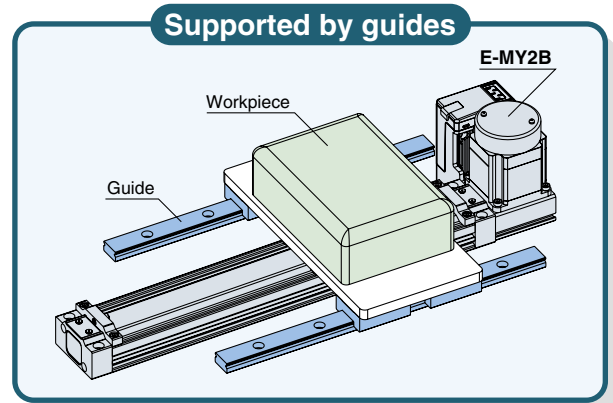
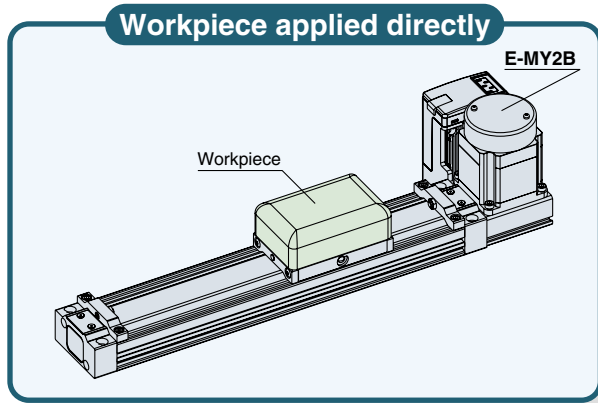


e-Rodless Actuator



Suitable for light-load transfers.
Can be combined with various guide types.



**Basic model is now available
for our program free e-rodless
actuator series!**



e-Actuator

Series E-MY2B

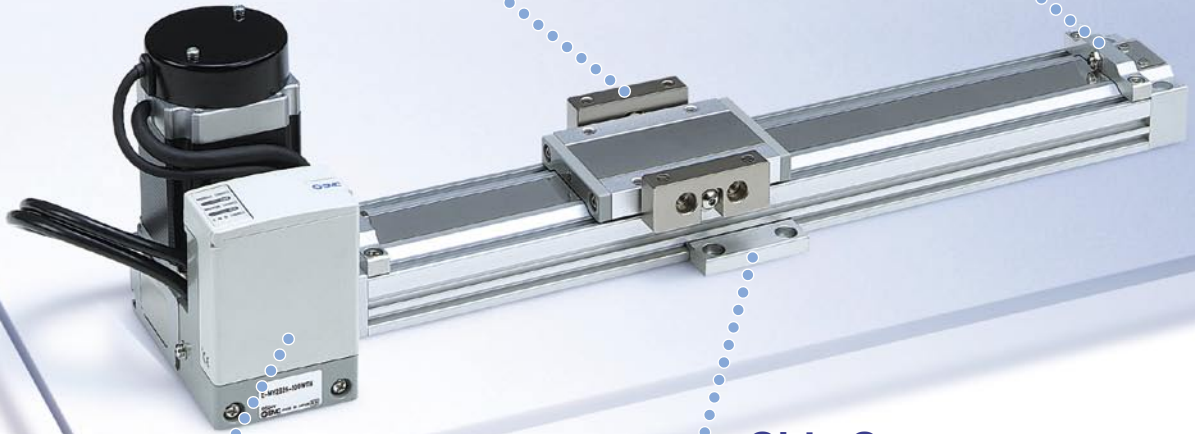

CAT.EUS100-64A-UK

Floating Bracket

Easy connection to an external guide. Two mounting directions are available.

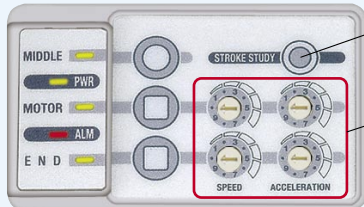


Stroke Adjusting Unit



Controller No Programming Required

Realised similar operational ability as a pneumatic cylinder by using simple commands.



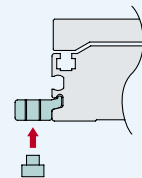
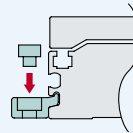
Automatic operation
Operate by using the same signals as those for a solenoid valve (PLC).

Stroke study

Speed / Acceleration settings

Side Support

The cylinder tube can be fixed from an upward or downward direction.



Speed / Acceleration Specifications

Speed Variation

(mm/s)

		Low speed	Medium speed	Standard speed
Main adjustment range		10 to 100	50 to 300	100 to 1000
Switch turned ON.	1	10	50	100
	2	20	75	200
	3	30	100	300
	4	40	125	400
	5	50	150	500
	6	75	200	600
	7	100	250	700
	8	300	300	800
	9	500	500	900
	10	1000	1000	1000

Load Specification and Acceleration Variation

(kg)

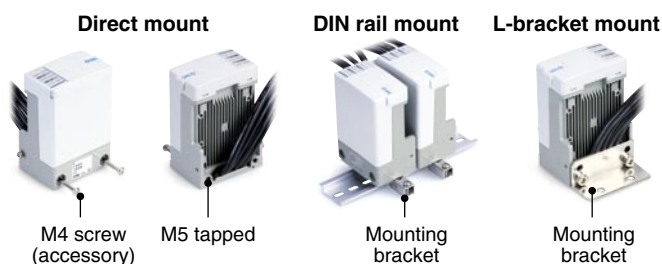
Payload		Heavy load	Standard load	Medium load	Light load
Nominal size	16	6 (10)	4 (5)	2.5 (2.5)	1.25 (1.25)
	25	11 (20)	8 (10)	4 (5)	2.5 (2.5)
Acceleration					
Switch turned ON.	1	0.25	0.49	0.98	1.96
	2	0.49	0.74	1.47	3.94
	3	0.74	0.98	1.96	3.92
	4	0.98	1.23	2.45	4.90
	5	1.23	1.47	2.94	5.88
	6	1.47	1.96	3.92	7.84
	7	1.72	2.45	4.90	9.80
	8	1.96	2.94	5.88	11.76
	9	2.21	3.92	7.84	15.68
	10	2.45	4.90	9.80	19.60

(): Using an external guide.

Remote Control Type

Easy to reset after installation as a result of the remote controller.
 Suited for installing where it is difficult to reach because the controller can be operated in an easily accessible location.

- Cable length is selectable from 1 m, 3 m and 5 m.
- Improvement in the maximum operating temperature from 40°C to 50°C (Actuator unit only)
- Mounting method can be selected among 3 types.



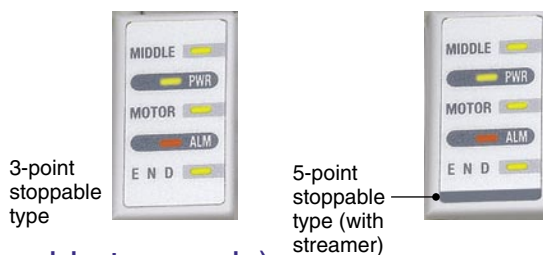
Intermediate Stop

3-point stoppable type (2-points for both ends and 1-point for an intermediate stop)

One intermediate stop is possible beside the stops at both ends.

5-point stoppable type (2-points for both ends and 3-points for an intermediate stop)

5-point positioning is possible at any preferred location.



Stop Functions by External Inputs (5-point stoppable type only)

Stop command by an external input such as a PLC or PC makes it possible to decelerate or stop a slider (as programmed).

Application example 1

Quick start-up is possible after stopping.

Stop method	Stop by external inputs	Emergency stop
Stopping acceleration (deceleration)	Value of the switch for setting acceleration	4.9 m/s ²
Initial motion speed after stopping	Value of the switch for setting speed	50 mm/s

* Settings for emergency acceleration and speed cannot be changed.

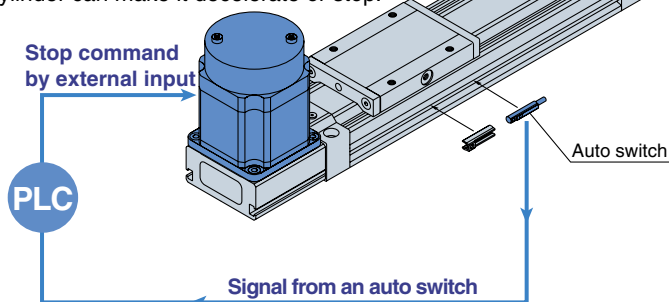
Repeatability of stop functions by external stop

Travelling speed (mm/s)	100	500	1000
Repeatability (mm)	±0.5	±1.0	±2.0

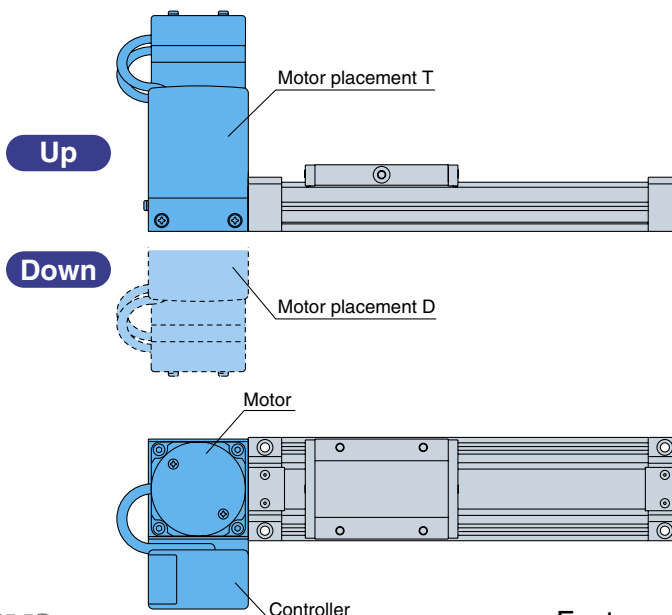
Note) The valves shown are to be used as a selection guide and are not guaranteed.

Application example 2

Signal from auto switches on the e-rodless cylinder can make it decelerate or stop.



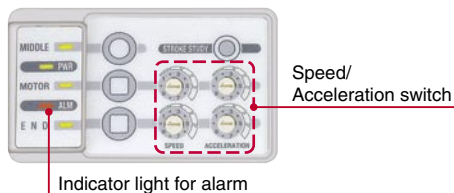
Motor Placement: Mounting position of the motor is user selectable and can either be on the top or bottom of the actuator.



Locking Functions

Settings for speed/acceleration can be locked.
 If the speed/acceleration switch is changed in the middle of locking, the alarm light will blink. However, the motion will continue in accordance with the preprogrammed settings.

* Settings for locking a stroke and intermediate position are not applicable.



e-Rodless Actuators Series

Basic Type

Series **E-MY2B**



Light-load transfer; combining with another guide; stroke accuracy is required.

Cam Follower Guide Type

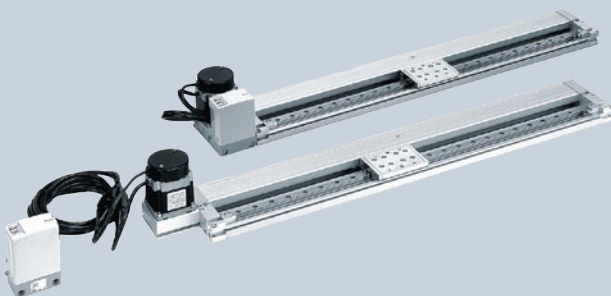
Series **E-MY2C**



Workpiece direct mounting; table and stroke accuracy are required.

Linear Guide Single Axis Type

Series **E-MY2H**



Workpiece direct mounting without restriction of mounting direction; table and stroke accuracy are required.

Linear Guide Double Axis Type

Series **E-MY2HT**



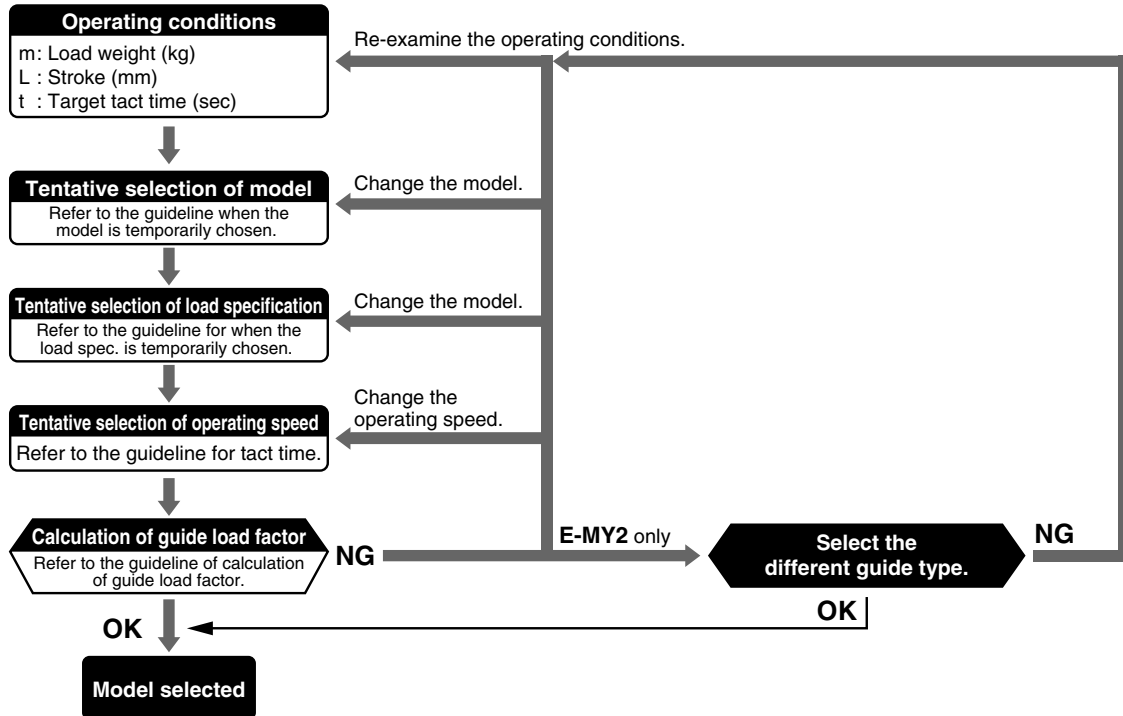
Workpiece direct mounting without restriction of mounting direction; table and stroke accuracy are required especially when a heavy load or moment is applied.

Series E-MY2B

Model Selection 1

For e-rodless actuator E-MY2C/H/HT series, refer to CAT.ES100-51 catalogue.

Selection Flow Chart

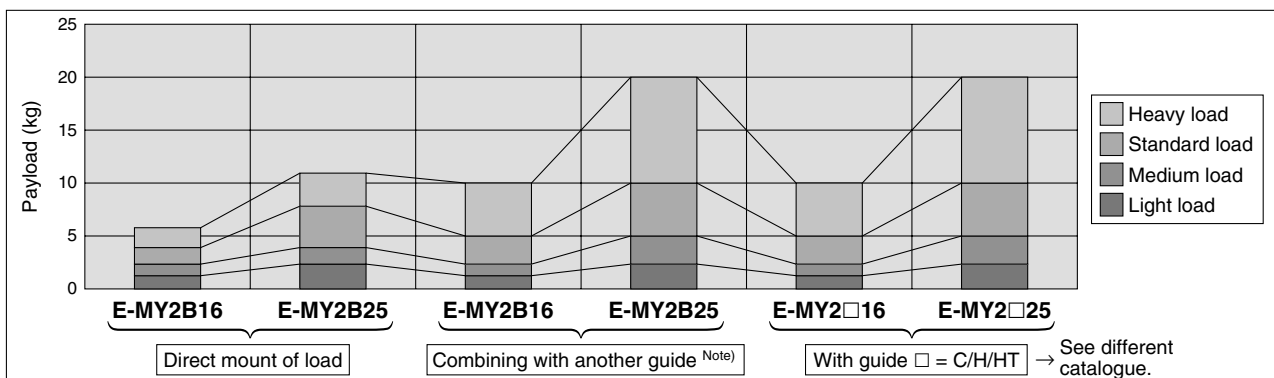


Guideline for Tentative Model Selection

Model	Type	Guideline for tentative model selection						Note
		Stroke accuracy	Use of external guide	Direct loaded (Horizontal)	Table ^{Note)} accuracy	Direct mount (Wall mounting)	Load resistance / Moment resistance	
E-MY2B	Basic type	◎	◎	○	△	△	△	Light-load transfer; combining with another guide; stroke accuracy is required.
E-MY2C	Cam follower guide type	◎	×	◎	◎	○	○	Workpiece direct mounting; table and stroke accuracy are required.
E-MY2H	Linear guide single axis type	◎	×	◎	◎	◎	○	Workpiece direct mounting without restriction of mounting direction; table and stroke accuracy are required.
E-MY2HT	Linear guide double axis type	◎	×	◎	◎	◎	◎	Workpiece direct mounting without restriction of mounting direction; table and stroke accuracy are required especially when a heavy load or moment is applied.

◎ Most suitable ○ Suitable △ Usable × Not recommended
 Note) The table accuracy means the amount of table deflection when a moment is applied.

