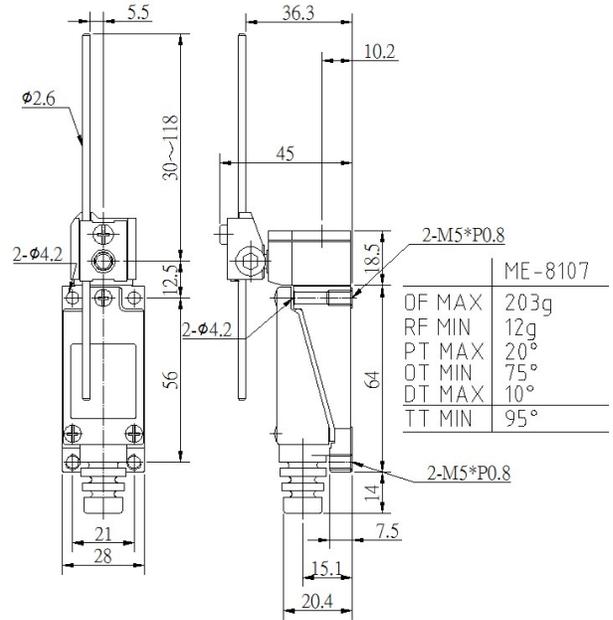
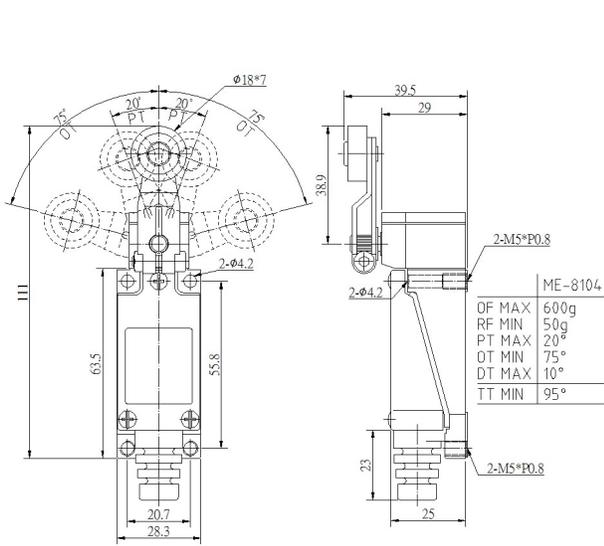
Actuation touch part	Electrical contact point	Enclosure
Nylon, or Stainless Steel, or Teflon	Silver 99.9%	Plastic top with Zinc alloy bottom

◆ Nomenclature

Series:	Actuator (and material):
ME –	8104
	8104 = Side rotary, nylon roller 8104-L = Side rotary, ø50mm 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 ø50mm 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 = Metallic spring coil with nylon tip 8169 = Metallic spring coil with wire tip 9101 = Metallic spring coil 9101-HI = Metallic spring coil with solid stainless-steel tip

◆ Dimensions & Operating Characteristics

*Measurements in millimeters



ME-8104



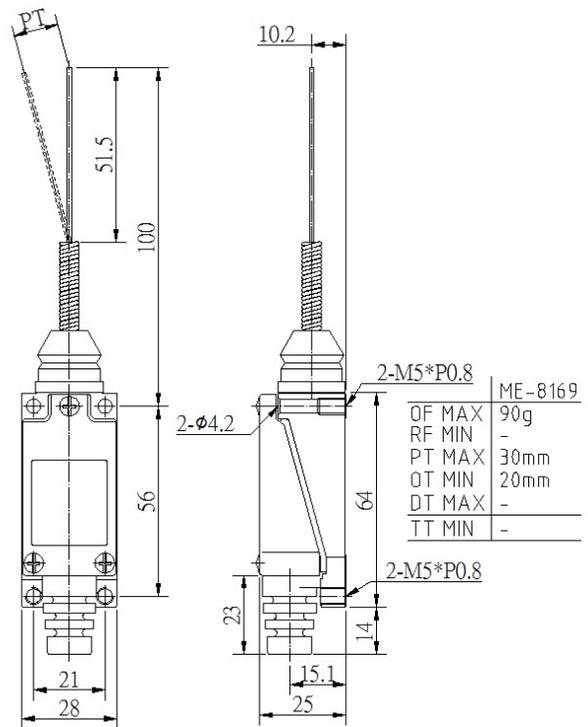
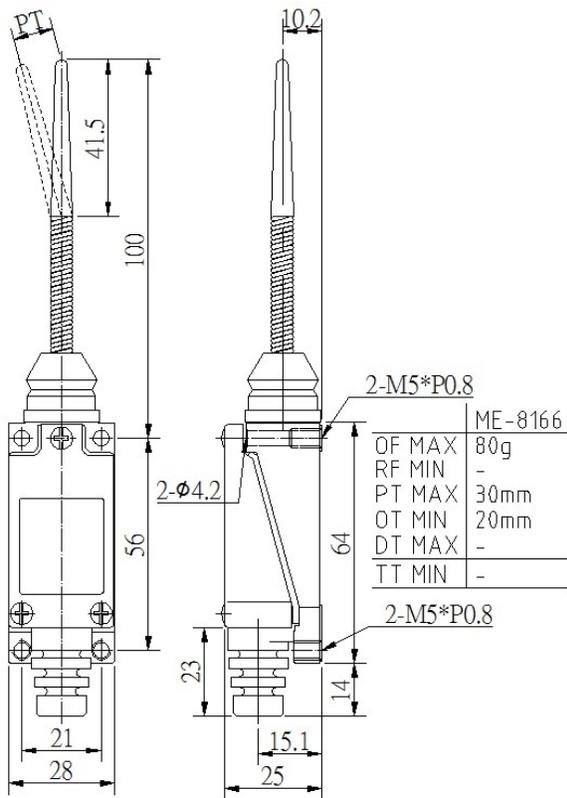
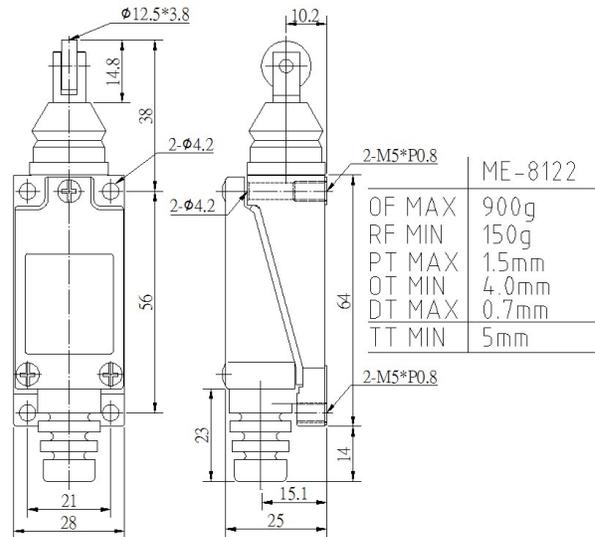
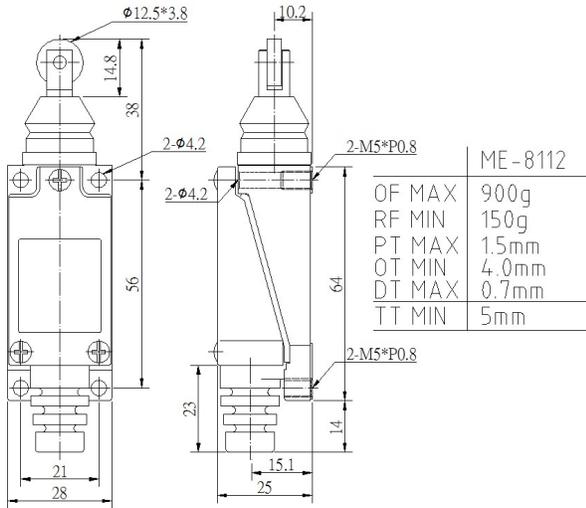
ME-8107



ME-8108



ME-8111

ME-8


ME-8112



ME-8122

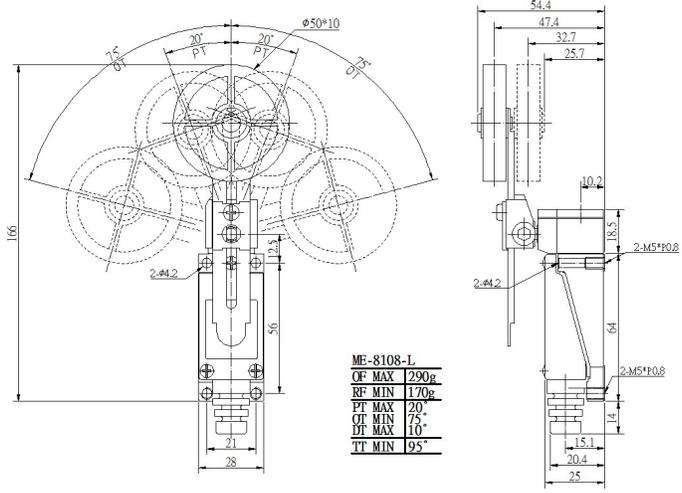
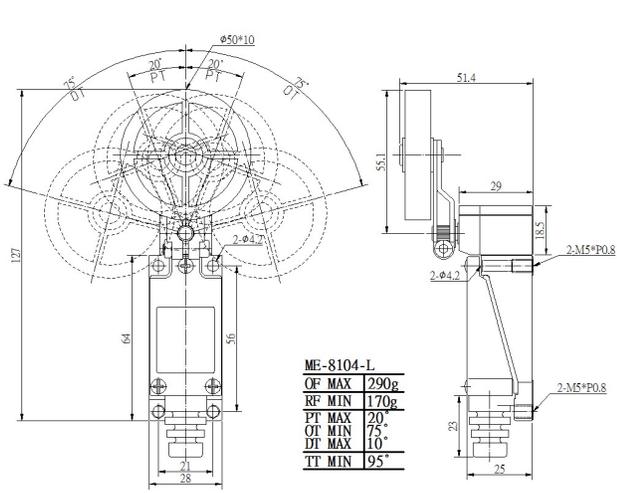
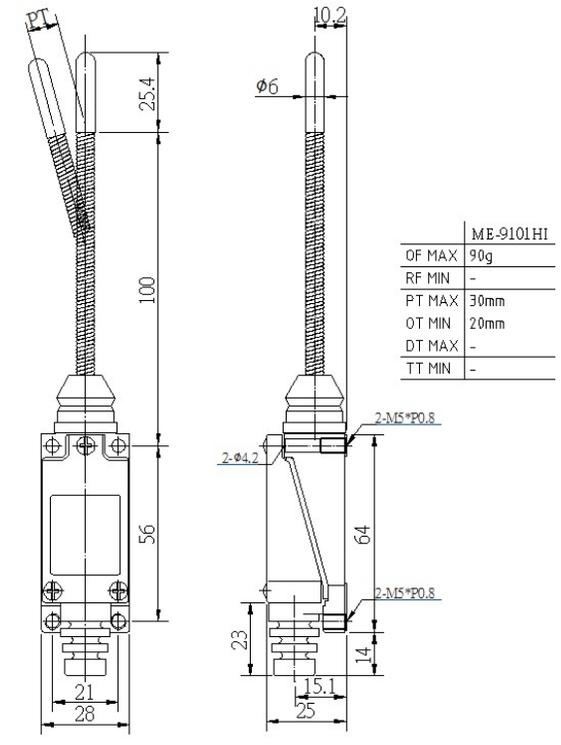
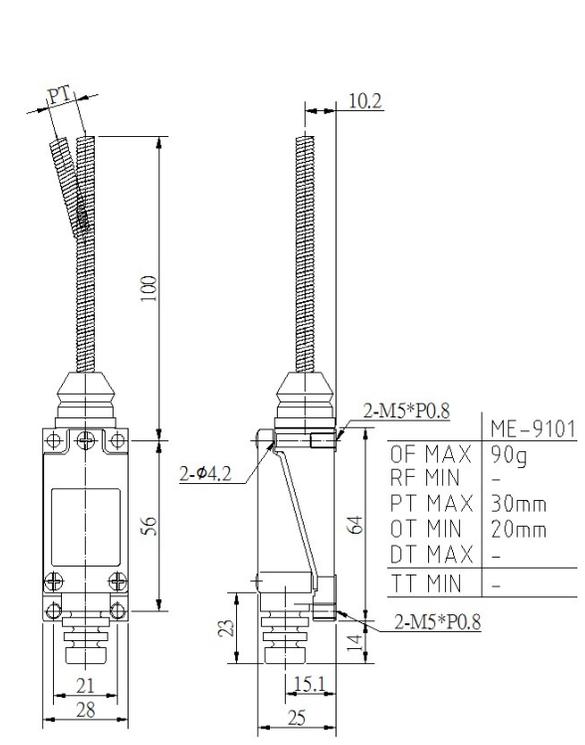


ME-8166



ME-8169

ME-8



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


◆ 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)

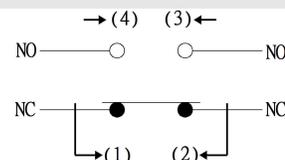
Operating Temp.	AC Rated	DC Rated	IP	Oil Resist	Dust Resist	Water Resist	Operating Speed
-15 to 70 Celsius	6A 125-250V	0.4A 125V	65	Yes	Yes	Yes	0.5mm to 50cm/sec

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 (GF)

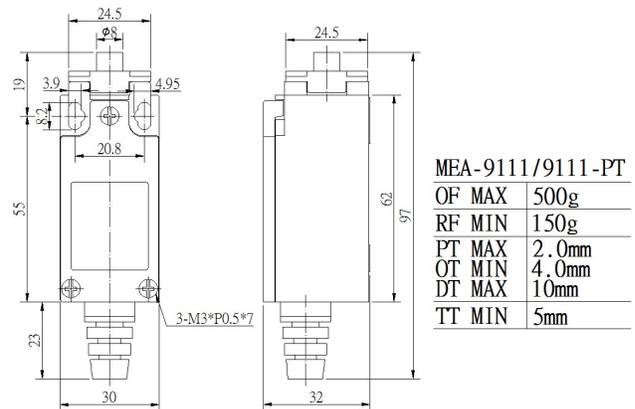
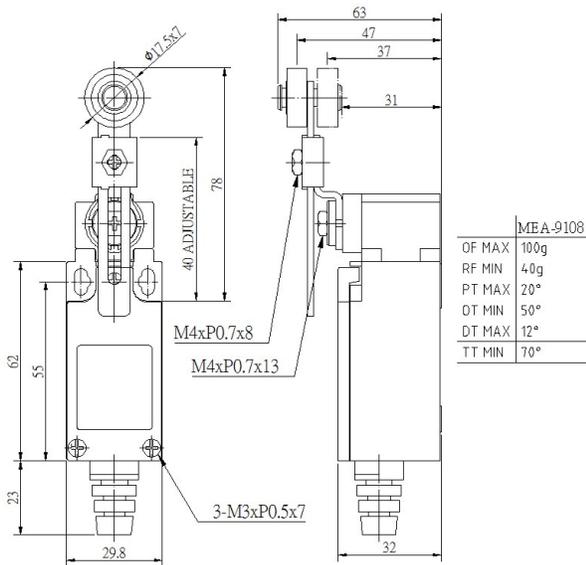
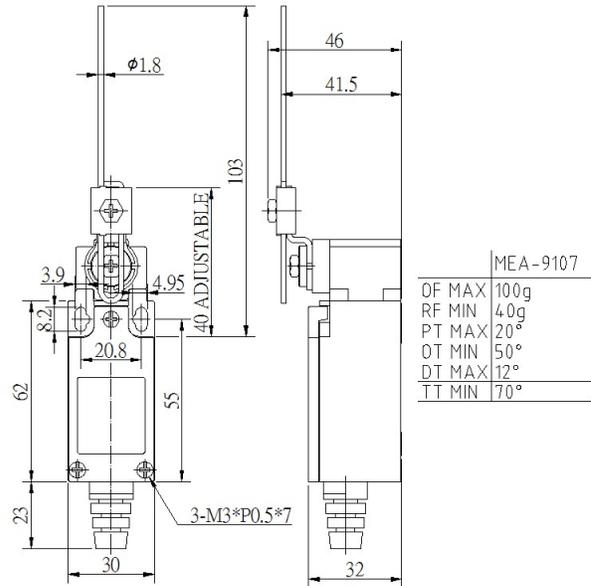
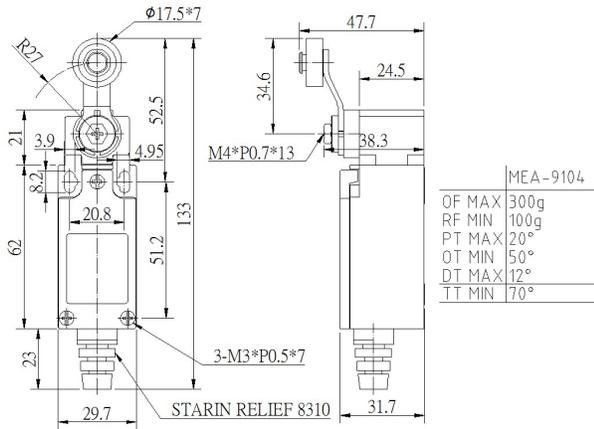
◆ Nomenclature

Series:	Actuator (and material):	Through hole:
MEA –	9104 –	
	9104 = Side rotary, nylon roller 9104-L = Side rotary, ø50mm rubber roller 9107 = Side rotary, adjustable metallic wire 9108 = Side rotary, adjustable nylon roller 9108-L = Side rotary, adjustable ø50mm rubber roller 9111 = Metallic plunger 9111-PT = Teflon plunger 9112 = Metallic roller plunger 9112-HP = Metallic roller plunger (high GF% head) 9112-P = Nylon roller plunger 9112-PT = Teflon roller plunger 9122 = Cross metallic roller plunger 9122-HP = Cross metallic roller plunger (high GF% head) 9122-P = Cross nylon roller plunger 9122-PT = Cross Teflon roller plunger 9161 = Spring, metallic coil 9166 = Spring, metallic coil with nylon tip 9169 = Spring, metallic wire	<i>Blank</i> =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



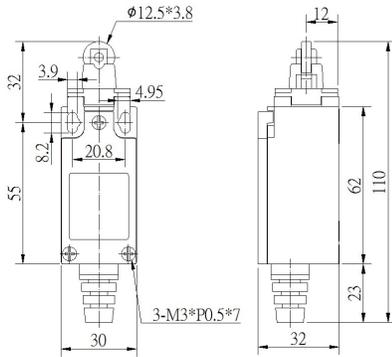
MEA-9107



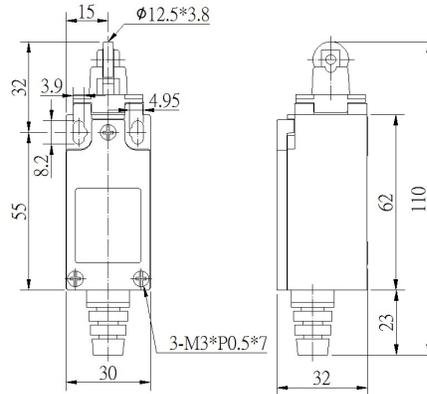
MEA-9108



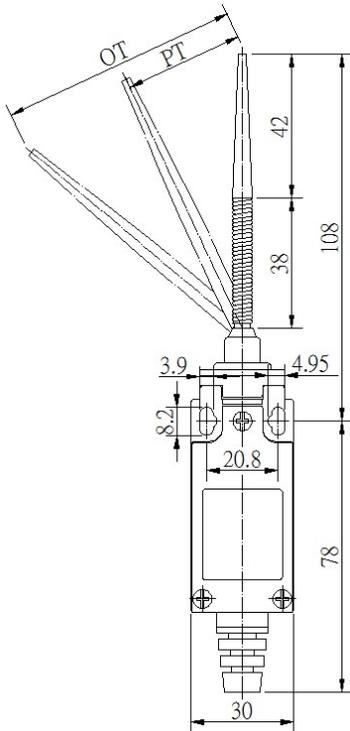
MEA-9111 / 9111-PT



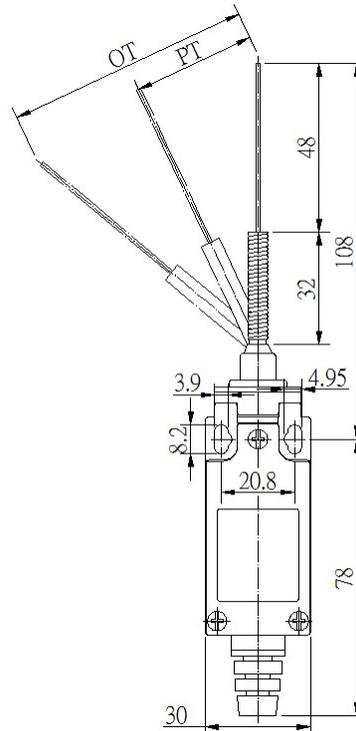
MEA-9112/9112-P/9112-PT	
OF MAX	500g
RF MIN	150g
PT MAX	2.0mm
OT MIN	4.0mm
DT MAX	1.0mm
TT MIN	5mm



