

Visit [nipponpulse.com](http://nipponpulse.com) to download 3D CAD drawings and 2D prints of this motor.

Electrical Specs	S040D	S040T	S040Q	S040X
Continuous Force <sup>1</sup>	0.29N (0.07lbs)	0.45N (0.10lbs)	0.58N (0.13lbs)	0.94 (0.22lbs)
Continuous Current <sup>1</sup>	0.3Arms			0.6Arms
Acceleration Force <sup>2</sup>	1.2N (0.27lbs)	1.8N (0.40lbs)	2.3N (0.52lbs)	3.8N (0.86lbs)
Acceleration Current <sup>2</sup>	1.1Arms			2.2Arms
Force Constant ( $K_f$ )	1.0N/amp (0.23lbs/amp)	1.6N/amp (0.37lbs/amp)	2.1N/amp (0.47lbs/amp)	1.7N/amp (0.39lbs/amp)
Back EMF ( $K_e$ )	0.4V/m/s (0.01V/in/s)	0.5V/m/s (0.01V/in/s)	0.7V/m/s (0.02V/in/s)	0.6V/m/s (0.02V/in/s)
Resistance 25°C, <sup>3</sup>	11.2Ω	16.8Ω	22.4Ω	11.2Ω
Inductance <sup>3</sup>	0.5mH	0.7mH	1.0mH	0.5mH
Electric Time Constant	0.045ms	0.042ms	0.044ms	0.045ms
Fundamental Motor Constant ( $K_m$ )	0.31N√W	0.39N√W	0.44N√W	0.50N√W
Magnetic Pitch (North-North)	18mm (0.71in)			

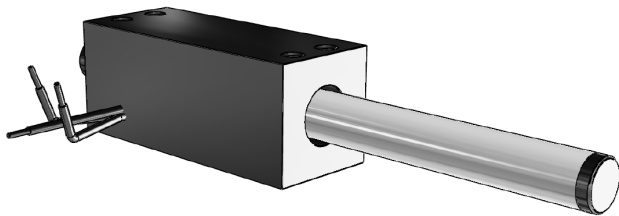
Is this the proper Linear Shaft Motor for your application? Use our **SMART sizing program** to assist in your decision.

This motor can be customized to fit your application demands; contact your application engineer for more information.

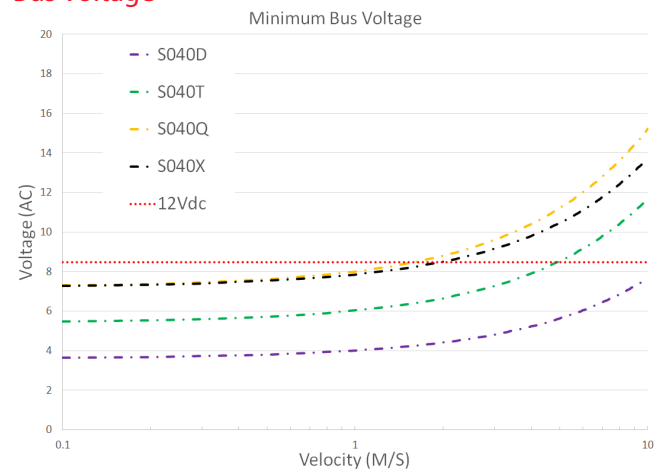
<sup>1</sup> Based on a temp rise of coil surface of 110°K over 25°C ambient temperature stalled forcer, and no external cooling or heat sinking.

<sup>2</sup> Can be maintained for a maximum of 40 seconds. Higher forces and current possible for short periods of time, contact Nippon Pulse for more information.

<sup>3</sup> All winding parameters listed are measured line-to-line (phase-to-phase).



### Bus Voltage



Forcer Specs	S040D	S040T	S040Q	S040X
Forcer Length (A)	25mm (0.98in)	34mm (1.34in)	43mm (1.69in)	79mm (3.1in)
Forcer Width	10mm (0.39in)			
Forcer Screw Pitch (P)	21.5mm (0.85in)	30.5mm (1.20in)	39.5mm (1.56in)	75.5mm (2.97in)
Forcer Weight	9g (0.02lb)	11g (0.02lb)	14g (0.03lb)	35g (1.23oz)
Gap	0.50mm (0.02in)			
Screw	M3			
Tightening Torque	0.17 Nm			

### Part Numbering System

S — Shaft Size 040 — Forcer Size (A) X — Parallel Option XX — Usable Stroke (S) XXXXst — Options XX

D: Double (2) windings      Blank: Standard      20, 30, 40      Blank: Standard  
T: Triple (3) windings      PL: Parallel      Motors      FO: Forcer Only  
Q: Quadruple (4) windings

These motors have not received a CE Declaration of Conformity, and as such are designated FGA.

