

e-Actuator

New

Easy to Operate Integrated Controller Slider Type/Rod Type

CE UK
CA

Battery-less Absolute (Step Motor 24 VDC)

RoHS

Easy to set up,
just like air equipment!

2-position stop

- Single solenoid mode
- Double solenoid mode



Control mode switching

3-position stop

- Closed center mode

Cycle time setting available

Downsized

with Integrated Controller

Wiring saving

Labor saving

- Programless
- Reduced adjustment time

Annual CO₂ emissions:

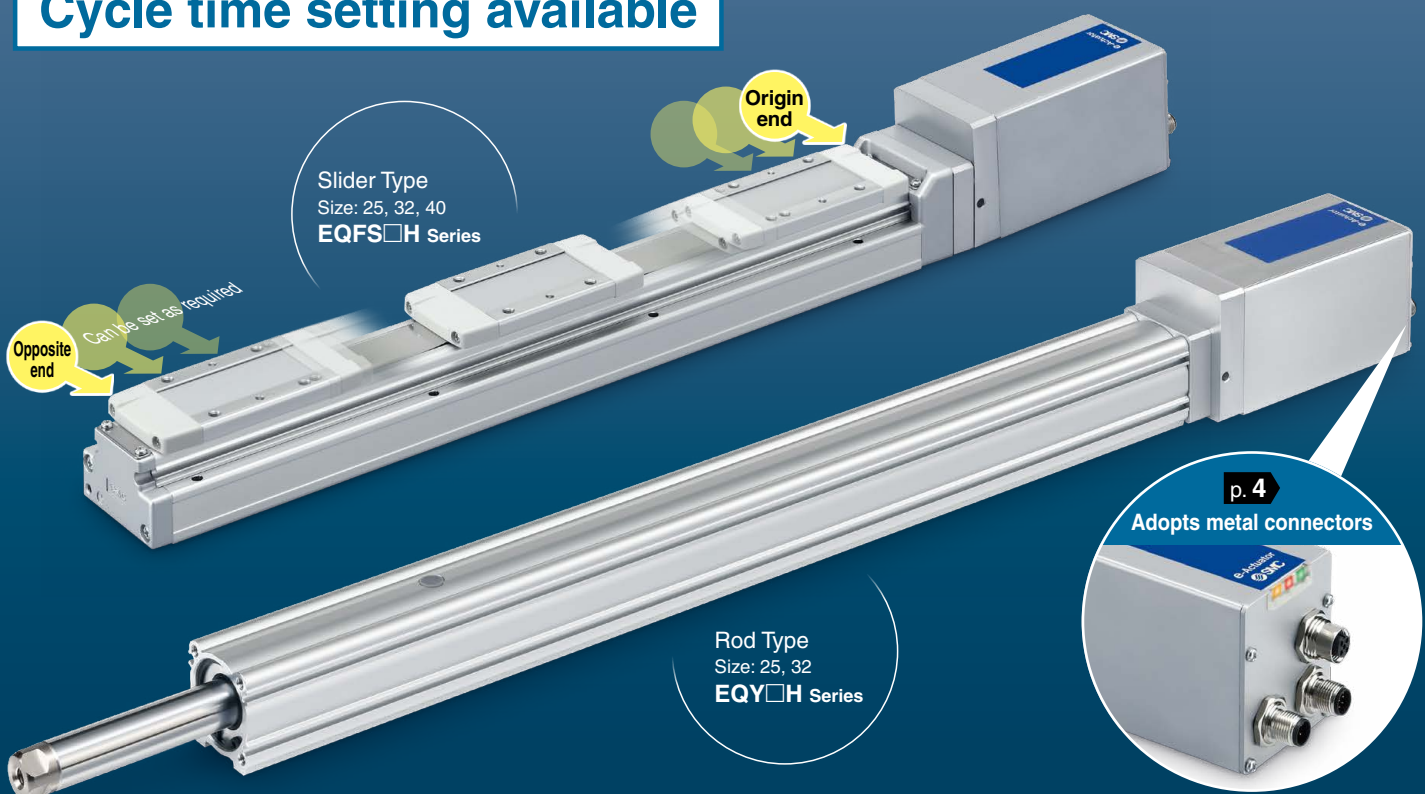
Max. 59% reduction

(SMC comparison)

p. 4

5.8 kg-CO₂e/year (14.1)

* The numerical values vary depending on the operating conditions.



Slider Type
Size: 25, 32, 40
EQFS□H Series

Rod Type
Size: 25, 32
EQY□H Series

p. 4

Adopts metal connectors

EQFS□H/EQY□H Series

SMC

CAT.ES100-154A

Simple setting allows for immediate use.

Two position stop with no programming required

For single solenoid mode (2-position)/
double solenoid mode (2-position)

All configurable on one screen.

Just **2 steps** to complete!

* When used in single solenoid mode, the control mode must be changed.



Step 1 Select the control mode.

Double solenoid mode

Double solenoid mode (2-position)

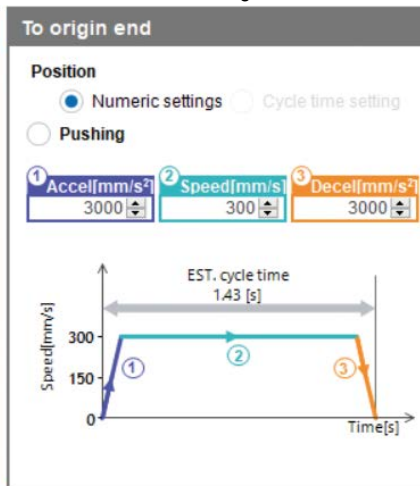
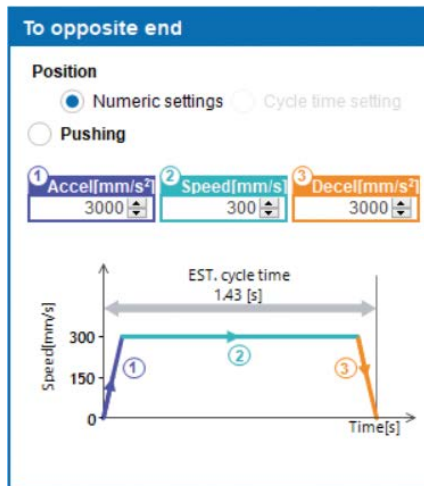


Pull down

Step 2 Set the speed, acceleration, and deceleration.

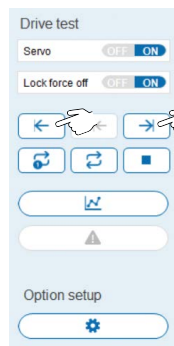
Operating Conditions

* In these charts, settling time is not included.



Setting complete

Test operation is possible immediately after setting up.



Just press the forward/backward button.

Caution

The stop position can be changed. For use in positions other than the default setting, refer to the operation manual.



Easy to set intermediate positions

Three position stop with no programming required

For closed center mode (3-position)

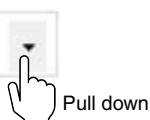
All configurable on one screen.
 Just **3 steps** to complete!



Step 1 Select the control mode.

Closed center mode

Closed center mode (3-position)



Step 2 Set the intermediate point position.

Position Setup

☒ Jog ☐ Inching

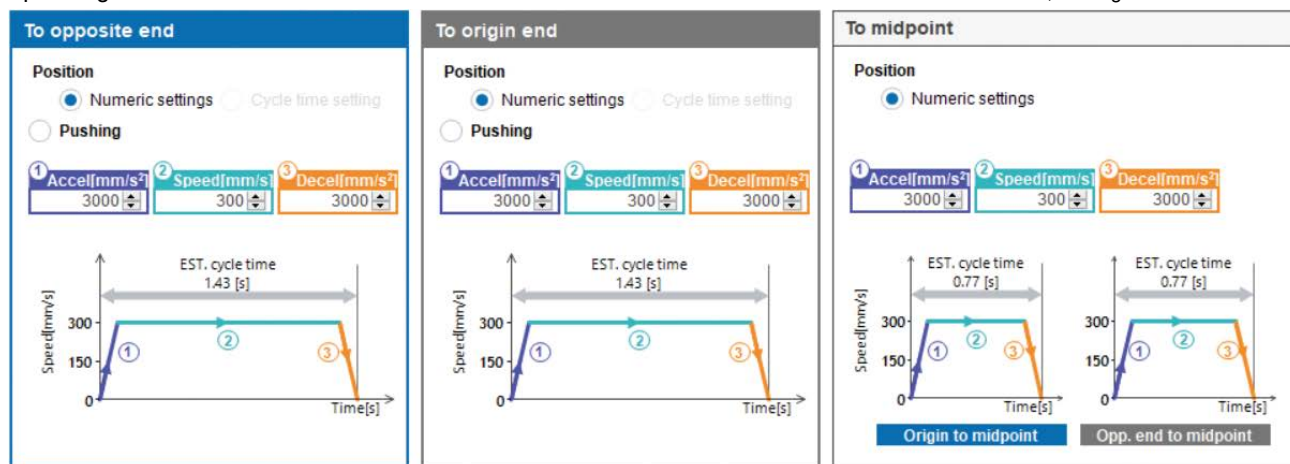
Position **0.00 mm** < >

Move speed 300mm/s

Step 3 Set the speed, acceleration, and deceleration.

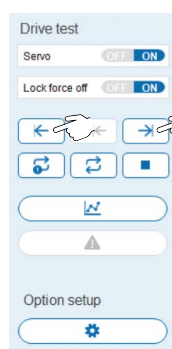
Operating Conditions

* In these charts, settling time is not included.



Setting complete

Test operation is possible immediately after setting up.



Just press the forward/backward button.

Cycle times are also *easily set*.

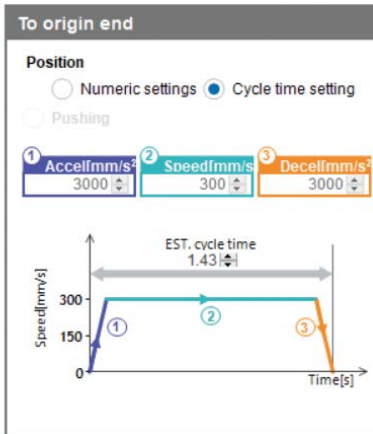
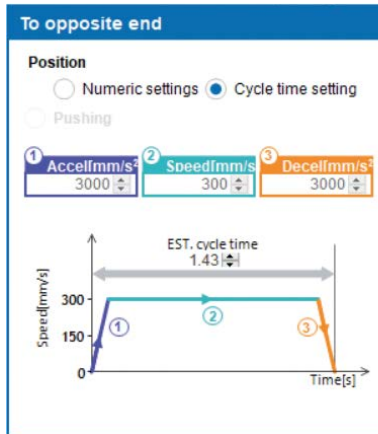
Cycle time can be set in all control modes.

For single solenoid mode (2-position)/ double solenoid mode (2-position)



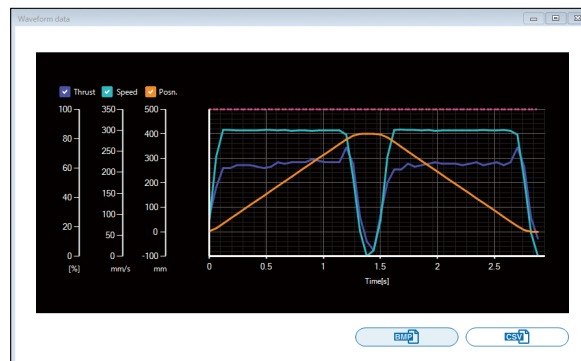
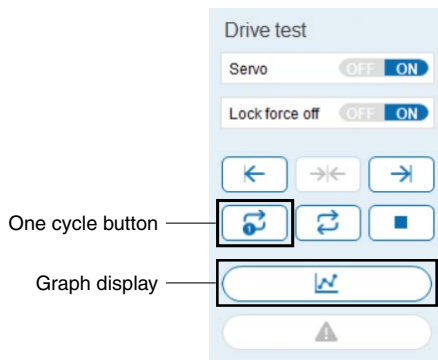
Step 1 Forward and backward speeds, temporary setting of acceleration/deceleration

Operating Conditions



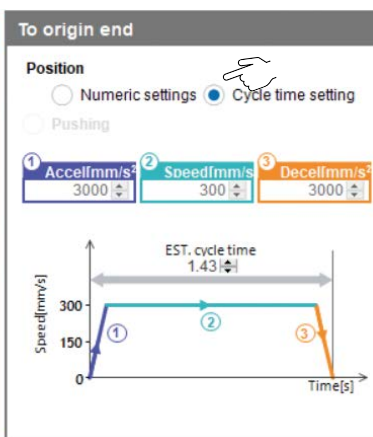
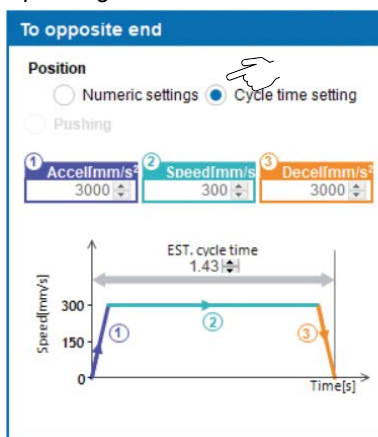
- * In these charts, settling time is not included.
- * The operating conditions to an intermediate point do not correspond to the cycle time setting.
- * Cycle time cannot be set for pushing operation.

Step 2 Operate one cycle and check the graph.



Setting complete Adjustable according to cycle time

Operating Conditions



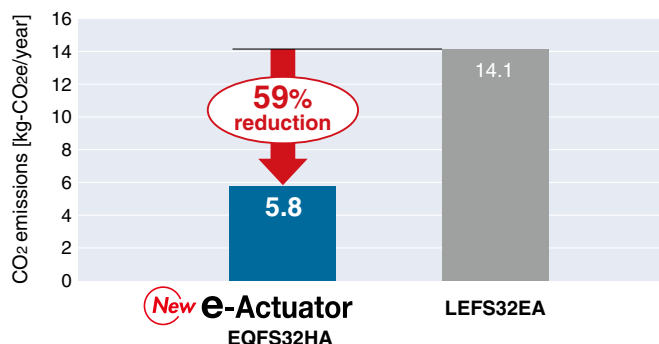
- * In these charts, settling time is not included.

Caution

The stop position can be changed. For use in positions other than the default setting, refer to the operation manual.

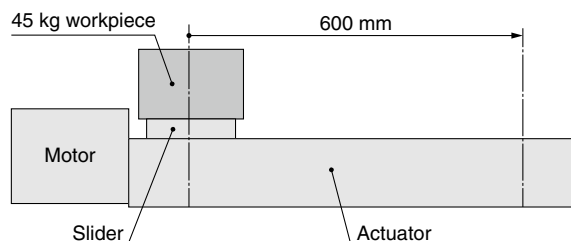


Annual CO₂ emissions reduced by up to 59% through motor control optimization (SMC comparison)



Operating conditions

- Slider type, Size 32
- Acceleration/Deceleration: 3000 mm/s²
- Speed: 50 mm/s
- Duty ratio: 20%



* The numerical values vary depending on the operating conditions.

LEDs indicate the load condition.

PWR Green :

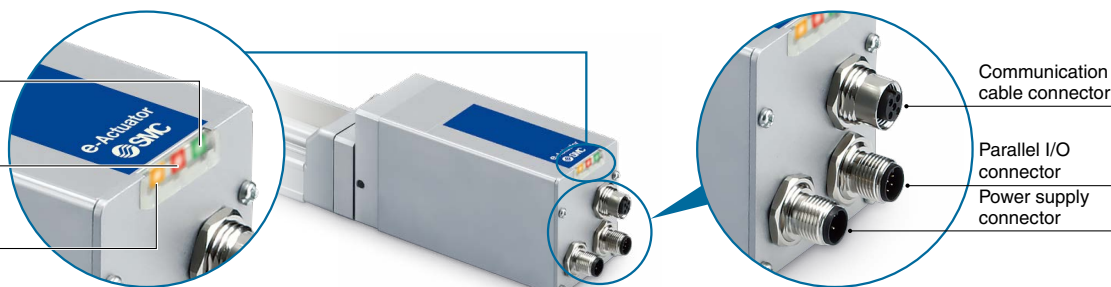
Lights up during normal operation after power on

ALM Red :

Lights up when an alarm is generated

OVL Orange :

Lights up when an overload condition occurs



Increased metal connector strength

Restart from the last stop position is possible.

Easy operation restart after recovery of the power supply

The position information is held by the encoder even when the power supply is turned off. A return to origin operation is not necessary when the power supply is recovered.



Does not require the use of batteries.

Reduced maintenance

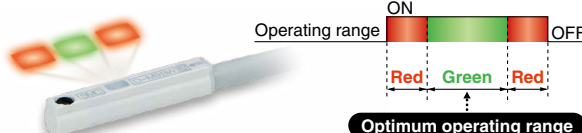
Batteries are not used to store the position information. Therefore, there is no need to store spare batteries or replace dead batteries.

Detection of table stop position by means of an auto switch is possible. p. 26

2-color indicator solid state auto switch (D-M9□ series)

Accurate setting of the mounting position can be performed without mistakes.

A **green** light lights up when within the optimum operating range.



For the slider type

Allows for position detection of the table throughout the stroke

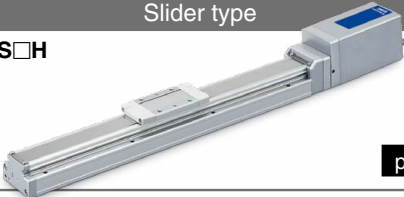



For the rod type

For checking the limit and the intermediate signal

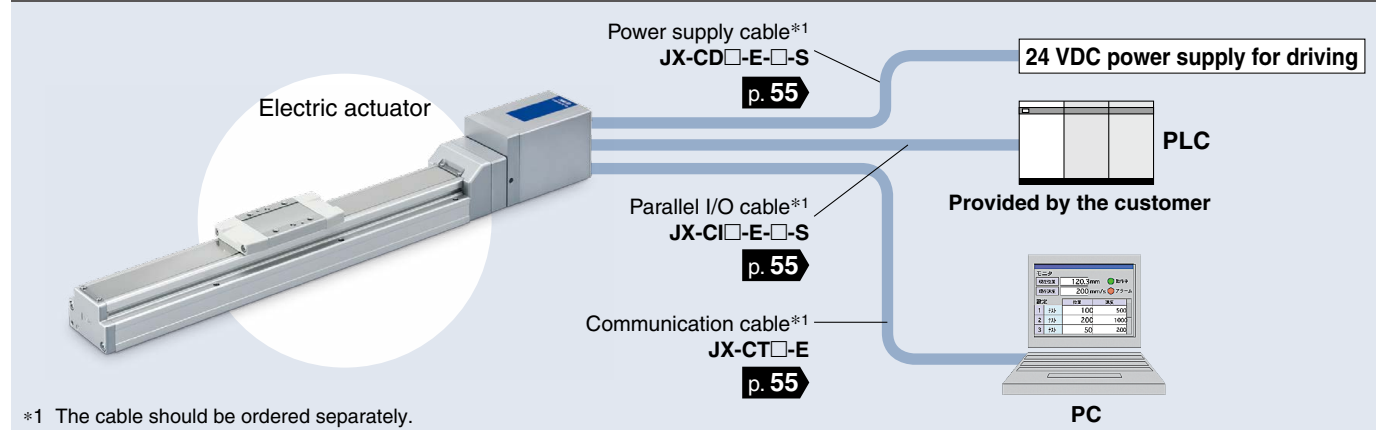


Variations

Type	Slider type		Rod type	
Series	EQFS□H  p. 8		EQY□H  p. 32	
Actuation type	In-line: Ball screw Parallel: Ball screw + Belt		In-line: Ball screw Parallel: Ball screw + Belt	
Max. speed*1 [mm/s]	1200		500	
Positioning repeatability [mm]	±0.02		±0.02	
Drive motor	Battery-less absolute (Step motor 24 VDC)	●		●
Power supply	24 VDC ±10%			
I/O signal	Parallel input: 3 inputs Parallel output: 4 outputs			
Operation mode	Positioning operation		Positioning operation Pushing operation (Excludes intermediate points)	
Size	25	●		●
	32	●		●
	40	●		—
Max. work load [kg] <small>The values in parentheses are for when mounted vertically</small>	Size 25	40 (15)		70 (30)
	32	68 (20)		100 (46)
	40	80 (40)		—
Max. pushing force [N]	Size 25	—		452
	32	—		707
Max. stroke [mm]	1200		500	
Auto switch mounting	●		●	

*1 The numerical values vary depending on the actuator type, work load, speed, and specifications.
 Please contact SMC for further details.

System Construction/General Purpose I/O

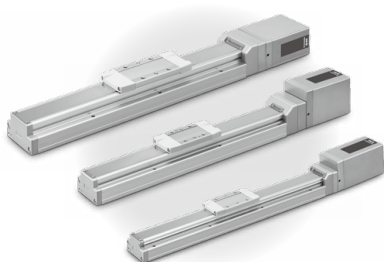


e-Actuator

Easy to Operate Integrated Controller

Slider Type *EQFS□H Series* **p. 8**

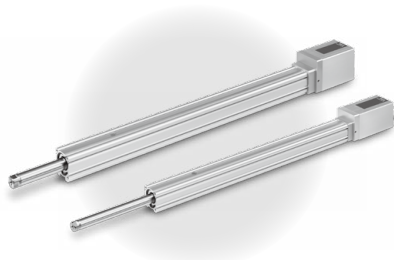
Battery-less Absolute (Step Motor 24 VDC)



Model Selection	p. 9
How to Order	p. 16
Specifications	p. 17
Construction	p. 19
Dimensions	p. 20

Rod Type *EQY□H Series* **p. 32**

Battery-less Absolute (Step Motor 24 VDC)



Model Selection	p. 33
How to Order	p. 38
Specifications	p. 39
Construction	p. 41
Dimensions	p. 42

Auto Switch Mounting	p. 26, 46
Solid State Auto Switch, Normally Closed Solid State Auto Switch, 2-Color Indicator Solid State Auto Switch	p. 27, 47

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Wiring Examples	p. 53
Operation Data Setting	p. 54
Options	p. 55

Slider Type Specific Product Precautions	p. 30
Rod Type Specific Product Precautions	p. 50
Battery-less Absolute Encoder Type Specific Product Precautions	p. 56

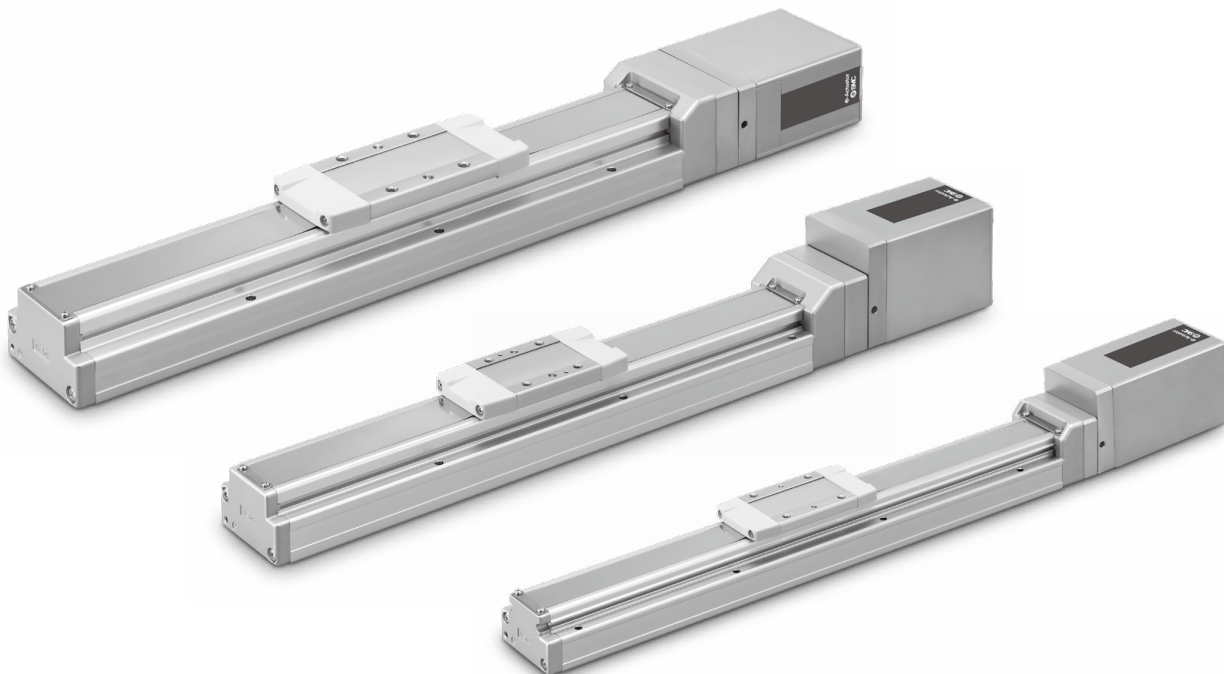
e-Actuator

Easy to Operate Integrated Controller / Slider Type

EQFS□H Series

p. 9

Battery-less Absolute (Step Motor 24 VDC)



Model Selection

EQFS□H Series

EQY□H Series

Auto Switch

Electric
Specifications

Wiring
Examples

Operation
Data Setting

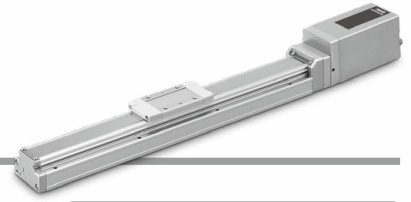
Options

Specific Product
Precautions

e-Actuator Easy to Operate Integrated Controller

EQFS□H Series Battery-less Absolute (Step Motor 24 VDC)

Model Selection



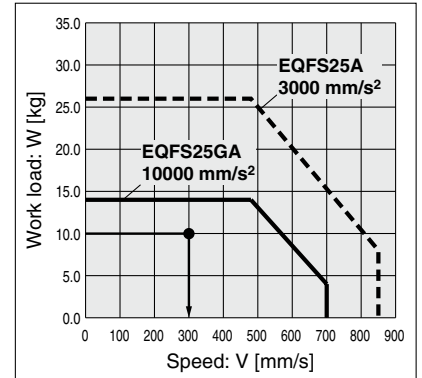
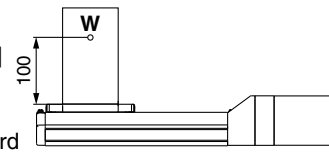
Selection Procedure



Selection Example

Operating conditions

- Workpiece mass: 10 [kg]
- Speed: 300 [mm/s]
- Acceleration/Deceleration: 10000 [mm/s²]
- Stroke: 200 [mm]
- Mounting orientation: Horizontal upward
- Workpiece mounting condition:



<Speed-Work load graph>
(EQFS25HA/Battery-less absolute)

Step 1 Check the work load-speed. <Speed-Work load graph> (pages 10 to 12)
Select a model based on the workpiece mass and speed while referencing the speed-work load graph.

