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508.832.3456 (East)
949.679.9191 (West)
The LS-180 Vacuum linear stage was developed for industrial applications. Recirculating ball guides mounted on a rigid tempered aluminum-alloy body guarantee a very high guiding stiffness and long operating life. The ball screw with 5 mm pitch allows velocities up to 25 mm/s. For demanding positioning tasks the linear stages LS-180 Vacuum can be supplied with a linear scale which is centrally installed between the guides. The LS-180 Vacuum linear stages is equipped with a special 2-phase vacuum stepper motor and are supplied with two limit switches.

### TECHNICAL DATA

<table>
<thead>
<tr>
<th></th>
<th>FV</th>
<th>HV</th>
<th>UHVG</th>
<th>FV</th>
<th>UHVG</th>
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<td>± 3</td>
<td>± 4</td>
<td>± 5</td>
<td>± 6</td>
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<tr>
<td>Pitch (µrad)</td>
<td>± 40</td>
<td>± 50</td>
<td>± 60</td>
<td>± 70</td>
<td>± 80</td>
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<tr>
<td>Yaw (µrad)</td>
<td>± 50</td>
<td>± 50</td>
<td>± 50</td>
<td>± 50</td>
<td>± 50</td>
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<td>HV</td>
<td>UHVG</td>
<td>FV</td>
<td>UHVG</td>
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<tr>
<td>Linear scale</td>
<td></td>
<td></td>
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<td>Accuracy</td>
<td>on request</td>
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<td>Velocity range (mm/sec)</td>
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<tr>
<td>Material</td>
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</table>

### KEY FEATURES
- Vacuum up 10-9 hPa
- Travel range up to 610 mm (24")
- Uni-directional repeatability down to 0.05 µm
- Maximum speed 25 mm/sec
- Load capacity up to 100 kg
- Integrated inductive limit switches
- Option: linear scale (center mounted)
drawings for the corresponding vacuum class must be requested separately.
The installed motor types are:
PK258 for FV
VSS 87 for HV & UHVG
The LS-120 Vacuum linear stage is suited for high precision applications with limited space conditions. High rigidity within a compact package is achieved by using re-circulating linear ball bearings mounted within a highly rigid, tempered aluminum-alloy stage body. The linear stage is driven by a re-circulating ball screw and can be supplied with a linear scale which is centrally installed between the guides. The LS-120 Vacuum linear stages is equipped with a special 2-phase vacuum stepper motor.

### Load characteristics

<table>
<thead>
<tr>
<th></th>
<th>( F_x(N) )</th>
<th>( F_y(N) )</th>
<th>( F_z(N) )</th>
<th>( M_x(Nm) )</th>
<th>( M_y(Nm) )</th>
<th>( k_{ax} (\mu\text{rad}/Nm) )</th>
<th>( k_{ay} (\mu\text{rad}/Nm) )</th>
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<tr>
<td>FV</td>
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<td>80</td>
<td>100</td>
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<td>40</td>
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<tr>
<td>HV</td>
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<td>100</td>
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<td>60</td>
<td>33</td>
<td>40</td>
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<tr>
<td>UHVG</td>
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<td>100</td>
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### TECHNICAL DATA

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<tr>
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<tr>
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<td>Straightness / Flatness (µm)</td>
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<tr>
<td>Pitch (µrad)</td>
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<td></td>
</tr>
<tr>
<td>Yaw (µrad)</td>
<td>±40</td>
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<tr>
<td>Weight (kg)</td>
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<td>HV</td>
<td>UHV</td>
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<tr>
<td>Linear scale</td>
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<td>Speed max. (mm/sec)</td>
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<td>Resolution calculated (µm)</td>
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<td>10 (FS)</td>
<td>10 (FS)</td>
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<td>Resolution typical (µm)</td>
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<td>±1</td>
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<tr>
<td>Accuracy</td>
<td>on request</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Velocity range (mm/sec)</td>
<td>0.001 .. 15</td>
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<tr>
<td>Material</td>
<td>Aluminum or Stainless steel, suitable for vacuum</td>
<td></td>
<td></td>
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</tbody>
</table>

Vacuum Note: FS = full step, RE = rotary encoder

More info: Detailed information concerning motors and encoders, see appendix.
drawings for the corresponding vacuum class must be requested separately. The installed motor types are:
PK245 for FV
VSS 42.200.1.2-E for HV & UHVG

Order No. | 6237-V- | 0 0
---|---|---
FV | | 1
HV | | 2
UHVG | | 3
40 mm (1.5") | | 1
open loop | | 0
closed loop | | 1

www.pimicos.com // info@pi-usa.us // 508.832.3456 East 949.679.9191 West // www.pi-usa.us
The LS-110 Vacuum linear stage series is especially suited for industrial laser treatment. Linear guides with recirculating linear ball bearings guarantee very high guiding stiffness. Driven by a recirculating ball screw with 2 mm pitch, the LS-110 Vacuum can be mounted in any orientation. For demanding positioning tasks, the LS-110 Vacuum linear stages can be supplied with a linear scale which is centrally installed between the guides. The LS-110 Vacuum is equipped with a special 2-phase vacuum stepper motor and is equipped with limit switches.