MEA-9122-P MEA-9122/9122-PT	
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 / 9112-HP / 9112-P / 9112-PT



MEA-9122 / 9122-HP / 9122-P / 9122-PT

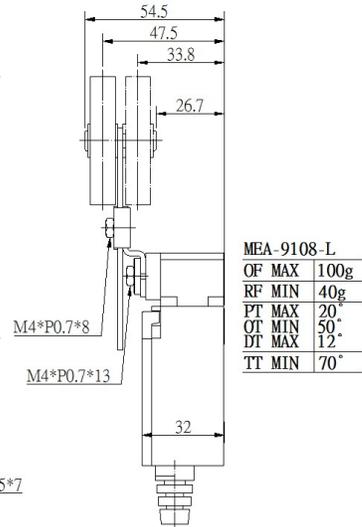
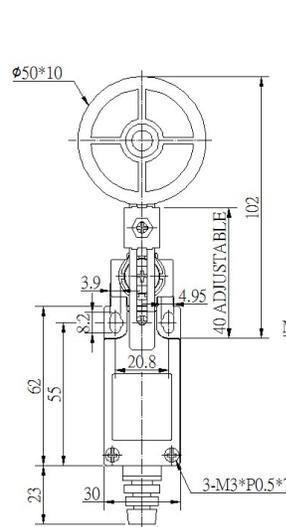
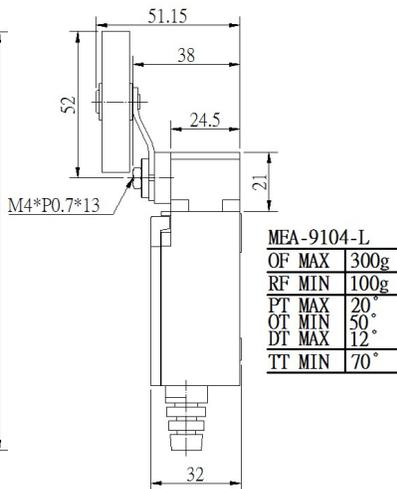
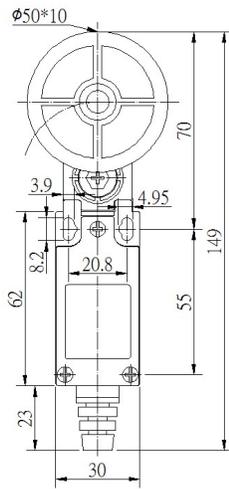
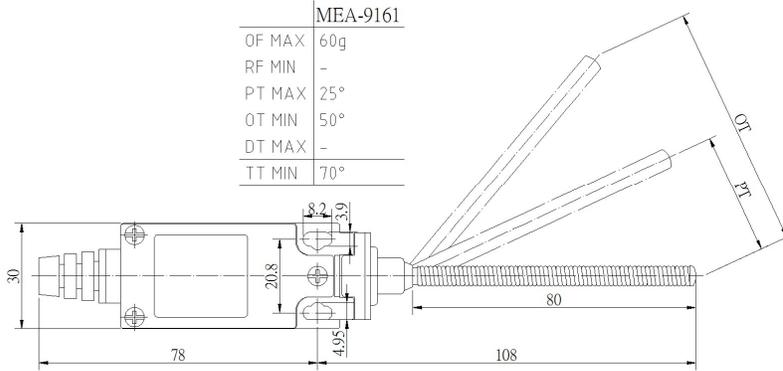


MEA-9166



MEA-9169

MEA-9



MEA-9161



MEA-9104-L



MEA-9108-L

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)

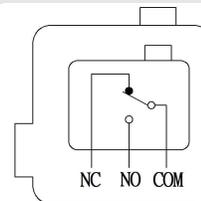
Operating Temp.	AC Rated	DC Rated	IP	Oil Resist	Dust Resist	Water Resist	Operating Speed
-10 to 80 Celsius	10A 250V	0.5A 125V	65	Yes	Yes	Yes	0.01mm to 50cm/sec

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	Circuitry
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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



◆ Materials

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

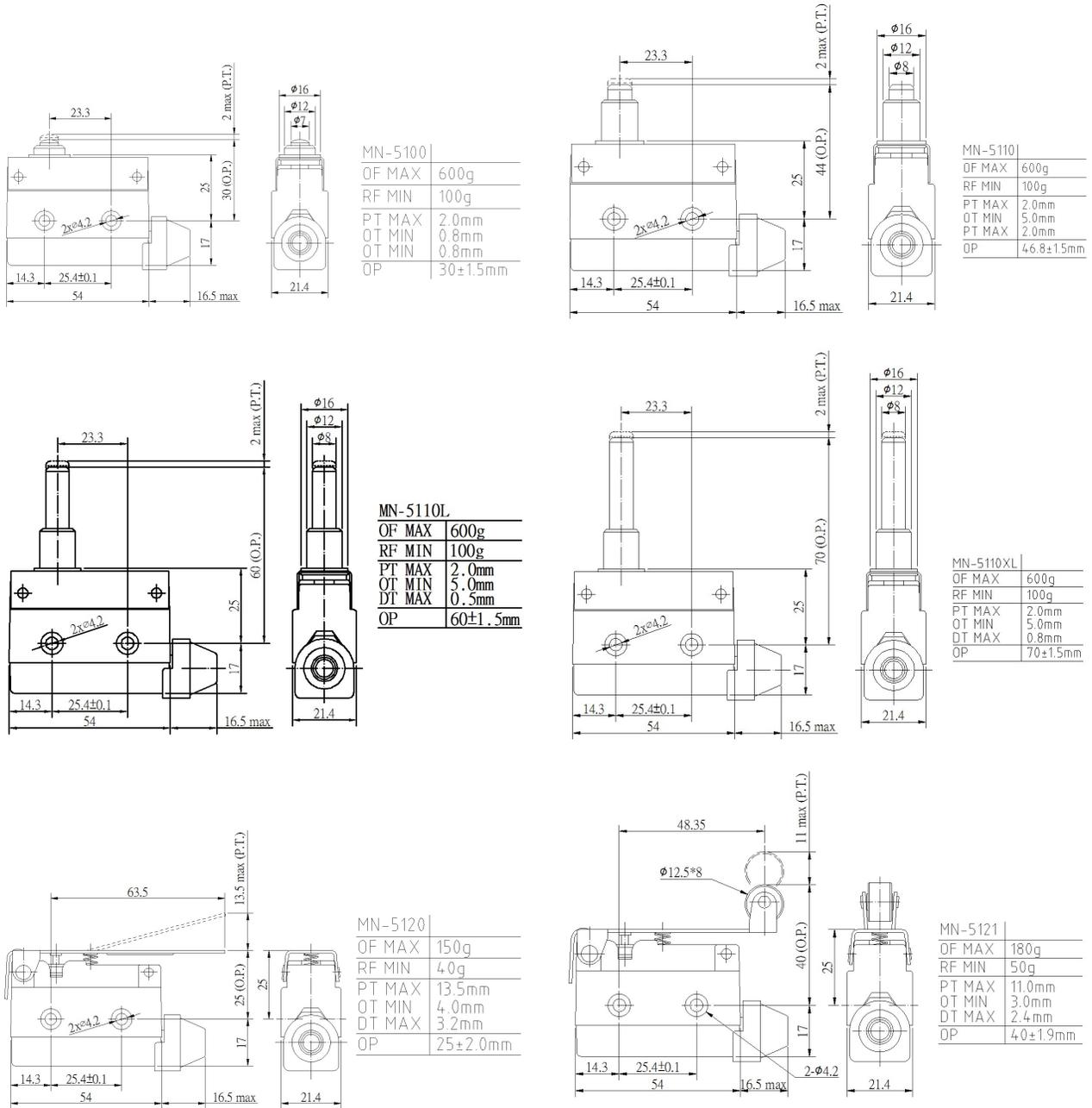
◆ Nomenclature

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, nylon 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



MN-5110



MN-5110L



MN-5110XL

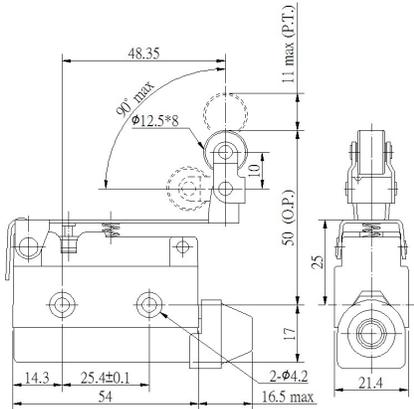


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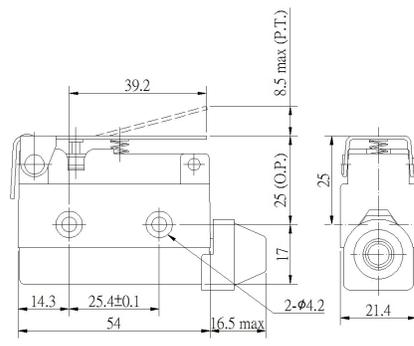


MN-5121

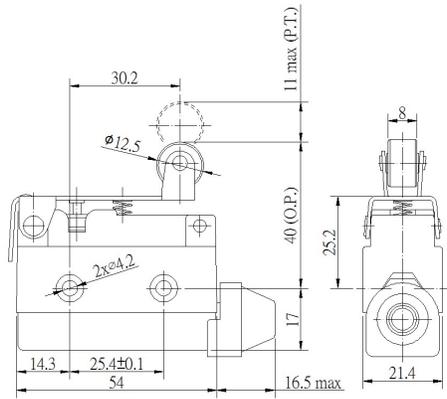
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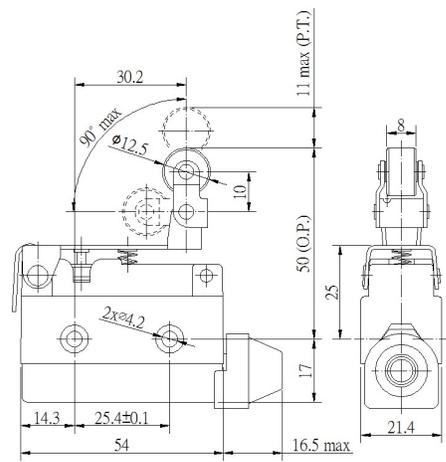
MN-5124	
OF MAX	200g
RF MIN	60g
PT MAX	11.0mm
OT MIN	3.0mm
DT MAX	2.4mm
OP	50±1.9mm



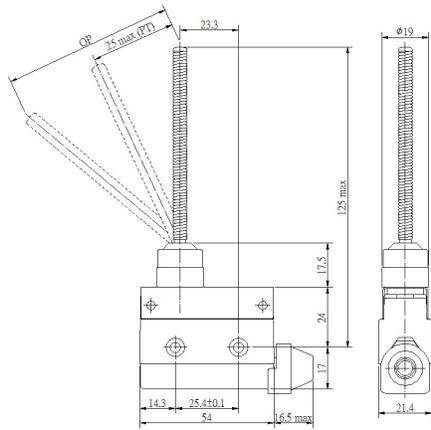
MN-5140	
OF MAX	220g
RF MIN	60g
PT MAX	8.5mm
OT MIN	2.5mm
DT MAX	2mm
OP	25±1.3mm



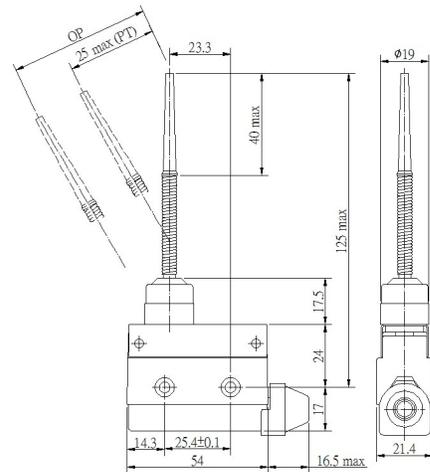
MN-5141	
OF MAX	240g
RF MIN	80g
PT MAX	6.5mm
OT MIN	2.0mm
DT MAX	1.5mm
OP	40±1.6mm



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



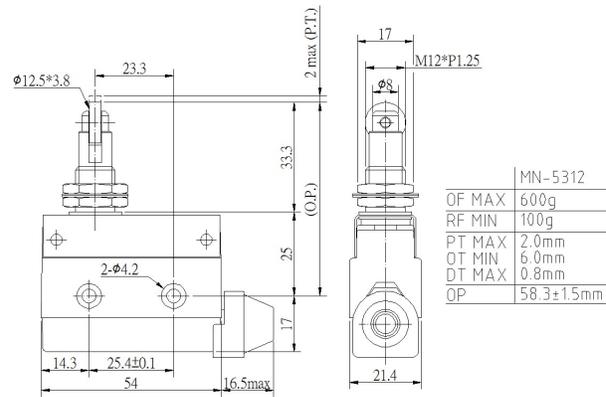
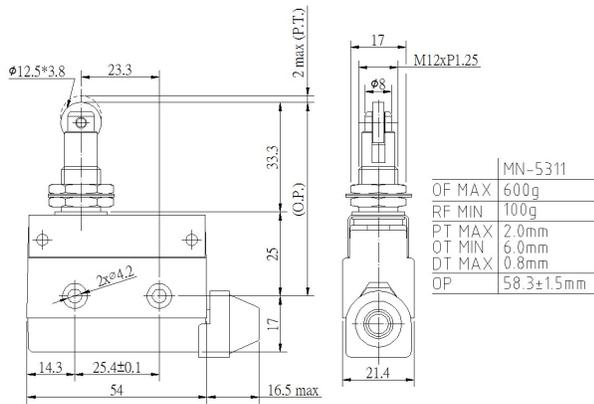
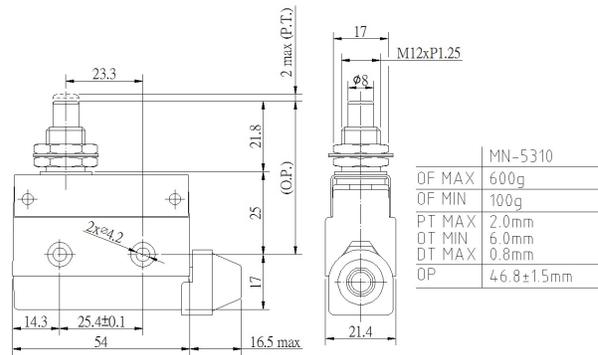
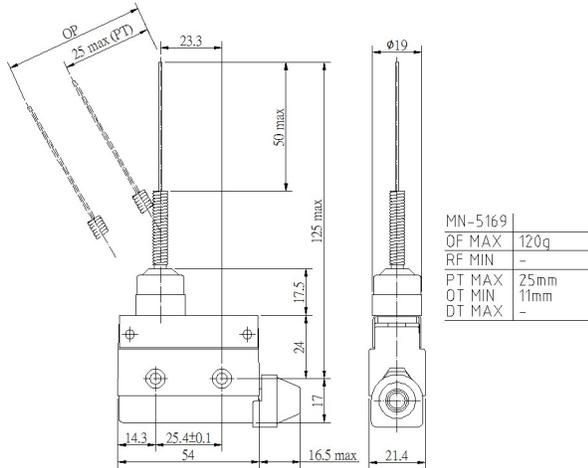
MN-5144



MN-5161



MN-5166

MN-5


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

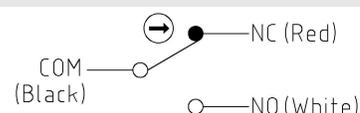
Operation Frequency	Contact Resistance	Insulation Resistance	Vibration
Mechanically: 120/min Electrically: 30/min	300mΩ max. (initial)	100MΩ min. (500VDC)	1.5mm amplitude at 10-55Hz

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

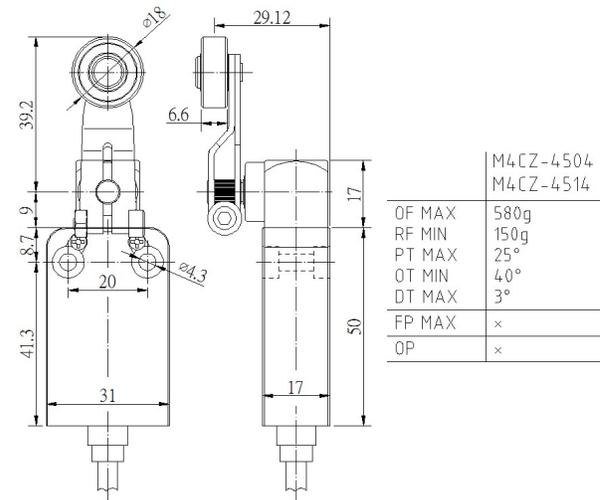
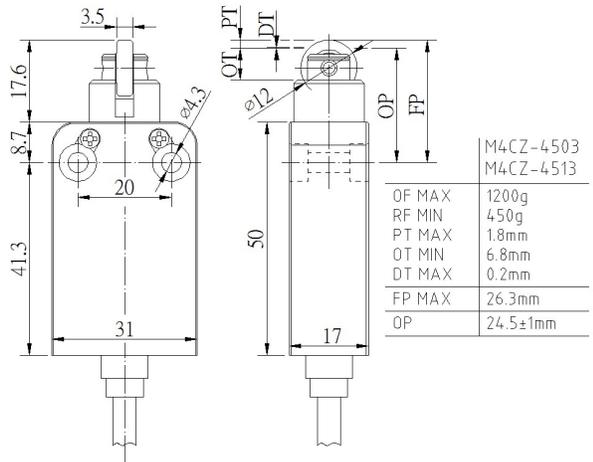
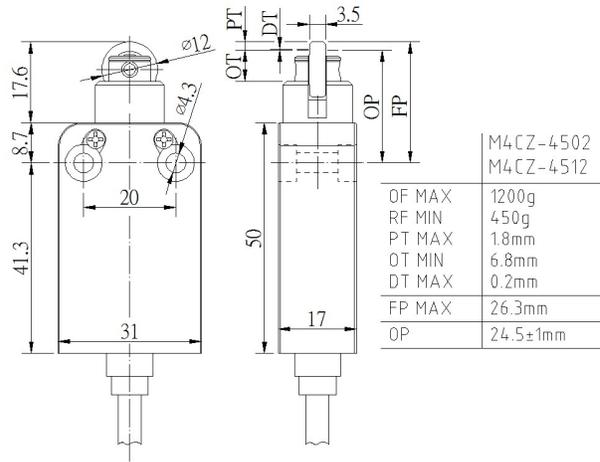
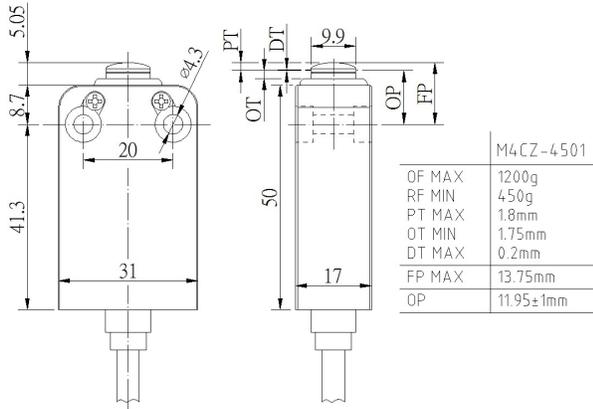
◆ Nomenclature

Series:	Cable direction	Actuator:	Cable Length:
M4CZ –	45	01 –	1L
	45=Bottom out	<u>Stainless Steel Touch Part</u> 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 <u>Nylon Touch Part</u> 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

