High Precision Type

Electric Slide Table/ Ball Screw Drive

Positioning repeatability

±0.01 mm

Due to the adoption of a ball screw drive

Lost motion

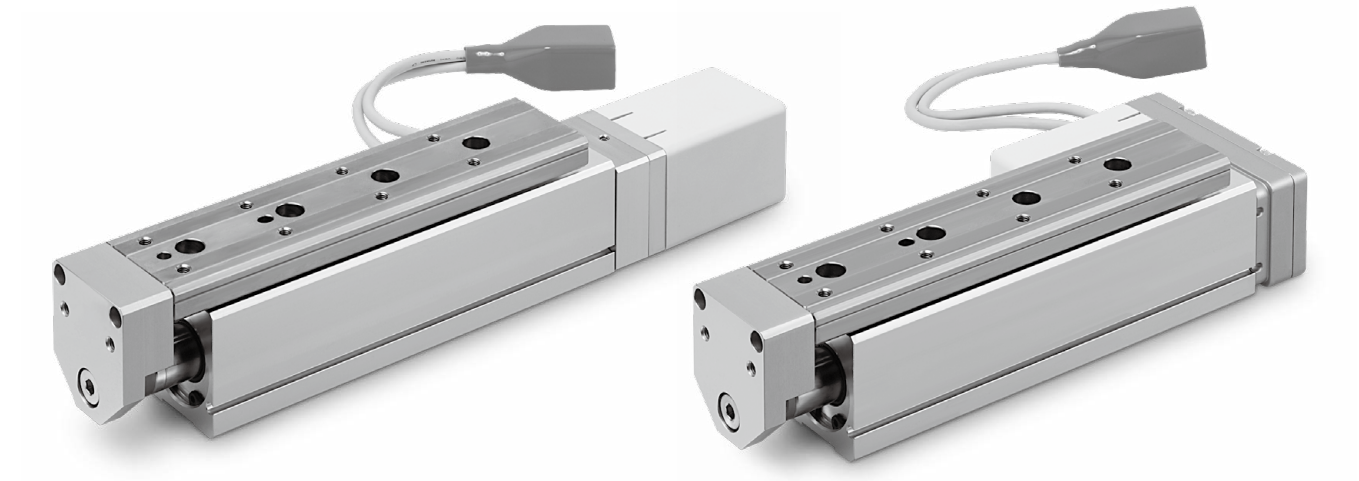
0.1 mm or less

Increased vertical work load

6 times

New **LESYH16** 12 kg

Existing model **LESH16** 2 kg



Battery-less absolute encoder compatible

Step motor controller JXC Series

Battery-less absolute type (Step motor 24 VDC)

EtherCAT direct input type	EtherNet/IP direct input type	PROFINET direct input type	DeviceNet direct input type	IO-Link direct input type	CC-Link direct input type	Step data input type
						
JXCE1	**JXC91**	**JXCP1**	**JXCD1**	**JXCL1**	New **JXCM1**	New **JXC51** **JXC61**

■Trademark

EtherNet/IP™ is a trademark of ODVA.
DeviceNet™ is a trademark of ODVA.
EtherCAT® is registered trademark and patented technology, licensed by Beckhoff Automation GmbH, Germany.

LESYH16-X171

SMC

Battery-less Absolute (Step Motor 24 VDC)

Electric Slide Table/Ball Screw Drive

LESYH16-X171

Model Selection 1

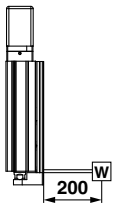
Selection Procedure

Step 1 Check the work load–speed. → **Step 2** Check the cycle time. → **Step 3** Check the allowable moment.

Selection Example

Operating conditions

- Workpiece mass: 1 [kg]
- Speed: 200 [mm/s]
- Mounting orientation: Vertical
- Stroke: 50 [mm]
- Acceleration/Deceleration: 3000 [mm/s^2]
- Cycle time: 0.5 s
- Workpiece mounting condition:

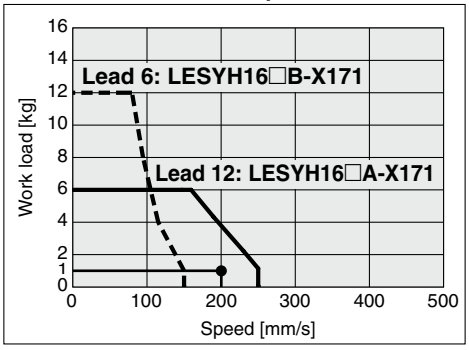


Step 1 Check the work load–speed. <Speed–Work load graph> (page 2)

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

Selection example) The **LESYH16□A-50-X171** is temporarily selected based on the graph shown on the right side.

LESYH16□□-X171/Step Motor Vertical



<Speed–Work load graph>

Step 2 Check the cycle time.

It is possible to obtain an approximate cycle time by using method 1, but if more detailed cycle time is required, use method 2.

∗ Although it is possible to make a suitable selection by using method 1, this calculation is based on a maximum load condition. Therefore, if a more detailed selection for each load is required, use method 2.

Method 1: Check the cycle time graph. (Refer to the Web Catalog.)

Method 2: Calculation <Speed–Work load graph> (page 2)

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

Cycle time:

T can be found from the following equation.

$T = T1 + T2 + T3 + T4$ [s]

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

  $T1 = V/a1$ [s] $T3 = V/a2$ [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 motor types, load and in position of the step data. Therefore, calculate the settling time while referencing the following value.

  $T4 = 0.15$ [s]

Calculation example)

T1 to T4 can be calculated as follows.

$T1 = V/a1 = 200/3000 = 0.07$ [s],

$T3 = V/a2 = 200/3000 = 0.07$ [s]

$$T2 = \frac{L - 0.5 \cdot V \cdot (T1 + T3)}{V} = \frac{50 - 0.5 \cdot 200 \cdot (0.04 + 0.04)}{200} = 0.21 \text{ [s]}$$

$T4 = 0.15$ [s]

The cycle time can be found as follows.

