

Motorized Linear Slides EZ limo SPV Series

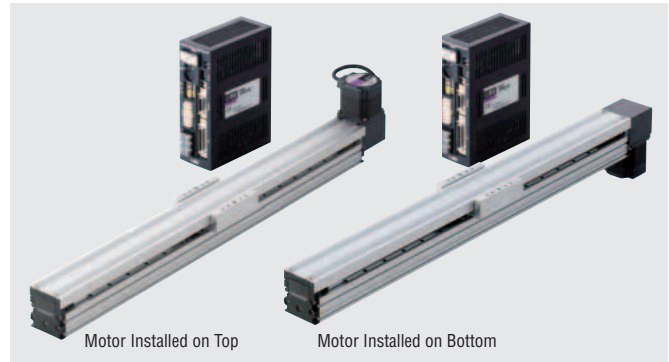
● Additional Information ●
 Technical reference → Page G-1
 Safety standards → Page H-2

The **SPV** Series employs an α STEP stepping motor and controller system for tuning-free, misstep-free operation.

The belt driven actuator allows the load to be transferred at high-speed and long strokes.



● For detailed product safety standard information including standards, file number and certification body, please visit www.orientalmotor.com.



Features

● Adopting a Closed Loop α STEP Stepping Motor, This Linear Slide Eliminates Misstep and Hunting, While Attaining High-Speed and High-Response Operation

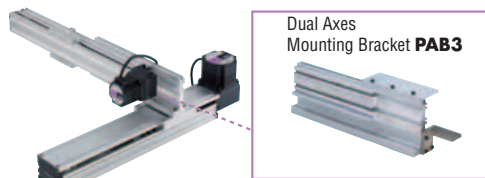
The linear slide has no hunting problem upon stopping. The vibration and noise levels have been lowered by employing advanced technology that produces smoothness comparable to a microstep driver.

● Dual Axes Combination Can be Easily Implemented

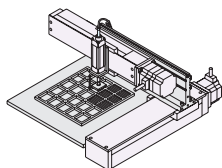
The X and Y axes can be installed easily using the **PAB3** dual axes mounting bracket as an accessory. It is also possible to directly assemble the linear slides of both axes.

(Accessories **PAB3** → Page E-116)

Only products with a motor at the top can be installed as the Y-axis. Products with a motor at the bottom cannot be installed as the Y-axis.



Using a Mounting Bracket



Positioning Operation of Load



Direct Installation

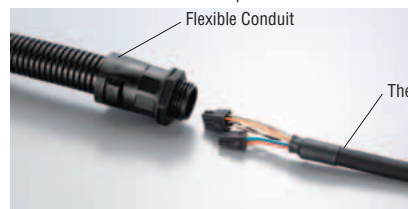
● Long Stroke

The belt drive supports long strokes up to 1500 mm (the 1500 mm stroke is supported by the **SPV8** only).

● Easy Wiring between the Linear Slide and Controller

The linear slide and controller are connected via a single cable, and the wiring distance can be extended to a maximum of 20 m*. The cable is fitted with a connector for quick connection.

* Maximum of 10 m for 24 VDC products



The cable can be placed in a flexible conduit or cable gland with an inner diameter of $\phi 16.5$ mm.*

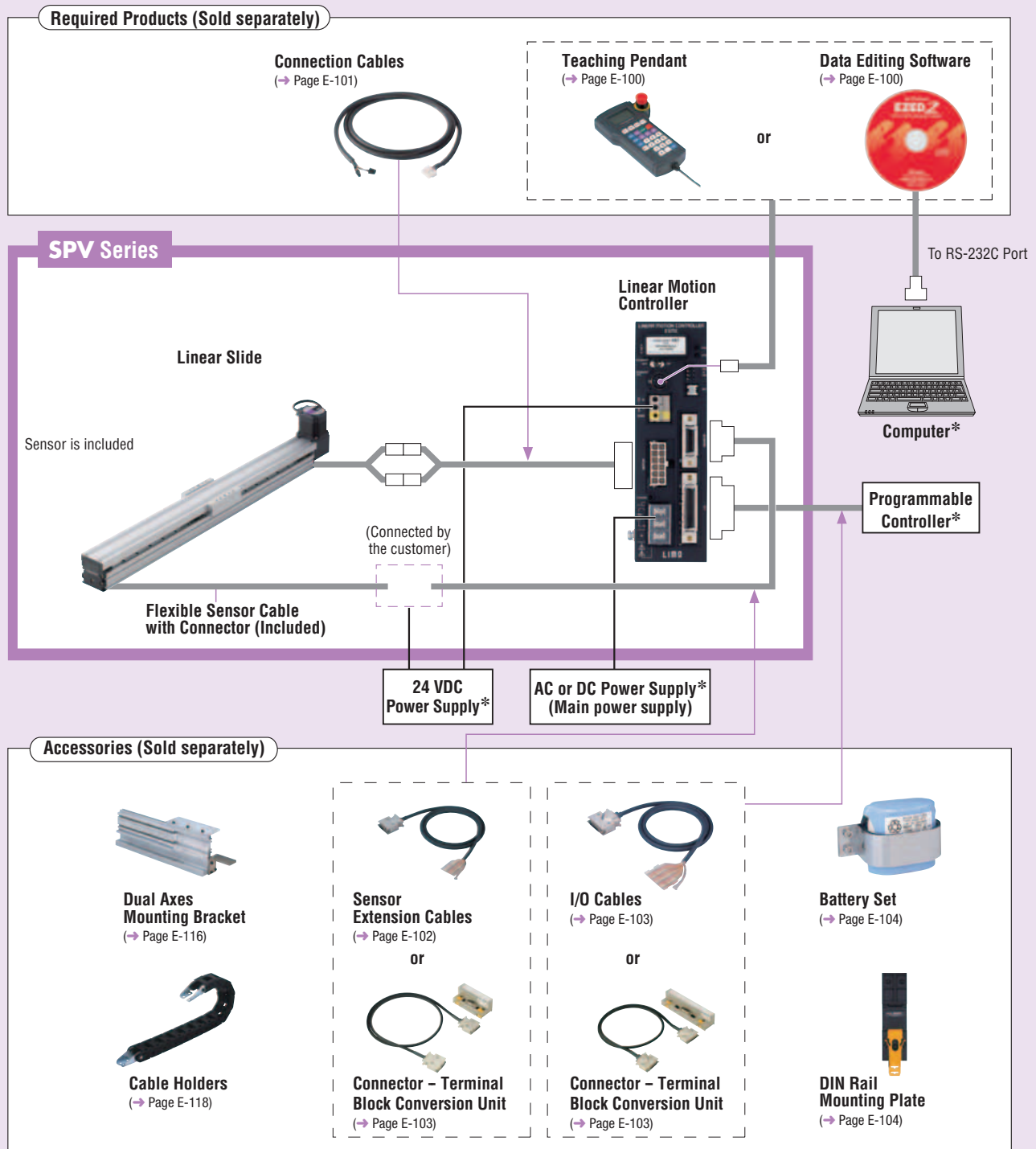
* Except for the single-phase 200-230 VAC product

