NPM
Nippon Pulse
*Your partner in motion control*

SCR150
Nanopositioning Stage

The largest of the SCR stages, the SCR150 stage has stroke lengths up to 300mm while maintaining the high performance and accuracy of the smaller SCR stages. Like the other three stages, the SCR150 is a complete single axis stage which integrates a slide guide, encoder, and a Linear Shaft Motor. It offers a wide range of advantages for applications requiring high performance and accuracy.

Each SCR 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. Two SCR stages can be supplied as an X-Y stage to insure true orthogonal orientation between the two axes.
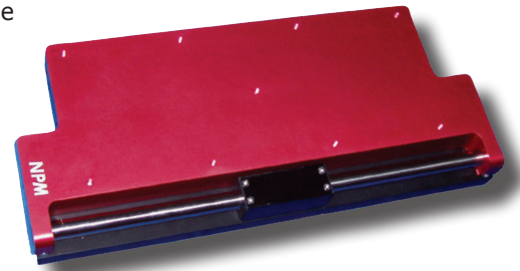
Stage Specifications

Specifications[1]	Units	SCR150-100	SCR150-150	SCR150-200	SCR150-250	SCR150-300
Travel/Stroke[2]	mm	100	150	200	250	300
Stage Width (B)	mm	230	280	330	380	430
Stroke	mm	100	150	200	250	300
Accuracy	µm	5	7	9	11	12
Encoder Resolution	nm	1000, 500, 100, 50, 10				
Bi-Directional Repeatability[3]		±1 count				
Maximum Acceleration	m/s²	17	13	11	9	8
Maximum Velocity[4]	m/s	1.3	1.3	1.4	1.5	1.5
Load Capacity[5]	kg	45.5				
Moving Mass	kg	2.3	2.9	3.5	4.1	4.7
Total Mass	kg	5.2	6.5	7.9	9.2	10.6
Straightness & Flatness	µm	2/25mm				
Home Limit Switches		Standard				
Home Switch Location		Center				
Limit Switch Over Travel	mm	1				
Hard Stop Over Travel	mm	2				
Bearing		Cross-roller bearing				
Linear Shaft Motor		S160D				

Note 1: Standard stage specifications based on the S160D Linear Shaft Motor
Note 2: Travel/Stroke with S160D coil; when using S160T, stroke is 30mm shorter; when using S160Q, stroke is 60mm shorter
Note 3: Repeatability +/- 2 counts sub 0.1µm resolutions
Note 4: For 10nm resolution, max velocity of encoder is limited to 135mm/sec; for 50nm, the limit is 675mm/sec; and for 100nm, the limit is 1350mm/sec
Note 5: Please contact our Applications Engineers for loads exceeding 45.5kg

Acceleration/Velocity Curves

SCR150-100

SCR150-150

SCR150-250

SCR150-300
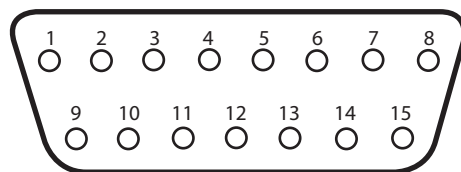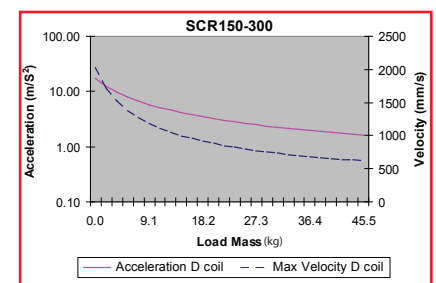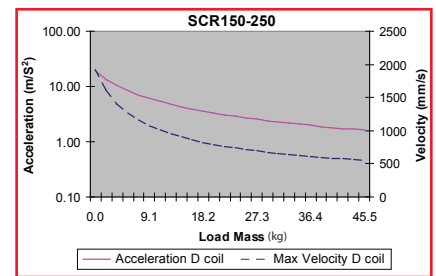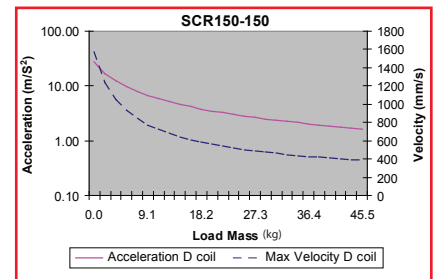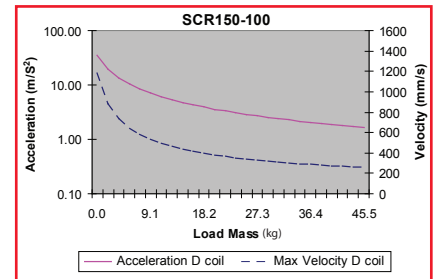
Pin	Signal	Function
2	0V	Ground
4	Z-	Reference Mark
5	B-	Incremental Signal
6	A-	Incremental Signal
7	5V	Power
8	5V	Power
9	0V	Ground
10	Q	Limit
11	P	Limit
12	Z+	Reference Mark
13	B+	Incremental Signal
14	A+	Incremental Signal
15	shield	

