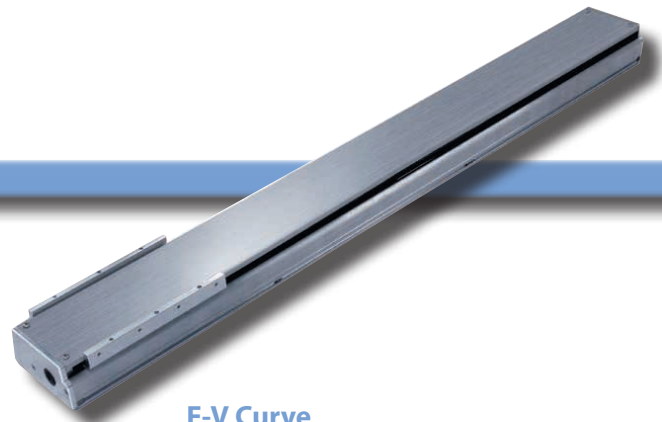


# SLP15

- High Thrust, High Speed, High Responsiveness, High Precision, Long Stroke
- Simple Design and Easy Installation
- Non-Contact Drive means Low Noise, Long Lifespan, and Maintenance-Free



## Stage Specifications

Rated Spec	Unit	Specification
Encoder Resolution	μm	1 (HEIDENHAIN LIDA279)
Continuous Force	N	17
Acceleration Force <sup>1</sup>	N	90
Continuous Current <sup>2</sup>	A	0.51
Acceleration Current <sup>1</sup>	A	2.7
Force Constant (Kf)	N/A rms	33
Back-EMF Constant	V/m/s	11
Resistance <sup>3</sup>	ohm	56
Inductance <sup>3</sup>	mH	24
Magnetic Pitch (N-N)	mm	60
Maximum Acceleration <sup>4</sup>	G	3.5
Maximum Velocity <sup>4,5</sup>	m/s	3.0
Bi-Directional Repeat-ability	mm	±0.0005
Max Load, Horizontal	kg	5.0
Load Capacity	kg	3.0
Stroke, Single Forcer <sup>6</sup>	mm	100~1300 (100 interval)
Stroke, Double Forcer <sup>6</sup>	mm	100~1200 (100 interval)
Operating Temperature	°C	0~+40
Operating Humidity	%	20~80 (no condensation)
Storage Temperature	°C	-20~+60
Moving Mass	kg	0.5

<sup>1</sup> Acceleration Force given is based on the output with the use of the SLP15 driver ([I14] Hitachi Production Machine System ADA3-01LL2)

<sup>2</sup> The effective amperage when the temperature increase of the coil front becomes 110K

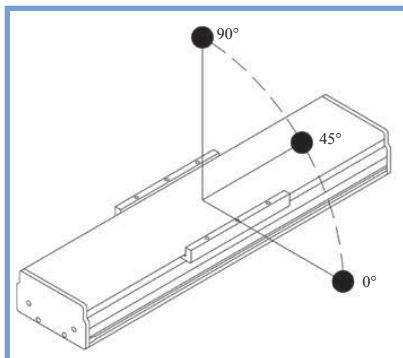
<sup>3</sup> An average value of U-V, U-W, and V-W

<sup>4</sup> There are instances when this is not achieved due to load or operation specifications

<sup>5</sup> There are instances when this is not achieved due to the length of the stroke

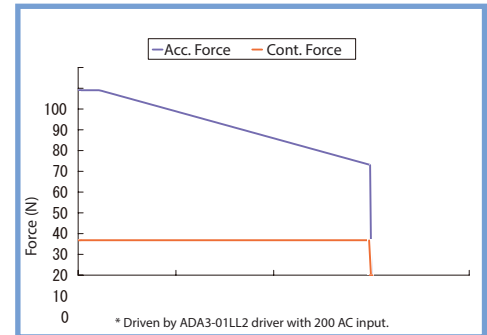
<sup>6</sup> Contact Nippon Pulse for longer stroke lengths

## Overhanging Weight Tolerance (in mm)

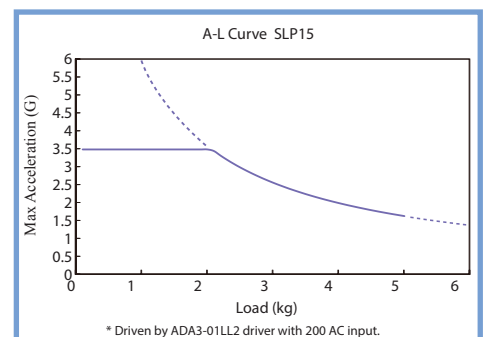


	Load	0°	45°	90°
Horizontal	1kg	380	400	450
	2kg	220	250	270
	3kg	160	190	200
	4kg	120	140	150
	5kg	100	110	130
Wall	1kg	440	390	320
	2kg	260	230	180
	3kg	180	170	120

