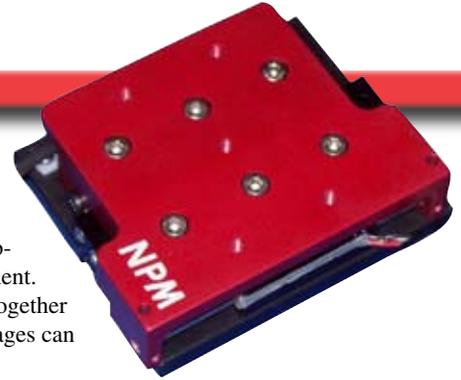


## SCR Stages

# SCR-050

The SCR-050 stage utilizes a S040 Linear Shaft Motor, making it a compact, precise solution for small-scale stage applications. The stage itself contains the cables within a stationary base and like all SCR stages, it utilizes a moving magnet design. With a built-in optical linear encoder that provides sub-micron resolution, the SCR-050 is a complete compact stage solution for small-scale precision movement.

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 standard, without the need for adapter plates. Two SCR stages can be supplied as an X-Y stage to insure true orthogonal orientation between the two axes.



### Stage Specifications

Stage Specifications	Units	SCR050-020	SCR050-040
Travel / Stroke	mm	20	40
Length	mm	75	95
Accuracy	μm	2	2
Encoder Resolution	μm	1, 0.5, 0.1, 0.05, 0.01	
Bi-Directional Repeatability <sup>1</sup>		± 1 count	
Maximum Acceleration	m/s <sup>2</sup>	20	8
Maximum Velocity <sup>2</sup>	m/s	0.6	0.5
Load Capacity <sup>3</sup>	kg	10	
Moving Mass	kg	0.115	0.275
Total Mass	g	450	700
Straightness & Flatness	μm	2.5/25mm	
Home Limit Switches		Non-contact Magnetic reed switch	
Home Switch Location		Center	
Limit Switch Over Travel		1 mm	
Hard Stop Over Travel		2 mm	
Bearing		Cross Roller Bearing	
Linear Shaft Motor(s)		S040Q	

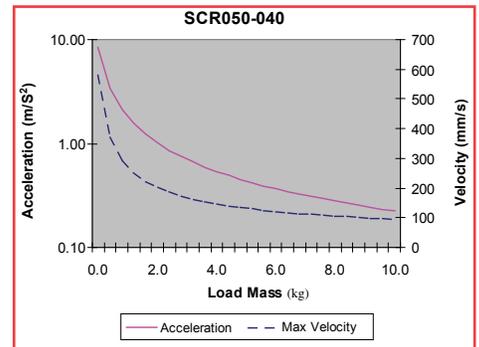
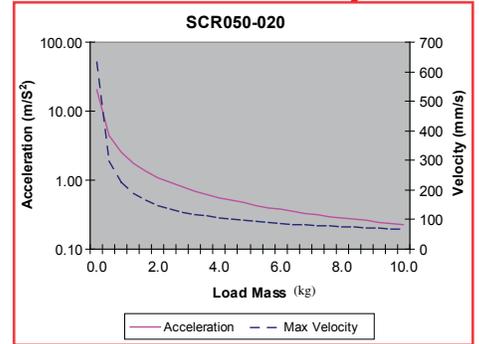
Note 1: Repeatability +/- 2 counts sub 0.1 μm @ Resolutions

Note 2: For 10nm resolution, max velocity of encoder is limited to 65mm/sec; for 50nm, the limit is 250mm/sec; and for 100nm (0.1μm), the limit is 500mm/sec.

