Digital linear actuators

The range of DLA's comprise two versions. Both types are based on 4 phase permanent magnet stepper motor technology and utilise a rotor with an internal thread to provide linear motion via a leadscrew.

The **L92000 series** are provided with a leadscrew which may be attached to the driven mechanism. When the leadscrew is prevented from rotating the operation of the motor imparts linear motion to the screw. The maximum travel of the mechanism is between 47 & 76 mm depending on the model although optional 300 mm long leadscrews may be purchased to increase travel distance if required.

The **K92000 series** incorporate a keyway in the actuator's output slideway thereby providing the spindle with linear motion. This design is ideal for driving spring loaded mechanisms over limited travel.

### Typical performance

![Graphs showing force vs. steps per sec. for 92100, 92211, and L92411 series.]

The above performance describes pull-in (start/stop) operation when the actuators are driven with an L/R drive. Increased performance can be obtained with L/4R drive techniques using drives such as the EM162 series.

### Specification

<table>
<thead>
<tr>
<th>Standard models</th>
<th>L92121-P2</th>
<th>L92111-P1</th>
<th>L92211-P2</th>
<th>L92411-P2</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Maximum linear force</strong></td>
<td>N</td>
<td>7.23</td>
<td>12.5</td>
<td>20.9</td>
</tr>
<tr>
<td><strong>Min. holding force (de-energised)</strong></td>
<td>N</td>
<td>11.13</td>
<td>16.6</td>
<td>11.13</td>
</tr>
<tr>
<td><strong>Linear travel per step</strong></td>
<td>ins./mm</td>
<td>0.002 / 0.0508</td>
<td>0.001 / 0.0254</td>
<td>0.001 / 0.0254</td>
</tr>
<tr>
<td><strong>Typical backlash</strong></td>
<td>Steps</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td><strong>Maximum linear travel:</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>L92000 series</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>using standard screw</td>
<td>mm</td>
<td>47.6</td>
<td>47.6</td>
<td>47.6</td>
</tr>
<tr>
<td>using extended screw</td>
<td>mm</td>
<td>259</td>
<td>259</td>
<td>215</td>
</tr>
<tr>
<td><strong>K92000 series</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maximum Pull-in rate</td>
<td>Steps/sec.</td>
<td>380 *</td>
<td>425</td>
<td>425</td>
</tr>
<tr>
<td>Maximum Pull-out rate</td>
<td>Steps/sec.</td>
<td>650 *</td>
<td>700 *</td>
<td>700 *</td>
</tr>
<tr>
<td><strong>Bearing construction</strong></td>
<td></td>
<td>Radial Ball</td>
<td>Radial Ball</td>
<td>Radial Ball</td>
</tr>
<tr>
<td><strong>Mass</strong></td>
<td>Kg</td>
<td>0.0425</td>
<td>0.0425</td>
<td>0.198</td>
</tr>
<tr>
<td><strong>Nominal Voltage (L/R Drive)</strong></td>
<td>Vdc</td>
<td>12</td>
<td>5</td>
<td>12</td>
</tr>
<tr>
<td><strong>Resistance per phase</strong></td>
<td>Ohms</td>
<td>84</td>
<td>15</td>
<td>58</td>
</tr>
<tr>
<td><strong>Current per phase</strong></td>
<td>Amps</td>
<td>0.146</td>
<td>0.333</td>
<td>0.208</td>
</tr>
<tr>
<td><strong>Inductance per phase</strong></td>
<td>mH</td>
<td>29</td>
<td>5.0</td>
<td>30</td>
</tr>
<tr>
<td><strong>Suitable drives</strong></td>
<td></td>
<td>SAA 1027</td>
<td>MSE422</td>
<td>EM162</td>
</tr>
<tr>
<td></td>
<td></td>
<td>MSE422</td>
<td>EM162</td>
<td>TM162C</td>
</tr>
<tr>
<td></td>
<td></td>
<td>MSE422</td>
<td>EM162</td>
<td>TM162C</td>
</tr>
</tbody>
</table>

*Note: Higher step rates may be achieved using L/4R current forcing techniques. Alternative low inductance models are available to special order.*
**Dimensions mm.**

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**92100 series**

- **L92100 series**
  - Dimensions:
    - Diameter: 14.48 mm
    - Length: 21.08 mm
    - Stroke: 76.2 mm (max)

- **K92100 Series**
  - Dimensions:
    - Diameter: 25.91 mm
    - Length: 36.37 mm (extended)
    - Stroke: 12.7 mm

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**92200 series**

- **L92200 series**
  - Dimensions:
    - Diameter: 14.27 mm
    - Length: 32.18 mm
    - Stroke: 22.2 mm

- **K92200 Series**
  - Dimensions:
    - Diameter: 25.91 mm
    - Length: 35.05 mm (extended)
    - Leads: 304.8 mm long

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**92400 series**

- **L92400 series with optional heatsink**
  - Dimensions:
    - Diameter: 14.48 mm
    - Length: 32.18 mm
    - Stroke: 22.2 mm

- **K92400 series**
  - Dimensions:
    - Diameter: 25.91 mm
    - Length: 35.05 mm (extended)
    - Leads: 304.8 mm long

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**Optional Leadscrews for ‘L’ series actuators:**

Optional 300 mm long Leadscrews may be ordered separately to extend the stroke of ‘L’ series actuators.

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