Actuator Products – Guided Cylinders

HB Series

- Medium duty to extremely heavy duty linear motion
- Powered by the 3MA or 4MA NFPA cylinder, with ISO options available
- Bore sizes 1-1/2", 2", and 2-1/2"
- Thrust, reach, and compact versions available
- Shock absorber, bumpers/stop collars, and proximity sensor options available

Operating information

Operating pressure:  Maximum 100 PSIG (7 bar), air – 4MAJ cylinder 150 PSIG (10 bar), air – P1D cylinder 250 PSIG (17 bar), air – 3MA, 4MA and 2A cylinders 400 PSIG (28 bar), oil – 4ML cylinder only 750 PSIG (52 bar), oil – 3L cylinder only

Temperature range: Cylinder Standard seals 0°F to 165°F (-18°C to 74°C) Fluorocarbon seals* 0°F to 250°F (-18°C to 121°C)

* See fluorocarbon seal option for high temperature applications. Not available for 3MA or rod lock cylinders.

Filtration requirements: 40 micron, dry filtered air

For technical information see CD

Ordering information for HBC, HBT and HBR

<table>
<thead>
<tr>
<th>HBC</th>
<th>25</th>
<th>08</th>
<th>A</th>
<th>P1</th>
<th>T</th>
<th>F</th>
<th>4A</th>
<th>B</th>
</tr>
</thead>
<tbody>
<tr>
<td>Series</td>
<td>Stroke length</td>
<td>bushes</td>
<td>Special Options</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HBC</td>
<td>Compact slide</td>
<td>Order in 1&quot; increments. For 3-position units, specify intermediate and total stroke separated by a ‘,” i.e. 02/06.</td>
<td>T Composite (standard)</td>
<td>Linear ball bearing</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HBT</td>
<td>Thrust slide</td>
<td></td>
<td>D</td>
<td>B Current design level</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HBR</td>
<td>Reach slide</td>
<td></td>
<td>T1 Composite with oversized support shafts</td>
<td>Composite with contaminant-tolerant seals</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Model</td>
<td>Design Series</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>Blank</td>
<td>Stroke length</td>
<td>B</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Stroke length</td>
<td>Bushings</td>
<td>Special Options</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>20</td>
<td>1-1/2&quot; bore, 20mm shaft</td>
<td>Order in 1&quot; increments. For 3-position units, specify intermediate and total stroke separated by a “,” i.e. 02/06.</td>
<td>T Composite (standard)</td>
<td>Linear ball bearing</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>25</td>
<td>2-1/2&quot; bore, 30mm shaft</td>
<td></td>
<td>D</td>
<td>B Current design level</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stroke length</td>
<td>Special Options</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>T Composite (standard)</td>
<td>Linear ball bearing</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>T1 Composite with oversized support shafts</td>
<td>T Composite with contaminant-tolerant seals</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Cylinder Options

- Blank | None
- P | PNP, flying lead type
- N | NPN, flying lead type
- P1 | PNP, plug-in connector
- N1 | NPN, plug-in connector
- J | 8mm sensor mounting bracket, no sensor supplied
- J1 | 12mm sensor mounting bracket, no sensor supplied

Proximity Sensor Options

- Blank | None
- F | Flow controls (presto-lok)
- K | Stainless steel support shafting

Bushings

- T Composite (standard)
- D Linear ball bearing
- T1 Composite with oversized support shafts
- T Composite with contaminant-tolerant seals

Bumpers/Stop Collars

- None
- Blank standard
- A2 Shock absorber, extend only
- A3 Shock absorber, both ends
- A4 Shock absorber, extend only
- A5 Shock absorber, retract only
- B Bumpers both ends 1
- B1 Bumper & adjustable stop collar, extend only
- B2 Bumper retract only
- B3 Bumper & adjustable stop collar, retract only
- C4 Bumper & adjustable stop collar, both ends
- C Cushion on cylinder, extend only
- C1 Cushion on cylinder, extend only 2
- C2 Cushion on cylinder, retract only 2
- X Special slide configuration (please specify)

Bushings

- T Composite (standard)
- D Linear ball bearing
- T1 Composite with oversized support shafts
- T Composite with contaminant-tolerant seals

Special Options

- Blank | None
- V Fluorocarbon cylinder seals
- L1 Left hand assembly
- L3 Cylinder ports at position 0

Fluorocarbon Seals

- 750 PSIG (52 bar), oil – 3L cylinder only
- 400 PSIG (28 bar), oil – 4ML cylinder only

Other Options

- Blank | None
- F Flow controls (presto-lok)
- K Stainless steel support shafting

