Ball Slides
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Introduction: Ball Slide Cylinders

Product Types

BSC1000 Series
Unique extra slim design puts the load bearing slide element in front of the air cylinder with a ridged support bracket.
- Bore Sizes (mm): 8, 12, 20, 25, 40
- 5 Models

BSC2000 Series
Extra short design puts the load bearing slide element next to the air cylinder. The 'L' shaped tooling plate offers various mounting options.
- Bore Sizes (mm): 8, 12, 20, 25, 40
- 15 Models

Force/Pressure Ratings

<table>
<thead>
<tr>
<th>Bore</th>
<th>Piston Area mm² (in²)</th>
<th>Pre-Calculated Force kgf (lbf)</th>
<th>Pressure Rating BAR (PSI)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>4 BAR</td>
<td>6 BAR</td>
<td>7 BAR</td>
</tr>
<tr>
<td>8</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Push 50 (.08)</td>
<td>2.04 (.45)</td>
<td>3.1 (.7)</td>
</tr>
<tr>
<td></td>
<td>Pull 37 (.06)</td>
<td>1.5 (.3)</td>
<td>2.3 (.5)</td>
</tr>
<tr>
<td>12</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Push 113 (.17)</td>
<td>4.6 (.10)</td>
<td>6.9 (.15)</td>
</tr>
<tr>
<td></td>
<td>Pull 85 (.13)</td>
<td>3.5 (.8)</td>
<td>5.2 (.11)</td>
</tr>
<tr>
<td>20</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Push 314 (.49)</td>
<td>12.8 (.28)</td>
<td>19.2 (.42)</td>
</tr>
<tr>
<td></td>
<td>Pull 263 (.40)</td>
<td>10.7 (.23)</td>
<td>16.1 (.35)</td>
</tr>
<tr>
<td>25</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Push 491 (.76)</td>
<td>15.0 (.33.1)</td>
<td>30.0 (.66.2)</td>
</tr>
<tr>
<td></td>
<td>Pull 412 (.64)</td>
<td>12.6 (.27.8)</td>
<td>25.2 (.55.6)</td>
</tr>
<tr>
<td>40</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Push 1257 (.94)</td>
<td>38.5 (.84.8)</td>
<td>76.9 (.169.6)</td>
</tr>
<tr>
<td></td>
<td>Pull 1056 (.64)</td>
<td>32.3 (.71.2)</td>
<td>64.6 (.142.5)</td>
</tr>
</tbody>
</table>

Conversion Formulas:
1 Bar = 0.0102 kgf/mm² = 14.5 PSI
1 kgf = 2,2046 lbf

Example:
4 Bar x 0.0102 = 0.0408 kgf/mm²
0.0408 kgf/mm² x 50 mm² = 2.04 kgf
2.04 kgf x 2.2046 = 4.5 lbf

*NOTE: With Hydraulic option
See 'Hydraulic Seals' page 32
How to Order: Ball Slide Cylinders

BSC Series  Example: BSC2T20x25-PC3

<table>
<thead>
<tr>
<th>BALL SLIDE CYLINDER</th>
<th>SERIES</th>
<th>MOUNTING STYLE</th>
<th>BORE SIZE</th>
</tr>
</thead>
<tbody>
<tr>
<td>BSC</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
</tbody>
</table>

**STROKE LENGTH**

<table>
<thead>
<tr>
<th>X</th>
<th>25</th>
</tr>
</thead>
</table>

**OPTIONS**

<table>
<thead>
<tr>
<th>5</th>
<th>6</th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>6</td>
<td>6</td>
</tr>
</tbody>
</table>

1. **Style**
   - BSC Ball Slide Cylinder

2. **Series**
   - 1 1000 Series
   - 2 2000 Series

3. **Mounting Style (2000 Series Only)**
   - 5 End Mount
   - 8 Base Mount
   - T Thin Side Mount

Note: 1000 Series Mounting Style Blank

4. **Bore**
   - 8 8 mm
   - 12 12 mm
   - 20 20 mm
   - 25 25 mm

5. **Stroke**
   - 8
     - 2.5
     - 5
     - 7.5
     - 10
     - 12.5
     - 15
     - 17.5
     - 20
     - 22.5
     - 25
     - 27.5
     - 30
   - 12
     - 2.5
     - 5
     - 7.5
     - 10
     - 12.5
     - 15
     - 17.5
     - 20
     - 22.5
     - 25
     - 27.5
     - 30
     - 32.5
     - 35
     - 37.5
     - 40
     - 42.5
     - 45
     - 47.5
     - 50
   - 20
     - 5
     - 10
     - 15
     - 20
     - 25
     - 30
     - 35
     - 40
     - 45
     - 50
     - 55
     - 60
     - 65
     - 70
     - 75
   - 25
     - 5
     - 10
     - 15
     - 20
     - 25
     - 30
     - 35
     - 40
     - 45
     - 50
     - 55
     - 60
     - 65
     - 70
     - 75
     - 80
     - 85
     - 90
     - 95
     - 100
     - 105
     - 110
     - 115
     - 120
     - 125
     - 130
     - 135
     - 140
     - 145
     - 150
   - 40
     - 5
     - 10
     - 15
     - 20
     - 25
     - 30
     - 35
     - 40
     - 45
     - 50
     - 55
     - 60
     - 65
     - 70
     - 75
     - 80
     - 85
     - 90
     - 95
     - 100
     - 105
     - 110
     - 115
     - 120
     - 125
     - 130
     - 135
     - 140
     - 145
     - 150
     - 155
     - 160
     - 165
     - 170
     - 175
     - 180
     - 185
     - 190
     - 195
     - 200

6. **Options**
   - MPA Multi-Position (specify 1st stroke length)
   - MPA Multi-Piston (specify stroke length)
   - PC1 Flow control on head end only
   - PC2 Flow control on cap end only
   - PC3 Flow control on both ends
   - 18 NPT 1/8" National Pipe Thread*
   - HYD Hydraulic seals**

*NOTE: Only available on 25 and 40mm bore.
**NOTE: Only available on 20, 25 and 40mm bore.
***NOTE: See page 30 for MPA details.
Component Description: Ball Slide Cylinders

BSC series cylinders are another variation of our versatile compact air cylinder. All models feature our signature compact space efficiency. We have combined our cylinders with a high load bearing, factory matched recirculating ball slide rail set in two simple, low cost, designs ideal for precision industrial automation.

Ball Slide Elements Smooth, quiet operating, recirculating ball slides are factory matched set assemblies with uniform, non-adjustable pre-load. Under load the slide assemblies feel smooth. With zero load the recirculation of the balls is felt.

Tooling Plate Aluminum tooling plates have machined surfaces with mounting patterns that match similar BSC units for multi-axis motion. Locator dowel pin holes are standard.

Mounting Surfaces Precision mounting surface with dowel pin locator holes are featured. Dowel pin holes are slip fit for m6 class pins on all surfaces.

Sensors All BSC Series units are sensor ready. Comtronic® limit sensors are sold separately in NPN and PNP variations.

Materials Basic materials include anodized aluminum, stainless steel slide elements, bronze or PET cylinder rod bushings, Nitrile seals and steel fasteners. Consult factory for harsh environment options including 100% stainless steel.

Design Tips
Temperature Limits All units are rated from 0º to 100ºC continuous, to 120ºC intermittently. For service over 100ºC continuous — consult factory.

Loads Detailed moment load information is included. The Ball Slide Cylinders allow increased load capacity compared to a guide rod air cylinder. This is desirable for long, service-free life and lasting precision motion.

The rolling load inertia is most destructive to this device and must be accounted for in your design.

Lubrication
- Cylinder - The cylinder is factory lubricated and does not require air line induced lubrication, although additional air line lubrication is not a problem. Lubricated air that is compatible with petroleum based grease containing Teflon® will enhance the life of the cylinder. Non-lubricated air is acceptable to operate the cylinder.
- Ball Slides - All ball slide elements are factory lubricated. Periodic lubrication is required for maximum life expectancy. General guidelines and recommendations from the ball slide manufacturer: No. 2 lithium soap based grease, generously applied every six months to the rail and into the holes on the carriage.

Engineering Data

Pneumatic
Some type of control is required on any pneumatic ball slide cylinder, below are available choices.

8mm and 12mm Bore
Cylinders feature our patented Snap-Cap® design: a resilient retainer seal that aids in absorbing minor piston impact.

- Flow Controls are strongly recommended for all ball slides. Controlled speed extends life.

20mm, 25mm and 40mm Bore
Cylinders feature our patented stainless steel wire form end cap retainer.

- Flow Controls are strongly recommended for all ball slides. Controlled speed extends life.

CAUTION!

Users’ Design Responsibilities

- Mechanical Stops External mechanical stops maximize unit life by reducing stresses caused when the cylinder bottoms out. High impact forces will damage the cylinder.
- Shock Absorbers If flow controls cannot be used, due to high cycle speeds, mechanical stops with external hydraulic shock absorbers will maximize unit life.

WARNING!