$T = T1 + T2 + T3 + T4$

$= 0.07 + 0.21 + 0.07 + 0.15$

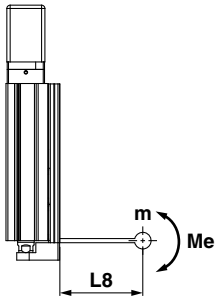
$=$ **0.50 [s]**

Step 3 Check the allowable moment.

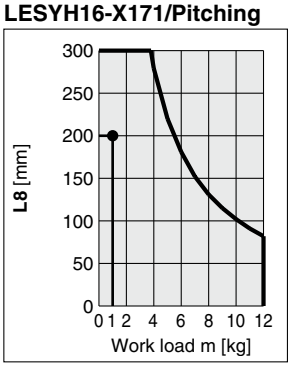
<Static allowable moment> (page 2)

<Dynamic allowable moment> (pages 3, 4)

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



LESYH16-X171/Pitching



<Dynamic allowable moment>

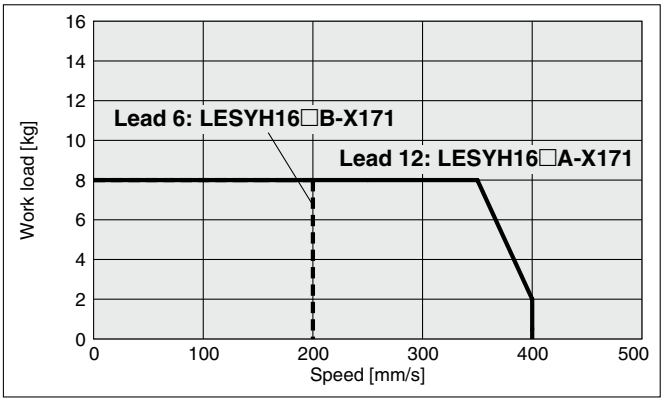
Based on the above calculation result, the LESYH16□A-50-X171 should be selected.

SMC

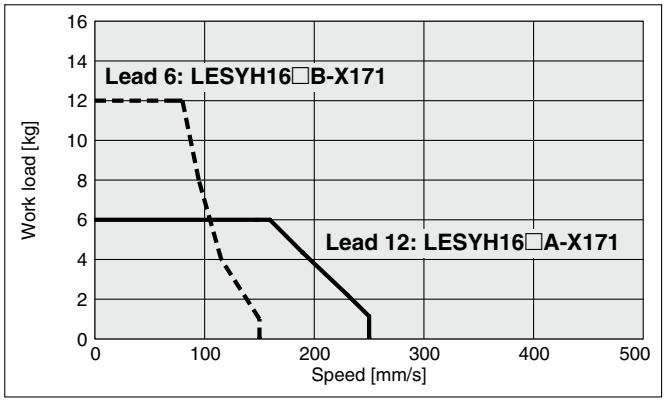
Speed–Work Load Graph (Guide)

LESYH16-X171

Horizontal



Vertical



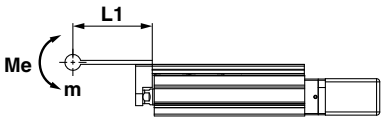
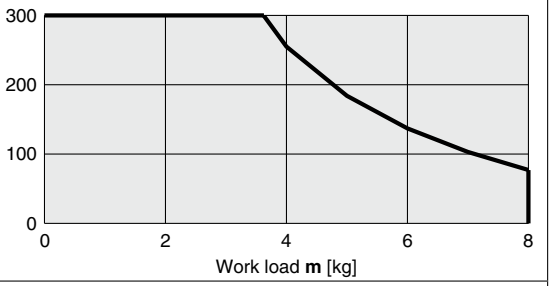
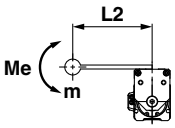
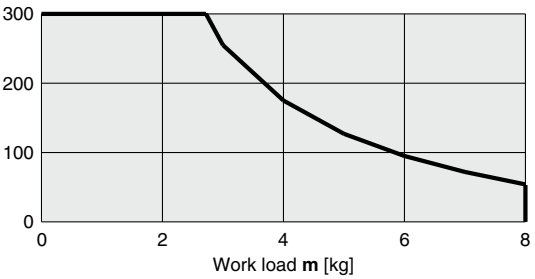
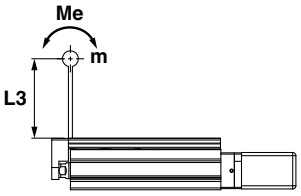
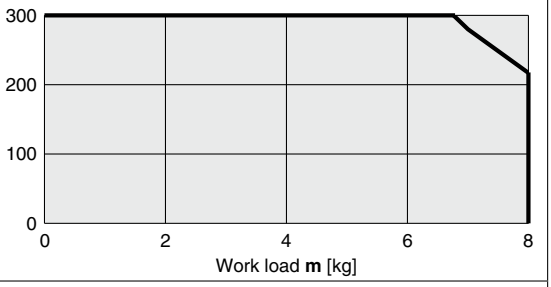
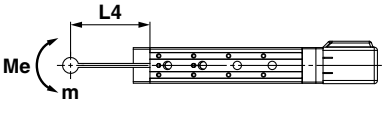
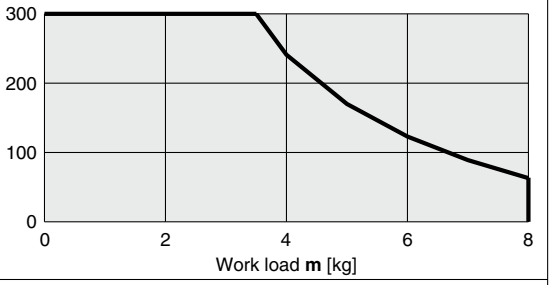
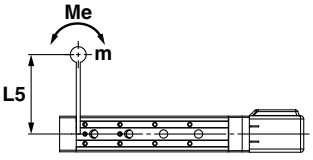
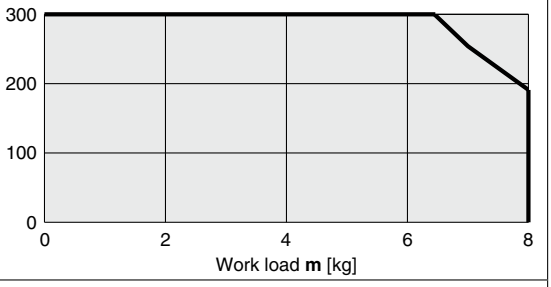
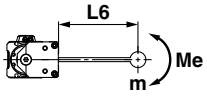
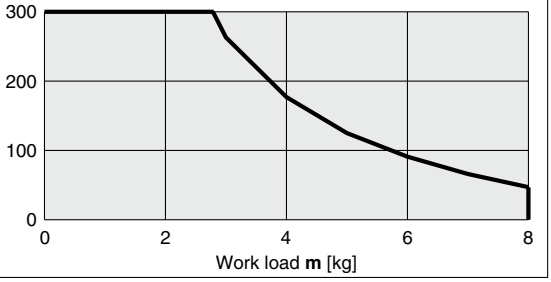
Static Allowable Moment