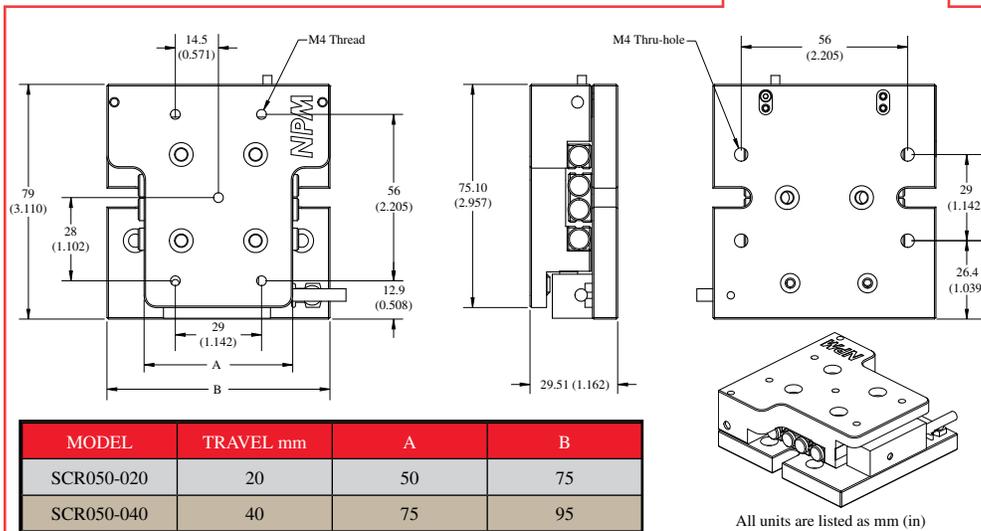
Note 3: Please contact our Applications Engineers for loads exceeding 10kg.

**Motor Cable UL1440**  
 AWG 28  
 U - red  
 V - White  
 W - black  
 Length: 300mm - 0.3m

### Acceleration/Velocity Curves



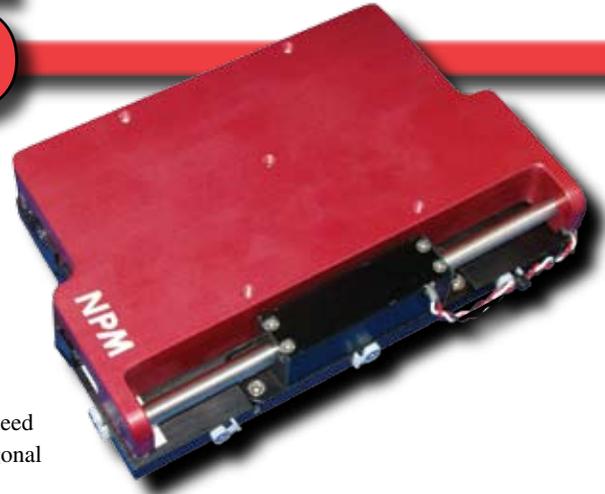
### Dimensions



### Linear Shaft Motor Specifications

Motor Specifications	S040Q (Units)
Fund. Motor Constant	0.44 N/ W
Motor Force Constant	2.1 N/Arms
Back-EMF Constant	0.7 V/m/s
Coil Resistance@25°C	22.4
Coil Inductance	1 mH
Cont. Current@135°C	0.3 Arms
Peak Current	1.1 Arms
Cont. Force@135°C	0.58 N
Peak Force	2.3 N
Cont. Power Rating	3.5 W
Thermal Resistance	62.6 °C/W

# SCR-075



The SCR-075 stage is a complete single axis stage which integrates a slide guide, encoder and Linear Shaft Motor. It offers a wide range of advantages for applications requiring high performance and accuracy. The Linear Shaft Motor allows for higher resolution, speed, and continuous force than the standard stepper or piezo servomotor.

The SCR-075 uses a standard S080 Linear Shaft Motor, however, the coil windings are customizable to a double, triple, or quadruple winding. The SCR-075 features a moving magnet design, a precision ground cross roller and a built-in

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 standard, without the need for adapter plates. Two SCR stages can be supplied as an X-Y stage to insure true orthogonal orientation between the two axes.