With high load capacities of the ball slide units, the forces resulting from inertia must be considered in your design.
Pneumatic Cylinder

BSC1000 Series

General Information

- Recirculating ball type slide, factory matched
- Side porting
- Sensor ready
- Multi-axis applications - no transition plates required
- Stroke lengths (mm):
  > 8mm bore: 2.5-30
  > 12mm bore: 2.5-50
  > 20mm bore: 5-75
  > 25mm bore: 5-150
  > 40mm bore: 5-200
- Multi-position and Multi-piston cylinders
- Modifications welcome. Consult factory.

Available in 5 models

- 8mm Bore  Thin mount
- 12mm Bore  Thin mount
- 20mm Bore  Thin mount
- 25mm Bore  Thin mount
- 40mm Bore  Thin mount

NOTE: Multi-position and Multi-piston design shown in MPA section

WARNING!

Pressurizing actuated equipment creates pinch points.
Prevent operator access to moving equipment and work pieces.

WARNING!

Mounting hardware must not interfere with ball slide function.
Disassembly of ball slide voids warranty.
**BSC1000 Series 8mm Bore**

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Standard Stroke Length (mm)</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
</tr>
</thead>
<tbody>
<tr>
<td>BSC18x___</td>
<td>2.5 5 7.5 10 12.5 15</td>
<td>83</td>
<td>68.5</td>
<td>74</td>
<td>38</td>
</tr>
<tr>
<td>BSC18x___</td>
<td>17.5 20 22.5 25 27.5 30</td>
<td>113</td>
<td>83.5</td>
<td>89</td>
<td>53</td>
</tr>
</tbody>
</table>

All dimensions shown in millimeters unless otherwise noted.

---

**Dowel Pin Locator Holes**

- Designed for location and additional shear strength.

**Sensor Mounting Track**

**Multi-Axis Assembly**

This mounting pattern is designed to mount on any 8mm bore, BSC2000 Series tooling plate. Also can be used for general purpose mounting.

**Mouting Holes**

- M3x0.5 TAP X 6 DP (2 Places)
- M3x0.5 TAP X 5.5 DP (1 Place)
- M2.5x0.45 X 4.5 DP (6 Places)

**Port**

- M3x0.8 TAP X 5 DP (2 Places)

---

**Easy Multi-Axis Assemblies**

Pattern 1: Adapts to a BSC2000 Series, Style ‘B’ cylinder, of the same bore size. Also can be used for general purpose mounting.

---

BSC1000 Series 12mm Bore

Dowel Pin Locator Holes are designed for location and additional shear strength.

All dimensions shown in millimeters unless otherwise noted.

### Part Number

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Standard Stroke Length (mm)</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
</tr>
</thead>
<tbody>
<tr>
<td>BSC112x___</td>
<td>2.5 7 7.5 10 12.5 15</td>
<td>93</td>
<td>80.5</td>
<td>93.3</td>
<td>41</td>
</tr>
<tr>
<td>BSC112x___</td>
<td>17.5 20 22.5 25 27.5 30</td>
<td>123</td>
<td>95.5</td>
<td>108.3</td>
<td>56</td>
</tr>
<tr>
<td>BSC112x___</td>
<td>32.5 35 37.5 40 42.5 45 47.5 50</td>
<td>163</td>
<td>115.5</td>
<td>128.3</td>
<td>76</td>
</tr>
</tbody>
</table>

**Part Number Description**

- **BSC112x____**: Standard Stroke Length (mm) with A, B, C, and D values listed separately.

**Diagram Details**

- **Multi-Axis Assembly**: Designed to mount on any 12mm bore, BSC2000 Series tooling plate. Also can be used for general purpose mounting.

- **Easy Multi-Axis Assemblies**
  - **Pattern 1**: Adapts to a BSC2000 Series, Style “B” cylinder, of the same bore size. Also can be used for general purpose mounting.

**Additional Information**

- Dowel Pin LOCATOR HOLE 2 dia X 5 DP (2 PLACES)
- MOUNTING HOLE M4 X 0.7 TAP X 6 DP (1 PLACE)
- SENSOR MOUNTING TRACK

---

BSC1000 Series 20mm Bore

Dowel Pin Locator Holes are designed for location and additional shear strength.

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Standard Stroke Length (mm)</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
</tr>
</thead>
<tbody>
<tr>
<td>BSC120x____</td>
<td>5  10  15</td>
<td>111</td>
<td>106</td>
<td>112</td>
<td>45</td>
</tr>
<tr>
<td>BSC120x____</td>
<td>20  25  30</td>
<td>141</td>
<td>121</td>
<td>127</td>
<td>60</td>
</tr>
<tr>
<td>BSC120x____</td>
<td>35  40  45  50</td>
<td>181</td>
<td>141</td>
<td>147</td>
<td>80</td>
</tr>
<tr>
<td>BSC120x____</td>
<td>55  60  65  70  75</td>
<td>231</td>
<td>166</td>
<td>172</td>
<td>105</td>
</tr>
</tbody>
</table>

All dimensions shown in millimeters unless otherwise noted.
BSC1000 Series 25mm Bore

Dowel Pin Locator Holes are designed for location and additional shear strength.

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Standard Stroke Length (mm)</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>BSC125X_5</td>
<td>10 15</td>
<td>120.</td>
<td>112.</td>
<td>123.</td>
<td>50.</td>
<td>13.</td>
<td>4</td>
</tr>
<tr>
<td>BSC125X_20</td>
<td>25 30</td>
<td>150.</td>
<td>127.</td>
<td>138.</td>
<td>65.</td>
<td>13.</td>
<td>6</td>
</tr>
<tr>
<td>BSC125X_35</td>
<td>40 45 50</td>
<td>190.</td>
<td>147.</td>
<td>158.</td>
<td>85.</td>
<td>13.</td>
<td>6</td>
</tr>
<tr>
<td>BSC125X_55</td>
<td>60 65 70 75</td>
<td>240.</td>
<td>172.</td>
<td>183.</td>
<td>110.</td>
<td>13.</td>
<td>6</td>
</tr>
<tr>
<td>BSC125X_80</td>
<td>85 90 95 100</td>
<td>290.</td>
<td>197.</td>
<td>208.</td>
<td>135.</td>
<td>1.</td>
<td>6</td>
</tr>
<tr>
<td>BSC125X_105</td>
<td>110 115 120 125</td>
<td>340.</td>
<td>222.</td>
<td>233.</td>
<td>160.</td>
<td>13.</td>
<td>6</td>
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<tr>
<td>BSC125X_130</td>
<td>135 140 145 150</td>
<td>390.</td>
<td>247.</td>
<td>258.</td>
<td>185.</td>
<td>13.</td>
<td>6</td>
</tr>
</tbody>
</table>

All dimensions shown in millimeters unless otherwise noted.

**Easy Multi-Axis Assemblies**

Pattern 1: Adapts to a BSC2000 Series, Style ‘B’ cylinder, of the same bore size. Also can be used for general purpose mounting.
## BSC1000 Series 40mm Bore

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Standard Stroke Length (mm)</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>BSC140X_5</td>
<td>10 15 20 25 30</td>
<td>165.6</td>
<td>149.5</td>
<td>166.7</td>
<td>71.13</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>BSC140X_35</td>
<td>40 45 50</td>
<td>205.6</td>
<td>149.5</td>
<td>186.7</td>
<td>91.13</td>
<td>6</td>
<td>4</td>
</tr>
<tr>
<td>BSC140X_55</td>
<td>60 65 70 75</td>
<td>255.6</td>
<td>194.5</td>
<td>211.7</td>
<td>116.13</td>
<td>6</td>
<td>4</td>
</tr>
<tr>
<td>BSC140X_80</td>
<td>85 90 95 100</td>
<td>305.5</td>
<td>219.5</td>
<td>236.7</td>
<td>141.13</td>
<td>6</td>
<td>4</td>
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<tr>
<td>BSC140X_105</td>
<td>110 115 120 125 130 135 145</td>
<td>405.6</td>
<td>269.5</td>
<td>286.7</td>
<td>191.13</td>
<td>6</td>
<td>4</td>
</tr>
<tr>
<td>BSC140X_155</td>
<td>160 170 175 180 185 190 195</td>
<td>505.6</td>
<td>319.5</td>
<td>336.7</td>
<td>241.13</td>
<td>6</td>
<td>4</td>
</tr>
</tbody>
</table>

All dimensions shown in millimeters unless otherwise noted.

Dowel Pin Locator Holes are designed for location and additional shear strength.