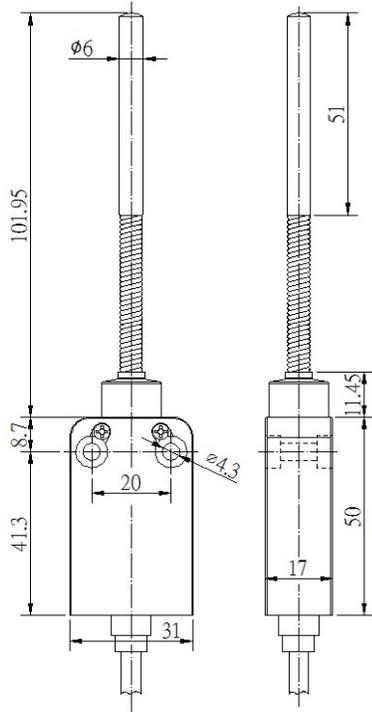
◆ Dimensions & Operating Characteristics

*Measurements in *millimeters*

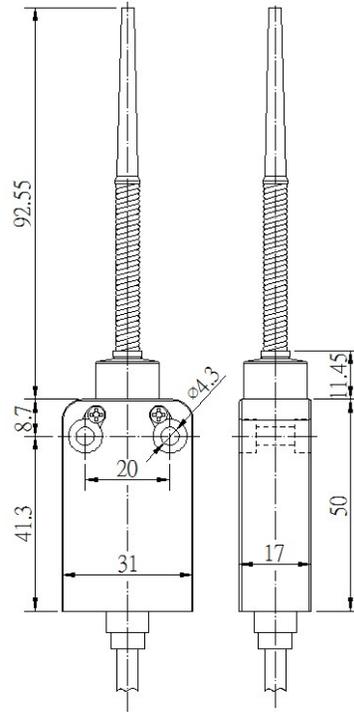
*Actuation touch part materials does not affect operating characteristics



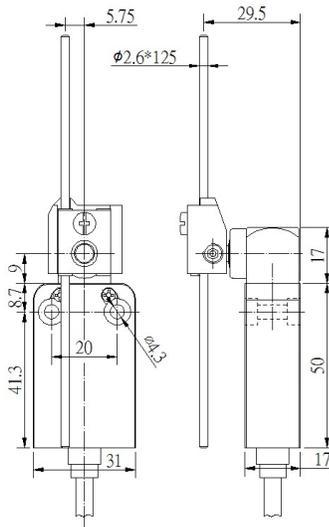
M4CZ



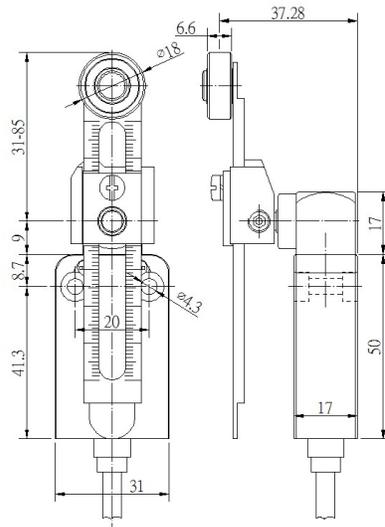
M4CZ-4506	
OF MAX	90g
RF MIN	x
PT MAX	x
OT MIN	x
DT MAX	x
FP MAX	x
OP	x



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



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



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



M4CZ-4506



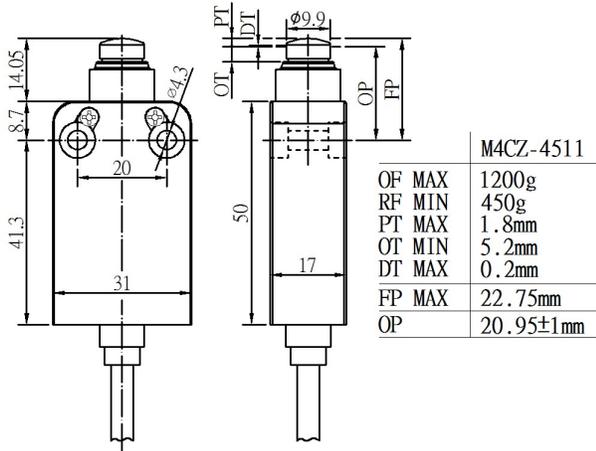
M4CZ-4516



M4CZ-4507



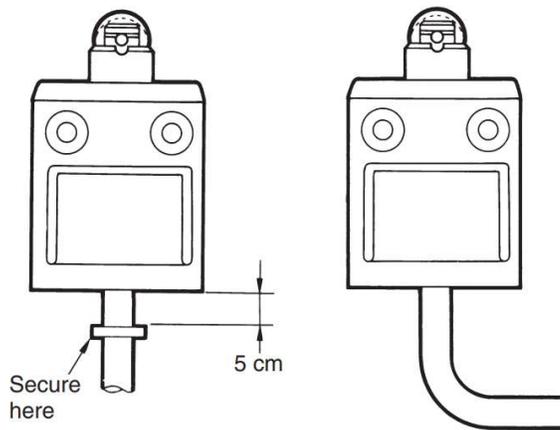
M4CZ-4508/4518


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

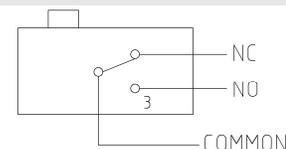
Operating Temp.	AC Rated	DC Rated	IP	Oil Resist	Dust Resist	Water Resist	Operating Speed
-25 to 80 Celsius, -25 to 120 Celsius	5A 125V-250V, 15A 125V-250V	0.5A 125V	40	No	No	No	0.01mm to 1m/sec

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 –	3003	A		– NO

3000 = Phenolic Plunger
 3001 = Metallic Lever, simulated roller
 3002 = Metallic Lever, straight
 3003 = Metallic Lever, straight long
 3003L = Metallic Lever, straight long 55.5mm
 3004 = Lever, nickel-plated brass roller
 3005 = Lever, nickel-plated brass roller, long

A=Standard

Blank=5 Amps
 20=**15 Amps**

Blank=Form C
 NO=Form A
 NC=Form B

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

CUSTOM

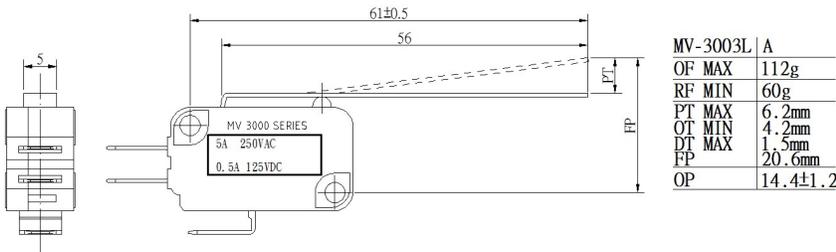
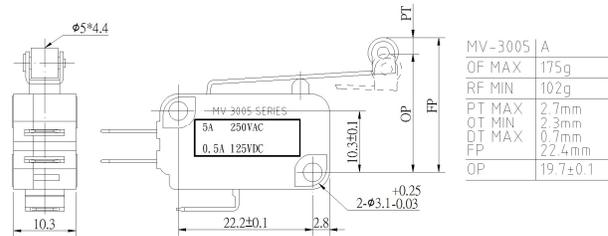
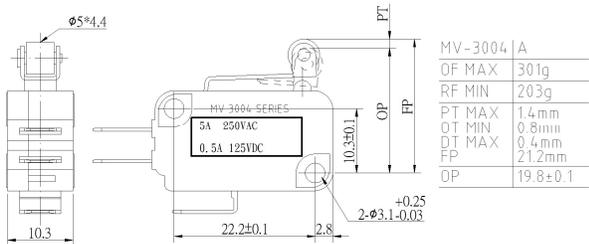
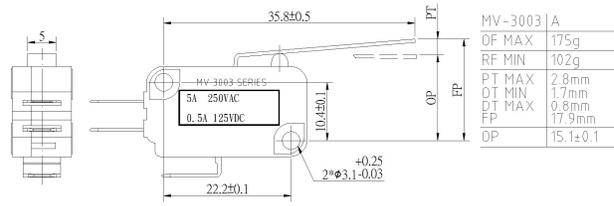
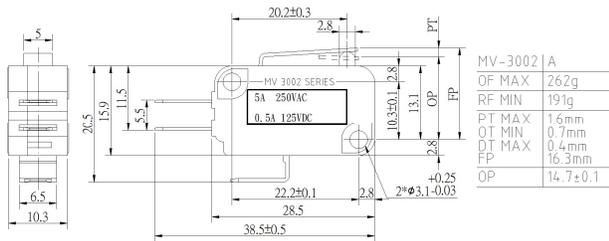
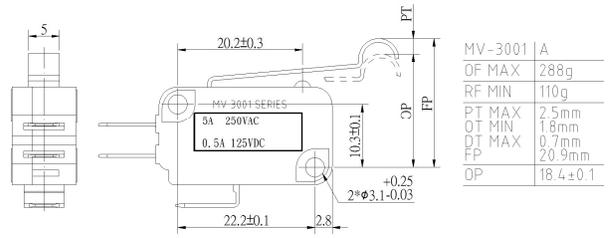
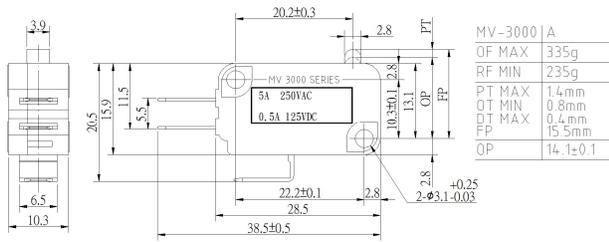
MV-3004A-P = Lever, POM roller

MV-3005A-P = Lever, POM roller, long

MV-3

◆ **Dimensions & Operating Characteristics**

*Measurements in millimeters



MV-3003AL



MV-3000A



MV-3001A



MV-3002A



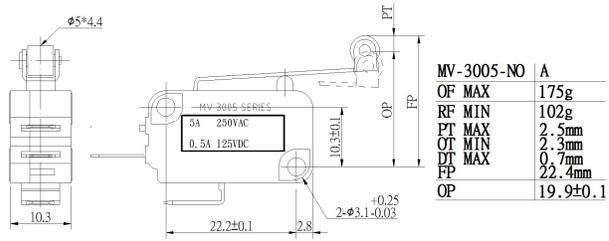
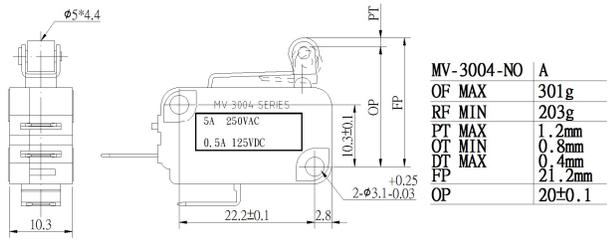
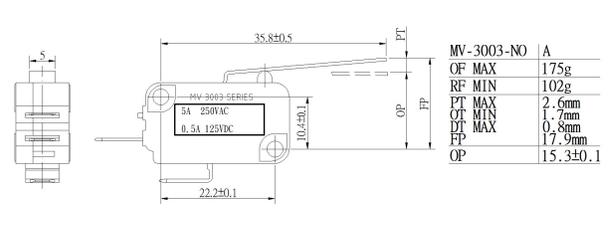
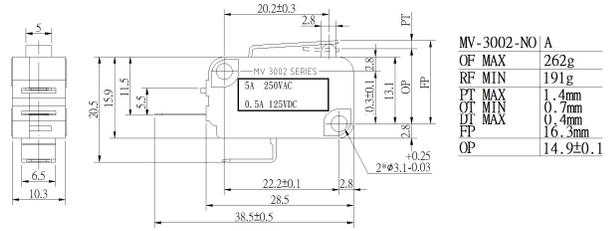
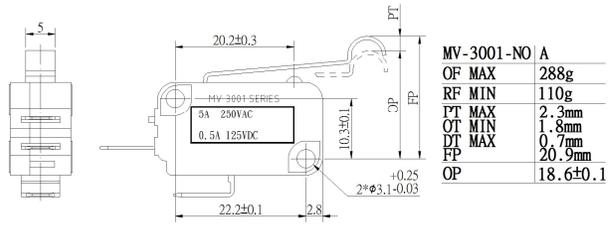
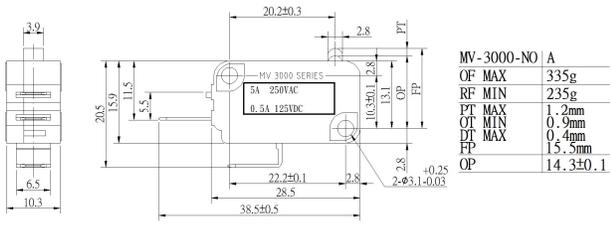
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MV-3004A



MV-3005A

MV-3


MV-3000A-NO

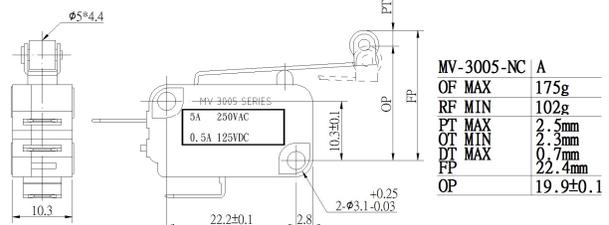
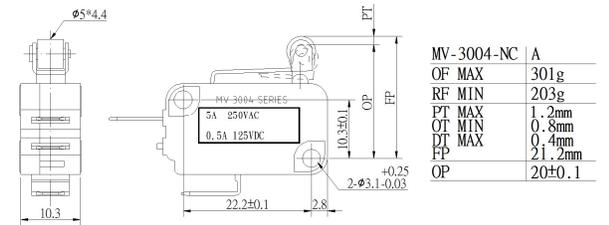
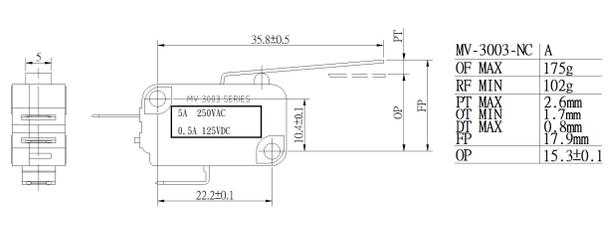
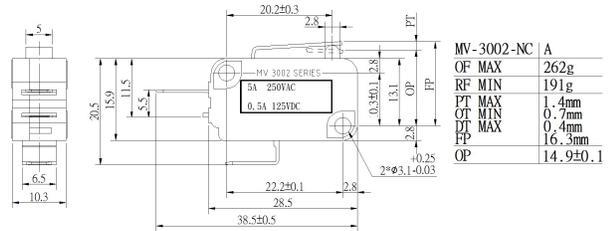
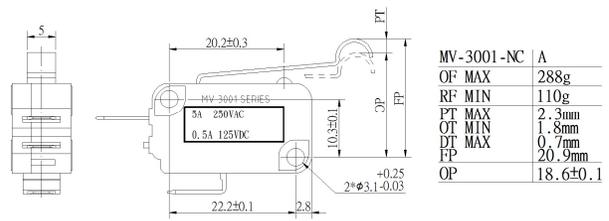
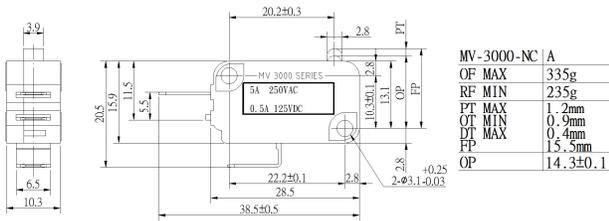
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MV-3002A-NO

MV-3003A-NO

MV-3004A-NO

MV-3005A-NO

MV-3


MV-3000A-NC

MV-3001A-NC

MV-3002A-NC

MV-3003A-NC

MV-3004A-NC

MV-3005A-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

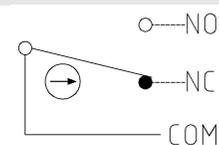
Operation Frequency	Contact Resistance	Insulation Resistance	Vibration
Mechanically: 60/min Electrically: 30/min	30mΩ max. (initial)	100MΩ min. (500VDC)	1.5mm amplitude at 10-55Hz

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 <u>Custom:</u> Gold-plated Silver-Nickel Alloy	PC Plastic

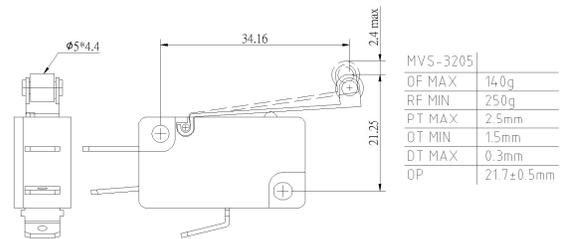
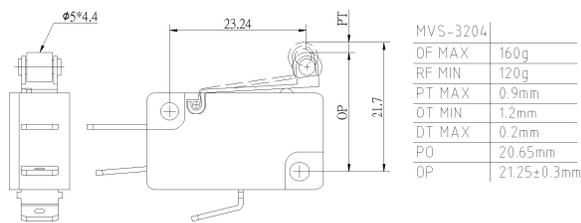
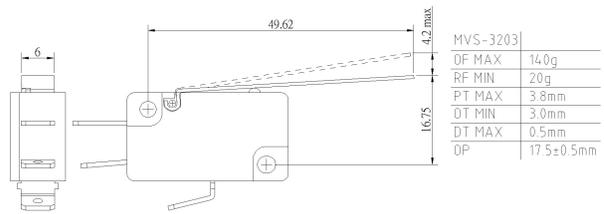
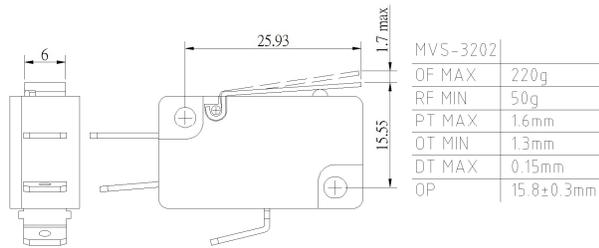
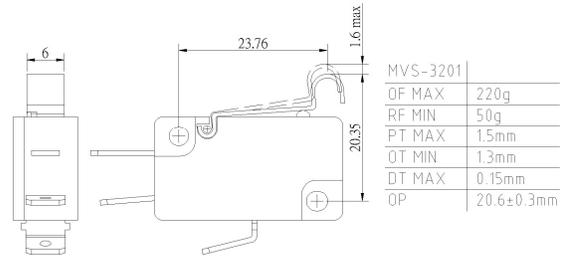
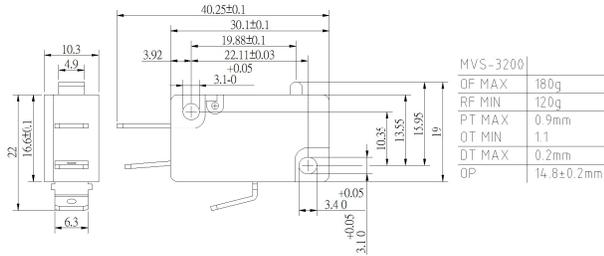
◆ Nomenclature

Series:	Terminal Type:	Actuator:
MVS –	32	00
	32=#250 Quick Connect 33=M3 Screw 34=Solder	<u>Touch part, Plastic</u> 00=Nylon pin plunger 04=POM roller lever 05=POM roller lever, long <u>Touch part, Stainless Steel</u> 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