Model	LESYH16-X171	
Stroke [mm]	**50**	**100**
Pitching [N·m]	26	43
Yawing [N·m]		
Rolling [N·m]	48	

Dynamic Allowable Moment

* This graph shows the amount of allowable overhang (guide unit) when the center of gravity of the workpiece overhangs in one direction. When selecting the overhang, refer to "Calculation of Guide Load Factor" or the Electric Actuator Model Selection Software for confirmation, https://www.smcworld.com

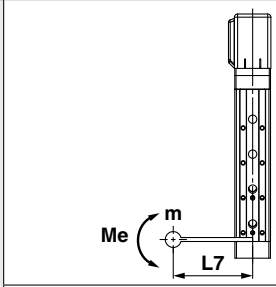
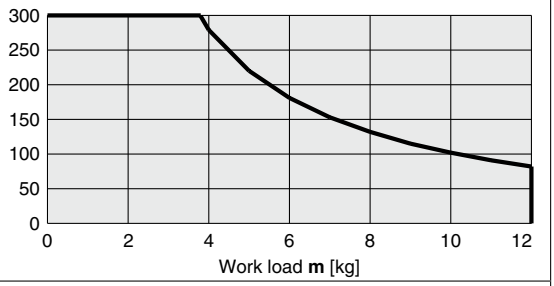
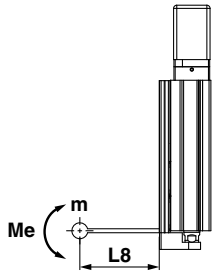
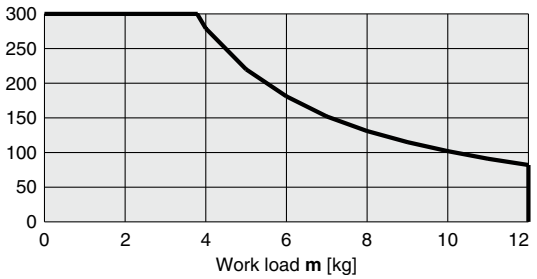
Acceleration/Deceleration —— 3000 mm/s²

Orientation	**Load overhanging direction** **m**: Work load [kg] **Me**: Dynamic allowable moment [N·m] **L**: Overhang to the work load center of gravity [mm]		Model **LESYH16-X171**
Horizontal/Bottom		**X**	
		**Y**	
		**Z**	
Horizontal (Wall)		**X**	
		**Y**	
		**Z**	

Dynamic Allowable Moment

∗ This graph shows the amount of allowable overhang (guide unit) when the center of gravity of the workpiece overhangs in one direction. When selecting the overhang, refer to "Calculation of Guide Load Factor" or the Electric Actuator Model Selection Software for confirmation, https://www.smcworld.com

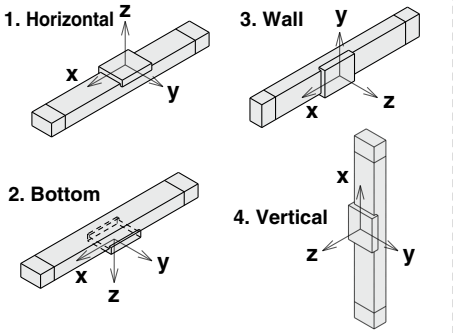
Acceleration/Deceleration —— 3000 mm/s²

Orientation	Load overhanging direction **m**: Work load [kg] **Me**: Dynamic allowable moment [N·m] **L**: Overhang to the work load center of gravity [mm]		Model **LESYH16-X171**
Vertical		Y	
		Z	

Calculation of Guide Load Factor

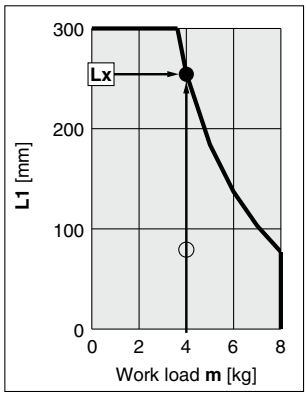
1. Decide operating conditions.
   Model: LESYH
   Size: 16
   Mounting orientation: Horizontal/Bottom/Wall/Vertical
   Acceleration [mm/s²]: **a**
   Work load [kg]: **m**
   Work load center position [mm]: **Xc/Yc/Zc**
2. Select the target graph with reference to the model, size, and mounting orientation.
3. Based on the acceleration and work load, obtain the overhang [mm]: **Lx/Ly/Lz** from the graph.
4. Calculate the load factor for each direction.
   α**x = Xc/Lx**, α**y = Yc/Ly**, α**z = Zc/Lz**
5. Confirm the total of α**x**, α**y**, and α**z** is 1 or less.
   α**x + αy + αz ≤ 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.

