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| | S080D | | S080T | | S080Q | | |
|--|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|
| Electrical Specs | S080D | S080D 1S | S080T | S080T 1S | S080Q | S080Q 2S | S080Q 1S |
| Continuous Force ¹ | 1.8N (0.4lbs) | | 2.7N (0.61lbs) | | 3.5N (0.79lbs) | | |
| Continuous Current ¹ | 0.84Arms | 1.7Arms | 0.84Arms | 2.5Arms | 0.84Arms | 1.7Arms | 3.4Arms |
| Acceleration Force ² | 7.2N (1.6lbs) | | 11N (2.4lbs) | | 14N (3.1lbs) | | |
| Acceleration Current ² | 3.4Arms | 6.7Arms | 3.4Arms | 10Arms | 3.4Arms | 6.7Arms | 13Arms |
| Force Constant (K _f) | 2.1N/Arms (0.48lbs/amp) | 1.1N/Arms (0.25lbs/amp) | 3.2N/Arms (0.72lbs/amp) | 1.1N/Arms (0.25lbs/amp) | 4.2N/Arms (0.94lbs/amp) | 2.1N/Arms (0.47lbs/amp) | 1.0N/Arms (0.22lbs/amp) |
| Back EMF (K _e) | 0.71V/m/s (0.02V/in/s) | 0.36V/m/s (0.01V/in/s) | 1.1V/m/s (0.03V/in/s) | 0.36V/m/s (0.01V/in/s) | 1.4V/m/s (0.04V/in/s) | 0.70V/m/s (0.02V/in/s) | 0.35V/m/s (0.01V/in/s) |
| Resistance 25°C, ³ | 4.7Ω | 1.2Ω | 6.8Ω | 0.76Ω | 9.0Ω | 2.3Ω | 0.56Ω |
| Inductance ³ | 0.7mH | 0.18mH | 1.0mH | 0.11mH | 1.3mH | 0.33mH | 0.081mH |
| Electric Time Constant | 0.149ms | | 0.147ms | | 0.144ms | | |
| Max. Rated Voltage (AC) | 240V | | | | | | |
| Fundamental Motor Constant (K _m) | 0.98N√W | | 1.23N√W | | 1.39N√W | | |
| Magnetic Pitch (North-North) | 30mm (1.18in) | | | | | | |

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.

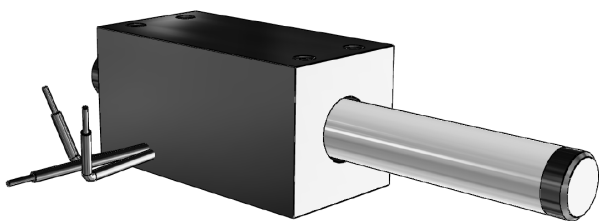
¹ Based on a temp rise of coil surface of 110°K over 25°C ambient temperature stalled forcer, and no external cooling or heat sinking.

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

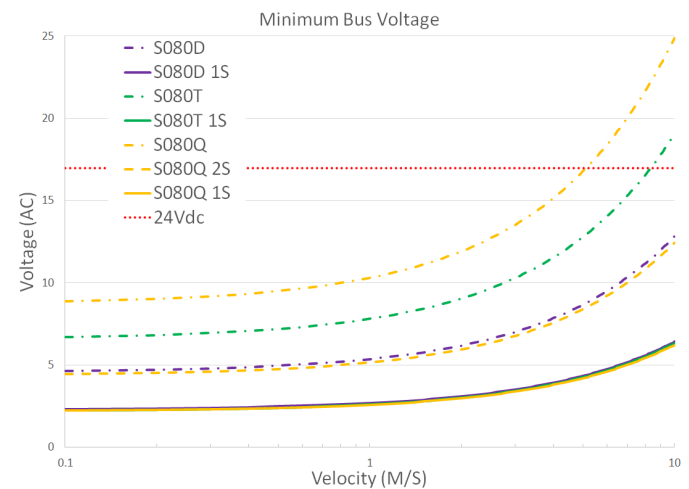
³ All winding parameters listed are measured line-to-line (phase-to-phase).