Selection example) The **EQFS25HA-200** can be temporarily selected as a possible candidate based on the graph shown on the right side.

Step 2 Check the cycle time.

Calculate the **cycle time** using the following calculation method.

Cycle time:

T can be found from the following equation.

$$T = T1 + T2 + T3 + T4 \text{ [s]}$$

- T1: Acceleration time and T3: Deceleration time can be found by the following equation.

$$T1 = V/a1 \text{ [s]} \quad T3 = V/a2 \text{ [s]}$$

- T2: Constant speed time can be found from the following equation.

$$T2 = \frac{L - 0.5 \cdot V \cdot (T1 + T3)}{V} \text{ [s]}$$

- T4: Settling time varies depending on the conditions such as actuator types, load, and in position of the step data. Reference value for settling time: 0.15 s or less. The following value is used for this calculation.

$$T4 = 0.15 \text{ [s]}$$

Calculation example)

T1 to T4 can be calculated as follows.

$$T1 = V/a1 = 300/10000 = 0.03 \text{ [s]}$$

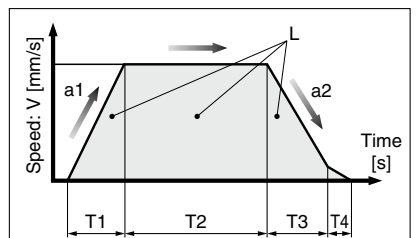
$$T3 = V/a2 = 300/10000 = 0.03 \text{ [s]}$$

$$T2 = \frac{L - 0.5 \cdot V \cdot (T1 + T3)}{V} = \frac{200 - 0.5 \cdot 300 \cdot (0.03 + 0.03)}{300} = 0.64 \text{ [s]}$$

$$T4 = 0.15 \text{ [s]}$$

The cycle time can be found as follows.

$$T = T1 + T2 + T3 + T4 = 0.03 + 0.64 + 0.03 + 0.15 = 0.85 \text{ [s]}$$

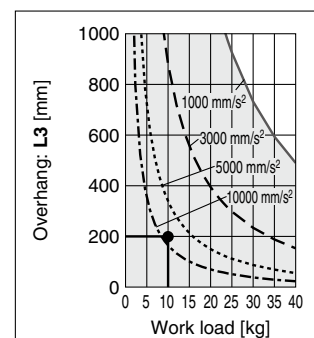
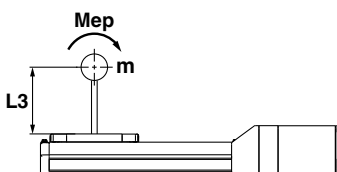


L : Stroke [mm] ... (Operating condition)
V : Speed [mm/s] ... (Operating condition)
a1: Acceleration [mm/s²] ... (Operating condition)
a2: Deceleration [mm/s²] ... (Operating condition)

T1: Acceleration time [s]
Time until reaching the set speed
T2: Constant speed time [s]
Time while the actuator is operating at a constant speed
T3: Deceleration time [s]
Time from the beginning of the constant speed operation to stop
T4: Settling time [s]
Time until positioning is completed

Step 3 Check the allowable moment. <Static allowable moment> (page 12)
<Dynamic allowable moment> (pages 13 and 14)

Confirm the moment that applies to the actuator is within the allowable range for both static and dynamic conditions.

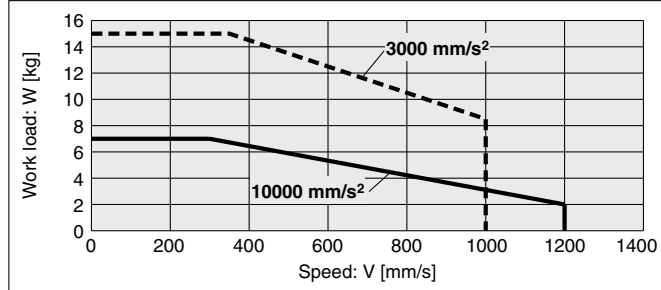


Based on the above calculation result, the **EQFS25A-200** should be selected.

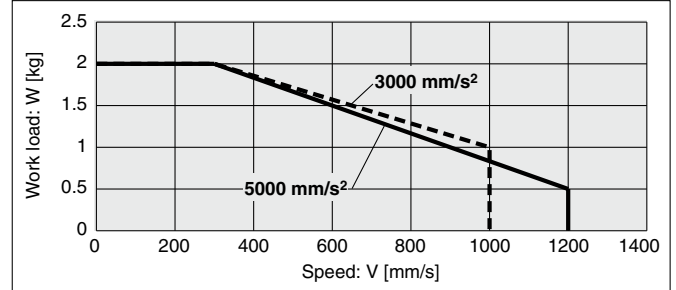
Speed-Work Load Graph (Guide)

EQFS25□HH/Ball Screw Drive

Horizontal/Lead 20

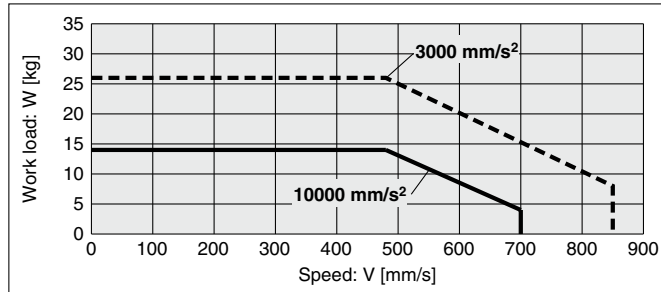


Vertical/Lead 20

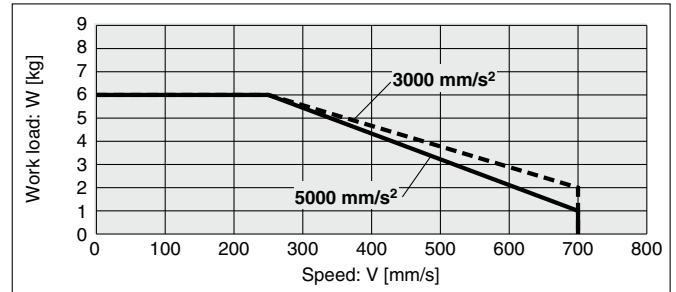


EQFS25□HA/Ball Screw Drive

Horizontal/Lead 12

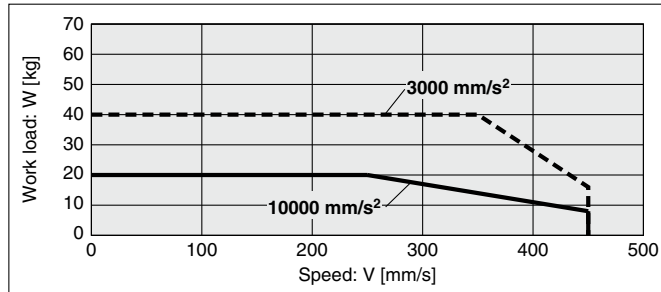


Vertical/Lead 12

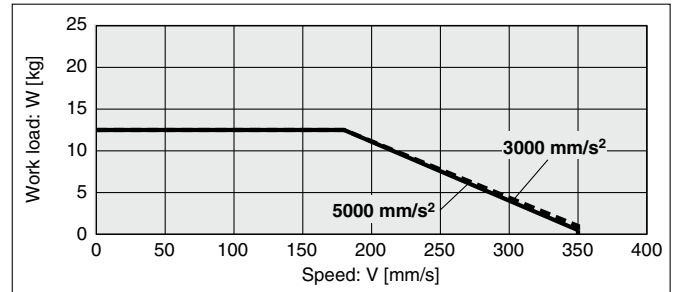


EQFS25□HB/Ball Screw Drive

Horizontal/Lead 6

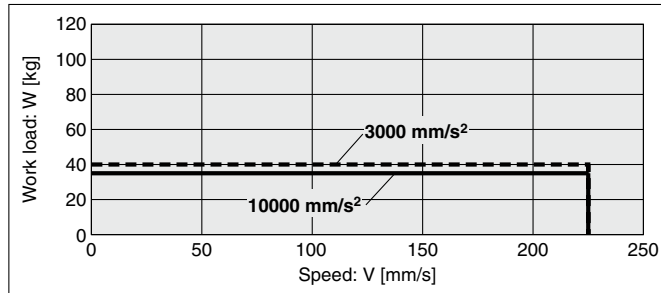


Vertical/Lead 6

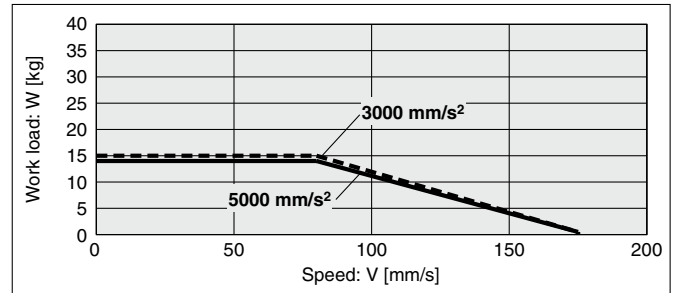


EQFS25□HC/Ball Screw Drive

Horizontal/Lead 3



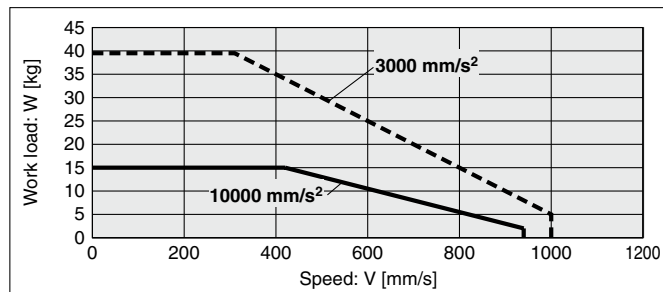
Vertical/Lead 3



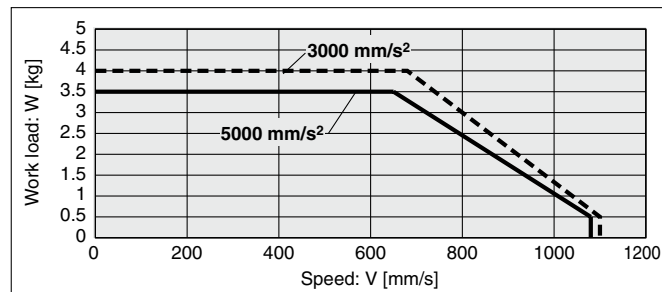
Speed-Work Load Graph (Guide)

EQFS32□HH/Ball Screw Drive

Horizontal/Lead 24

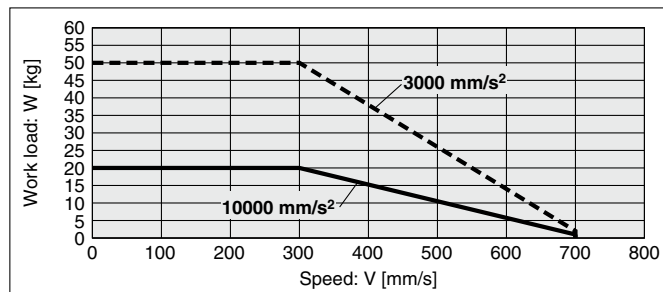


Vertical/Lead 24

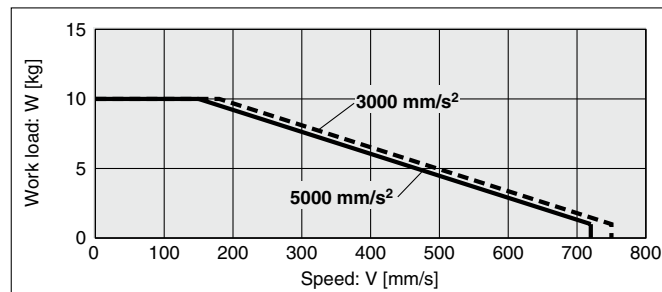


EQFS32□HA/Ball Screw Drive

Horizontal/Lead 16

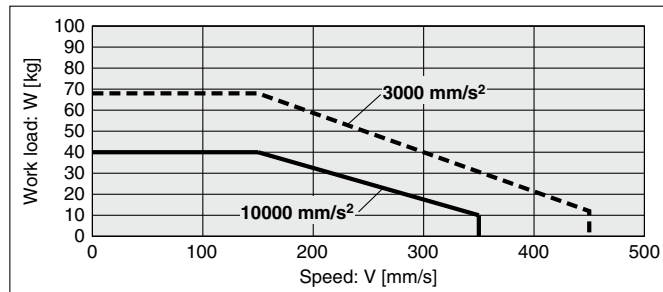


Vertical/Lead 6

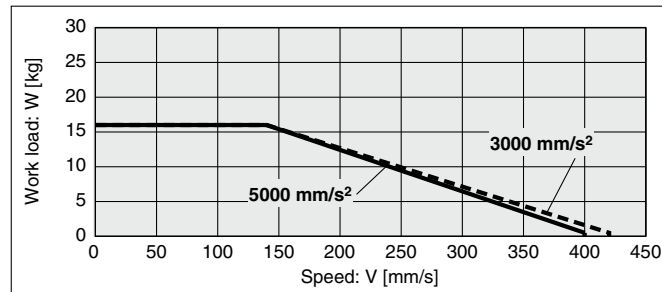


EQFS32□HB/Ball Screw Drive

Horizontal/Lead 8

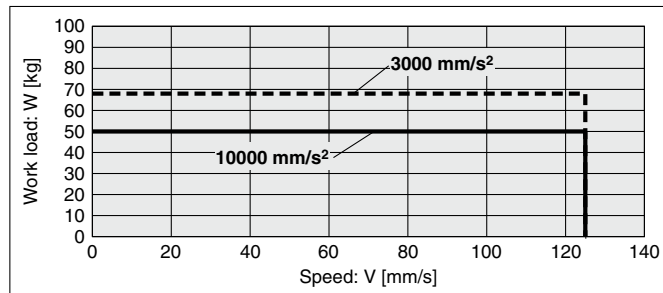


Vertical/Lead 8

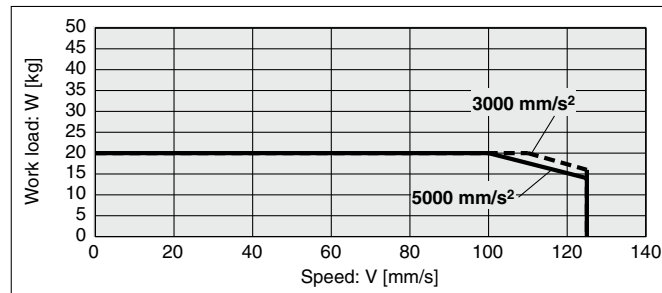


EQFS32□HC/Ball Screw Drive

Horizontal/Lead 4



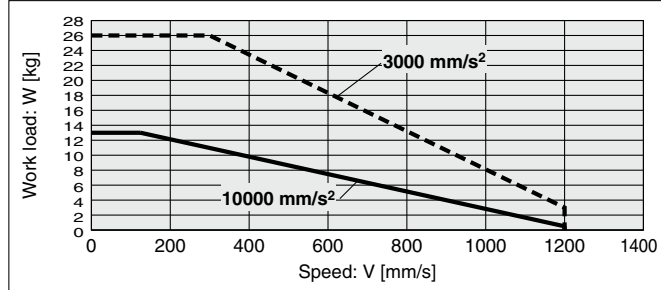
Vertical/Lead 4



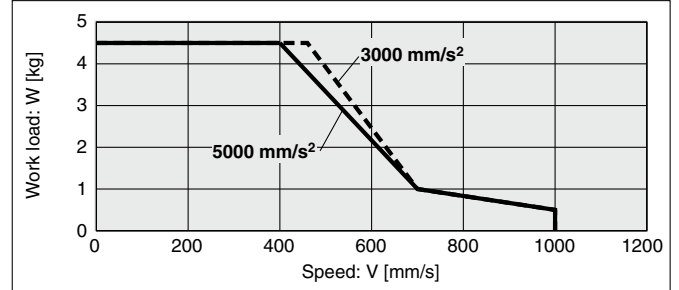
Speed-Work Load Graph (Guide)

EQFS40□HH/Ball Screw Drive

Horizontal/Lead 30

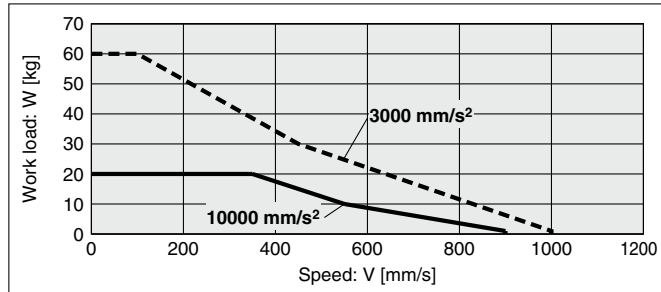


Vertical/Lead 30

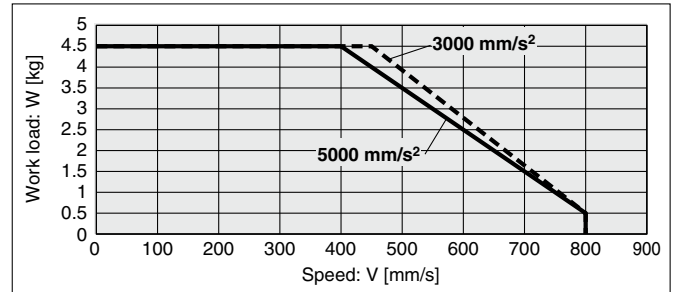


EQFS40□HA/Ball Screw Drive

Horizontal/Lead 20

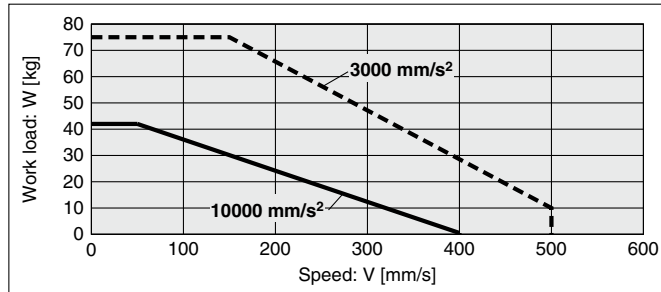


Vertical/Lead 20

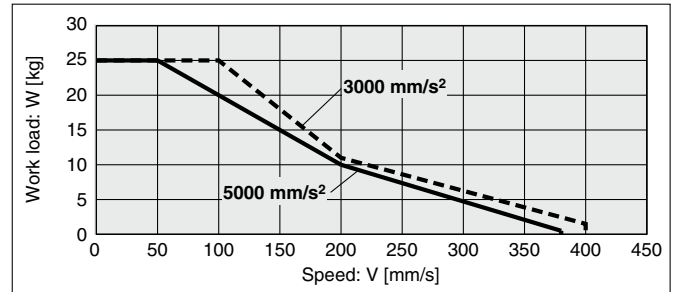


EQFS40□HB/Ball Screw Drive

Horizontal/Lead 10

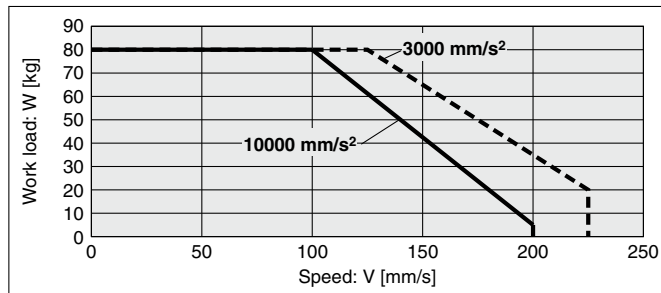


Vertical/Lead 10

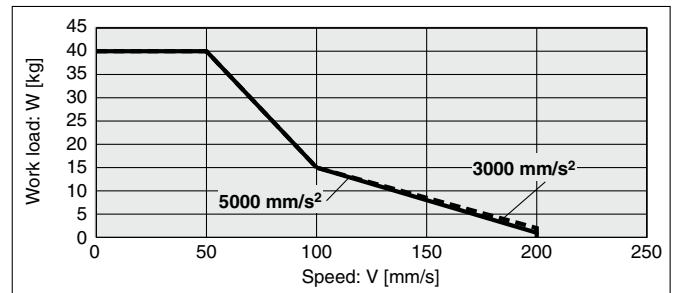


EQFS40□HC/Ball Screw Drive

Horizontal/Lead 5



Vertical/Lead 5



Static Allowable Moment*1

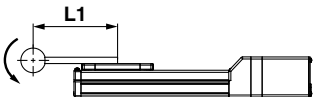
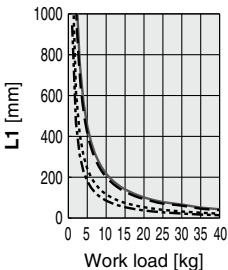
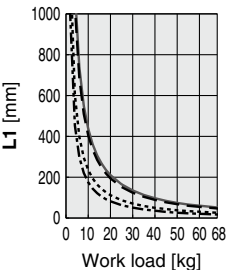
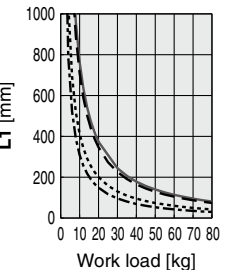
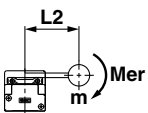
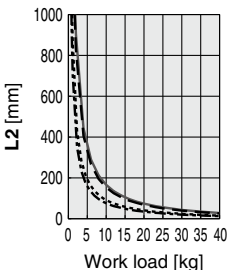
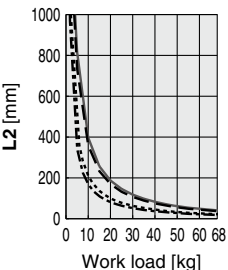
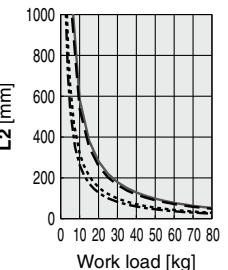
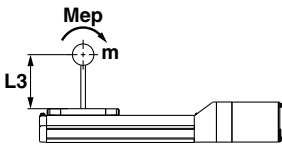
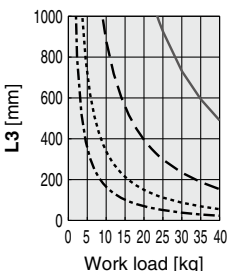
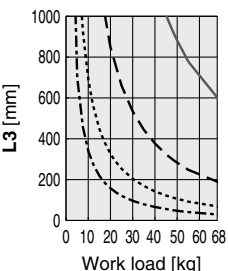
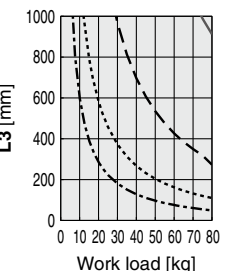
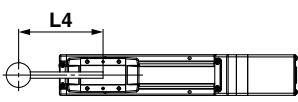
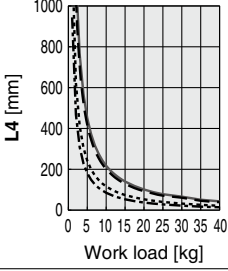
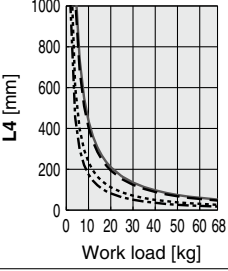
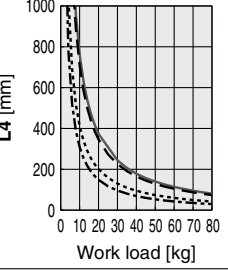
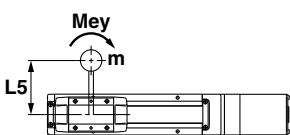
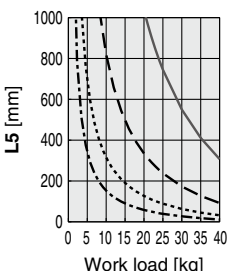
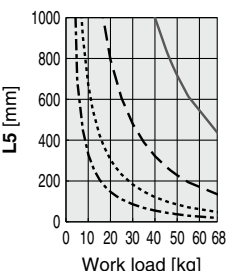
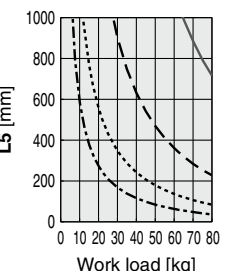
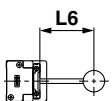
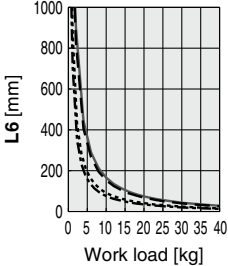
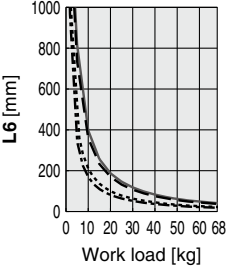
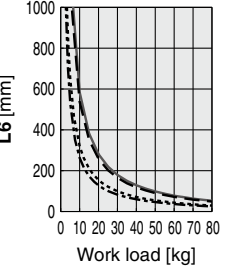
Model	Size	Pitching	Yawing	Rolling
EQFS□H	25	27.0	27.0	52.0
	32	46.0	46.0	101.0
	40	110.0	110.0	207.0

[N·m] *1 The static allowable moment is the amount of static moment which can be applied to the actuator when it is stopped.
 If the product is exposed to impact or repeated load, be sure to take adequate safety measures when using the product.