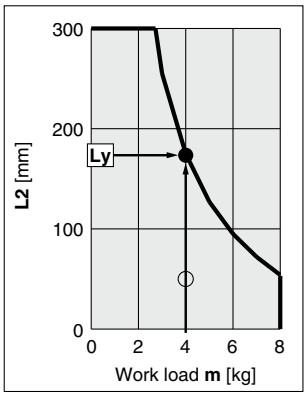
Mounting orientation

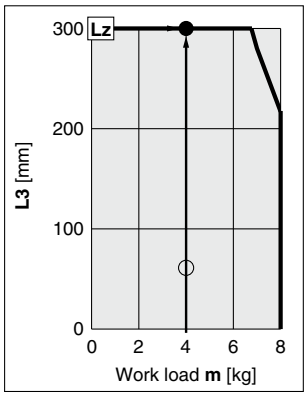


Example

1. Operating conditions
   Model: LESYH
   Size: 16
   Mounting orientation: Horizontal
   Acceleration [mm/s²]: 3000
   Work load [kg]: 4.0
   Work load center position [mm]: **Xc = 80**, **Yc = 50**, **Zc = 60**
2. Select three graphs from the top on page 3.
3. **Lx = 250 mm**, **Ly = 160 mm**, **Lz = 300 mm**
4. The load factor for each direction can be obtained as follows.
   α**x = 80/250 = 0.32**
   α**y = 50/160 = 0.32**
   α**z = 60/300 = 0.2**
5. α**x + αy + αz = 0.84 ≤ 1**







Model Selection 2

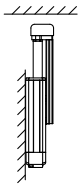
Selection Procedure

Step 1 Check the required force. → **Step 2** Check the pushing force set value. → **Step 3** Check the duty ratio.

Selection Example

Operating conditions

- Pushing force: 150 N
- Workpiece mass: 1 kg
- Speed: 100 mm/s
- Stroke: 100 mm
- Mounting position: Vertical upward
- Pushing time + Operation (A): 1.5 s
- Full cycle time (B): 6 s



Step 1 Check the required force.

Calculate the approximate required force for a pushing operation.
Selection example) ● Pushing force: 150 [N]
● Workpiece mass: 1 [kg]
The approximate required force can be found to be 150 + 10 = 160 [N].
Select a model based on the approximate required force while referencing the specifications (page 9).
Selection example based on the specifications)
● Approximate required force: 160 [N]
● Speed: 100 [mm/s]
The **LESYH16□A-X171** can be temporarily selected as a possible candidate.
Then, calculate the required force for a pushing operation. If the mounting position is vertical upward, add the actuator table weight.
Selection example based on the table weight)
● **LESYH16□-X171** table weight: 0.7 [kg]
The required force can be found to be 160 + 7 = 167 [N].

Table Weight Unit [kg]

Model	Stroke [mm]	
	50	**100**
LESYH16-X171	0.4	0.7

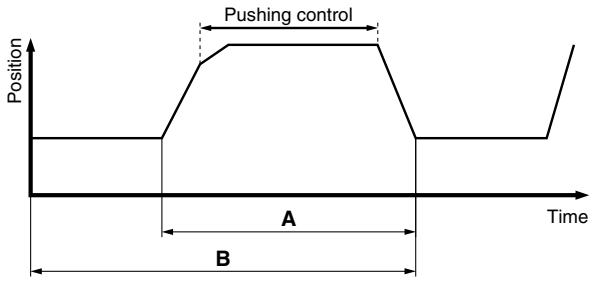
∗ If the mounting position is vertical upward, add the table weight.

Step 2 Check the pushing force set value. <Pushing force set value>

Select a model based on the pushing force in the specifications, and confirm the pushing force set value.
Selection example)
● Required force: 167 [N]
The **LESYH16□B-X171** can be temporarily selected as a possible candidate.
The pushing force set value is 46 [%].

Allowable Duty Ratio
Step Motor (Servo 24 VDC)

Pushing force set value [%]	Duty ratio [%]	Continuous pushing time [min]
30	—	—
50 or less	30 or less	5 or less
70 or less	20 or less	3 or less



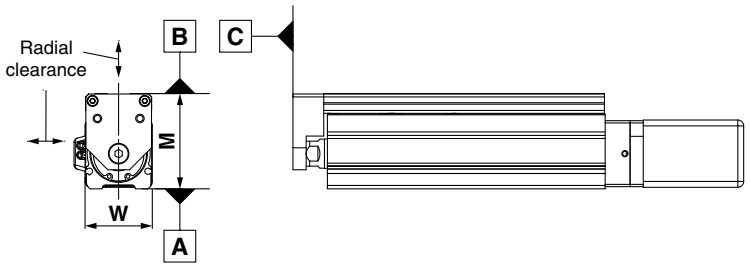
Step 3 Check the duty ratio.

Confirm the allowable duty ratio based on the pushing force set value while referencing the allowable duty ratio.
Selection example based on the allowable duty ratio)
● Pushing force set value: 46 [%]
The allowable duty ratio can be found to be 30 [%].
Calculate the duty ratio for the operating conditions, and confirm it does not exceed the allowable duty ratio.
Selection example) ● Pushing time + Operation (A): 1.5 s
● Full cycle time (B): 6 s
The duty ratio can be found to be 1.5/6 x 100 = 25 [%], and this is within the allowable range.

Based on the above calculation result, the LESYH16□B-100-X171 should be selected.
For the allowable moment, the selection procedure is the same as that for the positioning control.

Table Accuracy

∗ These values are initial guideline values.