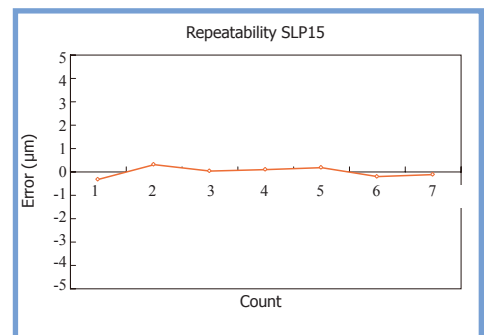
## F-V Curve



## Max. Acceleration vs. Load



## Position Repeatability



# SLP15

## Single Slider Dimensions

**Motor Cable Specifications**  
 Hitachi Cable  
 UL2464  
 AWG 25  
 U-red; V-white; W-black  
 Outer Diameter  $\phi$  4.3mm  
 JST XM Connector (Male)

**Encoder Cable Specifications**  
 Heidenhain  
 Outer Diameter  $\phi$  4.3 mm  
 Dsub 15 Pin Connector (Male)

N = sets of holes on stage  
 Available stroke 100mm-2m

All units are listed in mm

Stroke (mm)	L (mm)	N	Weight (Kg)
100	270	3	1.8
200	370	4	2.2
300	470	5	2.6
400	570	6	3.1
500	670	7	3.5
600	770	8	4.0
700	870	9	4.4
800	970	10	4.8
900	1070	11	5.3
1000	1170	12	5.7
1100	1270	13	6.1
1200	1370	14	6.6
1300	1470	15	7.0

## Double Slider Dimensions

**Motor Cable Specifications**  
 Hitachi Cable  
 UL2464  
 AWG 25  
 U-red; V-white; W-black  
 Outer Diameter  $\phi$  4.3mm  
 JST XM Connector (Male)

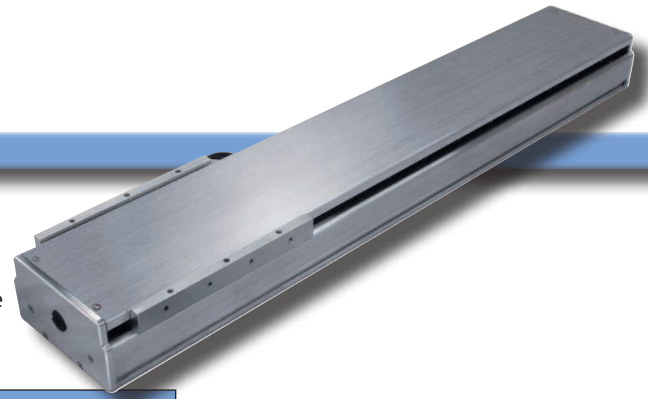
**Encoder Cable Specifications**  
 Heidenhain  
 Outer Diameter  $\phi$  4.3 mm  
 Dsub 15 Pin Connector (Male)

N = sets of holes on stage  
 Available stroke 100mm-2m

All units are listed in mm

Stroke (mm)	L (mm)	N	Weight (Kg)
100	420	4	3.0
200	520	5	3.5
300	620	6	3.9
400	720	7	4.3
500	820	8	4.8
600	920	9	5.2
700	1020	10	5.6
800	1120	11	6.1
900	1220	12	6.5
1000	1320	13	6.9
1100	1420	14	7.4
1200	1520	15	7.8

# SLP25



- High Thrust, High Speed, High Responsiveness, High Precision, Long Stroke
- Simple Design and Easy Installation
- Non-Contact Drive means Low Noise, Long Lifespan, and Maintenance-Free

## Stage Specifications

Rated Spec	Unit	Specification
Encoder Resolution	μm	1 (HEIDENHAIN LIDA279)
Continuous Force	N	80
Acceleration Force <sup>1</sup>	N	340
Continuous Current <sup>2</sup>	A	1.2
Acceleration Current <sup>1</sup>	A	5.1
Force Constant (Kf)	N/A rms	66
Back-EMF Constant	V/m/s	22
Resistance <sup>3</sup>	ohm	22
Inductance <sup>3</sup>	mH	31
Magnetic Pitch (N-N)	mm	90
Maximum Acceleration <sup>4</sup>	G	3.5
Maximum Velocity <sup>4,5</sup>	m/s	3.0
Bi-Directional Repeat-ability	mm	±0.0005
Max Load, Horizontal	kg	30
Load Capacity	kg	15
Stroke, Single Forcer <sup>6</sup>	mm	200-1200 (100 interval)
Stroke, Double Forcer <sup>6</sup>	mm	200-1200 (100 interval)
Operating Temperature	°C	0~+40
Operating Humidity	%	20~80 (no condensation)
Storage Temperature	°C	-20~+60
Moving Mass	kg	2.7

<sup>1</sup> Acceleration Force given is based on the output with the use of the SLP25 driver ([14] Hitachi Production Machine System ADA3-01LL2)

<sup>2</sup> The effective amperage when the temperature increase of the coil front becomes 110K

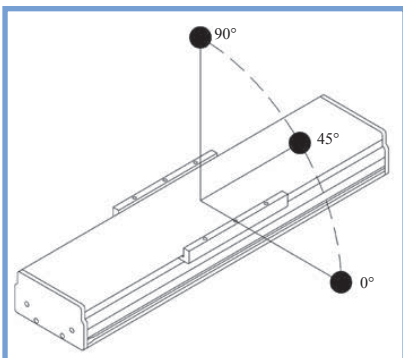
<sup>3</sup> An average value of U-V, U-W, and V-W