Easy Multi-Axis Assemblies

Pattern 1: Adapts to a BSC2000 Series, Style 'W', cylinder, of the same bore size. Also can be used for general purpose mounting.
**BSC1000 Series Load Ratings**

### Moment Loads

<table>
<thead>
<tr>
<th>Bore Size (mm)</th>
<th>Stroke (mm)</th>
<th>Push Max. kgf</th>
<th>Pull Max. kgf</th>
<th>µ</th>
<th>Coefficient of friction</th>
<th>C Basic Dynamic Load</th>
<th>Co Basic Static Load Rating</th>
<th>Ma kgf<em>m (lbf</em>in)</th>
<th>Da mm (in)</th>
<th>Mb kgf<em>m (lbf</em>in)</th>
<th>Mc kgf<em>m (lbf</em>in)</th>
<th>De mm (in)</th>
</tr>
</thead>
<tbody>
<tr>
<td>8mm</td>
<td>2.5-30</td>
<td>4.25</td>
<td>3.2</td>
<td>0.06</td>
<td>0.06</td>
<td>19.8</td>
<td>0.06</td>
<td>0.07</td>
<td>6.7</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>2.5-50</td>
<td>9</td>
<td>6.9</td>
<td>198</td>
<td>140</td>
<td>23.5</td>
<td>0.1</td>
<td>0.15</td>
<td>10</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>5-75</td>
<td>47</td>
<td>39.5</td>
<td>104</td>
<td>330</td>
<td>35</td>
<td>0.2</td>
<td>0.3</td>
<td>13</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>5-150</td>
<td>75</td>
<td>63</td>
<td>165</td>
<td>903</td>
<td>35.3</td>
<td>0.5</td>
<td>1</td>
<td>15.9</td>
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<td></td>
</tr>
<tr>
<td></td>
<td>5-200</td>
<td>192</td>
<td>161</td>
<td>423</td>
<td>1477</td>
<td>40.5</td>
<td>1.0</td>
<td>2</td>
<td>22.2</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Note: Theoretical coefficient of friction of the bearing for loads < 0.5C is 0.004. Increased frictional resistance due to moment loads and the frictional resistance of the cylinder are additional to the bearing resistance.

For example: 20mm x 30mm Stroke

Part No.: BSC120x30

- Da = 35mm
- Dc = 13mm
- If La = 50mm, Lb = 50mm or Lc = 0
- Then: Fa = \( \frac{M_a}{L_a} \) = 13 kgf = 29 lbf
  - \( M_a = 35 \times 13 = 455 \text{ kgf*m} = 1004 \text{ lbf*in} \)
  - \( L_a = 50 \text{ mm} \)
- Fb = \( \frac{M_b}{L_b} \) = 13 kgf = 29 lbf
  - \( M_b = 35 \times 13 = 455 \text{ kgf*m} = 1004 \text{ lbf*in} \)
  - \( L_b = 50 \text{ mm} \)
- Fc = \( \frac{M_c}{L_c} \) = 23 kgf = 51 lbf
  - \( M_c = 35 \times 23 = 805 \text{ kgf*m} = 1859 \text{ lbf*in} \)
  - \( L_c = 0 + 13 = 13 \text{ mm} \)

**CAUTION!**

Forces resulting from inertia must be considered in your application.

Use equipment within specifications.

---

Downward basic loads equal C and Co. For lateral loading, dynamic load rating equals 0.82 C and static load rating equals 0.76 Co. For upward loading, dynamic load rating equals 0.78 C and static load rating equals 0.70 Co.

The slide does not increase the push or pull capabilities of the pneumatic system. Flow controls are recommended to improve the life of the overall system if high loads and/or speeds are expected.

Basic dynamic load rating of the slide is defined as a load whose direction and magnitude are constant and under which 90% of the slides traveled 50 x 10^3 meters (1.9 million inches) without suffering from material damage due to rolling contact fatigue. Life is increased when moment loads are observed.

Basic static load rating of the slide is defined as the static load which gives a prescribed contact stress at the center of contact area between the rolling element and the raceway which are receiving the maximum load.

Basic loads and moment arm lengths are assumed centered on slide carriage. Moment and load directions are as illustrated:

La, Lb and Lc are distances from frame to loading point.

Formulas for allowable static loads in kg:

- \( Fa = \frac{Ma(1000)}{La-Da} \)
- \( Fb = \frac{Mb(1000)}{Lb-Da} \)
- \( Fc = \frac{Mc(1000)}{Lc+Dc} \)

For example: 20mm x 30mm Stroke

Part No.: BSC120x30

- Fa = \( \frac{1000 \times 13}{50 - 13} = 29 \text{ lbf} \)
- Fb = \( \frac{1000 \times 13}{50 - 13} = 29 \text{ lbf} \)
- Fc = \( \frac{1000 \times 23}{13} = 51 \text{ lbf} \)

---

Reference:

1kgf = 9.807N = 2.2046 lbf

1mm = 0.03937 in

1kgf*m = 9,807N*m

1lbf*in = 0.0115kgf*m

1kgf*m = 86.8 lbf*in

---

BSC2000 Series

Pneumatic Cylinder
8 mm, 12mm, 20mm, 25mm and 40mm Bore

General Information
- Recirculating ball type slide, factory matched
- Side or rear porting
- Sensor ready
- Three mounting styles
- Multi-axis applications - no transition plates required
- Stroke lengths (mm):
  - > 8mm bore: 2.5-30
  - > 12mm bore: 2.5-50
  - > 20mm bore: 5-75
  - > 25mm bore: 5-150
  - > 40mm bore: 5-200
- Multi-position and Multi-piston cylinders - See Accessories section
- Modifications welcome — Larger bore sizes, longer stroke lengths, etc. Consult factory

Available in 15 models
8mm Bore
  - End mount, Side mount, Thin mount
12mm Bore
  - End mount, Side mount, Thin mount
20mm Bore
  - End mount, Side mount, Thin mount
25mm Bore
  - End mount, Side mount, Thin mount
40mm Bore
  - End mount, Side mount, Thin mount

Note: Multi-position and Multi-piston design shown in Accessories section

Part number shown: BSC2B20x25

WARNING!
Pressurizing actuated equipment creates pinch points. Prevent operator access to moving equipment and work pieces.

CAUTION!
Mounting hardware must not interfere with ball slide function. Disassembly of ball slide voids warranty.

Three Mounting Versions — Available on all Bore Sizes
Rear View Shown

'S' Style
- End Mount
- Side Port

'B' Style
- Side Mount
- Broad side
- Side Port
- Sensor mounting track must be removed for thru mounting.

'T' Style
- Thin Side Mount
- Rear Port

SIGNATURE
SPACE EFFICIENCY
SLIM DESIGN
REMOVABLE COMTROIC® SENSOR TRACK
PORTS ON BSC SERIES 'T' MOUNT
SHORT LENGTH DESIGN

High Performance Cylinder
Machined Tooling Plate
Recirculating Ball Slide Carriage
Fixed Slide Rail

BSC2000 Series 8mm Bore Style ‘S’ End Mount

Dowel Pin Locator Holes are designed for location and additional shear strength.

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Standard Stroke Length (mm)</th>
<th>A</th>
<th>B</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>BSC2S8x___</td>
<td>2.5 5 7.5 10 12.5 15</td>
<td>49</td>
<td>47</td>
<td>38</td>
</tr>
<tr>
<td>BSC2S8x___</td>
<td>17.5 20 22.5 25 27.5 30</td>
<td>64</td>
<td>62</td>
<td>53</td>
</tr>
</tbody>
</table>

All dimensions shown in millimeters unless otherwise noted.

Easy Multi-Axis Assemblies
Both surfaces on the plate have mounting patterns:

Pattern 1:
Adapts to a BSC1000 Series mounting platform - or - a BSC2000 Series, Style ‘B’ cylinder, both of the same bore size. Also can be used for general purpose mounting.

Pattern 2:
Adapts to a BSC2000 Series, Style ‘B’ cylinder of the same bore size. Also can be used for...
BSC2000 Series 8mm Bore

Style ‘B’ Side Mount

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Standard Stroke Length (mm)</th>
<th>A</th>
<th>B</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>BSC2BB8___</td>
<td>2,5 7,5 10 12,5 15</td>
<td>49</td>
<td>47</td>
<td>38</td>
</tr>
<tr>
<td>BSC2BB8___</td>
<td>17,5 20 22,5 25 27,5 30</td>
<td>64</td>
<td>62</td>
<td>53</td>
</tr>
</tbody>
</table>

All dimensions shown in millimeters unless otherwise noted.

Dowel Pin Locator Holes are designed for location and additional shear strength.

Port Dowel Pin Locator Hole
2 DIA X 4 DP (2 PLACES)

TOOLING PLATE

MOUNTING HOLE
M4X0,7 TAP THRU
THRU MOUNT FOR M3X0,5
SHCS
5,65 DIA C BORE X 3,5 DP
(OPPOSITE SIDE)
(2 PLACES)

Dowel Pin Locator Hole
2 DIA X 2 DP (2 PLACES)

TOOLING PLATE

MOUNTING HOLE
M3X0,5 TAP X 5 DP
(MAX)
(2 PLACES)

Dowel Pin Locator Hole
2 DIA X 4 DP (2 PLACES)

TOOLING PLATE

MOUNTING HOLE
M3X0,5 TAP THRU
THRU MOUNT FOR M2,5
SHCS
5,2 DIA C BORE X 2,75 DP
(OPPOSITE SIDE)
(3 PLACES)

THIS VIEW SHOWN BELOW

Easy Multi-Axis Assemblies

Both surfaces on the plate have mounting patterns:

Pattern 1:
Adapts to a BSC1000 Series mounting platform - or - a BSC2000 Series, Style “B” cylinder, both of the same bore size.
Also can be used for general purpose mounting.

Pattern 2:
Adapts to a BSC2000 Series, Style “B” cylinder of the same bore size. Also can be used for
BSC2000 Series 8mm Bore  Style ‘T’ Side Mount

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Standard Stroke Length (mm)</th>
<th>A</th>
<th>B</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>BSC2T8x...</td>
<td>2,5 5 7,5 10 12,5 15 49 47 38</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>BSC2T8x...</td>
<td>17,5 20 22,5 25 27,5 30 64 62 53</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Dowel Pin Locator Holes are designed for location and additional shear strength.