Dynamic Allowable Moment

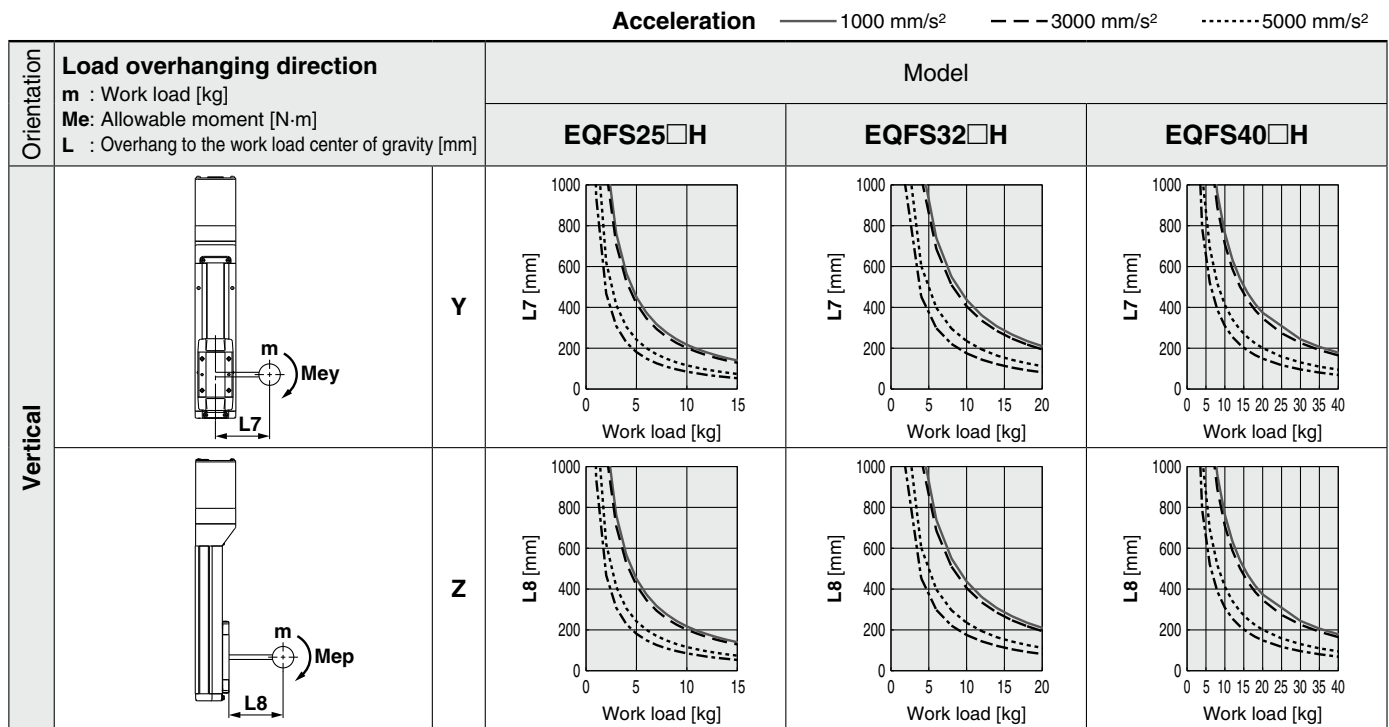
* These graphs show the amount of allowable overhang (guide unit) when the center of gravity of the workpiece overhangs in one direction.

Acceleration ——— 1000 mm/s² - - - 3000 mm/s² 5000 mm/s² - - - - 10000 mm/s²

Orientation	Load overhanging direction m : Work load [kg] Me: Allowable moment [N·m] L : Overhang to the work load center of gravity [mm]	Model		
		EQFS25□H	EQFS32□H	EQFS40□H
Horizontal/Bottom	 X			
	 Y			
	 Z			
Wall	 X			
	 Y			
	 Z			

Dynamic Allowable Moment

* These graphs show the amount of allowable overhang (guide unit) when the center of gravity of the workpiece overhangs in one direction.

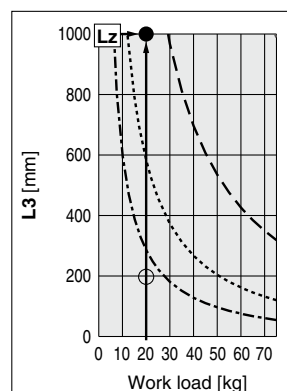
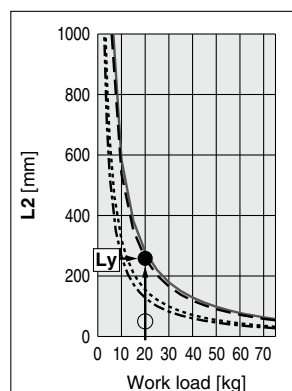
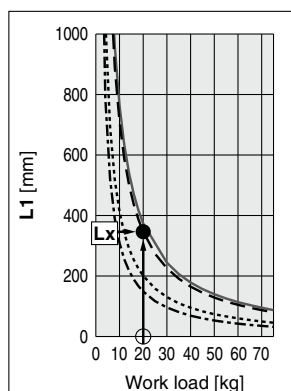


Calculation of Guide Load Factor

- Decide operating conditions.
 Model: EQFS□H
 Size: 25/32/40
 Mounting orientation: Horizontal/Bottom/Wall/Vertical
 Acceleration [mm/s²]: **a**
 Work load [kg]: **m**
 Work load center position [mm]: **Xc/Yc/Zc**
- Select the target graph while referencing the model, size, and mounting orientation.
- Based on the acceleration and work load, find the overhang [mm]: **Lx/Ly/Lz** from the graph.
- Calculate the load factor for each direction.
 $\alpha x = Xc/Lx$, $\alpha y = Yc/Ly$, $\alpha z = Zc/Lz$
- Confirm the total of αx , αy , and αz is 1 or less.
 $\alpha x + \alpha y + \alpha z \leq 1$
 When 1 is exceeded, please consider a reduction of acceleration and work load, or a change of the work load center position and series.

Example

- Operating conditions
 Model: EQFS40□H
 Size: 40
 Mounting orientation: Horizontal
 Acceleration [mm/s²]: 3000
 Work load [kg]: 20
 Work load center position [mm]: **Xc = 0, Yc = 50, Zc = 200**
- Select the graphs for horizontal of the EQFS40□H on page 13.



- Lx = 350 mm, Ly = 250 mm, Lz = 1000 mm**
- The load factor for each direction can be found as follows.
 $\alpha x = 0/350 = 0$
 $\alpha y = 50/250 = 0.2$
 $\alpha z = 200/1000 = 0.2$
- $\alpha x + \alpha y + \alpha z = 0.4 \leq 1$**

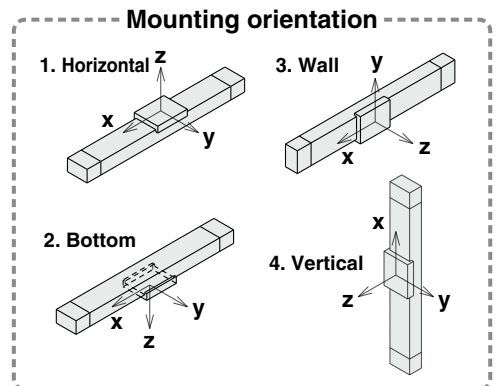
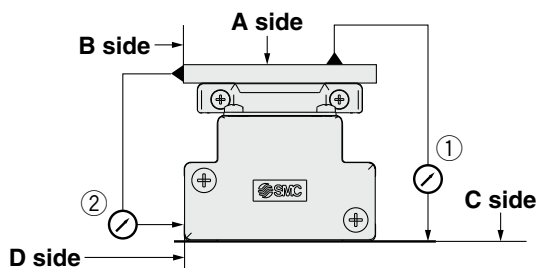


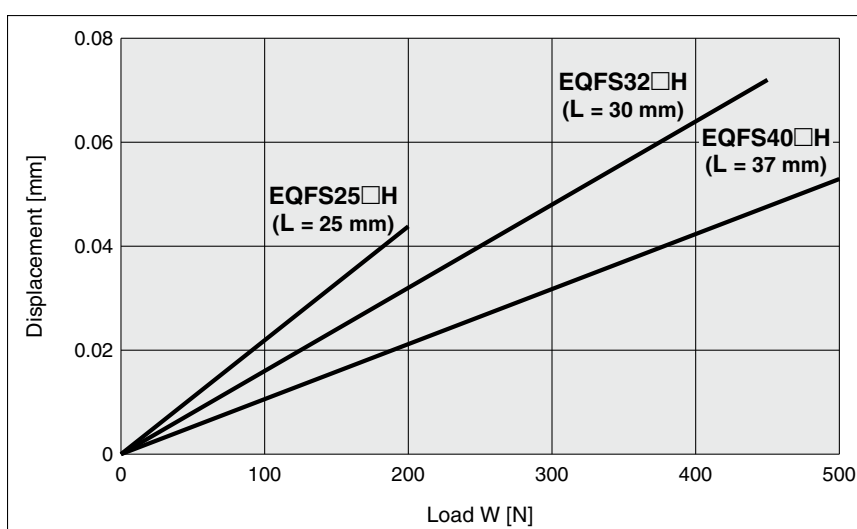
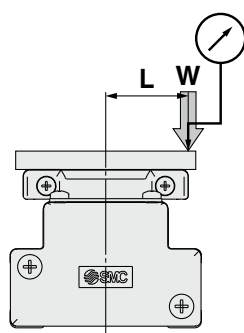
Table Accuracy (Reference Value)



Model	Traveling parallelism [mm] (Every 300 mm)	
	① C side traveling parallelism to A side	② D side traveling parallelism to B side
EQFS25□H	0.05	0.03
EQFS32□H	0.05	0.03
EQFS40□H	0.05	0.03

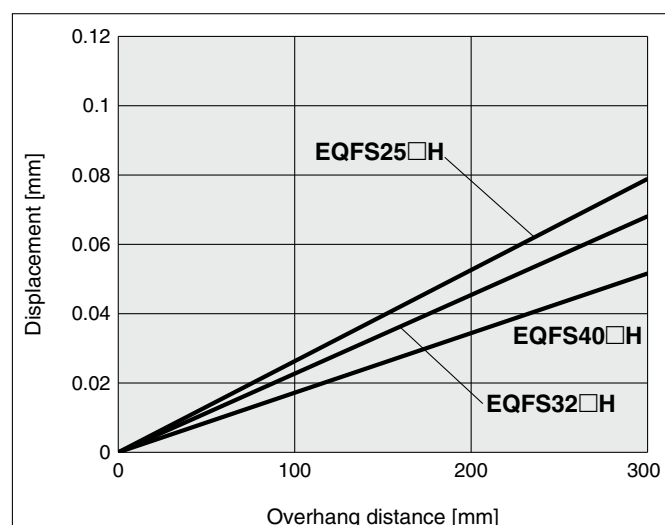
* Traveling parallelism does not include the mounting surface accuracy.
 (Excludes when the stroke exceeds 2000 mm)

Table Displacement (Reference Value)



* This displacement is measured when a 15 mm aluminum plate is mounted and fixed on the table.
 * Check the clearance and play of the guide separately.

Overhang Displacement Due to Table Clearance (Initial Reference Value)



Battery-less Absolute (Step Motor 24 VDC)

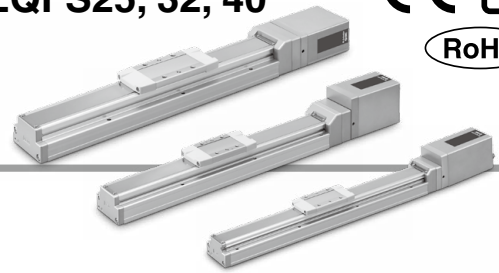
e-Actuator Easy to Operate

Integrated Controller / Slider Type

EQFS□H Series EQFS25, 32, 40



How to Order



EQFS **32** **R** **H** **A** - **300** **□** **□** - **B** **5**

1 2 3 4 5 6 7 8 9

1 Size

25
32
40

2 Motor mounting position

Nil	In-line
R	Right side parallel
L	Left side parallel

3 Motor type

H	Battery-less absolute (Step motor 24 VDC)
---	---

4 Lead [mm]

Symbol	EQFS25	EQFS32	EQFS40
H	20	24	30
A	12	16	20
B	6	8	10
C	3	4	5

5 Stroke

50	50
to	to
1200	1200

* For details, refer to the applicable stroke table below.

6 Motor option

Nil	Without option
B	With lock

7 Grease application (Seal band part)

Nil	With
N	Without (Roller specification)

8 Controller position

B	Integrated controller
---	-----------------------

9 Parallel input

5	NPN
6	PNP

The auto switches should be ordered separately.
For details, refer to pages 26 to 29.

Applicable Stroke Table

Size	Stroke																					
	50	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000	1100	1200
25	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	—	—	—	—	—	—
32	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	—	—
40	—	—	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●

Model Selection

EQFS□H Series

EQY□H Series

Auto Switch

Electric Specifications

Wiring Examples

Operation Data Setting

Options

Specific Product Precautions

Specifications

Model			EQFS25□H				EQFS32□H				EQFS40□H				
Actuator specifications	Stroke [mm]*1		50 to 800				50 to 1000				150 to 1200				
	Work load [kg]*2		Horizontal	15	26	40	40	39.5	50	68	68	26	60	75	80
			Vertical	2	6	12.5	15	4	10	16	20	4.5	4.5	25	40
	Speed [mm/s]	Stroke range	Up to 400	20 to 1200	12 to 850	6 to 450	3 to 225	24 to 1100	16 to 750	8 to 450	4 to 125	30 to 1200	20 to 1000	10 to 500	5 to 225
			401 to 500	20 to 1100	12 to 750	6 to 400	3 to 225	24 to 1100	16 to 750	8 to 450	4 to 125	30 to 1200	20 to 1000	10 to 500	5 to 225
			501 to 600	20 to 900	12 to 540	6 to 270	3 to 135	24 to 1100	16 to 750	8 to 400	4 to 125	30 to 1200	20 to 1000	10 to 500	5 to 225
			601 to 700	20 to 630	12 to 420	6 to 230	3 to 115	24 to 930	16 to 620	8 to 310	4 to 125	30 to 1200	20 to 900	10 to 440	5 to 220
			701 to 800	20 to 550	12 to 330	6 to 180	3 to 90	24 to 750	16 to 500	8 to 250	4 to 125	30 to 1140	20 to 760	10 to 350	5 to 175
			801 to 900	—	—	—	—	24 to 610	16 to 410	8 to 200	4 to 100	30 to 930	20 to 620	10 to 280	5 to 140
			901 to 1000	—	—	—	—	24 to 500	16 to 340	8 to 170	4 to 85	30 to 780	20 to 520	10 to 250	5 to 125
			1001 to 1100	—	—	—	—	—	—	—	—	30 to 660	20 to 440	10 to 220	5 to 110
			1101 to 1200	—	—	—	—	—	—	—	—	30 to 570	20 to 380	10 to 190	5 to 95
	Max. acceleration/ deceleration [mm/s²]		Horizontal	10000											
			Vertical	5000											
	Positioning repeatability [mm]			±0.02											
	Lost motion [mm]*3			0.1 or less											
	Lead [mm]			20	12	6	3	24	16	8	4	30	20	10	5
	Impact/Vibration resistance [m/s²]*4			50/20											
	Actuation type			Ball screw (EQFS□H), Ball screw + Belt (EQFS□ ^R H)											
	Guide type			Linear guide											
	Operating temperature range [°C]			5 to 40											
	Operating humidity range [%RH]			90 or less (No condensation)											
Electric specifications	Motor size		□42				□56.4								
	Motor type		Battery-less absolute (Step motor 24 VDC)												
	Encoder		Battery-less absolute												
	Power supply voltage [V]		24 VDC ±10%												
	Power [W]*5 *7		Max. power 89				Max. power 116				Max. power 116				
Lock unit specifications	Type*6		Non-magnetizing lock												
	Holding force [N]		47	78	157	294	72	108	216	421	75	113	225	421	
	Power [W]*7		5				5				5				
	Rated voltage [V]		24 VDC ±10%												

*1 Please contact SMC for non-standard strokes as they are produced as special orders.

*2 The max. work load at 3000 mm/s² acceleration and deceleration speed

Work load varies depending on the speed and acceleration. Check the "Speed-Work Load Graph (Guide)" on pages 10 to 12.

Furthermore, if the cable length exceeds 5 m, the speed and work load specified in the "Speed-Work Load Graph" may decrease by up to 10% for each 5 m increase.

*3 A reference value for correcting errors in reciprocal operation

*4 Impact resistance: No malfunction occurred when the actuator was tested with a drop tester in both an axial direction and a perpendicular direction to the lead screw. (The test was performed with the actuator in the initial state.)

Vibration resistance: No malfunction occurred in a test ranging between 45 to 2000 Hz. The test was performed in both an axial direction and a perpendicular direction to the lead screw. (The test was performed with the actuator in the initial state.)

*5 This value can be used for the selection of the power supply.

*6 With lock only

*7 For an actuator with lock, add the power for the lock.

Weight

In-line Motor

Series	EQFS25															
Stroke [mm]	50	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800
Product weight [kg]	1.77	1.91	2.05	2.19	2.33	2.47	2.61	2.75	2.89	3.03	3.17	3.31	3.45	3.59	3.73	3.87
Additional weight with lock [kg]	0.31															

Series	EQFS32																			
Stroke [mm]	50	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000
Product weight [kg]	3.12	3.32	3.52	3.72	3.92	4.12	4.32	4.52	4.72	4.92	5.12	5.32	5.52	5.72	5.92	6.12	6.32	6.52	6.72	6.92
Additional weight with lock [kg]	0.58																			

Series	EQFS40																			
Stroke [mm]	150	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000	1100	1200
Product weight [kg]	4.99	5.27	5.55	5.83	6.11	6.39	6.77	6.95	7.23	7.51	7.79	8.07	8.35	8.63	8.91	9.19	9.47	9.75	10.31	10.87
Additional weight with lock [kg]	0.60																			

Right/Left Side Parallel Motor

Series	EQFS25															
Stroke [mm]	50	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800
Product weight [kg]	1.75	1.89	2.03	2.17	2.31	2.45	2.59	2.73	2.87	3.01	3.15	3.29	3.43	3.57	3.71	3.85
Additional weight with lock [kg]	0.31															

Series	EQFS32																			
Stroke [mm]	50	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000
Product weight [kg]	3.09	3.29	3.49	3.69	3.89	4.09	4.29	4.49	4.69	4.89	5.09	5.29	5.49	5.69	5.89	6.09	6.29	6.49	6.69	6.89
Additional weight with lock [kg]	0.58																			

Series	EQFS40																			
Stroke [mm]	150	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000	1100	1200
Product weight [kg]	5.15	5.43	5.71	5.99	6.27	6.55	6.93	7.11	7.39	7.67	7.95	8.23	8.51	8.79	9.07	9.35	9.63	9.91	10.47	11.03
Additional weight with lock [kg]	0.60																			

Model Selection

EQFS□H Series

EQ□H Series

Auto Switch

Electric Specifications

Wiring Examples

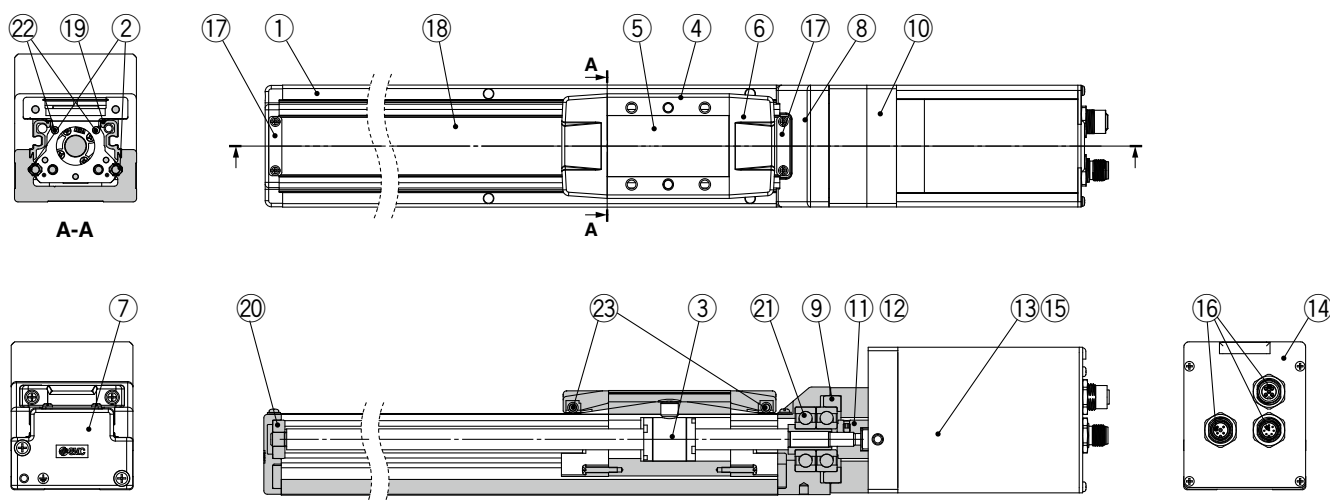
Operation Data Setting

Options

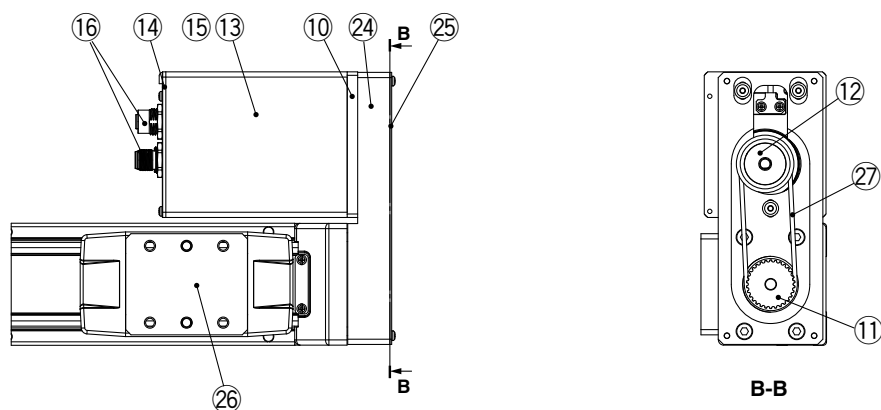
Specific Product Precautions

Construction

In-line motor



Right/Left side parallel motor



Component Parts

No.	Description	Material	Note
1	Body	Aluminum alloy	Anodized
2	Rail guide	—	
3	Ball screw assembly	—	
4	Table	Aluminum alloy	Anodized
5	Blanking plate	Aluminum alloy	Anodized
6	Seal band holder	Synthetic resin	
7	Housing A	Aluminum die-casted	Coating
8	Housing B	Aluminum die-casted	Coating
9	Bearing stopper	Aluminum alloy	
10	Motor adapter	Aluminum alloy	Coating
11	Screw hub/pulley	Aluminum alloy	
12	Motor hub/pulley	Aluminum alloy	
13	Motor cover	Aluminum alloy	Anodized
14	End cover	Aluminum alloy	Anodized
15	Motor	—	
16	Connector	—	
17	Band stopper	Stainless steel	
18	Dust seal band	Stainless steel	
19	Seal magnet	—	
20	Bearing	—	201 mm stroke or more
21	Bearing	—	
22	Magnet	—	
23	Roller shaft	Stainless steel	Without grease application

Component Parts (Right/Left side parallel only)

No.	Description	Material	Note
24	Return plate	Aluminum alloy	Coating
25	Cover plate	Aluminum alloy	Anodized
26	Table spacer	Aluminum alloy	Anodized
27	Belt	—	

Replacement Parts (Right/Left side parallel only)/Belt

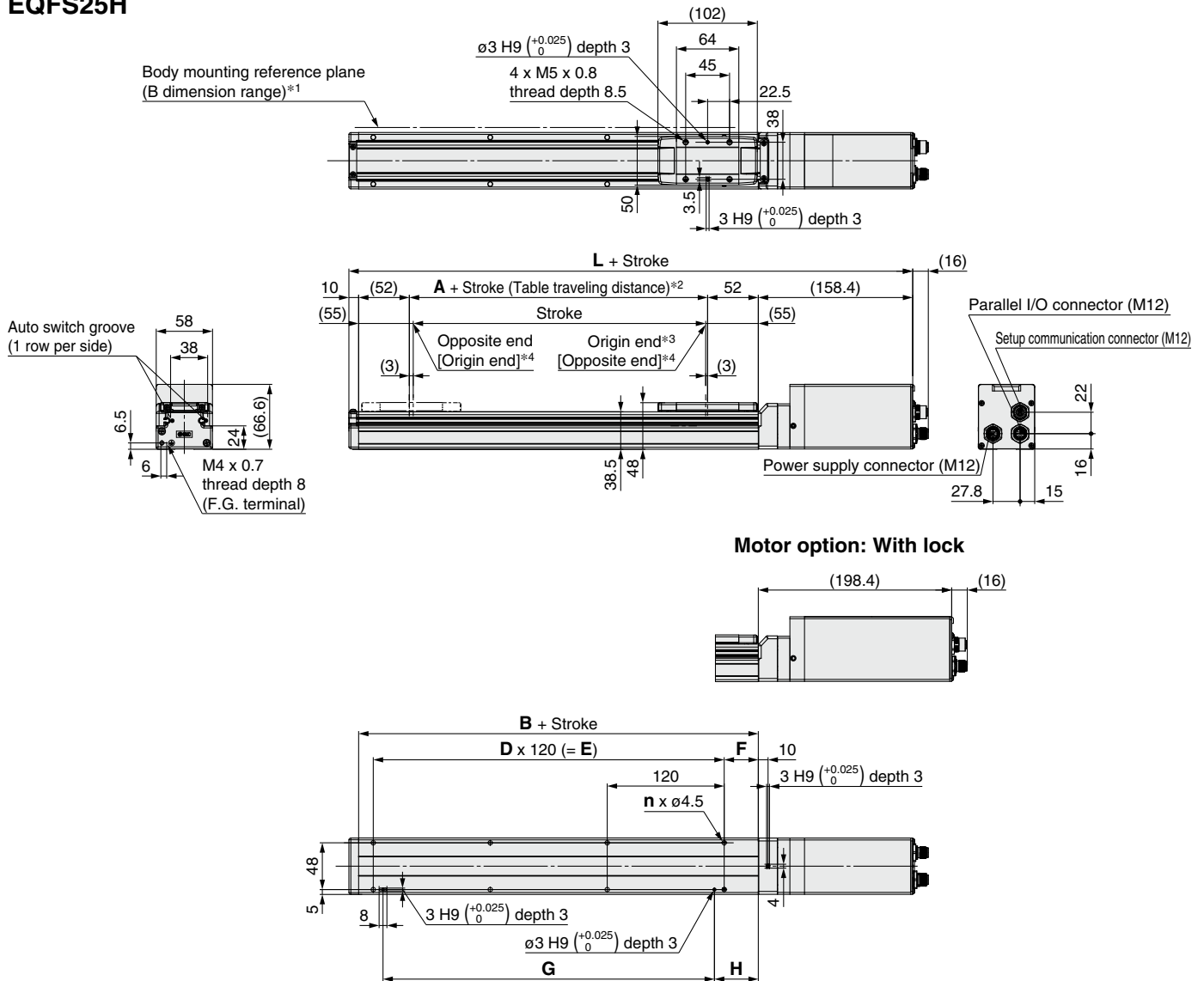
No.	Size	Order no.
27	25	LE-D-15-1
	32	LE-D-19-1
	40	LE-D-19-2

Replacement Parts/Grease Pack

Applied portion	Order no.
Ball screw	GR-S-010 (10 G) GR-S-020 (20 G)
Rail guide	
Dust seal band (When "Without" is selected for the grease application, grease is applied only on the back side.)	