MVS-3201



MVS-3202



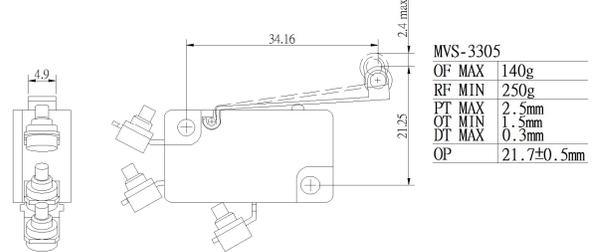
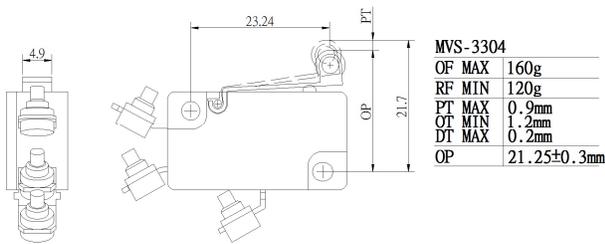
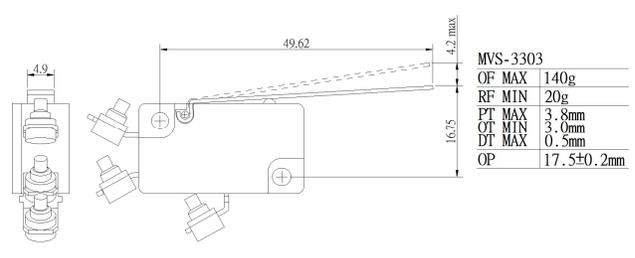
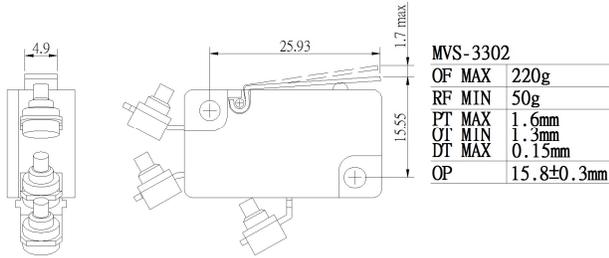
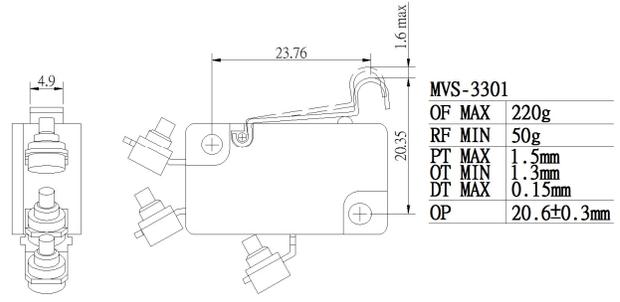
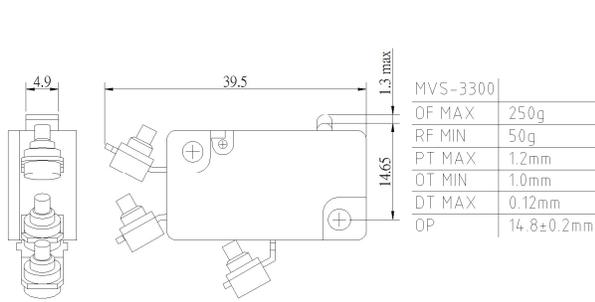
MVS-3203



MVS-3204



MVS-3205



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)
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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
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Operating Temp.	AC Rated	DC Rated	IP	Oil Resist	Dust Resist	Water Resist	Operating Speed
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-40 to 80 Celsius	1.5A 230V	0.5A 60V	67	Yes	Yes	Yes	0.01mm to 1m/sec
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Operation Frequency	Contact Resistance	Insulation Resistance	Vibration
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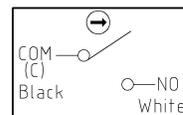
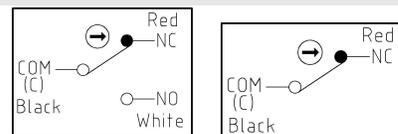
Mechanically: 60/min Electrically: 30/min	30mΩ max. (initial)	100MΩ min. (500VDC)	1.5mm amplitude at 10-55Hz
--	---------------------	---------------------	----------------------------

Storage Humidity	Service Life (min.)	Dielectric Strength
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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% <u>Custom:</u> Gold-plated Silver	PC Plastic

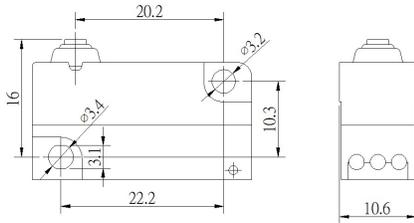
◆ Nomenclature

Series:	Terminal Type:	Actuator:	Contact Form:
MVS –	36	00 –	NC
	36=sealed wire-out	<u>Touch part, Plastic</u> 00=POM pin plunger 04=POM roller lever 05=POM roller lever, long <u>Touch part, Stainless Steel</u> 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)

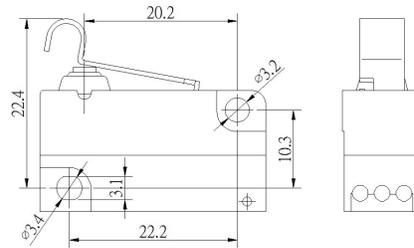
◆ Dimensions & Operating Characteristics

*Measurements in *millimeters*

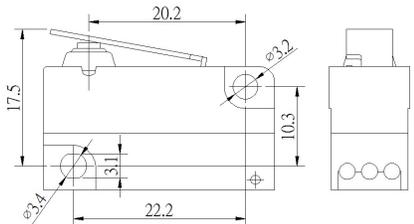
*NO/NC contact forms do not affect operating characteristics; examples below are Form C contacts (3 wires)



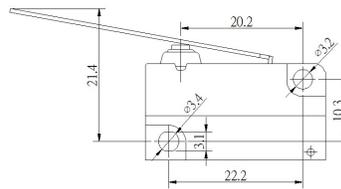
MVS-3600	
OF MAX	150g
RF MIN	107g
PT MAX	1.0mm
OT MIN	1.6mm
DT	0.6mm
OP	15±1mm



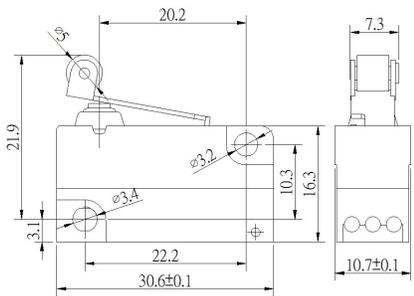
MVS-3601	
OF MAX	126g
RF MIN	68g
PT MAX	1.1mm
OT MIN	2.5mm
DT	0.5mm
OP	21.3±1mm



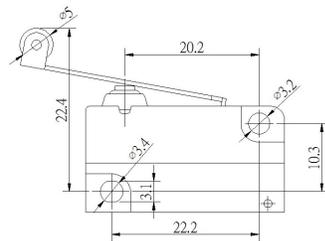
MVS-3602	
OF MAX	96g
RF MIN	61g
PT MAX	1.4mm
OT MIN	2.3mm
DT	0.8mm
OP	16.1±1mm



MVS-3603	
OF MAX	50g
RF MIN	8g
PT MAX	2.9mm
OT MIN	6.0mm
DT	1.1mm
OP	18.5±1mm



MVS-3604	
OF MAX	127g
RF MIN	99g
PT MAX	1.1mm
OT MIN	0.5mm
DT	0.5mm
OP	20.8±1mm



MVS-3605	
OF MAX	74g
RF MIN	56g
PT MAX	2mm
OT MIN	4.1mm
DT	0.9mm
OP	20.4±1mm



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 cable (AWG20, 0.5m) terminals

◆ Recognition(s)

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


◆ Characteristics

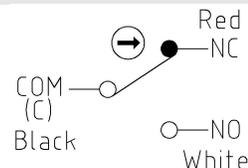
Positive Opening	Electrical Contact	Terminal Type	Contact Form(s)	Poles & Throws		Actuation Sequence(s)	
Yes	3 Points	Quick connect (#110) or wire (0.5m)	Form C	SPDT		Break(1) Make(2)	

Operating Temp.	AC Rated	DC Rated	IP	Oil Resist	Dust Resist	Water Resist	Operating Speed
-25 to 80 Celsius	0.75A 240V	0.27A 250V	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			Circuitry
Purpose	Screw type	Tightening	
Mounting	M2	0.2 N·m MAX	



◆ Materials

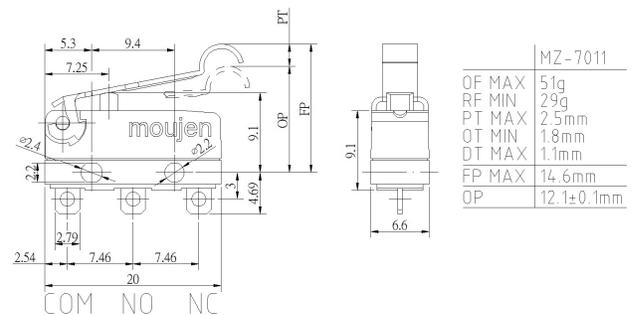
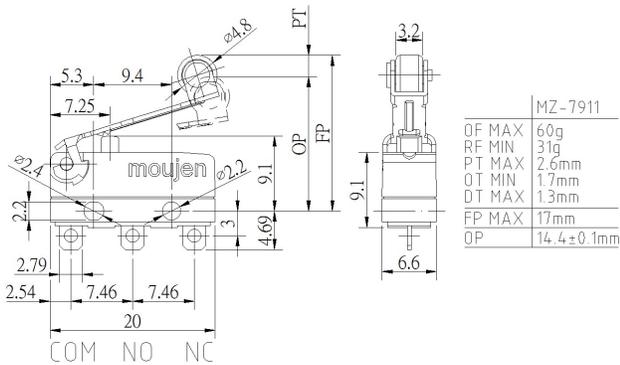
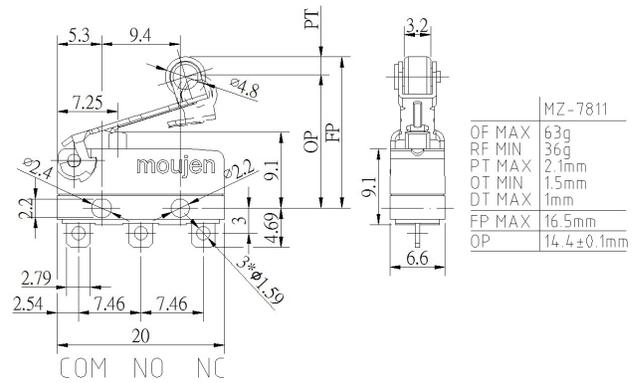
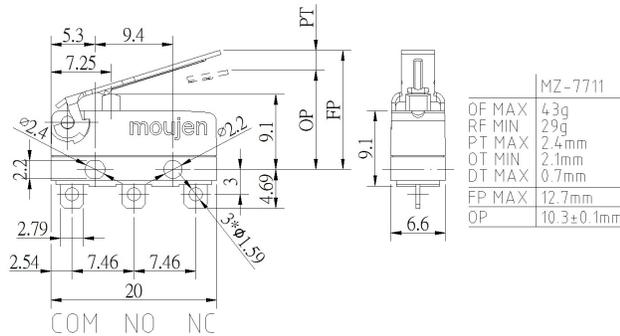
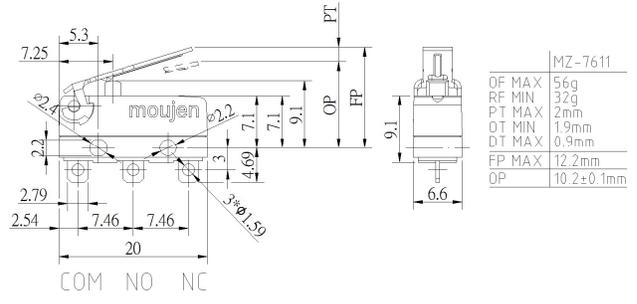
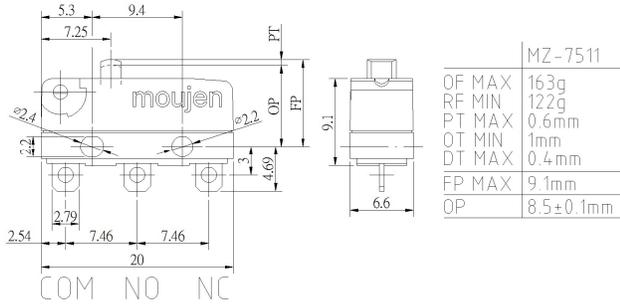
Actuation touch part	Electrical contact point	Enclosure
Stainless Steel SUS304 (Levers), or V-0 PC Plastic (Plunger), or POM, black (Rollers)	Silver 99.9% or Gold plated silver	PC Plastic

◆ 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 <u>3C Wires</u> R=Right side L=Left side B=Bottom Only applicable for IP67	S=Standard U=UL Only applicable for IP67

MZ-7
◆ Dimensions & Operating Characteristics

*Measurements in millimeters

IP 40 Variants


MZ-7511



MZ-7611



MZ-7711



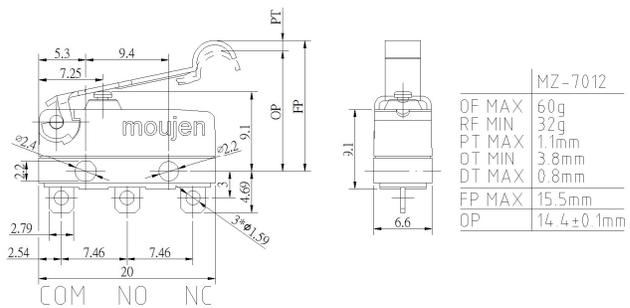
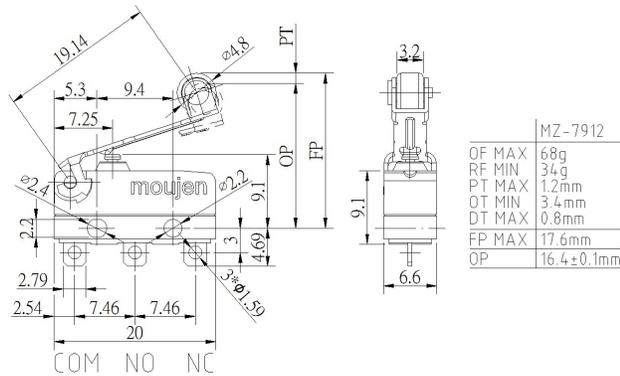
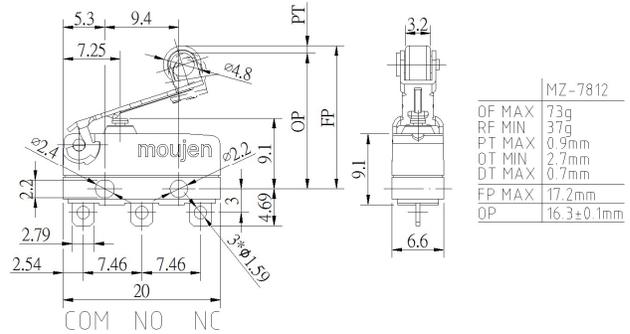
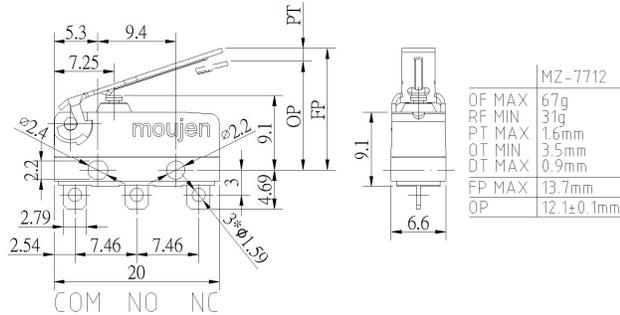
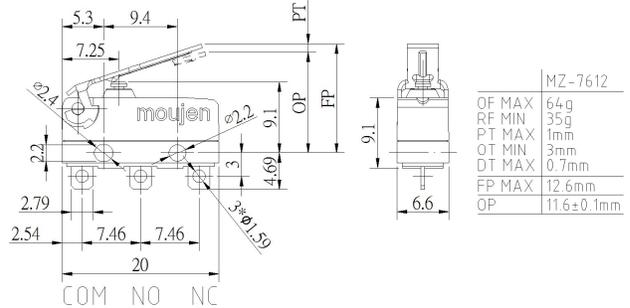
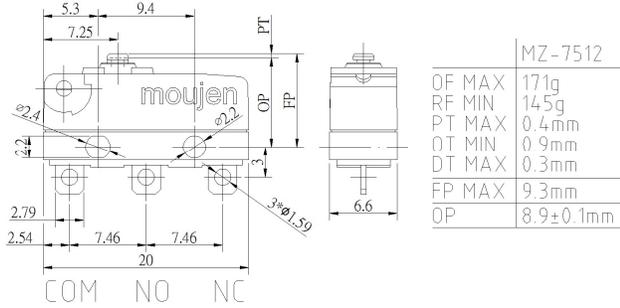
MZ-7811



MZ-7911



MZ-7011

IP 60 Variants


MZ-7512



MZ-7612



MZ-7712



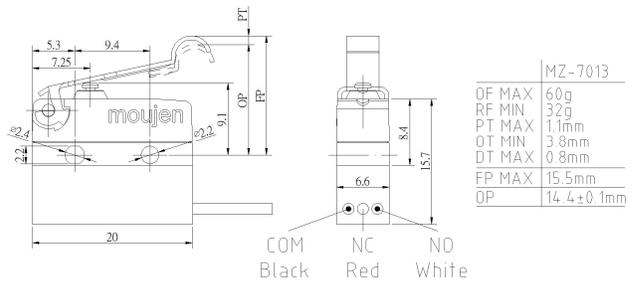
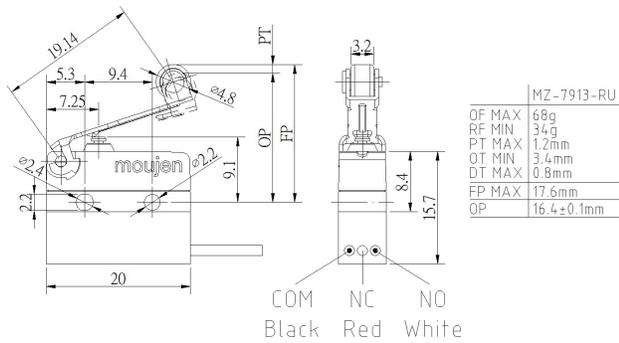
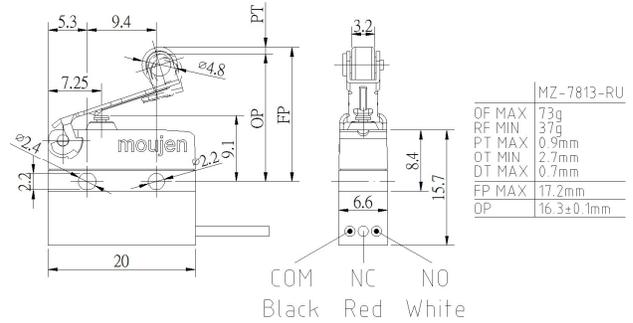
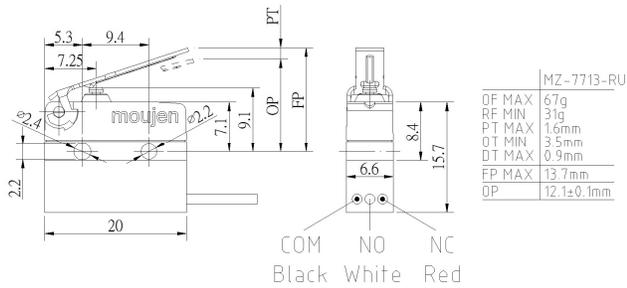
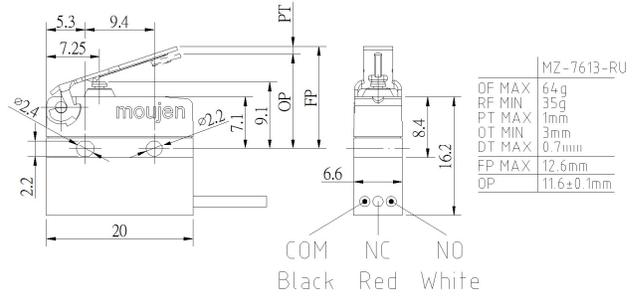
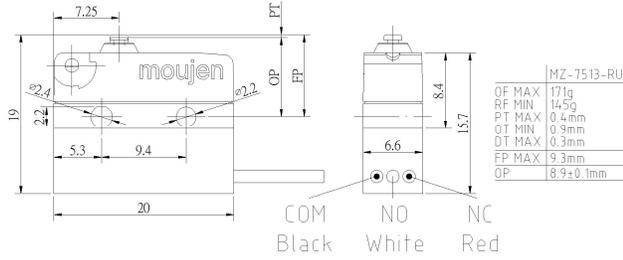
MZ-7812



MZ-7912



MZ-7012

IP 67 Variants (right-side)


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 $\varnothing 16.2\text{mm}$
- ✓ 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= <i>not applicable</i> M6P=1 or 2 "C" M6S=1 or 2 "C" M6K=1 or 2 "C" M6Z= <i>not applicable</i> M6E=1 or 2 "B"	M6L= <i>not applicable</i> M6P=SPDT/DPDT M6S=SPDT/2*SPDT/DPDT M6K=SPDT/2*SPDT/DPDT M6Z= <i>not applicable</i> M6E=SPST-NC/DPST-NC	Break(1)-Make(2), DB(1)-DM(2), Single Break, Double Break
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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

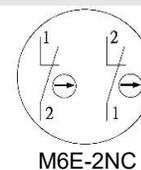
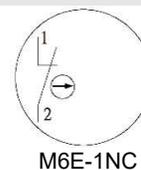
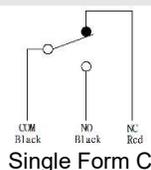
Operation Frequency	Service Life (min.)	Dielectric Strength
Momentary~1800/hr Alternate~1200/hr Selector~1200/hr E-Stop~600/hr	Momentary=2,000,000 Alternate=250,000 Selectors=250,000 E-Stop=100,000	Between live part and ground=2500Vac, 1min Between terminals of different poles=2500Vac, 1min Between terminals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

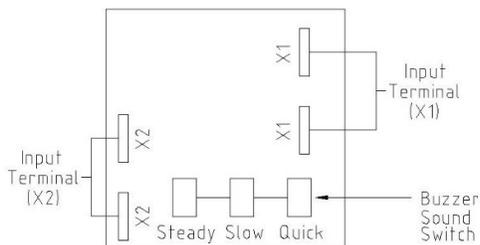
Purpose	Screw type	Tightening
Panel mount	Lock Ring	0.88 N·m MAX

Circuitry



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



(illum & non-illum) 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-illum
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:

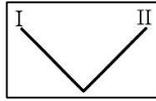
-Illumination colors from lamps are the same as lens colors; unless otherwise specified.