Guideline for when the load spec. is temporarily chosen.

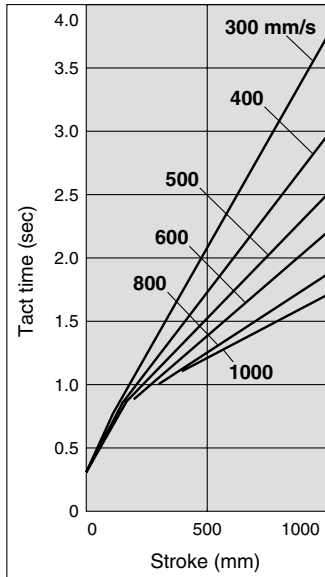


Note) Friction coefficient for combining with another guide is 0.1 or less.

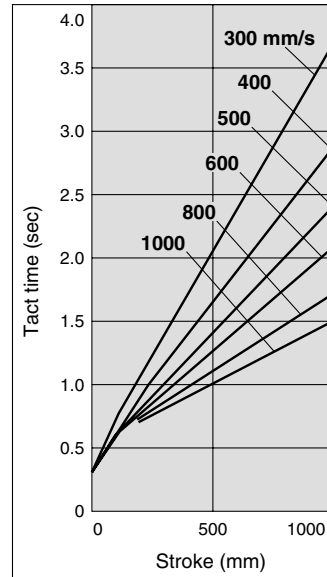
Model Selection

Guide Tact Time

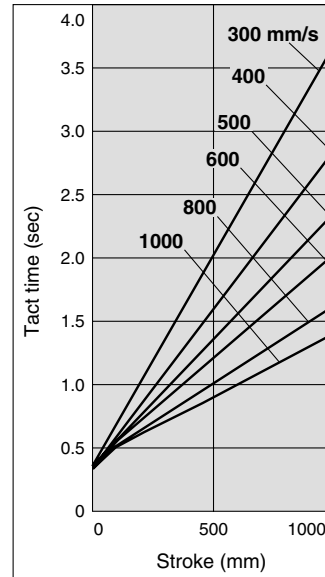
Heavy load specifications (2.45 mm/s²)



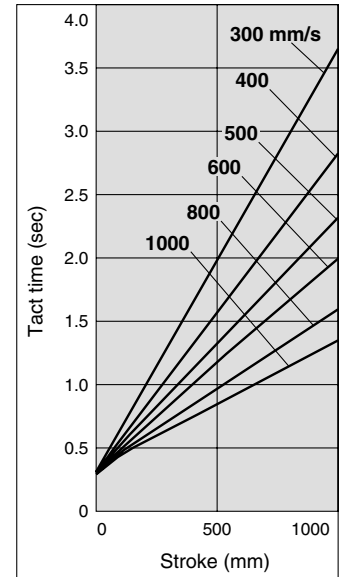
Standard load specifications (4.90 mm/s²)



Medium load specifications (9.80 mm/s²)



Light load specifications (19.60 mm/s²)



Note) Tact time may vary depending on the load weight or sliding resistance and thus value is not guaranteed.

Calculation of Guide Load Factor

1. Maximum allowable load (1), static moment (2), and dynamic moment (at the time of acceleration/deceleration) (3) must be examined for the selection calculations.

* Calculate m max for (1) from the maximum load weight (m₁, m₂, m₃) and Mmax for (2) and (3) from the maximum allowable moment graph (M₁, M₂, M₃).

$$\text{Sum of guide load factors } \Sigma\alpha = \frac{\text{Load weight [m]}}{\text{Maximum load weight [m max]}} + \frac{\text{Static moment [M] }^{\text{Note 1}}}{\text{Allowable static moment [Mmax]}} + \frac{\text{Dynamic moment [ME] }^{\text{Note 2}}}{\text{Allowable dynamic moment [MEmax]}} \leq 1$$

Note 1) Moment caused by the load, etc., with cylinder in resting condition.

Note 2) Moment caused by the impact load equivalent at the stroke end (at the time of collision to stopper).

Note 3) Depending on the shape of the workpiece, multiple moments may occur. When this happens, the sum of the load factors ($\Sigma\alpha$) is the total of all such moments.

2. Reference formulas [Dynamic moment at impact]

Use the following formulas to calculate dynamic moment when taking stopper impact into consideration.

m : Load weight (kg)

F : Load (N)

F_E : Load at acceleration and deceleration (N)

a : Set acceleration (m/s²)

U : Set speed (mm/s)

M : Static moment (N·m)

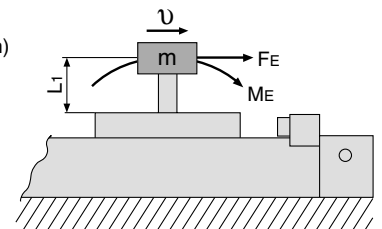
F_E : m · a

$$ME = \frac{1}{3} \cdot F_E \cdot L_1 \text{ (N·m)} \text{ }^{\text{Note 4}}$$

L₁ : Distance to the load's centre of gravity (m)

ME: Dynamic moment (N·m)

g : Gravitational acceleration (9.8 m/s²)



Note 4) Average load coefficient (= $\frac{1}{3}$):

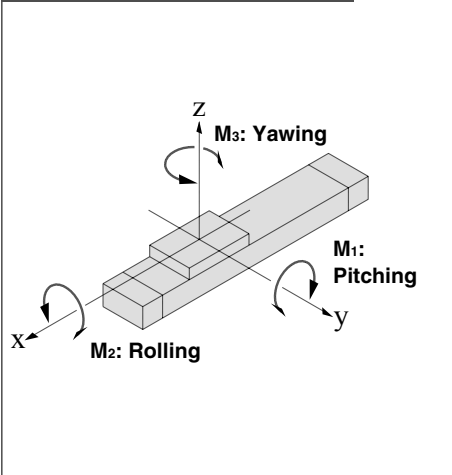
This coefficient is for averaging the maximum load moment at the time of stopper impact according to service life calculations.

3. Refer to pages 4 and 5 for detailed model selection procedures.

Types of Load Weights and Moments Applied to Rodless Cylinders

Multiple moments may be generated depending on the mounting orientation, load, and position of the centre of gravity.

Coordinates and moments



Load weight and static moment

Horizontal mounting

Ceiling mounting

Wall mounting

Mounting orientation	Horizontal mounting	Ceiling mounting	Wall mounting
Load weight (m)	m_1	m_2	m_3
Static moment			
M_1	$m_1 \times g \times X$	$m_2 \times g \times X$	—
M_2	$m_1 \times g \times Y$	$m_2 \times g \times Y$	$m_3 \times g \times Z$
M_3	—	—	$m_3 \times g \times X$

g: Gravitational acceleration

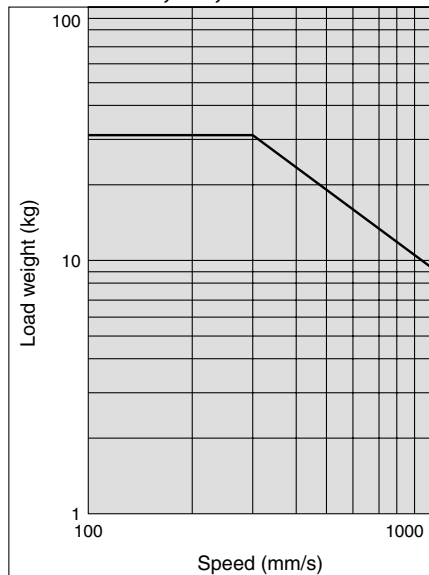
Dynamic moment

g: Gravitational acceleration
va: Average speed
δ: Dumper coefficient

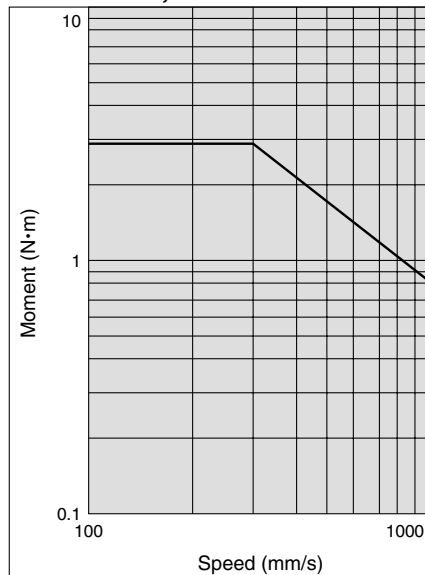
Mounting orientation	Horizontal mounting	Ceiling mounting	Wall mounting
Dynamic load (F_E)	$m_n \times a$		
Dynamic moment			
M_{1E}	$\frac{1}{3} \times F_E \times Z$		
M_{2E}	Dynamic moment M_{2E} does not occur.		
M_{3E}	$\frac{1}{3} \times F_E \times Y$		

Note) Regardless of the mounting orientation, dynamic moment is calculated with the formulas above.

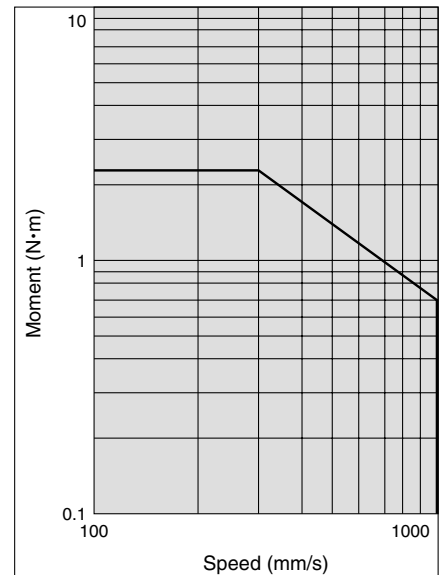
E-MY2B/ m_1, m_2, m_3



E-MY2B/ M_1, M_3



E-MY2B/ M_2



Model Selection 2

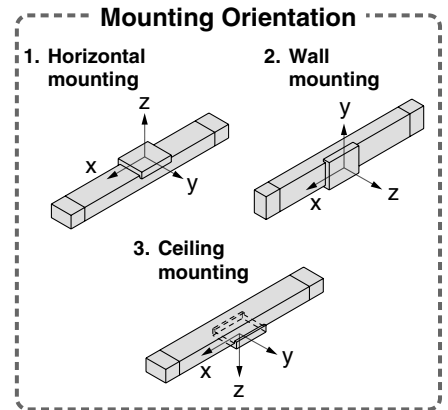
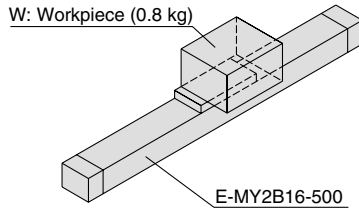
The following are steps for selecting the E-MY2B series best suited for your application.

Calculation of Guide Load Factor

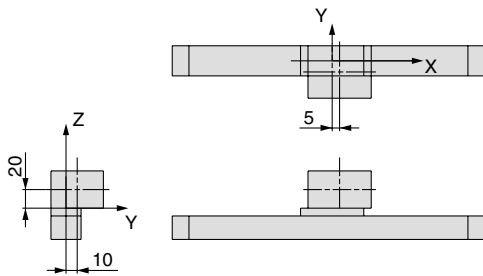
1 Operating Conditions

Operating cylinder E-MY2B16-500
 Set speed v 600 mm/s Note)
 Set acceleration degree a 4.9 m/s² Note)
 Mounting orientation Horizontal mounting

Note) Regarding the speed and acceleration setting, select from the speed/acceleration chart on page 7.



2 Load Blocking



Weight and Centre of Gravity for Workpiece

Work-piece no.	Weight (m)	Centre of gravity (m)		
		X-axis	Y-axis	Z-axis
W	4 kg	5 mm	10 mm	20 mm

3 Calculation of Load Factor for Static Load

m_1 : Weight

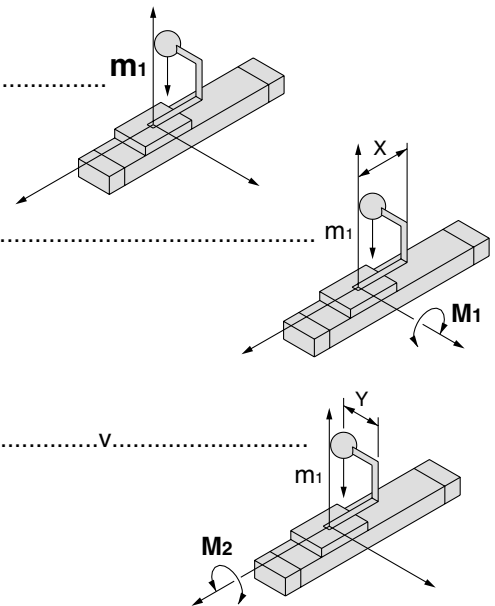
m_1 max (from 1 of graph M_1) = 15.5 (kg)
 Load factor $\alpha_1 = m_1 / m_1 \text{ max} = 4 / 15.5 = 0.26$

M_1 : Moment

M_1 max (from 2 of graph M_1) = 1.45 (N·m)
 $M_1 = m_1 \times g \times X = 4 \times 9.8 \times 5 \times 10^{-3} = 0.20$ (N·m)
 Load factor $\alpha_2 = M_1 / M_1 \text{ max} = 0.20 / 1.45 = 0.14$

M_2 : Moment

M_2 max (from 3 of graph M_2) = 1.15 (N·m)
 $M_2 = m_1 \times g \times Y = 4 \times 9.8 \times 10 \times 10^{-3} = 0.39$ (N·m)
 Load factor $\alpha_3 = M_2 / M_2 \text{ max} = 0.39 / 1.15 = 0.34$



Calculation of Guide Load Factor

4 Calculation of Load Factor for Dynamic Moment

Load F_E at acceleration and deceleration

$$F_E = m \times a = 4 \times 4.9 = 19.6 \text{ (N)}$$

M_{1E} : Moment

$$M_{1E \text{ max}} \text{ (From 4 of graph } M_1 \text{ at } 600 \text{ mm/s)} = 1.45 \text{ (N}\cdot\text{m)} \dots\dots\dots$$

$$M_{1E} = \frac{1}{3} \times F_E \times Z = \frac{1}{3} \times 19.6 \times 20 \times 10^{-3} = 0.13 \text{ (N}\cdot\text{m)}$$

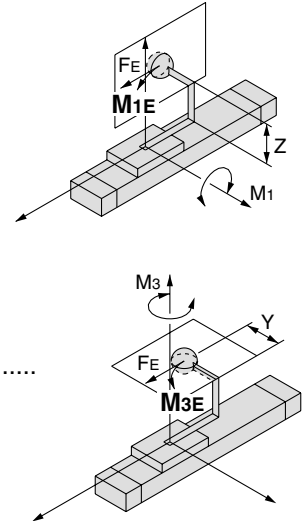
$$\text{Load factor } \alpha_4 = M_{1E} / M_{1E \text{ max}} = 0.13 / 1.45 = \mathbf{0.09}$$

M_{3E} : Moment

$$M_{3E \text{ max}} \text{ (From 5 of graph } M_3 \text{ at } 600 \text{ mm/s)} = 1.45 \text{ (N}\cdot\text{m)} \dots\dots\dots$$

$$M_{3E} = \frac{1}{3} \times F_E \times Y = \frac{1}{3} \times 19.6 \times 10 \times 10^{-3} = 0.07 \text{ (N}\cdot\text{m)}$$

$$\text{Load factor } \alpha_5 = M_{3E} / M_{3E \text{ max}} = 0.07 / 1.45 = \mathbf{0.05}$$



5 Sum and Examination of Guide Load Factors

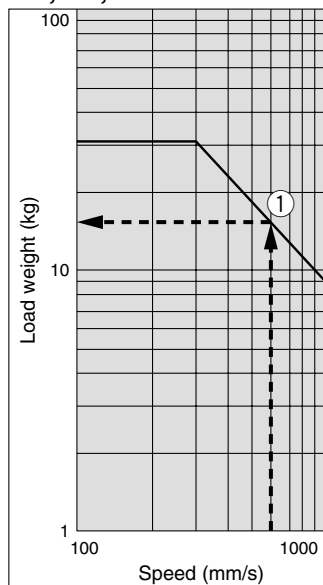
$$\Sigma\alpha = \alpha_1 + \alpha_2 + \alpha_3 + \alpha_4 + \alpha_5 = 0.26 + 0.14 + 0.34 + 0.09 + 0.05 = 0.88 \leq 1$$

The above calculation is within the allowable value and therefore the selected model can be used.

In an actual calculation, when sum of guide load factors $\Sigma\alpha$ in the formula above is more than 1, consider decreasing the speed or changing the product series.