Dimensions: In-line Motor

EQFS25H



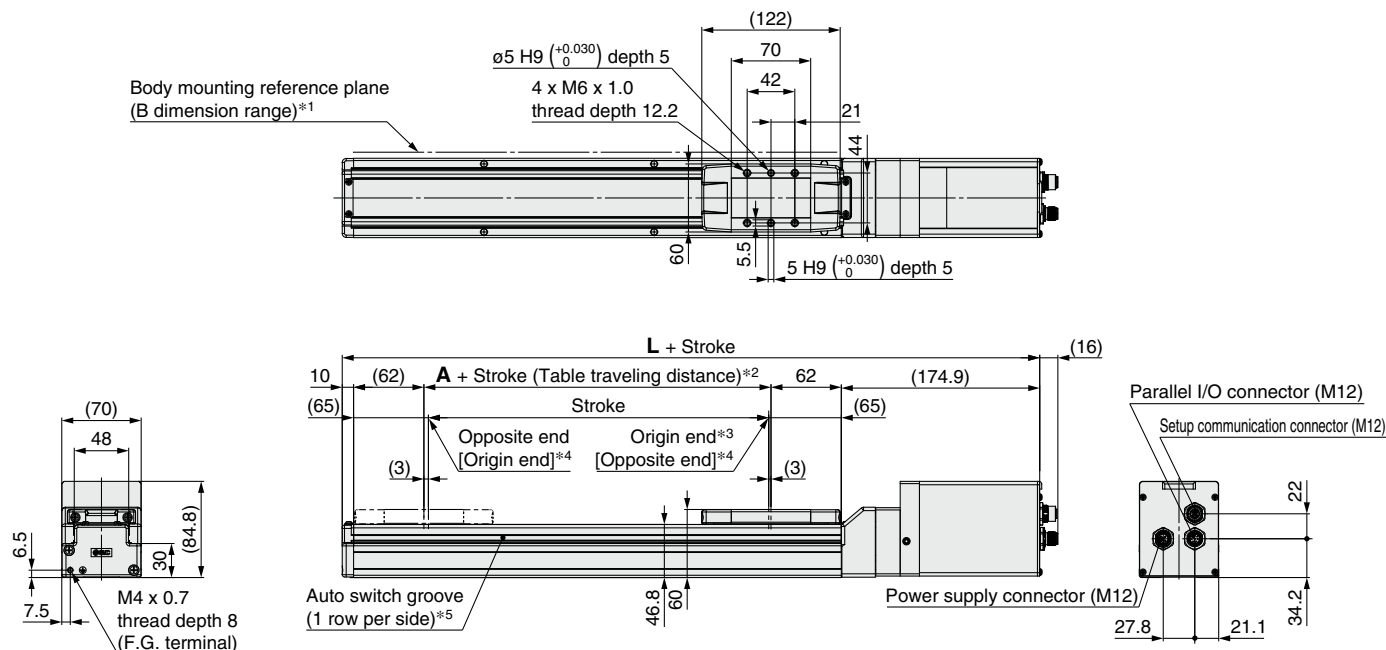
- *1 When mounting the actuator using the body mounting reference plane, set the height of the opposite surface or pin to be 3 mm or more. (Recommended height: 5 mm)
 In addition, be aware that surfaces other than the body mounting reference plane (B dimension range) may slightly protrude from the body mounting reference plane. Be sure to provide a clearance of 1 mm or more to avoid interference with workpieces, facilities, etc.
- *2 The distance the table moves according to movement instructions
 Make sure that workpieces mounted on the table do not interfere with other workpieces or the facilities around the table.
- *3 Indicates the factory default origin position (0 mm)
- *4 [] refers to when the rotation direction reference is changed.

Dimensions

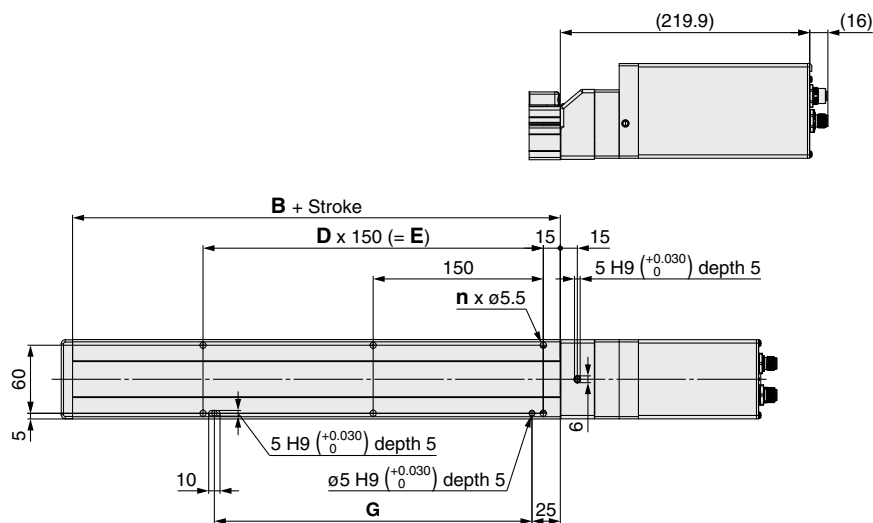
Stroke [mm]	L		A	B	n	D	E	F	G	H
	Without lock	With lock								
50	278.4	318.4	6	110	4	—	—	20	100	30
100, 150					6	2	240	35	220	45
200, 250					8	3	360		340	
300, 350, 400					10	4	480		460	
450, 500					12	5	600		580	
550, 600, 650					14	6	720		700	
700, 750					16	7	840		820	
800										

Dimensions: In-line Motor

EQFS32H



Motor option: With lock



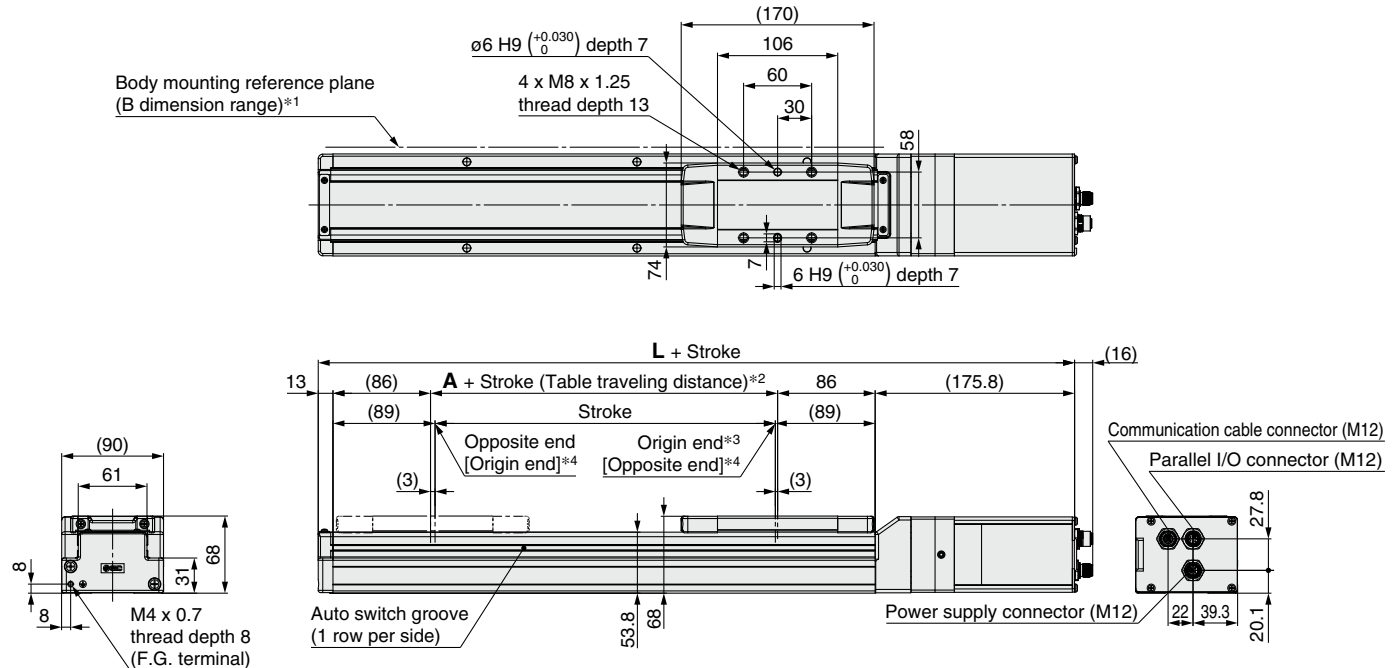
- *1 When mounting the actuator using the body mounting reference plane, set the height of the opposite surface or pin to be 3 mm or more. (Recommended height: 5 mm)
 In addition, be aware that surfaces other than the body mounting reference plane (B dimension range) may slightly protrude from the body mounting reference plane. Be sure to provide a clearance of 1 mm or more to avoid interference with workpieces, facilities, etc.
- *2 The distance the table moves according to movement instructions
 Make sure that workpieces mounted on the table do not interfere with other workpieces or the facilities around the table.
- *3 Indicates the factory default origin position (0 mm)
- *4 [] refers to when the rotation direction reference is changed.
- *5 A switch spacer (BM3-016) is required to secure auto switches. Please order it separately.

Dimensions

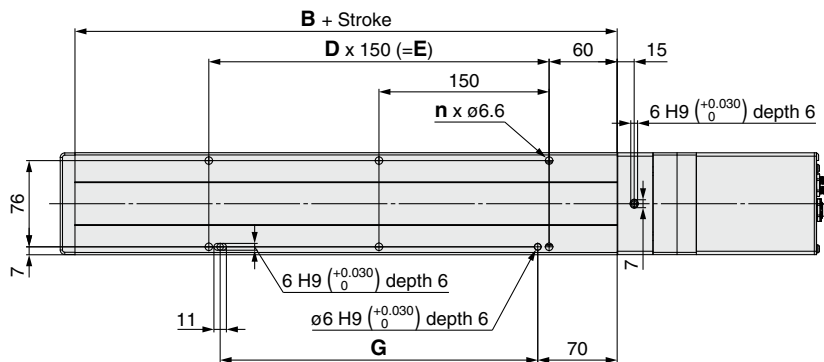
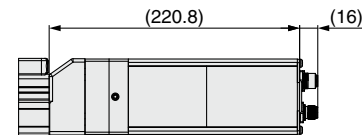
Stroke [mm]	L		A	B	n	D	E	G
	Without lock	With lock						
50, 100, 150	314.9	359.9	6	130	4	—	—	130
200, 250, 300					6	2	300	280
350, 400, 450					8	3	450	430
500, 550, 600					10	4	600	580
650, 700, 750					12	5	750	730
800, 850, 900					14	6	900	880
950, 1000					16	7	1050	1030

Dimensions: In-line Motor

EQFS40H



Motor option: With lock

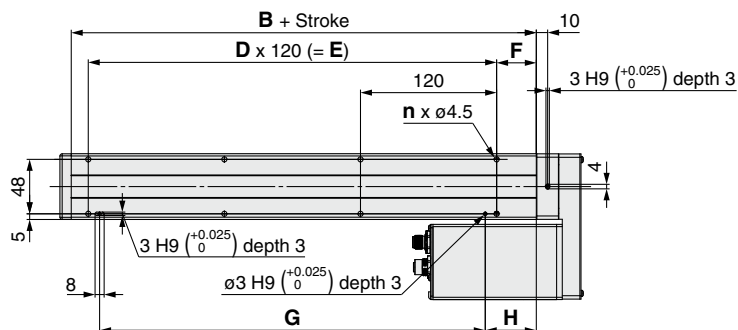


- *1 When mounting the actuator using the body mounting reference plane, set the height of the opposite surface or pin to be 3 mm or more. (Recommended height: 5 mm)
 In addition, be aware that surfaces other than the body mounting reference plane (B dimension range) may slightly protrude from the body mounting reference plane. Be sure to provide a clearance of 1 mm or more to avoid interference with workpieces, facilities, etc.
- *2 The distance the table moves according to movement instructions
 Make sure that workpieces mounted on the table do not interfere with other workpieces or the facilities around the table.
- *3 Indicates the factory default origin position (0 mm)
- *4 [] refers to when the rotation direction reference is changed.
- * A switch spacer (BM Y3-016) is required to secure auto switches. Please order it separately.

Dimensions

Stroke [mm]	L		A	B	n	D	E	G
	Without lock	With lock						
50 to 199	366.8	411.8	6	178	4	—	—	130
200 to 349					6	2	300	280
350 to 499					8	3	450	430
500 to 649					10	4	600	580
650 to 799					12	5	750	730
800 to 949					14	6	900	880
950 to 1099					16	7	1050	1030
1100 to 1200					18	8	1200	1030

EQFS25RH

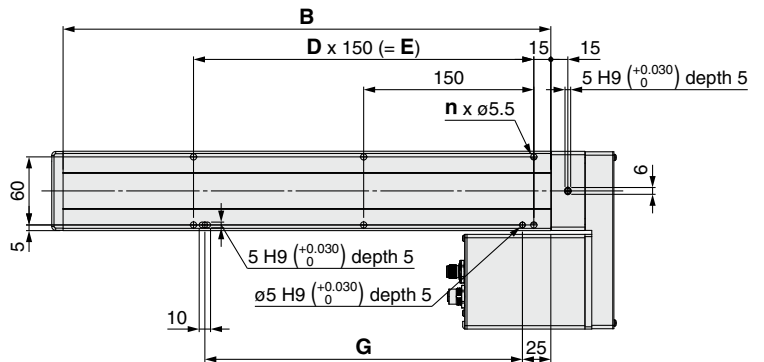
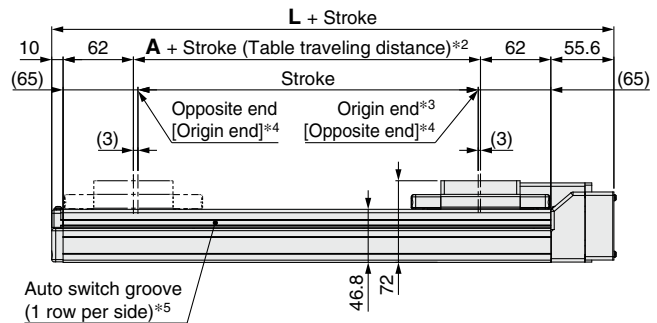
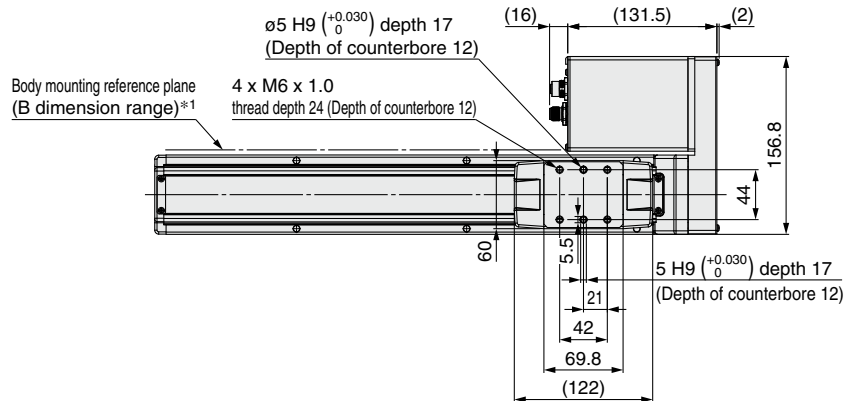
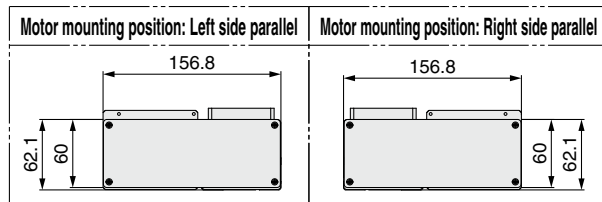
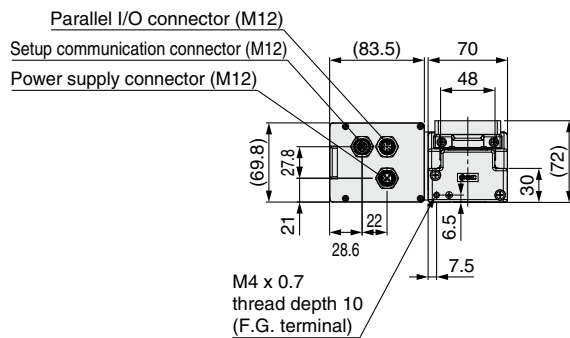
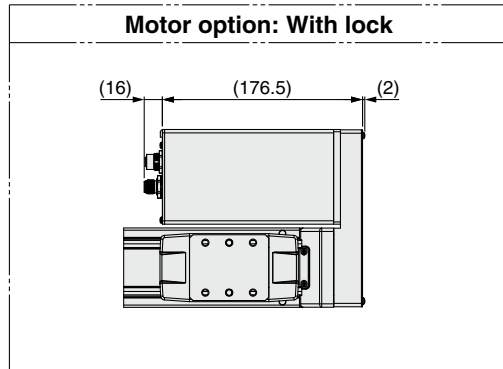


- *1 When mounting the actuator using the body mounting reference plane, set the height of the opposite surface or pin to be 3 mm or more. (Recommended height: 5 mm)
In addition, be aware that surfaces other than the body mounting reference plane (B dimension range) may slightly protrude from the body mounting reference plane. Be sure to provide a clearance of 1 mm or more to avoid interference with workpieces, facilities, etc.
- *2 The distance the table moves according to movement instructions
Make sure that workpieces mounted on the table do not interfere with other workpieces or the facilities around the table.
- *3 Indicates the factory default origin position (0 mm)
- *4 [] refers to when the rotation direction reference is changed.

[mm]

Dimensions: Right/Left Side Parallel Motor

EQFS32RH



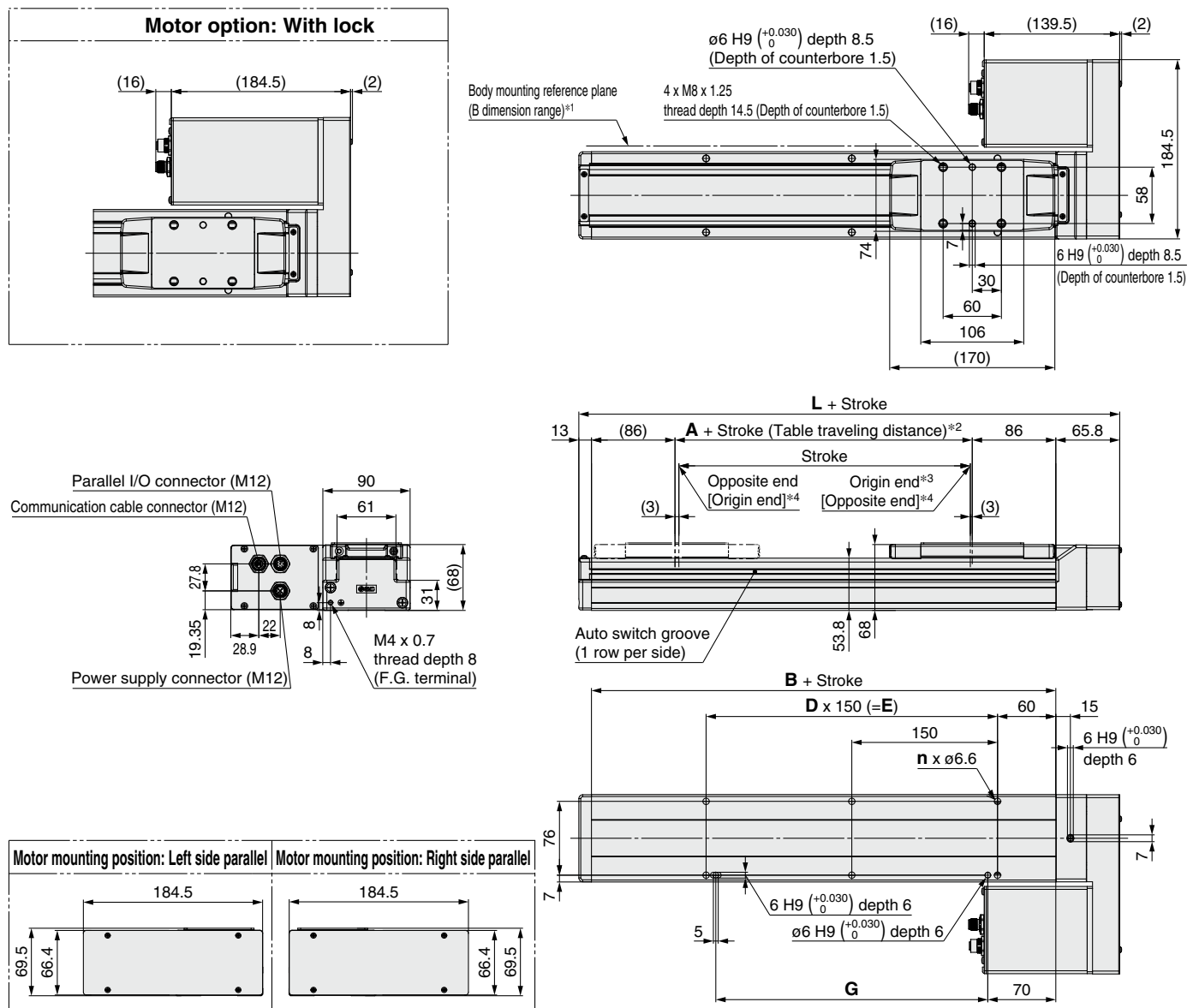
- *1 When mounting the actuator using the body mounting reference plane, set the height of the opposite surface or pin to be 3 mm or more. (Recommended height: 5 mm)
 In addition, be aware that surfaces other than the body mounting reference plane (B dimension range) may slightly protrude from the body mounting reference plane. Be sure to provide a clearance of 1 mm or more to avoid interference with workpieces, facilities, etc.
- *2 The distance the table moves according to movement instructions
 Make sure that workpieces mounted on the table do not interfere with other workpieces or the facilities around the table.
- *3 Indicates the factory default origin position (0 mm)
- *4 [] refers to when the rotation direction reference is changed.
- *5 A switch spacer (BM Y3-016) is required to secure auto switches. Please order it separately.

Dimensions

	[mm]						
Stroke [mm]	L	A	B	n	D	E	G
50, 100, 150	195.6	6	130	4	—	—	130
200, 250, 300				6	2	300	280
350, 400, 450				8	3	450	430
500, 550, 600				10	4	600	580
650, 700, 750				12	5	750	730
800, 850, 900				14	6	900	880
950, 1000				16	7	1050	1030

Dimensions: Right/Left Side Parallel Motor

EQFS40RH



*1 When mounting the actuator using the body mounting reference plane, set the height of the opposite surface or pin to be 3 mm or more. (Recommended height: 5 mm)

In addition, be aware that surfaces other than the body mounting reference plane (B dimension range) may slightly protrude from the body mounting reference plane. Be sure to provide a clearance of 1 mm or more to avoid interference with workpieces, facilities, etc.

*2 The distance the table moves according to movement instructions

Make sure that workpieces mounted on the table do not interfere with other workpieces or the facilities around the table.

*3 Indicates the factory default origin position (0 mm)

*4 [] refers to when the rotation direction reference is changed.

* A switch spacer (BM-Y3-016) is required to secure auto switches. Please order it separately.

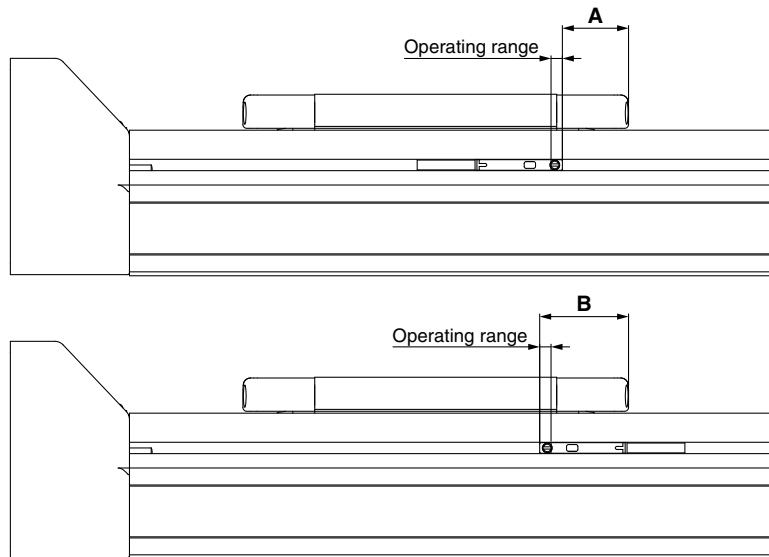
Dimensions

Stroke [mm]	L	A	B	n	D	E	G
50 to 199	256.8	6	178	4	—	—	130
200 to 349				6	2	300	280
350 to 499				8	3	450	430
500 to 649				10	4	600	580
650 to 799				12	5	750	730
800 to 949				14	6	900	880
950 to 1099				16	7	1050	1030
1100 to 1200				18	8	1200	1030

Slider Type/*EQFS□H* Series Auto Switch Mounting

Auto Switch Proper Mounting Position

Applicable auto switch: D-M9□, D-M9□E(V), D-M9□W

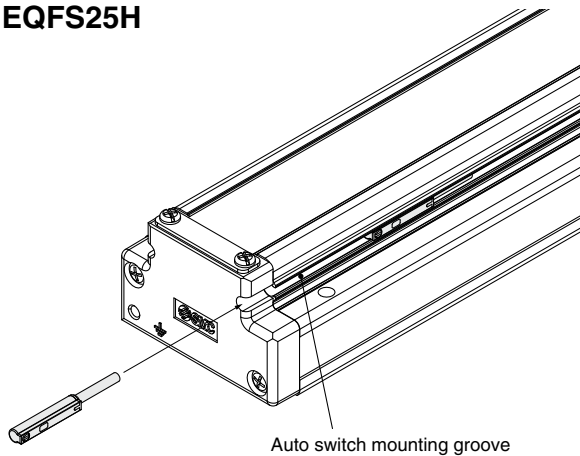


Size	A	B	Operating range
25	17.5	23.5	3.0
32	26.3	32.3	3.4
40	32.2	38.2	3.6

* The operating range is a guideline including hysteresis, not meant to be guaranteed. There may be large variations depending on the ambient environment.
* Adjust the auto switch after confirming the operating conditions in the actual setting.

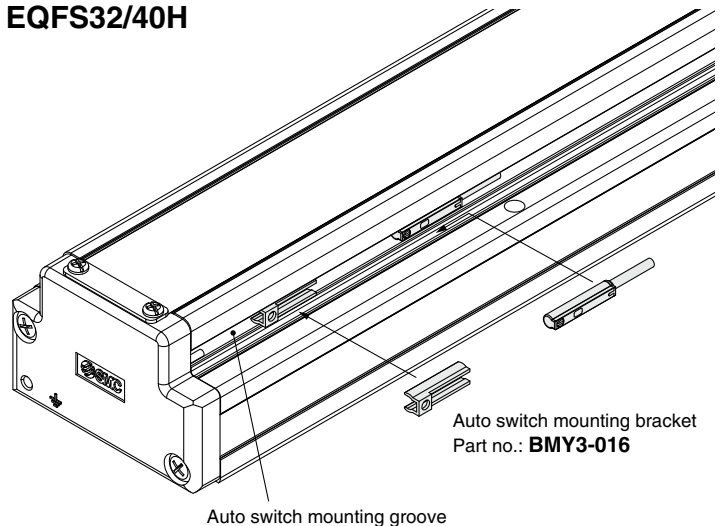
Auto Switch Mounting

EQFS25H



Auto switch mounting groove

EQFS32/40H



Auto switch mounting bracket
Part no.: **BMY3-016**

Auto switch mounting groove

Tightening Torque for Auto Switch Mounting Screw [N·m]

Auto switch model	Tightening torque
D-M9□ D-M9□E(V) D-M9□W	0.1 to 0.15

* When tightening the auto switch mounting screw (included with the auto switch), use a watchmaker's screwdriver with a handle diameter of 5 to 6 mm.
* Prepare an auto switch mounting bracket (BMY3-016) when mounting the auto switch on to the EQFS32/40H.