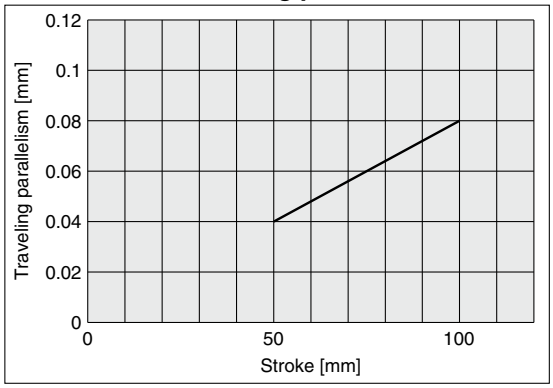


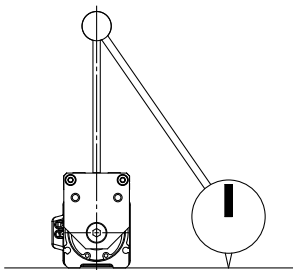
Model	LESYH16-X171
B side parallelism to A side [mm]	Refer to Table 1.
B side traveling parallelism to A side [mm]	Refer to Graph 1.
C side perpendicularity to A side [mm]	0.05
M dimension tolerance [mm]	±0.3
W dimension tolerance [mm]	±0.2
Radial clearance [μm]	−10 to 0

Table 1 B side parallelism to A side

Model	Stroke [mm]	
	50	100
LESYH16-X171	0.05	0.08

Graph 1 B side traveling parallelism to A side





Traveling parallelism:
The amount of deflection on a dial gauge when the table travels a full stroke with the body secured on a reference base surface

Table Deflection (Reference Value)

∗ These values are initial guideline values.

Table displacement due to pitch moment load
Table displacement when loads are applied to the section marked with the arrow with the slide table stuck out.

LESYH16

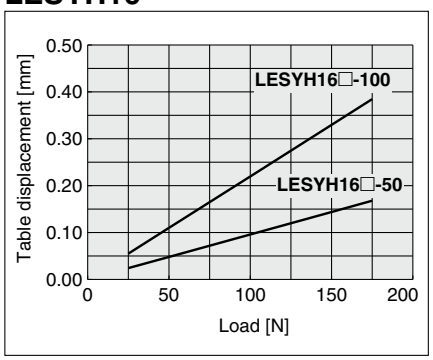
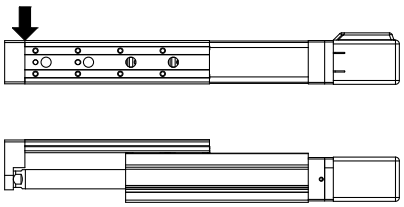


Table displacement due to yaw moment load
Table displacement when loads are applied to the section marked with the arrow with the slide table stuck out.



LESYH16

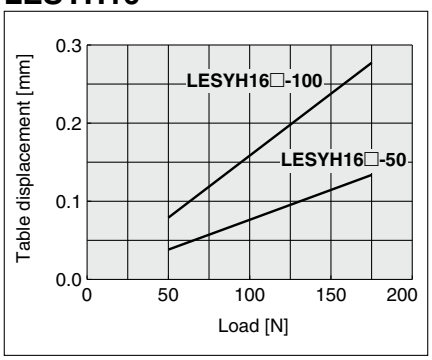
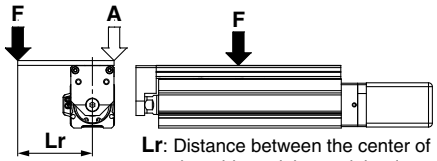
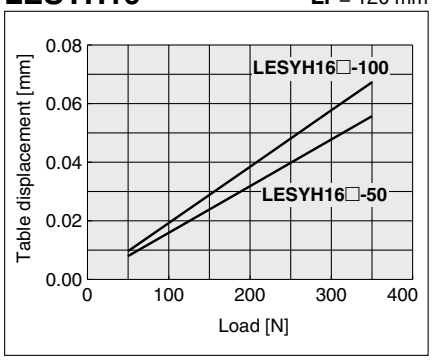


Table displacement due to roll moment load
Table displacement of section A when loads are applied to the section F with the slide table retracted.



Lr: Distance between the center of the table and the work load center of gravity

LESYH16 **Lr** = 120 mm

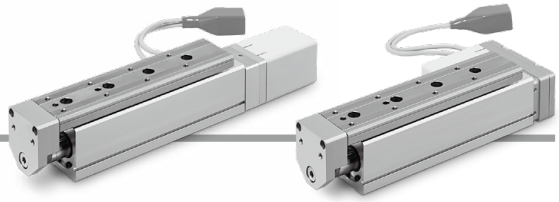


Battery-less Absolute Encoder:

Electric Slide Table/ Ball Screw Drive

LESYH16-X171

How to Order



Motor mounting position: In-line

Motor mounting position: Right side parallel

LESYH 16 D E A – 50 C – R1 CD17T – X171

❶ ❷ ❸ ❹ ❺ ❻ ❼ ❽

For details on controllers, refer to the next page.

❶ Size

16

❷ Motor mounting position

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

❸ Motor type

E	Battery-less absolute (Step motor 24 VDC)

❹ Lead [mm]

A	12
B	6

❺ Stroke

50	50 mm
100	100 mm

❻ Motor option

C	With motor cover
W	With lock/motor cover

❼ Actuator cable type/length

Robotic cable [m]

Nil	Without cable	**R8**	8*1
R1	1.5	**RA**	10*1
R3	3	**RB**	15*1
R5	5	**RC**	20*1

⑧ Controller

Nil	Without controller
C□1□□	With controller

C D 1 7 T

Interface (Communication protocol/ Input/Output)

E	EtherCAT®
9	EtherNet/IP™
P	PROFINET
D	DeviceNet™
L	IO-Link
M	CC-Link Ver. 1.10
5	Parallel input (NPN)
6	Parallel input (PNP)

For single axis

Mounting

7	Screw mounting
8∗2	DIN rail

Communication plug connector I/O cable∗3

Symbol	Type	Applicable interface
Nil	Without accessory	—
S	Straight type communication plug connector	DeviceNet™ CC-Link Ver. 1.10
T	T-branch type communication plug connector	
1	I/O cable (1.5 m)	Parallel input (NPN) Parallel input (PNP)
3	I/O cable (3 m)	
5	I/O cable (5 m)	

∗1 Produced upon receipt of order
∗2 The DIN rail is not included. Order it separately.
∗3 Select "Nil" for anything other than DeviceNet™, CC-Link, or parallel input.
Select "Nil," "S," or "T" for DeviceNet™ or CC-Link.
Select "Nil," "1," "3," or "5" for parallel input.