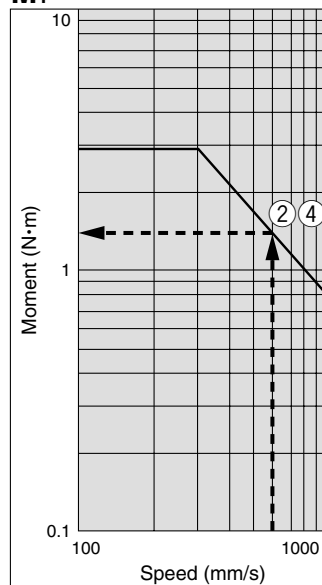
Load Weight

m_1, m_2, m_3

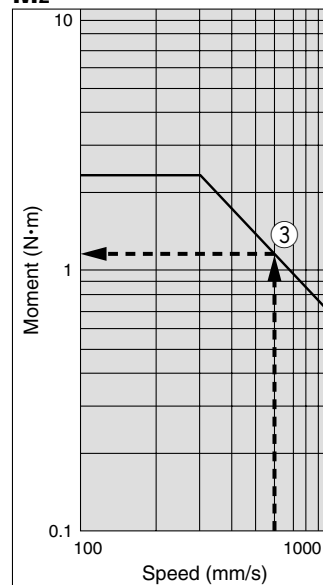


Allowable Moment

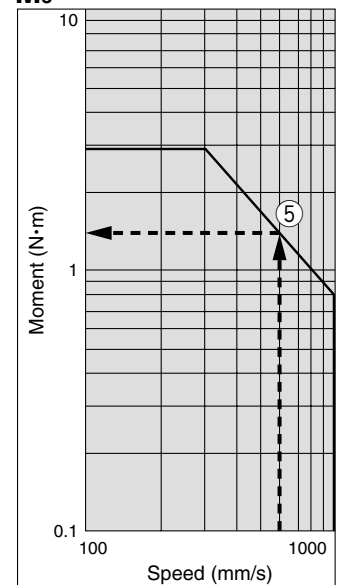
M_1



M_2



M_3



e-Rodless Actuator

Series E-MY2B



Basic Type / Nominal Size: 16, 25

How to Order

Integrated control type E-MY2B 16 [] [] - 100 W T N [] - M9B [] []

Remote control type E-MY2B 16 [] [] - 100 W T N [] M - M9B [] - Q - []

Nominal size

16
25

Speed specifications* [mm/s]

L	Low	10 to 1000
M	Medium	50 to 1000
-	Standard	100 to 1000

* Standard type is not available for high speed.

Stroke
Refer to "Standard Stroke" table.

Stroke adjusting unit

-	None
M	Motor side only
E	End side only
W	Both sides

Motor placement

T	On the top, Standard
D	On the bottom, Standard

Output type

N	NPN
P	PNP

Number of stoppable positioning points

-	3-point stoppable type
A	5-point stoppable type

Number of auto switches

-	2 pcs.
S	1 pc.
n	n

Auto switch

-	Without auto switch
---	---------------------

Cable length

M	1 m
L	3 m
Z	5 m

Load specifications* Work load [kg]

Symbol	Load specifications	Nominal size	16	25
D	Light load		1.25	2.5
E	Medium load		2.5	5
-	Standard load		5	10
Q	Heavy load		10	20

* For details, refer to "Switch and Speed," "Switch and Acceleration" on the next page.

Stroke adjusting unit diagram: Shows actuator with T (top) and D (bottom) markings. Arrow mark shows handling side on controller.

Motor placement diagram: Shows actuator with Motor and Controller labels.

Made to Order
(Refer to page 7.)

CE compliant

Nil	—
Q	CE marked

* There is no need to add a "Q" suffix for the integrated control type, as the CE compliant product is provided as standard.
* Noise filter is provided but not attached to the "Q" spec.

Auto switch

* Refer to the table below for auto switch model numbers.
* Auto switch is provided but not mounted at the time of shipment.

Cable length

M	1 m
L	3 m
Z	5 m

* The remote control type can be selected by adding the above symbols.

Standard Stroke

Nominal size	Standard stroke (mm)
16, 25	100, 200, 300, 400, 500, 600, 700, 800, 900, 1000

* Strokes are manufacturable in increments of 1 mm, up to 100 to 1000 strokes. (Strokes for less than 100 are not available.)
* When exceeding a 1000 strokes, refer to "Made to Order" on page 22.

Applicable Auto Switches / For detailed auto switch specifications, refer to page 16 through to 21.

Type	Special function	Electrical entry	Indicator light	Wiring (Output)	Load voltage		Auto switch model		Lead wire length (m)*				Pre-wired connector	Applicable load		
					DC	AC	Electrical entry direction		0.5 (-)	1 (M)	3 (L)	5 (Z)				
							Perpendicular	In-line								
Reed switch	—	Grommet	Yes	3-wire (NPN equiv.)	—	5 V	—	A96V	A96	●	—	●	—	—	IC circuit	
				2-wire	24 V	12 V	100 V	A93V	A93	●	—	●	—	—	—	Relay, PLC
					5 V, 12 V	100 V or less	A90V	A90	●	—	●	—	—	—	—	IC circuit
Solid state switch	Diagnostic indication (2-colour display)	Grommet	Yes	3-wire (NPN)	24 V	5 V	—	M9NV	M9N	●	—	●	○	○	IC circuit	
				3-wire (PNP)		12 V		M9PV	M9P	●	—	●	○	○	—	
				2-wire		12 V		M9BV	M9B	●	—	●	○	○	—	
				3-wire (NPN)		5 V		M9NVV	M9NW	●	●	●	○	○	IC circuit	
				3-wire (PNP)		12 V		M9PWV	M9PW	●	●	●	○	○	—	
				2-wire		12 V		M9BVV	M9BW	●	●	●	○	○	—	

* Lead wire length symbols: 0.5 m - (Example) M9N
 1 m M M9NWM
 3 m L M9NL
 5 m Z M9NZ

* Solid state switches marked "○" are produced upon receipt of order.
 * For details of auto switches with pre-wired connector, refer to SMC's "Best Pneumatics" catalogue.

Basic Specifications



Made to Order
(For details, refer to page 22.)

Symbol	Specifications
X168	Helical insert thread specifications

Weight

Actuator Unit Unit: kg

Nominal size	Basic weight	Additional weight per 50 mm stroke	Stroke adjusting unit weight (per unit)
16	1.61	0.09	0.02
25	2.04	0.09	0.02

Remote Controller Unit Unit: kg

Controller body	Cable length		
	1 m	3 m	5 m
0.24	0.09	0.24	0.39

How to calculate/Example: E-MY2B25-300WTNM-Q

Actuator unit

Basic weight 2.04 kg
 Additional weight 0.09/50 st
 Actuator stroke 300 st
 Unit weight 0.02 g
 $2.04 + 0.09 \times 300 \div 50 + 0.02 \times 2 = 2.62$ kg

Remote controller unit

Controller body 0.24 kg
 Cable length (3 m) 0.24 kg
 $0.24 + 0.24 = 0.48$ kg

* For an integrated control type, add 0.24 kg (controller body) to the basic weight.

Option / Mounting Bracket

Description	Part no.
L-bracket	MYE-LB
DIN rail bracket	MYE-DB

Model		E-MY2B			
Transfer speed set range	Low	10 to 1000 mm/s			
	Medium	50 to 1000 mm/s			
	Standard	100 to 1000 mm/s			
Transfer speed acceleration set range	Heavy load	0.25 to 2.45 m/s ²	0.49 to 4.90 m/s ²	0.98 to 9.80 m/s ²	1.96 to 19.6 m/s ²
	Standard load				
	Medium load				
	Light load				
Maximum load weight	Note 1), Note 2) Nominal size: 16	6 (10) kg	4 (5) kg	2.5 (2.5) kg	1.25 (1.25) kg
	Nominal size: 25	11 (20) kg	8 (10) kg	4 (5) kg	2.5 (2.5) kg
Acceleration and deceleration method		Trapezoidal drive			
Moving direction		Horizontal direction			
Repeated positioning stopping precision	3-point stoppable type	Both ends (mechanical stoppers), 1 intermediate position			
	5-point stoppable type	Both ends (mechanical stoppers), 3 intermediate positions			
Repeated positioning stopping precision	Both ends	± 0.01 mm			
	Intermediate stopping position	± 0.1 mm			
Allowable external resistance	Note 3) Nominal size: 16	10 N			
	Nominal size: 25	20 N			
Intermediate stopping point positioning method		Direct teaching, JOG teaching			
Positioning setting spot		Controller body			
Display		LED for power supply, LED for alarming, LED for positioning completion			
Input signal		Actuation command signal, Emergency stop input signal			
Output signal		Positioning completion signal, Emergency detection signal, Ready signal			

Note 1) The maximum load weight shows the motor ability. Please consider it together with the guide load factor when selecting a model.

Note 2) (): when combined with another guide and the friction coefficient is 0.1 or less.

Note 3) The resistance value of the attached equipment should be within the allowable external resistance value.

Electrical Specifications

Power supply for driving	Power supply voltage	24 VDC ± 10%
	Current consumption	Rated current 2.5 A (Max. 5 A: 2 s or less) at 24 VDC
Power supply for signals	Power supply voltage	24 VDC ± 10%
	Current consumption	30 mA at 24 VDC and Output load capacity
Input signal capacity		6 mA or less at 24 VDC/1 circuit (Photo coupler input)
Output load capacity		30 VDC or less, 20 mA or less/1 circuit (Open drain output)
Emergency detection items		Emergency stop, Output deviation, Power supply deviation, Driving deviation, Temperature deviation, Stroke deviation, Motor deviation, Controller deviation

Environmental Specifications

Operating temperature range	Integrated control type	5 to 40°C
	Remote control type	5 to 50°C
	Actuator unit Remote controller unit	5 to 40°C
Operating humidity range		35 to 85%RH (with no condensation)
Storage temperature range		-10 to 60°C (with no condensation and freezing)
Storage humidity range		35 to 85%RH (no condensation)
Withstand voltage		Between all of external terminals and the case: 500 VAC for 1 minute
Insulation resistance		Between all of external terminals and the case: 50 MΩ (500 VDC)
Noise resistance		1000 Vp-p Pulse width 1 μs, Rise time 1 ns
CE marked	Integrated control type	Standard
	Remote control type	Available with -Q suffixed products only

Speed / Acceleration

Switch no.	Switch and Speed ^{Note 1)} [mm/s]		
	Low speed	Medium speed	Standard speed
1	10	50	100
2	20	75	200
3	30	100	300
4	40	125	400
5	50	150	500
6	75	200	600
7	100	250	700
8	300	300	800
9	500	500	900
10	1000	1000	1000

Switch no.	Switch and Acceleration ^{Note 2)} [m/s ²]			
	Heavy load	Standard load	Medium load	Light load
1	0.25	0.49	0.98	1.96
2	0.49	0.74	1.47	2.94
3	0.74	0.98	1.96	3.92
4	0.98	1.23	2.45	4.90
5	1.23	1.47	2.94	5.88
6	1.47	1.96	3.92	7.84
7	1.72	2.45	4.90	9.80
8	1.96	2.94	5.88	11.76
9	2.21	3.92	7.84	15.68
10	2.45	4.90	9.80	19.60

Note 1) The factory default setting for the switch is No.1.

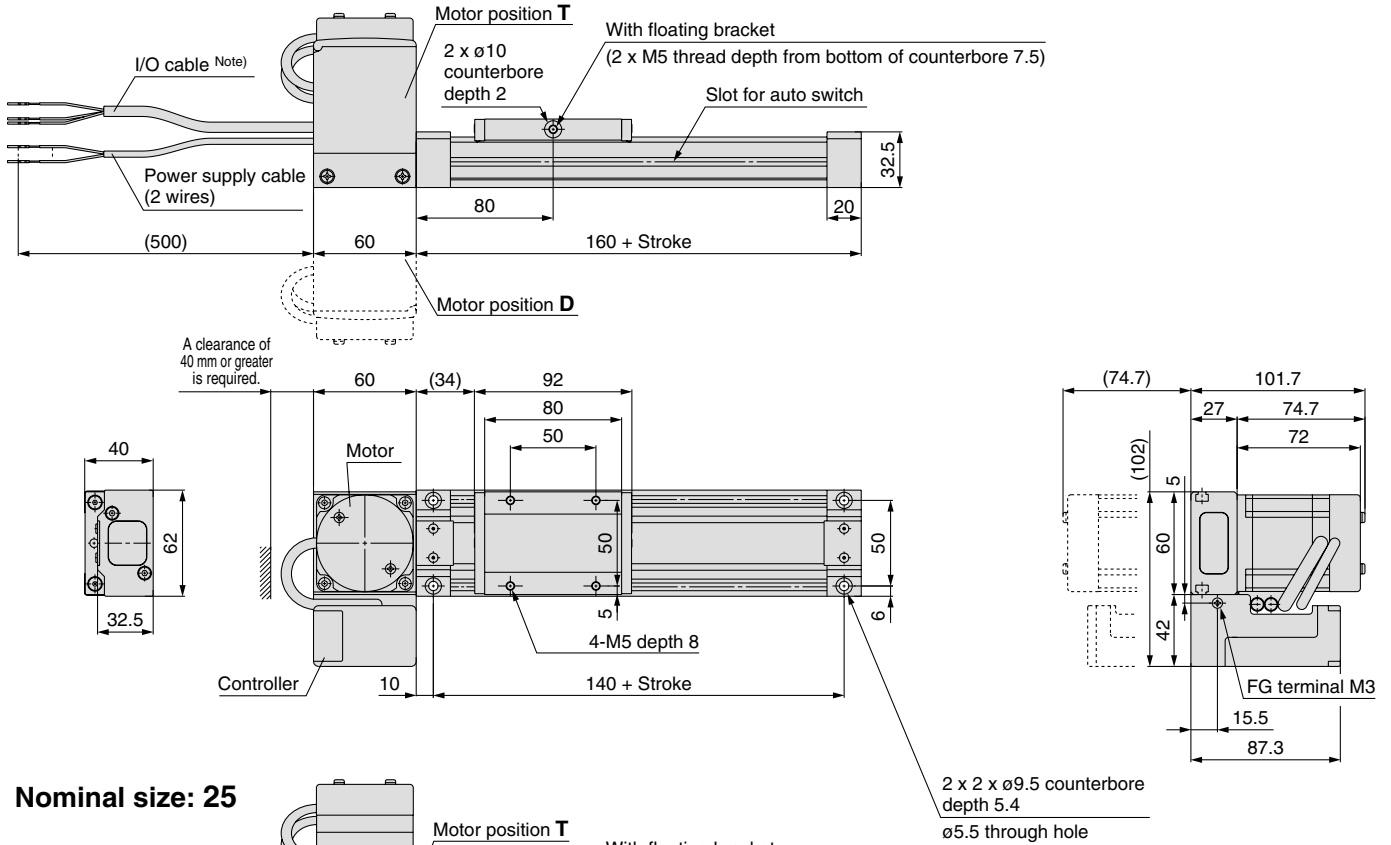
Note 2) The factory default setting for the switch is No.1.