● Drivable at a Maximum Speed of 1500 mm/s and Acceleration of 5 m/s² (Single-phase 100-115 VAC/ 200-230 VAC)

The **SPV** Series boasts a maximum speed of 1500 mm/s. It also achieves an acceleration of 5 m/s² when carrying a load corresponding to the maximum transportable mass in the horizontal direction.

System Configuration

Controller Mode



Example of System Configuration

SPV Series	Sold Separately		+	Sold Separately	
	Connection Cable (2 m)	Teaching Pendant		I/O Cable (1 m)	Sensor Extension Cable (2 m)
SPV6K010U-A	CC020ES-3	EZT1		CC36D1-1	CC20D2-1

● The system configuration shown above is an example. Other combinations are available.

* Not supplied

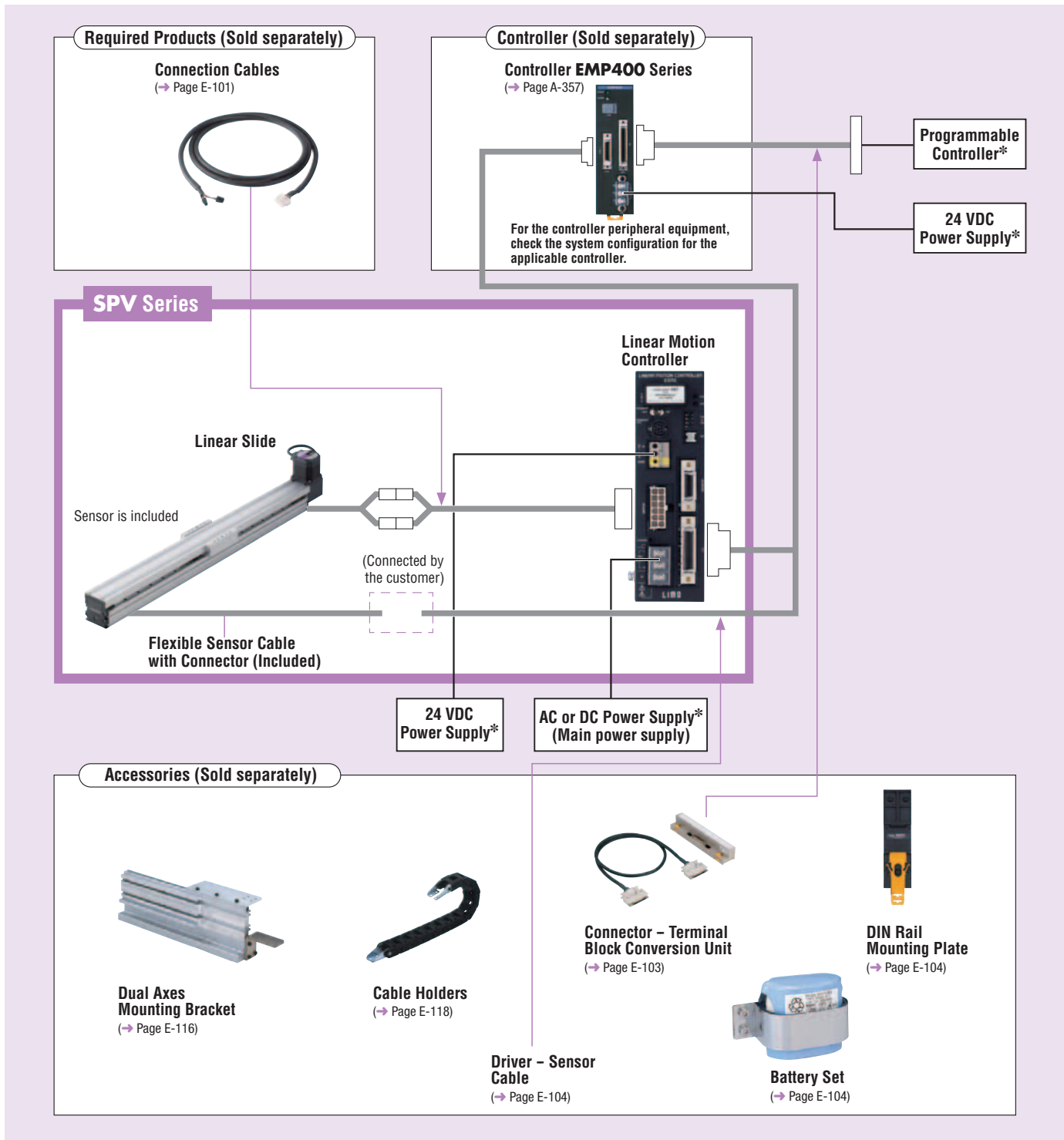
System Configuration

Driver Mode

Below is an example of a single-axis system configuration with the **EMP400** Series controller.

When performing return-to-home operation using the linear motion controller, refer to the system configuration example on page E-37.