⚠Caution

[CE-compliant products]
EMC compliance was tested by combining the electric actuator LES series and the controller JXC series.
The EMC depends on the configuration of the customer's control panel and the relationship with other electrical equipment and wiring. Therefore, compliance with the EMC directive cannot be certified for SMC components incorporated into the customer's equipment under actual operating conditions. As a result, it is necessary for the customer to verify compliance with the EMC directive for the machinery and equipment as a whole.

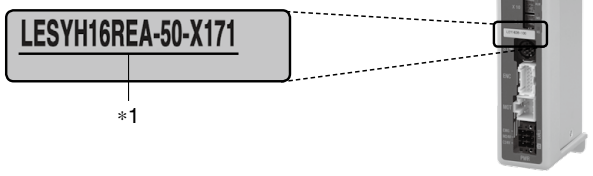
[Precautions relating to differences in controller versions]
When the JXC series is to be used in combination with the battery-less absolute encoder, use a controller that is version V3.4 or S3.4 or higher. For details, refer to the **Web Catalog**.

The actuator and controller are sold as a package.

Confirm that the combination of the controller and actuator is correct.

<Check the following before use.>

∗1 Check the actuator label for the model number. This number should match that of the controller.



∗ Refer to the Operation Manual for using the products. Please download it via our website, https://www.smcworld.com

Type	EtherCAT® direct input type	EtherNet/IP™ direct input type	PROFINET direct input type	DeviceNet™ direct input type	IO-Link direct input type	CC-Link direct input type	Step data input type
							
Series	**JXCE1**	**JXC91**	**JXCP1**	**JXCD1**	**JXCL1**	**JXCM1**	**JXC51 JXC61**
Features	EtherCAT® direct input	EtherNet/IP™ direct input	PROFINET direct input	DeviceNet™ direct input	IO-Link direct input	CC-Link direct input	Parallel I/O
Compatible motor	Battery-less absolute (Step motor 24 VDC)						
Max. number of step data	64 points						
Power supply voltage	24 VDC						

Specifications

Step Motor (Servo/24 VDC)

Model			LESYH16□	
Actuator specifications	Stroke [mm]		50, 100	
	Work load [kg]*1 *3	Horizontal	8	
		Vertical	12	6
	Pushing force 30% to 70% [N]*2 *3		126 to 252	63 to 126
	Speed [mm/s]*1 *3		10 to 200	20 to 400
	Pushing speed [mm/s]		10 to 30	20 to 30
	Max. acceleration/deceleration [mm/s²]		3000	
	Positioning repeatability [mm]		±0.01	
	Lost motion [mm]*4		0.1 or less	
	Screw lead [mm]		6	12
	Impact/Vibration resistance [m/s²]*5		50/20	
	Actuation type		Ball screw (LESYH16D) Ball screw + Belt (LESYH16R, L)	
	Guide type		Linear guide (Circulating type)	
	Operating temperature range [°C]		5 to 40	
	Operating humidity range [%RH]		90 or less (No condensation)	
Electric specifications	Motor size		□42	
	Motor type		Step motor (Servo/24 VDC)	
	Encoder (Angular displacement sensor)		Battery-less absolute (4096 pulse/rotation)	
	Rated voltage [V]		24 VDC ±10%	
	Power consumption [W]*6		40	
	Standby power consumption when operating [W]*7		15	
	Max. instantaneous power consumption [W]*8		48	
Lock unit specifications	Type	*9	Non-magnetizing lock	
	Holding force [N]		157	78
	Power consumption [W]*10		5	
	Rated voltage [V]		24 VDC ±10%	

*1 Speed changes according to the work load. Check “Speed–Work Load Graph (Guide)” on page 2.
*2 Pushing force accuracy is ±20% (F.S.).
*3 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. (At 15 m: Reduced by up to 20%)
*4 A reference value for correcting an error in reciprocal operation
*5 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.)
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.)
*6 The power consumption (including the controller) is for when the actuator is operating.
*7 The standby power consumption when operating (including the controller) is for when the actuator is stopped in the set position during the operation. Except during the pushing operation
*8 The maximum instantaneous power consumption (including the controller) is for when the actuator is operating. This value can be used for the selection of the power supply.
*9 With lock only
*10 For an actuator with lock, add the power consumption for the lock.

Weight

With Motor Cover

[kg]