### KEY FEATURES
- Vacuum up to 10-9 hPa
- Travel range up to 508 mm (20")
- Uni-directional repeatability down to 0.05 µm
- Maximum speed 15 mm/sec
- Load capacity up to 10 kg
- Integrated mechanical limit switches
- Option: linear scale (center mounted)

### FACTS

<table>
<thead>
<tr>
<th>Load characteristics</th>
<th>FX(N)</th>
<th>FY(N)</th>
<th>FZ(N)</th>
<th>MX(Nm)</th>
<th>MY(Nm)</th>
<th>MZ(Nm)</th>
<th>kax(µrad/Nm)</th>
<th>kay(µrad/Nm)</th>
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</thead>
<tbody>
<tr>
<td>FV</td>
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<td>40</td>
</tr>
<tr>
<td>HV</td>
<td>50</td>
<td>80</td>
<td>100</td>
<td>30</td>
<td>60</td>
<td>33</td>
<td>50</td>
<td>40</td>
</tr>
<tr>
<td>UHVG</td>
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### TECHNICAL DATA

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<th>102</th>
<th>155</th>
<th>190</th>
<th>255</th>
<th>305</th>
<th>508</th>
</tr>
</thead>
<tbody>
<tr>
<td>Straightness / Flatness (µm)</td>
<td>± 1</td>
<td>± 1.5</td>
<td>± 2</td>
<td>± 2.5</td>
<td>± 3</td>
<td>± 3.5</td>
<td>± 4</td>
<td>± 5</td>
<td>± 6</td>
</tr>
<tr>
<td>Pitch (µrad)</td>
<td>± 30</td>
<td>± 40</td>
<td>± 50</td>
<td>± 60</td>
<td>± 70</td>
<td>± 80</td>
<td>± 90</td>
<td>± 100</td>
<td>± 110</td>
</tr>
<tr>
<td>Yaw (µrad)</td>
<td>± 40</td>
<td>± 40</td>
<td>± 40</td>
<td>± 40</td>
<td>± 40</td>
<td>± 40</td>
<td>± 40</td>
<td>± 40</td>
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<table>
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<th>Vacuum type</th>
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<th>UHVG</th>
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<tr>
<td>Linear scale</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Speed max. (mm/sec)</td>
<td>15</td>
<td>5</td>
<td>5</td>
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<tr>
<td>Resolution calculated (µm)</td>
<td>0.2</td>
<td>0.2</td>
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</tr>
<tr>
<td>Resolution typical (µm)</td>
<td>0.05</td>
<td>0.05</td>
<td>0.05</td>
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<tr>
<td>Bi-directional Repeatability (µm)</td>
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<td>± 1</td>
<td>± 1</td>
</tr>
<tr>
<td>Uni-directional Repeatability (µm)</td>
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<td>0.2</td>
<td>0.2</td>
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<tr>
<td>Nominal Current (A)</td>
<td>1.5</td>
<td>1.2</td>
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</tbody>
</table>

| Accuracy | on request |
| Velocitiy range (mm/sec) | 0.001 ... 15 |
| Material | Aluminum or Stainless steel, suitable for vacuum |

Vacuum Note: FS = full step, RE = rotary encoder

More info: Detailed information concerning motors and encoders, see appendix.
FACTS

<table>
<thead>
<tr>
<th>Load characteristics</th>
<th>F_x(N)</th>
<th>F_y(N)</th>
<th>F_z(N)</th>
<th>M_x(Nm)</th>
<th>M_y(Nm)</th>
<th>M_z(Nm)</th>
<th>k_x(µrad/Nm)</th>
<th>k_y(µrad/Nm)</th>
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<tbody>
<tr>
<td>FV</td>
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<td>1500</td>
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<td>280</td>
<td>250</td>
<td>3.2</td>
<td>1.6</td>
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<tr>
<td>HV</td>
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<td>3.2</td>
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<tr>
<td>UHVG</td>
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<td>2500</td>
<td>250</td>
<td>280</td>
<td>250</td>
<td>3.2</td>
<td>1.6</td>
</tr>
</tbody>
</table>

KEY FEATURES

- Vacuum up to 10-9 hPa
- Travel range up to 1016 mm (40")
- Uni-directional repeatability down to 0.05 µm
- Maximum speed 15 mm/sec
- Load capacity up to 150 kg
- Integrated limit switches
- Option: linear scale (center mounted)

The LS-270 Vacuum linear stage was developed for positioning high loads. Cross-roller bearings mounted on a rigid tempered aluminum-alloy body guarantee very high guiding stiffness and long operating life. The ball screw with 5 mm pitch allows velocities up to 15 mm/s. For demanding positioning tasks the LS-270 Vacuum linear stages can be supplied with a linear scale which is centrally installed between the guides. The LS-270 Vacuum linear stages is equipped with a special 2-phase vacuum stepper motor and have two limit switches.

TECHNICAL DATA

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<th>Parameter</th>
<th>FV</th>
<th>HV</th>
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<td>305</td>
<td>508</td>
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<td>Straightness / Flatness (µm)</td>
<td>±1.5</td>
<td>±3</td>
<td>±4</td>
</tr>
<tr>
<td>Pitch (µrad)</td>
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<td>±40</td>
<td>±80</td>
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<tr>
<td>Yaw (µrad)</td>
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<td>35</td>
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<td>Linear scale</td>
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<tr>
<td>Speed max. (mm/sec)</td>
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<td>Uni-directional Repeatability (µm)</td>
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<td>0.4</td>
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</table>

Vacuum Note: FS = full step, RE = rotary encoder
More info: Detailed information concerning motors and encoders, see appendix.
drawings for the corresponding vacuum class must be requested separately. The installed motor types are:
PK245 für FV
VSS 42.200.1.2-E für HV & UHVG