Solid State Auto Switch Direct Mounting Type D-M9N/D-M9P/D-M9B



Refer to the SMC website for details on products that are compliant with international standards.

Grommet

- 2-wire load current is reduced (2.5 to 40 mA).
- Using flexible cable as standard spec.



Caution

Precautions

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

Auto Switch Specifications

PLC: Programmable Logic Controller

D-M9□ (With indicator light)			
Auto switch model	D-M9N	D-M9P	D-M9B
Electrical entry direction	In-line		
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	Red LED illuminates when turned ON.		
Standard	CE/UKCA marking		

Oilproof Flexible Heavy-duty Lead Wire Specifications

Auto switch model	D-M9N	D-M9P	D-M9B
Sheath	Outside diameter [mm]	ø2.6	
Insulator	Number of cores	3 cores (Brown/Blue/Black)	2 cores (Brown/Blue)
	Outside diameter [mm]	ø0.88	
Conductor	Effective area [mm ²]	0.15	
	Strand diameter [mm]	ø0.05	
Min. bending radius [mm] (Reference values)		17	

* Refer to the **Web Catalog** for solid state auto switch common specifications.

* Refer to the **Web Catalog** for lead wire lengths.

Weight

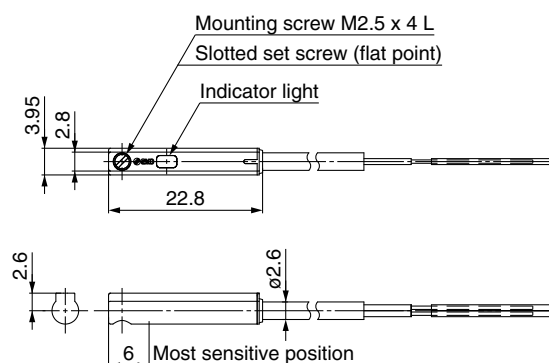
[g]

Auto switch model	D-M9N	D-M9P	D-M9B
Lead wire length	0.5 m (Nil)	8	7
	1 m (M)	14	13
	3 m (L)	41	38
	5 m (Z)	68	63

Dimensions

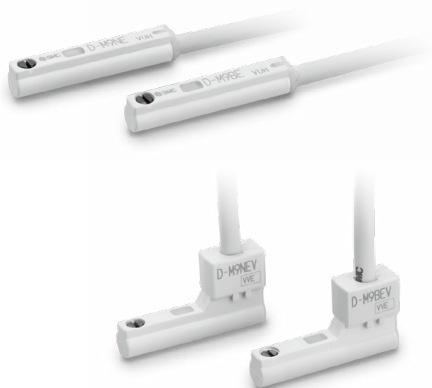
[mm]

D-M9□



CE UK
CA
RoHS

- Output signal turns on when no magnetic force is detected.
- Can be used for the actuator adopted by the solid state auto switch D-M9 series (excluding special order products)



Precautions

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

Refer to the SMC website for details on products that are compliant with international standards.

PLC: Programmable Logic Controller

D-M9□E, D-M9□EV (With indicator light)						
Auto switch model	D-M9NE	D-M9NEV	D-M9PE	D-M9PEV	D-M9BE	D-M9BEV
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	Red LED illuminates when turned ON.					
Standard	CE/UKCA marking					

Auto switch model		D-M9NE(V)	D-M9PE(V)	D-M9BE(V)
Sheath	Outside diameter [mm]	ø2.6		
Insulator	Number of cores	3 cores (Brown/Blue/Black)		2 cores (Brown/Blue)
	Outside diameter [mm]	ø0.88		
Conductor	Effective area [mm ²]	0.15		
	Strand diameter [mm]	ø0.05		
Min. bending radius [mm] (Reference values)		17		

* Refer to the **Web Catalog** for solid state auto switch common specifications.
* Refer to the **Web Catalog** for lead wire lengths.

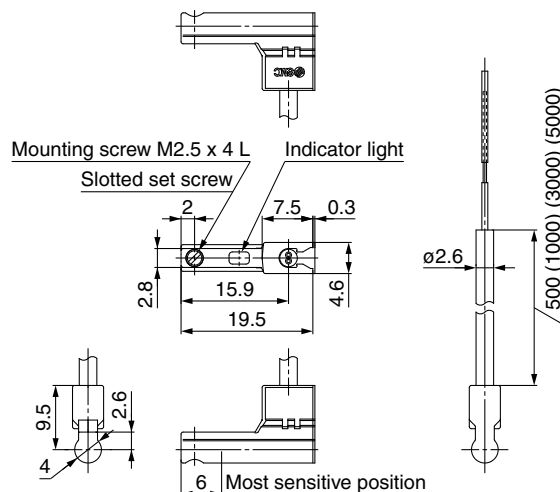
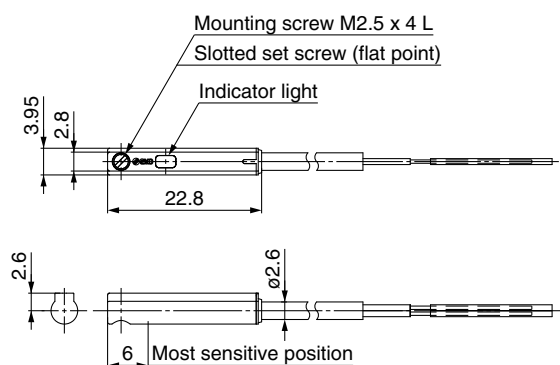
[g]

Auto switch model		D-M9NE(V)	D-M9PE(V)	D-M9BE(V)
Lead wire length	0.5 m (Nil)	8		7
	1 m (M)*1	14		13
	3 m (L)	41		38
	5 m (Z)*1	68		63

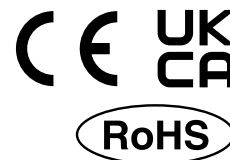
*1 The 1 m and 5 m options are produced upon receipt of order.

[mm]

D-M9□EV



2-Color Indicator Solid State Auto Switch Direct Mounting Type D-M9NW/D-M9PW/D-M9BW



Refer to the SMC website for details on products that are compliant with international standards.

Grommet

- 2-wire load current is reduced (2.5 to 40 mA).
- Using flexible cable as standard spec.
- The proper operating range can be determined by the color of the light. (Red → Green ← Red)



Caution

Precautions

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

Auto Switch Specifications

PLC: Programmable Logic Controller

D-M9□W (With indicator light)			
Auto switch model	D-M9NW	D-M9PW	D-M9BW
Electrical entry direction	In-line		
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 range Red LED illuminates. Proper operating range Green LED illuminates.		
Standard	CE/UKCA marking		

Oilproof Flexible Heavy-duty Lead Wire Specifications

Auto switch model		D-M9NW	D-M9PW	D-M9BW
Sheath	Outside diameter [mm]	ø2.6		
	Number of cores	3 cores (Brown/Blue/Black)		2 cores (Brown/Blue)
Insulator	Outside diameter [mm]	ø0.88		
	Effective area [mm ²]	0.15		
Conductor	Strand diameter [mm]	ø0.05		
	Min. bending radius [mm] (Reference values)	17		

- * Refer to the **Web Catalog** for solid state auto switch common specifications.
- * Refer to the **Web Catalog** for lead wire lengths.

Weight

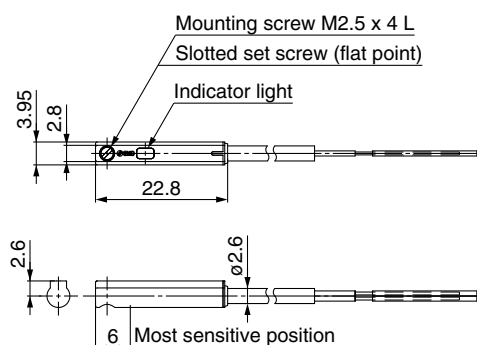
[g]

Auto switch model		D-M9NW	D-M9PW	D-M9BW
Lead wire length	0.5 m (Nil)	8		7
	1 m (M)	14		13
	3 m (L)	41		38
	5 m (Z)	68		63

Dimensions

[mm]

D-M9□W





Slider Type/EQFS□H Series Integrated Controller Electric Actuator Specific Product Precautions 1

Be sure to read this before handling the products. Refer to the back cover for safety instructions. For electric actuator and auto switch precautions, refer to the “Handling Precautions for SMC Products” and the “Operation Manual” on the SMC website: <https://www.smcworld.com>

Design

⚠ Caution

- Do not apply a load in excess of the specification limits.**
Select a suitable actuator by work load and allowable moment. If a load in excess of the specification limits is applied to the guide, adverse effects such as the generation of play in the guide, reduced accuracy, or reduced service life of the product may occur.
- Do not use the product in applications where excessive external force or impact force is applied to it.**
This can cause a malfunction.

Selection

⚠ Warning

- Do not increase the speed in excess of the specification limits.**
Select a suitable actuator by the relationship between the allowable work load and speed, and the allowable speed of each stroke. If the product is used outside of the specification limits, adverse effects such as the generation of noise, reduced accuracy, or reduced service life of the product may occur.
- Do not use the product in applications where excessive external force or impact force is applied to it.**
This can cause a malfunction.
- When the product repeatedly cycles with partial strokes (see the table below), operate it at a full stroke at least once every few dozen cycles.**
Failure to do so may result in the product running out of lubrication.

Model	Partial stroke
EQFS25	65 mm or less
EQFS32	70 mm or less
EQFS40	105 mm or less

- When external force is to be applied to the table, it is necessary to add the external force to the work load as the total carried load when selecting a size.**
When a cable duct or flexible moving tube is attached to the actuator, the sliding resistance of the table will increase, which may lead to the malfunction of the product.

Handling

⚠ Caution

- Set the [OUT signal output width] in the parameters to at least 0.5.**
If it is set any lower, the completion signal of the [In position] may not be properly output.
- OUT signal**
 - Positioning operation**
When the product comes within the set range of the parameter [OUT signal output width], the OUT signal will turn ON.
Initial value: Set to [0.50] or higher.

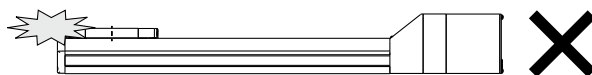
Handling

⚠ Caution

- Never allow the table to collide with the stroke end except during return to origin.**

When incorrect instructions are inputted, such as those which cause the product to operate outside of the specification limits or outside of the actual stroke through changes in the controller/driver settings and/or origin position, the table may collide with the stroke end of the actuator. Be sure to check these points before use.

If the table collides with the stroke end of the actuator, the guide, belt, or internal stopper may break. This can result in abnormal operation.



Handle the actuator with care when it is used in the vertical direction as the workpiece will fall freely from its own weight.

- The actual speed of this actuator is affected by the work load and stroke.**

Check the model selection section of the catalog.

- Do not apply a load, impact, or resistance in addition to the transferred load during return to origin.**

Additional force will cause the displacement of the origin position since it is based on the detected motor torque.

- Do not dent, scratch, or cause other damage to the body or table mounting surfaces.**

Doing so may cause unevenness in the mounting surface, play in the guide, or an increase in the sliding resistance.

- Do not apply strong impact or an excessive moment while mounting a workpiece.**

If an external force over the allowable moment is applied, it may cause play in the guide or an increase in the sliding resistance.

- Keep the flatness of the mounting surface within 0.1 mm/500 mm.**

If a workpiece or base does not sit evenly on the body of the product, play in the guide or an increase in the sliding resistance may occur.

- When mounting the product, secure a bending diameter of 40 mm or longer for the cable.**

- Do not allow a workpiece to collide with the table during the positioning operation or within the positioning range.**

- For the model where grease is applied to the dust seal band for sliding, when wiping off the grease to remove foreign matter, etc., be sure to reapply grease afterward.**

- When bottom mounted, the dust seal band may become warped.**



Slider Type/EQFS□H Series Integrated Controller Electric Actuator Specific Product Precautions 2

Be sure to read this before handling the products. Refer to the back cover for safety instructions. For electric actuator and auto switch precautions, refer to the “Handling Precautions for SMC Products” and the “Operation Manual” on the SMC website: <https://www.smcworld.com>

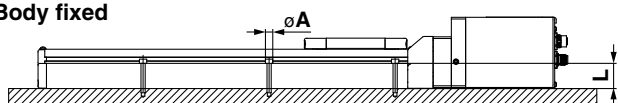
Handling

⚠ Caution

13. When mounting the product, use screws of adequate length and tighten them with adequate torque.

Tightening the screws with a higher torque than recommended may result in a malfunction and/or decrease in guide accuracy, while tightening with a lower torque can result in the displacement of the mounting position or, in extreme conditions, the actuator could become detached from its mounting position.

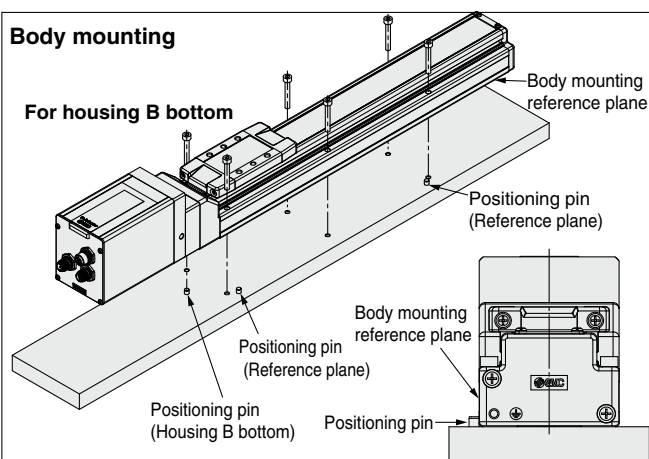
Body fixed



Model	Screw size	Max. tightening torque [N·m]	ϕA [mm]	L [mm]
EQFS25	M4	1.5	4.5	24
EQFS32	M5	3.0	5.5	30
EQFS40	M6	5.2	6.6	31

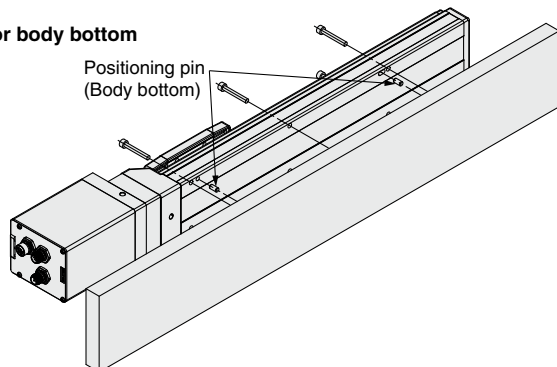
Body mounting

For housing B bottom

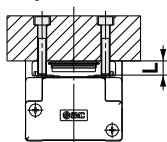


The traveling parallelism is the reference plane for the body mounting reference plane. If the traveling parallelism for a table is required, set the reference plane against parallel pins, etc.

For body bottom



Workpiece fixed



Model	Screw size	Max. tightening torque [N·m]	L (Max. screw-in depth) [mm]
EQFS25	M5 x 0.8	3.0	8
EQFS32	M6 x 1	5.2	9
EQFS40	M8 x 1.25	12.5	13

To prevent the workpiece retaining screws from touching the body, use screws that are 0.5 mm or shorter than the maximum screw-in depth. If long screws are used, they may touch the body and cause a malfunction.

14. Do not operate by fixing the table and moving the actuator body.

15. Check the specifications for the minimum speed of each actuator.

Failure to do so may result in unexpected malfunctions such as knocking.

Maintenance

⚠ Warning

Maintenance frequency

Perform maintenance according to the table below.

Frequency	Appearance check	Internal check	Belt check
Inspection before daily operation	○	—	—
Inspection every 6 months/1000 km/5 million cycles*1	○	○	○

*1 Select whichever comes first.

• Items for visual appearance check

1. Loose set screws, Abnormal amount of dirt, etc.
2. Check for visible damage, Check of cable joint
3. Vibration, Noise

• Items for internal check

1. Lubricant condition on moving parts
2. Loose or mechanical play in fixed parts or fixing screws

• Items for belt check

Stop operation immediately and replace the belt when any of the following occur. In addition, ensure your operating environment and conditions satisfy the requirements specified for the product.

a. Tooth shape canvas is worn out

Canvas fiber becomes fuzzy, Rubber is coming off and the fiber has become whitish, Lines of fibers have become unclear

b. Peeling off or wearing of the side of the belt

Belt corner has become rounded and frayed threads stick out

c. Belt is partially cut

Belt is partially cut, Foreign matter caught in the teeth of other parts is causing damage

d. A vertical line on belt teeth is visible

Damage which is made when the belt runs on the flange

e. Rubber back of the belt is softened and sticky

f. Cracks on the back of the belt are visible

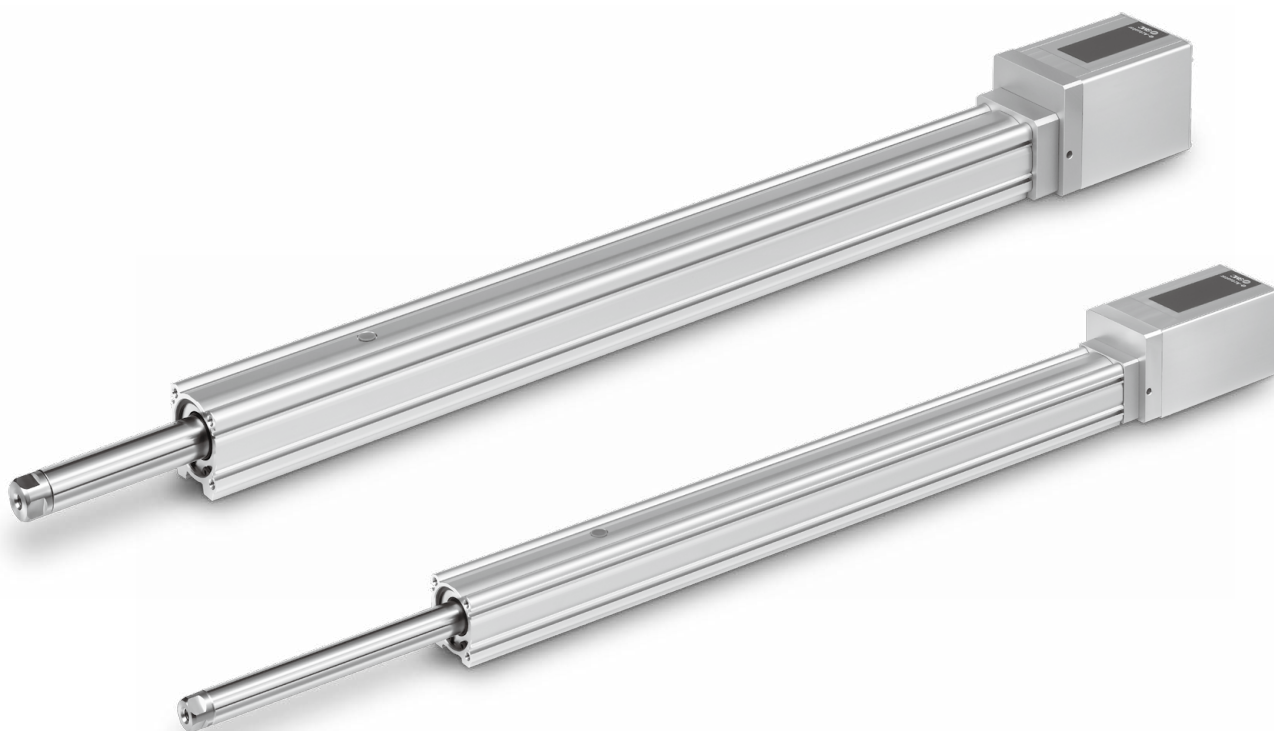
e-Actuator

Easy to Operate Integrated Controller / Rod Type

EQY□H Series

p. 33

Battery-less Absolute (Step Motor 24 VDC)



Model Selection

EQFS□H Series

EQY□H Series

Auto Switch

Electric
Specifications

Wiring
Examples

Operation
Data Setting

Options

Specific Product
Precautions

e-Actuator Easy to Operate Integrated Controller

EQY□H Series Battery-less Absolute (Step Motor 24 VDC)

Model Selection

Selection Procedure

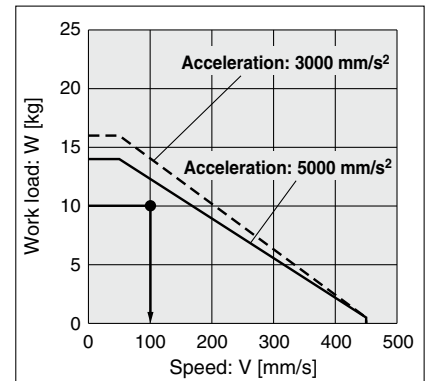
Positioning Control Selection Procedure



Selection Example

Operating conditions

- Workpiece mass: 10 [kg]
- Speed: 100 [mm/s]
- Acceleration/Deceleration: 5000 [mm/s²]
- Stroke: 200 [mm]
- Workpiece mounting condition: Vertical upward downward transfer



<Speed-Vertical work load graph>
(EQY25HB/Step motor)

Step 1 Check the work load–speed. <Speed-Vertical work load graph>

Select a model based on the workpiece mass and speed while referencing the speed–vertical work load graph.

Selection example) The **EQY25DHB-200** can be temporarily selected as a possible candidate based on the graph shown on the right side.

* It is necessary to mount a guide outside the actuator when used for horizontal transfer. When selecting the target model, refer to the horizontal work load in the specifications on page 39 and the precautions.

Step 2 Check the cycle time.

Calculate the **cycle time** using the following calculation method.

Cycle time:

T can be found from the following equation.

$$T = T1 + T2 + T3 + T4 \text{ [s]}$$

- T1: Acceleration time and T3: Deceleration time can be found by the following equation.

$$T1 = V/a1 \text{ [s]}$$

$$T3 = V/a2 \text{ [s]}$$

- T2: Constant speed time can be found from the following equation.

$$T2 = \frac{L - 0.5 \cdot V \cdot (T1 + T3)}{V} \text{ [s]}$$

- T4: Settling time varies depending on the conditions such as actuator types, load, and in position of the step data. Reference value for settling time: 0.15 s or less The following value is used for this calculation.

$$T4 = 0.15 \text{ [s]}$$

Calculation example)

T1 to T4 can be calculated as follows.

$$T1 = V/a1 = 100/5000 = 0.02 \text{ [s]}, T3 = V/a2 = 100/5000 = 0.02 \text{ [s]}$$

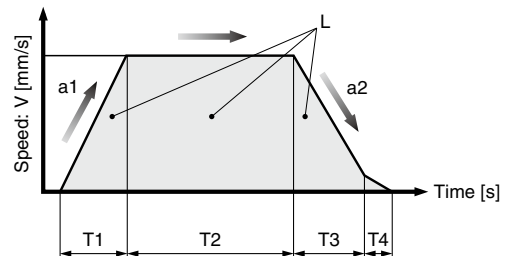
$$T2 = \frac{L - 0.5 \cdot V \cdot (T1 + T3)}{V} = \frac{200 - 0.5 \cdot 100 \cdot (0.02 + 0.02)}{100} = 1.98 \text{ [s]}$$

$$T4 = 0.15 \text{ [s]}$$

The **cycle time** can be found as follows.

$$T = T1 + T2 + T3 + T4 = 0.02 + 1.98 + 0.02 + 0.15 = 2.17 \text{ [s]}$$

Based on the above calculation result, the EQY25HB-200 should be selected.



- L : Stroke [mm] ... (Operating condition)
- V : Speed [mm/s] ... (Operating condition)
- a1: Acceleration [mm/s²] ... (Operating condition)
- a2: Deceleration [mm/s²] ... (Operating condition)

T1: Acceleration time [s] ... Time until reaching the set speed

T2: Constant speed time [s] ... Time while the actuator is operating at a constant speed

T3: Deceleration time [s] ... Time from the beginning of the constant speed operation to stop

T4: Settling time [s] ... Time until positioning is completed

Selection Procedure

Pushing Control Selection Procedure

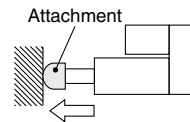


* The duty ratio is a ratio of the operation time in one cycle.

Selection Example

Operating conditions

- Mounting condition: Horizontal (pushing)
- Attachment weight: 0.2 [kg]
- Pushing force: 100 [N]
- Duty ratio: 15 [%]
- Speed: 100 [mm/s]
- Stroke: 200 [mm]



Step 1 Check the duty ratio.

<Conversion table of pushing force–duty ratio>

Select the [Pushing force] from the duty ratio while referencing the conversion table of pushing force–duty ratio.

Selection example)

Based on the table below,

- Duty ratio: 15 [%]

The pushing force set value will be 50 [%].

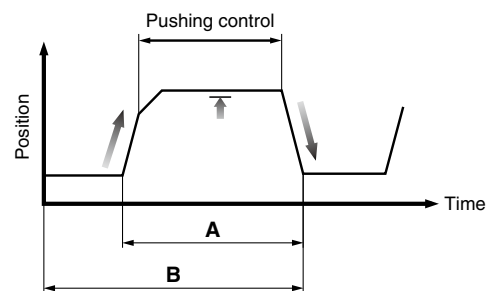
<Conversion table of pushing force–duty ratio>

(EQY25/Battery-less absolute)

Ambient temperature	Pushing force set value [%]	Duty ratio [%]	Continuous pushing time [min]
40°C or less	50 or less	100	—

* [Pushing force set value] is one of the step data input to the controller.

* [Continuous pushing time] is the time that the actuator can continuously keep pushing.



$$\text{Duty ratio} = A/B \times 100 [\%]$$

Step 2 Check the pushing force.

<Force conversion graph>

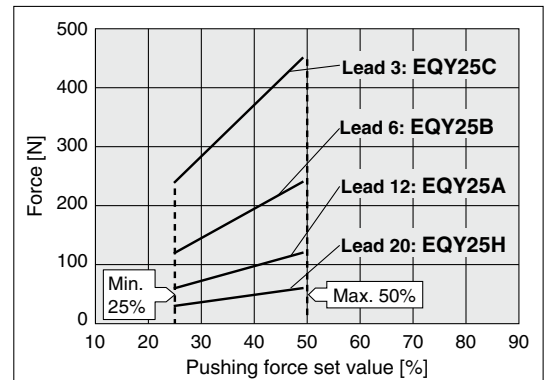
Select a model based on the pushing force set value and force while referencing the force conversion graph.