A teaching pendant or data editing software is required to change the parameters (I/O logic, velocity filter, etc.) of the linear motion controller.



Example of System Configuration

SPV Series	Sold Separately		+	Sold Separately		
	Connection Cable (2 m)			Controller	Driver - Sensor Cable (0.5 m)	Connector - Terminal Block Conversion Unit (1 m)
SPV6K010U-A	CC020ES-3			EMP401-1	CC005EZ6-EMPD	CC50T1

● The system configuration shown above is an example. Other combinations are available.

* Not supplied

Product Number Code

SPV 6 K 080 U - K

① ② ③ ④ ⑤ ⑥

① Series	SPV: SPV Series
② Linear Slide Size	6: Width: 60 mm Height: 67 mm 8: Width: 86 mm Height: 80 mm
③ Lead	K: 75 mm L: 90 mm
④ Stroke	010: 100 mm 020: 200 mm 030: 300 mm 040: 400 mm 050: 500 mm 060: 600 mm 070: 700 mm 080: 800 mm 090: 900 mm 100: 1000 mm 110: 1100 mm 120: 1200 mm 130: 1300 mm 140: 1400 mm 150: 1500 mm
⑤ Motor Installation Direction	U: Motor Installed on Top D: Motor Installed on Bottom
⑥ Power Supply Voltage	K: 24 VDC A: Single-Phase 100-115 VAC C: Single-Phase 200-230 VAC

Product Line

SPV6

Stroke	24 VDC	Single-Phase 100-115 VAC	Single-Phase 200-230 VAC
	Model	Model	Model
100 mm	SPV6K010 □-K	SPV6K010 □-A	SPV6K010 □-C
200 mm	SPV6K020 □-K	SPV6K020 □-A	SPV6K020 □-C
300 mm	SPV6K030 □-K	SPV6K030 □-A	SPV6K030 □-C
400 mm	SPV6K040 □-K	SPV6K040 □-A	SPV6K040 □-C
500 mm	SPV6K050 □-K	SPV6K050 □-A	SPV6K050 □-C
600 mm	SPV6K060 □-K	SPV6K060 □-A	SPV6K060 □-C
700 mm	SPV6K070 □-K	SPV6K070 □-A	SPV6K070 □-C
800 mm	SPV6K080 □-K	SPV6K080 □-A	SPV6K080 □-C
900 mm	SPV6K090 □-K	SPV6K090 □-A	SPV6K090 □-C
1000 mm	SPV6K100 □-K	SPV6K100 □-A	SPV6K100 □-C

● Enter the motor installation direction **U** (motor installed on top) or **D** (motor installed on bottom) in the box (□) within the model name.

SPV8

Stroke	Single-Phase 100-115 VAC	Single-Phase 200-230 VAC
	Model	Model
100 mm	SPV8L010 □-A	SPV8L010 □-C
200 mm	SPV8L020 □-A	SPV8L020 □-C
300 mm	SPV8L030 □-A	SPV8L030 □-C
400 mm	SPV8L040 □-A	SPV8L040 □-C
500 mm	SPV8L050 □-A	SPV8L050 □-C
600 mm	SPV8L060 □-A	SPV8L060 □-C
700 mm	SPV8L070 □-A	SPV8L070 □-C
800 mm	SPV8L080 □-A	SPV8L080 □-C
900 mm	SPV8L090 □-A	SPV8L090 □-C
1000 mm	SPV8L100 □-A	SPV8L100 □-C
1100 mm	SPV8L110 □-A	SPV8L110 □-C
1200 mm	SPV8L120 □-A	SPV8L120 □-C
1300 mm	SPV8L130 □-A	SPV8L130 □-C
1400 mm	SPV8L140 □-A	SPV8L140 □-C
1500 mm	SPV8L150 □-A	SPV8L150 □-C

● Enter the motor installation direction **U** (motor installed on top) or **D** (motor installed on bottom) in the box (□) within the model name.

The following items are included in each product.

Linear Slide, Frame Cover, Sensor with Cable, Sensor Cable Holder, Hexagonal Socket Head Screws, Controller, Mounting Bracket for Controller, User I/O Connector, Sensor I/O Connector, Operating Manual

General Specifications of Motor

● General specifications of controller → Page E-91

This is the value after rated operation under normal ambient temperature and humidity.

24 VDC

Item	Specification
Insulation Resistance	100 MΩ or more when 500 VDC megger is applied between the following places: ·Motor case – Motor/Sensor windings
Dielectric Strength	Sufficient to withstand the following for 1 minute: ·Motor case – Motor/Sensor windings 0.5 kVAC 50 Hz
Ambient Temperature	0~+40°C (non-freezing)
Ambient Humidity	85% or less (non-condensing)

Note

● Do not measure insulation resistance or perform the dielectric strength test while the linear slide and controller are connected.

Single-Phase 100-115 VAC/Single-Phase 200-230 VAC

Item	Specification
Insulation Resistance	100 MΩ or more when 500 VDC megger is applied between the following places: ·Motor case – Motor/Sensor windings
Dielectric Strength	Sufficient to withstand the following for 1 minute: ·Motor case – Motor/Sensor windings 1.5 kVAC 50 Hz
Ambient Temperature	0~+40°C (non-freezing)
Ambient Humidity	85% or less (non-condensing)

Note

● Do not measure insulation resistance or perform the dielectric strength test while the linear slide and controller are connected.

SPV6: 60 mm (W) × 67 mm (H) 24 VDC

Maximum Transportable Mass: Horizontal 10 kg
Stroke: 100 to 1000 mm (in 100 mm increments)



Specifications of Linear Slide

Drive Method	Belt	Repetitive Positioning Accuracy [mm]	±0.05	Resolution [mm]	0.01 (Driver Mode: 0.05)	Dynamic Permissible Moment [N·m]	Mr: 18 Mv: 16 Mr: 9
Model	Lead [mm]	Transportable Mass [kg]		Thrust [N]	Holding Force [N]	Maximum Speed [mm/s]	
		Horizontal	Vertical				
SPV6K□U-K	75	~10	-	~60	~40	400	
SPV6K□D-K							

● Enter the stroke length in the box (□) within the model name.