(illum & non-illum) Selectors	Frame:	Operation:	Terminal:	Contact Form(s):	Lamp:	Lens Color:
M6S -	A	30	S	2 -	24E	G

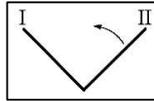
ø16mm

 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.

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

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

Blank

=Non-illum

Neon (AC)
110=110Vac

220=220Vac

LED (DC)
06E=6Vdc

12E=12Vdc

24E=24Vdc

R=Red

G=Green

Y=Yellow

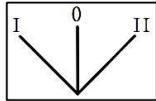
O=Orange

W=White

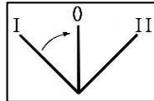
B=Blue

WO=

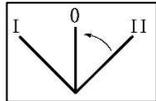
Opaque White (available only for Non-illumed)

Three Positions - 45° throw
30=


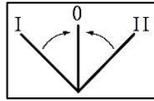
Alternate (maintained)

31=


spring return from left,

32=


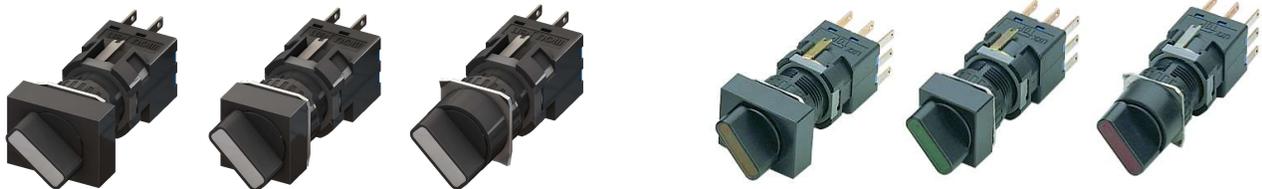
spring return from right

33=


spring return left & right

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

⚠ Always and only 2*SPDT configuration possible.


Note:

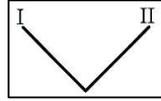
-Illumination colors from lamps are the same as lens colors; unless otherwise specified.

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

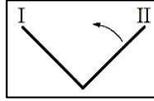
ø16 mm

 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.

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

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

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

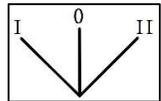
A=No lock limits
B=Right
C=Left

Applicable only for **three** positions

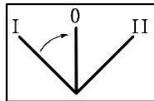
D=Right and left
E=Center
G=Center and right
H=Left and center

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

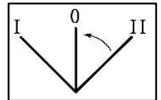
 Key Lock Limit(s) means keys **WILL BE NON-REMOVEABLE**. But may still operate different positions.

Three Positions - 45° throw
30=


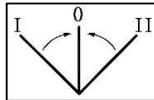
Alternate (maintained)

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.

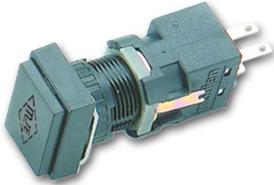

 **Note:**

-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.

M6

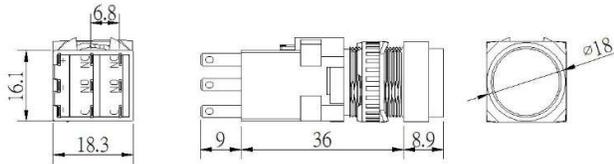
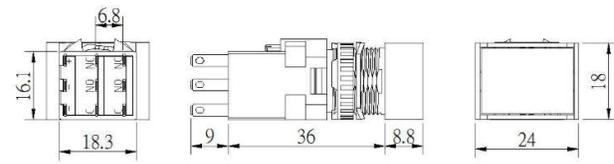
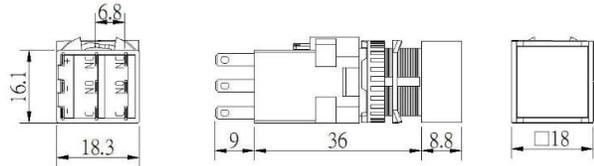
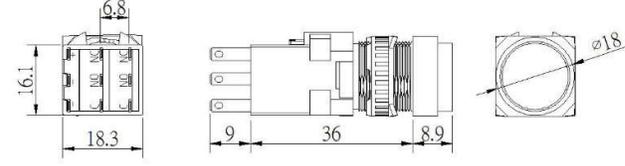
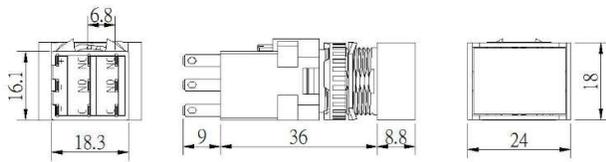
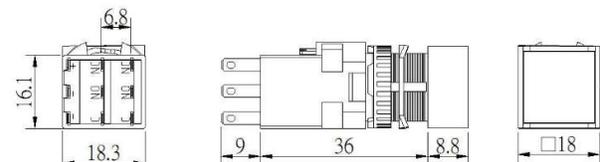
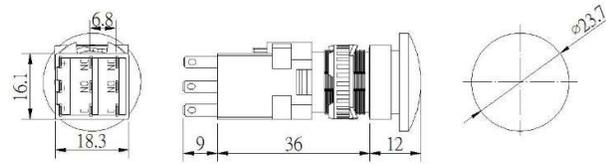
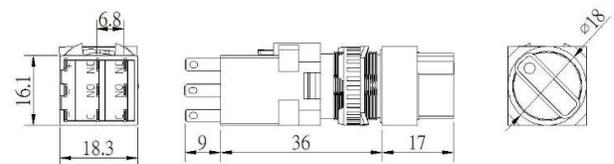
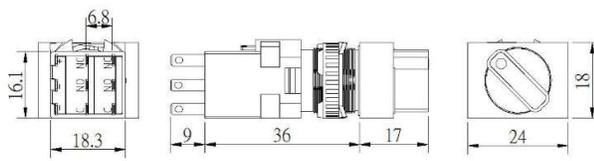
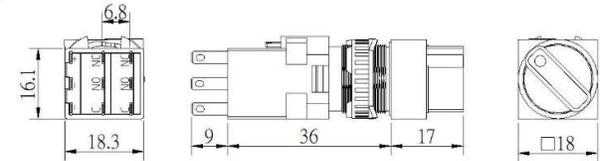
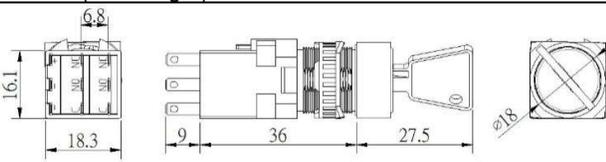
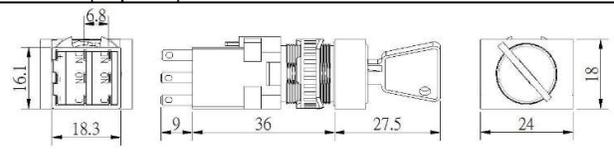
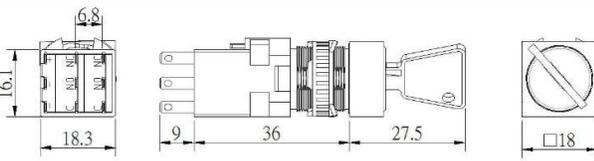
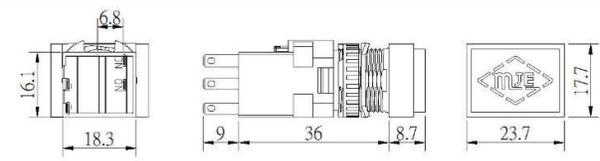
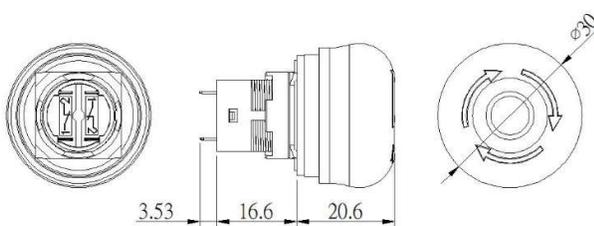
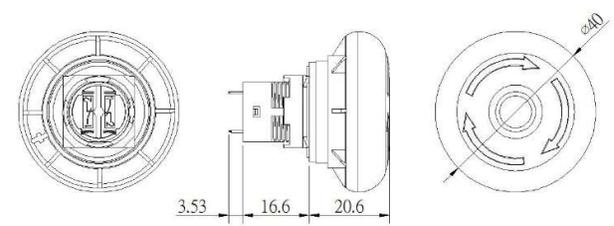
Buzzers	Frame:	Operating Voltage:	Terminal:
M6Z -		24	S
ø16mm	Blank =Rectangular (18x24mm)	06 =6V AC/DC 24 =12~24V AC/DC	S =Solder/Plug-in (#110) P =PCB (0.8w x 0.5t)



E-Stop Pushbuttons	Positive Opening:	Terminal:	Contact Form(s):	Button Size:	Lens Color:
M6E -	P	S	1	40	R
ø16mm, Positive Opening 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



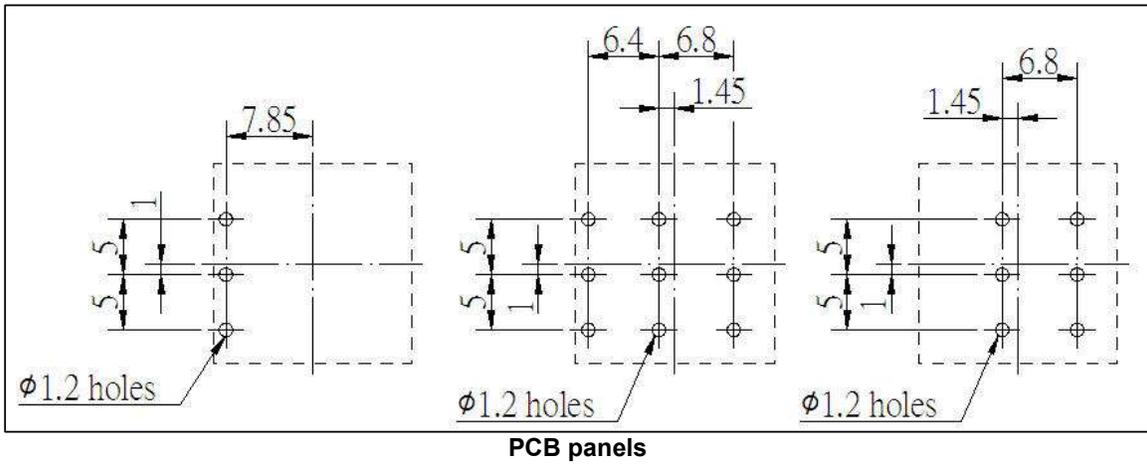
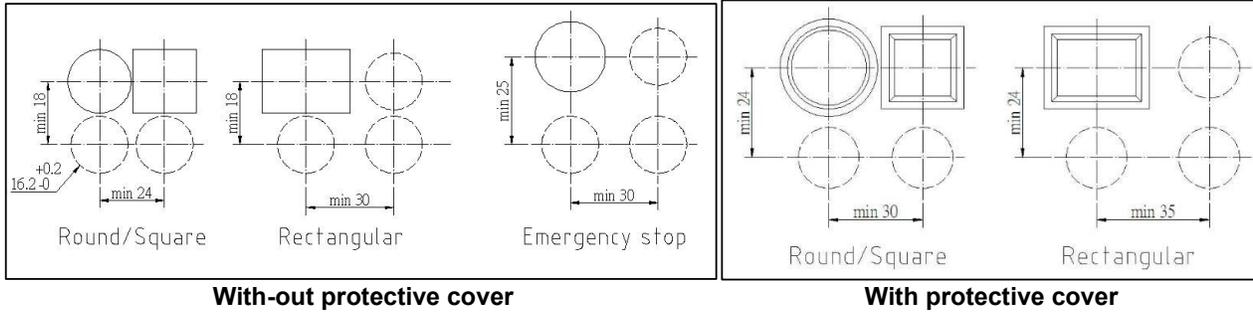
◆ Unit Dimensions

 *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

◆ **Panel cut-outs**

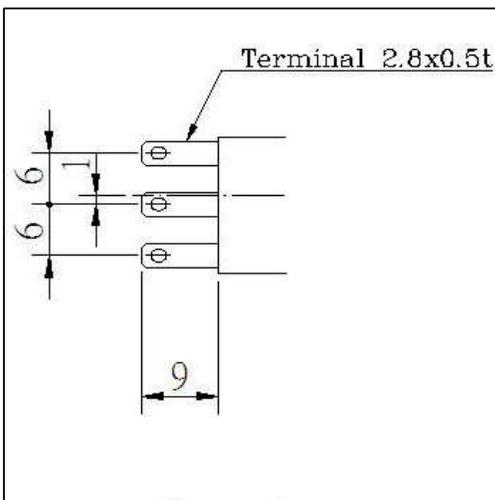
*Measurements in *millimeters*

△ All M6-series products fits best in a circular panel cut out that measures 16.2mm in diameter, with a thickness of 2~3mm. Damage and bad operation may occur to product if installed into incorrect diameter through-holes and incorrect tightening forces.

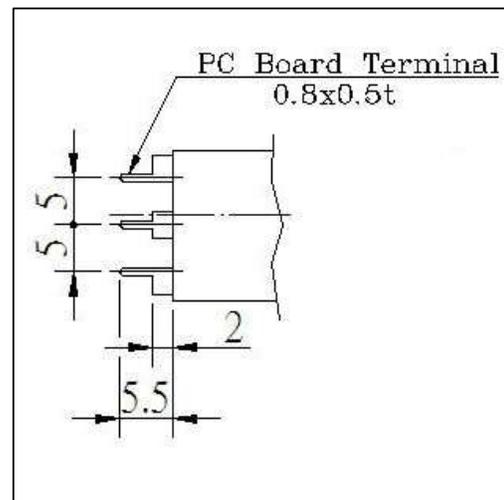


◆ **Terminal Dimensions**

*Measurements in *millimeters*



Solder, quick connect #110 terminal



PCB Pin terminal

M22 Series Pushbuttons

◆ Features

- ✓ For front panel cut-outs measuring $\varnothing 22.3\text{mm}$
- ✓ IP65 protection
- ✓ M3.5 screw terminals
- ✓ PCB ($\varnothing 0.1\text{t}$) terminals
- ✓ Tough and durable body material
- ✓ Available for multi-layer installations

⚠ All back facing terminal block buckles (SB) are ONLY compatible with Moujen in house control boxes (M22B).



◆ Recognition(s)

- ✓ CE – EN60947
- ✓ UL – UL508
- ✓ RoHS Compliant
- ✓ Reach Unaffected



◆ 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

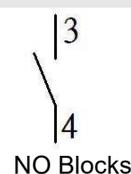
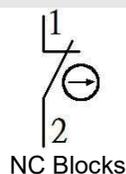
Operation Frequency	Service Life (min.ops)	Dielectric Strength
Momentary~3600/hr Alternate~1800/hr Selectors~2000/hr E-Stop~600/hr	Momentary=5,000,000 Alternate=1,000,000 Selectors=100,000 E-Stop=100,000	Between live part and ground=2500Vac, 1min Between terminals of different poles=2500Vac, 1min Between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



Additional Characteristics: Lamp blocks (LED)	
Codename in nomenclature = E30	12~30VDC, 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:	-20°C ~ 65°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:	Cap/Lens Color:	Symbol:
M22FP –	M	SF	01		G	
ø22.3mm SPST, or DPST	M =Momentary A =Alternate (Maintained)	<u>Front facing buckle</u> (for use with A3 adapter) SF =Screw terminals PF =PCB terminals  <u>Back facing buckle</u> (for use with control box) SB =Screw terminals	<u>One block</u> 10 =1x Form A 01 =1x Form B <u>Two blocks</u> 11 =1x Form A (&) 1x Form B 20 =2x Form A 02 =2x Form B	Blank = non-illum E30 =LED30V E230 =LED230V 	R =Red G =Green Y =Yellow W =White BL =Blue <u>Opaque</u> WO =White RO =Red BKO =Black	<I> <O> 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 indicated items.
- Please consider PCB terminal pins when designing your systems. Pins will conflict multi-layer designs if installed on top.
- △ All back facing terminal block buckles (SB) are ONLY compatible with Moujen in house control boxes (M22B).

M22

Extended Head	Actuation:	Type of Terminal:	Contact Block(s):	Lamp:	Cap/Lens Color:	Symbol:
M22XP –	M	SF	01		G	
ø22.3mm SPST, or DPST	M =Momentary A =Alternate (Maintained)	<u>Front facing buckle</u> (for use with A3 adapter) SF =Screw terminals PF =PCB terminals  <u>Back facing buckle</u> (for use with control box) SB =Screw terminals	<u>One block</u> 10 =1x Form A 01 =1x Form B <u>Two blocks</u> 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:	Cap Color:	Symbol:
M22DP –		SF	02	E30	GR	<I,O>
ø22.3mm 2x SPST	Blank =Momentary (All M22DP are momentary)	<u>Front facing buckle</u> (for use with A3 adapter) SF =Screw terminals PF =PCB terminals  <u>Back facing buckle</u> (for use with control box) SB =Screw terminals	<u>Two blocks</u> 11 =1x Form A (&) 1x Form B 20 =2x Form A 02 =2x Form B	Blank =non-illume E30 =LED30V E230 =LED230V  Center lamp illumines only WHITE color.	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 indicated items.
- Please consider PCB terminal pins when designing your systems. Pins will conflict multi-layer designs if installed on top.

 All back facing terminal block buckles (SB) are ONLY compatible with Moujen in house control boxes (M22B).

