

Visit nipponpulse.com to download 3D CAD drawings and 2D prints of this motor.

| Electrical Specs | S040D | S040T | S040Q | S040X |
|--------------------------------------|------------------------|------------------------|------------------------|------------------------|
| Continuous Force ¹ | 0.29N (0.07lbs) | 0.45N (0.10lbs) | 0.58N (0.13lbs) | 0.94 (0.22lbs) |
| Continuous Current ¹ | 0.3Arms | | | 0.6Arms |
| Acceleration Force ² | 1.2N (0.27lbs) | 1.8N (0.40lbs) | 2.3N (0.52lbs) | 3.8N (0.86lbs) |
| Acceleration Current ² | 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, ³ | 11.2Ω | 16.8Ω | 22.4Ω | 11.2Ω |
| Inductance ³ | 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.

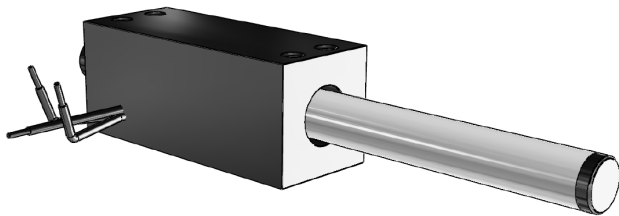
¹ Based on a temp rise of coil surface of 110°K over 25°C ambient temperature stalled forcer, and no external cooling or heat sinking.

² 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.

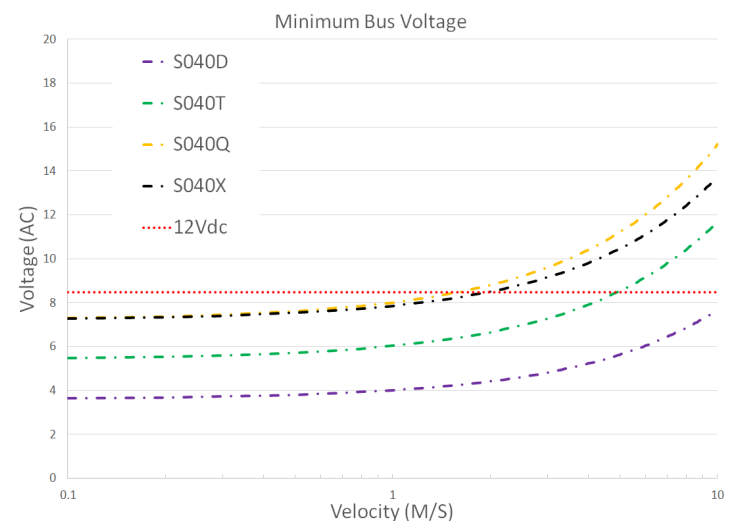
³ All winding parameters listed are measured line-to-line (phase-to-phase).

| Thermal Specs | S040D | S040T | S040Q | S040X |
|-------------------------------------|---------------------|--------------------|--------------------|---------------------|
| Max Phase Temperature ⁴ | 135°C (275°F) | | | |
| Thermal Resistance (Coil) (K_v) | 125.3°C/W (258°F/W) | 83.5°C/W (183°F/W) | 62.6°C/W (145°F/W) | 31.3°C/W (72.5°F/W) |

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



Bus Voltage



Part Numbering System

S — Shaft Size 040 — Forcer Size (A) X — Usable Stroke (S) XXXst — Options XX

D: Double (2) windings
T: Triple (3) windings
Q: Quadruple (4) windings

Blank: Standard
FO: Forcer Only
SO: Shaft Only

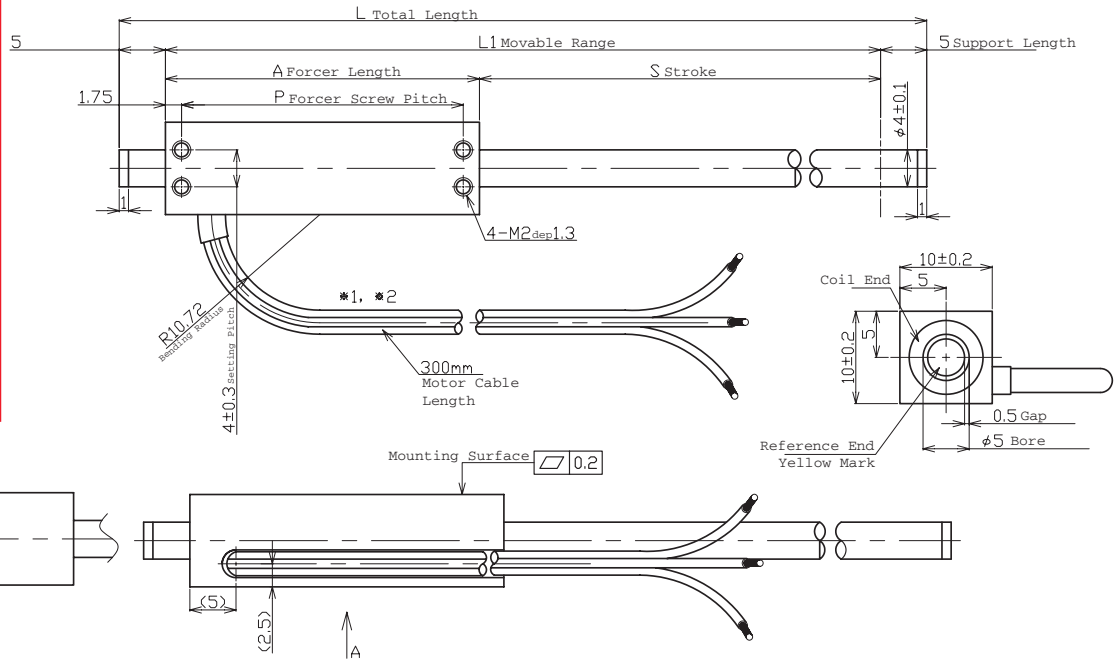
| Forcer Specs | S040D | S040T | S040Q | S040X |
|------------------------|-----------------|-----------------|-----------------|-----------------|
| Forcer Length (A) | 25mm (0.98in) | 34mm (1.34in) | 43mm (1.69in) | 79mm (3.1in) |
| Forcer Width | 10mm (0.39in) | | | |
| Forcer Screw Pitch (P) | 21.5mm (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) | | | |

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