All dimensions shown in millimeters unless otherwise noted.

Easy Multi-Axis Assemblies

Both surfaces on the plate have mounting patterns:

Pattern 1: Adapts to a BSC1000 Series mounting platform - or - a BSC2000 Series, Style ‘B’ cylinder, both of the same bore size. Also can be used for general purpose mounting.

Pattern 2: Adapts to a BSC2000 Series, Style ‘B’ cylinder of the same bore size. Also can be used for...
**BSC2000 Series 12mm Bore**

**Style ‘S’ End Mount**

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Standard Stroke Length (mm)</th>
<th>A</th>
<th>B</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>BSC2S12x</td>
<td>2,5 7,5 10 12,5 15</td>
<td>52</td>
<td>50,5</td>
<td>41</td>
</tr>
<tr>
<td>BSC2S12x</td>
<td>17,5 20 22,5 25 27,5 30</td>
<td>67</td>
<td>65,5</td>
<td>56</td>
</tr>
<tr>
<td>BSC2S12x</td>
<td>32,5 35 37,5 40 42,5 45 47,5 50</td>
<td>87</td>
<td>85,5</td>
<td>76</td>
</tr>
</tbody>
</table>

All dimensions shown in millimeters unless otherwise noted.

Dowel Pin Locator Holes are designed for location and additional shear strength.

**Easy Multi-Axis Assemblies**

Both surfaces on the plate have mounting patterns:

**Pattern 1:**
Adapts to a BSC1000 Series mounting platform or a BSC2000 Series, Style “B” cylinder, both of the same bore size. Also can be used for general purpose mounting.

**Pattern 2:**
Adapts to a BSC2000 Series, Style “B” cylinder of the same bore size. Also can be used for...
**BSC2000 Series 12mm Bore Style ‘B’ Side Mount**

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Standard Stroke Length (mm)</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
</tr>
</thead>
<tbody>
<tr>
<td>BSC2B12x</td>
<td>2.5 7.5 10 12.5 15</td>
<td>52</td>
<td>50.5</td>
<td>-</td>
<td>41</td>
<td>2</td>
</tr>
<tr>
<td>BSC2B12x</td>
<td>17.5 20 22.5 25 27.5 30</td>
<td>67</td>
<td>65.5</td>
<td>16</td>
<td>56</td>
<td>4</td>
</tr>
<tr>
<td>BSC2B12x</td>
<td>32.5 35 37.5 40 42.5 45 47.5 50</td>
<td>87</td>
<td>85.5</td>
<td>16</td>
<td>76</td>
<td>4</td>
</tr>
</tbody>
</table>

Dowel Pin Locator Holes are designed for location and additional shear strength.

All dimensions shown in millimeters unless otherwise noted.

**Easy Multi-Axis Assemblies**
Both surfaces on the plate have mounting patterns:

**Pattern 1:**
Adapts to a BSC1000 Series mounting platform - or - a BSC2000 Series, Style ‘B’ cylinder, both of the same bore size. Also can be used for general purpose mounting.

**Pattern 2:**
Adapts to a BSC2000 Series, Style ‘B’ cylinder of the same bore size. Also can be used for
**BSC2000 Series 12mm Bore**

**Style ‘T’ Thin Mount**

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Standard Stroke Length (mm)</th>
<th>A</th>
<th>B</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>BSC2T12x</td>
<td>2.5 5 7.5 10 12.5 15</td>
<td>52</td>
<td>50.5</td>
<td>41</td>
</tr>
<tr>
<td>BSC2T12x</td>
<td>17.5 20 22.5 25 27.5 30</td>
<td>67</td>
<td>65.5</td>
<td>56</td>
</tr>
<tr>
<td>BSC2T12x</td>
<td>32.5 35 37.5 40 42.5 45 47.5 50</td>
<td>87</td>
<td>85.5</td>
<td>76</td>
</tr>
</tbody>
</table>

Dowel Pin Locator Holes are designed for location and additional shear strength.

Dowel Pin Locator Hole 2 Dia X 3 DP (2 PLACES)

MOUNTING HOLE M3X0.5 TAP THRU (2 PLACES)

MOUNTING HOLE M4X0.7 TAP THRU FOR M3X0.5 SHCS 5.65 Dia C'Bore X 2.5 DP (OPPOSITE SIDE) (2 PLACES)

MOUNTING HOLE M5X0.8 TAP X 5 DP

PORT M5X0.8 TAP X 5 DP

PORT M3X0.5 TAP X 5 DP

Port Number Standard Stroke Length (mm) A B C

BSC2T12x 2.5 5 7.5 10 12.5 15 52 50.5 41

BSC2T12x 17.5 20 22.5 25 27.5 30 67 65.5 56

BSC2T12x 32.5 35 37.5 40 42.5 45 47.5 50 87 85.5 76

All dimensions shown in millimeters unless otherwise noted.

Easy Multi-Axis Assemblies

Both surfaces on the plate have mounting patterns:

**Pattern 1:** Adapts to a BSC1000 Series mounting platform - or - a BSC2000 Series, Style ‘B’ cylinder, both of the same bore size.

Also can be used for general purpose mounting.

**Pattern 2:** Adapts to a BSC2000 Series, Style ‘B’ cylinder of the same bore size. Also can be used for.


18
# BSC2000 Series 20mm Bore

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Standard Stroke Length (mm)</th>
<th>A</th>
<th>B</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>BSC2S20x</td>
<td>5  10  15</td>
<td>64.5</td>
<td>62.5</td>
<td>45</td>
</tr>
<tr>
<td>BSC2S20x</td>
<td>20  25  30</td>
<td>79.5</td>
<td>77.5</td>
<td>60</td>
</tr>
<tr>
<td>BSC2S20x</td>
<td>35  40  45</td>
<td>99.5</td>
<td>97.5</td>
<td>80</td>
</tr>
<tr>
<td>BSC2S20x</td>
<td>55  60  65  70  75</td>
<td>124.5</td>
<td>122.5</td>
<td>105</td>
</tr>
</tbody>
</table>

Dowel Pin Locator Holes are designed for location and additional shear strength.

All dimensions shown in millimeters unless otherwise noted.

## Tooling Plate

**Pattern 1:**
Adapts to a BSC1000 Series mounting platform - or - a BSC2000 Series, Style 'B' cylinder, both of the same bore size. Also can be used for general purpose mounting.

**Pattern 2:**
Adapts to a BSC2000 Series, Style 'B' cylinder of the same bore size. Also can be used for general purpose mounting.

## Easy Multi-Axis Assemblies

Both surfaces on the plate have mounting patterns:

**Pattern 1:**
Adapts to a BSC1000 Series mounting platform - or - a BSC2000 Series, Style 'B' cylinder, both of the same bore size. Also can be used for general purpose mounting.

**Pattern 2:**
Adapts to a BSC2000 Series, Style 'B' cylinder of the same bore size. Also can be used for general purpose mounting.
BSC2000 Series 20mm Bore  
Style ‘B’ Side Mount

Dowel Pin Locator Holes are designed for location and additional shear strength.

All dimensions shown in millimeters unless otherwise noted.

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Standard Stroke Length (mm)</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
</tr>
</thead>
<tbody>
<tr>
<td>BSC20B25</td>
<td>10 15</td>
<td>64.5</td>
<td>62.5</td>
<td>45</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>BSC20B30</td>
<td>20 25 30</td>
<td>79.5</td>
<td>77.5</td>
<td>60</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>BSC20B40</td>
<td>35 40 45 50</td>
<td>99.5</td>
<td>97.5</td>
<td>80</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>BSC20B55</td>
<td>55 60 65 70 75</td>
<td>124.5</td>
<td>122.5</td>
<td>105</td>
<td>4</td>
<td></td>
</tr>
</tbody>
</table>

Easy Multi-Axis Assemblies
Both surfaces on the plate have mounting patterns:

Pattern 1:
Adapts to a BSC1000 Series mounting platform - or - a BSC2000 Series, Style ‘B’ cylinder, both of the same bore size.
Also can be used for general purpose mounting.

Pattern 2:
Adapts to a BSC2000 Series, Style ‘B’ cylinder of the same bore size. Also can be used for

BSC2000 Series 20mm Bore Style ‘T’ Thin Mount

Dowel Pin Locator Holes are designed for location and additional shear strength.

<table>
<thead>
<tr>
<th>Port Number</th>
<th>Standard Stroke Length (mm)</th>
<th>A</th>
<th>B</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>BSC2T20x___</td>
<td>5 10 15</td>
<td>64.5</td>
<td>62.5</td>
<td>45</td>
</tr>
<tr>
<td>BSC2T20x___</td>
<td>20 25 30</td>
<td>79.5</td>
<td>77.5</td>
<td>60</td>
</tr>
<tr>
<td>BSC2T20x___</td>
<td>35 40 45 50</td>
<td>99.5</td>
<td>97.5</td>
<td>80</td>
</tr>
<tr>
<td>BSC2T20x___</td>
<td>55 60 65 70 75</td>
<td>124.5</td>
<td>122.5</td>
<td>105</td>
</tr>
</tbody>
</table>

All dimensions shown in millimeters unless otherwise noted.

