The standard temperature difference between the coil and the forcer surface is 25°C.

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,

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

Part Numbering System

L — Shaft Size
320

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

X — Forcer Size (A)

XX — Alt. Winding
S: Standard
W: Alternate

XX — Parallel Option
PL: Parallel Motors

XX — Usable Stroke (S)
100-2000mm

Options
W: Water Resistant
WP: Water Proof
FG: Frame Ground

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Note: Cable length 300mm. The bending radius of the motor cable should be 31.8mm (wire diameter 5.3 * 6) 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.

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 - 3150 ±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

Hall Effect Specs

Note: The bending radius of the motor cable should be R31.8mm (wire diameter 4.6 * 6) 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.

Sensor Cable Specs

<table>
<thead>
<tr>
<th>Wire Type</th>
<th>UL 758</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wire AWG</td>
<td>28</td>
</tr>
<tr>
<td>VCC</td>
<td>White/Red</td>
</tr>
<tr>
<td>GND</td>
<td>White/Black</td>
</tr>
<tr>
<td>Sensor 1</td>
<td>Orange/Red</td>
</tr>
<tr>
<td>Sensor 2</td>
<td>Orange/Black</td>
</tr>
<tr>
<td>Sensor 3</td>
<td>Gray/Red</td>
</tr>
</tbody>
</table>

The bending radius of the sensor cable should be R27.6mm (wire diameter 5.3 * 6) as suggested by the wire manufacturer. This radius should be maintained. Attach the proper high flex cable as required by your application.

Connector (Motor Cable)

<table>
<thead>
<tr>
<th>Receptacle Housing</th>
<th>HLR-03V</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plug Housing</td>
<td>HLP-03V</td>
</tr>
<tr>
<td>Retainer</td>
<td>HLS-03V</td>
</tr>
<tr>
<td>Pin Contact</td>
<td>SSM-21T-P1.4</td>
</tr>
<tr>
<td>Socket Contact</td>
<td>SSF-21T-P1.4</td>
</tr>
</tbody>
</table>

To be installed by the user.
FG Type Motor Cable

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

300mm lead wire bare leads. The bending radius of the motor cable should be 1.96mm as suggested by the wire manufacturer.

Forcer Spacing Distance

<table>
<thead>
<tr>
<th>Spec</th>
<th>L320T</th>
<th>L320Q</th>
</tr>
</thead>
<tbody>
<tr>
<td>Forcer Spacing Distance</td>
<td>20mm</td>
<td></td>
</tr>
<tr>
<td>Pole (N/S) Distance</td>
<td></td>
<td>60mm</td>
</tr>
<tr>
<td>Forcer Length</td>
<td>220mm</td>
<td>280mm</td>
</tr>
<tr>
<td>Flip Forcers</td>
<td>No</td>
<td>Yes</td>
</tr>
</tbody>
</table>

Tandem L320D forcers are possible, but are equivalent to one (1) L320Q forcer and thus are not listed above.

Support and Bending

<table>
<thead>
<tr>
<th>Stroke</th>
<th>Support Length (L2)</th>
<th>Max. Bending</th>
</tr>
</thead>
<tbody>
<tr>
<td>0~750</td>
<td>50mm</td>
<td>0.00mm</td>
</tr>
<tr>
<td>751~1000</td>
<td>70mm</td>
<td>0.30mm</td>
</tr>
<tr>
<td>1001~1500</td>
<td>70mm</td>
<td>0.70mm</td>
</tr>
<tr>
<td>1501~max</td>
<td>100mm</td>
<td>0.70mm</td>
</tr>
</tbody>
</table>

Shaft Diameter (D) - 32mm ±0.2

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

Forcer Spacing Distance

Thermocouple

- **Thermocouple K type (marked each phase name)**
- Attached to the surface of inside of coil
- Length 3000mm

