Linear Actuators for Additive Manufacturing
**Actuator with Integrated Rail System**

*Highest precision, defined stiffness by different carriages*

- Mounting flange for building plate
- Bellows to prevent intrusion of metal powder
- Mounting plate to machine frame to reach the best accuracy
- Support of actuator in machine on this side
- Pre-loaded rail system: - Ball bearing guides - Roller guides - One or two carriages
- Ball screw spindle and nut without backlash
- Couplings and motor flanges for all common servo motors

**Technical Data:**

- Max. axial force: 25 kN
- Other forces upon request
- Working stroke: max. 1000mm
- Longer strokes upon request
- Accuracy for 350mm stroke:  
  - Diagonal movement max. 0.04mm
  - Turning movement max. 0.01mm
  - Concentricity accuracy max. Ø 0.08mm
  (Accuracy valid for equal load distribution)

**Size:** HS25

Other sizes upon request
Actuator with High Positioning Accuracy
No additional guiding needed

Mounting flange for building plate

Bellows to prevent intrusion of metal powder

Mounting flange to machine frame

Guiding bar and twist protection

Ball screw spindle and nut without backlash

Couplings and motor flanges for all common servo motors

Technical Data:
Max. axial force: 25 kN
Other forces upon request

Working stroke: max. 500mm

Accuracy for 350mm stroke:
Diagonal movement max. 0.2mm
Turning movement max. 0.2mm
Concentricity accuracy max. Ø 0.5mm

(Accuracy valid for equal load distribution)

Size: HS25
Other sizes upon request
Actuator with Rotating Spindle

Partially mounted in vacuum area, additional guiding needed

Nut and mating bearing flange with grease for vacuum

Ball screw spindle and nut without backlash

Area with smooth shaft for sealing

Gearbox and motor outside of vacuum

Couplings and motor flanges for all common servo motors

Sizes: **HS10, HS25, HS50** and **HS100**
Actuator with Non-Rotating Spindle

Fixing flange with reduced axial runout

Ball screw spindle and nut without backlash

Couplings and motor flanges for all common servo motors

Sizes: HS10, HS25, HS50 and HS100
### Technical Data

#### General Data

<table>
<thead>
<tr>
<th>Self-locking quality</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max. duty cycle</td>
<td>up to 100 %&lt;sup&gt;1)&lt;/sup&gt; (depending on load and cycle)</td>
</tr>
<tr>
<td>Ratio of gearbox</td>
<td>3.0, 6.75 and 29</td>
</tr>
<tr>
<td>Motors</td>
<td>3-phase AC- and servomotors</td>
</tr>
<tr>
<td>Brake required</td>
<td>Yes</td>
</tr>
</tbody>
</table>

#### Gearbox

<table>
<thead>
<tr>
<th></th>
<th>HS 10</th>
<th>HS 25</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Non-rotating spindle</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ballscrew drive</td>
<td>20x10</td>
<td>20x20</td>
</tr>
<tr>
<td>Max. load during travel [kN]</td>
<td>9</td>
<td>5</td>
</tr>
<tr>
<td>Max. static load [kN]</td>
<td>9</td>
<td>9</td>
</tr>
<tr>
<td>Max. input speed [min&lt;sup&gt;-1&lt;/sup&gt;]</td>
<td>5000</td>
<td>5000</td>
</tr>
<tr>
<td>Max. traveling speed [mm/s]</td>
<td>275</td>
<td>555</td>
</tr>
<tr>
<td>Dyn. load capacity C [kN]</td>
<td>11.9</td>
<td>11.9</td>
</tr>
</tbody>
</table>

| **Rotating Spindle** |       |       |
| Ballscrew drive      | 32x10 | 32x20 | 40x10 | 40x20 |
| Max. load during travel [kN] | 10    | 5     | 25    | 25<sup>3)</sup> |
| Max. static load [kN]  | 18    | 18    | 45    | 45    |
| Max. input speed [min<sup>-1</sup>] | 5000  | 5000  | 5000  | 5000  |
| Max. traveling speed [mm/s] | 275   | 555   | 275   | 555   |
| Dyn. load capacity C [kN]  | 36.6  | 27.5  | 92.6  | 75.2  |

| **Lifting Cylinder** |       |       |
| Ballscrew drive      | 25x10 | 25x20 | 40x10 | 40x20 |
| Max. load during traveling [kN] | 10    | 5     | 25    | 25<sup>3)</sup> |
| Max. static load [kN]  | 18    | 13    | 45    | 45    |
| Max. input speed [min<sup>-1</sup>] | 5000  | 5000  | 5000  | 5000  |
| Max. traveling speed [mm/s] | 275   | 555   | 275   | 555   |
| Dyn. load capacity C [kN]  | 19.8  | 14.9  | 64.7  | 75.2  |

