BCK

STRETCH ROD CYLINDERS
for Krones® Stretch Blow Molding Machines

Simplified Pneumatic System
Easy Maintenance
Better Delivery
Better Price

Shown with optional MAC valve -U23

ISO-9001 CERTIFIED
Quality Management System Certified

BCK01

phd
SOLUTIONS FOR INDUSTRIAL AUTOMATION
www.phdinc.com

PHD is a member of the MAC Distributor Network
ORDERING DATA: SERIES BCK STRETCH ROD CYLINDERS

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TO ORDER SPECIFY:
Product Line, Series, Type, OEM Cylinder No., Design No., Bore Size, Metric Stroke, Mandatory Option, and Cylinder Options if required.

NOTES:
1) *-DR must be specified.
2) Standard stretch rod cylinder ordering number is as follows:
   BCK1-5-50 x 390 - DR (-U19.)
   -U23 or -U19 option needs to be specified for valve to be attached to unit.

CONTACT PHD FOR SMALLER OR LARGER BORES.

CONTACT PHD FOR LONGER STROKES.
**Major Benefits**

- Direct OEM replacement
- Single pressure operation
- ISO 2 valve compatible
- Retract cushion control factory set for retract end of stroke deceleration
- Cylinders easily field repairable to maximize investment
- Internal shock pads standard on extend and retract
- Food grade lubrication throughout

**Significantly Longer Life**

*Reduces Maintenance Downtime*

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ENGINEERING DATA: SERIES BCK STRETCH ROD CYLINDERS

### ACTUATOR SPEEDS
Factory set on retract. Cam controlled on extend by machine.

### MAXIMUM ALLOWABLE KINETIC ENERGY
Series BCK Cylinder is provided with a cushion retract. Its maximum kinetic energy rating is 60.5 in-lb [6.84 Nm].

### LIFE EXPECTANCY
Series BCK Cylinders have been designed for over 20 million trouble-free cycles.

### LUBRICATION
Series BCK Cylinders are lubricated internally at the factory for the life of the cylinder. PHD uses FDA food grade lubrication per regulation 21 CFR 1789.3570. Any other lubrication applied to the cylinder may decrease the life expectancy.

### MAINTENANCE
As with most PHD products, these cylinders are field repairable. Repair kits, piston and rod assemblies, and main structural components are available as needed for extended service.

### SPECIFICATIONS

<table>
<thead>
<tr>
<th>SPECIFICATIONS</th>
<th>IMPERIAL</th>
<th>METRIC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type</td>
<td>Pneumatic Cylinder</td>
<td></td>
</tr>
<tr>
<td>Series</td>
<td>BCK Stretch Rod Actuator</td>
<td></td>
</tr>
<tr>
<td>Bore Size</td>
<td>1.969 in</td>
<td>50 mm</td>
</tr>
<tr>
<td>Bore Area – Extend</td>
<td>3.04 in²</td>
<td>1963 mm²</td>
</tr>
<tr>
<td>Bore Area – Retract</td>
<td>2.56 in²</td>
<td>1649 mm²</td>
</tr>
<tr>
<td>Theoretical Output @ 87 psi [8 bar]</td>
<td>264.5 lb</td>
<td>1176.6 N</td>
</tr>
<tr>
<td>Fluid</td>
<td>Air</td>
<td></td>
</tr>
<tr>
<td>Operation</td>
<td>Double Acting</td>
<td></td>
</tr>
<tr>
<td>Operating Pressure Range</td>
<td>7.5 - 150 psi</td>
<td>0.5 - 10 bar</td>
</tr>
<tr>
<td>Ambient and Fluid Temperature</td>
<td>-20° to 180°F</td>
<td>-29° to 82°C</td>
</tr>
<tr>
<td>Operating Piston Speed (Typical)</td>
<td>Factory Set on Retract Cam Controlled on Machine</td>
<td></td>
</tr>
<tr>
<td>Cushion, Adjustable Retract</td>
<td>Standard (Factory Set)</td>
<td></td>
</tr>
<tr>
<td>Lubrication</td>
<td>FDA Regulation 21 CFR 1789.3570</td>
<td></td>
</tr>
<tr>
<td>Port Size</td>
<td>G 1/4 Head</td>
<td></td>
</tr>
<tr>
<td>Stroke</td>
<td>15.354 in</td>
<td>390 mm</td>
</tr>
<tr>
<td>Stroke Tolerance</td>
<td>+.079/-0.000 in</td>
<td>+2.0/-0.0 mm</td>
</tr>
<tr>
<td>Bumper</td>
<td>Thermoplastic Polyester Elastomer</td>
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</tr>
<tr>
<td>Heads &amp; Caps</td>
<td>Anodized Aluminum</td>
<td></td>
</tr>
<tr>
<td>Cylinder Tube</td>
<td>Anodized Aluminum</td>
<td></td>
</tr>
<tr>
<td>Piston Rod</td>
<td>Hard Chrome Plated Steel</td>
<td></td>
</tr>
<tr>
<td>Rod Bearing</td>
<td>Engineered Polymer</td>
<td></td>
</tr>
<tr>
<td>Piston &amp; Rod Seal Material</td>
<td>Urethane</td>
<td></td>
</tr>
</tbody>
</table>