| Thermal Specs | S080D | S080T | S080Q |
|---|-------------------|-------------------|-------------------|
| Max Phase Temperature ⁴ | 135°C (275°F) | | |
| Thermal Resistance (Coil) (K _q) | 33.2°C/W (92°F/W) | 22.9°C/W (73°F/W) | 17.3°C/W (63°F/W) |

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



Bus Voltage



Part Numbering System

| | | | | | | | | | | | | |
|---|---|-------------------|---|---|---|--|---|------------------------------------|---|--|---|--|
| S | — | Shaft Size 080 | — | Forcer Size (A) <u>X</u> | — | Parallel Option <u>XX</u> | — | Usable Stroke (S) <u>XXXXst</u> | — | Options <u>XX</u> | — | Options <u>XX</u> |
| | | | | D: Double (2) windings T: Triple (3) windings Q: Quadruple (4) windings | | Blank: Single Motor PL: Parallel Motors | | 25-300mm | | Blank: Standard WP: Water Resistant HA: Digital Hall Effect CE: CE type motor FG: Frame Ground | | Blank: Standard FO: Forcer Only SO: Shaft Only |

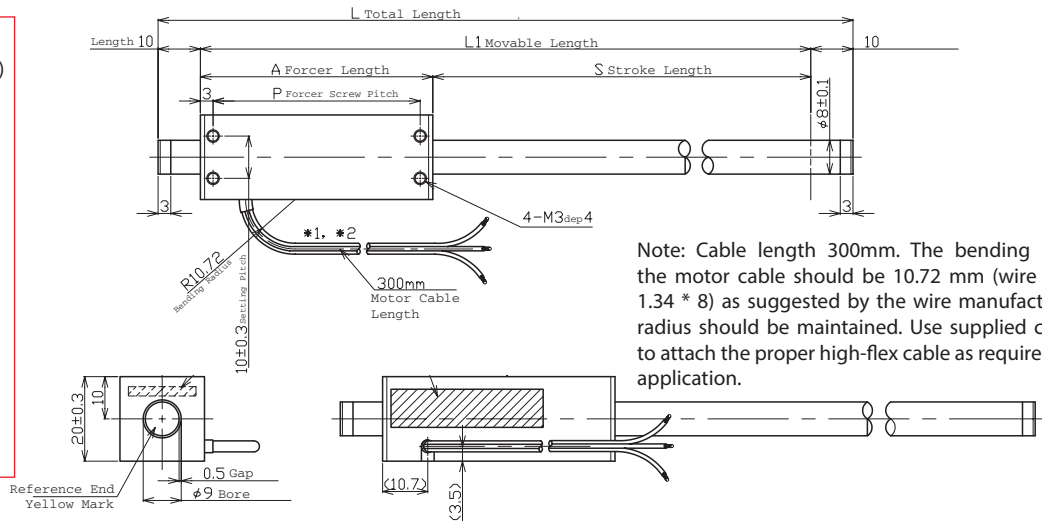
| Forcer Specs | S080D | S080T | S080Q |
|------------------------|------------------|------------------|------------------|
| Forcer Length (A) | 40mm (1.57in) | 55mm (2.17in) | 70mm (2.76in) |
| Forcer Width | 20mm (0.79in) | | |
| Forcer Screw Pitch (P) | 34mm (1.34in) | 49mm (1.93in) | 64mm (2.52in) |
| Forcer Weight | 0.05kg (0.11lbs) | 0.06kg (0.13lbs) | 0.08kg (0.18lbs) |
| Gap | 0.50mm (0.02lbs) | | |
| Screw | M3 | | |
| Tightening torque | 0.63 Nm | | |

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.