<sup>4</sup> There are instances when this is not achieved due to load or operation specifications

<sup>5</sup> There are instances when this is not achieved due to the length of the stroke

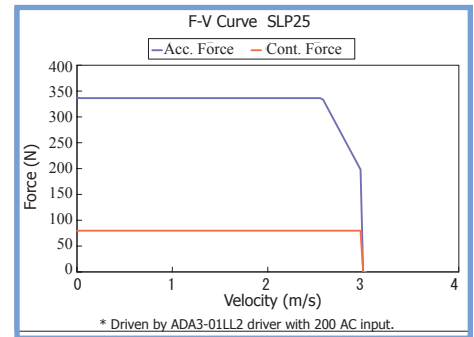
<sup>6</sup> Contact Nippon Pulse for longer stroke lengths

## Overhanging Weight Tolerance (in mm)

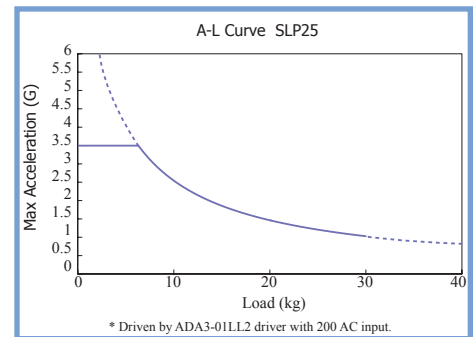


	Load	0°	45°	90°
Horizontal	5kg	1000	1000	1000
	10kg	1000	800	1000
	15kg	800	650	1000
	20kg	700	580	1000
	25kg	550	500	1000
	30kg	500	450	1000
Wall	3kg	1000	1000	580
	6kg	1000	800	450
	9kg	1000	670	400
	12kg	1000	580	350
	15kg	1000	500	300

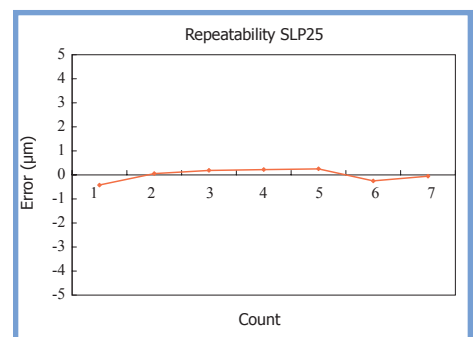
## F-V Curve



## Max. Acceleration vs. Load



## Position Repeatability



# SLP25

## Single Slider Dimensions

Stroke (mm)	L (mm)	N	Weight (Kg)
200	450	5	9.7
300	550	5	11
400	650	6	12
500	750	7	14
600	850	8	15
700	950	9	16
800	1050	10	18
900	1150	11	19
1000	1250	12	20
1100	1350	13	22
1200	1450	14	23

N = sets of holes on stage  
Available stroke 100mm-2m

**Motor Cable Specifications**  
Hitachi Cable  
UL2570  
AWG 18  
U-red; V-white; W-black  
Outer Diameter ø 6.1  
JST HL Connector (male)

**Encoder Cable Specifications**  
Heidenhain  
Outer Diameter ø 4.3  
Dsub 15 Pin Connector (Male)

All units are listed in mm

## Double Slider Dimensions

Stroke (mm)	L (mm)	N	Weight (Kg)
200	670	7	16
300	770	8	17
400	870	9	19
500	970	10	20
600	1070	11	22
700	1170	12	23
800	1270	13	24
900	1370	14	26
1000	1470	15	27

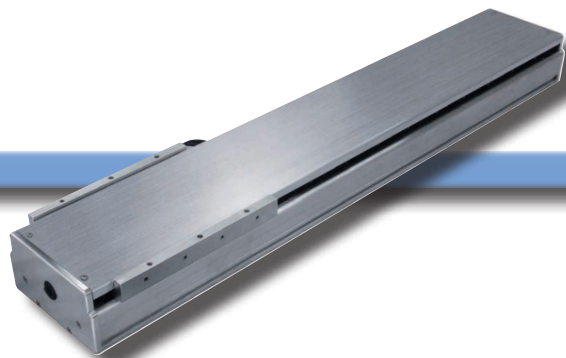
N = sets of holes on stage  
Available stroke 100mm-2m

**Motor Cable Specifications**  
Hitachi: Power Supply Co.  
UL2570  
AWG 18  
U-red; V-white; W-black  
Outer Diameter ø 6.1  
JST HL Connector (male)

**Encoder Cable Specifications**  
Heidenhain  
Outer Diameter ø 4.3  
Dsub 15 Pin Connector (Male)

All units are listed in mm

# SLP35



- High Thrust, High Speed, High Responsiveness, High Precision, Long Stroke
- Simple Design and Easy Installation
- Non-Contact Drive means Low Noise, Long Lifespan, and Maintenance-Free