Series E-MY2B

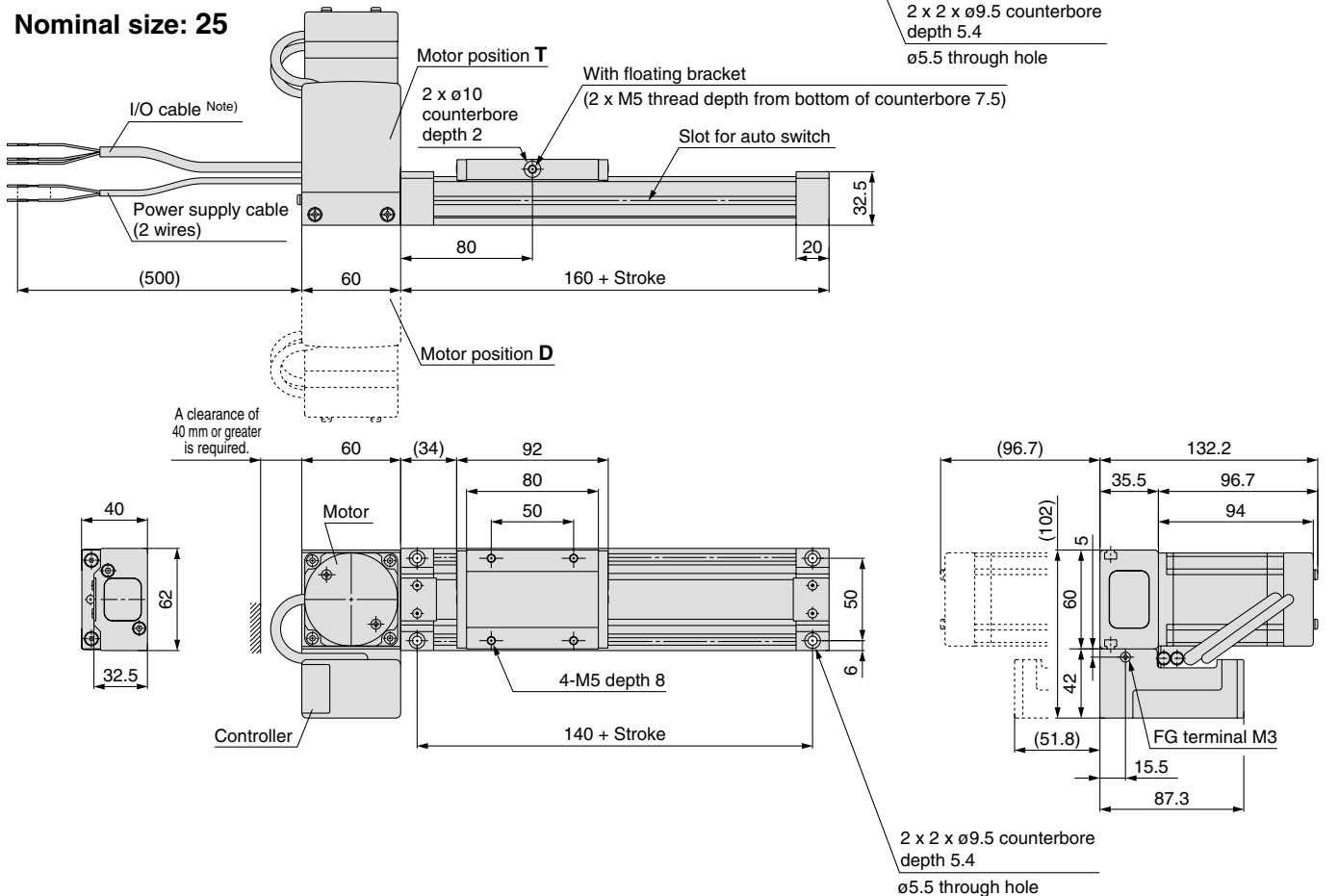
Dimensions: Integrated Control Type

E-MY2B **Nominal size** — **Stroke**

Nominal size: 16



Nominal size: 25

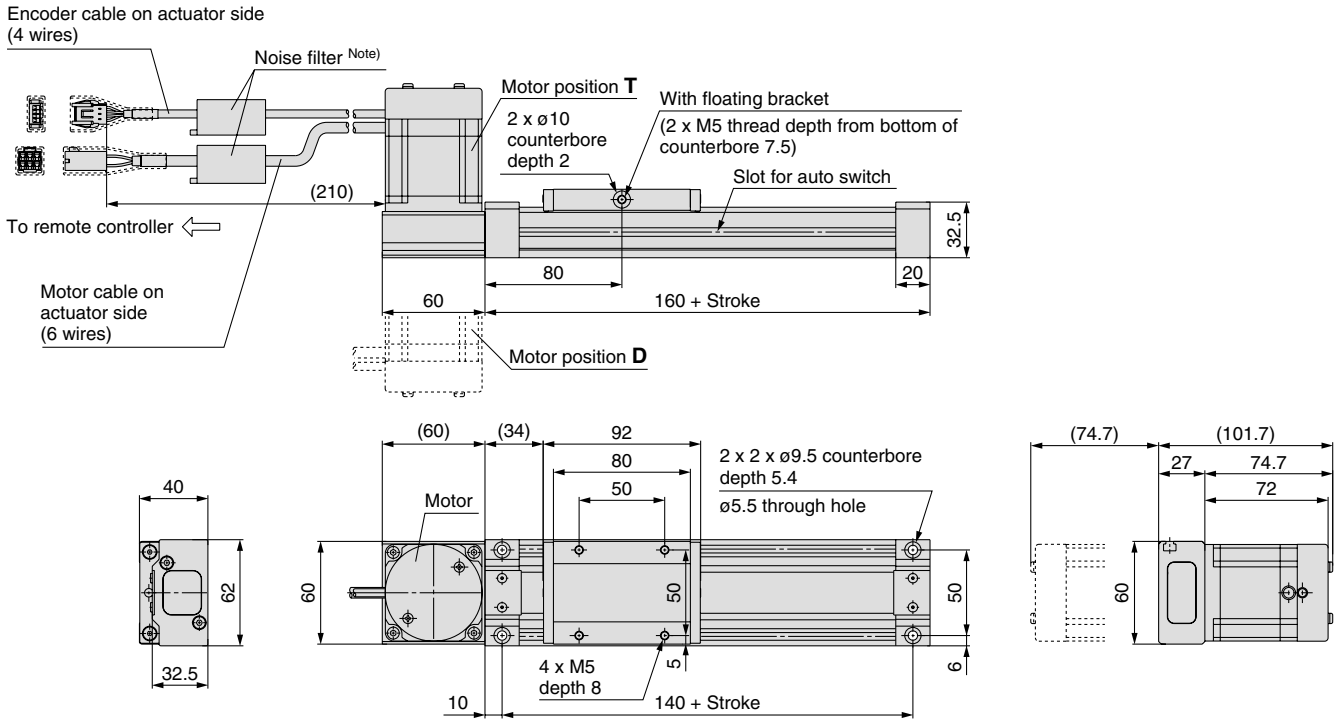


Note) For the 3-point stoppable type, the I/O cable is a 9-core type and for the 5-point stoppable type, a 11-core type is used.

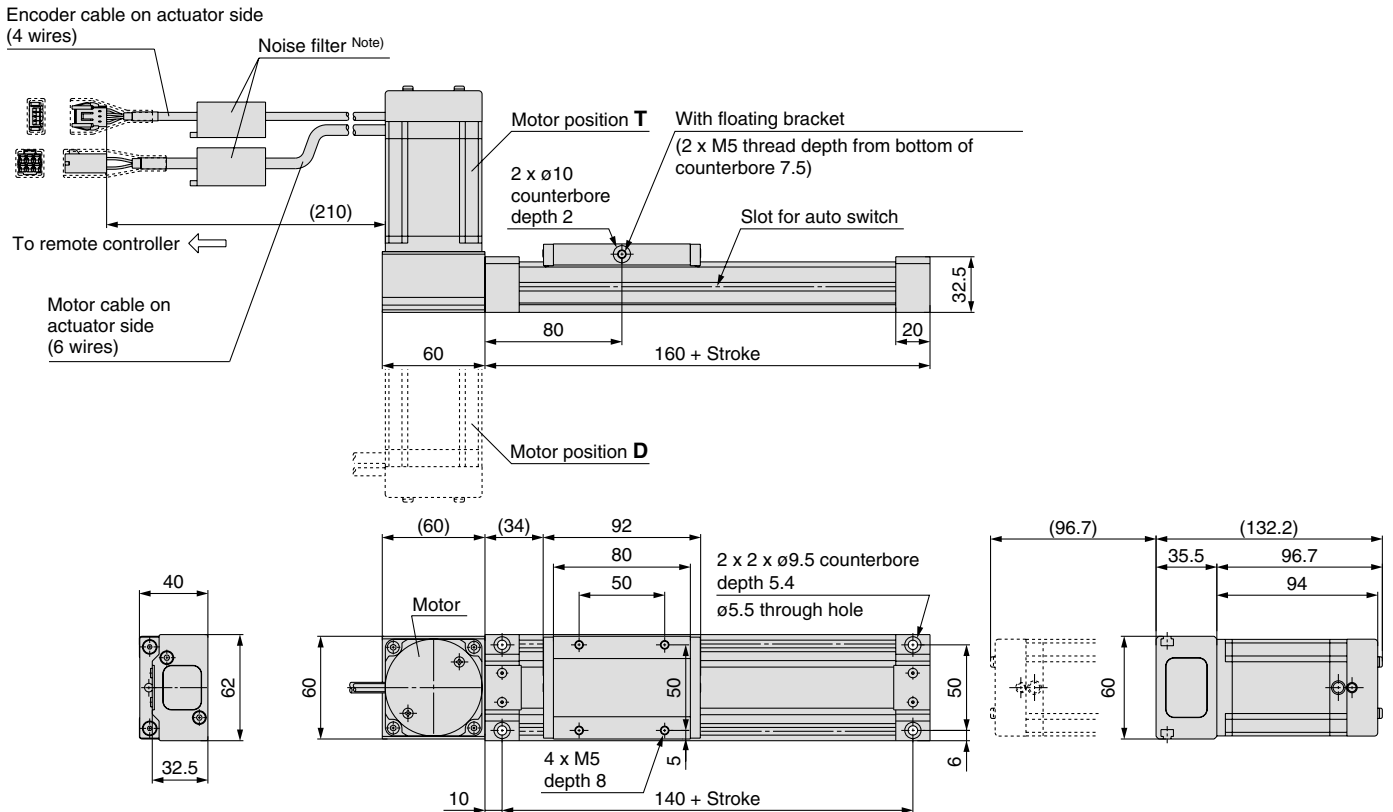
Dimensions: Remote Control Type (Actuator unit)

E-MY2B **Nominal size** — **Stroke** $\frac{M}{L}{Z}$ -Q
Nominal size: 16

* Refer to page 10 for dimensions of remote controller.



Nominal size: 25



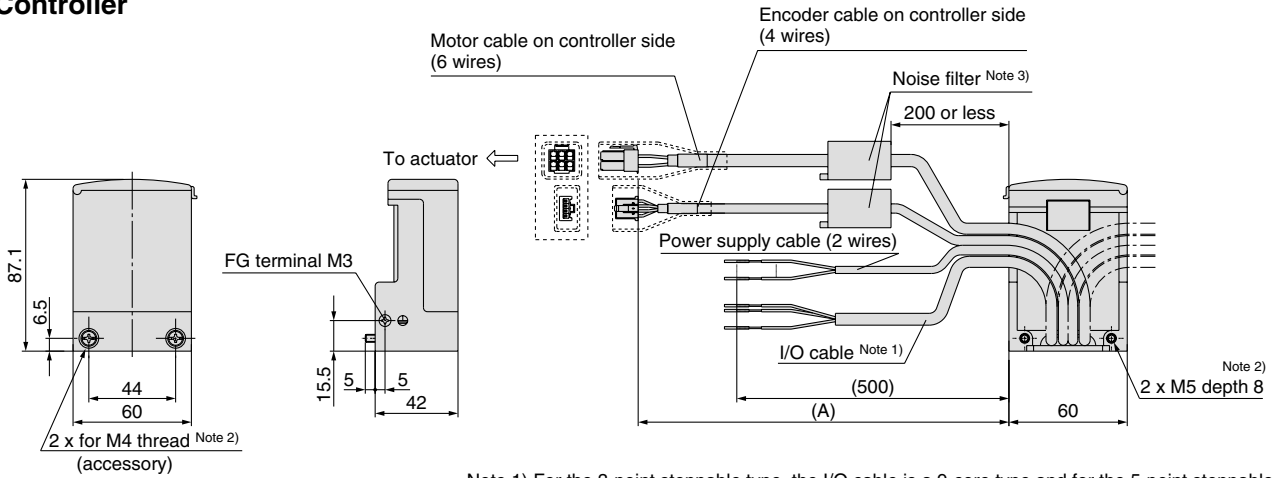
Note) For the CE compliant model a noise filter is provided but not attached.

The cable for the CE compliant models uses dedicated shielding. Even if a noise filter is attached to a non CE marked products, the products cannot be changed to a CE compliant product.

Series E-MY2B

Dimensions: Remote Control Type (Remote controller unit)

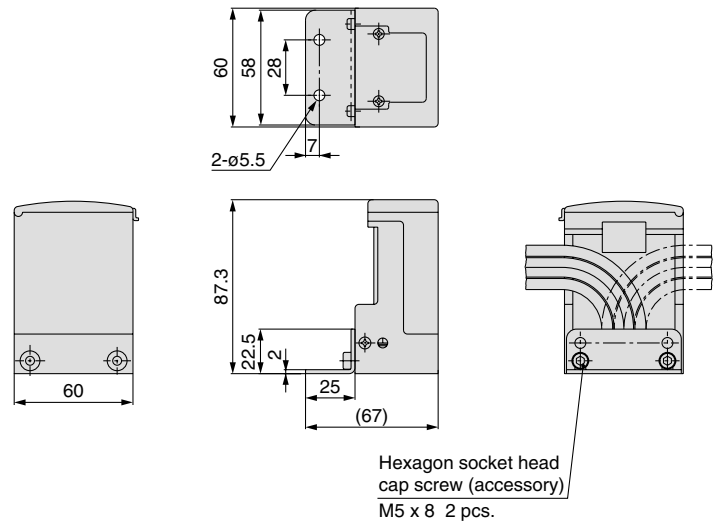
Controller



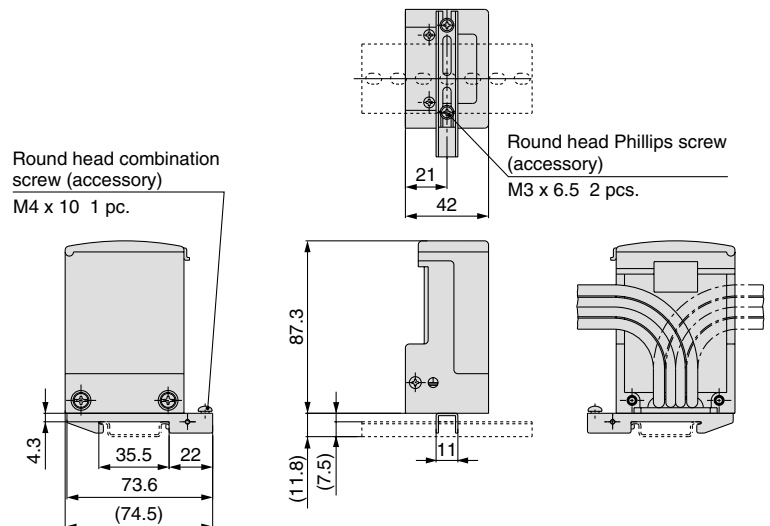
Extension cable	A dimension
M	1000
L	3000
Z	5000

- Note 1) For the 3-point stoppable type, the I/O cable is a 9-core type and for the 5-point stoppable type, a 11-core type is used.
- Note 2) When mounting the remote controller, use the included M4 screw or use the M5 tap located on one side of the controller.
- Note 3) For the CE compliant model a noise filter is included but not attached. The cable for the CE compliant models uses dedicated shielding. Even if a noise filter is attached to a non CE marked product, the products cannot be changed to a CE compliant product.

L-bracket / MYE-LB (Option)

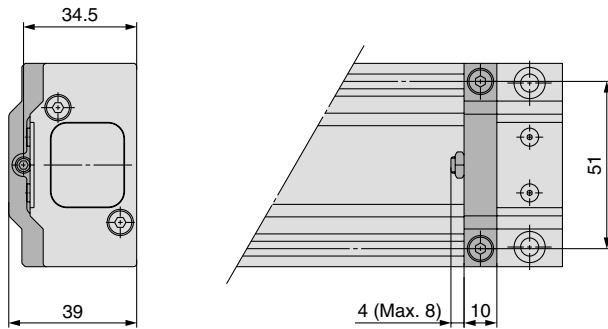


DIN rail bracket / MYE-DB (Option)



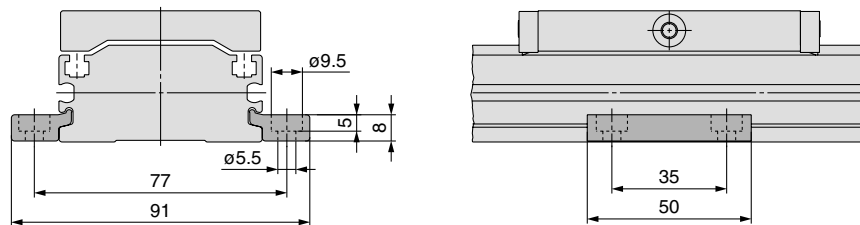
Stroke Adjusting Unit

E-MY2B-A16A

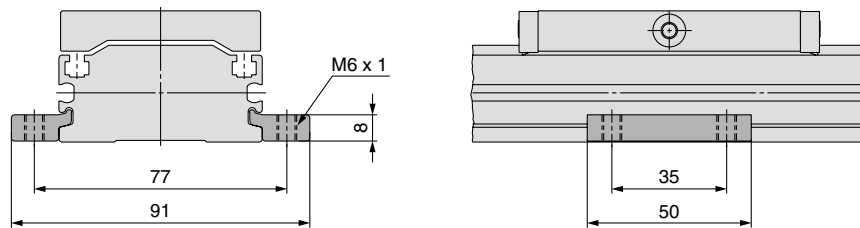


Side Support

Side support A MY-S25A



Side support B MY-S25B



Series E-MY2B

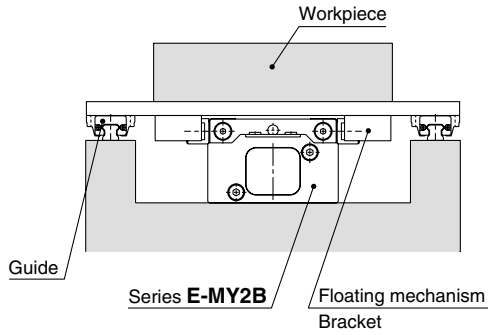
Floating Bracket

MYAJ25

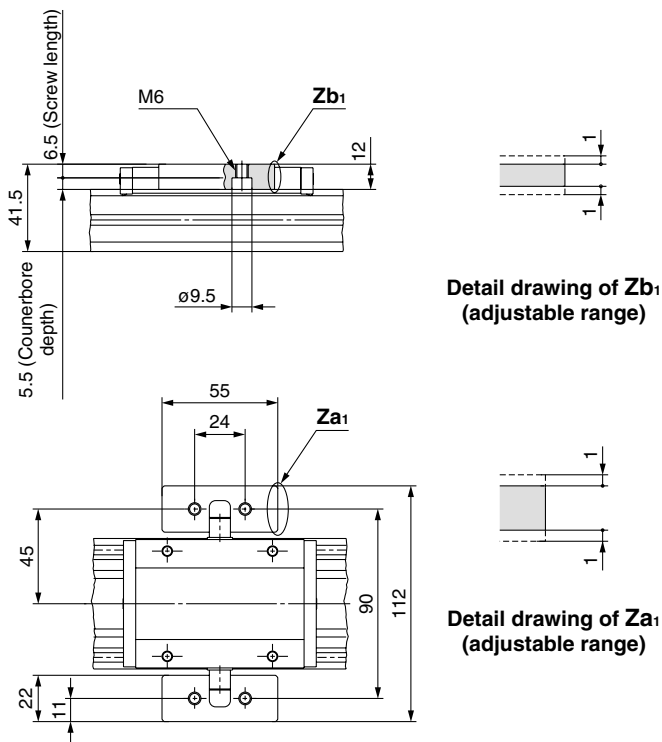
Mounting direction ① and ② are available for this model.