Selection example)

Based on the graph shown on the right side,

- Pushing force: 100 [N]
- Pushing force set value: 40 [%]

The **EQY25DHB** can be temporarily selected as a possible candidate.



<Force conversion graph>
(EQY25□H/Step motor)

Step 3 Check the lateral load on the rod end.

<Graph of allowable lateral load on the rod end>

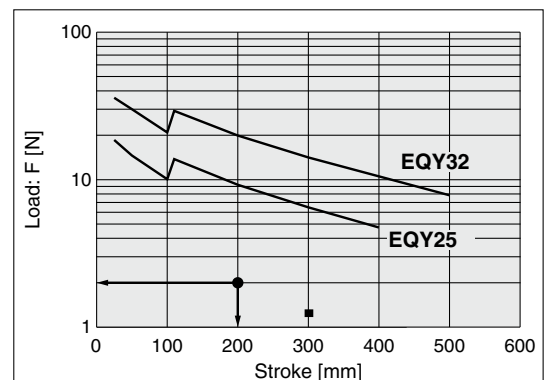
Confirm the allowable lateral load on the rod end of the actuator: EQY25, which has been selected temporarily while referencing the graph of allowable lateral load on the rod end.

Selection example)

Based on the graph shown on the right side,

- Attachment weight: 0.2 [kg] ≈ 2 [N]
- Product stroke: 200 [mm]

The lateral load on the rod end is in the allowable range.



<Graph of allowable lateral load on the rod end>

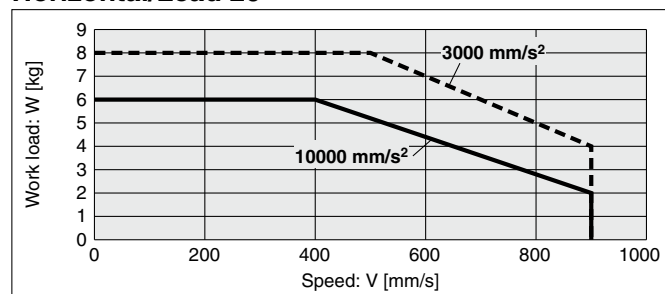
Based on the above calculation result, the EQY25DHB-200 should be selected.

Speed-Work Load Graph (Guide)

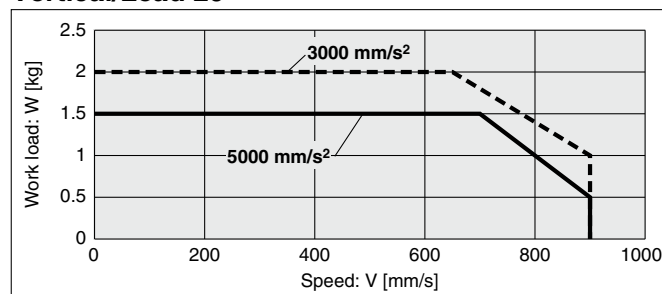
* The following graphs show the values when the external guide is used together.

EQY25□HH

Horizontal/Lead 20

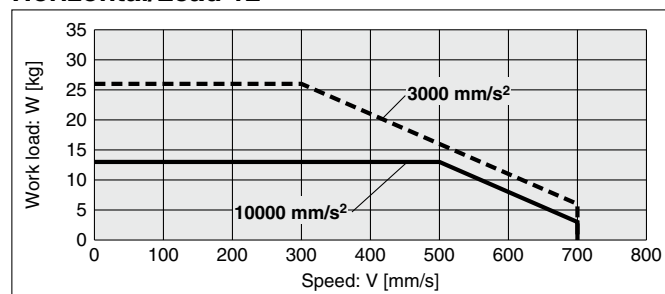


Vertical/Lead 20

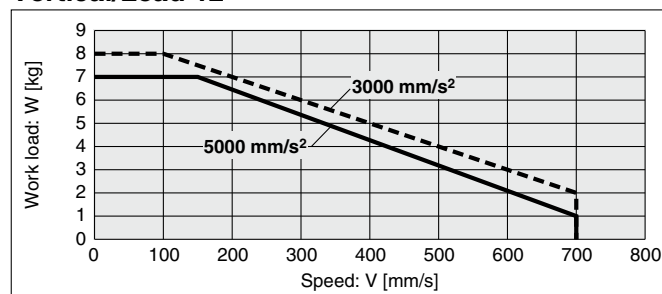


EQY25□HA

Horizontal/Lead 12

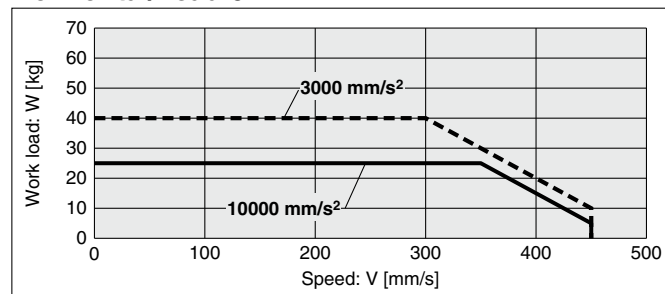


Vertical/Lead 12

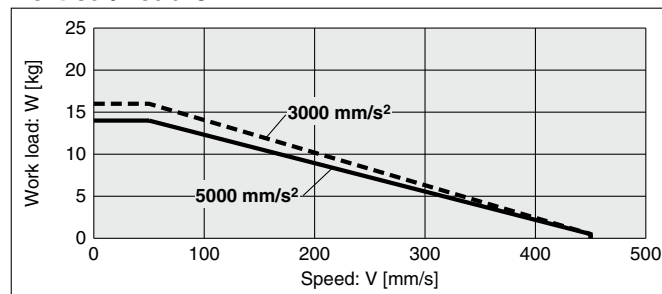


EQY25□HB

Horizontal/Lead 6

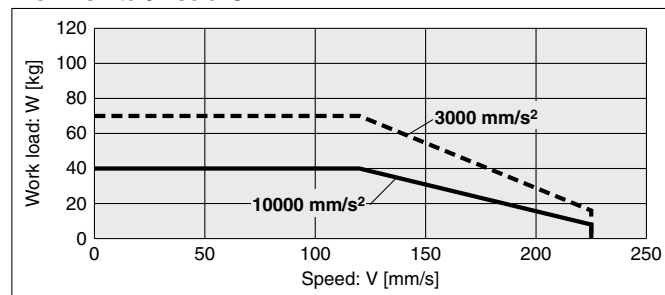


Vertical/Lead 6

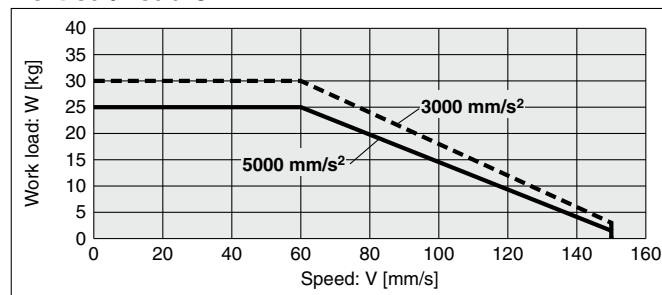


EQY25□HC

Horizontal/Lead 3



Vertical/Lead 3

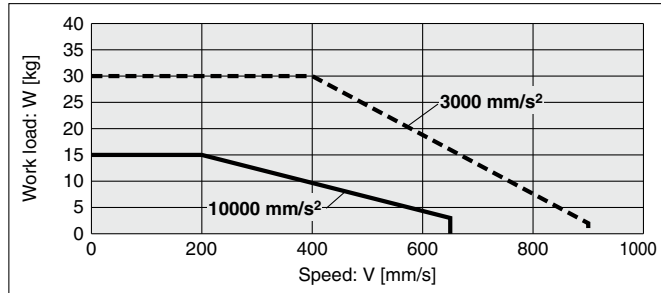


Speed-Work Load Graph (Guide)

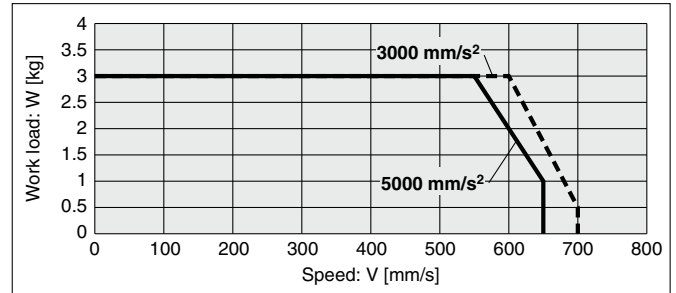
* The following graphs show the values when the external guide is used together.

EQY32□HH

Horizontal/Lead 24

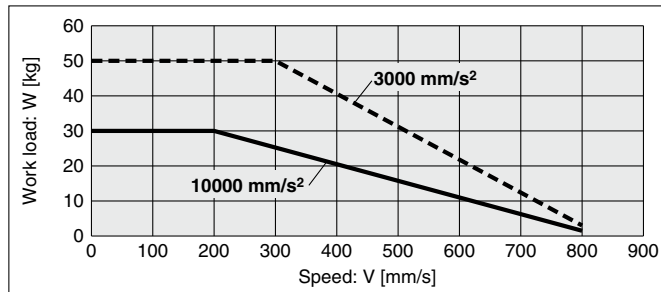


Vertical/Lead 24

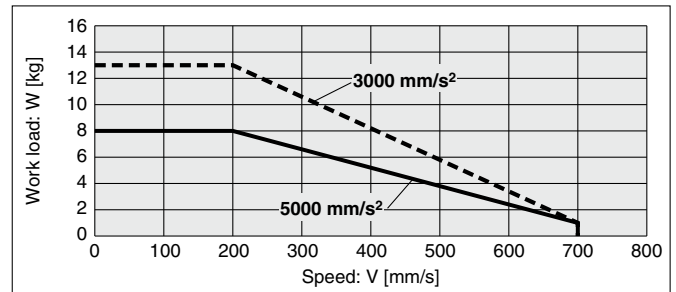


EQY32□HA

Horizontal/Lead 16

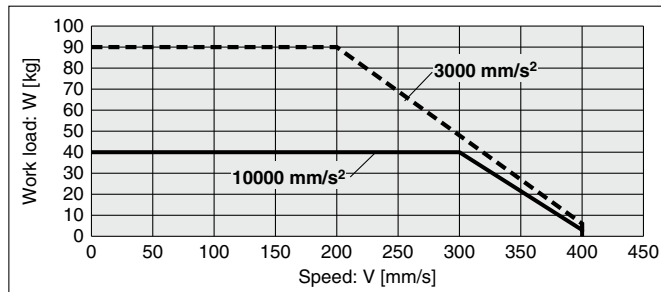


Vertical/Lead 16

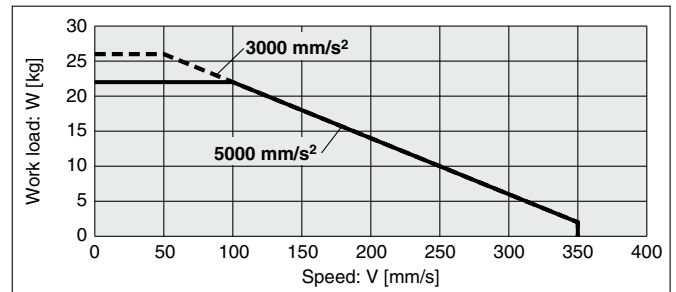


EQY32□HB

Horizontal/Lead 8

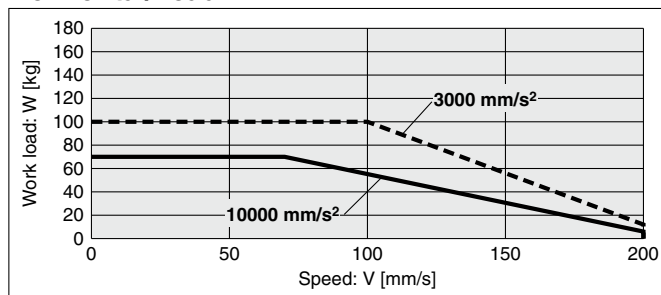


Vertical/Lead 8

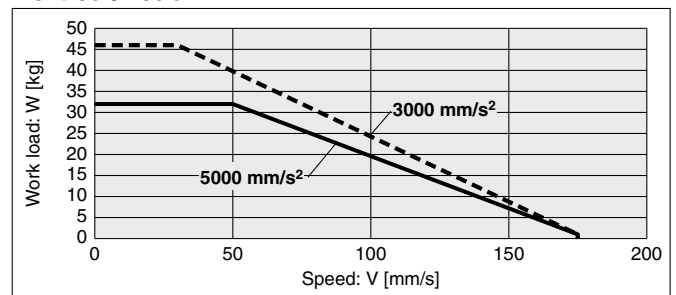


EQY32□HC

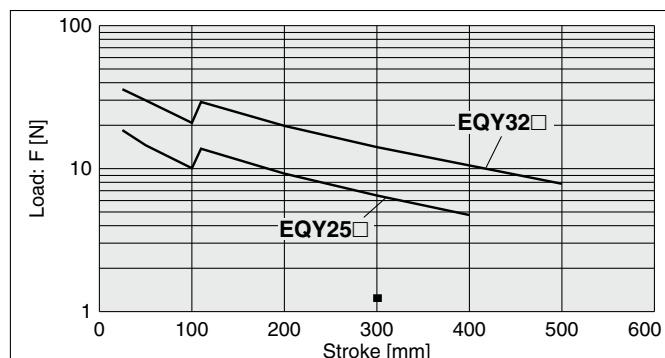
Horizontal/Lead 4



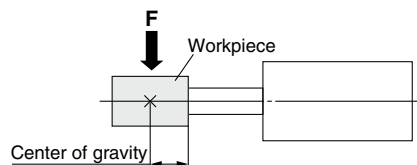
Vertical/Lead 4



Graph of Allowable Lateral Load on the Rod End (Guide)



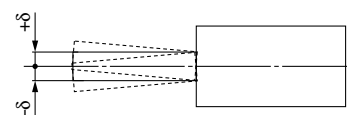
[Stroke] = [Product stroke] + [Distance from the rod end to the center of gravity of the workpiece]



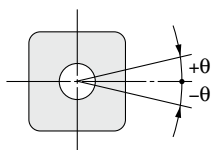
Rod Displacement: δ [mm]

Stroke	30	50	100	150	200	250	300	350	400	450	500
Size											
25	±0.3	±0.4	±0.7	±0.7	±0.9	±1.1	±1.3	±1.5	±1.7	—	—
32	±0.3	±0.4	±0.7	±0.6	±0.8	±1.0	±1.1	±1.3	±1.5	±1.7	±1.8

* The values without a load are shown.



Non-rotating Accuracy of Rod



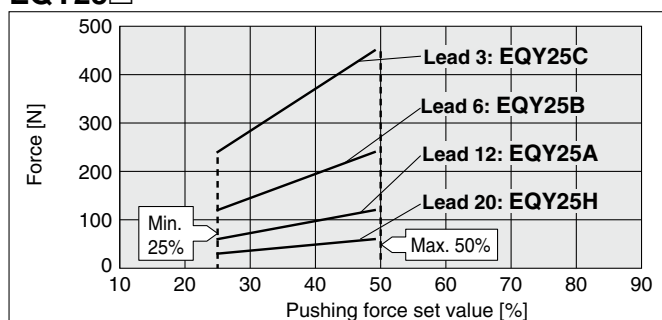
Size	Non-rotating accuracy θ
25	±0.8°
32	±0.7°

* Avoid using the electric actuator in such a way that rotational torque would be applied to the piston rod.

Failure to do so may result in the deformation of the non-rotating guide, abnormal auto switch responses, play in the internal guide, or an increase in the sliding resistance.

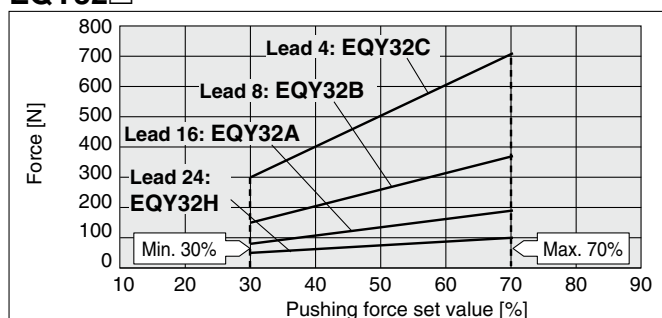
Force Conversion Graph (Guide)

EQY25□



Ambient temperature	Pushing force set value [%]	Duty ratio [%]	Continuous pushing time [min]
40°C or less	50 or less	100	—

EQY32□



Ambient temperature	Pushing force set value [%]	Duty ratio [%]	Continuous pushing time [min]
40°C or less	70 or less	100	—

<Set Values for Vertical Upward Transfer Pushing Operations>

For vertical loads (upward), set the pushing force to the max. value shown below and operate at the work load or less.

Model	EQY25				EQY32			
Lead	H	A	B	C	H	A	B	C
Work load [kg]	1	2.5	5	10	2	4.5	9	18
Pushing force	50%				70%			

e-Actuator Easy to Operate**Integrated Controller / Rod Type****EQY□H Series** EQY25, 32

RoHS

How to Order

EQY **25** **D** **H** **B** - **50** **□** **□** **□** - **B** **5**

1 2 3 4 5 6 7 8 9 10

1 Size

25
32

2 Motor mounting position*1

Nil	Top side parallel
R	Right side parallel
L	Left side parallel
D	In-line

3 Motor type

H	Battery-less absolute (Step motor 24 VDC)
---	---

4 Lead [mm]

Symbol	EQY25	EQY32
H	20	24
A	12	16
B	6	8
C	3	4

5 Stroke [mm]

30	30
to	to
500	500

* For details, refer to the applicable stroke table below.

6 Motor option

Nil	Without option
B	With lock

7 Rod end thread

Nil	Rod end female thread
M	Rod end male thread (1 rod end nut is included.)

9 Controller position

B	Integrated controller
---	-----------------------

10 Parallel input

5	NPN
6	PNP

8 Mounting*2

Symbol	Type	Motor mounting position	
		Parallel	In-line
Nil	Ends tapped*3 Body bottom tapped	●	●
L	Foot bracket	●	—
F	Rod flange*3 *6	●	●
G	Head flange*5	●*5	—
D	Double clevis*4	●	—

*1 Motor mounting position: For the parallel mounting type, the motor units with the following sizes and strokes protrude from the body end. Check for interference with workpieces before selecting a model.

· EQY25 Without lock: 30 mm stroke
With lock: 30, 50 mm strokes

· EQY32 Without lock: 30 mm stroke
With lock: 30, 50 mm strokes

*2 The mounting bracket is shipped together with the product but does not come assembled.

*3 For the horizontal cantilever mounting of the rod flange or ends tapped types, use the actuator within the following stroke range.

· EQY25: 200 or less · EQY32: 100 or less

*4 For the mounting of the double clevis type, use the actuator within the following stroke range.

· EQY25: 200 or less · EQY32: 200 or less

*5 The head flange type is not available for the EQY32.

*6 The rod flange type cannot accommodate the following sizes and strokes.

· EQY25 Without lock: 30 mm stroke
With lock: 30, 50 mm strokes

· EQY32 Without lock: 30 mm stroke
With lock: 30, 50 mm strokes

Applicable Stroke Table

Size	Stroke [mm]											Manufacturable stroke range
	30	50	100	150	200	250	300	350	400	450	500	
25	●	●	●	●	●	●	●	●	●	—	—	15 to 400
32	●	●	●	●	●	●	●	●	●	●	●	20 to 500

The auto switches should be ordered separately. For details, refer to pages 46 to 49.

Specifications

Model			EQY25□H				EQY32□H				
Actuator specifications	Stroke [mm]		30 to 400				30 to 500				
	Work load [kg]*1	Horizontal	8	26	40	70	30	50	90	100	
		Vertical	2	8	16	30	3	13	26	46	
	Pushing force [N]*2 *3 *4		36 to 76	63 to 122	126 to 238	232 to 452	50 to 118	80 to 189	156 to 370	296 to 707	
	Speed [mm/s]	Stroke range	Up to 300	30 to 900	18 to 700	9 to 450	5 to 225	30 to 900	24 to 800	12 to 400	6 to 200
			350 to 400	30 to 900	18 to 600	9 to 300	5 to 150	30 to 900	24 to 640	12 to 320	6 to 160
			450 to 500	—	—	—	—	30 to 900	24 to 640	12 to 320	6 to 160
	Max. acceleration/ deceleration [mm/s²]		Horizontal	10000*1							
			Vertical	5000*1							
	Pushing speed [mm/s²]*5		35				30				
	Positioning repeatability [mm]		±0.02								
	Lost motion [mm]*6		0.1 or less								
	Lead [mm]		20	12	6	3	24	16	8	4	
	Impact/Vibration resistance [m/s²]*7		50/20								
Actuation type		Ball screw + Belt (EQY□H), Ball screw (EQY□DH)									
Guide type		Sliding bushing (Piston rod)									
Operating temperature range [°C]		5 to 40									
Operating humidity range [%RH]		90 or less (No condensation)									
Electric specifications	Motor size		□42				□56.4				
	Motor type		Battery-less absolute (Step motor 24 VDC)								
	Encoder		Battery-less absolute								
	Power supply voltage [V]		24 VDC ±10%								
Lock unit specifications	Power [W]*8 *9		Max. power 86				Max. power 109				
	Type*10		Non-magnetizing lock								
	Holding force [N]		47	78	157	294	75	108	216	421	
	Power [W]*9		5				5				
	Power supply voltage [V]		24 VDC ±10%								

- *1 Work load varies depending on the speed and acceleration. Check the "Speed-Work Load Graph (Guide)" on pages 35 and 36.
 Horizontal: Please use an external guide (friction coefficient: 0.1 or less). The work load shows the maximum value. The actual work load and transfer speed change according to the condition of the external guide.
 Vertical: If the rod orientation is vertical or radial load is applied to the rod, please use an external guide (friction coefficient: 0.1 or less).
 The work load represents the maximum value. The actual work load and transfer speed change according to the condition of the external guide.
 Set the acceleration/deceleration speed to 10000 [mm/s²] or less for the horizontal direction and 5000 [mm/s²] or less for the vertical direction.
- *2 Pushing force accuracy is ±20% (F.S.).
- *3 The pushing force set values for EQY25□H are 25% to 50%, and for EQY32□H are 30% to 70%.
 For details, refer to the "Force Conversion Graph" on page 37.
- *4 The speed and force may change depending on the cable length, load, and mounting conditions. Furthermore, if the cable length exceeds 5 m, then it will decrease by up to 10% for each 5 m.
- *5 Pushing speed is fixed. In addition, when push conveying a workpiece, operate at the vertical work load or less.
- *6 A reference value for correcting errors in reciprocal operation
- *7 Impact resistance: No malfunction occurred when the actuator was tested with a drop tester in both an axial direction and a perpendicular direction to the lead screw. (The test was performed with the actuator in the initial state.)
 Vibration resistance: No malfunction occurred in a test ranging between 45 to 2000 Hz. The test was performed in both an axial direction and a perpendicular direction to the lead screw. (The test was performed with the actuator in the initial state.)
- *8 This value can be used for the selection of the power supply.
- *9 For an actuator with lock, add the power for the lock.
- *10 With lock only

Weight

Top/Right/Left Side Parallel Motor

Series	EQY25										EQY32									
Stroke [mm]	30	50	100	150	200	250	300	350	400	30	50	100	150	200	250	300	350	400	450	500
Product weight [kg]	1.74	1.81	1.98	2.24	2.42	2.59	2.77	2.94	3.12	2.74	2.85	3.14	3.42	3.82	4.11	4.39	4.68	4.97	5.25	5.54

In-line Motor

Series	EQY25D										EQY32D									
Stroke [mm]	30	50	100	150	200	250	300	350	400	30	50	100	150	200	250	300	350	400	450	500
Product weight [kg]	1.60	1.67	1.84	2.10	2.28	2.45	2.63	2.80	2.98	2.55	2.66	2.95	3.23	3.63	3.92	4.20	4.49	4.78	5.06	5.35

Additional Weight

[kg]

Size		25	32
Lock/Motor cover		0.33	0.65
Rod end male thread	Male thread	0.03	0.03
	Nut	0.02	0.02
Foot bracket (2 sets including mounting bolt)		0.08	0.14
Rod flange (including mounting bolt)		0.17	0.20
Head flange (including mounting bolt)			
Double clevis (including pin, retaining ring, and mounting bolt)		0.16	0.22

Model Selection

EQFS□H Series

EQY□H Series

Auto Switch

Electric Specifications

Wiring Examples

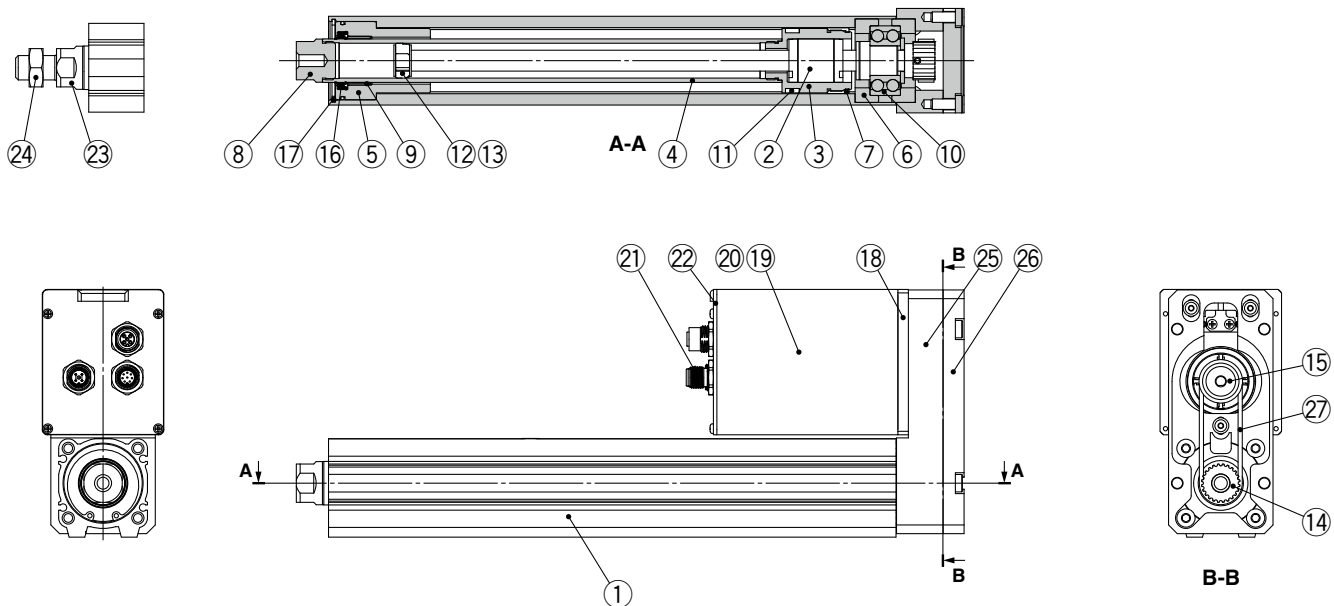
Operation Data Setting

Options

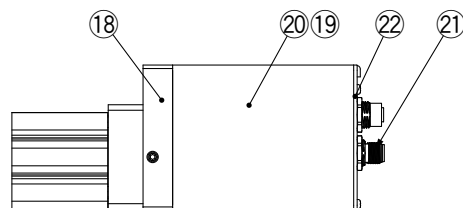
Specific Product Precautions

Construction

Top/Right/Left side parallel motor



In-line motor



Component Parts

No.	Description	Material	Note
1	Body	Aluminum alloy	Anodized
2	Ball screw assembly	—	
3	Piston	Aluminum alloy	
4	Piston rod	Stainless steel	Hard chrome plating
5	Rod cover	Aluminum alloy	
6	Bearing holder	Aluminum alloy	
7	Rotation stopper	Synthetic resin	
8	Socket (Female thread)	Free cutting carbon steel	Nickel plating
9	Bushing	Bearing alloy	
10	Bearing	—	
11	Magnet	—	
12	Wear ring holder	Stainless steel	101 mm stroke or more
13	Wear ring	Synthetic resin	101 mm stroke or more
14	Screw pulley/hub	Aluminum alloy	
15	Motor pulley/hub	Aluminum alloy	
16	Seal	NBR	
17	Retaining ring	Steel for spring	
18	Motor adapter	Aluminum alloy	Anodized
19	Motor	—	
20	Motor cover	Aluminum alloy	Anodized
21	Connector	—	
22	End cover	Aluminum alloy	Anodized
23	Socket (Male thread)	Free cutting carbon steel	Nickel plating/ Rod end male thread
24	Hexagon nut	—	Rod end male thread