## Stage Specifications

Stage Specifications <sup>Note 1</sup>	Units	SCR075-050	SCR075-100	SCR075-150
Travel / Stroke	mm	50	100	150
Length	mm	140	190	240
Accuracy	µm	3	5	7
Encoder Resolution	µm	1, 0.5, 0.1, 0.05, 0.01		
Bi-Directional Repeatability <sup>Note 2</sup>		± 1 count		
Maximum Acceleration	m/s <sup>2</sup>	25	20	15
Maximum Velocity <sup>Note 3</sup>	m/s	1.1	1.4	1.5
Load Capacity <sup>Note 4</sup>	kg	45.5		
Moving Mass	kg	0.55	0.7	0.93
Total Mass	kg	1	1.3	1.7
Straightness & Flatness	µm	2.5/25mm		
Home Limit Switches		Non-contact Magnetic reed switch		
Home Switch Location		Center		
Limit Switch Over Travel		1 mm		
Hard Stop Over Travel		2 mm		
Bearing		Cross Roller Bearing		
Linear Shaft Motor(s)		S080D, S080T, S080Q		

Note 1: Stage specifications are based on the standard motor, the S080Q.

Note 2: Repeatability +/- 2 counts sub 0.1 µm @ Resolutions

Note 3: For 10nm resolution, max velocity of encoder is limited to 65mm/sec; for 50nm, the limit is 250mm/sec; and for 100nm (0.1µm), the limit is 500mm/sec.

Note 4: Please contact our Applications Engineers for loads exceeding 45.5kg.

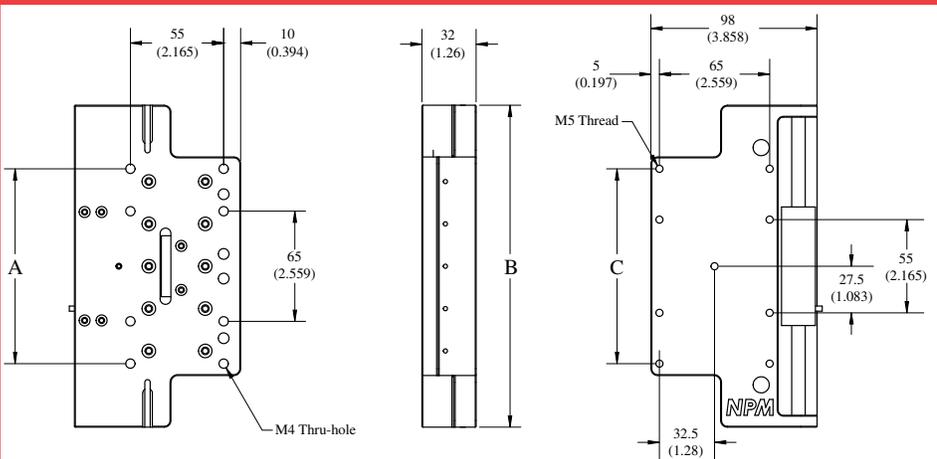
# SCR-075

## Linear Shaft Motor Specifications

Linear Shaft Motor Force Specifications	Units	S080D	S080T	S080Q
Fundamental Motor Constant	N/W	0.98	1.23	1.39
Motor Force Constant (Kf)	N/A rms	2.1	3.2	4.2
Back-emf Constant	V/m/s	0.7	1.1	1.4
Coil Resistance @ 25°C		4.7	6.8	9.0
Coil Inductance	mH	0.7	1	1.3
Continuous Current @ 135°C	A	0.84		
Peak Current	A	3.4		
Continuous Force @ 135°C	N	1.8	2.7	3.5
Peak Force	N	7.2	10.7	14
Continuous Power Rating	W	6.6	9.6	12.7
Thermal Resistance	°C/W	33.2	22.9	17.3

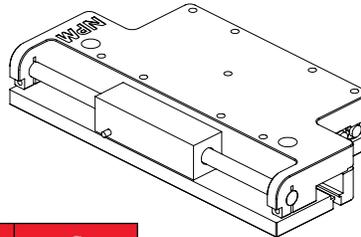
Note: Curves apply only to the stage's standard motor, the S080Q. If you are interested in using the S080D or S080T in your stage, please contact our application engineers to learn more about the acceleration and velocity for those coils.

