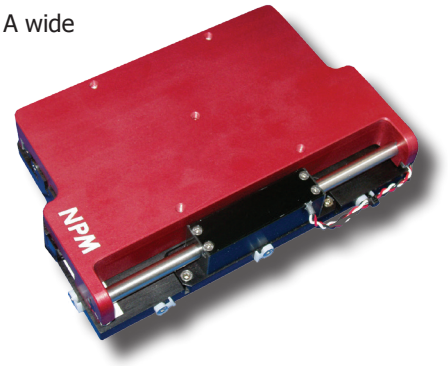
NPM Nippon Pulse
Your partner in motion control

SCR100
Nanopositioning Stage

Like its relatives, the SCR100 integrates a slide guide, encoder, and a Linear Shaft Motor. A wide range of options allows for a better match for stage applications needing sub-nanometer resolution that is free from motion errors. Like the SCR050 and SCR075, the encoder and motor cables are built into the stationary base and are designed so there is no need for them to bend and flex.

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.

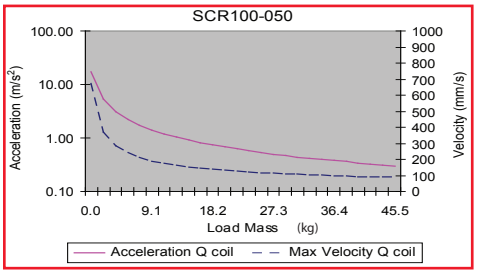


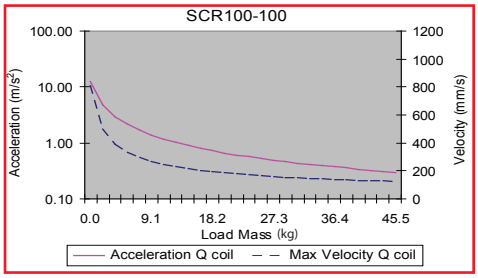
Stage Specifications

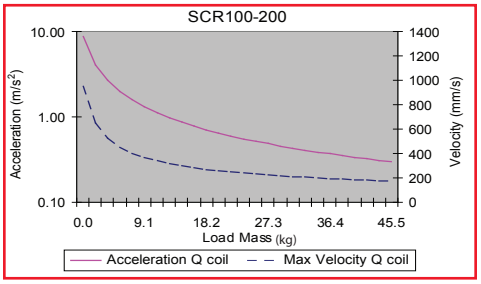
Specifications[1]	Units	SCR100-050	SCR100-100	SCR100-150	SCR100-200	SCR100-250	SCR100-300
Travel/Stroke	mm	50	100	150	200	250	300
Stage Width (B)	mm	140	190	240	290	340	390
Accuracy	µm	3	5	7	9	11	12
Encoder Resolution	nm	1000, 500, 100, 50, 10					
Bi-Directional Repeatability[2]		±1 count					
Maximum Acceleration	m/s²	17	12	10	8	7	6
Maximum Velocity[3]	m/s	0.9	1	1.2	1.2	1.3	1.3
Load Capacity[4]	kg	45.5					
Moving Mass	kg	0.8	1.1	1.3	1.6	2.0	2.2
Total Mass	kg	1.6	2.1	2.6	3.2	3.9	4.5
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		S080Q					

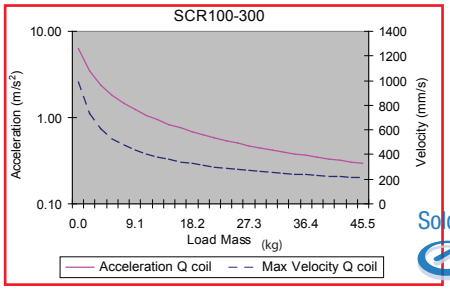
Note 1: Standard stage specifications are based on the S080Q Linear Shaft Motor
Note 2: Repeatability +/- 2 counts at sub 0.1µm resolutions
Note 3: For 10nm (0.01µm) resolution, max velocity of encoder is limited to 135mm/sec; for 50nm (0.05µm), the limit is 675mm/sec; and for 100nm (0.1µm), the limit is 1350mm/sec
Note 4: Please contact our Applications Engineers for loads exceeding 45.5kg