## Stage Specifications

Rated Spec	Unit	Specification
Encoder Resolution	μm	1 (HEIDENHAIN LIDA279)
Continuous Force	N	185
Acceleration Force <sup>1</sup>	N	970
Continuous Current <sup>2</sup>	A	2.7
Acceleration Current <sup>1</sup>	A	14.4
Force Constant (Kf)	N/A rms	68
Back-EMF Constant	V/m/s	22
Resistance <sup>3</sup>	ohm	7.2
Inductance <sup>3</sup>	mH	12
Magnetic Pitch (N-N)	mm	120
Maximum Acceleration <sup>4</sup>	G	3.5
Maximum Velocity <sup>4,5</sup>	m/s	3.0
Bi-Directional Repeatability	mm	±0.0005
Max Load, Horizontal	kg	60
Load Capacity	kg	30
Stroke, Single Forcer <sup>6</sup>	mm	300-1200 (100 interval)
Stroke, Double Forcer <sup>6</sup>	mm	300-900 (100 interval)
Operating Temperature	°C	0~+40
Operating Humidity	%	20~80 (no condensation)
Storage Temperature	°C	-20~+60
Moving Mass	kg	4.4

<sup>1</sup> Acceleration Force given is based on the output with the use of the SLP35 driver

([14] Hitachi Production Machine System ADA3-01LL2)

<sup>2</sup> The effective amperage when the temperature increase of the coil front becomes 110K.

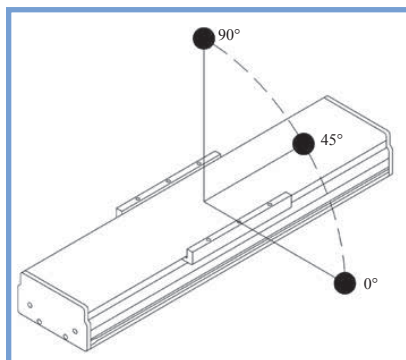
<sup>3</sup> An average value of U-V, U-W, and V-W.

<sup>4</sup> There are instances when this is not achieved due to load or operation specifications.

<sup>5</sup> There are instances when this is not achieved due to the length of the stroke.

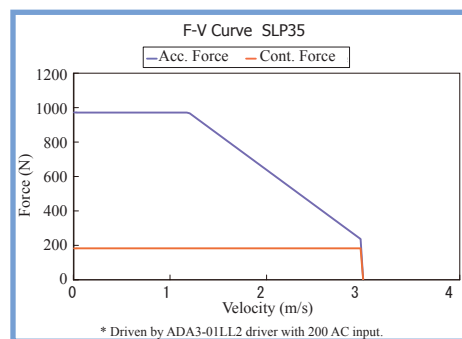
<sup>6</sup> Contact Nippon Pulse for longer stroke lengths.

## Overhanging Weight Tolerance (in mm)

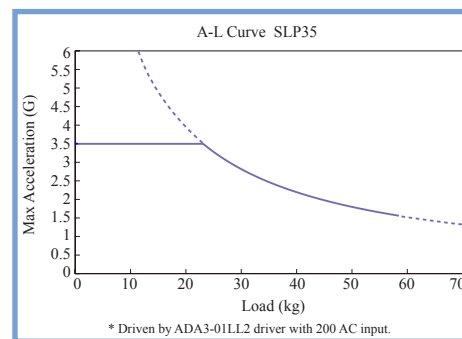


	Load	0°	45°	90°
Horizontal	10kg	1000	1000	1000
	20kg	1000	900	1000
	30kg	940	780	1000
	40kg	840	660	1000
	50kg	750	590	950
	60kg	680	540	900
Wall	5kg	1000	1000	700
	10kg	1000	900	600
	15kg	1000	810	520
	20kg	1000	710	430
	25kg	980	620	350
	30kg	890	530	300

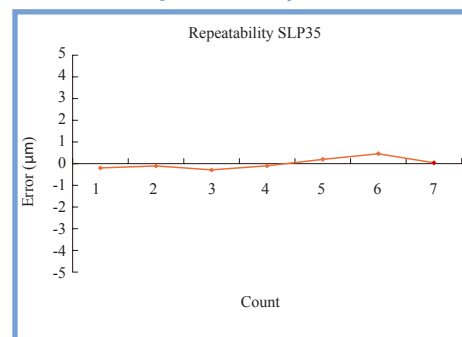
## F-V Curve



## Max. Acceleration vs. Load



## Position Repeatability



# SLP35

## Single Slider Dimensions

Technical drawings for SLP35 Single Slider Dimensions. The top view shows a width of 186mm and a depth of 90mm. The side view shows a length of 163mm and a depth of 90mm. The detail for P&Q shows a width of 186mm and a depth of 90mm. The main drawing shows a length of 170mm and a depth of 90mm. The stroke length is labeled as 'L Stroke'. The table below lists the dimensions for different stroke lengths.