Easy Multi-Axis Assemblies
Both surfaces on the plate have mounting patterns:

Pattern 1: Adapts to a BSC1000 Series mounting platform - or - a BSC2000 Series, Style ‘B’ cylinder, both of the same bore size. Also can be used for general purpose mounting.

Pattern 2: Adapts to a BSC2000 Series, Style ‘B’ cylinder of the same bore size. Also can be used for...
BSC2000 Series 25mm Bore Style ‘S’ End Mount

Dowel Pin Locator Holes are designed for location and additional shear strength.

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Standard Stroke Length (mm)</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
</tr>
</thead>
<tbody>
<tr>
<td>BSC25S5X</td>
<td>5 10 15</td>
<td>69.2</td>
<td>68.0</td>
<td>50.13</td>
<td>51.7</td>
</tr>
<tr>
<td>BSC25S5X</td>
<td>20 25 30</td>
<td>84.2</td>
<td>83.0</td>
<td>65.13</td>
<td>66.7</td>
</tr>
<tr>
<td>BSC25S5X</td>
<td>35 40 45 50</td>
<td>104.2</td>
<td>103.0</td>
<td>85.13</td>
<td>66.7</td>
</tr>
<tr>
<td>BSC25S5X</td>
<td>55 60 65 70 75</td>
<td>129.2</td>
<td>128.0</td>
<td>110.13</td>
<td>66.7</td>
</tr>
<tr>
<td>BSC25S5X</td>
<td>80 85 90 95 100</td>
<td>154.2</td>
<td>153.0</td>
<td>135.1</td>
<td>66.7</td>
</tr>
<tr>
<td>BSC25S5X</td>
<td>105 110 115 120 125</td>
<td>179.2</td>
<td>178.0</td>
<td>160.13</td>
<td>66.7</td>
</tr>
<tr>
<td>BSC25S5X</td>
<td>130 135 140 145 150</td>
<td>204.2</td>
<td>203.0</td>
<td>185.13</td>
<td>66.7</td>
</tr>
</tbody>
</table>

All dimensions shown in millimeters unless otherwise noted.

Easy Multi-Axis Assemblies

Both surfaces on the plate have mounting patterns:

Pattern 1: Adapts to a BSC1000 Series mounting platform - or - a BSC2000 Series, Style ‘B’ cylinder, both of the same bore size. Also can be used for general purpose mounting.

Pattern 2: Adapts to a BSC2000 Series, Style ‘B’ cylinder of the same bore size. Also can be used for


1/8-28 BSPP TAP X 8.5 DP (2 PLACES)
1/8-27 NPT PORTS AVAILABLE SPECIFY NPT OPTION

DOWEL PIN LOCATOR HOLE
3 DIA X 5 DP (4 PLACES)

MOUNTING HOLE
M5X0.8 TAP X 7 DP (MAX)

DOWEL PIN LOCATOR HOLE
4 DIA X 5 DP (2 PLACES)

MOUNTING HOLE
M5X0.8 TAP THRU THRU MOUNT FOR M4X0.7 SHCS
8 DIA C’BORE X 4.5 DP (OPPOSITE SIDE) (THIS TAP & C’BORE NOT AVAILABLE ON 15MM STROKE AND SHORTER) (2 PLACES)

MOUNTING HOLE
M6X1 TAP X 15 DP (2 PLACES)

DOWEL PIN LOCATOR HOLE
3 DIA X 4.5 DP (2 PLACES)

PORT
1/8-28 BSPP TAP X 8.5 DP (2 PLACES)
1/8-27 NPT PORTS AVAILABLE SPECIFY NPT OPTION

THIS VIEW SHOWN BELOW

DOWEL PIN LOCATOR HOLE
3 DIA X 4.5 DP (2 PLACES)

MOUNTING HOLE
M5X0.8 TAP THRU THRU MOUNT FOR M4X0.7 SHCS
8 DIA C’BORE X 4.5 DP (OPPOSITE SIDE) (THIS TAP & C’BORE NOT AVAILABLE ON 15MM STROKE AND SHORTER) (2 PLACES)

MOUNTING HOLE
M6X1 TAP X 15 DP (2 PLACES)

DOWEL PIN LOCATOR HOLE
3 DIA X 4.5 DP (2 PLACES)
### BSC2000 Series 25mm Bore

#### Style ‘B’ Side Mount

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Standard Stroke Length (mm)</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>BSC2B25X</td>
<td>5 10 15</td>
<td>69.2</td>
<td>66.0</td>
<td>---</td>
<td>50.13</td>
<td>2</td>
<td>51.7</td>
</tr>
<tr>
<td>BSC2B25X</td>
<td>20 25 30</td>
<td>84.2</td>
<td>83.0</td>
<td>19.0</td>
<td>65.13</td>
<td>4</td>
<td>66.7</td>
</tr>
<tr>
<td>BSC2B25X</td>
<td>35 40 45 50</td>
<td>104.2</td>
<td>103.0</td>
<td>19.0</td>
<td>85.13</td>
<td>4</td>
<td>66.7</td>
</tr>
<tr>
<td>BSC2B25X</td>
<td>55 60 65 70 75</td>
<td>129.2</td>
<td>128.0</td>
<td>19.0</td>
<td>110.13</td>
<td>4</td>
<td>66.7</td>
</tr>
<tr>
<td>BSC2B25X</td>
<td>80 85 90 95 100</td>
<td>154.2</td>
<td>153.0</td>
<td>19.0</td>
<td>135.13</td>
<td>4</td>
<td>66.7</td>
</tr>
<tr>
<td>BSC2B25X</td>
<td>105 110 115 120 125</td>
<td>179.2</td>
<td>178.0</td>
<td>19.0</td>
<td>160.13</td>
<td>4</td>
<td>66.7</td>
</tr>
<tr>
<td>BSC2B25X</td>
<td>130 135 140 145 150</td>
<td>204.2</td>
<td>203.0</td>
<td>19.0</td>
<td>185.13</td>
<td>4</td>
<td>66.7</td>
</tr>
</tbody>
</table>

All dimensions shown in millimeters unless otherwise noted.

Dowel Pin Locator Holes are designed for location and additional shear strength.

### Easy Multi-Axis Assemblies

Both surfaces on the plate have mounting patterns:

- **Pattern 1:** Adapts to a BSC1000 Series mounting platform - or - a BSC2000 Series, Style ‘B’ cylinder, both of the same bore size. Also can be used for general purpose mounting.
- **Pattern 2:** Adapts to a BSC2000 Series, Style ‘B’ cylinder of the same bore size. Also can be used for...
BSC2000 Series 25mm Bore

**Style ‘T’ Thin Mount**

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Standard Stroke Length (mm)</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
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</thead>
<tbody>
<tr>
<td>BSC2T25X</td>
<td>5 10 15</td>
<td>69.2</td>
<td>68.0</td>
<td>50.13</td>
<td>51.7</td>
</tr>
<tr>
<td>BSC2T25X</td>
<td>20 25 30</td>
<td>84.2</td>
<td>83.0</td>
<td>65.13</td>
<td>66.7</td>
</tr>
<tr>
<td>BSC2T25X</td>
<td>35 40 45 50</td>
<td>104.2</td>
<td>103.0</td>
<td>85.13</td>
<td>66.7</td>
</tr>
<tr>
<td>BSC2T25X</td>
<td>55 60 65 70 75</td>
<td>129.2</td>
<td>128.0</td>
<td>110.13</td>
<td>66.7</td>
</tr>
<tr>
<td>BSC2T25X</td>
<td>80 85 90 95 100</td>
<td>154.2</td>
<td>153.0</td>
<td>135.1</td>
<td>66.7</td>
</tr>
<tr>
<td>BSC2T25X</td>
<td>105 110 115 120 125</td>
<td>179.2</td>
<td>178.0</td>
<td>160.13</td>
<td>66.7</td>
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<tr>
<td>BSC2T25X</td>
<td>130 135 140 145 150</td>
<td>204.2</td>
<td>203.0</td>
<td>185.13</td>
<td>66.7</td>
</tr>
</tbody>
</table>

All dimensions shown in millimeters unless otherwise noted.

Dowel Pin Locator Holes are designed for location and additional shear strength.

### Easy Multi-Axis Assemblies

Both surfaces on the plate have mounting patterns:

**Pattern 1:**
Adapts to a BSC1000 Series mounting platform - or - a BSC2000 Series, Style ‘B’ cylinder, both of the same bore size. Also can be used for general purpose mounting.

**Pattern 2:**
Adapts to a BSC2000 Series, Style ‘B’ cylinder of the same bore size. Also can be used for

Dowel Pin Locator Holes are designed for location and additional shear strength.