## Dimensions



### Motor Cable

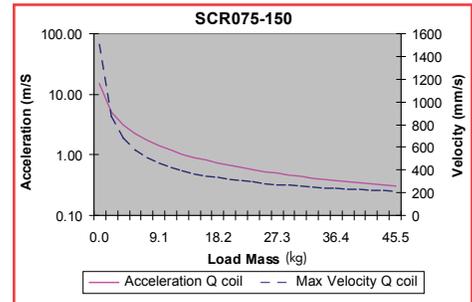
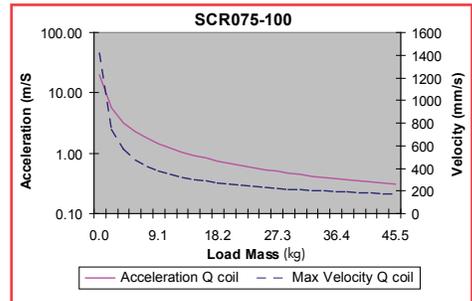
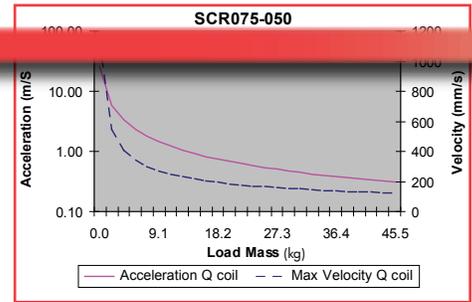
Lapp Unitronic 190-602803  
 AWG 28  
 U - red  
 V - White  
 W - black  
 Length 3000mm



All units are listed as mm (in)

MODEL	TRAVEL mm	A	B	C
SCR075-050	50	N/A	140	N/A
SCR075-100	100	115	190	115
SCR075-150	150	165	240	165

## Acceleration/Velocity Curves



# SCR-100



With six different stroke lengths and three different motor windings, the SCR-100 stage is the most versatile of the SCR lineup. Like its relatives, the SCR-100 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-micron resolution that is free from motion errors.

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 standard, without the need for adapter plates. Two SCR stages can be supplied as an X-Y stage to insure true orthogonal orientation between the two axes.

## Stage Specifications

Specifications <sup>Note 1</sup>	Units	SCR100-050	SCR100-100	SCR100-150	SCR100-200	SCR100-250	SCR100-300
Travel / Stroke	mm	50	100	150	200	250	300
Length	mm	140	190	240	290	340	390
Accuracy	µm	3	5	7	9	11	12
Encoder Resolution	µm	1, 0.5, 0.1, 0.05, 0.01					
Bi-Directional Repeatability <sup>Note 2</sup>		±1 count					
Maximum Acceleration	m/s <sup>2</sup>	17	12	10	8	7	6
Maximum Velocity <sup>Note 3</sup>	m/s	0.9	1	1.2	1.2	1.3	1.3
Load Capacity <sup>Note 4</sup>	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		Non-contact, Magnetic reed switch					
Home Switch Location		Center					
Limit Switch Over Travel	mm	1					
Hard Stop Over Travel	mm	2					
Bearing		Cross roller bearing					
Linear Shaft Motor(s)		S080D, S080T, S080Q					

Note 1: Stage specifications are based on the standard motor, the S080Q.

Note 2: Repeatability +/- 2 counts sub 0.1 µm @ Resolutions

Note 3: For 10nm resolution, max velocity of encoder is limited to 65mm/sec; for 50nm, the limit is 250mm/sec; and for 100nm (0.1µm), the limit is 500mm/sec.

Note 4: Please contact our Applications Engineers for loads exceeding 45.5kg.