Specifications of Sensor

Item	Model: EE-SX671A (OMRON)
Power Supply	5 to 24 VDC ±10%, ripple (p-p) 10% or less
Current Consumption	35 mA or less
Control Output	NPN open-collector output, 5 to 24 VDC, 100 mA or less Residual voltage 0.8 V or less (at load current of 100 mA)
Indicator LED	Detection display (red)
Logic	Normally open/normally closed (switchable, depending on connection)
Type	Photomicro sensor
Quantity	3 pieces, included
Movement	Possible

Product Number Code

SPV 6 K 080 U - K

① ② ③ ④ ⑤ ⑥

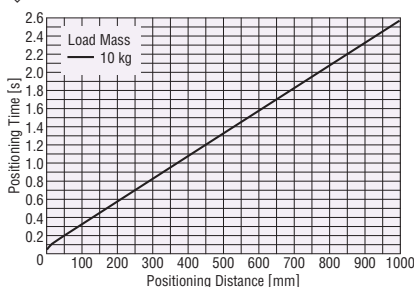
① Series	SPV: SPV Series
② Linear Slide Size	6: Width: 60 mm Height: 67 mm
③ Lead	K: 75 mm
④ Stroke	010 (100 mm) ~ 100 (1000 mm)
⑤ Motor Installation Direction	U: Motor Installed on Top D: Motor Installed on Bottom
⑥ Power Supply Voltage	K: 24 VDC

Positioning Distance – Positioning Time

Check the (approximate) positioning time from the positioning distance.

● SPV6K (Lead: 75 mm)

◇ Horizontal Installation



Notes

- The positioning time in the graph does not include the settling time. Use a settling time of 0.2 sec. as a reference (settling time is adjustable by the speed filter function).
- The starting speed should be 37.5 mm/s or less.

Linear Slide/Controller Combinations

Model names for linear slide and linear motion controller combinations are shown below.

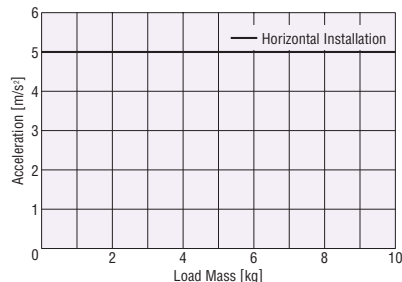
Motor Installation Direction	Model	Linear Slide Model	Controller Model
Motor Installed on Top	SPV6K□U-K	SPVM6K□UK	ESMC-K2
Motor Installed on Bottom	SPV6K□D-K	SPVM6K□DK	

● Enter the stroke length in the box (□) within the model name.

Load Mass – Acceleration

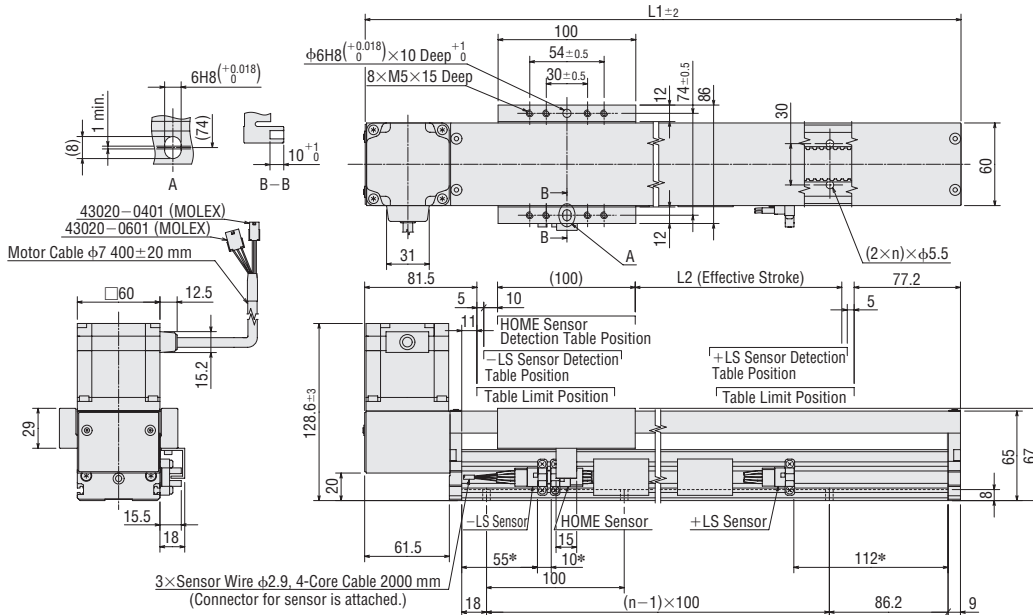
Approximate acceleration settable by a controller can be checked from the load mass.

● SPV6K (Lead: 75 mm)