Stroke (mm)	L (mm)	N	Weight (Kg)
300	630	6	17
400	730	7	30
500	830	8	21
600	930	9	23
700	1030	10	25
800	1130	11	26
900	1230	12	28
1000	1330	13	30
1100	1430	14	32
1200	1530	15	34

N = sets of holes on stage  
Available stroke 100mm-2m

**Motor Cable Specifications**  
Hitachi Cable  
UL2570  
AWG 18  
U-red; V-white; W-black  
Outer Diameter ø 6.1  
JST HL Connector (male)

**Encoder Cable Specifications**  
Heidenhain  
Outer Diameter ø 4.3  
Dsub 15 Pin Connector (Male)

All units are listed in mm

## Double Slider Dimensions

Technical drawings for SLP35 Double Slider Dimensions. The top view shows a width of 186mm and a depth of 90mm. The side view shows a length of 163mm and a depth of 90mm. The detail for P&Q shows a width of 186mm and a depth of 90mm. The main drawing shows a length of 170mm and a depth of 90mm. The stroke length is labeled as 'L Stroke'. The table below lists the dimensions for different stroke lengths.

Stroke (mm)	L (mm)	N	Weight (Kg)
300	920	9	28
400	1020	10	30
500	1120	11	32
600	1220	12	33
700	1320	13	35
800	1420	14	37
900	1520	15	39

N = sets of holes on stage  
Available stroke 100mm-2m

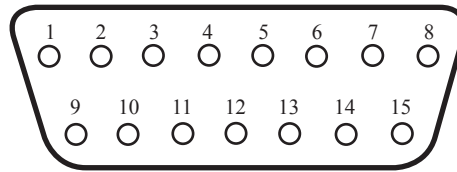
**Motor Cable Specifications**  
Hitachi Cable  
UL2570  
AWG 18  
U-red; V-white; W-black  
Outer Diameter ø 6.1  
JST HL Connector (male)

**Encoder Cable Specifications**  
Heidenhain  
Outer Diameter ø 4.3  
Dsub 15 Pin Connector (Male)

All units are listed in mm

## SCR Standard Pinout

Pin	Signal	Function
2	0V	Ground
4	Z-	Reference Mark
5	B-	Incremental Signal
6	A-	Incremental Signal
7	5V	Power
8	5V	Power
9	0V	Ground
10	Q	Limit
11	P	Limit
12	Z+	Reference Mark
13	B+	Incremental Signal
14	A+	Incremental Signal
15	shield	

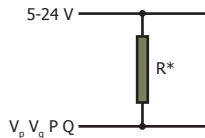


## SLP Pinout

Pin	Signal	Wire Color	Function
1	A+	White	Incremental Signal
2	0V	Black/Red	Ground
3	B+	Green	Incremental Signal
4	5V	Red	Power
7	Z-	Black/Yellow	Reference Mark
9	A-	Black/White	Incremental Signal
11	B-	Black/Green	Incremental Signal
14	Z+	Yellow	Reference Mark

Note: Limits-open collector output, asynchronous pulse

## Limit Outputs

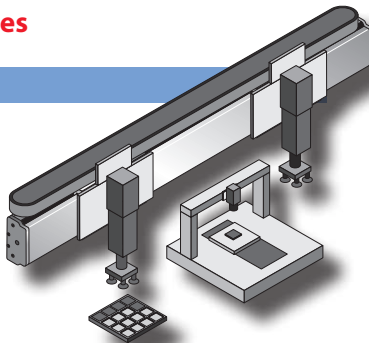


\*select R for I max <20 mA  
Alternatively, use a suitable relay or opto-isolator

## Application Examples

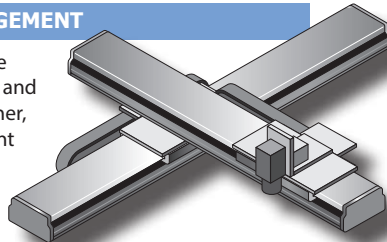
### LOADER/UNLOADER

- Multiple sliders move independently with accuracy.
- Multi-sliders save space and cut costs.



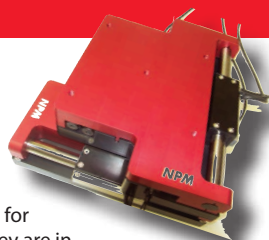
### STANDARD X-Y ARRANGEMENT

- Due to the many ways the high-speed SLP15, SLP25 and SLP35 can be used together, a wide range of movement is possible.



### SCR X-Y ARRANGEMENT

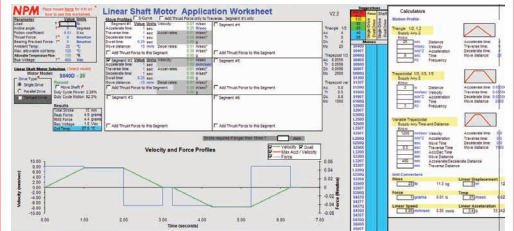
- Each SCR and SLP stage requires a servo driver to operate the stage. Any two SCR stages will bolt directly together to form a very stiff, compact X-Y assembly, without the need for adaptor plates (provided they are in the same series).