### BSC2000 Series 40mm Bore Style ‘S’ End Mount

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Standard Stroke Length (mm)</th>
<th>A</th>
<th>B</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>BSC2S40X</td>
<td>5 10 15 20 25 30</td>
<td>92.0</td>
<td>87.5</td>
<td>71.1</td>
</tr>
<tr>
<td>BSC2S40X</td>
<td>35 40 45 50</td>
<td>112.0</td>
<td>107.5</td>
<td>91.1</td>
</tr>
<tr>
<td>BSC2S40X</td>
<td>55 60 65 70 75</td>
<td>137.0</td>
<td>132.5</td>
<td>116.1</td>
</tr>
<tr>
<td>BSC2S40X</td>
<td>80 85 90 95 100</td>
<td>162.0</td>
<td>157.5</td>
<td>141.1</td>
</tr>
<tr>
<td>BSC2S40X</td>
<td>105 110 115 120 125 130 135 140 145 150</td>
<td>212.0</td>
<td>207.5</td>
<td>191.1</td>
</tr>
<tr>
<td>BSC2S40X</td>
<td>155 160 165 170 175 180 185 190 195 200</td>
<td>262.0</td>
<td>257.5</td>
<td>241.1</td>
</tr>
</tbody>
</table>

All dimensions shown in millimeters unless otherwise noted.

---

**Easy Multi-Axis Assemblies**

Both surfaces on the plate have mounting patterns:

**Pattern 1:**
Adapts to a BSC2000 Series, Style ‘B’ cylinder, both of the same bore size. Also can be used for general purpose mounting.

**Pattern 2:**
Adapts to a BSC2000 Series, Style ‘B’ cylinder of the same bore size. Also can be used for general purpose mounting.
## BSC2000 Series 40mm Bore

**Style ‘B’ Side Mount**

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Standard Stroke Length (mm)</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
</tr>
</thead>
<tbody>
<tr>
<td>BSC2B40X</td>
<td>5  10  15  20  25  30</td>
<td>92,0</td>
<td>87,5</td>
<td>--</td>
<td>71,13</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>35  40  45  50</td>
<td>112,0</td>
<td>107,5</td>
<td>21,0</td>
<td>91,13</td>
<td>4</td>
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<tr>
<td></td>
<td>55  60  65  70  75</td>
<td>137,0</td>
<td>132,5</td>
<td>21,0</td>
<td>116,13</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>80  85  90  95  100</td>
<td>162,0</td>
<td>157,5</td>
<td>21,0</td>
<td>141,13</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>105  110  115  120  125</td>
<td>212,0</td>
<td>207,5</td>
<td>21,0</td>
<td>191,13</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>130  135  140  145  150</td>
<td>262,0</td>
<td>257,5</td>
<td>21,0</td>
<td>241,13</td>
<td>4</td>
</tr>
</tbody>
</table>

Dowel Pin Locator Holes are designed for location and additional shear strength.

All dimensions shown in millimeters unless otherwise noted.

---

### Easy Multi-Axis Assemblies

Both surfaces on the plate have mounting patterns:

**Pattern 1:**
- Adapts to a BSC2000 Series, Style ‘B’ cylinder, both of the same bore size. Also can be used for general purpose mounting.

**Pattern 2:**
- Adapts to a BSC2000 Series, Style ‘B’ cylinder of the same bore size. Also can be used for general purpose mounting.

---

BSC2000 Series 40mm Bore

Dowel Pin Locator Holes are designed for location and additional shear strength.

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Standard Stroke Length (mm)</th>
<th>A</th>
<th>B</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>BSC2000X</td>
<td>5  10  15  20  25  30</td>
<td>92</td>
<td>87.5</td>
<td>71.13</td>
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<td>91.13</td>
</tr>
<tr>
<td>BSC220X</td>
<td>55  60  65  70  75</td>
<td>137</td>
<td>132.5</td>
<td>116.13</td>
</tr>
<tr>
<td>BSC230X</td>
<td>80  85  90  95  100</td>
<td>162</td>
<td>157.5</td>
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<td>BSC240X</td>
<td>105 110 115 120 125 130 135 140 145 150</td>
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<td>207.5</td>
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<td>BSC250X</td>
<td>155 160 165 170 175 180 185 190 195 200</td>
<td>262</td>
<td>257.5</td>
<td>241.13</td>
</tr>
</tbody>
</table>

All dimensions shown in millimeters unless otherwise noted.

Easy Multi-Axis Assemblies
Both surfaces on the plate have mounting patterns:

Pattern 1: Adapts to a BSC2000 Series, Style 'B' cylinder, both of the same bore size. Also can be used for general purpose mounting.

Pattern 2: Adapts to a BSC2000 Series, Style 'B' cylinder of the same bore size. Also can be used for general purpose mounting.
## BSC2000 Series Load Ratings

### Moment Loads

<table>
<thead>
<tr>
<th>Bore Size</th>
<th>Stroke (mm)</th>
<th>Push Max. kgf (lbf)</th>
<th>Pull Max. kgf (lbf)</th>
<th>See *Note Below</th>
<th>Coefficient of friction</th>
<th>C Basic Dynamic Load Rating kgf (lbf)</th>
<th>Co Basic Static Load Rating kgf (lbf)</th>
<th>Mb kgf<em>m (lbf</em>in) static</th>
<th>Da mm (in)</th>
<th>Mb kgf<em>m (lbf</em>in) static</th>
<th>Mc kgf<em>m (lbf</em>in) static</th>
<th>Dc mm (in)</th>
</tr>
</thead>
<tbody>
<tr>
<td>8mm</td>
<td>2.5-15</td>
<td>4.25 (9.36)</td>
<td>3.2 (7.02)</td>
<td>See *Note Below</td>
<td>32 (72)</td>
<td>60 (132)</td>
<td>0.06 (5)</td>
<td>0.06 (5)</td>
<td>0.07 (6)</td>
<td>0.07 (6)</td>
<td>8 (315)</td>
<td>0.07 (6)</td>
</tr>
<tr>
<td></td>
<td>17.5-30</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>8</td>
<td></td>
<td></td>
<td>8 (315)</td>
</tr>
<tr>
<td>12mm</td>
<td>2.5-15</td>
<td>9 (19.89)</td>
<td>6.9 (15.21)</td>
<td>See *Note Below</td>
<td>90 (198)</td>
<td>140 (308)</td>
<td>0.1 (8.7)</td>
<td>0.1 (8.7)</td>
<td>0.15 (13)</td>
<td>0.15 (13)</td>
<td>11 (433)</td>
<td>0.15 (13)</td>
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<tr>
<td></td>
<td>17.5-30</td>
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<td>73.5</td>
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<tr>
<td>20mm</td>
<td>5-15</td>
<td>47 (104)</td>
<td>39.5 (87)</td>
<td>See *Note Below</td>
<td>150 (330)</td>
<td>230 (506)</td>
<td>0.2 (17)</td>
<td>0.2 (17)</td>
<td>0.3 (26)</td>
<td>0.3 (26)</td>
<td>13 (5.1)</td>
<td>0.3 (26)</td>
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<tr>
<td></td>
<td>20-30</td>
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<td>35-50</td>
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<td>55-75</td>
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<td></td>
<td></td>
<td>108</td>
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</tr>
<tr>
<td>25mm</td>
<td>5-15</td>
<td>75 (16.5)</td>
<td>63 (139)</td>
<td>See *Note Below</td>
<td>270 (590)</td>
<td>410 (903)</td>
<td>0.5 (43.4)</td>
<td>0.5 (43.4)</td>
<td>1 (86.8)</td>
<td>1 (86.8)</td>
<td>15.9 (43)</td>
<td>1 (86.8)</td>
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<td>35-50</td>
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<td>64.6 (2.54)</td>
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<td>55-75</td>
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<td></td>
<td>100-115</td>
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<td>109.6 (4.31)</td>
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<td>134.8 (5.3)</td>
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<td>134.8 (5.3)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>200-240</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>169.6 (6.28)</td>
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<td>169.6 (6.28)</td>
<td></td>
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<tr>
<td></td>
<td>250-325</td>
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<td></td>
<td>194.8 (7.27)</td>
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<td>194.8 (7.27)</td>
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</tr>
<tr>
<td>40</td>
<td>5-30</td>
<td>192 (423)</td>
<td>161 (355)</td>
<td>See *Note Below</td>
<td>450 (992)</td>
<td>670 (1477)</td>
<td>1 (86.8)</td>
<td>1 (86.8)</td>
<td>2 (173.4)</td>
<td>2 (173.4)</td>
<td>22.2 (873)</td>
<td>2 (173.4)</td>
</tr>
<tr>
<td></td>
<td>35-50</td>
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<td>85.5</td>
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<td>85.5</td>
</tr>
<tr>
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<td>55-75</td>
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<td></td>
<td>110.5</td>
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<td>100-115</td>
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<td>135.5</td>
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<td>135.5</td>
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<td>155-200</td>
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<td></td>
<td>185.5</td>
<td></td>
<td></td>
<td>185.5</td>
</tr>
</tbody>
</table>

*Note: Theoretical coefficient of friction of the bearing for loads < 0.05C is < 0.004. Increased frictional resistance due to moment loads and the frictional resistance of the cylinder are additional to the bearing resistance.
BSC2000 Series Load Ratings

Moment Loads

Downward basic loads equal C and Co. For lateral loading, dynamic load rating equals 0,82 C and static load rating equals 0,76 Co. For upward loading, dynamic load rating equals 0,78 C and static load rating equals 0,70 Co.