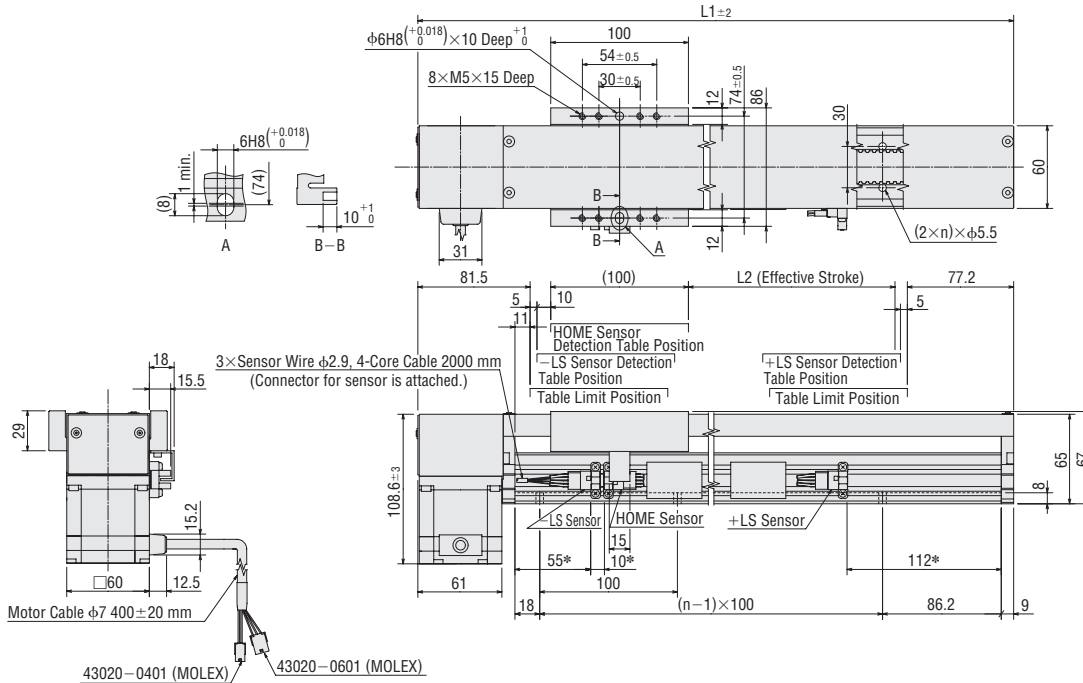
Dimensions of Linear Slide Unit = mm

◇ Motor Installed on Top



* The settings "55", "10" and "112" indicate the recommended mounting positions of the -LS sensor, HOME sensor and +LS sensor, respectively. Sensors and a shield plate can also be installed on the opposite side.

◇ Motor Installed on Bottom



* The settings "55", "10" and "112" indicate the recommended mounting positions of the -LS sensor, HOME sensor and +LS sensor, respectively. Sensors and a shield plate can also be installed on the opposite side.

Linear Slide Model: SPVM6K□UK (Motor Installed on Top)

SPVM6K□DK (Motor Installed on Bottom)

	Numbers Specifiable in the Box (□) within the Linear Slide Model Name										
	010	020	030	040	050	060	070	080	090	100	
Stroke	100	200	300	400	500	600	700	800	900	1000	
L1	383.7	483.7	583.7	683.7	783.7	883.7	983.7	1083.7	1183.7	1283.7	
L2	100	200	300	400	500	600	700	800	900	1000	
n	3	4	5	6	7	8	9	10	11	12	
Mass [kg]	3.8	4.2	4.5	4.9	5.2	5.6	5.9	6.3	6.6	7.0	
DXF	Motor Installed on Top	D745	D746	D747	D748	D749	D750	D751	D752	D753	D754
	Motor Installed on Bottom	D765	D766	D767	D768	D769	D770	D771	D772	D773	D774

Number of Holes (2×n)

Stroke [mm]	2×n
100	6
200	8
300	10
400	12
500	14
600	16
700	18
800	20
900	22
1000	24

SPV6: 60 mm (W) × 67 mm (H)

Single-Phase 100-115 VAC
Single-Phase 200-230 VAC

Maximum Transportable Mass: Horizontal 10 kg
Stroke: 100 to 1000 mm (in 100 mm increments)



Specifications of Linear Slide

Drive Method	Belt	Repetitive Positioning Accuracy [mm]	±0.05	Resolution [mm]	0.01 (Driver Mode: 0.05)	Dynamic Permissible Moment [N·m]	M _p : 18 M _v : 16 M _r : 9
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Model	Lead [mm]	Transportable Mass [kg]		Thrust [N]	Holding Force [N]	Maximum Speed [mm/s]
		Horizontal	Vertical			
SPV6K□U-□	75	~10	-	~60	~40	1500
SPV6K□D-□						

- Enter the stroke length in the box (□) within the model name.
- Enter the power supply voltage **A** or **C** in the box (□) within the model name.

Specifications of Sensor

Item	Model: EE-SX671A (OMRON)
Power Supply	5 to 24 VDC ±10%, ripple (p-p) 10% or less
Current Consumption	35 mA or less
Control Output	NPN open-collector output, 5 to 24 VDC, 100 mA or less Residual voltage 0.8 V or less (at load current of 100 mA)
Indicator LED	Detection display (red)
Logic	Normally open/normally closed (switchable, depending on connection)
Type	Photomicro sensor
Quantity	3 pieces, included
Movement	Possible

Product Number Code

SPV 6 K 080 U - A

① ② ③ ④ ⑤ ⑥

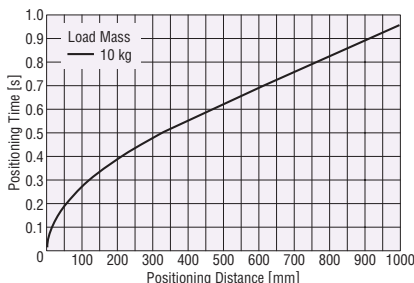
① Series	SPV : SPV Series
② Linear Slide Size	6 : Width: 60 mm Height: 67 mm
③ Lead	K : 75 mm
④ Stroke	010 (100 mm) ~ 100 (1000 mm)
⑤ Motor Installation Direction	U : Motor Installed on Top D : Motor Installed on Bottom
⑥ Power Supply Voltage	A : Single-Phase 100-115 VAC C : Single-Phase 200-230 VAC

Positioning Distance – Positioning Time

Check the (approximate) positioning time from the positioning distance.

SPV6K (Lead: 75 mm)

Horizontal Installation



Notes

- The positioning time in the graph does not include the settling time. Use a settling time of 0.2 sec. as a reference (settling time is adjustable by the speed filter function).
- The starting speed should be 37.5 mm/s or less.

Linear Slide/Controller Combinations

Model names for linear slide and linear motion controller combinations are shown below.