## Nippon Pulse SMART

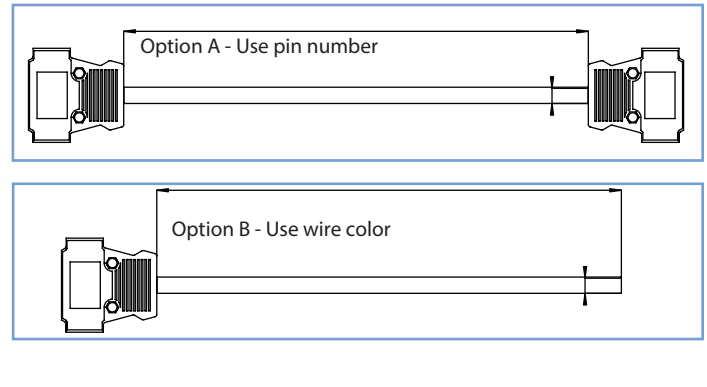
Nippon Pulse provides the Linear Shaft Motor Application Resource Tool (SMART) sizing resource for your convenience. You must be running Microsoft Excel 98 or a later version.

SMART is available at [nipponpulse.com/support/manuals](http://nipponpulse.com/support/manuals)



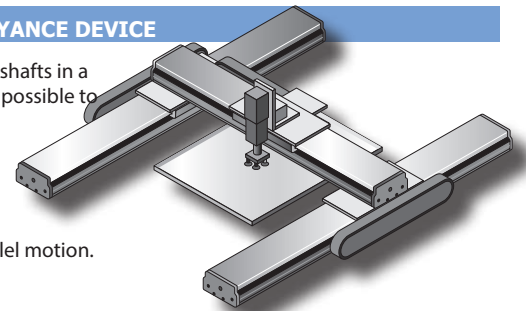
(Requires Microsoft Excel 98 or newer.)

## SLP Cable Options



## SUBSTRATE CONVEYANCE DEVICE

- By placing the lower shafts in a parallel position, it is possible to place the work in the central space.
- The shaft motors can be driven with one driver or in parallel motion.



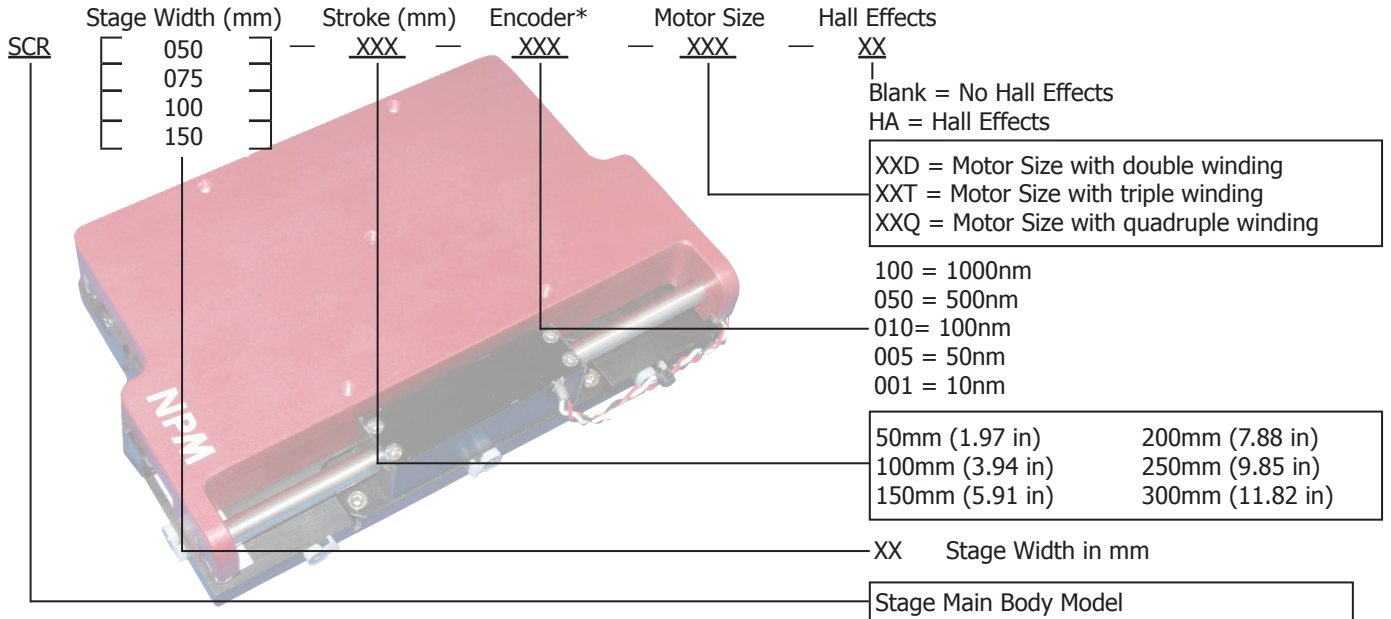
## Orthogonal Jig Plate for use with SLP X-Y table

When constructing a multiple-axis table that utilizes several SLP series stages, installation is exceptionally easy with the placement of the jig plate between the axes. It is possible to easily gain orthogonal precision between the lower axis and the upper axis by positioning the two attached positioning pins to the precision holes on the face of the stage's slider installation. (Because there is a limit to the possible combinations for certain models, please use the models suitable for multiple axes.) Z-axis jig plates are also available for three-dimensional motion. Jig plates are not needed for SCR stage multi-axis arrangements.