Hall Effect Specs

Forcer Length (A)

Forcer Screw Pitch (P) 0.39

Forcer Screw Pitch 10

1.10

28

0.79

20

Sensor Cable Specs

| | |
|---------------|--------------|
| Wire Type | UL 758 |
| Wire AWG | 28 |
| VCC | White/Red |
| GND | White/Black |
| Sensor 1 | Orange/Red |
| Sensor 2 | Orange/Black |
| Sensor 3 | Gray/Red |
| No Connection | Gray/Black |

The bending radius of the sensor cable should be R10.72 mm (wire diameter 1.38 * 8) as suggested by the wire manufacturer. This radius should be maintained.

FG/FGA Type Motor Cable

The drawing shows the FG/FGA type motor cable with dimensions: 20±0.3mm for the main body, 10mm for the offset, and a 0.5mm gap. It includes a serial number, rating plate, and mounting surface (0.2mm). The cable is connected to a frame ground and has a signage of frame ground.

| | |
|--------------|--------------|
| Wire Type | UL 1330 |
| Wire AWG | 20 |
| Frame Ground | Green/Yellow |

Shaft Length (L)

| Stroke | S080D | S080T | S080Q |
|--------|----------------|----------------|----------------|
| 25 | 85mm (3.3in) | 100mm (3.9in) | 115mm (4.5in) |
| 50 | 110mm (4.3in) | 125mm (4.9in) | 140mm (5.5in) |
| 100 | 160mm (6.3in) | 175mm (6.9in) | 190mm (7.5in) |
| 150 | 210mm (8.3in) | 225mm (8.9in) | 240mm (9.4in) |
| 200 | 260mm (10.2in) | 275mm (10.8in) | 290mm (11.4in) |

Shaft Diameter (D) - 8mm ±0.1

Total Length (L)=Stroke (S)+Forcer Length (A)+(Support Length (L2)x2)

Additional stroke lengths are available (up to 230mm for S080D and up to 215mm for S080T). Contact Nippon Pulse for more information.

Shaft Mass

| Stroke | S080D | S080T | S080Q |
|--------|-----------------|-----------------|-----------------|
| 25 | 0.02kg (0.05lb) | 0.03kg (0.06lb) | 0.03kg (0.07lb) |
| 50 | 0.03kg (0.07lb) | 0.04kg (0.08lb) | 0.04kg (0.09lb) |
| 100 | 0.05kg (0.11lb) | 0.05kg (0.12lb) | 0.06kg (0.13lb) |
| 150 | 0.07kg (0.15lb) | 0.07kg (0.16lb) | 0.08kg (0.17lb) |
| 200 | 0.08kg (0.19lb) | 0.09kg (0.2lb) | 0.1kg (0.21lb) |

Forcer Spacing Distance

| Spec | S080T | S080Q |
|-------------------------|-------|-------|
| Forcer Spacing Distance | 5mm | |
| Pole (N/S) Distance | 15mm | |
| Forcer Length | 55mm | 70mm |
| Flip Forcers | No | Yes |

Tandem S080D forcers are possible, but are equivalent to one (1) S080Q forcer and thus are not listed above.

Tandem Forcer



Forcer Spacing Distance

Support and Bending

| Stroke | Support Length (L2) | Max. Bending |
|--------|---------------------|--------------|
| All | 10mm | 0.05mm |

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.

Standard 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 10.72 mm as suggested by the wire manufacturer.

FGA/CE Type Lead Wire

| | |
|-------------|-----------|
| Ground Wire | CE |
| Wire Type | UL 1330 |
| Wire AWG | 24 |
| U Phase | Red |
| V Phase | White |
| W Phase | Black |

300mm lead wire bare leads. The bending radius of the motor cable should be 16.96mm as suggested by the wire manufacturer. FG type with insulating sheet between coils and case. Meets all requirements of EN60034-1 (1998).

Not all motors on this datasheet have received a CE Declaration of Conformity. Only the standard S080D, S080T and S080Q motors have been certified to CE standards. The motors and motor options with the following designations have not received a CE Declaration of Conformity, and as such are designated FGA: S080D-1S, S080T-1S, S080Q-2S, S080Q-1S, any S080 motor with Hall Effects.

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

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