The slide does not increase the push or pull capabilities of the pneumatic system. Flow controls are recommended to improve the life of the overall system if high loads and/or speeds are expected. Basic dynamic load rating of the slide is defined as a load whose direction and magnitude are constant and under which 90% of the slides traveled 50 x 10^3 meters (1.9 million inches) without suffering from material damage due to rolling contact fatigue. Life is increased when moment loads are observed.

Basic static load rating of the slide is defined as the static load which gives a prescribed contact stress at the center of contact area between the rolling element and the raceway which are receiving the maximum load.

Basic loads and moment arm lengths are assumed centered on slide carriage. Moment and load directions are as illustrated:

La, Lb and Lc are distances from tooling plate to loading point.

Formulas for allowable static loads in kg:

- \( Fa = \frac{Ma}{La+Da} \times 1000 \)
- \( Fb = \frac{Mb}{Lb+Da} \times 1000 \)
- \( Fc = \frac{Mc}{Lc+Dc} \times 1000 \)

For example: 20mm x 30mm Stroke

Part No.: BSC2_20x30

If \( La, Lb, \) or \( Lc = 0 \)

Then: \( Fa = \frac{2}{63} \times 1000 = 3,2 \text{ kgf} = 7 \text{ lbf} \)

\( Fb = \frac{2}{63} \times 1000 = 3,2 \text{ kgf} = 7 \text{ lbf} \)

\( Fc = \frac{3}{13} \times 1000 = 23 \text{ kgf} = 51 \text{ lbf} \)

CAUTION!

Forces resulting from inertia must be considered in your application.

Use equipment within specifications.

Reference:

- 1 kgf = 9,807N = 2.2046 lbf
- 1 mm = .03937 in
- 1 kgf*m = 9.807 N*m
- 1 lbf*in = 0,0115 kgf*m
- 1 kgf*m = 86.8 lbf*in
MPA

Multi-Position Cylinder

Available on all BSC1000 Series and BSC2000 Series, B style only

Example:
1. Fully retracted, position 1
2. Usually a low constant pressure is applied to Port D, to prevent over travel or backlash in the middle increment
3. Send normal pressure to Port A, position 2
4. Send normal pressure to Port C, position 3
5. By relieving pressure to Port A and Port C unit will retract, note 2 - or - you can retract unit via Port D with full pressure
6. Port B is a vent only

Consult your local distributor to work through this schematic. They can also advise you on other control valve techniques for your specific application.

Piston Area mm² (in²)

<table>
<thead>
<tr>
<th>Bore</th>
<th>Push</th>
<th>Pull</th>
</tr>
</thead>
<tbody>
<tr>
<td>8</td>
<td>50 [0.8]</td>
<td>37 [0.06]</td>
</tr>
<tr>
<td>12</td>
<td>113 [1.7]</td>
<td>85 [0.13]</td>
</tr>
<tr>
<td>20</td>
<td>314 [4.9]</td>
<td>263 [4.0]</td>
</tr>
</tbody>
</table>

Reference: Dimensional Information on the following page

Multi-Piston Cylinder

Example: 12mm Bore
1. Air pressure to port D fully retracts the cylinder with the power of one piston. Piston Area 85mm²
2. The power of the piston is increased when air is supplied simultaneously to ports A and C. Piston Area 198mm² (two cylinders)
3. Use 'Dimensional Information' on the following page for reference.
4. Standard 4 way valve circuit
5. Port B is a vent only

Piston Area mm² (in²)

<table>
<thead>
<tr>
<th>Bore</th>
<th>Push</th>
<th>Pull</th>
</tr>
</thead>
<tbody>
<tr>
<td>8</td>
<td>87 [1.4]</td>
<td>37 [0.6]</td>
</tr>
<tr>
<td>12</td>
<td>198 [3.3]</td>
<td>85 [1.3]</td>
</tr>
<tr>
<td>20</td>
<td>577 [9.4]</td>
<td>263 [4.0]</td>
</tr>
</tbody>
</table>

Reference: Dimensional Information on the following page
MPA /Additional Option

MPA Option - Dimensional Information

Stroke increments are obtained using internal spacers in the ‘MPA cylinder option. Consult the factory with any questions.

<table>
<thead>
<tr>
<th>Bore Diameter</th>
<th>Standard Stroke Length</th>
<th>8mm Bore Stroke Increments</th>
</tr>
</thead>
<tbody>
<tr>
<td>BSC1000 or</td>
<td>2.5 5 7.5 10 12.5 15</td>
<td>X 38 Y 23 Z 12.6</td>
</tr>
<tr>
<td>Style B only</td>
<td>17.5 20 22.5 25 27.5 30</td>
<td></td>
</tr>
<tr>
<td>BSC2000-</td>
<td>2.5 5 7.5 10 12.5 15</td>
<td>12mm Bore Standard Stroke Length</td>
</tr>
<tr>
<td>Style B only</td>
<td>17.5 20 22.5 25 27.5 30</td>
<td>X 41 Y 25,4 Z 18.6</td>
</tr>
<tr>
<td>BSC1000 or</td>
<td>2.5 5 7.5 10 12.5 15</td>
<td>20mm Bore Standard Stroke Length</td>
</tr>
<tr>
<td>Style B only</td>
<td>17.5 20 22.5 25 27.5 30</td>
<td>X 45 Y 39 Z 25.6</td>
</tr>
<tr>
<td>BSC2000-</td>
<td>2.5 5 7.5 10 12.5 15</td>
<td></td>
</tr>
<tr>
<td>Style B only</td>
<td>17.5 20 22.5 25 27.5 30</td>
<td></td>
</tr>
<tr>
<td>BSC1000 or</td>
<td>2.5 5 7.5 10 12.5 15</td>
<td>25mm Bore Standard Stroke Length</td>
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<tr>
<td>Style B only</td>
<td>17.5 20 22.5 25 27.5 30</td>
<td>X 47 Y 33 Z 33</td>
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<tr>
<td>BSC2000-</td>
<td>2.5 5 7.5 10 12.5 15</td>
<td></td>
</tr>
<tr>
<td>Style B only</td>
<td>17.5 20 22.5 25 27.5 30</td>
<td></td>
</tr>
<tr>
<td>BSC1000 or</td>
<td>2.5 5 7.5 10 12.5 15</td>
<td>40mm Bore Standard Stroke Length</td>
</tr>
<tr>
<td>Style B only</td>
<td>17.5 20 22.5 25 27.5 30</td>
<td>X 51.7 Y 47 Z 33</td>
</tr>
<tr>
<td>BSC2000-</td>
<td>2.5 5 7.5 10 12.5 15</td>
<td></td>
</tr>
<tr>
<td>Style B only</td>
<td>17.5 20 22.5 25 27.5 30</td>
<td></td>
</tr>
</tbody>
</table>
### MPA / Additional Options

#### Flow Controls
Metered out flow controls only

<table>
<thead>
<tr>
<th>Port</th>
<th>A</th>
<th>B</th>
</tr>
</thead>
<tbody>
<tr>
<td>M5</td>
<td>15</td>
<td>15,1</td>
</tr>
<tr>
<td>G18</td>
<td>25,4</td>
<td>23,4</td>
</tr>
</tbody>
</table>

**Installation locations:**

- Factory Installed Option
  - PC
- Ordering Suffix: PC

**Example:** PC1, PC2, or PC3

#### Hydraulic Seals
Seal material is Nitrile and Urethane. Moderate resistance to abrasion, high pressure and shock. Low temperature decreases flexibility.

Note: 20, 25, and 40mm bore only

**Material:** Nitrile and Urethane

**Rating:** -20ºC - 120ºC
(0ºF - 250ºF)

### Application Specific

#### Modified Ball Slide Cylinder Examples
Consult the factory with your unique ball slide application. We can promptly quote a cylinder with your custom requirements.

Examples include:
- Extra high load capacities
- Double carriages
- Custom tooling plates, sliding element brackets
- Multi-axis assemblies
- Larger bore sizes
- Longer stroke lengths
**Sensors**

**Standard Limit Sensors**

- Low cost and compact size
- Dual LED indicators for power and signal
- Circuit protection/surge and polarity
- High-flex robotic grade cable with 4.8mm (3/16") bend radius. 105 strand primaries.
- CE compliant / IP67 and NEMA 6 rated
- 100% solid state device for maximum life
- 3 cord options

(Shown with Quick Disconnect Option)

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Sensor Type (Wiring diagrams and definitions on page 5)</th>
<th>Cord Types</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Quick</td>
</tr>
<tr>
<td>WSKL</td>
<td>NPN</td>
<td>Disconnect</td>
</tr>
<tr>
<td>WSKLP</td>
<td></td>
<td>✔</td>
</tr>
<tr>
<td>WSKL3</td>
<td></td>
<td>✔</td>
</tr>
<tr>
<td>WSKLPS</td>
<td></td>
<td>✔</td>
</tr>
</tbody>
</table>

**Optional Quick Disconnect Sensor Cable**

with threaded, sealed connectors  
Part Number - Specify K or C

3 Prong Plug  
#WSKL, #WSCLP, #WSKLPS, #WSCLPS

3 Socket Receptacle  
For use with:  
#WSKL, #WSCLP, #WSKLPS, #WSCLPS,  
#HSK, #HSC, #WSKLPS, #WSCLPS

Sold Separately

<table>
<thead>
<tr>
<th>Part Number</th>
<th>3 Socket Receptacle</th>
</tr>
</thead>
<tbody>
<tr>
<td>R3</td>
<td></td>
</tr>
</tbody>
</table>

**Plug - 3 Prong**  
Part Number  
R3

[Diagram of 3 Prong Plug]

**Receptacle - 3 Socket**  
Part Number  
R3

[Diagram of 3 Socket Receptacle]
Sensors

Comtronic® Sensors Dimensional Information

Must specify ‘K’ (sinking) or ‘C’ (sourcing) when ordering

Part Number - Specify K or C

Part No. WS_KL-3 - Sinking output with 3 meter cable.