Application

Mounting direction ① (to minimise the installation width)

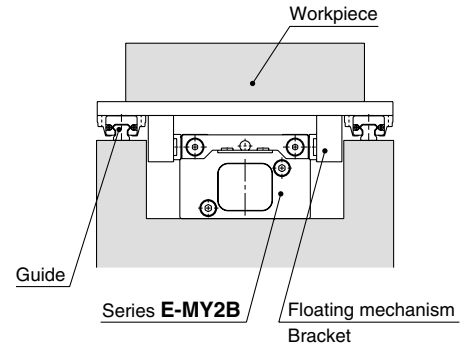


Mounting Example

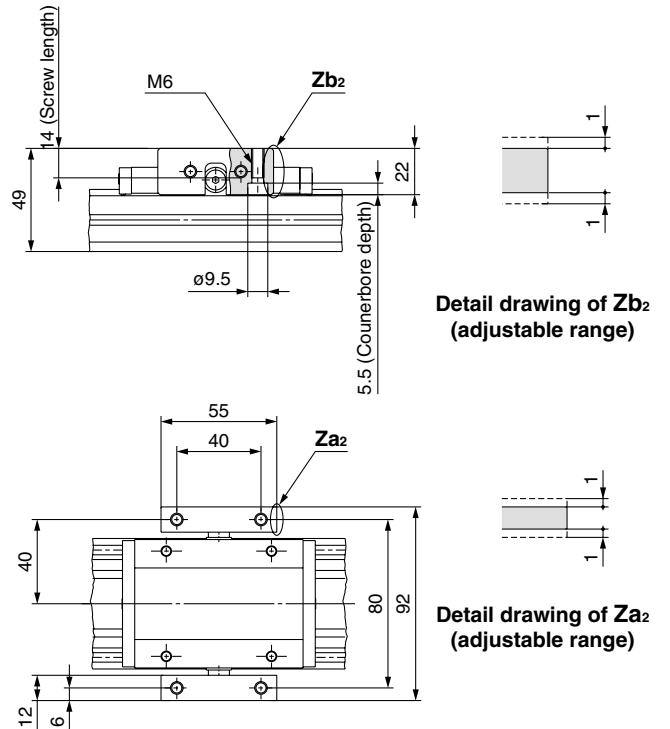


Application

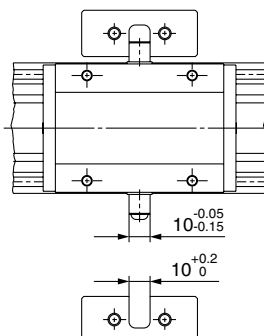
Mounting direction ② (to minimise the installation width)



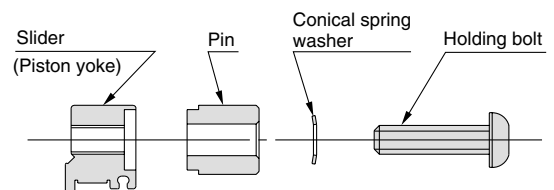
Mounting Example



Floating Parts Dimensions



Installation of Holding Bolts



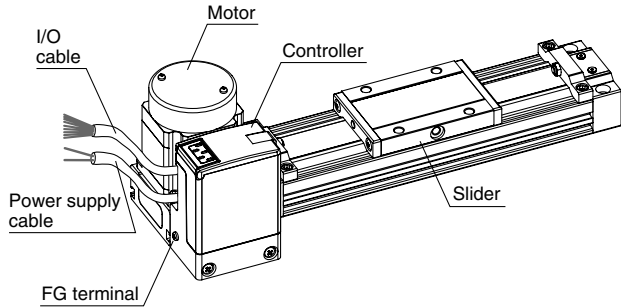
Tightening Torque for Holding Bolts

Unit: N·m

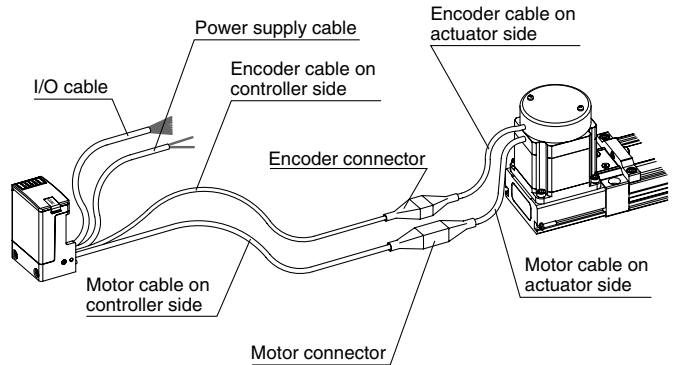
Model	Tightening torque
MYAJ25	3

Names and Functions of Individual Parts

Integrated control type

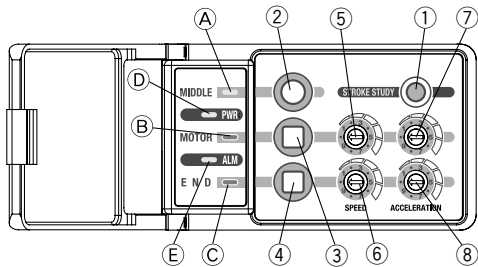


Remote control type



Description	Contents/Functions
Slider	Moving part within the actuator
Motor	Motor activating the actuator
Power supply cable	Power supply cable for providing power to the actuator
I/O cable	I/O cable for transmitting a positioning completion signal and driving instructions
Controller unit	The unit to control and set the actuator, and indicate its status
FG terminal	The terminal to connect the FG cable
Encoder cable on actuator side	Encoder cable for connecting the actuator with the controller
Motor cable on actuator side	Motor cable for connecting the actuator with the controller
Encoder cable on controller side	Encoder cable for separating the controller
Motor cable on controller side	Motor cable for separating the controller

Controller detail



Switch

Description	Contents/Functions
①	Stroke learning switch
② to ④	Switch to move the actuator to intermediate position and set the intermediate position
⑤	Rotary switch to set moving speed to the motor side end
⑥	Rotary switch to set moving speed to the other end
⑦	Rotary switch to set moving acceleration to the motor side end
⑧	Rotary switch to set moving acceleration to the other end

Indicator Light and the Display for the Basic Functions

Symbol	Description	Power supply ON	Actuation instruction					When decelerated and completely stopped	When the alarm is activated.
			Motor side	End side	Intermediate 1	Intermediate 2 ^{*1}	Intermediate 3 ^{*1}		
(A)	MIDDLE Indicator light (Green)	—	—	—	○	○	○	—	*2
(B)	MOTOR Indicator light (Green)	—	○	—	—	○	—	○	
(C)	END Indicator light (Green)	—	—	○	—	—	○	○	
(D)	PWR Indicator light (Green)	○	○	○	○	○	○	○	○
(E)	ALM Indicator light (Red)	—	—	—	—	—	—	—	○

○ indicates on status, and — indicates off status.

*1 Displays for the 5-point stoppable type only.

*2 When the alarm is activated, see page 15 for the ALM display.

Internal Circuits and Wiring Examples

3-point Stoppable Type

Power Supply Cable 2-core AWG20 (20 wires/0.16 mm²)

Symbol	Colour	Signal name	Contents
DC1 (+)	Brown	Vcc	Power supply cables for driving the actuator
DC1 (-)	Blue	GND	

I/O Cable 9-core AWG28 (7 wires/0.127 mm²)

Symbol	Colour	Signal name	Contents
DC2 (+)	Brown	Vcc	Power supply cables for signal
DC2 (-)	Blue	GND	
OUT1	Pink	READY output	Signal indicating the controller is operable
OUT2	Orange	Positioning completion output 1	Signal indicating that positioning is completed
OUT3	Yellow	Positioning completion output 2	
OUT4	Green	Alarm output	Signal indicating an alarm has been generated
IN1	Purple	Actuation instruction input 1	Instruction signal to actuator
IN2	Gray	Actuation instruction input 2	
IN3	White	Emergency stop	Signal providing emergency stop instruction (The emergency stop is activated when contact is opened)

This product can be used without connecting I/O cables, however please use caution and install a power supply switch for the actuator. In case of an emergency, please turn it off.

I/O Cable Signals

Input signal

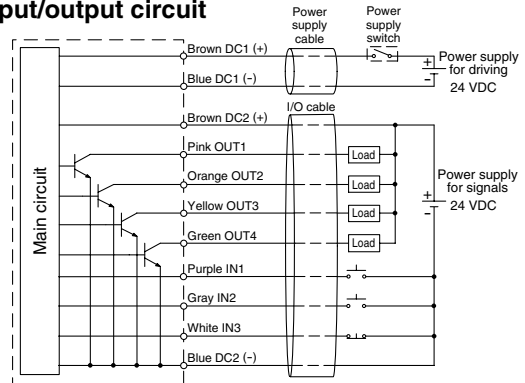
Command	Symbol	
	IN1	IN2
Motor side actuation instruction	○	—
End side actuation instruction	—	○
Intermediate actuation instruction	○	○

Output signal

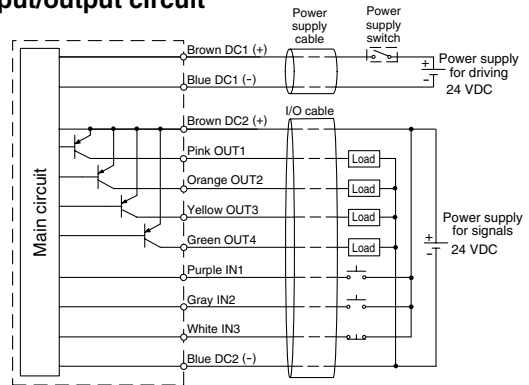
Actuator status	Symbol		
	OUT1	OUT2	OUT3
Completion of motor side end positioning	○	○	—
Completion of end positioning	○	—	○
Completion of intermediate positioning	○	○	○

○ indicates on status, and — indicates off status.

NPN input/output circuit



PNP input/output circuit



5-point Stoppable Type

Power Supply Cable 2-core AWG20 (20 wires/0.16 mm²)

Symbol	Colour	Signal name	Contents
DC1 (+)	Brown	Vcc	Power supply cables for driving the actuator
DC1 (-)	Blue	GND	

I/O Cable 11-core AWG28 (7 wires/0.127 mm²)

Symbol	Colour	Signal name	Contents
DC2 (+)	Brown	Vcc	Power supply cables for signal
DC2 (-)	Blue	GND	
OUT1	Pink	READY output	Signal indicating the controller is operable
OUT2	Orange	Positioning completion output 1	Signal indicating that positioning is completed
OUT3	Yellow	Positioning completion output 2	
OUT4	Red	Positioning completion output 3	
OUT5	Green	Alarm output	Signal indicating an alarm has been generated
IN1	Purple	Actuation instruction input 1	Instruction signal to actuator
IN2	Gray	Actuation instruction input 2	
IN3	Black	Actuation instruction input 3	
IN3	White	Emergency stop	Signal providing emergency stop instruction (The emergency stop is activated when contact is opened)

This product can be used without connecting I/O cables, however please use caution and install a power supply switch for the actuator. In case of an emergency, please turn it off.

I/O Cable Signals

Input signal

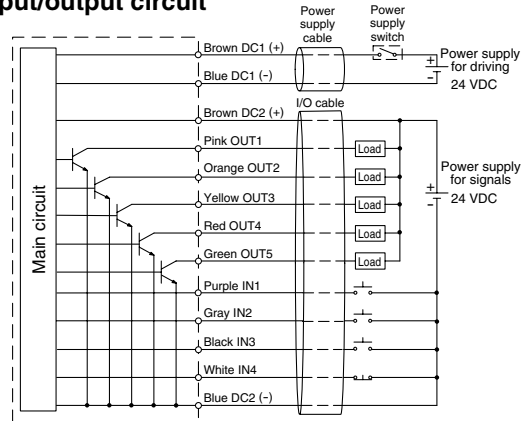
Command	Symbol		
	IN1	IN2	IN3
Motor side actuation instruction	○	—	—
End side actuation instruction	—	○	—
Intermediate actuation instruction 1	—	—	○
Intermediate actuation instruction 2	○	—	○
Intermediate actuation instruction 3	—	○	○
External input stop instruction	○	○	—

Output signal

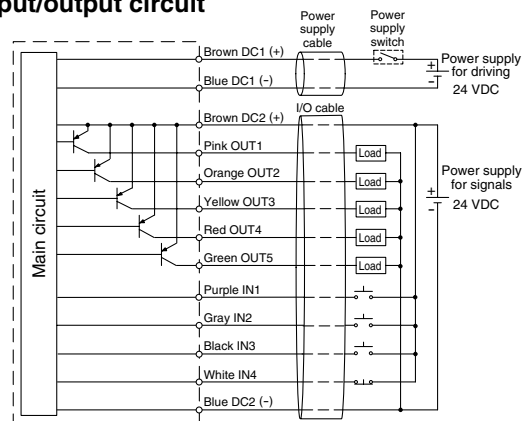
Actuator status	Symbol			
	OUT1	OUT2	OUT3	OUT4
Completion of motor side end positioning	○	○	—	—
Completion of end positioning	○	—	○	—
Completion of intermediate 1 positioning	○	○	—	○
Completion of intermediate 2 positioning	○	○	—	○
Completion of intermediate 3 positioning	○	—	○	○
Completion of external input stop	○	○	○	—

○ indicates on status, and — indicates off status.

NPN input/output circuit



PNP input/output circuit



Error Display and Problem Solving

When the error indicator is displayed, refer to the following instructions.



Item	Display	Contents	Solution
Emergency stop		Either the emergency stop input is opened, or the power supply for the signal is cut-off.	Confirm the power supply signal is energised and release the emergency stop input. (Refer to the circuit diagram on page 14.)
Abnormal external output		External output is short-circuited. * There is no external output signal.	In case of common power supply, turn off the power supply and check the wiring condition of load. Restart the power supply. (Refer to the circuit diagram on page 14.)
			In case of an independent power supply, turn off the power supply for the signals and check the wiring condition of load. Restart the power supply. (Refer to the circuit diagram on page 14.)
Power supply abnormality		The power supply voltage is excessive or lower than the limit for operation.	Check the power supply voltage and adjust it if necessary, then press the MIDDLE button.
Drive abnormality		Maximum output is continued for a prolonged period of time.	Check the work weight and confirm that no foreign materials are attached to the actuator. After confirming, press the MIDDLE button.
Temperature abnormality		Internal temperature of the controller is high.	Lower the surrounding temperature of the actuator in use, and then press the MIDDLE button.

Item	Display	Contents	Solution
Abnormal stroke		The motor is revolving at excessive speed or stops before target is achieved.	If any foreign materials are observed, remove them and then press the MIDDLE button.
			Check to see whether the stroke adjusting unit is loose. If required, readjust the stroke and perform the stroke learning again. (Note)
Motor abnormality		The motor does not revolve properly or over current is detected.	In case of using the remote controller type, please confirm the connection of the connector part between the motor and the controller, after turning off the power supply.
			Press the MIDDLE button. In case of using the remote controller type, please confirm the connector part between the motor and the controller after cutting off the power supply.
Controller abnormality		The CPU is malfunctioning or the memory content is abnormal.	Turn off the power supply and restart it.
Error of the set value		The switch settings for speed and acceleration have been changed while in a locked condition. * There is no external output signal.	Reset the settings for speed and acceleration to the set values while in a locked condition.

Note) The product is in the same condition as when the stroke learning process is completed.

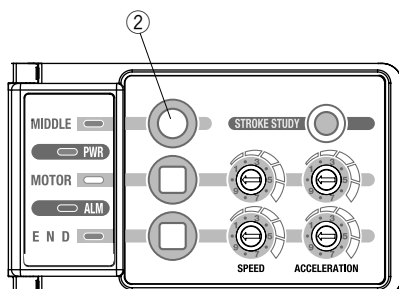
- Return to the home position is not performed by the initial input
- If the error can not be corrected, turn off the power supply to stop operation, and contact your SMC sales representative.

Alarm reset

There are two types of alarm reset: alarm reset manually (a) and an alarm reset externally by an external signal (b).

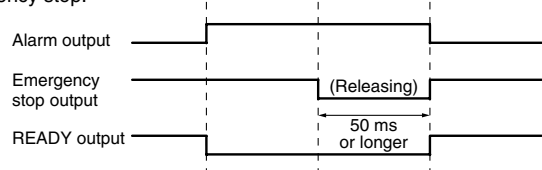
a: Alarm reset manually

In the event of an alarm, simply pushing (2) will revert from the alarm state.



b: Alarm reset externally

In the event of an alarm, simply inputting an external emergency stop signal for 50 ms or longer will return to the state prior to the alarm. The emergency stop output will activate by releasing the input for the emergency stop.