#### Gearbox

<table>
<thead>
<tr>
<th></th>
<th>HS 50</th>
<th>HS 100</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Non-Rotating Spindle</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ballscrew drive</td>
<td>40x10</td>
<td>40x20</td>
</tr>
<tr>
<td>Max. load during traveling [kN]</td>
<td>50</td>
<td>50&lt;sup&gt;3)&lt;/sup&gt;</td>
</tr>
<tr>
<td>Max. static load [kN]</td>
<td>90</td>
<td>65</td>
</tr>
<tr>
<td>Max. input speed [min&lt;sup&gt;-1&lt;/sup&gt;]</td>
<td>4000</td>
<td>3000</td>
</tr>
<tr>
<td>Max. traveling speed [mm/s]</td>
<td>220</td>
<td>440</td>
</tr>
<tr>
<td>Dyn. load capacity C [kN]</td>
<td>92.6</td>
<td>75.2</td>
</tr>
</tbody>
</table>

| **Rotating Spindle** |       |       |
| Ballscrew drive      | 50x20 | 63x20  | 63x20 | 80x20 |
| Max. load during traveling [kN] | 50<sup>3)</sup> | 50<sup>3)</sup> | 100<sup>4)</sup> | 100<sup>4)</sup> |
| Max. static load [kN]  | 90    | 90     | 180   | 180   |
| Max. input speed [min<sup>-1</sup>] | 4000  | 3000   | 3000  | 3000  |
| Max. traveling speed [mm/s] | 440   | 440    | 330   | 330   |
| Dyn. load capacity C [kN]  | 160   | 248    | 248   | 359   |

| **Lifting Cylinder** |       |       |
| Ballscrew drive      | 50x20 | 63x20  | 80x20 |
| Max. load during traveling [kN] | 50<sup>3)</sup> | 100<sup>4)</sup> | 100<sup>4)</sup> |
| Max. static load [kN]  | 90    | 180    | 180   |
| Max. input speed [min<sup>-1</sup>] | 4000  | 3000   | 3000  |
| Max. traveling speed [mm/s] | 440   | 330    | 330   |
| Dyn. load capacity C [kN]  | 160   | 248    | 359   |

<sup>1)</sup> Duty cycles over 50% upon request.
<sup>2)</sup> For i=3 \( F_{\text{max}} = 15\text{kN} \)
<sup>3)</sup> For i=3 \( F_{\text{max}} = 30\text{kN} \)
<sup>4)</sup> For i=3 \( F_{\text{max}} = 80\text{kN} \)
ATLANTA Linear Actuators Overview

**HS - High Performance Screw Jack Gearbox**

- **Sizes:** HS10, HS25, HS50 and HS100
- **Load capacity:** 5 to 100 kN
- **Travelling speed:** up to 550 mm/s
- **Design with ball-screw spindle drive:**
  - Rotating spindle
  - Non-rotating spindle
  - Lifting cylinder

**TS - Standard Screw Jack Gearbox**

- **Sizes:** TS2, TS5, TS10, TS25, TS50 and TS100
- **Load capacity:** 2 to 100 kN
- **Travelling speed:** up to 25 mm/s
- **Design with trapezoidal spindle drive:**
  - Rotating spindle
  - Non-rotating spindle

**EH - High Thrust Linear Actuator**

- **Sizes:** EH4 and EH8
- **Load capacity:** 30 to 160 kN
- **Travelling speed:**
  - Trapezoidal spindle drive: up to 83 mm/s
  - Ballscrew spindle drive: up to 230 mm/s
- **Design with trapezoidal spindle drive:**
  - Non-rotating spindle
- **Design with ball screw spindle drive:**
  - Rotating spindle
  - Lifting cylinder
Servo Drive Systems

Further information:

www.atlantadrives.com