Component Parts (Top/Right/Left side parallel only)

No.	Description	Material	Note
25	Return box	Aluminum die-casted	Coating
26	Return plate	Aluminum die-casted	Coating
27	Belt	—	

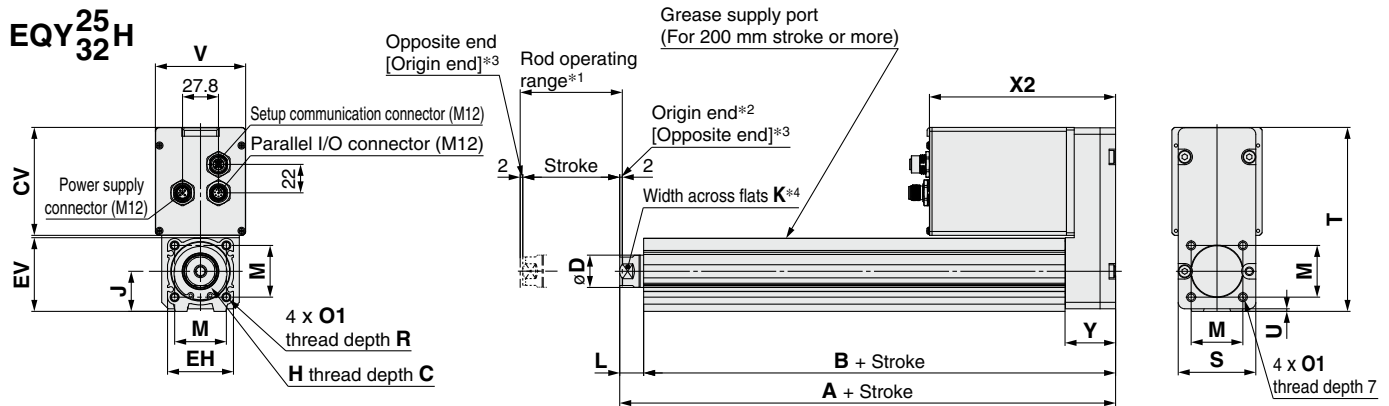
Replacement Parts (Top/Right/Left side parallel only)/Belt

No.	Size	Order no.
27	25	LE-D-19-3
	32	LE-D-19-4

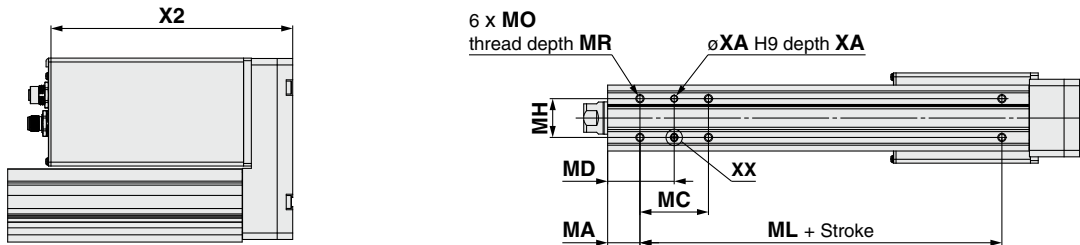
Replacement Parts/Grease Pack

Applied portion	Order no.
Piston rod	GR-S-010 (10 G) GR-S-020 (20 G)

Dimensions: Top Side Parallel Motor

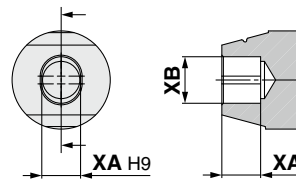
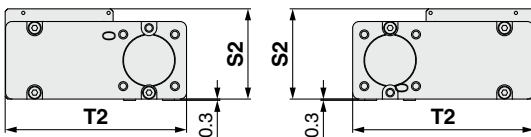


Motor option: With lock



Motor mounting position

Left side parallel Right side parallel



XX (2:1)

- *1 The range of movement of the rod according to the movement instructions. Make sure that workpieces mounted on the rod do not interfere with other workpieces or the facilities around the rod.
- *2 Indicates the factory default origin position (0 mm)
- *3 [] refers to when the rotation direction reference is changed.
- *4 The direction of rod end width across flats differs depending on the products.

Dimensions

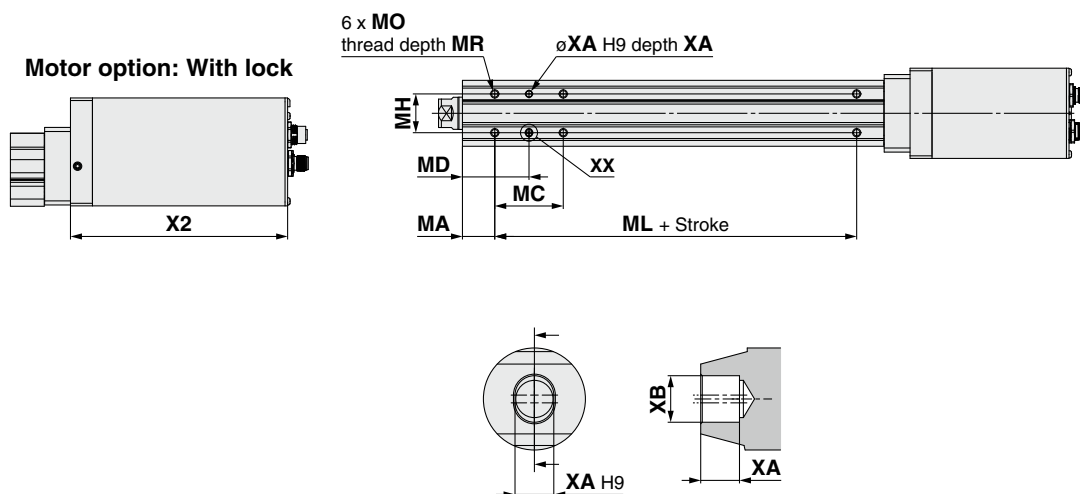
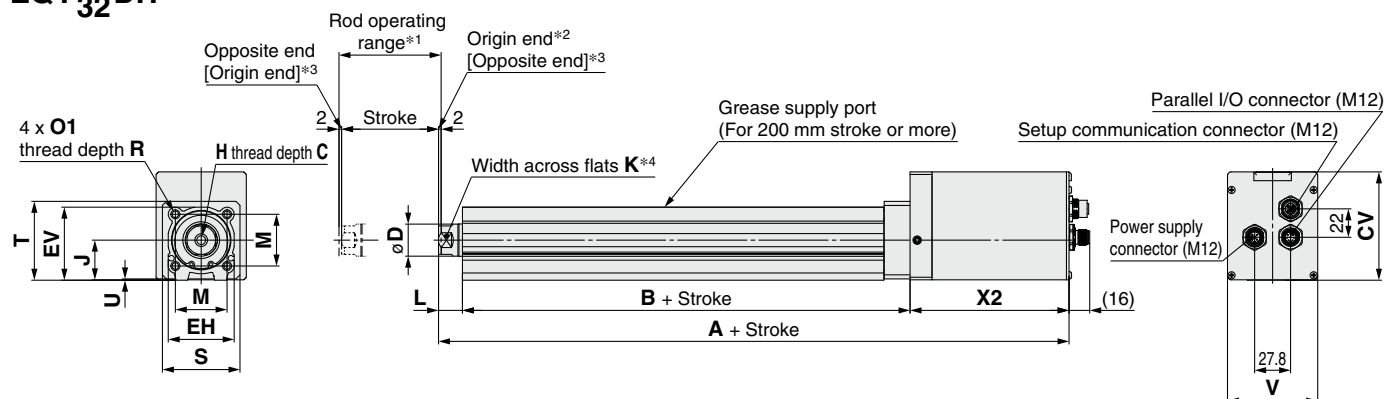
Dimensions																								[mm]
Size	Stroke range [mm]	A	B	C	D	EH	EV	H	J	K	L	M	O1	R	S	S2	T	T2	U	CV	V	X2		Y
																						Without lock	With lock	
25	15 to 100	136.2	121.7	13	20	44	45.5	M8 x 1.25	24	17	14.5	34	M5 x 0.8	8	46	58.1	115	113.6	1	66.3	57.8	144	184	32.2
	101 to 400	161.2	146.7																					
32	20 to 100	153.6	135.1	13	25	51	56.5	M8 x 1.25	31	22	18.5	40	M6 x 1	10	60	70.8	142	140.3	2	83.5	69.8	144	187	39.1
	101 to 500	183.6	165.1																					

Body Bottom Tapped

Size	Stroke range [mm]	MA	MC	MD	MH	ML	MO	MR	XA	XB
25	15 to 39	20	24	32	29	50	M5 x 0.8	6.5	4	5
	40 to 100		42	41		75				
	101 to 124		59	49.5						
	125 to 200		76	58						
	201 to 400									
32	20 to 39	25	22	36	30	50	M6 x 1	8.5	5	6
	40 to 100		36	43		80				
	101 to 124		53	51.5						
	125 to 200		70	60						
	201 to 500									

Dimensions: In-line Motor

EQY²⁵₃₂DH



XX (2:1)

- *1 The range of movement of the rod according to the movement instructions. Make sure that workpieces mounted on the rod do not interfere with other workpieces or the facilities around the rod.
- *2 Indicates the factory default origin position (0 mm)
- *3 [] refers to when the rotation direction reference is changed.
- *4 The direction of rod end width across flats differs depending on the products.

Dimensions

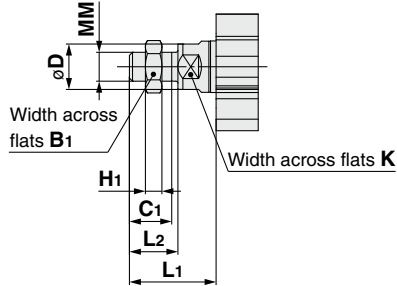
Size	Stroke range [mm]	A		B	C	D	EH	EV	H	J	K	L	M	O1	R	S	T	U	V	X2		CV
		Without lock	With lock																	Without lock	With lock	
25	15 to 100	243.4	283.4	102.9	13	20	44	45.5	M8 x 1.25	24	17	14.5	34	M5 x 0.8	8	45	46.5	1.5	57.8	126	166	66.6
	101 to 400	268.4	308.4	127.9																		
32	20 to 100	257.8	302.8	116.3	13	25	51	56.5	M8 x 1.25	31	22	18.5	40	M6 x 1	10	60	61	1	69.8	123	168	83.8
	101 to 500	287.8	332.8	146.3																		

Body Bottom Tapped

Size	Stroke range [mm]	MA	MC	MD	MH	ML	MO	MR	XA	XB
25	15 to 39	20	24	32	29	50	M5 x 0.8	6.5	4	5
	40 to 100		42	41		75				
	101 to 124		59	49.5						
	125 to 200		76	58						
	201 to 400									
32	20 to 39	25	22	36	30	50	M6 x 1	8.5	5	6
	40 to 100		36	43		80				
	101 to 124		53	51.5						
	125 to 200		70	60						
	201 to 500									

Dimensions

End male thread: EQY²⁵₃₂□H^A□B□C-M



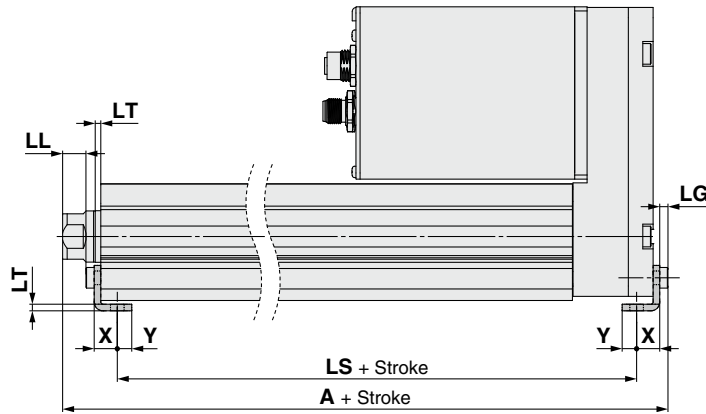
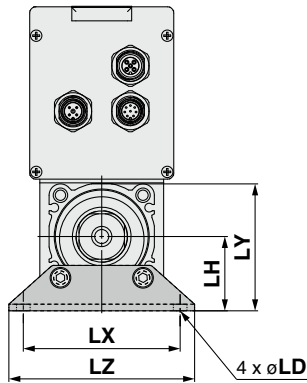
End Male Thread

Size	B_1	C_1	ϕD	H_1	K	L_1	L_2	MM
25	22	20.5	20	8	17	38	23.5	M14 x 1.5
32	22	20.5	25	8	22	42	23.5	M14 x 1.5

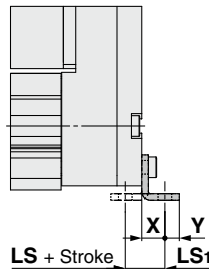
* The L_1 measurement is when the unit is in the original position.
 At this position, 2 mm at the end.

* Refer to the **Web Catalog** for details on the rod end nut and mounting bracket.
 * Refer to the specific product precautions ("Handling") in the **Web Catalog** when mounting end brackets such as knuckle joint or workpieces.

Foot bracket: EQY²⁵₃₂□H^A□B□C-L



Outward mounting



Included parts
 · Foot bracket
 · Body mounting bolt

Foot Bracket

Size	Stroke range [mm]	A	LS	LS ₁	LL	LD	LG	LH	LT	LX	LY	LZ	X	Y
25	30 to 100	142.3	104.5	19.8	8.4	6.6	3.5	30	2.6	57	51.5	71	11.2	5.8
	101 to 400	167.3	129.5											
32	30 to 100	160.8	119.1	19.2	11.3	6.6	4	36	3.2	76	61.5	90	11.2	7
	101 to 500	190.8	149.1											

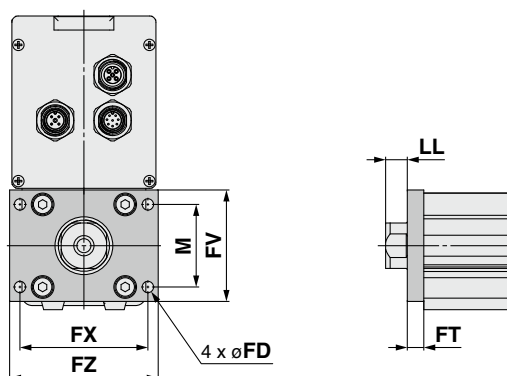
Material: Carbon steel (Chromating)

* The A measurement is when the unit is in the original position. At this position, 2 mm at the end.

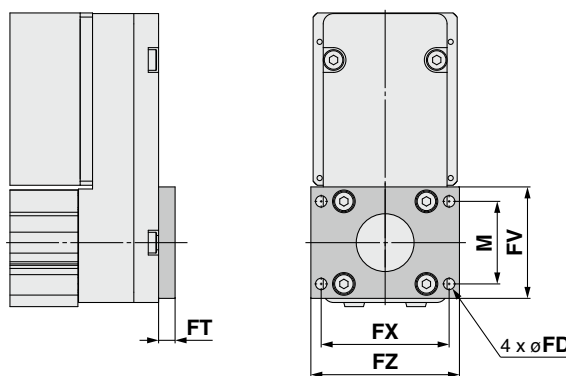
* When the motor mounting is the right or left side parallel type, the head side foot bracket should be mounted outward.

Dimensions

Rod flange: EQY $\frac{25}{32}$ H $\frac{A}{B}$ - $\frac{C}{C}$ □ □ □ F



Head flange: EQY25H $\frac{A}{B}$ - $\frac{C}{C}$ □ □ □ G



* The head flange type is not available for the EQY32.

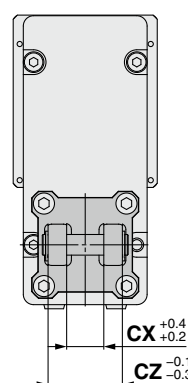
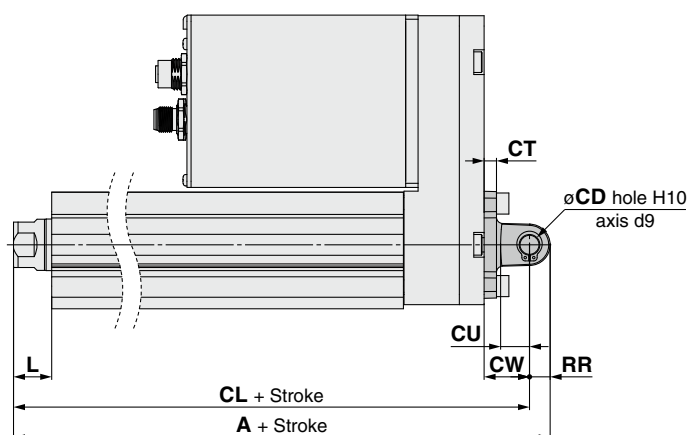
Included parts
 · Flange
 · Body mounting bolt

Rod/Head Flange [mm]

Size	FD	FT	FV	FX	FZ	LL	M
25	5.5	8	48	56	65	6.5	34
32	5.5	8	54	62	72	10.5	40

Material: Carbon steel (Nickel plating)

Double clevis: EQY $\frac{25}{32}$ H $\frac{A}{B}$ - $\frac{C}{C}$ □ □ □ D



Included parts
 · Double clevis
 · Body mounting bolt
 · Clevis pin
 · Retaining ring

For the models and dimensions of the mounting bracket and simple joint bracket, refer to the **Web Catalog** for the LEY series.

* Refer to the **Web Catalog** for details on the rod end nut and mounting bracket.

Double Clevis [mm]

Size	Stroke range [mm]	A	CL	CD	CT	CU	CW	CX	CZ	L	RR
25	30 to 100	166.2	156.2	10	5	14	20	18	36	14.5	10
	101 to 200	191.2	181.2								
32	30 to 100	185.6	175.6	10	6	14	22	18	36	18.5	10
	101 to 200	215.6	205.6								

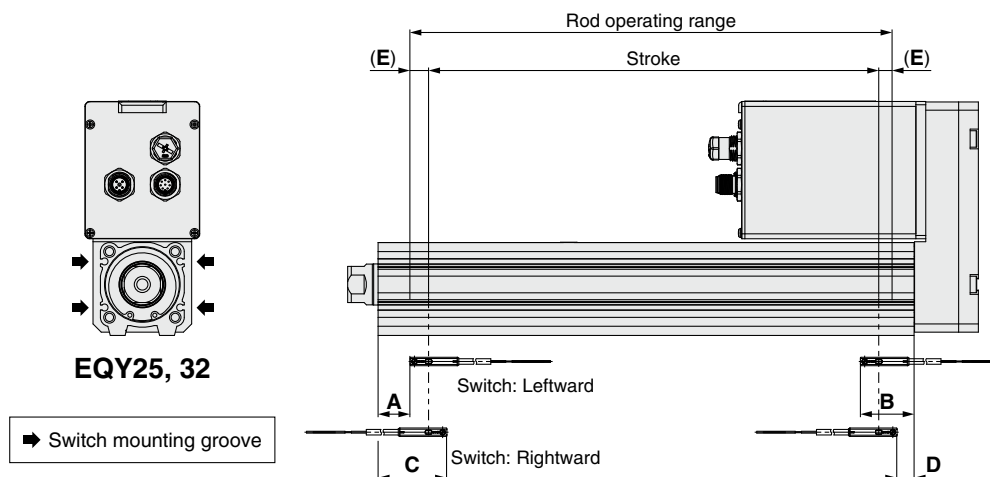
Material: Cast iron (Coating)

* The A and CL measurements are when the unit is in the original position. At this position, 2 mm at the end.

Rod Type/*EQY*□*H* Series Auto Switch Mounting

Auto Switch Proper Mounting Position

Applicable auto switch: D-M9□(V), D-M9□E(V), D-M9□W(V), D-M9□A(V)



								[mm]
Size	Stroke range	Auto switch position				Return to origin distance	Operating range	
		Leftward mounting		Rightward mounting				
		A	B	C	D	E	—	
25	30 to 100	27	62.5	39	50.5	(2)	4.2	
	105 to 400	52		64				
32	30 to 100	30.5	65.5	42.5	53.5	(2)	4.9	
	105 to 500	60.5		72.5				

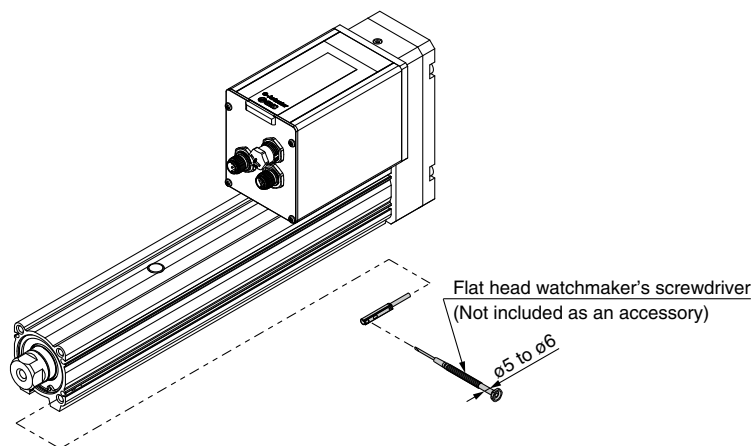
* The values in the table above are to be used as a reference when mounting auto switches for stroke end detection.

Adjust the auto switch after confirming the operating conditions in the actual setting.

* An auto switch cannot be mounted on the same side as a motor.

* Since the operating range is provided as a guideline including hysteresis, it cannot be guaranteed (assuming approx. $\pm 30\%$ dispersion). It may change substantially depending on the ambient environment.

Auto Switch Mounting



Tightening Torque for Auto Switch Mounting Screw [N·m]

Auto switch model	Tightening torque
D-M9□(V) D-M9□E(V) D-M9□W(V)	0.05 to 0.15
D-M9□A(V)	0.05 to 0.10

* When tightening the auto switch mounting screw (included with the auto switch), use a watchmaker's screwdriver with a handle diameter of 5 to 6 mm.

Solid State Auto Switch Direct Mounting Type D-M9N(V)/D-M9P(V)/D-M9B(V)



Refer to the SMC website for details on products that are compliant with international standards.

Auto Switch Specifications

PLC: Programmable Logic Controller

Grommet

- 2-wire load current is reduced (2.5 to 40 mA).
- Using flexible cable as standard spec.



D-M9□, D-M9□V (With indicator light)						
Auto switch model	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 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	Red LED illuminates when turned ON.					
Standard	CE/UKCA marking					

Oilproof Flexible Heavy-duty Lead Wire Specifications

Auto switch model		D-M9N(V)	D-M9P(V)	D-M9B(V)
Sheath	Outside diameter [mm]	ø2.6		
Insulator	Number of cores	3 cores (Brown/Blue/Black)		2 cores (Brown/Blue)
	Outside diameter [mm]	ø0.88		
Conductor	Effective area [mm ²]	0.15		
	Strand diameter [mm]	ø0.05		
Min. bending radius [mm] (Reference values)		17		

- * Refer to the **Web Catalog** for solid state auto switch common specifications.
- * Refer to the **Web Catalog** for lead wire lengths.

Caution

Precautions

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

Weight

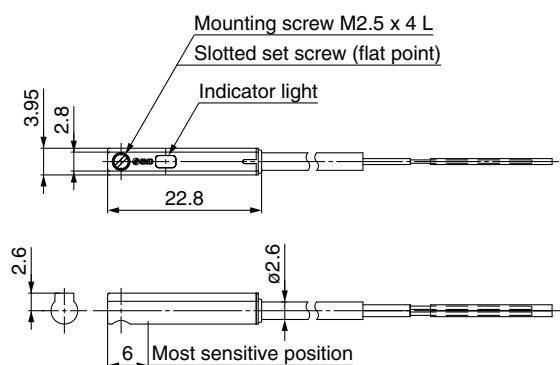
[g]

Auto switch model		D-M9N(V)	D-M9P(V)	D-M9B(V)
Lead wire length	0.5 m (Nil)	8	7	7
	1 m (M)	14	13	13
	3 m (L)	41	38	38
	5 m (Z)	68	63	63

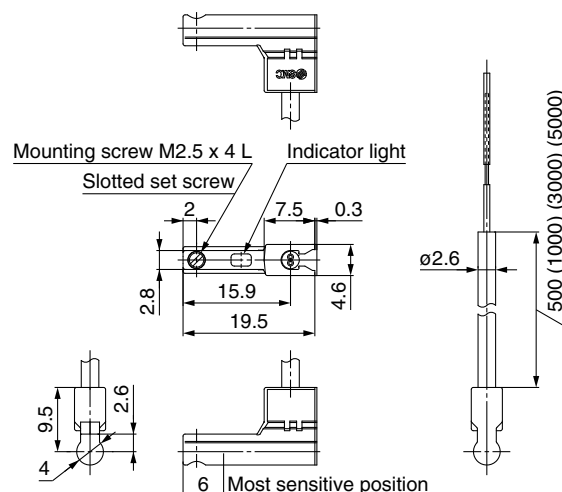
Dimensions

[mm]

D-M9□

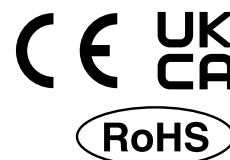


D-M9□V



CE UK
CA
RoHS

2-Color Indicator Solid State Auto Switch Direct Mounting Type D-M9NW(V)/D-M9PW(V)/D-M9BW(V)



Refer to the SMC website for details on products that are compliant with international standards.