Guided Cylinders

Actuator Products

Parker Hannifin Corporation
Pneumatic Division
Richland, Michigan
www.parker.com/pneumatics
## B210

### HBC Series

<table>
<thead>
<tr>
<th>Model number</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>Ds*</th>
<th>Do**</th>
<th>E</th>
<th>F</th>
<th>GNPFT</th>
<th>F</th>
<th>BSPP</th>
<th>K</th>
<th>L</th>
<th>M</th>
<th>N</th>
<th>P</th>
<th>R</th>
<th>S</th>
<th>T</th>
<th>U</th>
</tr>
</thead>
<tbody>
<tr>
<td>15</td>
<td>3.25</td>
<td>6.00</td>
<td>2.25</td>
<td>20mm</td>
<td>(0.79)</td>
<td>25mm</td>
<td>(0.98)</td>
<td>0.375</td>
<td>1/4</td>
<td>1/4</td>
<td>1.06</td>
<td>5.19</td>
<td>6.26</td>
<td>0.94</td>
<td>5.88</td>
<td>1.94</td>
<td>4.250</td>
<td>1.375</td>
<td>2.750</td>
</tr>
<tr>
<td>20</td>
<td>4.00</td>
<td>7.25</td>
<td>2.75</td>
<td>25mm</td>
<td>(0.98)</td>
<td>30mm</td>
<td>(1.18)</td>
<td>0.500</td>
<td>3/8</td>
<td>1/4</td>
<td>1.31</td>
<td>6.39</td>
<td>7.00</td>
<td>1.19</td>
<td>7.13</td>
<td>2.44</td>
<td>5.000</td>
<td>1.750</td>
<td>3.250</td>
</tr>
<tr>
<td>25</td>
<td>5.00</td>
<td>9.00</td>
<td>3.25</td>
<td>30mm</td>
<td>(1.18)</td>
<td>35mm</td>
<td>(1.38)</td>
<td>0.500</td>
<td>3/8</td>
<td>3/8</td>
<td>1.56</td>
<td>7.82</td>
<td>8.38</td>
<td>1.44</td>
<td>8.88</td>
<td>2.88</td>
<td>6.500</td>
<td>2.000</td>
<td>3.750</td>
</tr>
</tbody>
</table>

**Model number**

<table>
<thead>
<tr>
<th>V</th>
<th>W</th>
<th>X</th>
<th>Y</th>
<th>AA</th>
<th>BB</th>
<th>CC</th>
<th>EE</th>
<th>FF</th>
<th>GG</th>
<th>HH</th>
<th>JJ</th>
<th>KK</th>
<th>LL</th>
<th>MM</th>
</tr>
</thead>
<tbody>
<tr>
<td>15</td>
<td>0.251</td>
<td>0.27</td>
<td>2.750</td>
<td>0.750</td>
<td>0.28</td>
<td>1/4</td>
<td>1.750</td>
<td>1.500</td>
<td>2.31</td>
<td>0.50</td>
<td>1/4-20</td>
<td>2.50</td>
<td>0.75</td>
<td>3/8</td>
</tr>
<tr>
<td>20</td>
<td>0.313</td>
<td>0.33</td>
<td>3.250</td>
<td>0.750</td>
<td>0.34</td>
<td>5/16</td>
<td>2.250</td>
<td>1.750</td>
<td>2.31</td>
<td>0.63</td>
<td>5/16-18</td>
<td>3.00</td>
<td>0.88</td>
<td>3/8</td>
</tr>
<tr>
<td>25</td>
<td>0.376</td>
<td>0.39</td>
<td>4.000</td>
<td>1.532</td>
<td>0.41</td>
<td>3/8</td>
<td>3.000</td>
<td>2.250</td>
<td>2.38</td>
<td>0.75</td>
<td>3/8-16</td>
<td>4.00</td>
<td>1.00</td>
<td>1/2</td>
</tr>
</tbody>
</table>