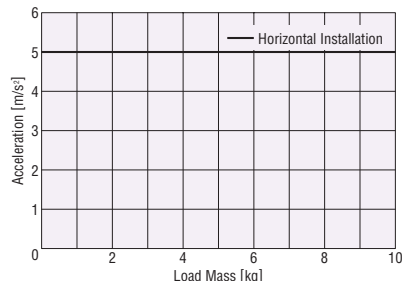
Motor Installation Direction	Model	Linear Slide Model	Controller Model
Motor Installed on Top	SPV6K□U- A	SPVM6K□UA	ESMC-A2
	SPV6K□U- C	SPVM6K□UC	ESMC-C2
Motor Installed on Bottom	SPV6K□D- A	SPVM6K□DA	ESMC-A2
	SPV6K□D- C	SPVM6K□DC	ESMC-C2

- Enter the stroke length in the box (□) within the model name.

Load Mass – Acceleration

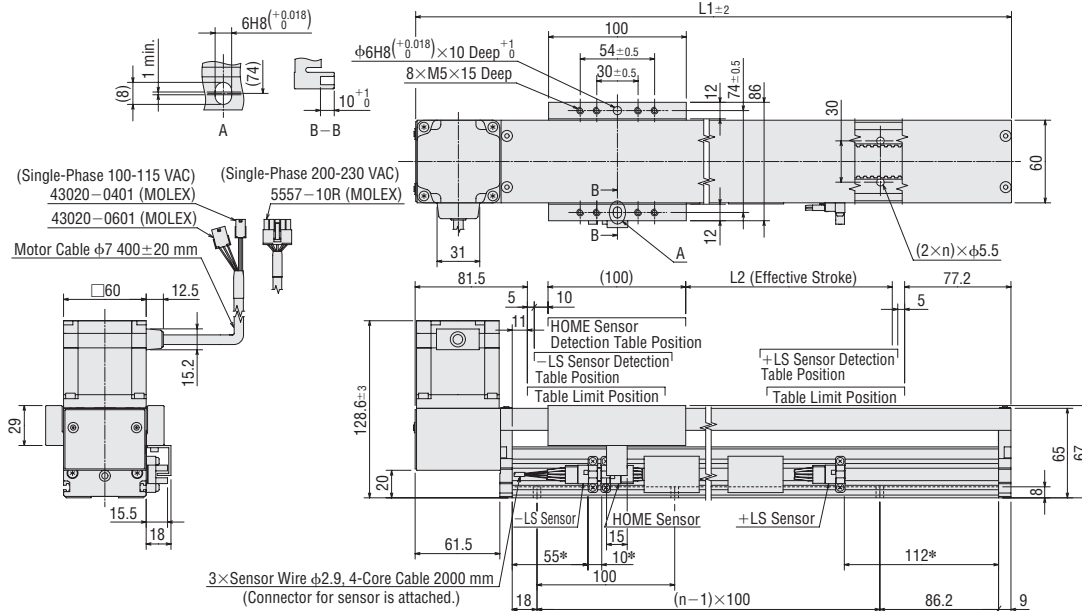
Approximate acceleration settable by a controller can be checked from the load mass.

SPV6K (Lead: 75 mm)



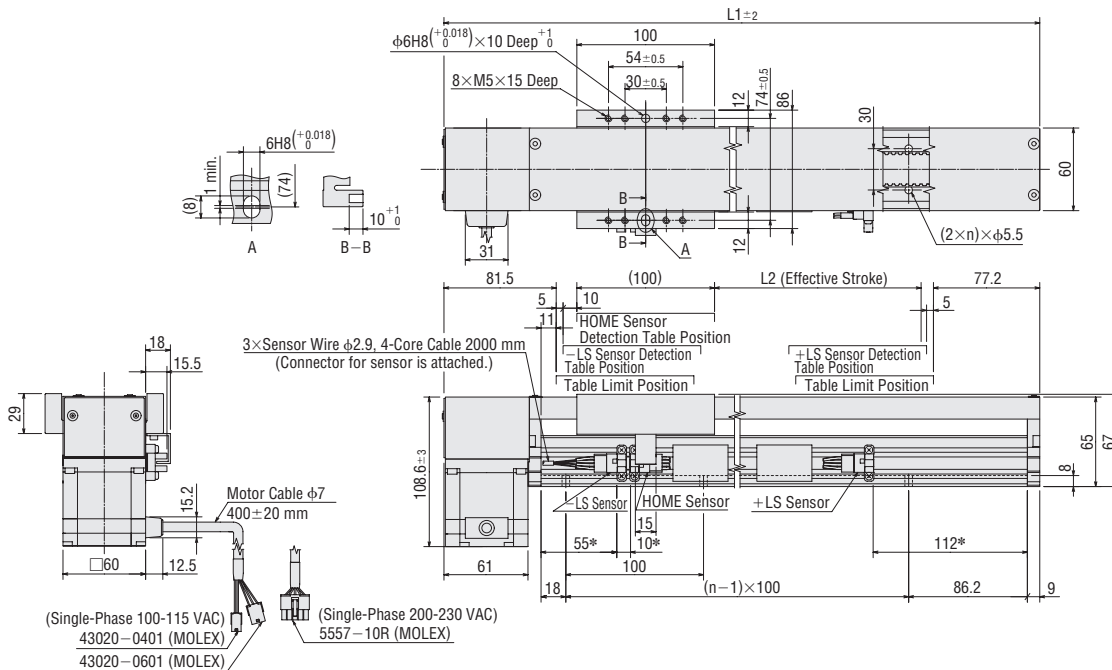
Dimensions of Linear Slide Unit = mm

◇ Motor Installed on Top



* The settings "55", "10" and "112" indicate the recommended mounting positions of the -LS sensor, HOME sensor and +LS sensor, respectively. Sensors and a shield plate can also be installed on the opposite side.

◇ Motor Installed on Bottom



* The settings "55", "10" and "112" indicate the recommended mounting positions of the -LS sensor, HOME sensor and +LS sensor, respectively. Sensors and a shield plate can also be installed on the opposite side.