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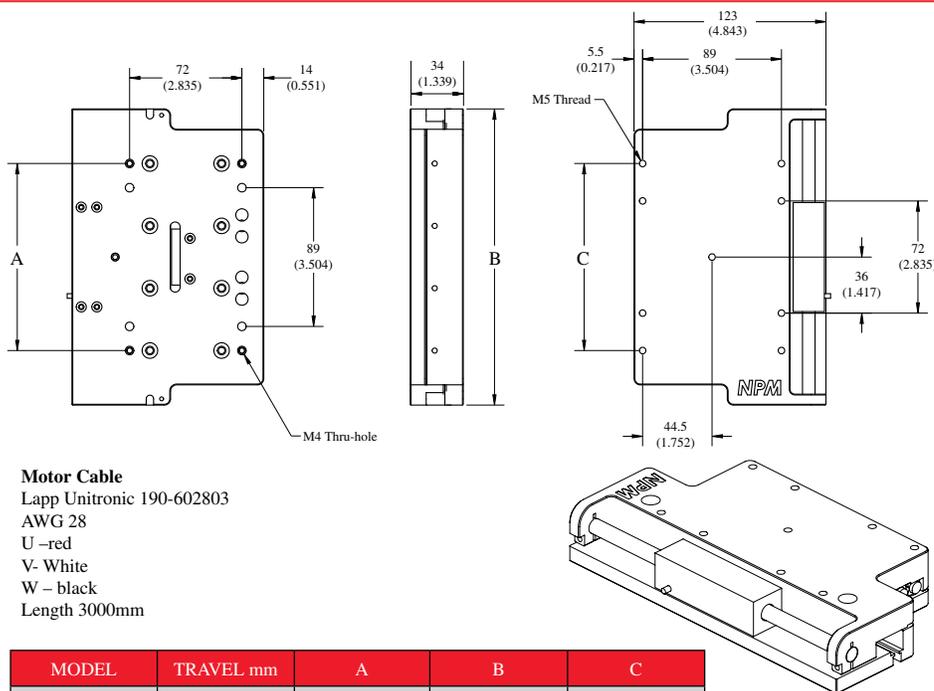
# SCR-100

## Linear Shaft Motor Specifications

Linear Shaft Motor Force Specifications	Units	S080D	S080T	S080Q
Fundamental Motor Constant	N/W	0.98	1.23	1.39
Motor Force Constant (Kf)	N/A rms	2.1	3.2	4.2
Back-emf Constant	V/m/s	0.7	1.1	1.4
Coil Resistance @ 25°C		4.7	6.8	9
Coil Inductance	mH	0.7	1	1.3
Continuous Current @ 135°C	A	0.84		
Peak Current	A	3.4		
Continuous Force @ 135°C	N	1.8	2.7	3.5
Peak Force	N	7.2	10.7	14
Continuous Power Rating	W	6.6	9.6	12.7
Thermal Resistance	°C/W	33.2	22.9	17.3

Note: Curves apply only to the stage's standard motor, the S080Q. If you are interested in using the S080D or S080T in your stage, please contact our application engineers to learn more about the acceleration and velocity for those coils.