* Standard shafting
** Oversized shafting

1. Model 15 with Cylinder Type 3A (3MA cylinder) has 3/8" NPTF ports.

All dimensions in inches unless otherwise noted.
## HBT Series

### Model Number Table

<table>
<thead>
<tr>
<th>Model number</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>Ds*</th>
<th>Do**</th>
<th>E</th>
<th>F NPTF</th>
<th>F BSPP</th>
<th>K</th>
<th>L</th>
<th>M</th>
<th>N</th>
<th>P</th>
<th>R</th>
<th>S</th>
<th>T</th>
</tr>
</thead>
<tbody>
<tr>
<td>15</td>
<td>5.0</td>
<td>6.00</td>
<td>2.25</td>
<td>20mm (0.79)</td>
<td>25mm (0.98)</td>
<td>0.375</td>
<td>1/4</td>
<td>1/4</td>
<td>1.06</td>
<td>6.94</td>
<td>8.19</td>
<td>0.94</td>
<td>5.88</td>
<td>1.94</td>
<td>4.250</td>
<td>1.375</td>
</tr>
<tr>
<td>20</td>
<td>5.5</td>
<td>7.25</td>
<td>2.75</td>
<td>25mm (0.98)</td>
<td>30mm (1.18)</td>
<td>0.500</td>
<td>3/8</td>
<td>1/4</td>
<td>1.31</td>
<td>7.88</td>
<td>8.94</td>
<td>1.19</td>
<td>7.13</td>
<td>2.44</td>
<td>5.000</td>
<td>1.750</td>
</tr>
<tr>
<td>25</td>
<td>6.5</td>
<td>9.00</td>
<td>3.25</td>
<td>30mm (1.18)</td>
<td>35mm (1.38)</td>
<td>0.500</td>
<td>3/8</td>
<td>3/8</td>
<td>1.56</td>
<td>9.31</td>
<td>10.31</td>
<td>1.44</td>
<td>8.88</td>
<td>2.88</td>
<td>6.500</td>
<td>2.000</td>
</tr>
</tbody>
</table>

### Model Number Sizes

<table>
<thead>
<tr>
<th>Model number</th>
<th>U</th>
<th>V</th>
<th>W</th>
<th>X</th>
<th>Y</th>
<th>AA</th>
<th>BB</th>
<th>CC</th>
<th>EE</th>
<th>FF</th>
<th>GG</th>
<th>HH</th>
<th>JJ</th>
<th>KK</th>
</tr>
</thead>
<tbody>
<tr>
<td>15</td>
<td>2.750</td>
<td>0.251</td>
<td>0.27</td>
<td>2.750</td>
<td>1.938</td>
<td>0.28</td>
<td>1/4</td>
<td>2.500</td>
<td>1.500</td>
<td>2.31</td>
<td>0.50</td>
<td>1/4-20</td>
<td>4.25</td>
<td>0.69</td>
</tr>
<tr>
<td>20</td>
<td>3.250</td>
<td>0.313</td>
<td>0.33</td>
<td>3.250</td>
<td>2.250</td>
<td>0.34</td>
<td>5/16</td>
<td>2.750</td>
<td>1.750</td>
<td>2.31</td>
<td>0.63</td>
<td>5/16-18</td>
<td>4.50</td>
<td>0.88</td>
</tr>
<tr>
<td>25</td>
<td>3.750</td>
<td>0.376</td>
<td>0.39</td>
<td>4.000</td>
<td>2.750</td>
<td>0.41</td>
<td>3/8</td>
<td>3.500</td>
<td>2.250</td>
<td>2.38</td>
<td>0.75</td>
<td>3/8-16</td>
<td>5.50</td>
<td>1.00</td>
</tr>
</tbody>
</table>

* Standard shafting
** Oversized shafting
1 Model 15 with Cylinder Type 3A (3MA cylinder) has 3/8" NPTF ports.

All dimensions in inches unless otherwise noted.
### HBR Series

#### Model 15

<table>
<thead>
<tr>
<th>Model number</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>Ds*</th>
<th>Do**</th>
<th>E</th>
<th>F</th>
<th>NPTF</th>
<th>F</th>
<th>BSPP</th>
<th>K</th>
<th>L</th>
<th>M</th>
<th>N</th>
<th>P</th>
<th>R</th>
<th>S</th>
<th>T</th>
</tr>
</thead>
<tbody>
<tr>
<td>15</td>
<td>8.00</td>
<td>6.00</td>
<td>2.25</td>
<td>20mm (0.79)</td>
<td>25mm (0.98)</td>
<td>0.375</td>
<td>1/4</td>
<td>1/4</td>
<td>1.06</td>
<td>9.94</td>
<td>11.19</td>
<td>0.94</td>
<td>5.88</td>
<td>1.94</td>
<td>4.250</td>
<td>1.375</td>
<td></td>
<td></td>
</tr>
<tr>
<td>20</td>
<td>10.00</td>
<td>7.25</td>
<td>2.75</td>
<td>25mm (0.98)</td>
<td>30mm (1.18)</td>
<td>0.500</td>
<td>3/8</td>
<td>3/8</td>
<td>1.31</td>
<td>12.39</td>
<td>13.44</td>
<td>1.19</td>
<td>7.13</td>
<td>2.44</td>
<td>5.000</td>
<td>1.750</td>
<td></td>
<td></td>
</tr>
<tr>
<td>25</td>
<td>12.00</td>
<td>9.00</td>
<td>3.25</td>
<td>30mm (1.18)</td>
<td>35mm (1.38)</td>
<td>0.500</td>
<td>3/8</td>
<td>3/8</td>
<td>1.56</td>
<td>14.82</td>
<td>15.82</td>
<td>1.44</td>
<td>8.88</td>
<td>2.88</td>
<td>6.500</td>
<td>2.000</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Model 20