- Jig Plate A - Lower axis SLP 15, Upper axis SLP 15
- Jig Plate B - Lower axis SLP25/35, Upper axis SLP 15/25/35
- Z-axis Jig Plate - Z-axis SLP15, X-axis SLP25

**SCR Stage Part Numbering Guide**

Example model number: SCR100-50-010-080Q



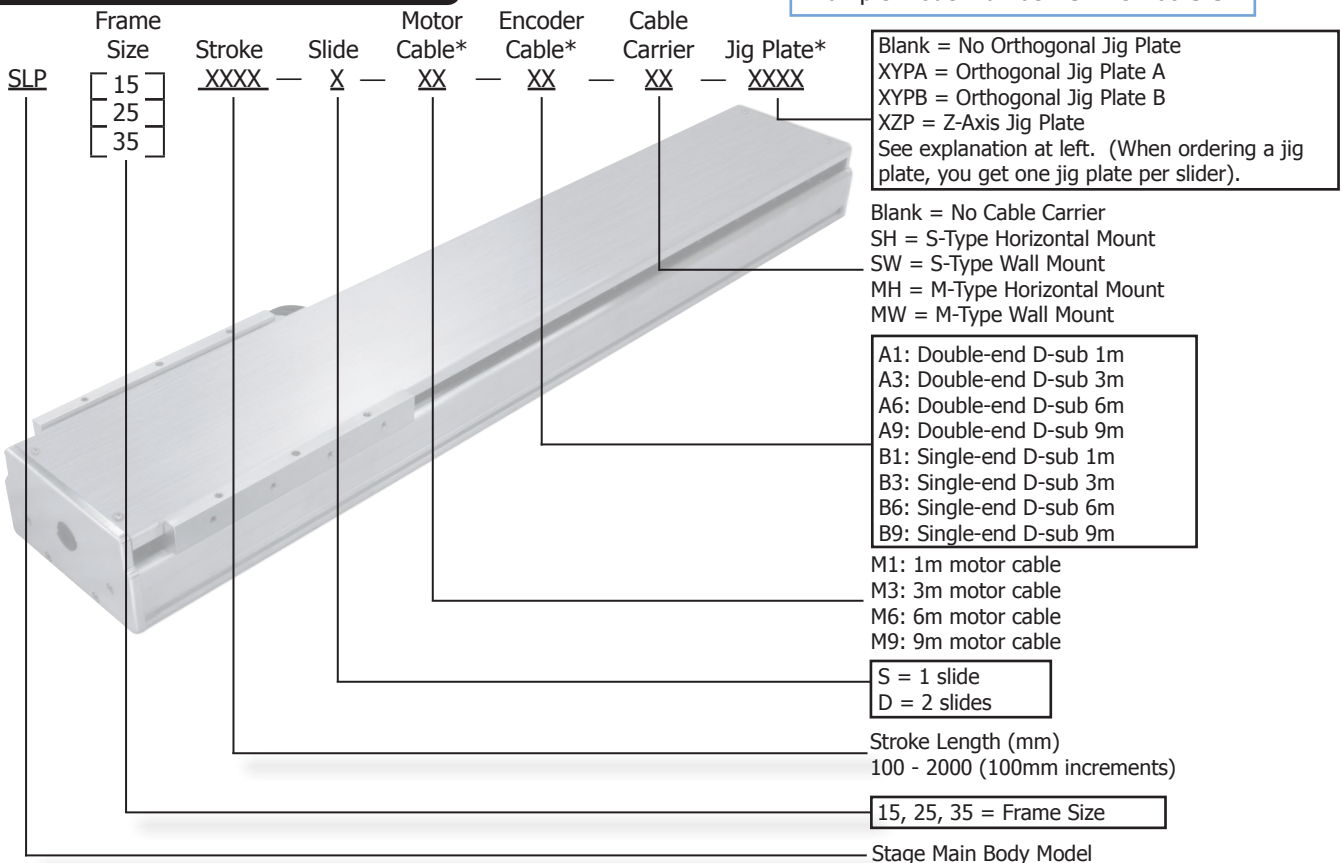
**\*SCR Encoder Upgrade Notice**

As of September 1, 2010, all Nippon Pulse SCR Nanopositioning stages are available with an upgraded encoder. Any stage built after Sept. 1, 2010, and beginning with unit SN#080210-001, comes standard with the Renishaw Tonic Encoder.

The previous encoder was the Renishaw RGH24, which used optional and separate read switch end-of-travel limits. The Tonic Encoder includes limit switches as a part of the new read head and makes end limits standard at no additional cost. This change optimizes performance and eliminates extra wiring needed with the optional limit switches. Other benefits of using the new encoder include improving interpolation feedback by four times, achieving 5nm resolution without the use of a large RGB interpolator, and increased resolution and speed options.