Auto Switch Specifications

PLC: Programmable Logic Controller

D-M9□W, D-M9□WV (With indicator light)						
Auto switch model	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 range Red LED illuminates. Proper operating range Green LED illuminates.					
Standard	CE/UKCA marking					

Grommet

- 2-wire load current is reduced (2.5 to 40 mA).
- Using flexible cable as standard spec.
- The proper operating range can be determined by the color of the light. (Red → Green ← Red)



Caution

Precautions

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

Oilproof Flexible Heavy-duty Lead Wire Specifications

Auto switch model	D-M9NW(V)	D-M9PW(V)	D-M9BW(V)
Sheath	Outside diameter [mm]	ø2.6	
Insulator	Number of cores	3 cores (Brown/Blue/Black)	
	Outside diameter [mm]	ø0.88	
Conductor	Effective area [mm ²]	0.15	
	Strand diameter [mm]	ø0.05	
Min. bending radius [mm] (Reference values)		17	

- * Refer to the **Web Catalog** for solid state auto switch common specifications.
- * Refer to the **Web Catalog** for lead wire lengths.

Weight

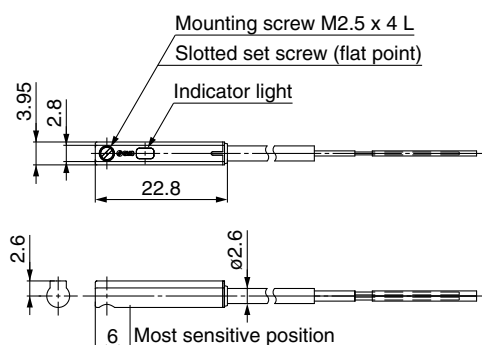
[g]

Auto switch model	D-M9NW(V)	D-M9PW(V)	D-M9BW(V)
Lead wire length	0.5 m (Nil)	8	7
	1 m (M)	14	13
	3 m (L)	41	38
	5 m (Z)	68	63

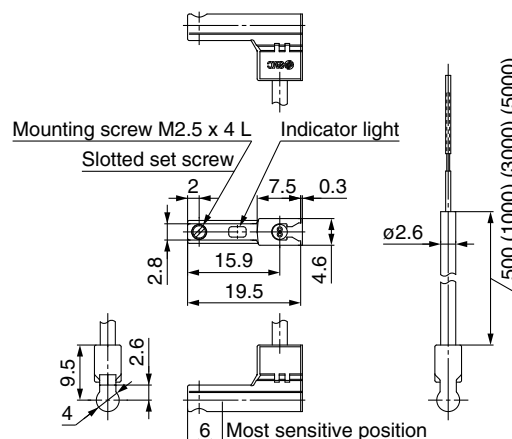
Dimensions

[mm]

D-M9□W



D-M9□WV





Rod Type/**EQY**□**H** Series Integrated Controller Electric Actuator Specific Product Precautions 1

Be sure to read this before handling the products. Refer to the back cover for safety instructions. For electric actuator and auto switch precautions, refer to the “Handling Precautions for SMC Products” and the “Operation Manual” on the SMC website: <https://www.smcworld.com>

Design / Selection

⚠ Warning

- 1. Do not apply a load in excess of the specification limits.**
Select a suitable actuator by work load and allowable lateral load on the rod end. If a load in excess of the specification limits is applied to the piston rod, the generation of play in the piston rod sliding parts, reduced accuracy, etc., may occur and adversely affect the operation and service life of the product.
- 2. Do not use the product in applications where excessive external force or impact force is applied to it.**
Failure to do so may result in a malfunction.

Handling

⚠ Caution

1. OUT signal

1) Positioning operation

When the product comes within the set range of the parameter [OUT signal output width], the OUT signal will turn ON.
Initial value: Set to [0.50] or higher.

2) Pushing operation

When the effective force reaches the set [Pushing force], the OUT0 and OUT1 outputs corresponding to the commanded operation data turn ON to complete the pushing operation.

<Set Values for Vertical Upward Transfer Pushing Operations>

For vertical loads (upward), set the pushing force to the max. value shown below and operate at the work load or less.

Model	EQY25				EQY32			
	H	A	B	C	H	A	B	C
Work load [kg]	1	2.5	5	10	2	4.5	9	18
Pushing force	50%				70%			

Handling

⚠ Caution

- 2. To conduct a pushing operation, be sure to set the product to [Pushing operation].**
Also, refrain from bumping the workpiece during a positioning operation or when in the range of the positioning operation. Failure to do so may result in a malfunction.
- 3. The driving speed at the time of pushing operation is fixed.**
- 4. The actual speed of this actuator is affected by the load.**
Check the model selection section of the catalog.
- 5. Do not apply a load, impact, or resistance in addition to the transferred load during return to origin.**
Additional force will cause the displacement of the origin position since it is based on the detected motor torque.
- 6. Do not scratch or dent the sliding parts of the piston rod by bumping them or placing objects on them.**
The piston rod and guide rod are manufactured to precise tolerances, so even a slight deformation may result in a malfunction.
- 7. When an external guide is used, connect it in such a way that no impact or load is applied to it.**
Use a freely moving connector (such as a floating joint).
- 8. Do not operate by fixing the piston rod and moving the actuator body.**
Excessive load will be applied to the piston rod, resulting in damage to the actuator and a reduced service life of the product.
- 9. When an actuator is operated with one end fixed and the other free (ends tapped or flange), a bending moment may act on the actuator due to vibration generated at the stroke end, which can damage the actuator. In such cases, install a mounting bracket to suppress the vibration of the actuator body or reduce the speed so that the actuator does not vibrate at the stroke end.**

Also, use a mounting bracket when moving the actuator body or when a long stroke actuator is mounted horizontally and fixed at one end.



Rod Type/*EQY*□*H* Series

Integrated Controller Electric Actuator

Specific Product Precautions 2

Be sure to read this before handling the products. Refer to the back cover for safety instructions. For electric actuator and auto switch precautions, refer to the “Handling Precautions for SMC Products” and the “Operation Manual” on the SMC website: <https://www.smcworld.com>

Handling

Caution

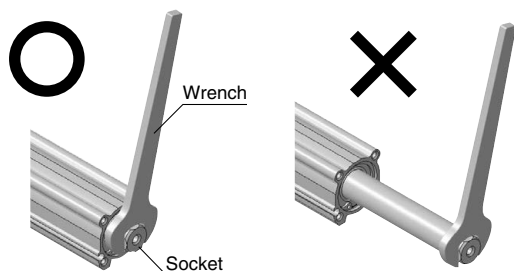
- 10. Avoid using the electric actuator in such a way that rotational torque would be applied to the piston rod.**

Failure to do so may result in the deformation of the non-rotating guide, abnormal auto switch responses, play in the internal guide, or an increase in the sliding resistance.

Refer to the table below for the approximate values of the allowable range of rotational torque.

Allowable rotational torque [N·m] or less	EQY25	EQY32
	1.1	1.4

When screwing a bracket or nut into the piston rod end, hold the flats of the end of the “socket” with a wrench (the piston rod should be fully retracted). Do not apply tightening torque to the non-rotating mechanism.



- 11. When mounting a bolt, workpiece, or attachment, hold the flats of the piston rod end with a wrench so that the piston rod does not rotate. The bolt should be tightened within the specified torque range.**

Failure to do so may result in abnormal auto switch responses, play in the internal guide, or an increase in the sliding resistance.

Slider Type

Rod Type

EQFS□H/EQY□H Series

e-Actuator Electric Specifications

Compatible motor		Step motor 24 VDC
Power supply		24 VDC ±10%
Compatible encoder		Battery-less absolute
Parallel input specifications	Number of inputs	3 inputs (Non-insulated)
	Input voltage	24 VDC ±10%
	Input current	5 mA/circuit
Parallel output specifications	Number of outputs	4 outputs (Non-insulated)
	Load voltage	24 VDC ±10%
	Max. load current	40 mA/point
LED		PWR (Green), ALM (Red), OVL (Orange)

The initial setting of the e-Actuator at the time of shipment from the factory is the closed center mode.

To switch the setting to single or double solenoid mode, switch the mode by using the e-Actuator setup software.

Model Selection

EQFS□H Series

EQY□H Series

Auto Switch

Electric Specifications

Wiring Examples

Operation Data Setting

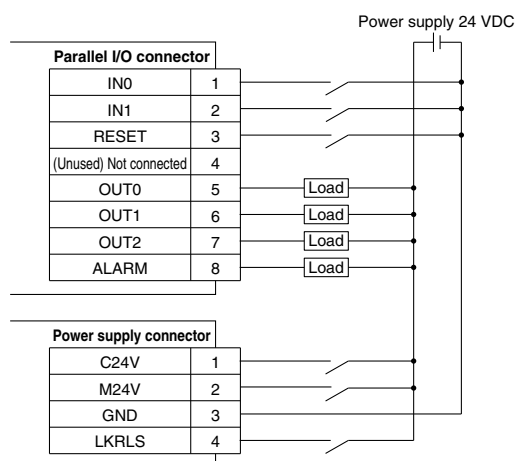
Options

Specific Product Precautions

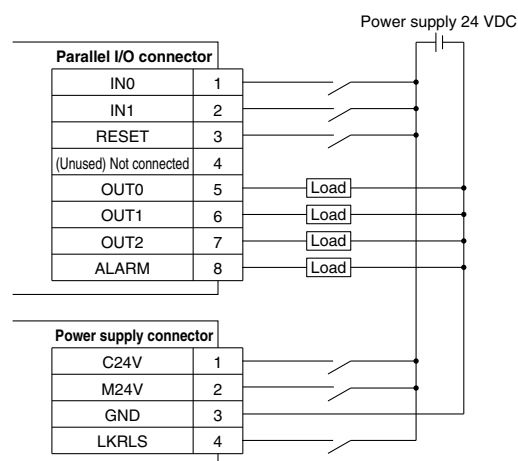
Slider Type Rod Type **EQFS□H/EQY□H Series** Wiring Examples

- * The wiring examples are shown below. Refer to the EQFS/EQY operation manual for details.
- * Use the I/O cable (JX-CI□-E-□-S) for connecting a PLC with the parallel I/O connector.
- * Wiring depends on the parallel input/output type (NPN or PNP).
- * The parallel I/O is of non-insulated specification.
The ground connection of the connected PLC and other equipment uses a common GND with the GND of the power supply connector.

Wiring diagram (NPN)



Wiring diagram (PNP)



Input Signal

Name	Details
IN0*1	Movement signal for origin end
IN1*1	Movement signal for opposite end
RESET	Reset alarms

*1 In single solenoid mode, turning ON of IN1 input gives an opposite end operation instruction, turning OFF of IN1 input gives an origin end operation instruction, and IN0 is not used.

Output Signal

Name	Details
OUT0	Origin end position detection
OUT1	Opposite end position detection
OUT2	Midpoint position detection
*ALARM*1	OFF when alarm is generated

*1 Signal of negative-logic circuit

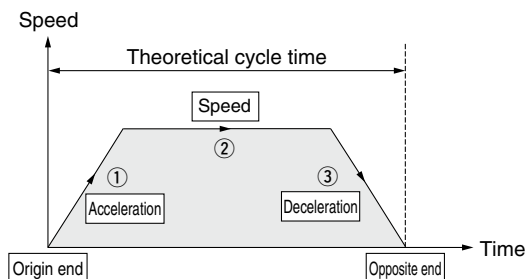
Slider Type Rod Type **EQFS□H/EQY□H Series** Operation Data Setting

* For details of the setting of operation data, refer to the e-Actuator Setup Software Operation Manual.

Operation data setting for positioning

In this setting, the actuator moves toward and stops at the target position.

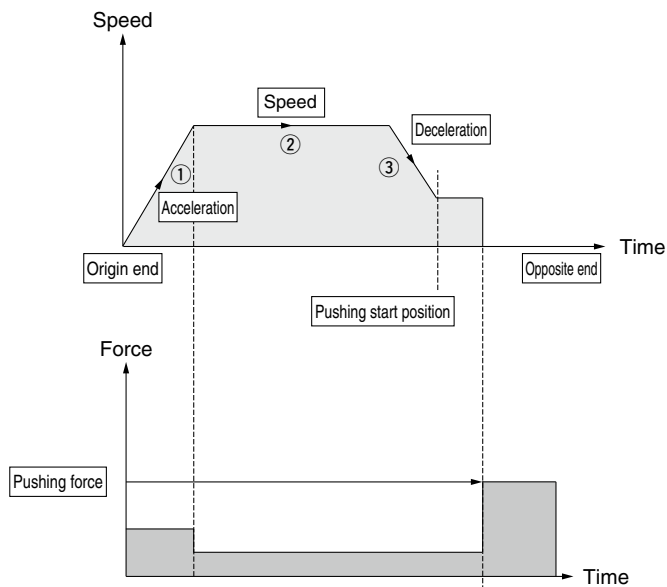
The following diagram shows the setting items and operation. The setting items and set values for this operation are stated below.



* The items circled in □ are setting items.

Operation data setting for pushing

The actuator moves toward the target position, and when it reaches that position, it starts pushing with the set force or less. The following diagram shows the setting items and operation. The setting items and set values for this operation are stated below.



* The items circled in □ are setting items. Pushing completion

◎ Explanation of modes

- Double solenoid mode: it is possible to make operation commands to the origin end and opposite end by means of two input signals as though a double solenoid valve is used.
- Single solenoid mode: it is possible to make operation commands to the origin end and opposite end by means of a single input signal as though a single solenoid valve is used.
- Closed center mode: it is possible to make operation commands to the origin end, opposite end, and intermediate point by means of two input signals as though a closed center valve is used.

Operation Data (Positioning)

Item	Details
Speed	Transfer speed to the target position
Acceleration	Item which defines how rapidly the actuator reaches the speed set. The higher the set value, the faster it reaches the speed set.
Deceleration	Item which defines how rapidly the actuator comes to stop. The higher the set value, the quicker it stops.
Origin end	Target position of the origin end of the actuator
Opposite end	Target position of the opposite end of the actuator

Operation Data (Pushing)

Item	Details
Speed	Transfer speed to the target position
Acceleration	Item which defines how rapidly the actuator reaches the speed set. The higher the set value, the faster it reaches the speed set.
Deceleration	Item which defines how rapidly the actuator comes to stop. The higher the set value, the quicker it stops.
Pushing force	Pushing force ratio is defined. The setting range differs depending on the electric actuator type. Refer to the operation manual for the electric actuator.
Origin end	Target position of the origin end of the actuator
Opposite end	Target position of the opposite end of the actuator
Pushing start position	Specifies the position at which the pushing operation starts

Slider Type Rod Type EQFS□H/EQY□H Series Options

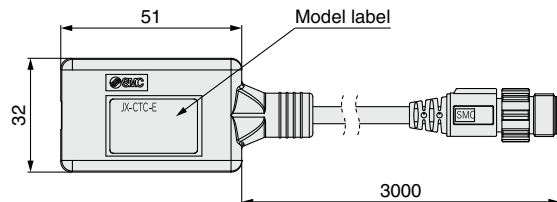
■ Communication cable for controller setting

Controller setting kit JX-CT-E

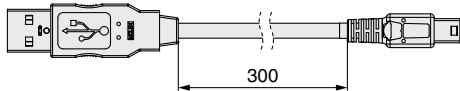
A set which includes a communication cable (JXC-CTC-E) and a USB cable (LEC-W2-U)

* It is possible to individually purchase the communication cable and USB cable.

Communication cable JXC-CTC-E



USB cable LEC-W2-U



<Controller setting software/USB driver>

- Controller setting software
- USB driver (For JXC-CT□-E)

Download from SMC's website:
<https://www.smcworld.com>

Hardware Requirements

OS	Windows®10 (64 bit), Windows®11 (64 bit)
Communication interface	USB 2.0 port
Display	1366 x 768 or more

* Windows®10 and Windows®11 are registered trademarks of Microsoft Corporation in the United States.

■ Power supply cable

JX-CD□S-E-1-S

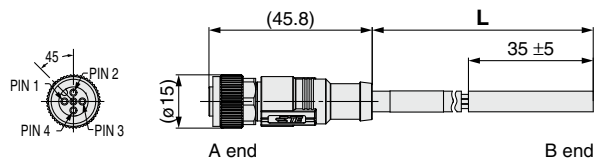
Connector type

Symbol	Specifications
S	Straight
A	Right angled

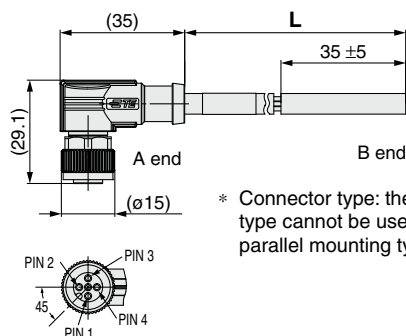
Cable length

	1	3	5	10
	1.5 m	3 m	5 m	10 m

● Connector type: Straight



● Connector type: Right angled



* Connector type: the right angled type cannot be used for the parallel mounting type.

■ Parallel I/O cable

JX-CIS-E-1-S

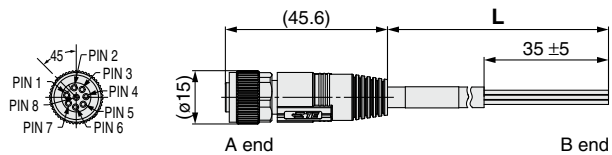
Connector type

Symbol	Specifications
S	Straight
A	Right angled

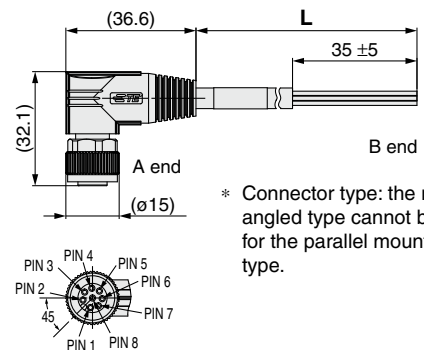
Cable length

	1	3	5	10
	1.5 m	3 m	5 m	10 m

● Connector type: Straight



● Connector type: Right angled



* Connector type: the right angled type cannot be used for the parallel mounting type.

Pin no.	Wire color	Signal
1	White	IN0
2	Brown	IN1
3	Green	RESET
4	Yellow	—
5	Gray	OUT0
6	Pink	OUT1
7	Blue	OUT2
8	Red	ALARM

Part no.	Weight [g]
JX-CIS-E-1-S	88
JX-CIS-E-3-S	164
JX-CIS-E-5-S	265
JX-CIS-E-10-S	517
JX-CIA-E-1-S	88
JX-CIA-E-3-S	164
JX-CIA-E-5-S	265
JX-CIA-E-10-S	517

Pin no.	Wire color	Signal
1	Brown	C24V
2	White	M24V
3	Blue	0V
4	Black	LK RLS

Part no.	Weight [g]
JX-CDS-E-1-S	68
JX-CDS-E-3-S	125
JX-CDS-E-5-S	200
JX-CDS-E-10-S	387
JX-CDA-E-1-S	68
JX-CDA-E-3-S	125
JX-CDA-E-5-S	200
JX-CDA-E-10-S	387



Slider Type Rod Type
EQFS□H/EQY□H Series

Battery-less Absolute Encoder Type Specific Product Precautions

Be sure to read this before handling the products. Refer to the back cover for safety instructions. For electric actuator precautions, refer to the "Handling Precautions for SMC Products" and the "Operation Manual" on the SMC website: <https://www.smcworld.com>

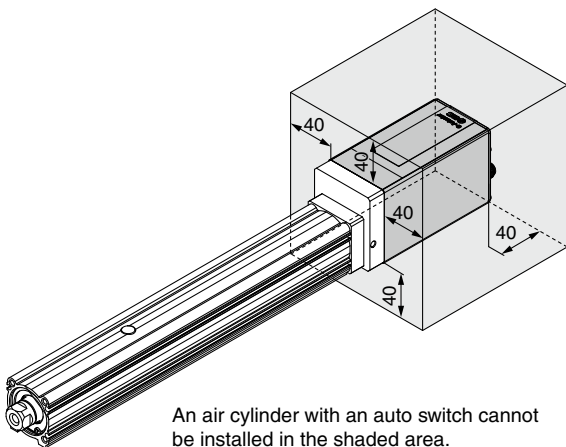
Handling

⚠ Caution

1. In environments where strong magnetic fields are present, use may be limited.

A magnetic sensor is used in the encoder. Therefore, if the actuator motor is used in an environment where strong magnetic fields are present, malfunction or failure may occur. Do not expose the actuator motor to magnetic fields with a magnetic flux density of 13 mT or more.

When installing an electric actuator and an air cylinder with an auto switch (ex. CDQ2 series) or multiple electric actuators side by side, maintain a space of 40 mm or more around the motor. Refer to the construction drawing of the actuator motor.

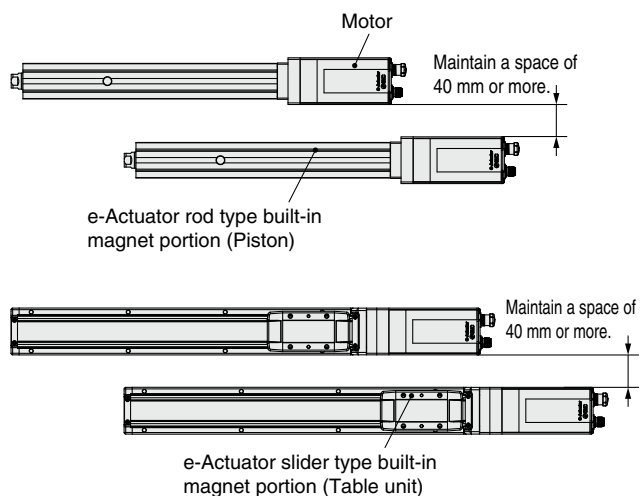


An air cylinder with an auto switch cannot be installed in the shaded area.

● **When lining up actuators**


For actuators with a built-in auto switch magnet, maintain a space of 40 mm or more between the motors and the position where the magnet passes.


✗ Do not allow the motors to be in close proximity to the position where the magnet passes.




Safety Instructions

These safety instructions are intended to prevent hazardous situations and/or equipment damage. These instructions indicate the level of potential hazard with the labels of “**Caution**,” “**Warning**” or “**Danger**.” They are all important notes for safety and must be followed in addition to International Standards (ISO/IEC)*1), and other safety regulations.

 **Caution:** **Caution** indicates a hazard with a low level of risk which, if not avoided, could result in minor or moderate injury.

 **Warning:** **Warning** indicates a hazard with a medium level of risk which, if not avoided, could result in death or serious injury.

 **Danger :** **Danger** indicates a hazard with a high level of risk which, if not avoided, will result in death or serious injury.

*1) ISO 4414: Pneumatic fluid power – General rules relating to systems.
ISO 4413: Hydraulic fluid power – General rules relating to systems.
IEC 60204-1: Safety of machinery – Electrical equipment of machines.
(Part 1: General requirements)
ISO 10218-1: Manipulating industrial robots – Safety.
etc.

Warning

1. The compatibility of the product is the responsibility of the person who designs the equipment or decides its specifications.

Since the product specified here is used under various operating conditions, its compatibility with specific equipment must be decided by the person who designs the equipment or decides its specifications based on necessary analysis and test results. The expected performance and safety assurance of the equipment will be the responsibility of the person who has determined its compatibility with the product. This person should also continuously review all specifications of the product referring to its latest catalog information, with a view to giving due consideration to any possibility of equipment failure when configuring the equipment.

2. Only personnel with appropriate training should operate machinery and equipment.

The product specified here may become unsafe if handled incorrectly. The assembly, operation and maintenance of machines or equipment including our products must be performed by an operator who is appropriately trained and experienced.

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

1. The inspection and maintenance of machinery/equipment should only be performed after measures to prevent falling or runaway of the driven objects have been confirmed.
2. When the product is to be removed, confirm that the safety measures as mentioned above are implemented and the power from any appropriate source is cut, and read and understand the specific product precautions of all relevant products carefully.
3. Before machinery/equipment is restarted, take measures to prevent unexpected operation and malfunction.

4. Contact SMC beforehand and take special consideration of safety measures if the product is to be used in any of the following conditions.

1. Conditions and environments outside of the given specifications, or use outdoors or in a place exposed to direct sunlight.
2. Installation on equipment in conjunction with atomic energy, railways, air navigation, space, shipping, vehicles, military, medical treatment, combustion and recreation, or equipment in contact with food and beverages, emergency stop circuits, clutch and brake circuits in press applications, safety equipment or other applications unsuitable for the standard specifications described in the product catalog.
3. An application which could have negative effects on people, property, or animals requiring special safety analysis.
4. Use in an interlock circuit, which requires the provision of double interlock for possible failure by using a mechanical protective function, and periodical checks to confirm proper operation.

Caution

1. The product is provided for use in manufacturing industries.

The product herein described is basically provided for peaceful use in manufacturing industries.
If considering using the product in other industries, consult SMC beforehand and exchange specifications or a contract if necessary.
If anything is unclear, contact your nearest sales branch.

Limited warranty and Disclaimer/ Compliance Requirements

The product used is subject to the following “Limited warranty and Disclaimer” and “Compliance Requirements”.

Read and accept them before using the product.

Limited warranty and Disclaimer

1. The warranty period of the product is 1 year in service or 1.5 years after the product is delivered, whichever is first.*2)
Also, the product may have specified durability, running distance or replacement parts. Please consult your nearest sales branch.
2. For any failure or damage reported within the warranty period which is clearly our responsibility, a replacement product or necessary parts will be provided.
This limited warranty applies only to our product independently, and not to any other damage incurred due to the failure of the product.
3. Prior to using SMC products, please read and understand the warranty terms and disclaimers noted in the specified catalog for the particular products.

*2) Vacuum pads are excluded from this 1 year warranty.

A vacuum pad is a consumable part, so it is warranted for a year after it is delivered.
Also, even within the warranty period, the wear of a product due to the use of the vacuum pad or failure due to the deterioration of rubber material are not covered by the limited warranty.


Compliance Requirements

1. The use of SMC products with production equipment for the manufacture of weapons of mass destruction (WMD) or any other weapon is strictly prohibited.
2. The exports of SMC products or technology from one country to another are governed by the relevant security laws and regulations of the countries involved in the transaction. Prior to the shipment of a SMC product to another country, assure that all local rules governing that export are known and followed.

Caution

SMC products are not intended for use as instruments for legal metrology.

Measurement instruments that SMC manufactures or sells have not been qualified by type approval tests relevant to the metrology (measurement) laws of each country. Therefore, SMC products cannot be used for business or certification ordained by the metrology (measurement) laws of each country.

 **Safety Instructions** Be sure to read the “Handling Precautions for SMC Products” (M-E03-3) and “Operation Manual” before use.

SMC Corporation

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Specifications are subject to change without prior notice
and any obligation on the part of the manufacturer.

D-G