The followings are the reinstated condition.

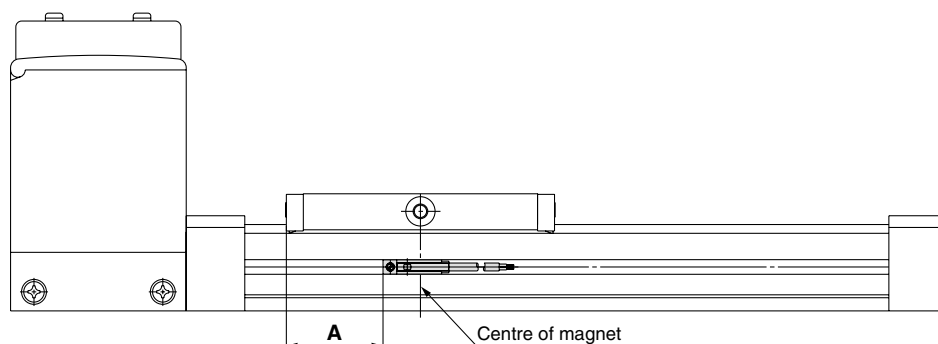
- The slider will be free until the command for driving is applied.
- After being reverted, the next input command for driving makes it start. The initial motion traveling speed after being reverted is 50 mm/s.

Series E-MY2B

Auto Switch Specifications

Note) The operating range is a guide including hysteresis, but is not guaranteed. There may be large variations (as much as $\pm 30\%$) depending on the ambient environment.

Auto Switch Proper Mounting Position (at Stroke End Detection)



D-A9, D-A9□V (mm)

Bore size	A	Operating range
16	30	9
25	30	9

D-M9□, D-M9□V (mm)

Bore size	A	Operating range
16	34	3
25	34	3

D-M9□W, D-M9□WV (mm)

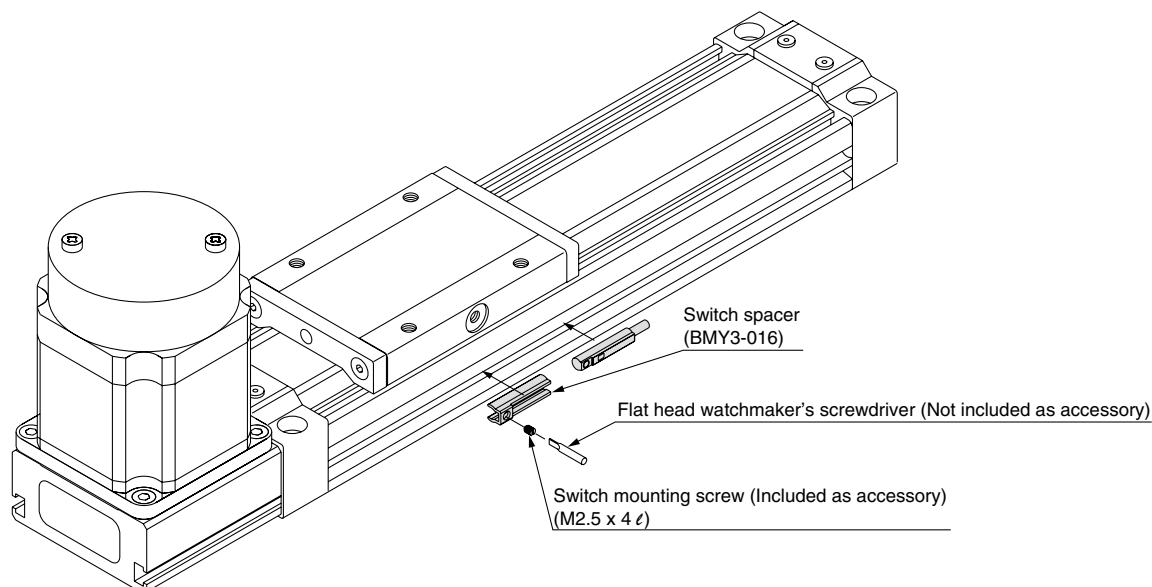
Bore size	A	Operating range
16	34	4.5
25	34	4.5

Note) Only adjust the setting position after confirming the auto switch is properly activated.

Auto Switch Mounting

When mounting an auto switch, first hold the switch spacer with your fingers and push it into the groove. Confirm that it is aligned evenly within the groove and adjust the position if necessary. Then, insert the auto switch into the groove and slide it into the spacer.

After establishing the mounting position, use a watchmaker's flat head screwdriver to tighten the switch mounting screw which is included.



Note) When tightening an auto switch mounting screw, use a watchmaker's screwdriver with a handle of approximately 5 to 6 mm in diameter. Also, tighten with a torque of about 0.1 to 0.15 N·m. As a guide, turn about 90° past the point at which tightening can first be felt.

Switch Spacer Model

Applicable bore size (mm)	16	25
Switch spacer model	BMY3-016	

Series E-MY2B

Auto Switch Specifications

Auto Switch Common Specifications

Type	Reed switch	Solid state switch
Leakage current	None	3-wire: 100 μ A or less 2-wire: 0.8 mA or less
Operating time	1.2 ms	1 ms or less
Impact resistance	300 m/s ²	1000 m/s ²
Insulation resistance	50 M Ω or more at 500 VDC Mega (between lead wire and case)	
Withstand voltage	1500 VAC for 1 minute (between lead wire and case)	1000 VAC for 1 minute (between lead wire and case)
Ambient temperature	-10 to 60°C	
Enclosure	IEC529 standard IP67, JIS C 0920 waterproof construction	
Standard	Conforming to CE Standards	

Lead Wire Length

Lead wire length indication

(Example) D-M9P **L**

Lead wire length

-	0.5 m
M	1 m
L	3 m
Z	5 m

Note 1) Applicable auto switch with 5 m lead wire "Z"

Solid state switch: Manufactured upon receipt of order as standard.

Note 2) For 1 m (M), available with D-M9□W(V) only.

Contact Protection Boxes: CD-P11, CD-P12

<Applicable switch model>

D-A9/A9□V

The auto switches above do not have a built-in contact protection circuit. Therefore, please use a contact protection box with the switch for any of the following cases:

- ① Where the operation load is an inductive load.
- ② Where the wiring length to load is greater than 5 m.
- ③ Where the load voltage is 100 VAC.

The contact life may be shortened. (Due to permanent energising conditions.)

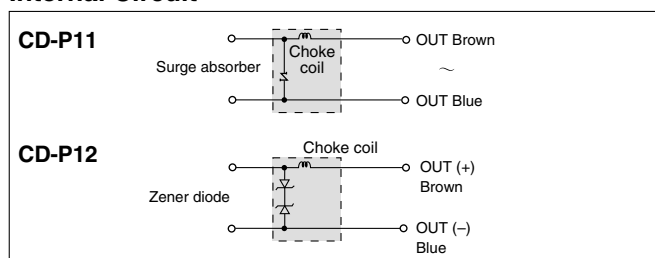
Specifications

Part no.	CD-P11		CD-P12
Load voltage	100 VAC	200 VAC	24 VDC
Maximum load current	25 mA	12.5 mA	50 mA

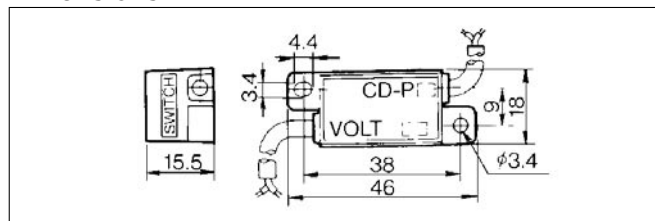
* Lead wire length — Switch connection side 0.5 m
Load connection side 0.5 m



Internal Circuit



Dimensions



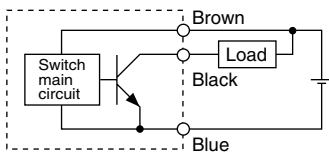
Connection

To connect a switch unit to a contact protection box, connect the lead wire from the side of the contact protection box marked SWITCH to the lead wire coming out of the switch unit. Keep the switch as close as possible to the contact protection box, with a lead wire length of no more than 1 metre.

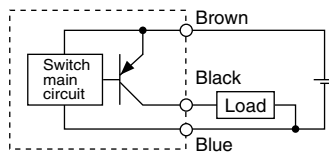
Auto Switch Connections and Examples

Basic Wiring

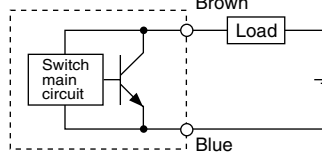
Solid state 3-wire, NPN



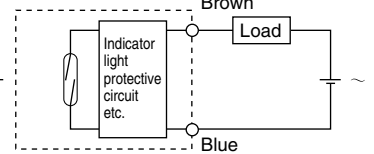
Solid state 3-wire, PNP



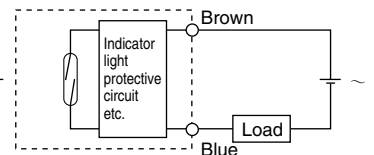
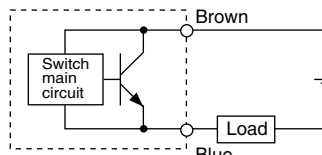
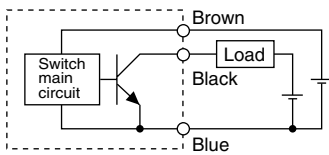
2-wire (Solid state)



2-wire (Reed)

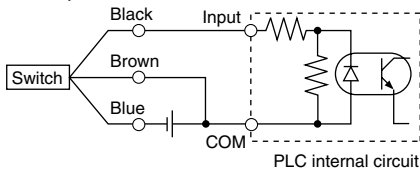


(Power supplies for switch and load are separate.)

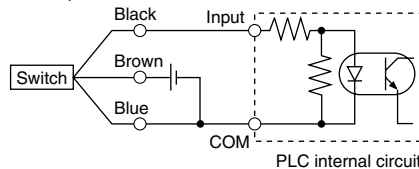


Examples of Connection to PLC (Programmable Logic Controller)

• Sink input specifications 3-wire, NPN

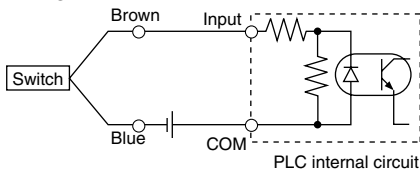


• Source input specifications 3-wire, PNP

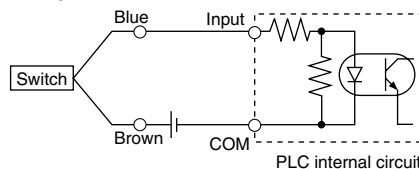


Connect according to the applicable PLC input specifications, since the connection method will vary depending on the PLC input specifications.

2-wire



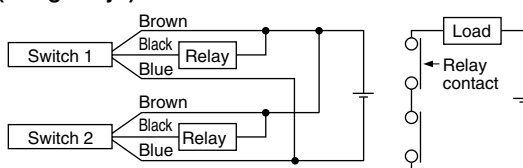
2-wire



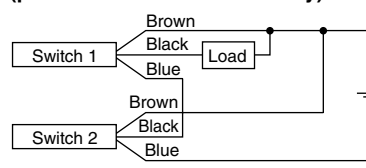
Examples of AND (Serial) and OR (Parallel) Connection

• 3-wire

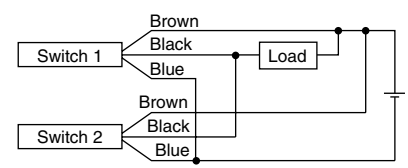
AND connection for NPN output (using relays)



AND connection for NPN output (performed with switches only)

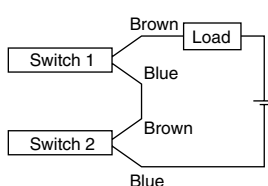


OR connection for NPN output



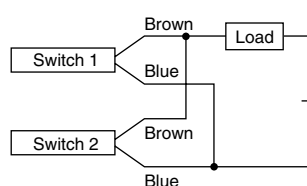
The indicator lights will light up when both switches are turned ON.

2-wire with 2-switch AND connection



When two switches are connected in series, a load may malfunction because the load voltage will decline when in the ON state. The indicator lights will light up if both of the switches are in the ON state.

2-wire with 2-switch OR connection



(Solid state)

When two switches are connected in parallel, a malfunction may occur because the load voltage will increase when in the OFF state.

(Reed)

Because there is no current leakage, the load voltage will not increase when turned OFF. However, depending on the number of switches in the ON state, the indicator lights may sometimes dim or not light because of the dispersion and reduction of the current flowing to the switches.

$$\begin{aligned} \text{Load voltage at ON} &= \text{Power supply voltage} - \text{Internal voltage drop} \times 2 \text{ pcs.} \\ &= 24 \text{ V} - 4 \text{ V} \times 2 \text{ pcs.} \\ &= 16 \text{ V} \end{aligned}$$

Example: Power supply is 24 VDC.
Internal voltage drop in switch is 4 V.

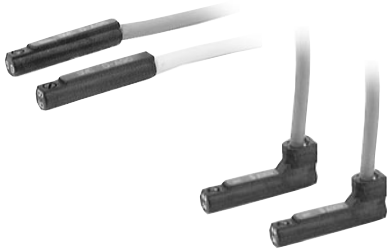
$$\begin{aligned} \text{Load voltage at OFF} &= \text{Leakage current} \times 2 \text{ pcs.} \\ &\quad \times \text{Load impedance} \\ &= 1 \text{ mA} \times 2 \text{ pcs.} \times 3 \text{ k}\Omega \\ &= 6 \text{ V} \end{aligned}$$

Example: Load impedance is 3 kΩ.
Leakage current from switch is 1 mA.

Reed Switch: Direct Mounting Style

D-A90(V)/D-A93(V)/D-A96(V) (C) (E)

Grommet



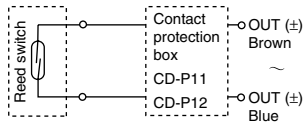
Caution

Operating Precautions

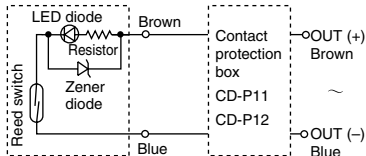
Fix the switch with the existing screw installed on the switch body. The switch may be damaged if a screw other than the one supplied, is used.

Auto Switch Internal Circuit

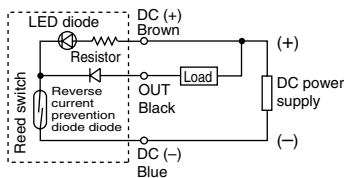
D-A90(V)



D-A93(V)



D-A96(V)



- Note) ① In a case where the operation load is an inductive load.
 ② In a case where the wiring load is greater than 5 m.
 ③ In a case where the load voltage is 100 VAC.

Please use the auto switch with a contact protection box any of the above mentioned cases. (For details about the contact protection box, refer to page 17.)

Auto Switch Specifications

PLC: Programmable Logic Controller

D-A90/D-A90V (Without indicator light)						
Auto switch part no.	D-A90	D-A90V	D-A90	D-A90V	D-A90	D-A90V
Electrical entry direction	In-line	Perpendicular	In-line	Perpendicular	In-line	Perpendicular
Applicable load	IC circuit, Relay, PLC					
Load voltage	24 VAC/DC or less		48 VAC/DC or less		100 VAC/DC or less	
Maximum load current	50 mA		40 mA		20 mA	
Contact protection circuit	None					
Internal resistance	1 Ω or less (including lead wire length of 3 m)					
D-A93/D-A93V/D-A96/D-A96V (With indicator light)						
Auto switch part no.	D-A93	D-A93V	D-A93	D-A93V	D-A96	D-A96V
Electrical entry direction	In-line	Perpendicular	In-line	Perpendicular	In-line	Perpendicular
Applicable load	Relay, PLC				IC circuit	
Load voltage	24 VDC		100 VAC		4 to 8 VDC	
Load current range and max. load current	5 to 40 mA		5 to 20 mA		20 mA	
Contact protection circuit	None					
Internal voltage drop	D-A93 — 2.4 V or less (to 20 mA)/3 V or less (to 40 mA) D-A93V — 2.7 V or less				0.8 V or less	
Indicator light	Red LED illuminates when ON.					
Standard	Conforming to CE Standards					

Lead wires

D-A90(V)/D-A93(V) — Oilproof heavy-duty vinyl cable: $\phi 2.7$, 0.18 mm² x 2 cores (Brown, Blue), 0.5 m
 D-A96(V) — Oilproof heavy-duty vinyl cable: $\phi 2.7$, 0.15 mm² x 3 cores (Brown, Black, Blue), 0.5 m
 Note 1) Refer to page 17 for reed switch common specifications.
 Note 2) Refer to page 17 for lead wire lengths.