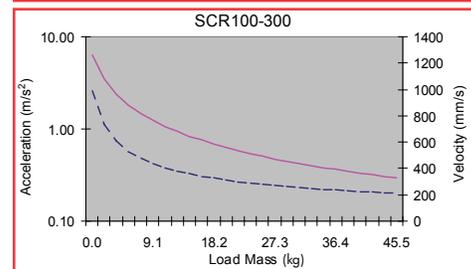
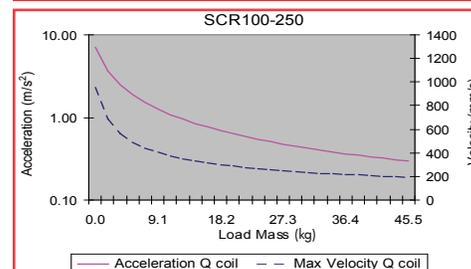
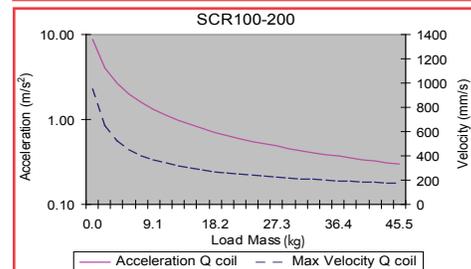
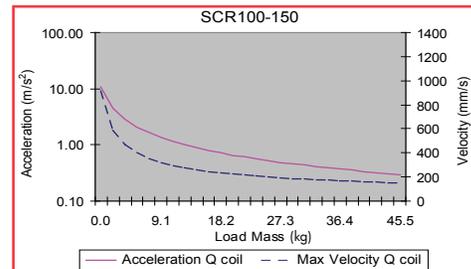
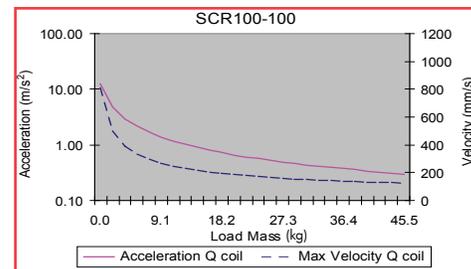
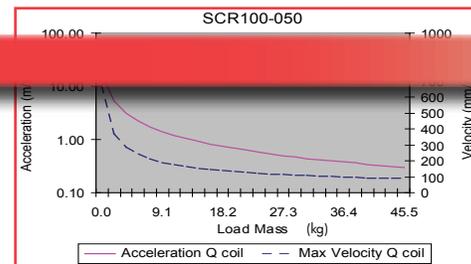
## Dimensions



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 (in)

## Acceleration/Velocity Curves



# SCR-150



The largest of the SCR stages, the SCR-150 stage has stroke lengths up to 300 mm while maintaining the high performance and accuracy of the smaller SCR stages. Like the other three stages, the SCR 150 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 standard, without the need for adapter plates. Two SCR stages can be supplied as an X-Y stage to insure true orthogonal orientation between the two axes.

## Stage Specifications

Specifications <sup>Note 1</sup>	Units	SCR150-100	SCR150-150	SCR150-200	SCR150-250	SCR150-300
Travel / Stroke <sup>Note 2</sup>	mm	100	150	200	250	300
Length	mm	230	280	330	380	430
Stroke	mm	100	150	200	250	300
Accuracy	µm	5	7	9	11	12
Encoder Resolution	µm	1, 0.5, 0.1, 0.05, 0.01				
Bi-Directional Repeatability <sup>Note 3</sup>		±1 count				
Maximum Acceleration	m/s <sup>2</sup>	17	13	11	9	8
Maximum Velocity <sup>Note 4</sup>	m/s	1.3	1.3	1.4	1.5	1.5
Load Capacity <sup>Note 5</sup>	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		Non-contact, Magnetic reed switch				
Home Switch Location		Center				
Limit Switch Over Travel	mm	1				
Hard Stop Over Travel	mm	2				
Bearing		Cross roller bearing				
Linear Shaft Motor(s)		S160D, S160T, S160Q				

Note 1: Specifications based on standard motor, S160D

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 0.1 µm @ Resolutions

Note 4: For 10nm resolution, max velocity of encoder is limited to 65mm/sec; for 50 m, the limit is 250mm/sec; and for 100 m (0.1µm), the limit is 500mm/sec.

Note 5: Please contact our Applications Engineers for loads exceeding 45.5kg.