Model	Stroke	
	50	100
LESYH16(D, R, L)-□-X171	1.87	2.26

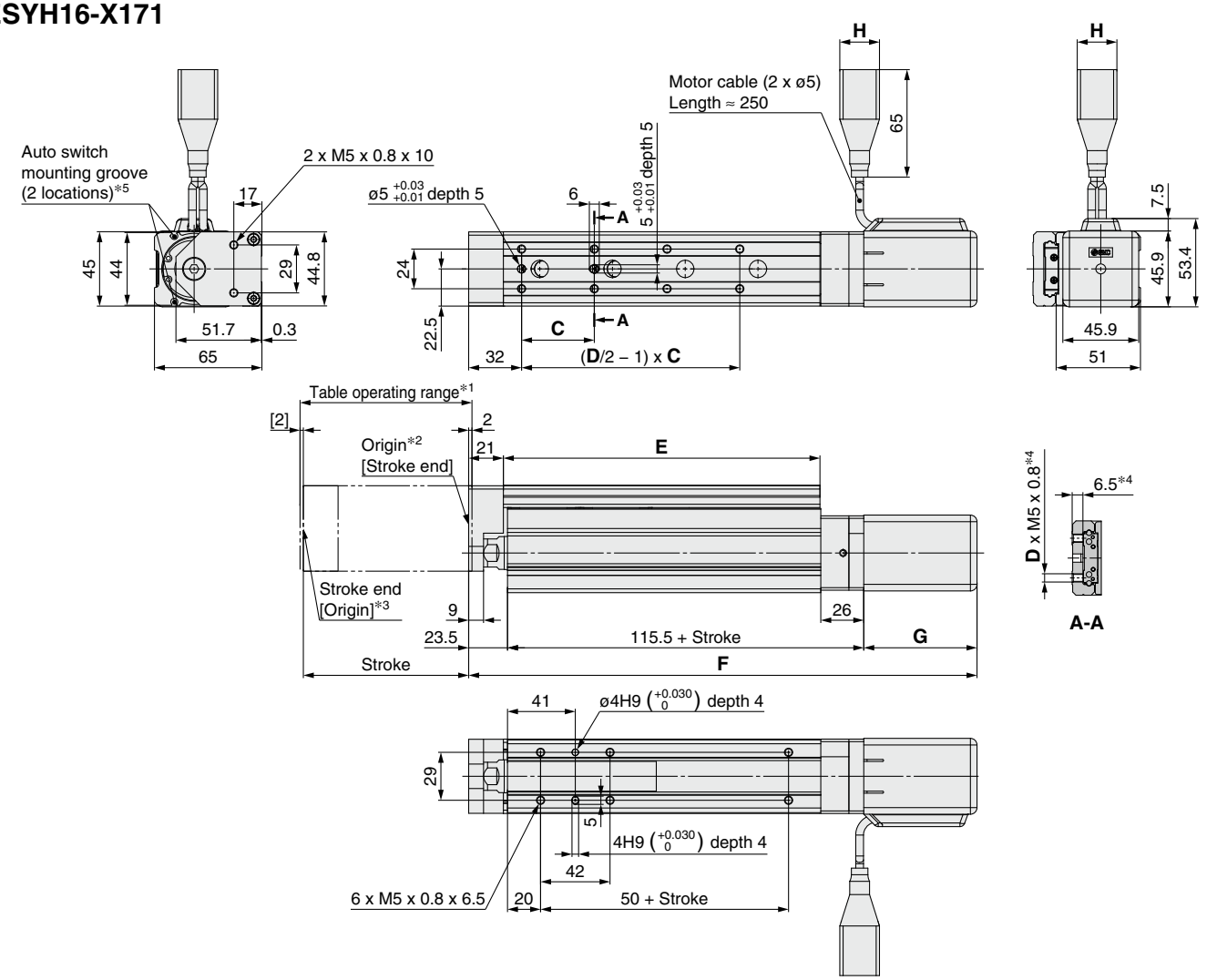
Additional Weight

[kg]

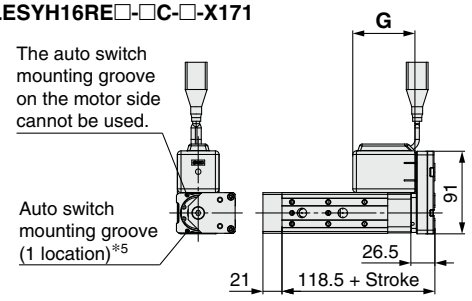
With lock/motor cover	0.32

Dimensions

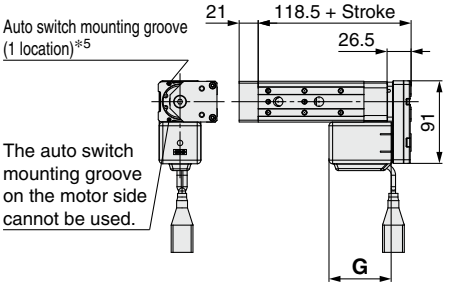
LESYH16-X171



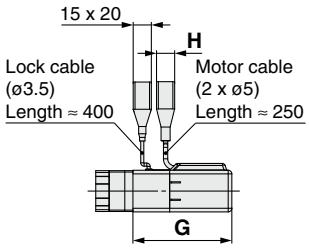
Motor mounting position: Right side parallel
LESYH16RE□-□C-□-X171



Motor mounting position: Left side parallel
LESYH16LE□-□C-□-X171



Motor option: With lock/motor cover
LESYH16□E□-□W-□-X171



*1 This is the range within which the table can move when it returns to origin. Make sure workpieces mounted on the table do not interfere with the workpieces and facilities around the table.
*2 Position after return to origin
*3 [ ] for when the direction of return to origin has changed
*4 If the workpiece retaining screws are too long, they may come in contact with the guide block, resulting in a malfunction. Use screws of a length equal to or shorter than the thread length.
*5 Order the auto switch for checking the limit and the intermediate signal separately. Applicable to the D-M9□ and D-M9□W (2-color indicator)

Dimensions

[mm]

Model	Stroke	Motor option	C	D	E	F	G	H
LESYH16D□-50C-□-X171	50	C: With motor cover	40	6	116.5	257.5	68.5	24
LESYH16D□-100C-□-X171	100		44	8	191.5	307.5		
LESYH16D□-50W-□-X171	50	W: With lock/motor cover	40	6	116.5	298	109	
LESYH16D□-100W-□-X171	100		44	8	191.5	348		

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.

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□, 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 marking, RoHS					

Oilproof Heavy-duty Lead Wire Specifications

Auto switch model		D-M9N(V)	D-M9P(V)	D-M9B(V)
Sheath	Outside diameter [mm]	2.6		
Insulator	Number of cores	3 cores (Brown/Blue/Black)		2 cores (Brown/Blue)
	Outside diameter [mm]	0.88		
Conductor	Effective area [mm²]	0.15		
	Strand diameter [mm]	0.05		
Minimum 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

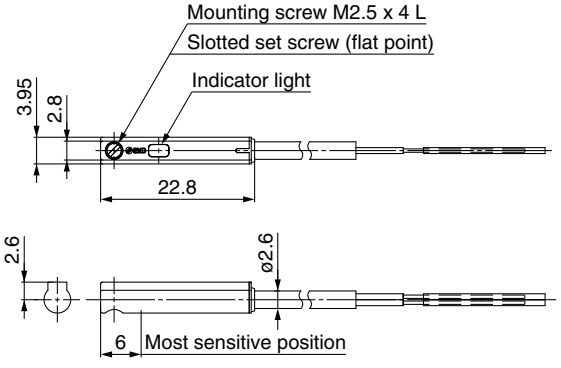
[g]