Linear Shaft Motor Specs

Linear Shaft Motor Force Specs	Units	S160D
Fundamental Motor Constant	N/W	3.51
Motor Force Constant (Kf)	N/A rms	16
Back-EMF Constant	V/m/s	5.4
Coil Resistance @ 25°C	Ω	21
Coil Inductance	mH	8.2
Continuous Current @ 135°C	A	0.6
Acceleration Current	A	2.5
Continuous Force @ 135°C	N	10
Acceleration Force	N (lb)	40
Continuous Power Rating	W	16.1
Thermal Resistance	°C/W	33.2
Magnetic Pole Pitch (N-N)	mm	60

Note: Curves apply only to the stage's standard motor, the S160D Linear Shaft Motor. If you are interested in using the S160T or S160Q in your stage, please contact our application engineers to learn more about these coils.
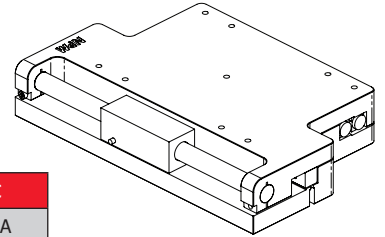
Dimensions
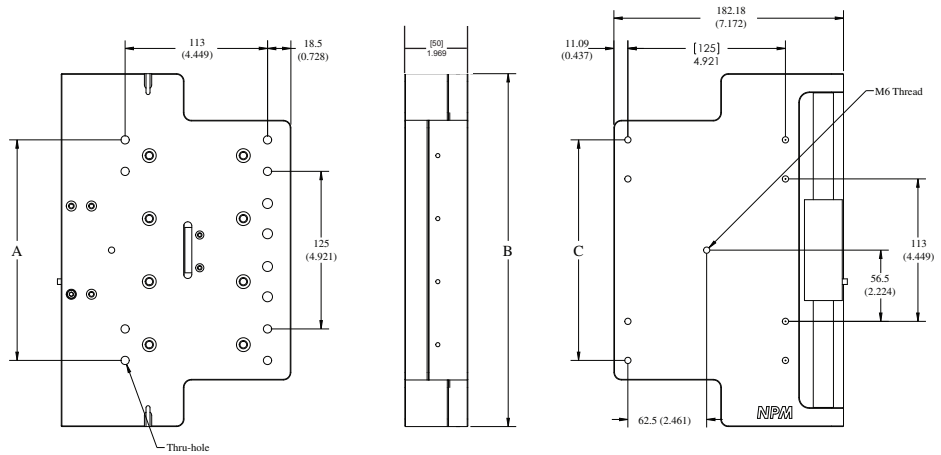
Motor Cable
UL2464
AWG 24
U–orange
V–white
W–gray
Length: 300mm
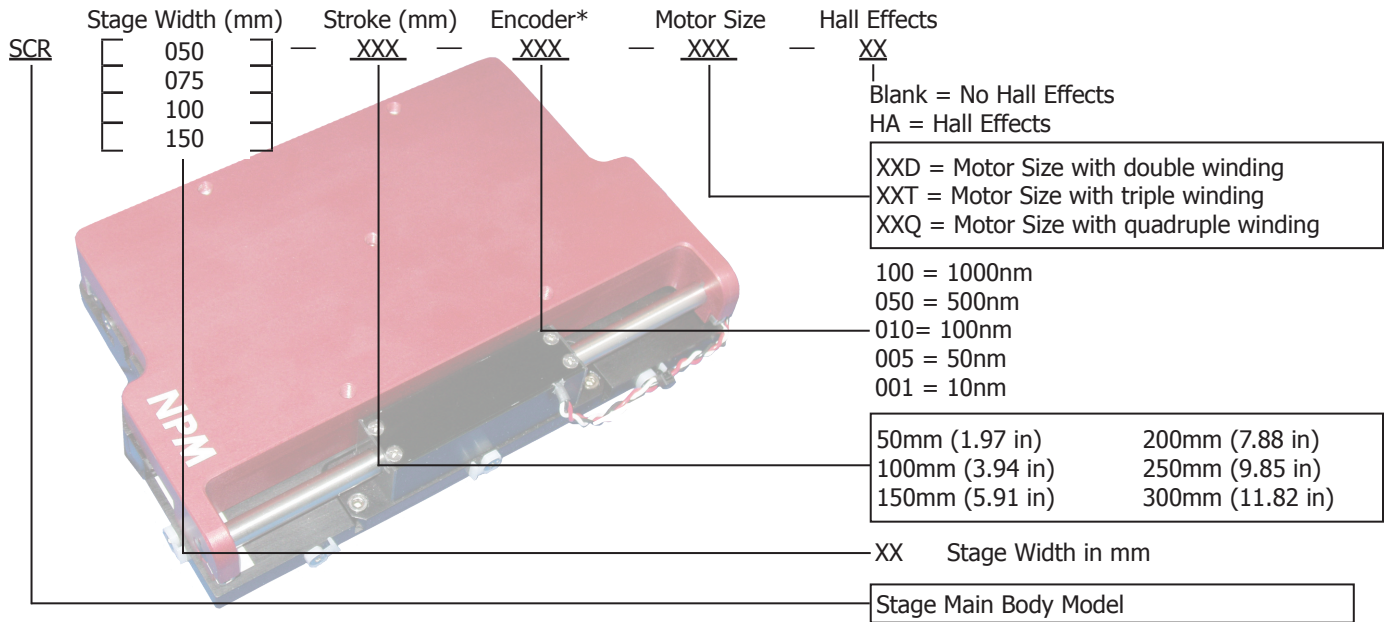
Encoder cable length: minimum 1000mm

MODEL	TRAVEL mm	A	B	C
SCR150-100	100	N/A	230	N/A
SCR150-150	150	175	280	175
SCR150-200	200	225	330	225
SCR150-250	250	275	380	275
SCR150-300	300	325	430	325

All units are listed as mm

SCR Stage Part Numbering Guide

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

SCR	Stage Width (mm)	Stroke (mm)	Encoder*	Motor Size	Hall Effects
SCR	050 / 075 / 100 / 150	XXX	XXX	XXX	XX

Blank = No Hall Effects
HA = Hall Effects

XXD = Motor Size with double winding
XXT = Motor Size with triple winding
XXQ = Motor Size with quadruple winding

100 = 1000nm
050 = 500nm
010 = 100nm
005 = 50nm
001 = 10nm

50mm (1.97 in)	200mm (7.88 in)
100mm (3.94 in)	250mm (9.85 in)
150mm (5.91 in)	300mm (11.82 in)

XX   Stage Width in mm

Stage Main Body Model

*SCR Encoder Upgrade Notice

As of September 1, 2010, all Nippon Pulse SCR Nanopositioning Pulges are available with a upgraded encoder. Any stage built after September 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.