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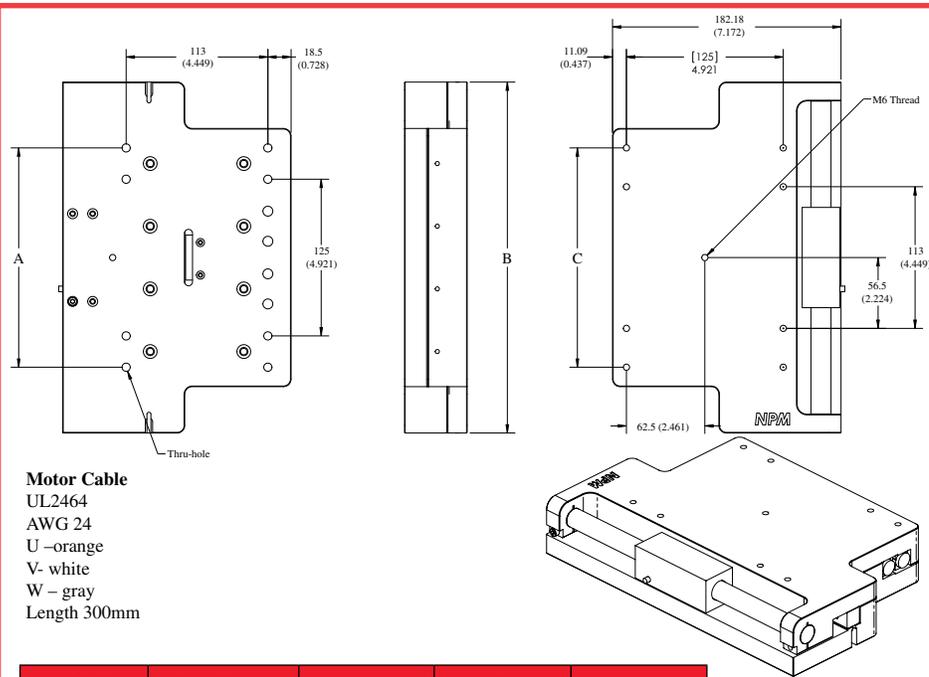
# SCR-150

## Linear Shaft Motor Specifications

Linear Shaft Motor Force Specifications	Units	S160D	S160T	S160Q
Fundamental Motor Constant	N/W	3.51	4.2	4.96
Motor Force Constant (Kf)	N/A rms	16	24	33
Back-emf Constant	V/m/s	5.4	8.1	11
Coil Resistance @ 25°C		21	33	43
Coil Inductance	mH	8.2	12	16
Continuous Current @ 135°C	A	0.6		
Peak Current	A	2.5		
Continuous Force @ 135°C	N	10	15	20
Peak Force	N (lb)	40	60	80
Continuous Power Rating	W	16.1	25.4	33.1
Thermal Resistance	°C/W	33.2	22.9	17.3

Note: Curves apply only to the stage's standard motor, the S160D. If you are interested in using the S160T or S160Q in your stage, please contact our application engineers to learn more about the acceleration and velocity for those coils.

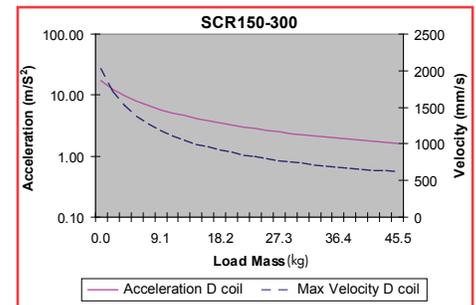
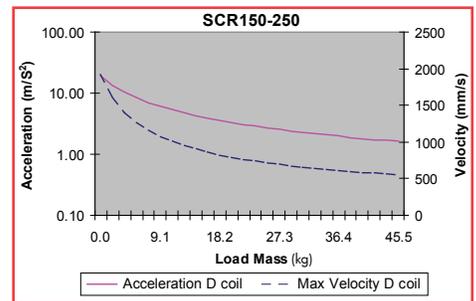
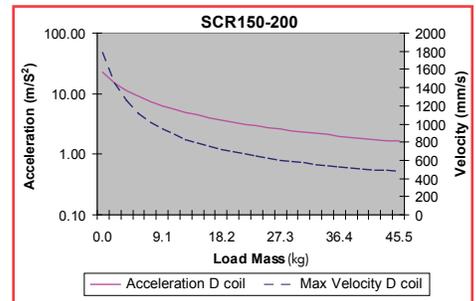
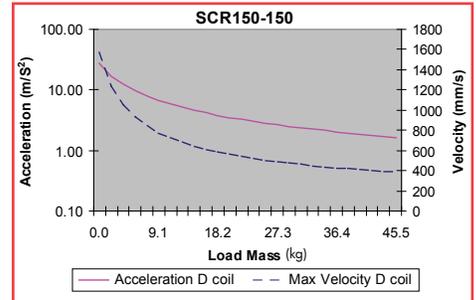
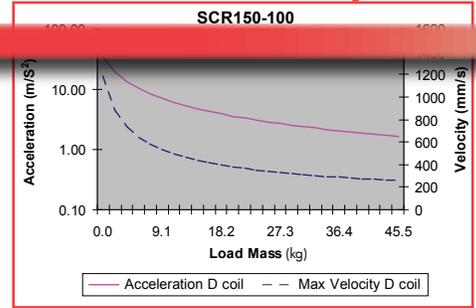
## Dimensions