Linear Slide Model: SPVM6K□UA, SPVM6K□UC (Motor Installed on Top)

SPVM6K□DA, SPVM6K□DC (Motor Installed on Bottom)

	Numbers Specifiable in the Box (□) within the Linear Slide Model Name										
	010	020	030	040	050	060	070	080	090	100	
Stroke	100	200	300	400	500	600	700	800	900	1000	
L1	383.7	483.7	583.7	683.7	783.7	883.7	983.7	1083.7	1183.7	1283.7	
L2	100	200	300	400	500	600	700	800	900	1000	
n	3	4	5	6	7	8	9	10	11	12	
Mass [kg]	3.8	4.2	4.5	4.9	5.2	5.6	5.9	6.3	6.6	7.0	
DXF	Motor Installed 100-115 VAC on Top	D745	D746	D747	D748	D749	D750	D751	D752	D753	D754
	200-230 VAC	D755	D756	D757	D758	D759	D760	D761	D762	D763	D764
	Motor Installed 100-115 VAC on Bottom	D765	D766	D767	D768	D769	D770	D771	D772	D773	D774
	200-230 VAC	D775	D776	D777	D778	D779	D780	D781	D782	D783	D784

Number of Holes (2x n)

Stroke [mm]	2x n
100	6
200	8
300	10
400	12
500	14
600	16
700	18
800	20
900	22
1000	24

SPV8: 86 mm (W) × 80 mm (H)

Single-Phase 100-115 VAC
Single-Phase 200-230 VAC

Maximum Transportable Mass: Horizontal 20 kg
Stroke: 100 to 1500 mm (in 100 mm increments)



Specifications of Linear Slide

Drive Method	Belt	Repetitive Positioning Accuracy [mm]	±0.05	Resolution [mm]	0.01 (Driver Mode: 0.05)	Dynamic Permissible Moment [N·m]	M _F : 33 M _V : 29 M _R : 40
Model	Lead [mm]	Transportable Mass [kg]		Thrust [N]	Holding Force [N]	Maximum Speed [mm/s]	
		Horizontal	Vertical				
SPV8L□U-□ SPV8L□D-□	90	~15 [20: Speed 750 mm/s or less]	—	~70	~50	1500	

- Enter the stroke length in the box (□) within the model name.
- Enter the power supply voltage **A** or **C** in the box (□) within the model name.

Specifications of Sensor

Item	Model: EE-SX671A (OMRON)
Power Supply	5 to 24 VDC ±10%, ripple (p-p) 10% or less
Current Consumption	35 mA or less
Control Output	NPN open-collector output, 5 to 24 VDC, 100 mA or less Residual voltage 0.8 V or less (at load current of 100 mA)
Indicator LED	Detection display (red)
Logic	Normally open/normally closed (switchable, depending on connection)
Type	Photomicro sensor
Quantity	3 pieces, included
Movement	Possible

Product Number Code

SPV 8 L 080 U - A

① ② ③ ④ ⑤ ⑥

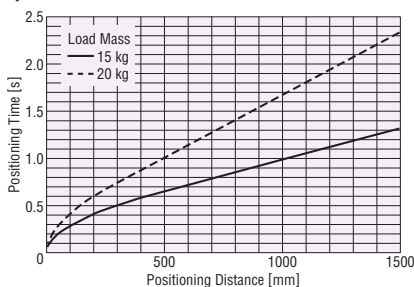
① Series	SPV: SPV Series
② Linear Slide Size	8 : Width: 86 mm Height: 80 mm
③ Lead	L : 90 mm
④ Stroke	010 (100 mm) ~ 150 (1500 mm)
⑤ Motor Installation Direction	U : Motor Installed on Top D : Motor Installed on Bottom
⑥ Power Supply Voltage	A : Single-Phase 100-115 VAC C : Single-Phase 200-230 VAC

Positioning Distance – Positioning Time

Check the (approximate) positioning time from the positioning distance.

SPV8L (Lead: 90 mm)

Horizontal Installation



Notes

- The positioning time in the graph does not include the settling time. Use a settling time of 0.2 sec. as a reference (settling time is adjustable by the speed filter function).
- The starting speed should be 45 mm/s or less.

Linear Slide/Controller Combinations

Model names for linear slide and linear motion controller combinations are shown below.

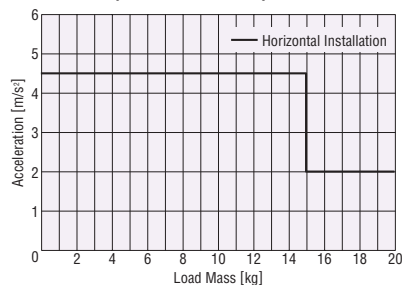
Motor Installation Direction	Model	Linear Slide Model	Controller Model
Motor Installed on Top	SPV8L□U- A	SPVM8L□UA	ESMC-A2
	SPV8L□U- C	SPVM8L□UC	ESMC-C2
Motor Installed on Bottom	SPV8L□D- A	SPVM8L□DA	ESMC-A2
	SPV8L□D- C	SPVM8L□DC	ESMC-C2

- Enter the stroke length in the box (□) within the model name.