Weight

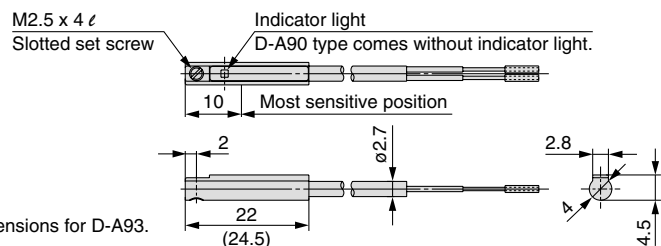
Unit: g

Auto switch part no.	D-A90(V)	D-A93(V)	D-A96(V)
Lead wire length 0.5 m	6	6	8
Lead wire length 3 m	30	30	41

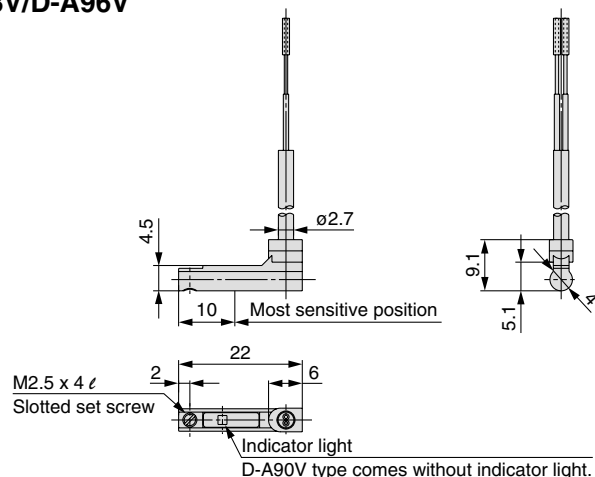
Dimensions

Unit: mm

D-A90/D-A93/D-A96



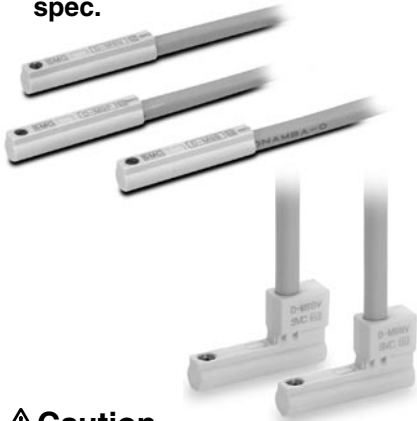
D-A90V/D-A93V/D-A96V



Solid State Switch: Direct Mounting Style D-M9N(V)/D-M9P(V)/D-M9B(V) C €

Grommet

- 2-wire load current is reduced (2.5 to 40 mA).
- Lead-free
- UL certified (style 2844) lead cable is used.
- Flexibility is 1.5 times greater than the conventional model (SMC comparison).
- Using flexible cable as standard spec.



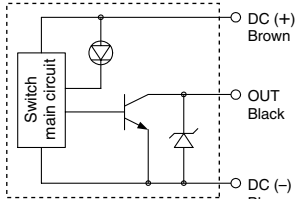
Caution

Operating Precautions

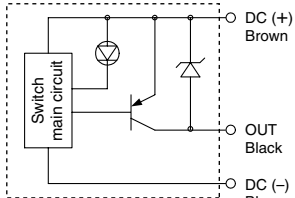
Fix the switch with the existing screw installed on the switch body. The switch may be damaged if a screw other than the one supplied, is used.

Auto Switch Internal Circuit

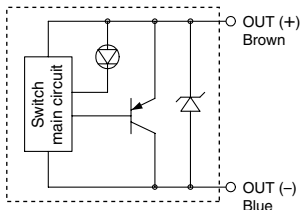
D-M9N(V)



D-M9P(V)



D-M9B(V)



Auto Switch Specifications

PLC: Programmable Logic Controller

D-M9□/D-M9□V (With indicator light)						
Auto switch part no.	D-M9N	D-M9NV	D-M9P	D-M9PV	D-M9B	D-M9BV
Electrical entry direction	In-line	Perpendicular	In-line	Perpendicular	In-line	Perpendicular
Wiring type	3-wire				2-wire	
Output type	NPN		PNP		—	
Applicable load	IC circuit, Relay, PLC				24 VDC relay, PLC	
Power supply voltage	5, 12, 24 VDC (4.5 to 28 V)				—	
Current consumption	10 mA or less				—	
Load voltage	28 VDC or less		—		24 VDC (10 to 28 VDC)	
Load current	40 mA or less				2.5 to 40 mA	
Internal voltage drop	0.8 V or less				4 V or less	
Leakage current	100 μA or less at 24 VDC				0.8 mA or less	
Indicator light	Red LED illuminates when ON.					
Standard	Conforming to CE Standards					

Lead wires

Oilproof heavy-duty vinyl cable: $\phi 2.7 \times 3.2$ ellipse

D-M9B(V) 0.15 mm² x 2 cores

D-M9N(V), D-M9P(V) 0.15 mm² x 3 cores

Note 1) Refer to page 17 for solid state switch common specifications.

Note 2) Refer to page 17 for lead wire lengths.

Weight

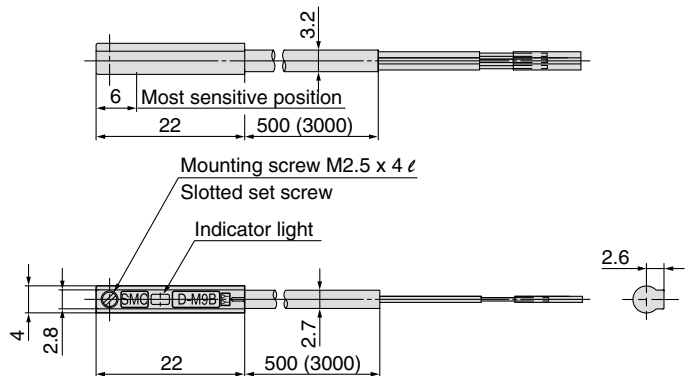
Unit: g

Auto switch part no.	D-M9N(V)	D-M9P(V)	D-M9B(V)
Lead wire length (m)	0.5	8	7
	3	41	38
	5	68	63

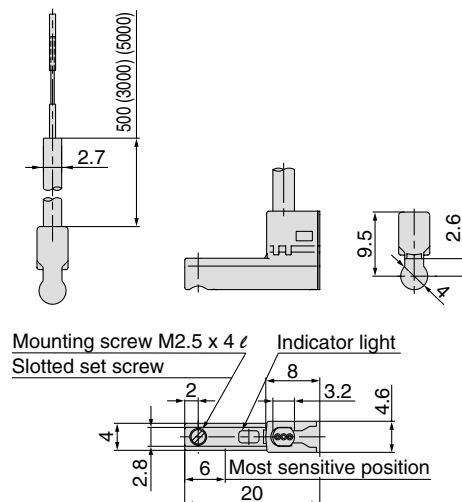
Dimensions

Unit: mm

D-M9□



D-M9□V



2-Colour Indication Solid State Switch: Direct Mounting Style

D-M9NW(V)/D-M9PW(V)/D-M9BW(V)

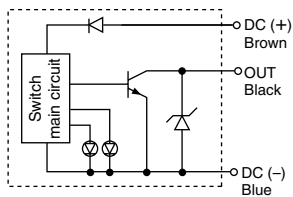
Grommet

- 2-wire load current is reduced (2.5 to 40 mA).
- RoHS compliant
- UL certified (style 2844) lead cable is used.
- Flexibility is 1.5 times greater than the conventional model (SMC comparison).
- Using flexible cable as standard spec.
- The optimum operating position can be determined by the colour of the light. (Red → Green → Red)

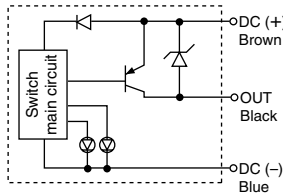


Auto Switch Internal Circuit

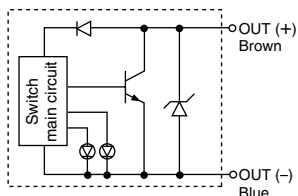
D-M9NW(V)



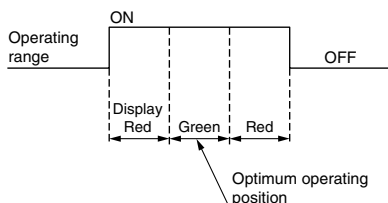
D-M9PW(V)



D-M9BW(V)



Indicator light / Display method



Auto Switch Specifications

PLC: Programmable Logic Controller

D-M9□W/D-M9□WV (With indicator light)						
Auto switch part no.	D-M9NW	D-M9NWV	D-M9PW	D-M9PWV	D-M9BW	D-M9BWV
Electrical entry direction	In-line	Perpendicular	In-line	Perpendicular	In-line	Perpendicular
Wiring type	3-wire				2-wire	
Output type	NPN		PNP		—	
Applicable load	IC circuit, Relay, PLC				24 VDC relay, PLC	
Power supply voltage	5, 12, 24 VDC (4.5 to 28 V)				—	
Current consumption	10 mA or less				—	
Load voltage	28 VDC or less		—		24 VDC (10 to 28 VDC)	
Load current	40 mA or less				2.5 to 40 mA	
Internal voltage drop	0.8 V or less at 10 mA (2 V or less at 40 mA)				4 V or less	
Leakage current	100 μA or less at 24 VDC				0.8 mA or less	
Indicator light	Operating position Red LED illuminates. Optimum operating position Green LED illuminates.					
Standard	Conforming to CE Standards					

● Lead wires

Oilproof heavy-duty vinyl cable: $\phi 2.7 \times 3.2$ ellipse

D-M9BW(V) 0.15 mm² x 2 cores

D-M9NW(V), D-M9PW(V) 0.15 mm² x 3 cores

Note 1) Refer to page 17 for solid state switch common specifications.

Note 2) Refer to page 17 for lead wire lengths.

Weight

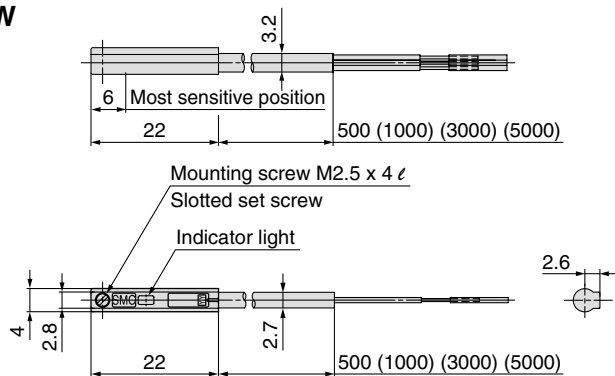
Unit: g

Auto switch part no.	D-M9NW(V)	D-M9PW(V)	D-M9BW(V)	
Lead wire length (m)	0.5	8	8	7
	1	14	14	13
	3	41	41	38
	5	68	68	63

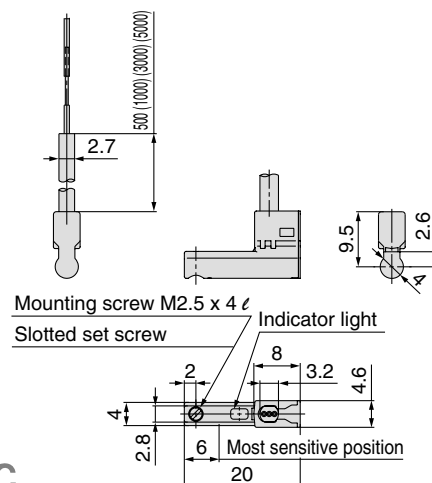
Dimensions

Unit: mm

D-M9□W



D-M9□WV



Series E-MY2B

Made to Order

Please contact SMC for detailed dimensions, specifications, and lead times.



1 Helical insert thread specifications -X168

The mounting threads of the slider are changed to helical insert threads. The thread size is standard size.

E-MY2B Refer to the standard model no. -X168

Example) E-MY2B25-300TN-M9B-X168

Others: Made to Order / For detail, please contact SMC.

● 6-point stoppable type

Stoppable at both ends (2-point) and at intermediate strokes (4-point)

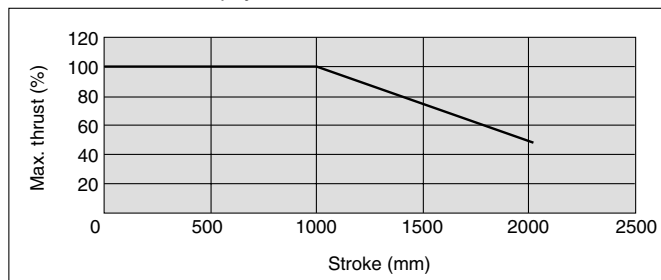
● Max. manufacturable stroke

Stroke exceeding 1000 mm is available.

Nominal size	E-MY2B
16	2000
25	2000

Maximum thrust is reduced depending on the stroke.

Max. thrust = Max. payload x Max. acceleration





Series E-MY2B

Safety Instructions

These safety instructions are intended to prevent a hazardous situation and/or equipment damage. These instructions indicate the level of potential hazard by labels of "Caution", "Warning" or "Danger". To ensure safety, be sure to observe ISO 10218 ^{Note 1)}, JIS B 8433 ^{Note 2)} and other safety practices.

⚠ Caution : Operator error could result in injury or equipment damage.

⚠ Warning : Operator error could result in serious injury or loss of life.

⚠ Danger : In extreme conditions, there is a possibility of serious injury or loss of life.

Note 1) ISO 10218: Manipulating industrial robots-Safety

Note 2) JIS B 8433: General Rules for Robot Safety

⚠ Warning

1. The compatibility of the e-Rodless actuator is the responsibility of the person who designs the system or decides its specifications.

Since the products specified here are used in various operating conditions, their compatibility with a specific system must be based on either specifications, post analysis and/or tests to meet a specific requirement. The expected performance and safety assurance are the responsibility of the person who has determined the compatibility of the system. This person should continuously review the suitability of all specified items by referring to the latest information in the catalogue and by taking into consideration the possibility of equipment failure when configuring the system.

2. Only trained personnel should operate pneumatically operated machinery and equipment.

Compressed air can be dangerous if handled incorrectly. Assembly, handling or repair of an electric actuator should be performed by trained and experienced operators.

3. Do not service machinery/equipment or attempt to remove components until safety is confirmed.

1. Inspection and maintenance of machinery/equipment should only be performed once measures to prevent falling or runaway of the driven objects have been confirmed.
2. When equipment will be removed, confirm that all safety precautions have been followed. Turn off the power supply for this equipment.
3. Before machinery/equipment is restarted, confirm that safety measures are in effect.

4. Contact SMC if the product will be used in any of the following conditions:

1. Conditions and environments beyond the given specifications, or if product is used outdoors.
2. Installation on equipment in conjunction with atomic energy, medical equipment, food and beverages, or safety equipment.
3. An application which has the possibility of having a negative effect on people, property, requiring special safety analysis.

5. Review and confirm the product's documentation thoroughly before using the product, or contact our distributors, or SMC for confirmation for a problem free application.

6. Use the product after thoroughly reviewing and confirming the precautions in this catalogue.

7. Some products in this catalogue are for particular applications and sites only. Check and confirm with the distributor or SMC.

■ Exemption from Liability

1. SMC, its officers and employees shall be exempted from liability for any loss or damage arising out of earthquakes or fire, action by a third person, accidents, customer error with or without intention, product misuse, and any other damages caused by abnormal operating conditions.
2. SMC, its officers and employees shall be exempted from liability for any direct or indirect loss or damage, including consequential loss or damage, loss of profits, or loss of chance, claims, demands, proceedings, costs, expenses, awards, judgments and any other liability whatsoever including legal costs and expenses, which may be suffered or incurred, whether in tort (including negligence), contract, breach of statutory duty, equity or otherwise.
3. SMC is exempted from liability for any damages caused by operations not contained in the catalogues and/or instruction manuals, and operations outside of the specification range.
4. SMC is exempted from liability for any loss or damage whatsoever caused by malfunctions of its products when combined with other devices or software.



Series E-MY2B e-Rodless Actuators Precautions 1

Be sure to read this before handling.

Design and Selection

Warning

- Conduct operation with a regulated voltage.**
The product may not function correctly or the controller section may be damaged if used with any other voltage than the specified regulated voltage. If the regulated voltage is low, the load may not operate due to internal voltage drop of the controller section. Check and confirm the operating voltage before using.
- Do not use a load that is over the maximum load capacity.**
The controller section may be damaged.
- Operate within the limit of the specification range.**
If operated outside of the specification range, there is a possibility of fire, malfunction, and or actuator damage. Operate after confirming the required specifications.
- To prevent any damage by product failure or malfunction, plan and construct a backup system beforehand, such as multiplexing the components and equipment, employing failure free planning, etc.**
- Provide enough space for maintenance.**
When planning, consider the space required for product checkup and maintenance.
- Provide a protective cover when there is a risk of human injury.**
If a driven object and or moving parts of a cylinder pose a danger to human injury, design the structure to avoid contact with the human body.
- Securely tighten all mounting parts and connecting parts of the actuator to prevent them from becoming loose.**
In particular, when a cylinder operates at a high frequency, or is installed where there is excessive vibration, ensure that all parts remain secure.
- Do not apply more load than stipulated by the spec.**

Load spec. Nominal size	Heavy load	Standard load	Medium load	Light load
16	6 (10)	4 (5)	2.5 (2.5)	1.25 (1.25)
25	11 (20)	8 (10)	4 (5)	2.5 (2.5)

(): When combined with another guide and the friction coefficient is 0.1 or less.