Note: Metric units guaranteed. Imperial (United States customary) units are calculated.
Stroke | L320D | L320T | L320Q  
---|---|---|---  
100 | Stroke is less than the electrical cycle length. Contact Nippon Pulse. |  
150 | 2.1kg (4.6lb) | 2.4kg (5.3lb) | 2.8kg (6.2lb)  
200 | 2.4kg (5.3lb) | 2.7kg (6lb) | 3kg (6.6lb)  
250 | 2.7kg (6lb) | 3kg (6.6lb) | 3.3kg (7.3lb)  
300 | 2.9kg (6.4lb) | 3.3kg (7.3lb) | 3.6kg (7.9lb)  
350 | 3.2kg (7.1lb) | 3.6kg (7.9lb) | 3.9kg (8.6lb)  
400 | 3.5kg (7.7lb) | 3.8kg (8.4lb) | 4.2kg (9.3lb)  
450 | 3.8kg (8.4lb) | 4.1kg (9lb) | 4.5kg (9.9lb)  
500 | 4.1kg (9lb) | 4.4kg (9.7lb) | 4.7kg (10.4lb)  
550 | 4.3kg (9.5lb) | 4.7kg (10.4lb) | 5kg (11lb)  
600 | 4.6kg (10.1lb) | 5kg (11lb) | 5.3kg (11.7lb)  
650 | 4.9kg (10.8lb) | 5.2kg (11.5lb) | 5.6kg (12.3lb)  
700 | 5.2kg (11.5lb) | 5.5kg (12.1lb) | 5.9kg (13lb)  
750 | 5.5kg (12.1lb) | 5.8kg (12.6lb) | 6.1kg (13.4lb)  
800 | 5.8kg (12.8lb) | 6.2kg (13.7lb) | 6.5kg (14.3lb)  
850 | 6.1kg (13.4lb) | 6.5kg (14.3lb) | 6.8kg (15lb)  
900 | 6.4kg (14.1lb) | 6.7kg (14.8lb) | 7.1kg (15.7lb)  
950 | 6.7kg (14.8lb) | 7kg (15.4lb) | 7.4kg (16.3lb)  
1000 | 7kg (15.4lb) | 7.3kg (16.1lb) | 7.6kg (16.8lb)  
1050 | 7.3kg (16.1lb) | 7.6kg (16.8lb) | 7.9kg (17.4lb)  
1100 | 7.5kg (16.5lb) | 7.9kg (17.4lb) | 8.2kg (18lb)  
1150 | 7.8kg (17.2lb) | 8.2kg (18lb) | 8.5kg (18.7lb)  
1200 | 8.1kg (17.9lb) | 8.4kg (18.5lb) | 8.8kg (19.4lb)  
1250 | 8.4kg (18.5lb) | 8.7kg (19.2lb) | 9.1kg (20.1lb)  
1300 | 8.7kg (19.2lb) | 9kg (19.8lb) | 9.3kg (20.5lb)  
1350 | 8.9kg (19.6lb) | 9.3kg (20.5lb) | 9.6kg (21.2lb)  
1400 | 9.2kg (20.3lb) | 9.6kg (21.2lb) | 9.9kg (21.8lb)  
1450 | 9.5kg (20.9lb) | 9.8kg (21.6lb) | 10.2kg (22.5lb)  
1500 | 9.8kg (21.6lb) | 10.1kg (22.3lb) | 10.5kg (23.1lb)  
1550 | 10.2kg (22.5lb) | 10.5kg (23.1lb) | 10.9kg (24lb)  
1600 | 10.5kg (23.1lb) | 10.8kg (23.8lb) | 11.2kg (24.7lb)  
1650 | 10.8kg (23.8lb) | 11.1kg (24.5lb) | 11.5kg (25.4lb)  
1700 | 11.1kg (24.5lb) | 11.4kg (25.1lb) | 11.7kg (25.8lb)  
1750 | 11.3kg (24.9lb) | 11.7kg (25.8lb) | 12kg (26.5lb)  
1800 | 11.6kg (25.6lb) | 12kg (26.5lb) | 12.3kg (27.1lb)  
1850 | 11.9kg (26.2lb) | 12.2kg (26.9lb) | 12.6kg (27.8lb)  
1900 | 12.2kg (26.9lb) | 12.5kg (27.6lb) | 12.9kg (28.4lb)  
1950 | 12.5kg (27.6lb) | 12.8kg (28.2lb) | 13.1kg (28.9lb)  
2000 | 12.7kg (28lb) | 13.1kg (28.9lb) | 13.4kg (29.5lb)  

Additional stroke lengths are available (up to 3640 for L320D, 3580 for L320T and 3520 for L320Q).