Load Mass – Acceleration

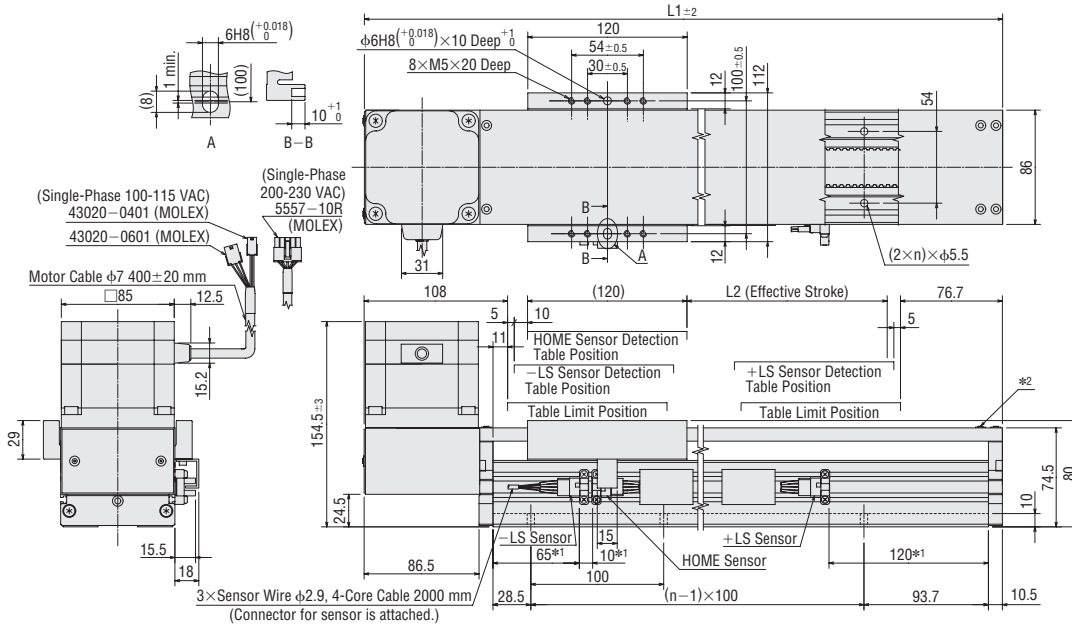
Approximate acceleration settable by a controller can be checked from the load mass.

SPV8L (Lead: 90 mm)

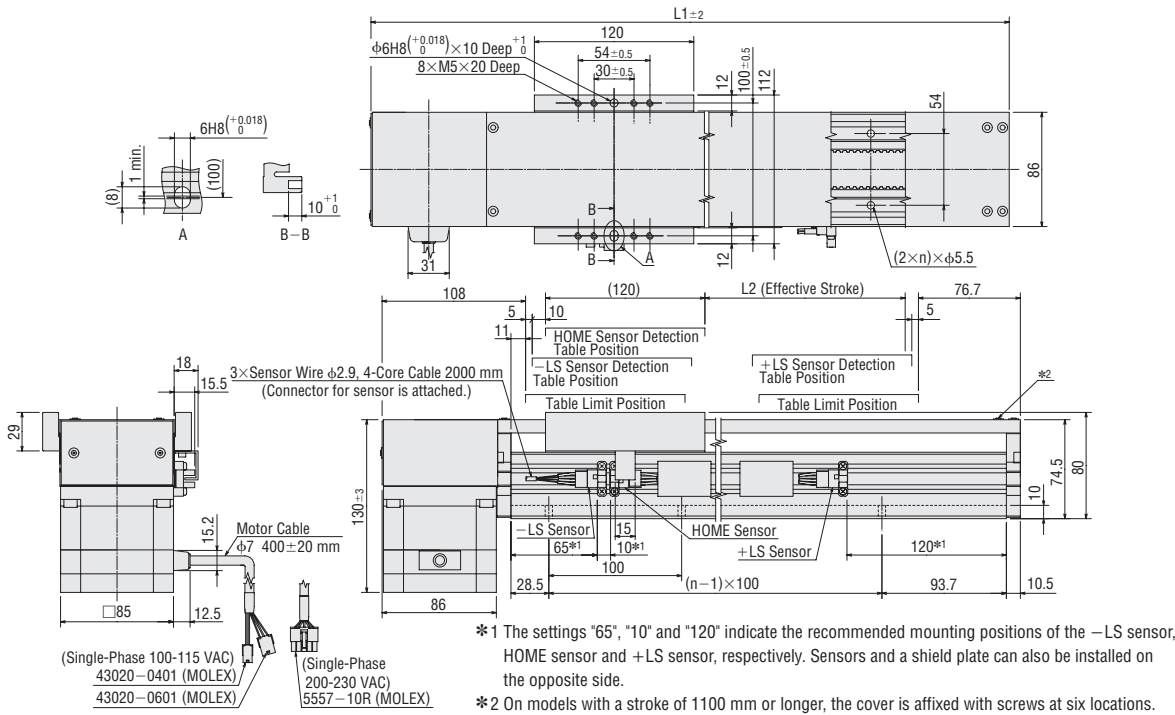


Dimensions of Linear Slide Unit = mm

◇ Motor Installed on Top



◇ Motor Installed on Bottom



Linear Slide Model: SPVM8□UA, SPVM8□UC (Motor Installed on Top)
SPVM8□DA, SPVM8□DC (Motor Installed on Bottom)

	Numbers Specifiable in the Box (□) within the Linear Slide Model Name																
	010	020	030	040	050	060	070	080	090	100	110	120	130	140	150		
Stroke	100	200	300	400	500	600	700	800	900	1000	1100	1200	1300	1400	1500		
L1	429.7	529.7	629.7	729.7	829.7	929.7	1029.7	1129.7	1229.7	1329.7	1429.7	1529.7	1629.7	1729.7	1829.7		
L2	100	200	300	400	500	600	700	800	900	1000	1100	1200	1300	1400	1500		
n	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17		
Mass [kg]	7.3	8.1	8.9	9.7	10.4	11.2	12.0	12.8	13.5	14.3	15.1	15.9	16.6	17.4	18.2		
DXF	Motor installed on Top	100-115 VAC	D785	D786	D787	D788	D789	D790	D791	D792	D793	D794	D795	D796	D797	D798	D799
	200-230 VAC	D800	D801	D802	D803	D804	D805	D806	D807	D808	D809	D810	D811	D812	D813	D814	
	Motor installed on Bottom	100-115 VAC	D815	D816	D817	D818	D819	D820	D821	D822	D823	D824	D825	D826	D827	D828	D829
	200-230 VAC	D830	D831	D832	D833	D834	D835	D836	D837	D838	D839	D840	D841	D842	D843	D844	

Number of Holes (2×n)

Stroke [mm]	2×n
100	6
200	8
300	10
400	12
500	14
600	16
700	18
800	20
900	22
1000	24
1100	26
1200	28
1300	30
1400	32
1500	34

