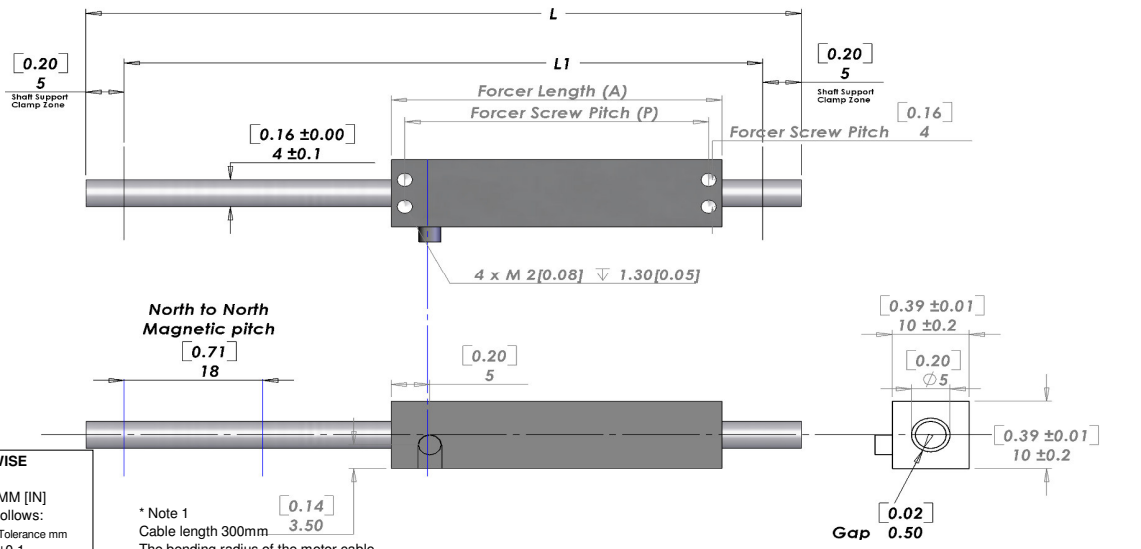
NPM S040



UNLESS OTHERWISE SPECIFIED:
Dimensions are in MM [IN]
Tolerances are as follows:

Dimension mm	Tolerance mm
- 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

* Note 1
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.

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

Electrical Specifications

		S040D	S040T	S040Q	S040X
Continuous Force[1]		0.29N (0.07lbs)	0.45N (0.1lbs)	0.58N (0.13lbs)	0.94N (0.21lbs)
Continuous Current[1]		0.3Arms	0.3Arms	0.3Arms	0.6Arms
Peak Force[2]		1.2N (0.26lbs)	1.8N (0.4lbs)	2.3N (0.52lbs)	3.8N (0.85lbs)
Peak Current[2]		1.1Arms	1.1Arms	1.1Arms	2.2Arms
Force Constant	K_f	1.0N/amp (0.2lbs/amp)	1.6N/amp (0.4lbs/amp)	2.1N/amp (0.5lbs/amp)	1.7N/amp (0.4lbs/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℃, [3]		11.2Ω	16.8Ω	22.4Ω	11.2Ω
Inductance[3]		0.5mH	0.7mH	1.0mH	0.5mH
Electrical 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)	18mm (0.71in)	18mm (0.71in)	18mm (0.71in)

All specifications are for reference only. Specifications may change depending on servo driver selected. Consult Nippon Pulse America.

1) Based on a temp rise of coil surface of 110℃K over 25℃ ambient temperature stalled forcer, and no external cooling or heat sinking.
Addition of 25 cm x 25 cm x 2.5 cm aluminum heat sink increases continuous force by 20%.

2) Can be maintained for a maximum of 40 seconds, higher forces and current possible for short periods of time, consult Nippon Pulse America.

3) All winding parameters listed are measured line-to-line (phase-to-phase).