<table>
<thead>
<tr>
<th>Model number</th>
<th>U</th>
<th>V</th>
<th>W</th>
<th>X</th>
<th>Y</th>
<th>AA</th>
<th>BB</th>
<th>CC</th>
<th>EE</th>
<th>FF</th>
<th>GG</th>
<th>HH</th>
<th>JJ</th>
<th>KK</th>
</tr>
</thead>
<tbody>
<tr>
<td>15</td>
<td>2.750</td>
<td>0.251</td>
<td>0.27</td>
<td>2.750</td>
<td>1.938</td>
<td>0.28</td>
<td>1/4</td>
<td>5.500</td>
<td>1.500</td>
<td>2.31</td>
<td>0.50</td>
<td>1/4-20</td>
<td>7.25</td>
<td>0.69</td>
</tr>
<tr>
<td>20</td>
<td>3.250</td>
<td>0.313</td>
<td>0.33</td>
<td>3.250</td>
<td>2.250</td>
<td>0.34</td>
<td>5/16</td>
<td>7.250</td>
<td>1.750</td>
<td>2.31</td>
<td>0.63</td>
<td>5/16-18</td>
<td>9.00</td>
<td>0.88</td>
</tr>
<tr>
<td>25</td>
<td>3.750</td>
<td>0.376</td>
<td>0.39</td>
<td>4.000</td>
<td>2.760</td>
<td>0.41</td>
<td>3/8</td>
<td>9.000</td>
<td>2.250</td>
<td>2.38</td>
<td>0.75</td>
<td>3/8-16</td>
<td>11.00</td>
<td>1.00</td>
</tr>
</tbody>
</table>

* Standard shafting
** Oversized shafting
1 Model 15 with Cylinder Type 3A (3MA cylinder) has 3/8" NPTF ports.

All dimensions in inches unless otherwise noted.
Horizontal Load Capacity & Deflection with Standard Shafting

The graphs illustrate the side load vs. actuator stroke for the three HB slide sizes. Applied loads will cause a slight deflection of the support rods. The graphs include the weight of the support rods and tooling plate and are based on a bearing life equivalent to 10 million cycles for dynamic conditions. Higher dynamic loads will reduce cycle life. For static loads, multiply the information in the graph by 1.5.

Note: Actuator life may vary depending on the severity of the following variables:
- Acceleration
- Velocity
- Vibration
- Orientation

EXAMPLE:
An HBT15 with ball bearings and a "stroke+d" of 12" would have a load capacity of 20 lbs.
Horizontal Load Capacity & Deflection with Oversized Shafting

The graphs illustrate the side load vs. actuator stroke for the three HB slide sizes. Applied loads will cause a slight deflection of the support rods. Deflection distance is also shown. The graphs include the weight of the support rods and tooling plate and are based on a bearing life equivalent to 10 million cycles for dynamic conditions. Higher dynamic loads will reduce cycle life. For static loads, multiply the information in the graph by 1.5.

**Note:** Actuator life may vary depending on the severity of the following variables:
- Acceleration
- Velocity
- Vibration
- Orientation

**EXAMPLE:**
An HBT15 with oversized composite bushings and a "stroke+d" of 8" would have a load capacity of 60 lbs.
Asymmetrical Torque Capacity

Asymmetrical loading occurs when the load is applied to one side of the unit. HB Series units can resist torsional loads that are asymmetrical. The graphs show torsional load capacity for both standard and oversized shafting under dynamic conditions. For static applications, multiply the information in the graphs by 1.5. The vertical load for HBN does not include the weight of the tool plate and support rods.

Note: Actuator life may vary depending on the severity of the following variables:
- Acceleration
- Velocity
- Vibration
- Orientation
Vertical Eccentric Load Capacity

HB Series units mounted vertically will have the same eccentric load capacity regardless of orientation. The graphs provide maximum load capacity for an eccentric mounted load on a 4" stroke cylinder. The load is assumed to be mounted at the face of the tooling plate.

**Note:** Actuator life may vary depending on the severity of the following variables:
- Acceleration
- Velocity
- Vibration

**EXAMPLE:**
An HBT15 with ball bearings carrying an eccentric load with an eccentricity distance of 15" would have a load capacity of 40 lbs.