**SLP Stage Part Numbering Guide**

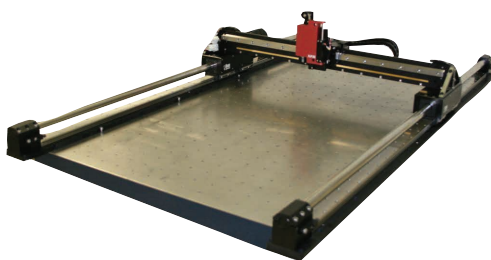
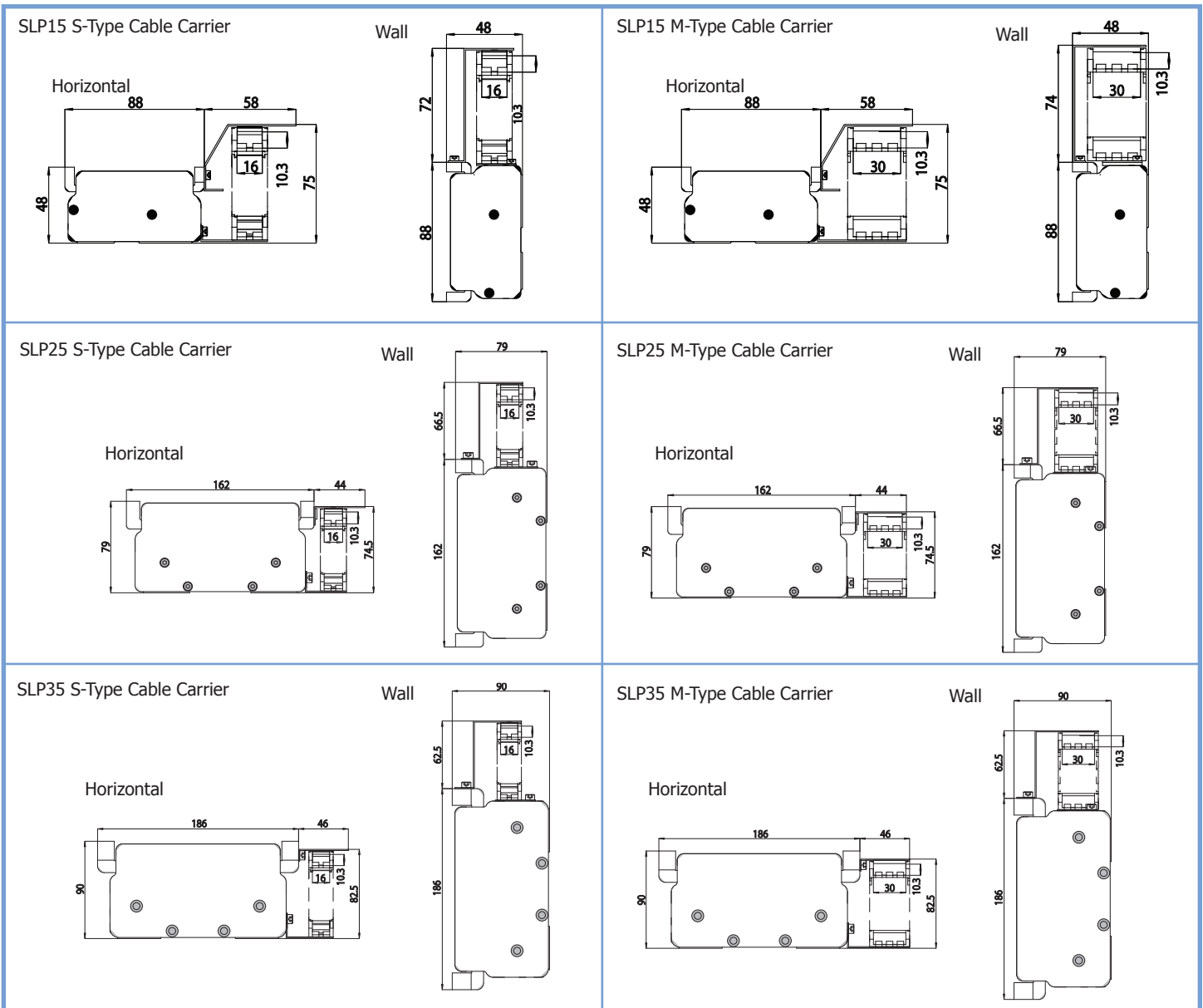
Example model number: SLP15-200-S-SH



\*Motor cables, encoder cables, and jig plates can be ordered separately. When ordering, add 'SL-' in front of the part number. Example: SL-A9 for a single-end D-sub 9m encoder cable or SL-XYPA for an orthogonal jig plate A.



## SLP Cable Carrier Dimensions



### Custom Stages

In addition to the two standard stage series, Nippon Pulse has the ability to build custom stages to fit your applications. Please contact Nippon Pulse to speak to a local representative for more information and pricing of a custom stage unit.

To provide better support, a custom stage worksheet is available on our web site. Complete the form and return it to Nippon Pulse to make custom staging more efficient.

[nipponpulse.com/support/custom-worksheets](http://nipponpulse.com/support/custom-worksheets)