Thermal Specifications

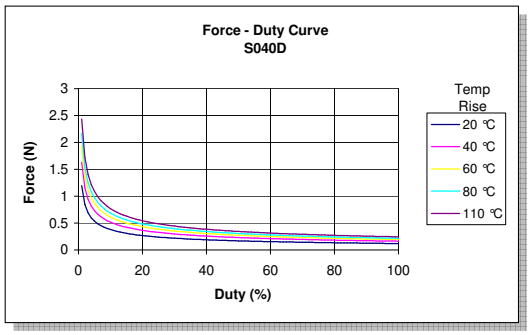
		S040D	S040T	S040Q	S040X
Max phase temperature[4]		135℃ (275℉)	135℃ (275℉)	135℃ (275℉)	135℃ (275℉)
Thermal Resistance (Coil)	K_q	125.3℃/W	83.5℃/W	62.6℃/W	31.3℃/W

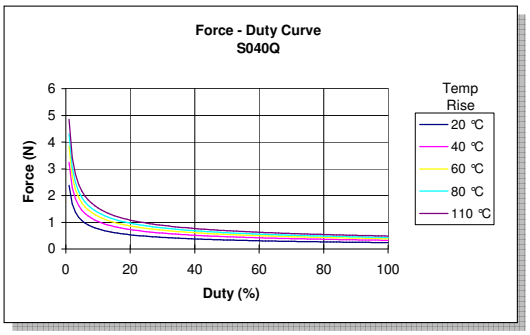
4) The standard temperature difference between the coil and the forcer surface is 10℃

Mechanical Specifications

Forcer

		S040D	S040T	S040Q	S040X
Forcer Length	A	25mm (0.98in)	34mm (1.3in)	43mm (1.7in)	79mm (3.1in)
Forcer Width		10mm (0.39in)	10mm (0.39in)	10mm (0.39in)	10mm (0.39in)
Forcer Screw Pitch	P	21.5mm (0.85in)	30.5mm (1.2in)	39.5mm (1.55in)	75.5mm (2.97in)
Forcer Weight		9g (0.32oz)	11g (0.39oz)	14g (0.49oz)	35g (1.23oz)
Gap		0.50mm (0.019in)	0.50mm (0.019in)	0.50mm (0.019in)	0.50mm (0.019in)





Mechanical Specifications

Shaft

Shaft Diameter (D) 4 ±0.1mm (0.16in)

Shaft Length (L) **Maximum Stroke length 250mm (9.84in)***

Motor Type / 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 (3in)	84mm (3.3in)	93mm (3.7in)	129mm (5.1in)

Shaft Mass

Motor Type / Stroke	S040D	S040T	S040Q	S040X
20	5.5 g (0.19 oz)	6.4 g (0.23 oz)	7.3 g (0.26 oz)	10.9 g (0.38 oz)
30	6.5 g (0.23 oz)	7.4 g (0.26 oz)	8.3 g (0.29 oz)	119 g (4.2 oz)
40	7.5 g (0.26 oz)	8.4 g (0.3 oz)	9.3 g (0.33 oz)	12.9 g (0.46 oz)

Support and Bending

Stroke	Shaft Support length (L2)	Max Bending
All	5mm (0.2in)	0.00mm (0.00in)

Lead Wire

Motor Cable

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.

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)

Tandem Forcer

Forcer spacing distance

	S040T	S040Q
Forcer spacing distance	2mm	2mm
Pole (North-South) distance	9mm	9mm
Forcer length	34mm	43mm
Flip forcers	No	Yes

How to Order (Available Options)

Motor Type	Forcer Size	Usable Stroke	Options	Options	
S040 –	X –	XX –	ST –	XX	
		20, 30, 40 mm	Standard	(Blank)	Standard
Linear Shaft Motor	D	Double (2) windings		FO	Forcer Only
	T	Triple (3) windings		SO	Shaft Only
	Q	Quadruple (4) windings		XX	Two digit for custom motor
	X	Octuple (8) windings			

* Contact Nippon Pulse for more information.

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