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



Illuminated Mushroom Actuator	Actuation:	Type of Terminal:	Contact Block(s):	Lamp:	Cap/Lens Color:	Symbol:
M22MPL –	M	SF	01	E30	R	<O>
ø22.3mm SPST, or DPST	M =Momentary A =Alternate (Maintained)	<u>Front facing buckle</u> (for use with A3 adapter) SF =Screw terminals PF =PCB terminals  <u>Back facing buckle</u> (for use with control box) SB =Screw terminals	<u>One block</u> 10 =1x Form A 01 =1x Form B <u>Two blocks</u> 11 =1x Form A (&) 1x Form B 20 =2x Form A 02 =2x Form B	E30 =LED30V E230 =LED230V 	R =Red	<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 indicated items.
- Please consider PCB terminal pins when designing your systems. Pins will conflict multi-layer designs if installed on top.

 All back facing terminal block buckles (SB) are ONLY compatible with Moujen in house control boxes (M22B).

M22

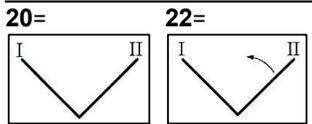
Selector Actuator	Actuator Style:	Operation:	Type of Terminal:	Contact Block(s):	Lamp:	Cap/Lens Color:
M22S -	T	30	SF	01	E30	G

ø22.3mm

SPST, or DPST, or 2x SPST

R=
Rotary

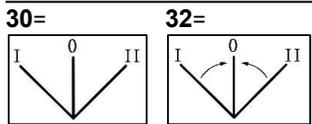
T=
Thumb grip

Two Positions


Alternate (Maintained) Spring-return from right

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

⚠ SPST or DPST; depending on contact blocks chosen.

Three Positions


Alternate (Maintained) 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

(Color only applicable for "T" thumb grip style)


Note:

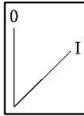
- Illumination colors from lamps are the same as lens colors; unless otherwise specified.
- Please contact Moujen before production to customize symbols to your needs. Only applicable to indicated items.
- Please consider PCB terminal pins when designing your systems. Pins will conflict multi-layer designs if installed on top.
- ⚠ All back facing terminal block buckles (SB) are ONLY compatible with Moujen in house control boxes (M22B).

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

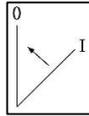
Two Positions

20=



Alternate (Maintained)

22=



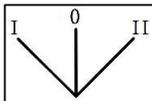
Spring-return from right

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

⚠ SPST or DPST; depending on contact blocks chosen.

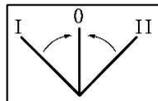
Three Positions

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

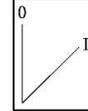
11=

1x Form A (& 1x Form B

20=2x Form A

02=2x Form B

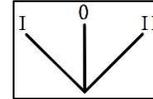
Two Positions



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.



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- 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 indicated items.
- Please consider PCB terminal pins when designing your systems. Pins will conflict multi-layer designs if installed on top.
- ⚠ All back facing terminal block buckles (SB) are ONLY compatible with Moujen in house control boxes (M22B).

M22

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



Compact Pilot light	Actuator Style:	Lamp:	Cap/Lens Color:
M22LC –	F	E24	G
ø22.3mm No blocks needed	F =Flathead X =Extended-head	E06 =LED6VDC E12 =LED12VDC E24 =LED24VDC E110 =LED110VAC E220 =LED220VAC 	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 indicated items.
- Please consider PCB terminal pins when designing your systems. Pins will conflict multi-layer designs if installed on top.
- △ All back facing terminal block buckles (SB) are ONLY compatible with Moujen in house control boxes (M22B).

M22

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



Illuminated Emergency Stop	Operation:	Type of Terminal:	Contact Block(s):	Lamp:	Cap/Lens Color:
M22EL –	T	SF	20	E30	R
ø22.3mm SPST, or DPST	P =Pull to release T =Twist to release	<u>Front facing buckle</u> (for use with A3 adapter) SF =Screw terminals PF =PCB terminals  <u>Back facing buckle</u> (for use with control box) SB =Screw terminals	<u>One block</u> 10 =1x Form A 01 =1x Form B <u>Two blocks</u> 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 indicated items.
- Please consider PCB terminal pins when designing your systems. Pins will conflict multi-layer designs if installed on top.
- △ All back facing terminal block buckles (SB) are ONLY compatible with Moujen in house control boxes (M22B).

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-made. M20 and M25 sizes possible.



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

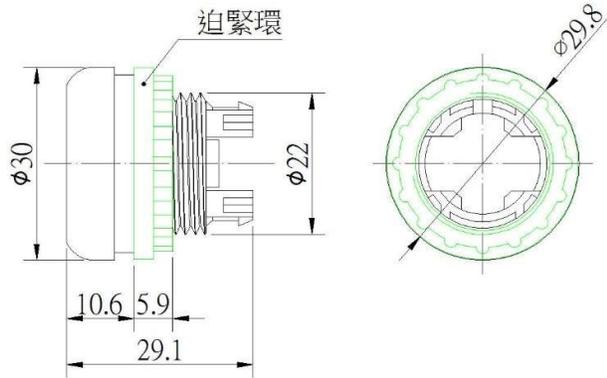
 Except illumination types, all else are opaque black.



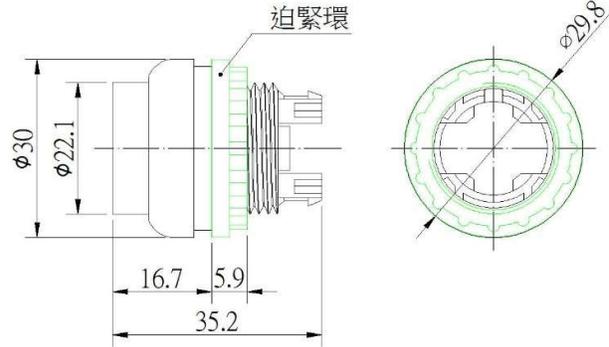
◆ **Unit Dimensions**

*Measurements in *millimeters*

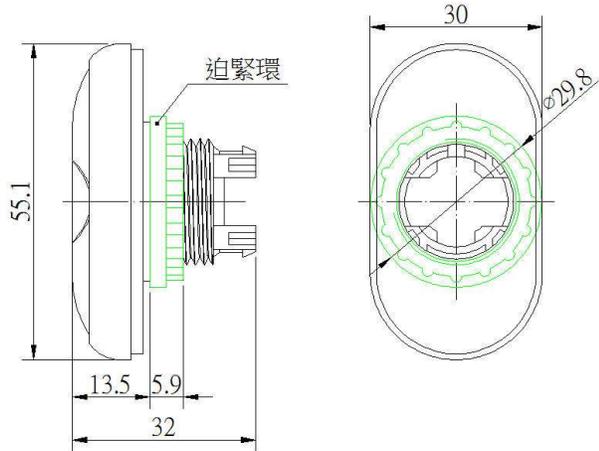
Flat head (FP)



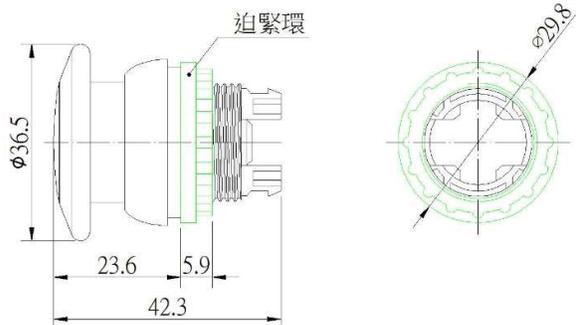
Extended head (XP)



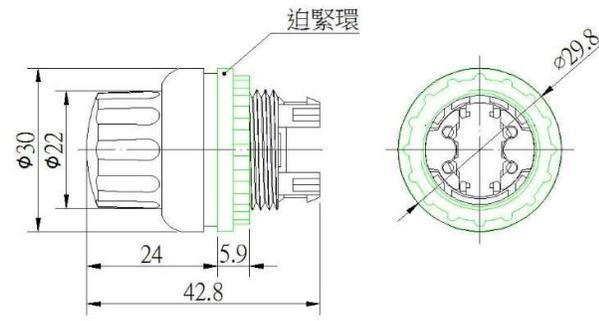
Double pushbutton (DP)



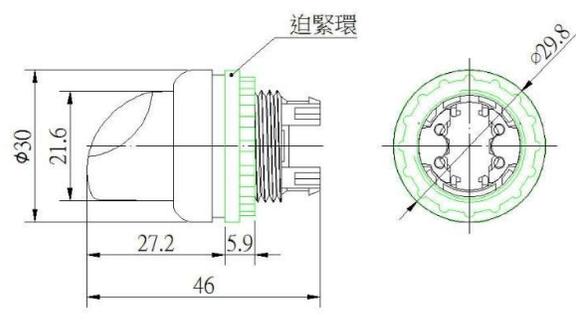
Mushroom pushbutton (MP, MPL)



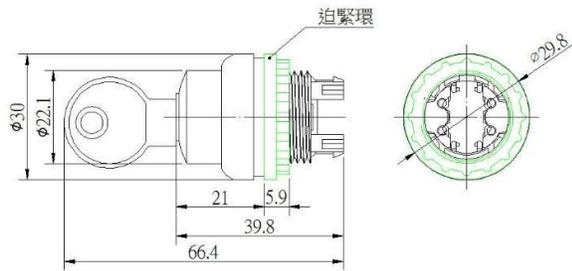
Selector (S) - Rotary



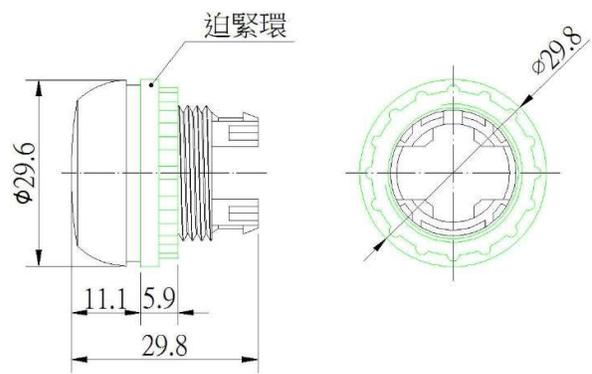
Selector (S) - Thumb grip



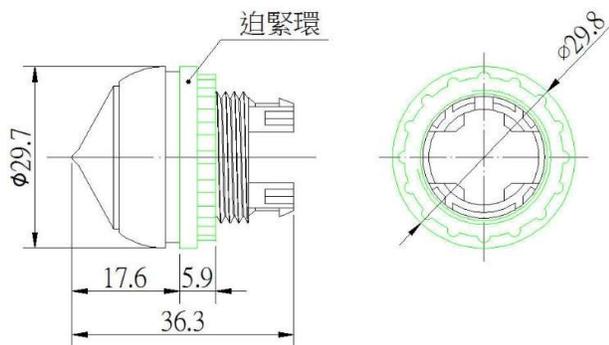
Key Selector (K)



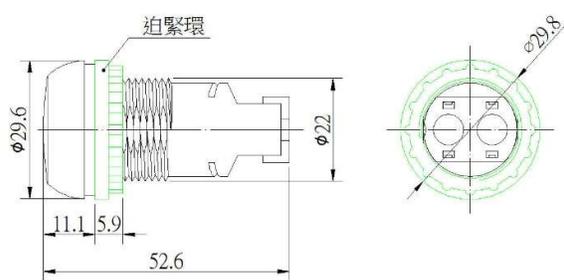
Pilot light (L) - Flat head



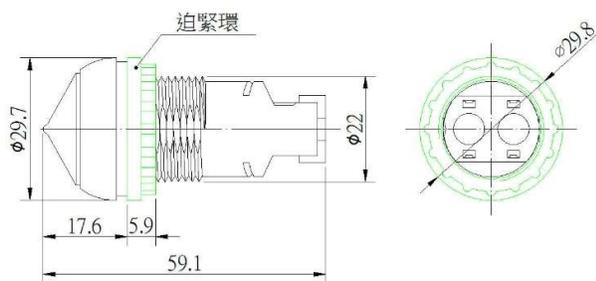
Pilot light (L) - Extended head



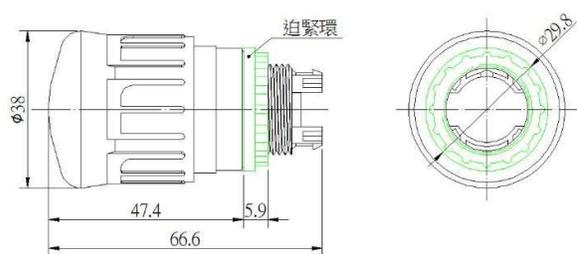
Compact pilot light (LC) - Flat head



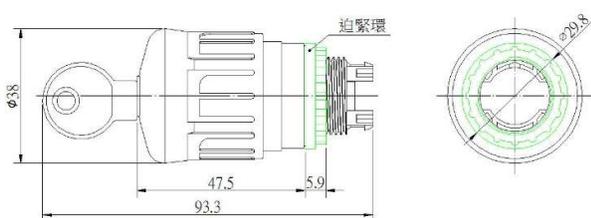
Compact pilot light (LC) - Extended head



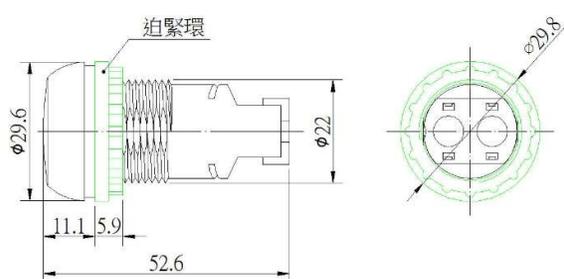
Emergency stop (E, EL) - Pull or Turn to release



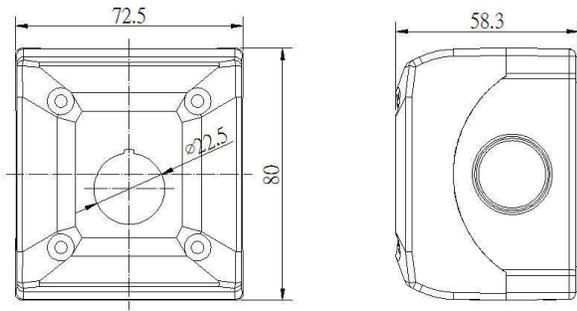
Emergency stop (E) - Key to release



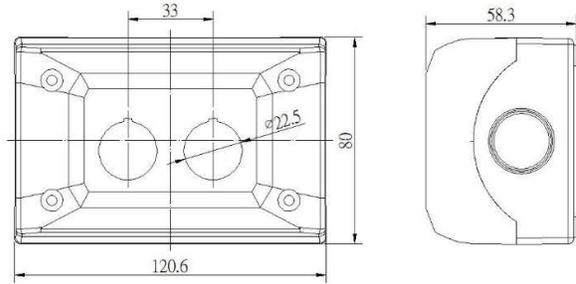
Buzzer (BZ)



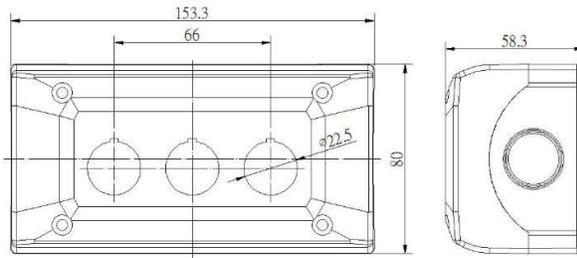
Control Box (M22B1) – 1 hole



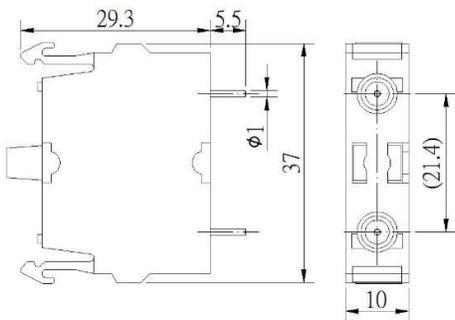
Control Box (M22B2) – 2 holes



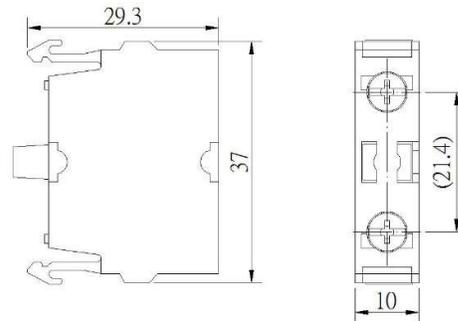
Control Box (M22B3) – 3 holes



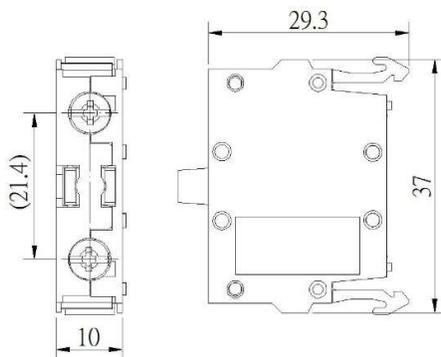
Contact Block (PF) -
PCB terminal, Front facing



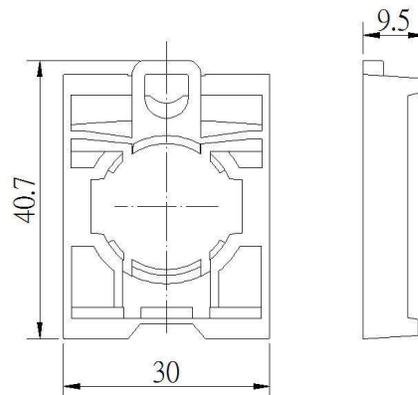
Contact Block (SF) -
Screw terminal, Front facing



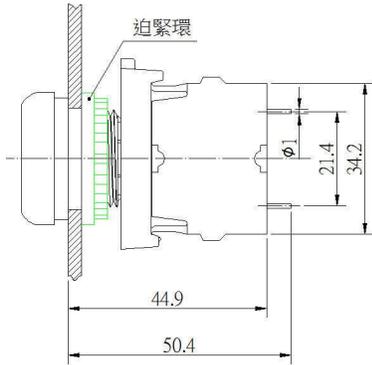
Contact Block (SB) -
Screw terminal, Back facing (for M22 Box)



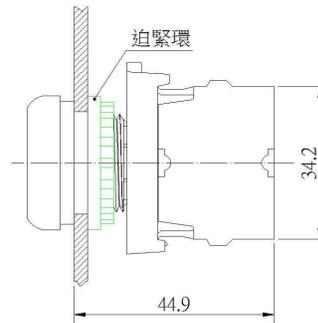
Adapter for front facing buckle
contact blocks (A3)



Dimensions with front facing PCB terminal contact block installation



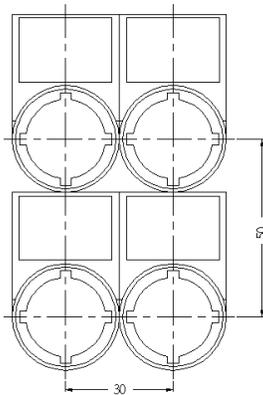
Dimensions with front facing Screw terminal contact block installation



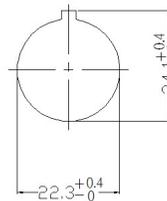
◆ **Panel cut-outs**

*Measurements in *millimeters*

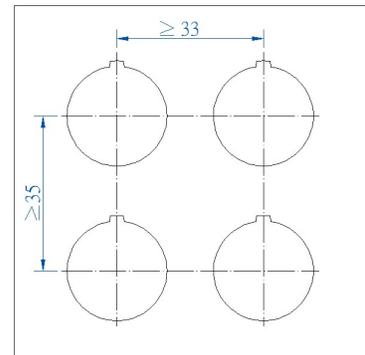
△ All M22-series products fits best in a circular panel cut out that measures 22.3mm in diameter, with a thickness of 1~4.5mm. Panels thicker than this may cause products to be secured improperly. Damage and bad operation may occur if installed onto incorrect through-holes or with incorrect tightening forces.