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 (in)

## Acceleration/Velocity Curves

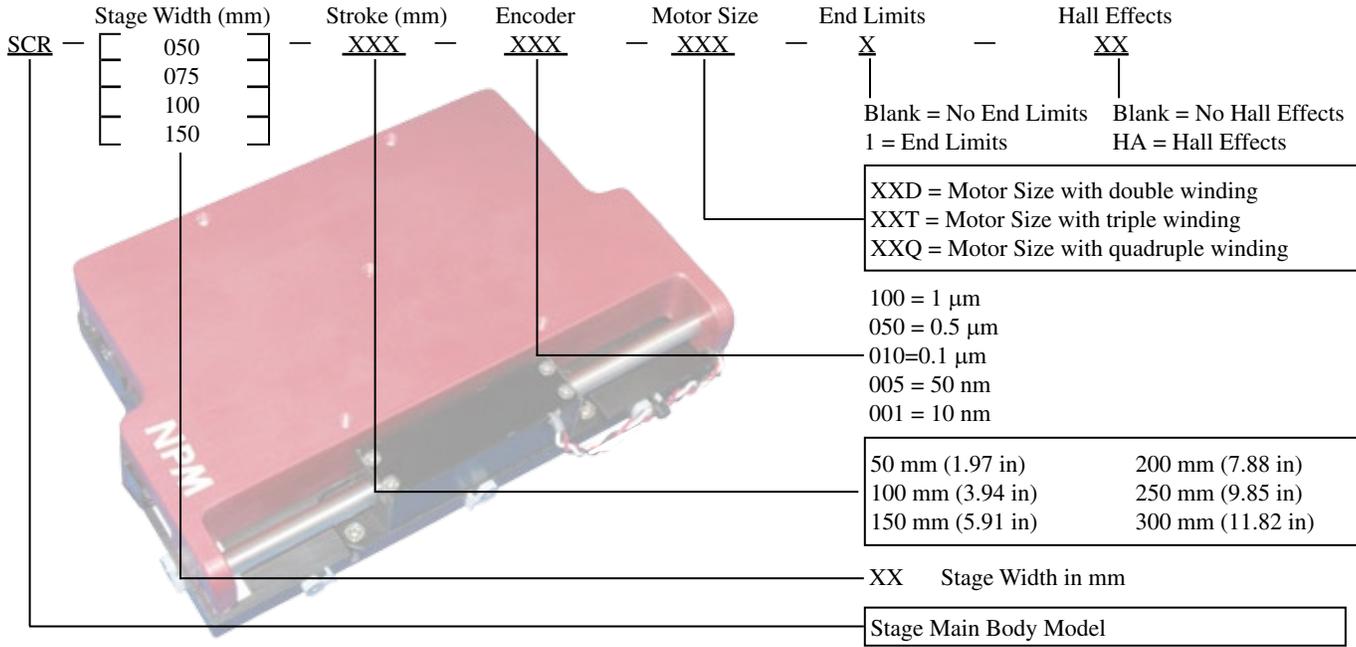


# Linear Stages

## Part Number Guide

### SCR Stage Part Number Guide

Example model number: SCR100-50-010-08Q



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