Wiring Diagrams and Definitions

For units with flying leads

NPN Output
Sinking (K)

PNP Output
Sourcing (C)

• Ideal for complex controls utilizing multiple power supplies.

A “sinking” output sensor completes a circuit by connecting the load to ground. Sinking output sensors in a sequence can have different supply voltages. The ground is their common factor.

• Ideal for single power supply applications.

A “sourcing” output sensor completes a circuit by connecting the load to the supply current. All sourcing output sensors must have the same supply voltage.

Life Calculation by Nomograph

BSC1000 Series or BSC2000 Series - Any stroke length

Rated life of the sliding element can be readily calculated from following graph:

Calculation of the rated life of BSC2B20x30 under the following operating conditions:
- Downward load: 60 kgf
- Stroke length: 30mm
- Number of strokes per minute: 20 cpm

The basic dynamic load rating of this rolling guide is
- \( C = 150 \text{ kgf} \) (see BSC2 Load Rating pages) and the downward load is
- \( F = 60 \text{ kgf} \)

Therefore, \( S = \frac{150}{60} = 2.5 \)

\( 2Sn_j \times 10^2 = 2 \times 30 \times 20 \times 10^2 = 1.2 \)

On the above nomograph, from the intersection point of the line \( C/F = 2.5 \) and the line \( 2Sn_j \times 10^2 = 1.2 \), the rated life in hours, \( Lh \), can be obtained as approximately 11000 hours.
### Load Correction Factor

#### Safety Correction Factor, \( f_s \)

\[
fs = \frac{Co}{Cs}
\]

Where:
- \( f_s \) = Safety factor
- \( Co \) = Basic static load rating (see Load Rating pages)
- \( Cs \) = Static Load

#### Impact and Vibrations

<table>
<thead>
<tr>
<th>Impact and Vibrations</th>
<th>Speed (V)</th>
<th>Measured Vibrations (G)</th>
<th>( fs )</th>
</tr>
</thead>
<tbody>
<tr>
<td>Without external impacts or vibrations</td>
<td>At low speed ( V \leq 15 ) (m/min)</td>
<td>Corresponding acceleration ( \leq 0.5G )</td>
<td>1–3</td>
</tr>
<tr>
<td>Without significant impact or vibrations</td>
<td>At medium speed 15 &lt; ( V \leq 60 ) (m/min)</td>
<td>0.5G ( \leq 1.0 )</td>
<td>2–4</td>
</tr>
<tr>
<td>With external impact and vibrations</td>
<td>At high speed ( V &gt; 60 ) (m/min)</td>
<td>1.0G ( \leq 2.0 )</td>
<td>3–5</td>
</tr>
</tbody>
</table>

### Ball Slide Cylinder Weights

#### Weights by Bore Size and Series

#### 8mm Bore BSC1 and BSC2

<table>
<thead>
<tr>
<th>Stroke</th>
<th>Weight</th>
<th>Stroke</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.5-15</td>
<td>2.5 OZ</td>
<td>2.5-15</td>
<td>2.5 OZ</td>
</tr>
<tr>
<td>17.5-30</td>
<td>3 OZ</td>
<td>17.5-30</td>
<td>3 OZ</td>
</tr>
</tbody>
</table>

#### 12mm Bore BSC1 and BSC2

<table>
<thead>
<tr>
<th>Stroke</th>
<th>Weight</th>
<th>Stroke</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.5-15</td>
<td>5 OZ</td>
<td>2.5-15</td>
<td>4 OZ</td>
</tr>
<tr>
<td>17.5-30</td>
<td>6 OZ</td>
<td>17.5-30</td>
<td>5 OZ</td>
</tr>
<tr>
<td>32.5-50</td>
<td>7 OZ</td>
<td>32.5-50</td>
<td>6 OZ</td>
</tr>
</tbody>
</table>

#### 20mm Bore BSC1 and BSC2

<table>
<thead>
<tr>
<th>Stroke</th>
<th>Weight</th>
<th>Stroke</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>5-15</td>
<td>11.5 OZ</td>
<td>5-15</td>
<td>9 OZ</td>
</tr>
<tr>
<td>20-30</td>
<td>13 OZ</td>
<td>20-30</td>
<td>10.5 OZ</td>
</tr>
<tr>
<td>35-50</td>
<td>15.5 OZ</td>
<td>35-50</td>
<td>12.5 OZ</td>
</tr>
<tr>
<td>55-75</td>
<td>1 LB 3 OZ</td>
<td>55-75</td>
<td>15 OZ</td>
</tr>
</tbody>
</table>

#### 25mm Bore BSC1 and BSC2

<table>
<thead>
<tr>
<th>Stroke</th>
<th>Weight</th>
<th>Stroke</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>5-15</td>
<td>1 LB 2 OZ</td>
<td>5-15</td>
<td>13.5 OZ</td>
</tr>
<tr>
<td>20-30</td>
<td>1 LB 5 OZ</td>
<td>20-30</td>
<td>1 LB</td>
</tr>
<tr>
<td>35-50</td>
<td>1 LB 8.5 OZ</td>
<td>35-50</td>
<td>1 LB 3.5 OZ</td>
</tr>
<tr>
<td>55-75</td>
<td>1 LB 13.5 OZ</td>
<td>55-75</td>
<td>1 LB 8 OZ</td>
</tr>
<tr>
<td>80-100</td>
<td>2 LB 2.5 OZ</td>
<td>80-100</td>
<td>1 LB 12.5 OZ</td>
</tr>
<tr>
<td>105-125</td>
<td>2 LB 7.5 OZ</td>
<td>105-125</td>
<td>2 LB 1 OZ</td>
</tr>
<tr>
<td>130-150</td>
<td>2 LB 12.5 OZ</td>
<td>130-150</td>
<td>2 LB 5.5 OZ</td>
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</tbody>
</table>

#### 40mm Bore BSC1 and BSC2

<table>
<thead>
<tr>
<th>Stroke</th>
<th>Weight</th>
<th>Stroke</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>20-30</td>
<td>2 LB 14.5 OZ</td>
<td>20-30</td>
<td>2 LB 2.5 OZ</td>
</tr>
<tr>
<td>35-50</td>
<td>3 LB 6 OZ</td>
<td>35-50</td>
<td>2 LB 9 OZ</td>
</tr>
<tr>
<td>55-75</td>
<td>3 LB 15.5 OZ</td>
<td>55-75</td>
<td>3 LB 1.5 OZ</td>
</tr>
<tr>
<td>80-100</td>
<td>4 LB 11 OZ</td>
<td>80-100</td>
<td>3 LB 9.5 OZ</td>
</tr>
<tr>
<td>105-150</td>
<td>5 LB 12 OZ</td>
<td>105-150</td>
<td>4 LB 10.5 OZ</td>
</tr>
<tr>
<td>155-200</td>
<td>6 LB 15 OZ</td>
<td>155-200</td>
<td>5 LB 11 OZ</td>
</tr>
<tr>
<td>205-250</td>
<td>8 LB 2 OZ</td>
<td>205-250</td>
<td>6 LB 12 OZ</td>
</tr>
<tr>
<td>255-300</td>
<td>9 LB 1 OZ</td>
<td>255-300</td>
<td>6 LB 12 OZ</td>
</tr>
</tbody>
</table>
Special Conditions and Limited Warranty

Determination of the suitability of any information or product for the application contemplated by any user or the manner of that use is the sole responsibility of the user.

Compact Automation Products, LLC reserves the right to improve or change designs without notice.

All orders are subject to acceptance by the factory sales department.

Compact Automation Products, LLC agrees to repair or replace to the original purchaser any standard parts or products for a period of 12 months from date of shipment which Compact Automation Products, LLC determines upon inspection to be defective in workmanship or material. Wear components including but not limited to seals and bearings are excluded from this warranty.

Under no circumstance may merchandise be returned without written authorization from the factory.

This warranty is void in the event the product has been tampered with, altered, or serviced by unauthorized personnel.

Compact Automation Products, LLC’s total responsibility for any claims, damages, losses or liabilities related to the product covered thereunder shall not exceed the purchase price of such product. In no event shall Compact Automation Products, LLC be liable for any special, indirect, incidental or consequential damages of any character, including but not limited to loss of use of productive facilities or equipment, lost profit, property damage, transportation, installation or removal or lost production whether suffered by purchaser or third party. Compact Automation Products, LLC disclaims all liability for any and all cost, claims demands, charges, expenses, and other damages, either direct or indirect, incident to all property damage arising out of any cause of action based on strict liability. This warranty gives you specific legal rights and you may have other rights, which vary from state to state.