Auto switch model		D-M9N(V)	D-M9P(V)	D-M9B(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

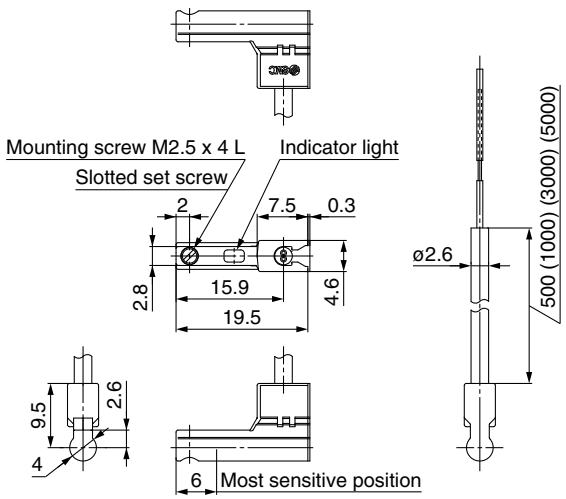
Dimensions

[mm]

D-M9□



D-M9□V

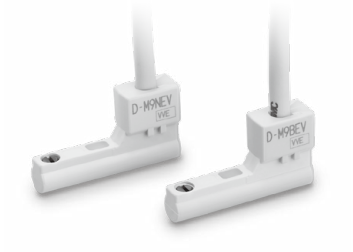


Normally Closed Solid State Auto Switch Direct Mounting Type
D-M9NE(V)/D-M9PE(V)/D-M9BE(V)

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

Grommet

- **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)**



⚠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□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 marking, RoHS					

Oilproof Heavy-duty Lead Wire Specifications

Auto switch model		D-M9NE(V)	D-M9PE(V)	D-M9BE(V)
Sheath	Outside diameter [mm]	2.6		
Insulator	Number of cores	3 cores (Brown/Blue/Black)		2 cores (Brown/Blue)
	Outside diameter [mm]	0.88		
Conductor	Effective area [mm²]	0.15		
	Strand diameter [mm]	0.05		
Minimum 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]

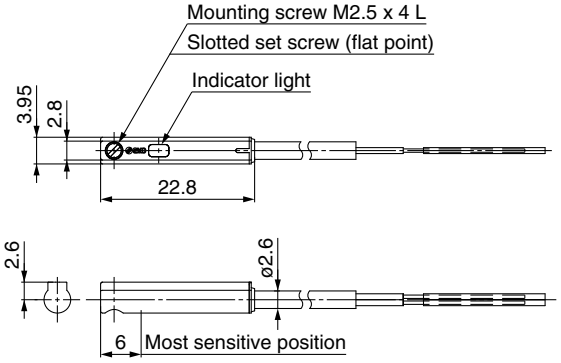
Auto switch model		D-M9NE(V)	D-M9PE(V)	D-M9BE(V)
Lead wire length	0.5 m (**Nil**)	8		7
	1 m (**M**)∗1	14		13
	3 m (**L**)	41		38
	5 m (**Z**)∗1	68		63

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

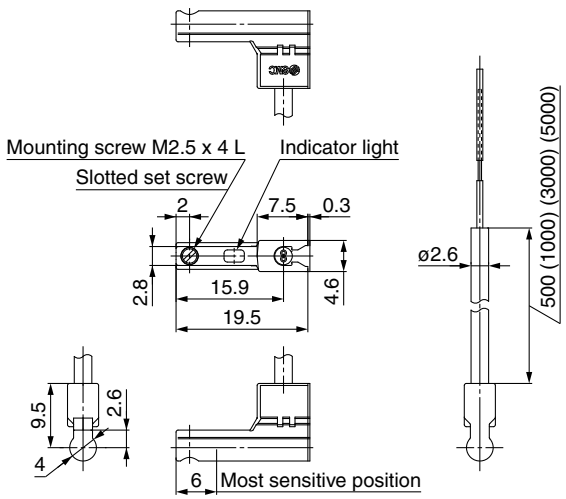
Dimensions

[mm]

D-M9□E



D-M9□EV



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.

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, 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 marking, RoHS					

Oilproof Flexible Heavy-duty Lead Wire Specifications

Auto switch model		D-M9NW(V)	D-M9PW(V)	D-M9BW(V)
Sheath	Outside diameter [mm]	2.6		
Insulator	Number of cores	3 cores (Brown/Blue/Black)		2 cores (Brown/Blue)
	Outside diameter [mm]	0.88		
Conductor	Effective area [mm²]	0.15		
	Strand diameter [mm]	0.05		
Minimum 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

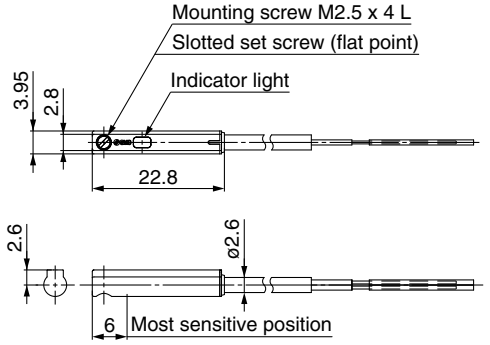
[g]

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

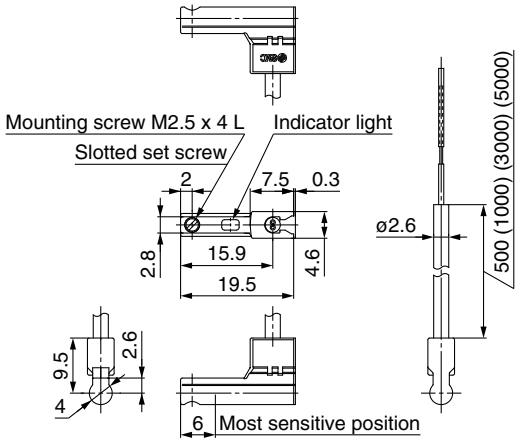
Dimensions

[mm]

D-M9□W



D-M9□WV



SMC

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