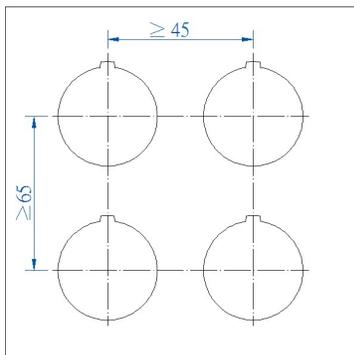
Multiple labeling (excl. M22DP)



Single unit panel cut-out



Multiple units panel cut-out (excl. M22DP)



Multiple units panel cut-out (for M22DP)

MFS Series

Foot switch

◆ Features

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

◆ Recognition(s)

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



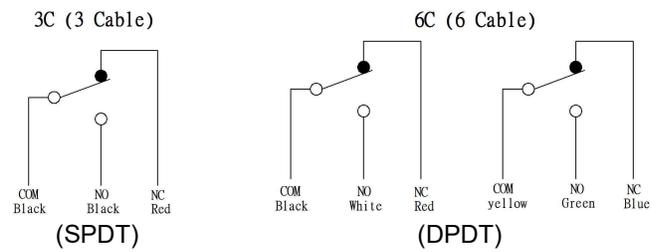
◆ Characteristics

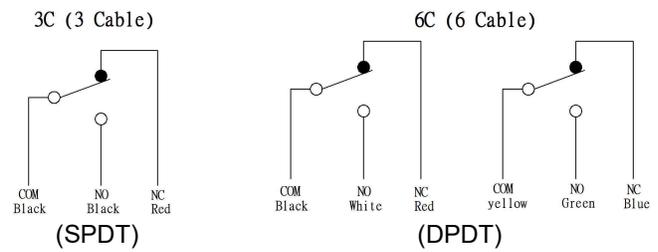
Positive Opening	Electrical Contact	Terminal Type	Contact Form(s)	Poles & Throws		Actuation Sequence(s)	
No	3C or 6C	Wire (1m,2m) E104879 AWM 18AWG	1or 2 x C	SPDT, DPDT		Break(1)-Make(2), DB(1)-DM(2)	

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
	



◆ Materials

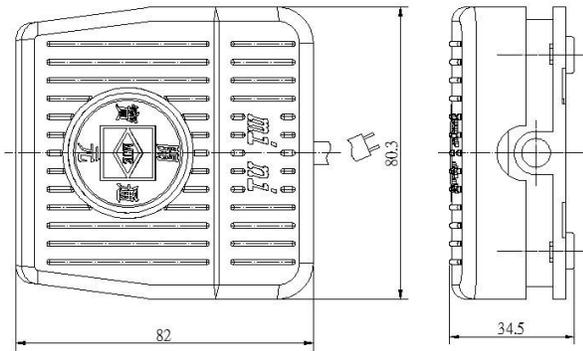
Actuation touch part	Electrical contact point	Enclosure
ABS Plastic, or Aluminum	Silver-Nickel Alloy	ABS Plastic (miniature), or Aluminum (large)

◆ Nomenclature

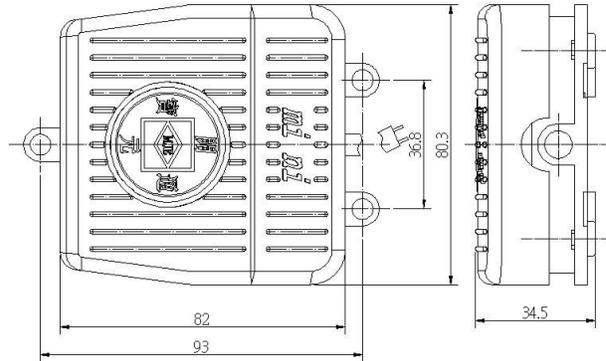
Series:	Type:	Cable Length:
MFS –	1012 –	2
	1011=miniature, SPDT 1012=miniature with fixture piece, SPDT 1021=large with fixture piece, SPDT 1022=large with fixture piece, DPDT	1L=1 meter 2L=2 meter

◆ **Dimensions & Operating Characteristics**

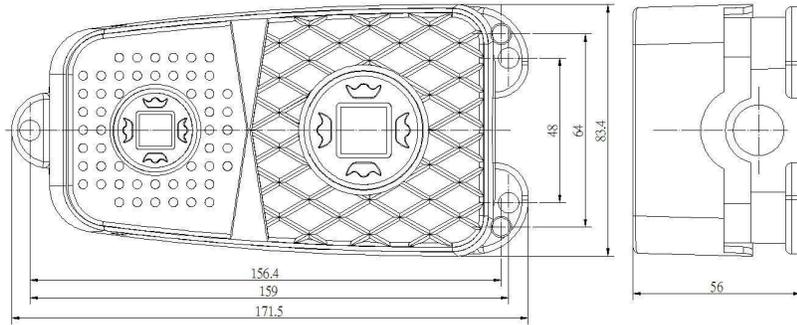
*Measurements in *millimeters*



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 3-in-1

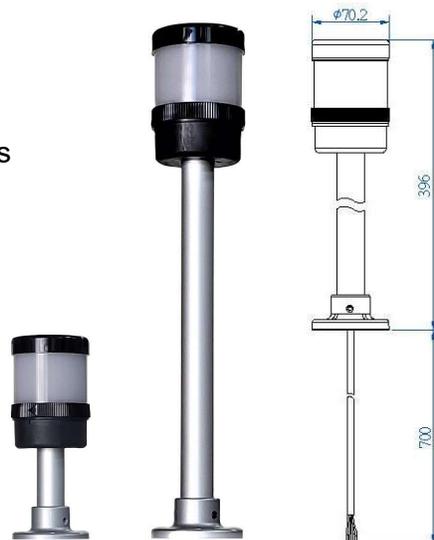
1-layer multi-function Tower Lights

◆ Features

- ✓ 3*LED colors plus optional buzzer in All-in-1 unit
- ✓ Piezoelectric buzzers
- ✓ Made with durable material for industrial environments
- ✓ Multiple types of base mounting
- ✓ IP65 protection
- ✓ E250011 20AWG cable

◆ Recognition(s)

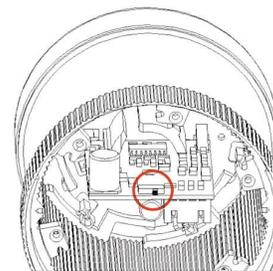
- ✓ CE – EN60947
- ✓ RoHS Compliant
- ✓ Reach Unaffected



◆ Characteristics

	LED without buzzer		LED with buzzer	
	Permanent	Blinking	Permanent	Blinking
LED lighting	Permanent	Blinking	Permanent	Blinking
Rated voltage	24VDC	24VDC	24VDC	24VDC
Green LED	≤73mA	33 to 73mA	≤73mA	33 to 73mA
Yellow LED	≤123mA	55 to 123mA	≤123mA	55 to 123mA
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°C to +50°C
Diameter	ø70mm
Unit only Dimensions	96mm Total
Unit w/ 1M, 2M cable	1096mm, 2096mm Total
Certified Standards	CE
Ingress protection	IP65

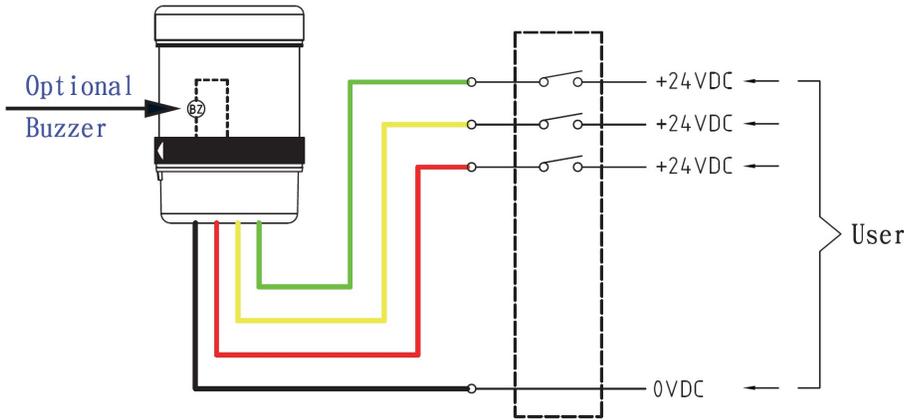


Function select switch

◆ Materials

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

◆ Wiring Schematic



⚠ Color of wire represents LED color illumination.

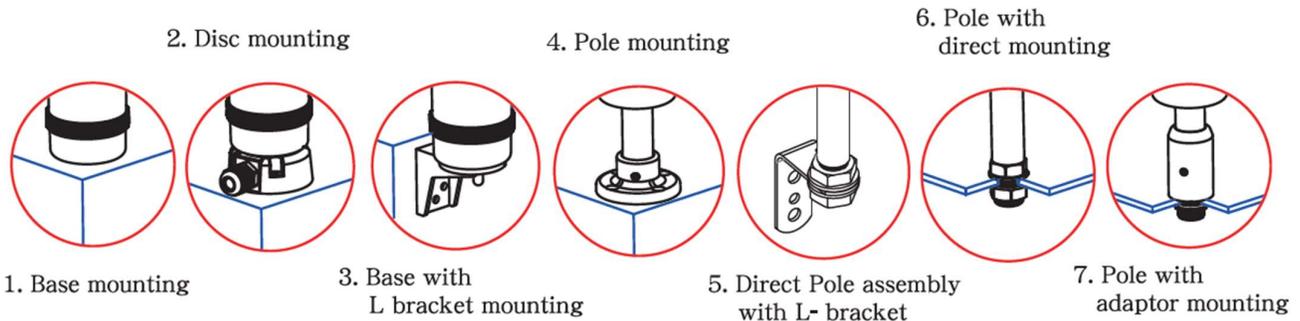
⚠ Only one color illumines at one time.

◆ 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
	7 = \varnothing 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 53 = 3in1+30cm pole, w/o buzzer 55 = 3in1, w/o 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. SPECIAL KS = Black unit & cap w/ silver mount	7 = Translucent 8 = Transparent	RYG = Red, Yellow, & Green	1 = 1 meter 2 = 2 meter

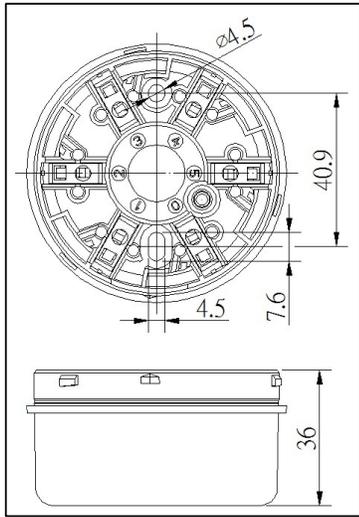
⚠ BM,DM,LB mount types do not come with aluminum poles

◆ Mounting Types & Dimensions

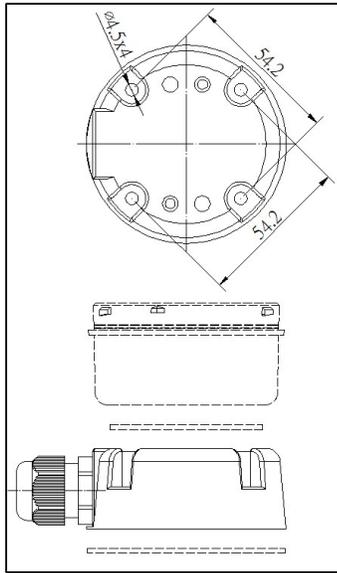


Mount materials			
1. BM = Base mounting = PA66+Glass fiber	2. DM = Disc mounting = PA66+Glass fiber	3. LB = Base w/ L bracket = PA66+Glass fiber	4. PM = Pole mounting = Zinc Alloy
5. AL = Direct pole w/ L bracket = Aluminium pole with steel L bracket		6. PD = Pole w/ direct mount = Aluminium	7. PA =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

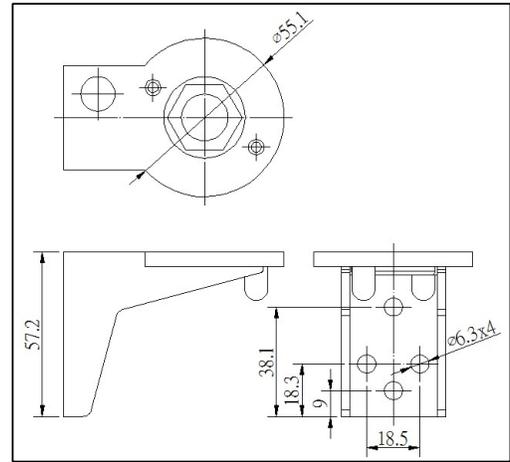
MST



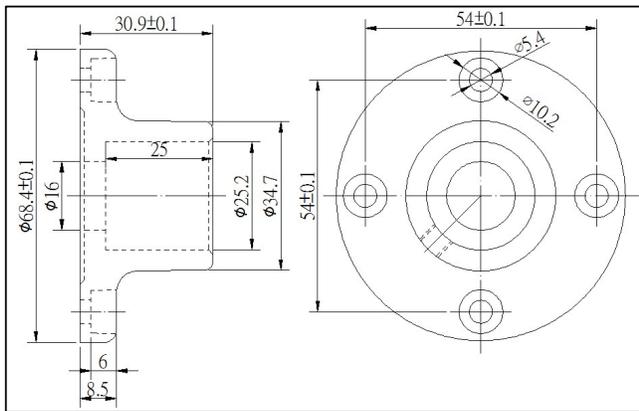
BM=Base Mount



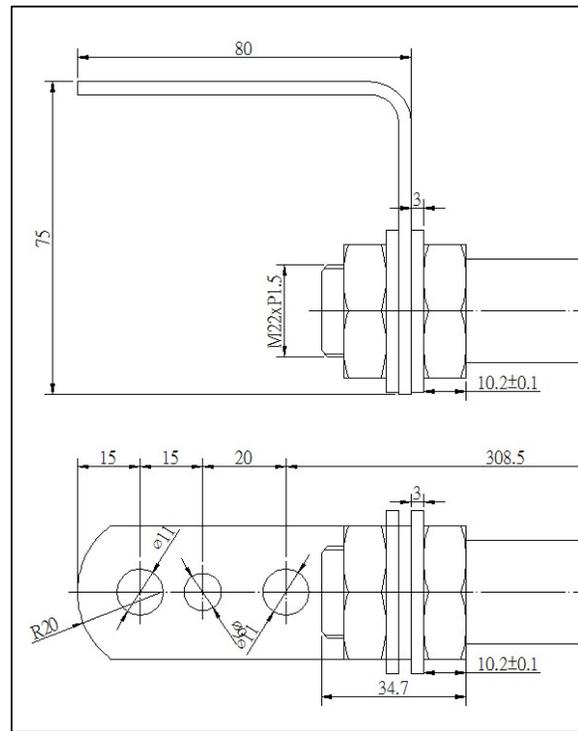
DM=Disc Mount



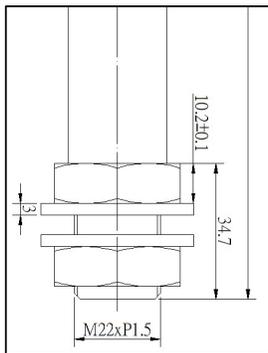
LB=Base w/ L bracket



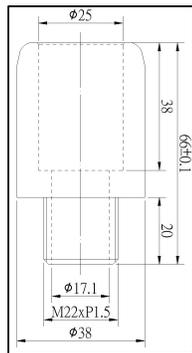
PM=Pole Mount



AL=Direct pole w/ L bracket

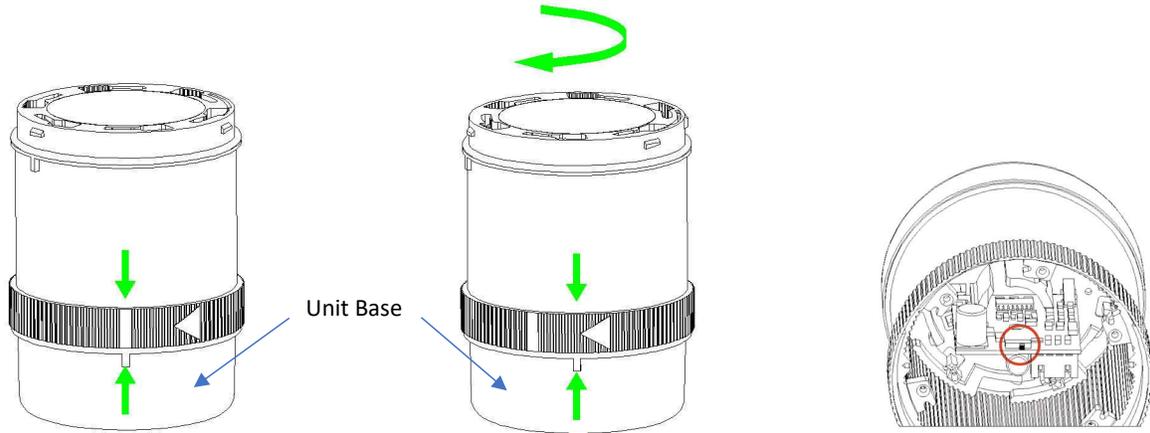


PD=Pole w/ direct mount



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.

MST Series

Multi-layer Modular Tower Lights

◆ Features

- ✓ \varnothing 70mm diameter units
- ✓ Max 5 modular layers for flexible customization
- ✓ Red, Yellow, Green, and Blue LED colors
- ✓ Piezoelectric buzzers
- ✓ Made with durable material for industrial environments
- ✓ Multiple types of base mounting
- ✓ IP65 protection
- ✓ E250011 20AWG cable

◆ Recognition(s)

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

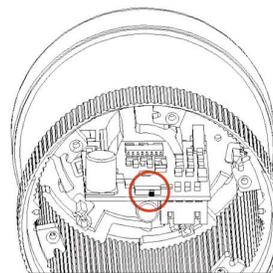
◆ Characteristics



Modular Units	LED units		BUZZER units	
	Rated voltage	24VDC	100~240VAC	24VDC
Current Consumption	≤50mA	≤40mA	≤50mA	≤30mA

Functions	Toggle LEFT	Toggle RIGHT
Blink/Perm. LED	Moderate blinking	Permanent
Dual Flash LED	Fast flashing	Slow flashing
Buzzer	2.8kHz, 102dB	0.9kHz, 96dB

Life expectancy	100,000 hours
Operating temperature	-20°C to +50°C
Diameter	\varnothing 70mm
Single Unit height	96mm
Certified Standards	CE
Ingress protection	IP65

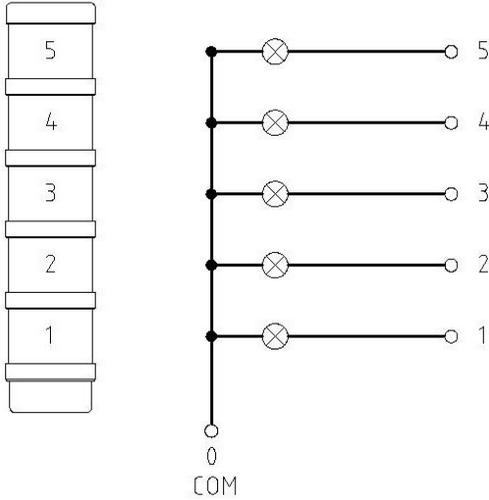


Function select switch

◆ Materials

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

◆ Wiring Schematic



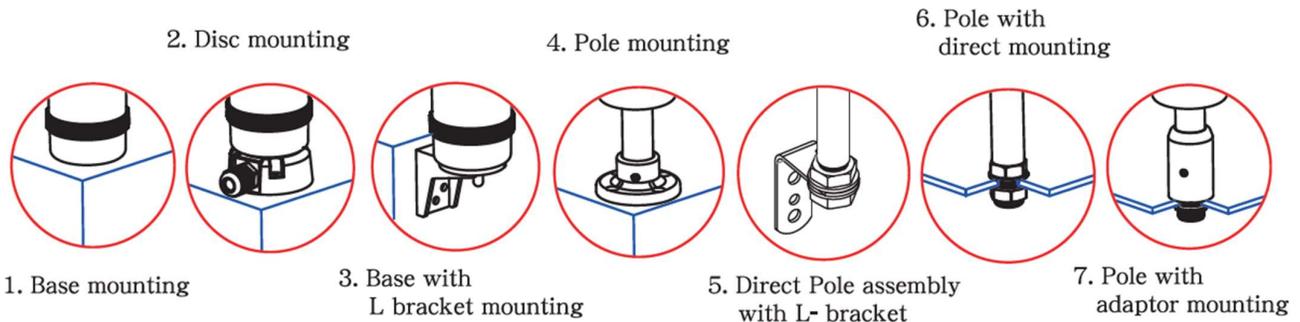
Base unit internal

◆ Nomenclature

Dimension:	Layers:	Voltage:	Mounting:	Function:	Unit base & cap color:	Lens type:	Colors	Cable Length:
MST - 7	4	2	BM	28	K	7	RYG	2
7 = \varnothing 70mm	1 = 1 layer 2 = 2 layers 3 = 3 layers 4 = 4 layers 5 = 5 layers	2 = 24VDC 3 = 100~240VAC	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	06 = Buzzer 13 = Blink/Perm.+30cm pole 28 = Blink/Perm.+Buzzer+30cm pole 33 = Dual Flash+30cm pole 38 = Dual Flash+Buzzer+30cm pole	W = White S = Dark silver K = Black <i>*Mount color will be the same color as what's chosen here.</i>	7 = Translucent 8 = Transparent	R = Red Y = Yellow G = Green U = Blue	1 = 1 meter 2 = 2 meter