- The resistance value of the attached equipment should be within the allowable external resistance value.**

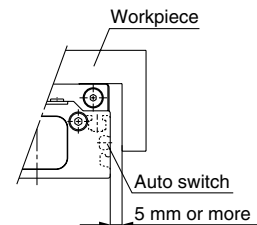
Caution

- When using actuator with a long stroke, please provide an intermediate support. When using actuator with a long stroke, implement an intermediate support to prevent frame deflection or deflection caused by vibration or external impacts.**

Mounting

Caution

- Do not drop, strike, or apply excessive shock to the actuator.**
The actuator could be damaged, resulting in its failure and or malfunction.
- Hold the body when handling.**
The actuator could be damaged, resulting in its failure and or malfunction.
- Keep tightening torque.**
If tightened beyond the specified range, damage may occur. In addition, if tightened below the specified range, the actuator installation position may shift to some extent.
- Do not install the actuator in a location used as a scaffold for work.**
By stepping on the actuator, the actuator may receive excessive load weight which may damage it.
- Provide a flat surface for installing the actuator. The degree of surface flatness should be determined by the machine precision requirement, or its corresponding precision.**
Keep surface flatness within 0.1/500 mm.
- Workpiece mounting**
When mounting a magnetic workpiece, keep a clearance of 5 mm or greater between the auto switch and the workpiece. Otherwise, the magnetic force within the cylinder may be lost, resulting in malfunction of the auto switch.



- Align carefully when connecting to a load having an external guide mechanism.**

E-MY2B can be used with a direct load within the allowable range for each type of guide. Please note that careful alignment is necessary when connecting to a load having an external guide mechanism. As the stroke becomes longer, variations in the centre axis become larger. Consider using a connection method (floating mechanism) that is able to absorb these variations. Furthermore, use the special floating brackets (page 12).

Wiring

Warning

- Avoid repeatedly bending and/or stretching the cables.**
Repeatedly applying bending stress and stretching force to the cables may result in broken lead wires.
- Avoid incorrect wiring.**
Depending on the type of incorrect wiring, the controller section may be damaged.



Series E-MY2B e-Rodless Actuators Precautions 2

Be sure to read this before handling.

Wiring

⚠ Warning

- 3. Perform wiring when the power is off.**
The controller section may be damaged and malfunction.
- 4. Do not wire with power lines or high voltage lines.**
Conduct wiring for controller separately from power lines or high voltage lines to avoid interference from the noise or surge from the signal lines of the power lines or high voltage lines. This may result in malfunction.
- 5. Confirm that the wiring is properly insulated.**
Be certain that there is no faulty wiring insulation (contact with other circuits, improper insulation between terminals, etc.) because the controller may be damaged due to excessively applied voltage or current flow to the controller section.
- 6. Be sure to attach a noise filter when a remote control type, CE compliant product is used.**
Using without a noise filter will be a non-CE compliant product.

Operating Environment

⚠ Warning

- 1. Do not use in a place where the product may come in contact with dust, particles, water, chemicals and oil.**
It may cause damage and malfunction.
- 2. Do not use in a place where a magnetic field is present.**
It may cause malfunction to the actuator.
- 3. Do not use the product in the presence of flammable, explosive or corrosive gas.**
It may cause fire, explosion, and corrosion.
The actuator does not have an explosion proof construction.
- 4. Do not use in an environment subjected to temperature cycles.**
If used in an environment where temperature cycling occurs, other than the usual temperature change, the internal controller may be adversely effected.
- 5. Do not use in a place that has excessive electrical surge generation, even though this product is compliant with CE marking.**
When there are units (solenoid type lifter, high frequency induction furnace, motor, etc.) which generate a large amount of surge in an area around the controller, deterioration or damage may occur to the internal circuit elements of the controller. Avoid sources of surge generation and crossed lines.
- 6. Select a product type that has built-in surge absorbing elements for a load, such as relays or solenoid valves which are employed for driving voltage generating load directly.**
- 7. Install the actuator in a place without vibration and impact.**
Vibration and impact causes damage and malfunction to the product and work, as well as prevents the work from meeting the specified parameters.

Adjustment and Operation

⚠ Warning

- 1. Do not short the loads.**
Short on the load of the controller indicates an error, but it may cause over current and damage the controller.
- 2. Do not operate or conduct any settings with wet hands.**
An electrical shock may result from wet hands.
- 3. When operating the controller, avoid making contact with the workpiece.**
Contact with the workpiece may cause injury.

⚠ Caution

- 1. Do not push the setting buttons with sharp pointed items.**
Sharp pointed items may cause setting button damage.
- 2. Do not touch the sides and lower parts of the motor and controller.**
Conduct operation after confirming that the machine is cool since it gets hot while in operation.
- 3. After the stroke is adjusted, turn on the power supply and then perform stroke learning.**
If stroke learning is not performed, the product may not operate according to the adjusted stroke and damage to any connected equipment may occur.
- 4. Do not randomly change the guide adjusting section setting.**
Readjustment of the guide is not necessary for normal operation, since it is pre-adjusted. Accordingly, do not randomly

Maintenance

⚠ Warning

- 1. Periodically perform maintenance of the product.**
Confirm that the piping and bolts are securely tightened. Unintentional malfunction of a system's components may occur as a result of an actuator malfunction.
- 2. Do not disassemble, modify (including change of printed circuit board) or repair.**
Disassembly or modification may result in injury or failure.

⚠ Caution

- 1. Confirm the range of movement of a workpiece (a slider) before connecting the driving power supply or turning on the switch.**
The movement of the work may cause an accident. When the power supply is turned on, the work is returned to home position by input IN1 or IN2 signal. (Except in the case when stroke learning is not performed ever).



Series E-MY2B Auto Switches Precautions 1

Be sure to read this before handling.

Design and Selection

Warning

1. Confirm the specifications.

Read the specifications carefully and use this product appropriately. The product may be damaged or malfunction if it is used outside of its specification range (e.g. load current, voltage, temperature or impact, etc.).

2. Take precautions when multiple actuators are used close together.

When two or more actuators are lined up in close proximity to each other, magnetic field interference may cause the switches to malfunction. Maintain a minimum cylinder separation of 40 mm.

3. Pay attention to the length of time that a switch is on at an intermediate stroke position.

When an auto switch is placed at an intermediate position of the stroke and a load connected to the auto switch is driven at the time the slide table passes, the auto switch will operate. However if the speed is too great, the operating time will be shortened and the load may not operate properly. The maximum detectable piston speed is:

$$V \text{ (mm/s)} = \frac{\text{Auto switch operating range (mm)}}{\text{Load operating time (ms)}} \times 1000$$

4. Keep wiring as short as possible.

<Reed switch>

As the length of the wiring to a load gets longer, the rush current at the time the switch is turned ON becomes greater, which may shorten the product's life. (The switch will stay ON all the time.) Use a contact protection box when the wire length is 5 m or longer.

<Solid state switch>

Although the wire length should not affect switch function, use a wire that is 100 m or shorter.

If the wiring is longer it will likely increase noise although the length is less than 100 m.

When the wire length is long, we recommend attaching the ferrite core to the both ends of the cable to prevent excess noise.

5. Take precautions for the internal voltage drop of the switch.

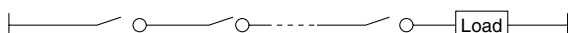
<Reed switch>

1) Switches with an indicator light (Except D-A96, A96V)

- If auto switches are connected in series as shown below, take note that there will be a large voltage drop because of internal resistance from the light emitting diodes. (Refer to internal voltage drop in the auto switch specifications.)

[The voltage drop will be "n" times larger when "n" auto switches are connected.]

Even though an auto switch operates normally, the load



- Similarly, when operating below a specified voltage, it is possible that the load may be ineffective even though the auto switch function is normal. Therefore, the formula below should be satisfied after confirming the minimum operating voltage of the load.

$$\text{Supply voltage} - \text{Internal voltage drop of switch} > \text{Minimum operating voltage of load}$$

2) If the internal resistance of a light emitting diode causes a problem, select a switch without an indicator light (Model A90, A90V).

<Solid state switch>

3) Generally, the internal voltage drop will be greater with a 2-wire solid state auto switch than with a reed switch. Take the same precautions as in item (1) as mentioned above.

Also, note that a 12 VDC relay is not applicable.

6. Pay attention to leakage current.

<Solid state switch>

With a 2-wire solid state auto switch, current (leakage current) flows to the load to operate the internal circuit even when in the OFF state.

$$\text{Current to operate load (Input OFF signal of controller)} > \text{Leakage current}$$

If the condition given in the above formula is not met, internal circuit will not reset correctly (stays ON). Use a 3-wire switch if this specification cannot be satisfied.

Moreover, leakage current flow to the load will be "n" times larger when "n" auto switches are connected in parallel.

7. Do not use a load that generates surge voltage.

<Reed switch>

If driving a load such as a relay which generates a surge voltage, use a contact protection box.

<Solid state switch>

Although a zener diode for surge protection is connected at the output side of a solid state auto switch, damage may still occur if a surge is applied repeatedly. When directly driving a load which generates a surge, such as a relay or solenoid valve, use a switch with a built-in surge absorbing element.

8. Cautions for use in an interlock circuit

When an auto switch is used for an interlock signal requiring high reliability, devise a double interlock system to safeguard against malfunctions. The double interlock system should provide a mechanical protection function or use another switch (sensor) together with the auto switch. Also perform periodic inspection and confirm proper operation.

9. Provide enough space for maintenance.

When designing an application, be sure to allow sufficient clearance for maintenance and inspections.

Mounting and Adjustment

Warning

1. Do not drop or bump.

Do not drop, bump or apply excessive impacts (300 m/s² or greater for reed switches and 1000 m/s² or greater for solid state switches) while handling.

Although the body of the switch may not be damaged, the inside of the switch could be damaged and cause a malfunction.



Series E-MY2B Auto Switches Precautions 2

Be sure to read this before handling.

Mounting and Adjustment

⚠ Warning

2. Do not carry an actuator by the auto switch lead wires.

Never carry a cylinder by its lead wires. This may not only cause broken lead wires, but it may cause internal elements of the switch to be damaged by the stress.

3. Mount switches using the proper tightening torque.

When a switch is tightened above the torque specification, the mounting screws, or switch may be damaged. On the other hand, tightening below the torque specification may allow the switch to slip out of position.

4. Mount a switch at the centre of the operating range.

Adjust the mounting position of an auto switch so that the piston stops at the centre of the operating range (the range in which a switch is ON). (The mounting positions shown in the catalogue indicate the optimum position at the stroke end.) If mounted at the end of the operating range (around the borderline of ON and OFF), operation will be unstable.

<D-M9□>

When the D-M9 auto switch is used to replace old series auto switch, it may not activate depending on operating condition because of its shorter operating range.

Such as

- **Application where the auto switch is used for detecting an intermediate stop position of the actuator. (In this case the detecting time will be reduced.)**

In these applications, set the auto switch to the centre of the required detecting range.

⚠ Caution

1. Fix the switch with the appropriate screw installed on the switch body. The switch may be damaged if other screws are used.

Wiring

⚠ Warning

1. Avoid repeatedly bending or stretching lead wires.

Broken lead wires will result from repeatedly applying bending stress or stretching force to the lead wires.

We recommend clamping (affixing) the wiring in the middle so that the bending stress or stretching force is not be applied to the main body.

2. Be sure to connect the load before power is applied.

<2-wire type>

If the power is turned ON when an auto switch is not connected to a load, the switch will be instantly damaged because of excess current.

3. Confirm proper insulation of wiring.

Be certain that there is no faulty wiring insulation (such as contact with other circuits, ground fault, improper insulation between terminals, etc.). Damage may occur due to excess current flow into a switch.

Wiring

⚠ Warning

4. Do not wire in conjunction with power lines or high voltage lines.

Wire separately from power lines or high voltage lines, avoiding parallel wiring or wiring in the same conduit with these lines. Control circuits containing auto switches may malfunction due to noise from these lines.

5. Do not allow short circuit of loads.

<Reed switch>

If the power is turned ON with a load in a short circuited condition, the switch will be instantly damaged because of excess current flow into the switch.

<Solid state switch>

D-M9□ and all models of PNP output type switches do not have built-in short circuit protection circuits. If loads are short circuited, the switches will be instantly damaged, as in the case of reed switches.

Take special care to avoid reverse wiring with the brown power supply line and the black output line on 3-wire type switches.

6. Avoid incorrect wiring.

<Reed switch>

A 24 VDC switch with indicator light has polarity. The brown lead wire is (+), and the blue lead wire is (-).

- 1) If connections are reversed, the switch will still operate, but the light emitting diode will not light up.

Also note that a current greater than the maximum specified one will damage a light emitting diode and make it inoperable.

Applicable models: D-A93, A93V

<Solid state switch>

- 1) Even if connections are reversed on a 2-wire type switch, the switch will not be damaged because it is protected by a protection circuit, but it will remain in a normally ON state. But reverse wiring in a short circuit load condition should be avoided to protect the switch from being damaged.

- 2) Even if (+) and (-) power supply line connections are reversed on a 3-wire type switch, the switch will be protected by a protection circuit. However, if the (+) power supply line is connected to the blue wire and the (-) power supply line is connected to the black wire, the switch will be damaged.

<D-M9□>

D-M9□ does not have built-in short circuit protection circuit. Be aware that if the power supply connection is reversed (e.g. (+) power supply wire and (-) power supply wire connection is reversed), the switch will be damaged.

* Lead wire colour changes

Lead wire colours of SMC switches have been changed in order to meet NECA Standard 0402 for production beginning September, 1996 and thereafter. Please refer to the tables provided.

Special care should be taken regarding wire polarity during the time that the old colours still coexist with the new colours.

2-wire

	Old	New
Output (+)	Red	Brown
Output (-)	Black	Blue

3-wire

	Old	New
Power supply	Red	Brown
GND	Black	Blue
Output	White	Black



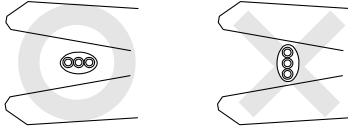
Series E-MY2B Auto Switches Precautions 3

Be sure to read this before handling.

Wiring

⚠ Caution

1. When the cable sheath is stripped, confirm the stripping direction. The insulator may be split or damaged depending on the direction. (D-M9□ only)



Recommended Tool

Model name	Model no.
Wire stripper	D-M9N-SWY

* Stripper for a round cable (ø2.0) can be used for a 2-wire type cable.

Operating Environment

⚠ Warning

1. Never use in an atmosphere of explosive gases.

The construction of the auto switch is not intended to prevent explosion. Never use in an atmosphere with an explosive gas since this may cause a serious explosion.

2. Do not use in an area where a magnetic field is generated.

The auto switch will malfunction or the magnets inside of an actuator will become demagnetised if used in such an environment.

3. Do not use in an environment where the auto switch will be continually exposed to water.

The switch satisfies the IEC standard IP67 construction (JIS C 0920: waterproof construction). Nevertheless, it should not be used in applications where it is continually exposed to water splash or spray. This may cause deterioration of the insulation or swelling of the potting resin inside switch causing a malfunction.

4. Do not use in an environment with oil or chemicals.

Consult with SMC if the auto switch will be used in an environment laden with coolant, cleaning solvent, various oils or chemicals. If the auto switch is used under these conditions for even a short time, it may be adversely effected by a deterioration of the insulation, a malfunction due to swelling of the potting resin, or hardening of the lead wires.

5. Do not use in an environment with temperature cycles.

Consult with SMC if the switch is used where there are temperature cycles other than normal temperature changes, as they may adversely affected the switch internally.

6. Do not use in an environment where there is excessive impact shock.

<Reed switch>

When excessive impact (300 m/s² or more) is applied to a reed switch during operation, the contact point may malfunction and generate a signal momentarily (1 ms or less) or cut off. Consult with SMC regarding the need to use a solid state switch in a specific environment.

Operating Environment

⚠ Warning

7. Do not use in an area where surges are generated.

<Solid state switch>

When there are units (such as solenoid type lifters, high frequency induction furnaces, motors, etc.) that generate a large amount of surge in the area around an actuator with a solid state auto switch, their proximity or pressure may cause deterioration or damage to the internal circuit of the switch. Avoid sources of surge generation and crossed lines.

8. Avoid accumulation of iron debris or close contact with magnetic substances.

The auto switches in an actuator may malfunction when a large accumulated amount of machining chips, welding spatter and or magnetically attracted material is located near the auto switch. This failure may be the result of loss magnetic force inside of the actuator.

Maintenance

⚠ Warning

1. Perform the following maintenance periodically in order to prevent possible danger due to unexpected auto switch malfunction.

- 1) Securely tighten switch mounting screws.

If screws become loose or the mounting position is dislocated, retighten them after readjusting the mounting position.

- 2) Confirm that there is no damage to the lead wires.

To prevent faulty insulation, replace switches or repair lead wires, etc., if damage is discovered.

- 3) Confirm that the green light on the 2-colour display type switch lights up.

Confirm that the green LED is ON when stopped at the set position. If the red LED is ON, when stopped at the set position, the mounting position is not appropriate. Readjust the mounting position until the green LED lights up.

Other

⚠ Warning

1. Consult with SMC concerning water resistance, elasticity of lead wires, usage at welding sites, etc.



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