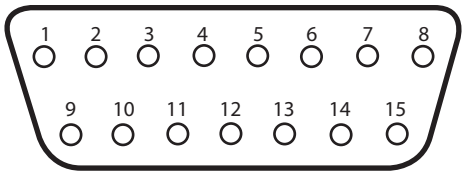
Acceleration/Velocity Curves











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	

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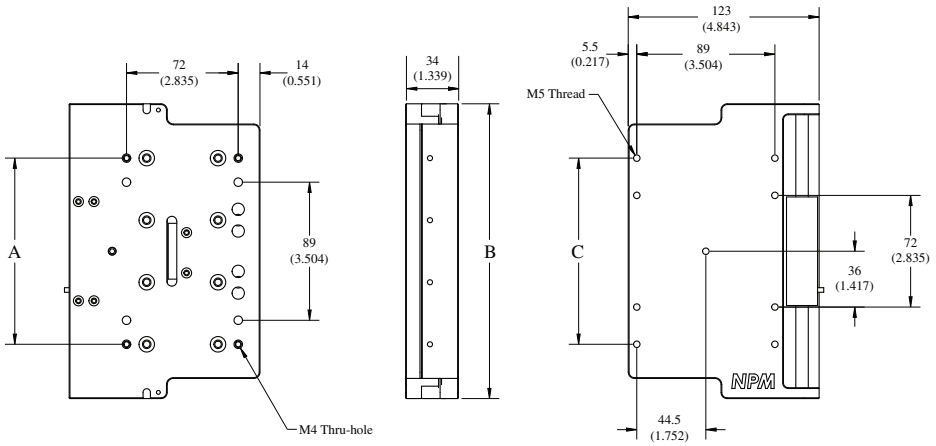
Linear Shaft Motor Specs

Linear Shaft Motor Force Specs	Units	S080Q
Fundamental Motor Constant	N/W	1.39
Motor Force Constant (Kf)	N/A rms	4.2
Back-EMF Constant	V/m/s	1.4
Coil Resistance @ 25°C	Ω	9
Coil Inductance	mH	1.3
Continuous Current @ 135°C	A	0.84
Acceleration Current	A	3.4
Continuous Force @ 135°C	N	3.5
Acceleration Force	N	14
Continuous Power Rating	W	12.7
Thermal Resistance	°C/W	17.3
Magnetic Pole Pitch (N-N)	mm	80

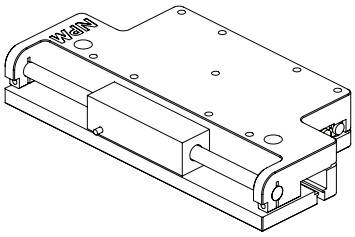
Note: Curves apply only to the stage's standard motor, the S080Q Linear Shaft Motor. If you are interested in using the S080D or S080T in your stage, please contact our application engineers to learn more about these coils.

Dimensions



Motor Cable
Lapp Unitronic 190-602803
AWG 28
U–red
V–white
W–black
Length: 3000mm

Encoder cable length:
minimum 1000mm



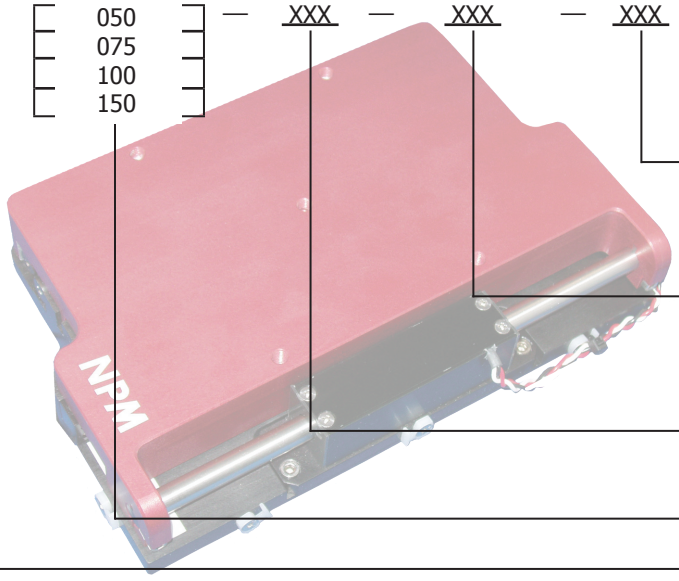
MODEL	TRAVEL mm	A	B	C
SCR100-050	50	N/A	140	N/A
SCR100-100	100	120	190	120
SCR100-150	150	160	240	160
SCR100-200	200	200	290	200
SCR100-250	250	260	340	260
SCR100-300	300	300	390	300

All units are listed as mm

SCR Stage Part Numbering Guide

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

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



Hall Effects:
Blank = No Hall Effects
HA = Hall Effects

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

Encoder*:
100 = 1000nm
050 = 500nm
010= 100nm
005 = 50nm
001 = 10nm

Stroke (mm):
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 stages 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.