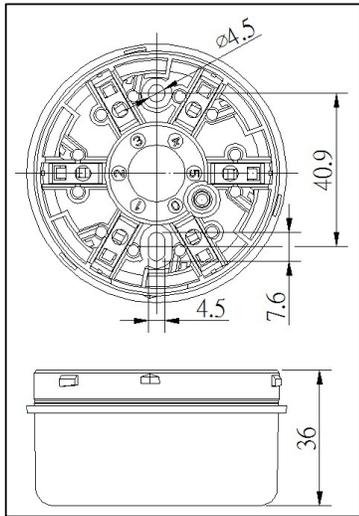
⚠ BM,DM,LB mount types do not come with poles

◆ Mounting Types & Dimensions

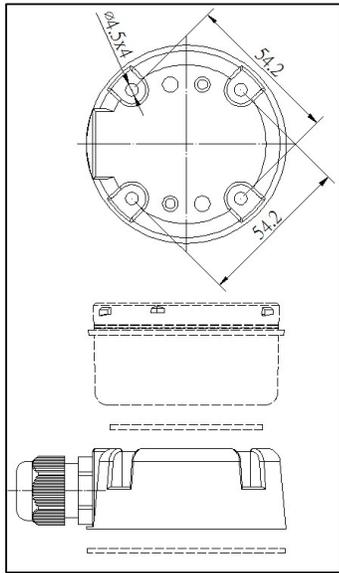


Mount materials			
1. BM = Base mounting = PA66+Glass fiber	2. DM = Disc mounting = PA66+Glass fiber	3. LB = Base w/ L bracket = PA66+Glass fiber	4. PM = Pole mounting = Zinc Alloy
5. AL = Direct pole w/ L bracket = Aluminium pole with steel L bracket		6. PD = Pole w/ direct mount = Aluminium	7. PA =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

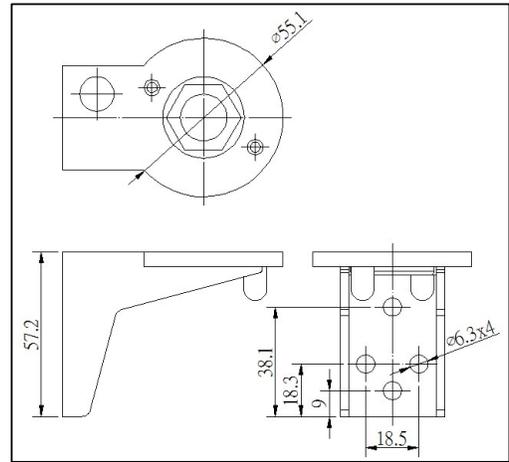
MST



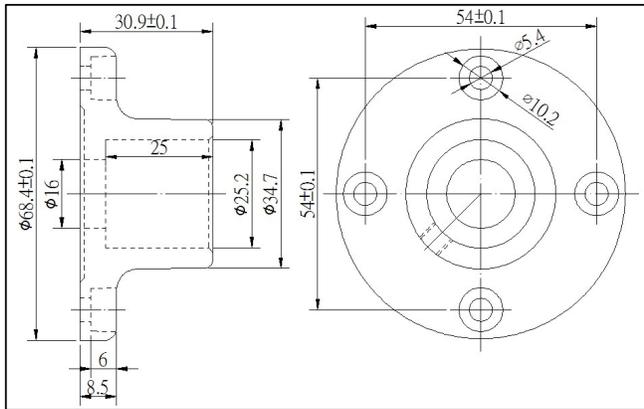
BM=Base Mount



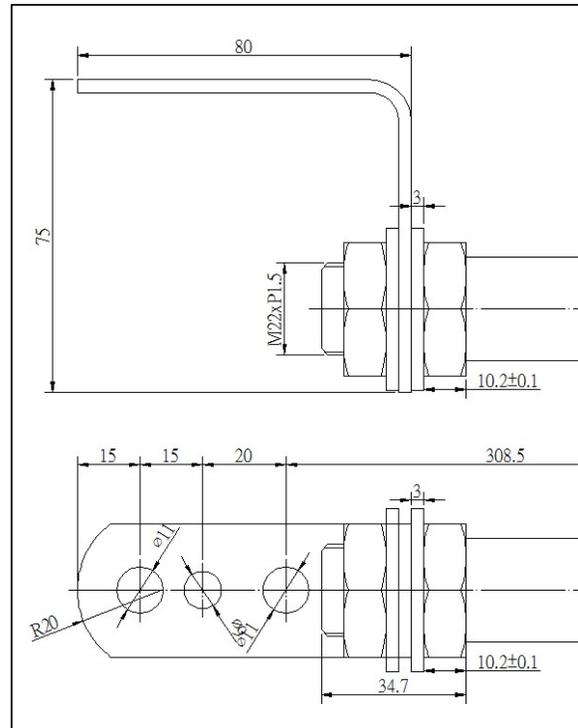
DM=Disc Mount



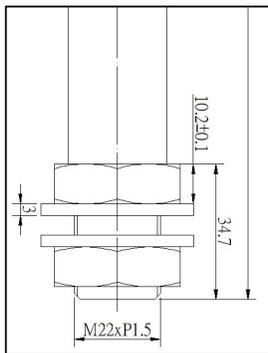
LB=Base w/ L bracket



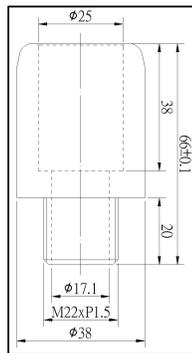
PM=Pole Mount



AL=Direct pole w/ L bracket

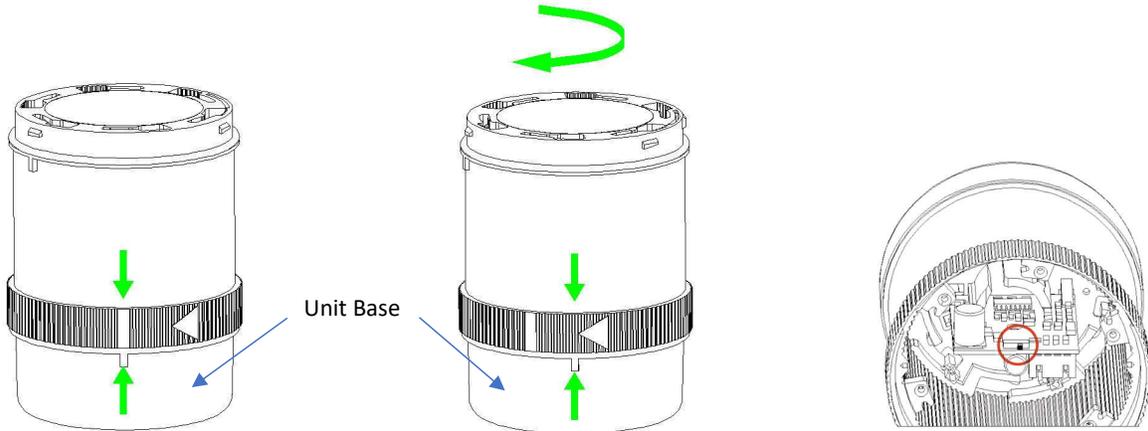


PD=Pole w/ direct mount



PA=Pole w/ adaptor

◆ Assembling and Disassembling the unit



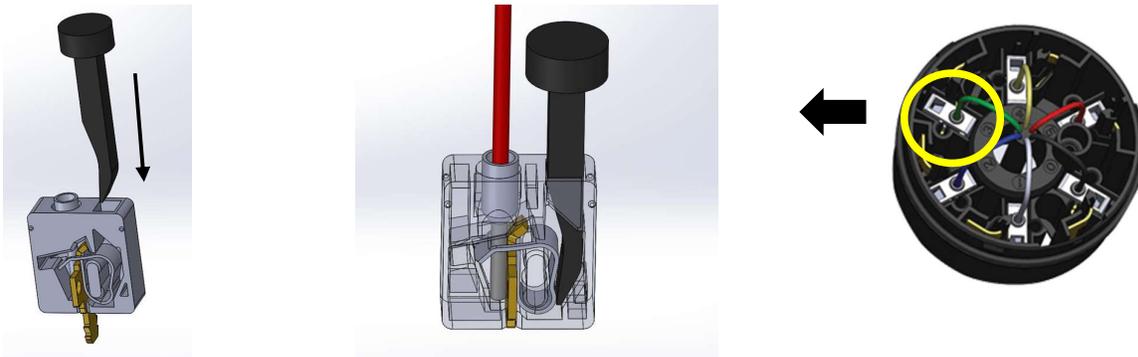
1. Find the white line mark at the mid-section of the unit.

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.

◆ Inserting wires



1. Insert pin tool into slot behind wire insertion hole. This opens clamp to insert desired wire in the front.

2. Insert wire securely. Once secure, release pin tool for clamp to engage with wire.

- ⚠ DO NOT USE excessive force when installing wires.
- ⚠ DO NOT USE non-compliant pin tools to install wires, doing so damages the unit.

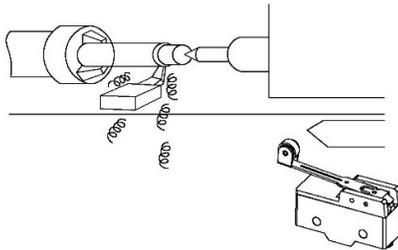
Precautions for Safe Use

- 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 (H₂S or SO₂), ammonium gas (NH₃), nitric gas (HNO₃), or chlorine gas (Cl₂), 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.

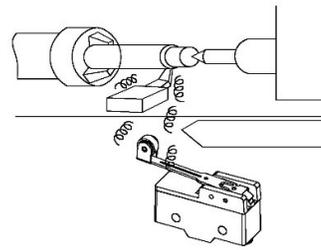
Precautions for Correct Use

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 (SiO₂) 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

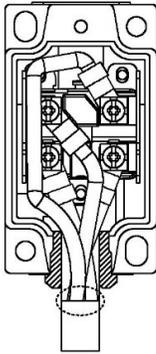
- Please view each individual product page's allowed parameters for details.
- Please follow these parameters diligently. Otherwise products may not function properly.

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.

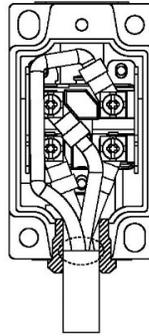
Conduit Installation

- 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.



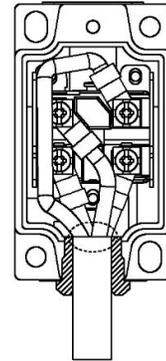
No envelopment of cable jacket in conduit. Exposed single wires.

✗ **Incorrect**



Partial/loose envelopment of cable jacket in conduit

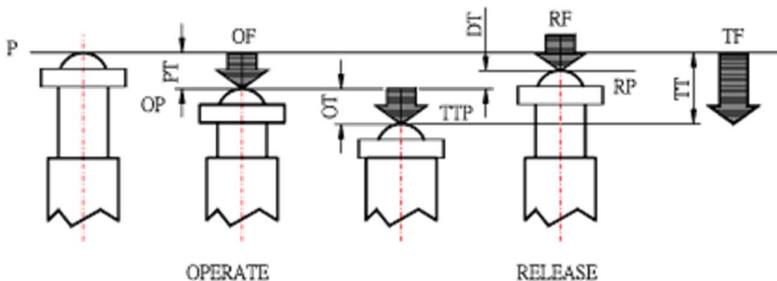
✗ **Incorrect**



Full envelopment of cable jacket in conduit.

✓ **Correct**

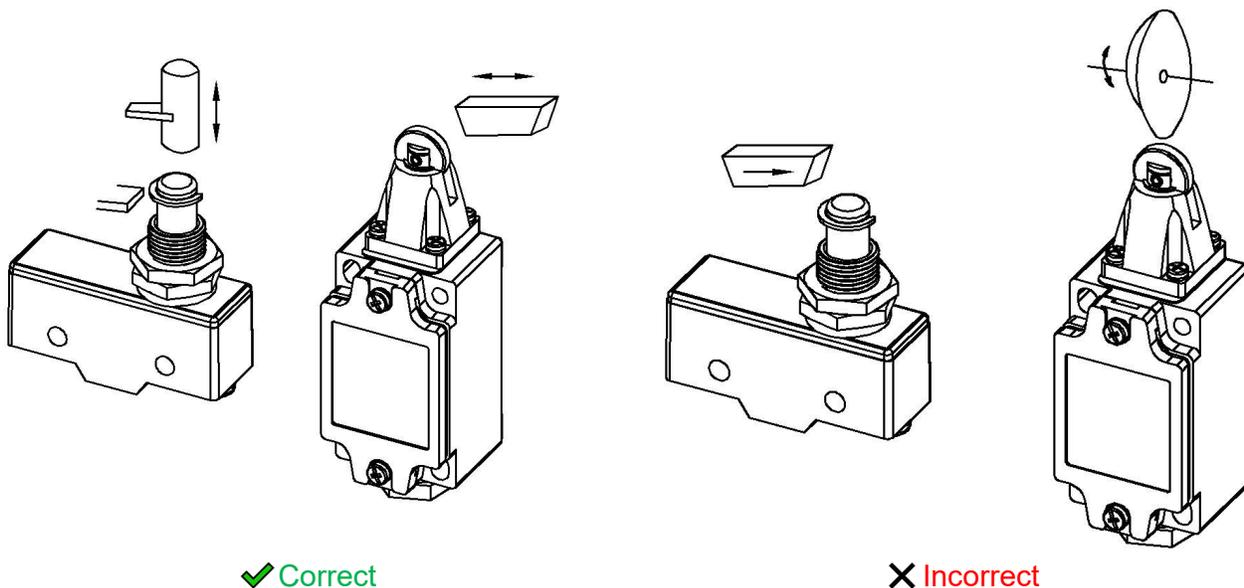
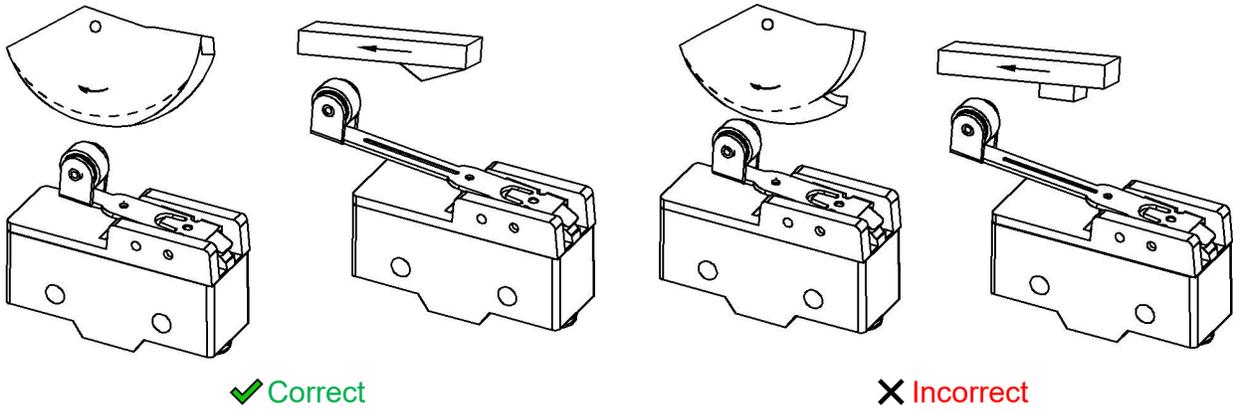
Actuating Terminology

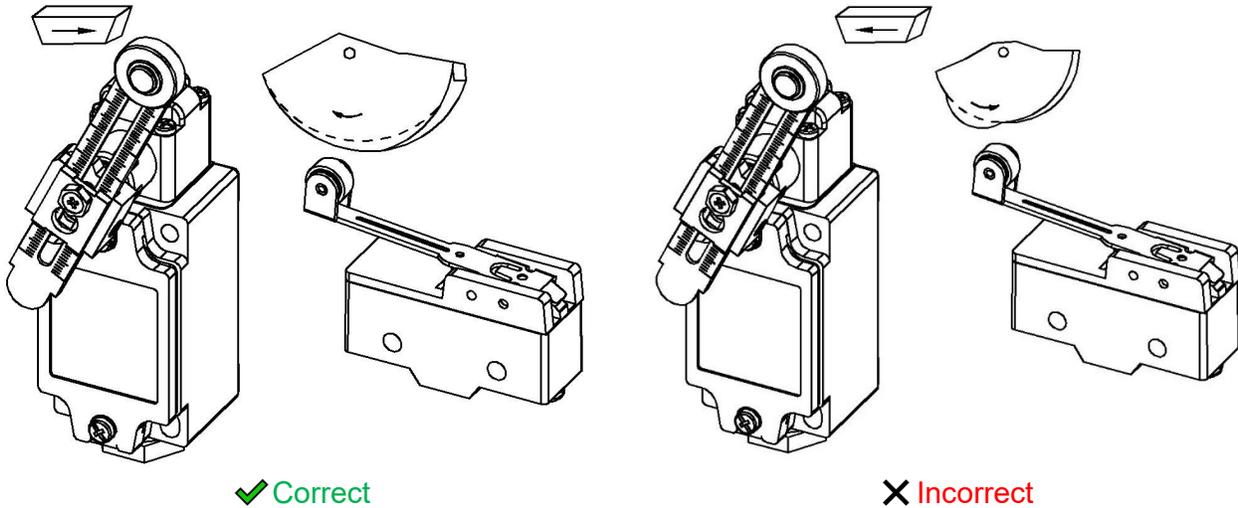


OF: Operating Force	TTP: Total Travel Position
RF: Releasing Force	PT: Pretravel
TF: Total Force	OT: Overtravel
FP: Free Position	DT: Travel Differential
OP: Operating Position	TT: Total Travel
RP: Releasing Position	

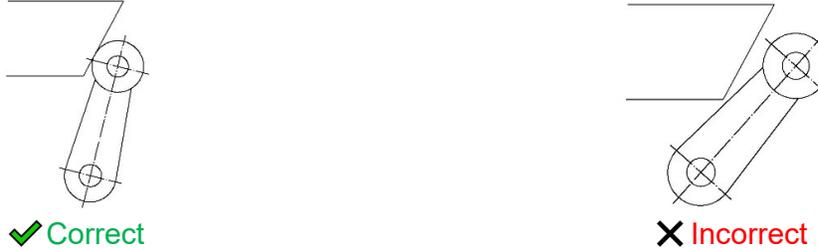
Integrating into systems – Limit Switches

- 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.

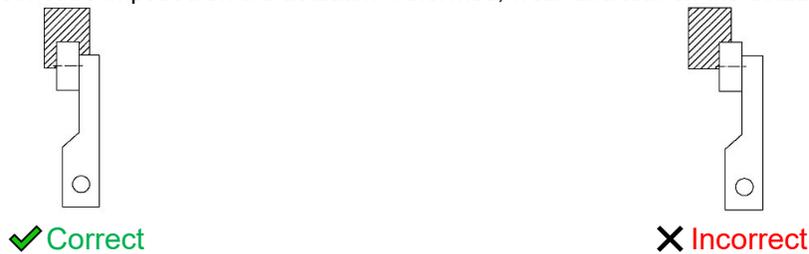




• Appropriate force must be imposed on the actuator by the cam or dog in both rotary operation and linear operation. If the dog touches the lever as shown below, the operating position will not be stable.



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



• 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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