Thermal Specs	S040D	S040T	S040Q	S040X
Max Phase Temperature <sup>4</sup>	135°C (275°F)			
Thermal Resistance (Coil) (K <sub>v</sub> )	125.3°C/W	83.5°C/W	62.6°C/W	31.3°C/W

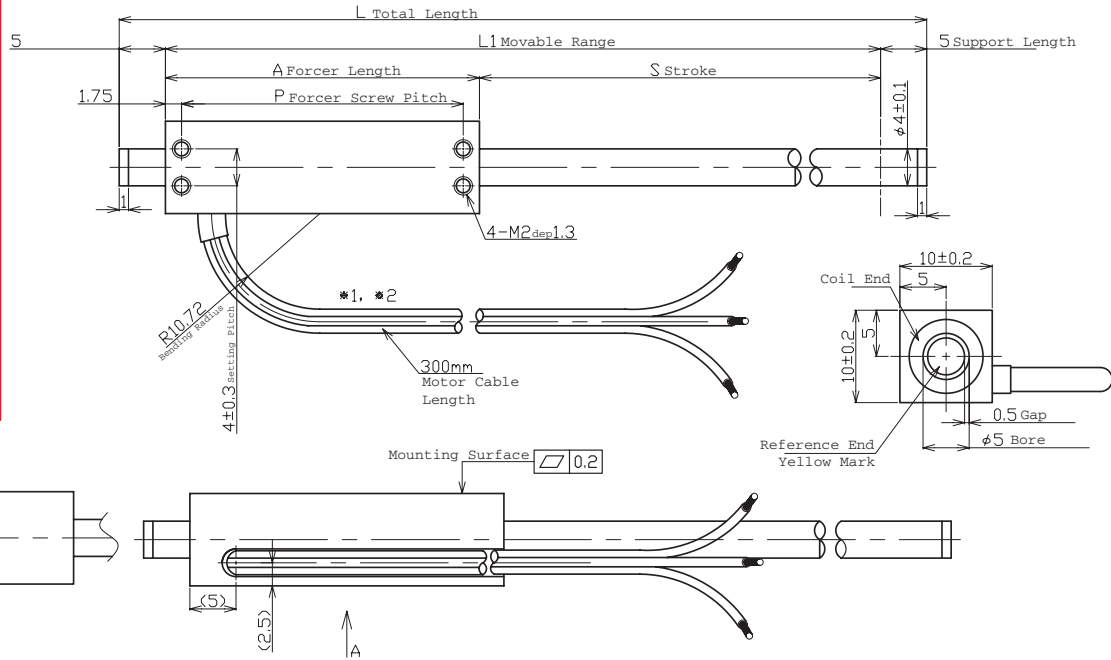
<sup>4</sup>The standard temperature difference between the coil and the forcer surface is 10°C.

Tolerances are as follows:

Dimension (mm)	Tolerance (mm)
0 - 6	±0.1
7 - 30	±0.2
31 - 120	±0.3
121 - 315	±0.5
316 - 1000	±0.8
1001 - 2000	±1.2
2000 -	±1.5

L = See Shaft Length  
L1 = Usable Stroke + A  
L2 = See Support Length  
A = See Forcer Length  
P = See Forcer Screw Pitch

Unless otherwise specified, dimensions are in mm



Note: Cable length 300mm.

The bending radius of the motor cable should be 10.72 mm (wire diameter 1.34 \* 8) as suggested by the wire manufacturer. This radius should be maintained. Use supplied connector to attach the proper high-flex cable as required by your application.

### Shaft Length (L)

Stroke	S040D	S040T	S040Q	S040X
20	55mm (2.2in)	64mm (2.5in)	73mm (2.9in)	109mm (4.3in)
30	65mm (2.6in)	74mm (2.9in)	83mm (3.3in)	119mm (4.7in)
40	75mm (3.0in)	84mm (3.3in)	93mm (3.7in)	129mm (5.1in)

Shaft Diameter - 4mm ±0.1

Additional stroke lengths are available (up to 250mm for S040D, and up to 200mm for S040T, S040Q, S040X). Contact Nippon Pulse for more information.

### Shaft Mass

Stroke	S040D	S040T	S040Q	S040X
20	5.5g (0.19oz)	6.4g (0.23oz)	7.3g (0.26oz)	10.9g (0.38oz)
30	6.5g (0.23oz)	7.4g (0.26oz)	8.3g (0.29oz)	11.9g (0.42oz)
40	7.5g (0.26oz)	8.4g (0.3oz)	9.3g (0.33oz)	12.9g (0.46oz)

### Forcer Spacing Distance

Spec	S040T	S040Q
Forcer Spacing Distance	2mm	
Pole (N/S) Distance	9mm	
Forcer Length	34mm	43mm
Flip Forcers	No	Yes

Tandem S040D forcers are possible, but are equivalent to one (1) S040Q forcer and thus are not listed.

### Support and Bending

Stroke	Support Length (L2)	Max. Bending
All	5mm	0mm

### Connector (Motor Cable)

Receptacle Housing	XMR-03V
Plug Housing	XMP-03V
Retainer	XMS-03V
Pin Contact	SXM-001T-P0.6
Socket Contact	SXA-001T-P0.6

To be installed by the user.

### Lead Wire

Wire Type	UL 1430
Wire AWG	28
U Phase	Red
V Phase	White
W Phase	Black

300mm lead wire bare leads. The bending radius of the motor cable should be 10.72mm as suggested by the wire manufacturer.

### Tandem Forcer



Note: Metric units guaranteed. Imperial (United States customary) units are calculated.

For assistance in selecting the best motor for your application, contact Nippon Pulse to speak with an applications engineer. 1-540-633-1677