### VALVE SPECIFICATIONS

<table>
<thead>
<tr>
<th>SPECIFICATIONS</th>
<th>IMPERIAL</th>
<th>METRIC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Series</td>
<td>ISO 2 (ISO 5599/1)</td>
<td></td>
</tr>
<tr>
<td>Function</td>
<td>5 / 2</td>
<td></td>
</tr>
<tr>
<td>Fluid</td>
<td>Air</td>
<td></td>
</tr>
<tr>
<td>Operator</td>
<td>Single</td>
<td></td>
</tr>
<tr>
<td>Pilot</td>
<td>Internal</td>
<td></td>
</tr>
<tr>
<td>Spool Return</td>
<td>Air Only</td>
<td></td>
</tr>
<tr>
<td>Solenoid</td>
<td>24 Vdc (5.4 W)</td>
<td></td>
</tr>
<tr>
<td>Voltage Range</td>
<td>-15% to +10% from Nominal</td>
<td></td>
</tr>
<tr>
<td>Electrical Connector</td>
<td>DIN 43650, Form A</td>
<td></td>
</tr>
<tr>
<td>Manual Operator</td>
<td>Non-locking Recessed</td>
<td></td>
</tr>
<tr>
<td>Pilot Exhaust</td>
<td>Muffled</td>
<td></td>
</tr>
<tr>
<td>Flow</td>
<td>3.0 Cv</td>
<td></td>
</tr>
<tr>
<td>Lubrication</td>
<td>FDA Regulation 21 CFR 1789.3570</td>
<td></td>
</tr>
<tr>
<td>Filtration</td>
<td>40 Micron</td>
<td></td>
</tr>
<tr>
<td>Operating Pressure Range</td>
<td>20 to 150 psi</td>
<td>1.37 to 10 bar</td>
</tr>
<tr>
<td>Ambient and Fluid Temperature</td>
<td>0° to 120°F</td>
<td>-18° to +50°C</td>
</tr>
</tbody>
</table>

### SCHEMATIC DIAGRAM

![Schematic Diagram](image-url)
DIMENSIONS: SERIES BCK STRETCH ROD CYLINDERS

CAUTION: *A tamper evident tag is placed over the cushion control needle cavity. Removal of the tag and/or adjustment of the cushion needle will void the warranty of the Series BCK Cylinder.

NOTES:
1) UNIT SHOWN AT 390 mm TRAVEL
2) ALL DIMENSIONS ARE REFERENCE ONLY
3) DIMENSIONS IN [ ] INDICATE VALUES IN mm
4) MAXIMUM STROKE IS 15.354 [390]
5) MINIMUM STROKE IS 6.457 [164]
6) FOR STROKES SHORTER THAN 390 SUBTRACT .019 [.5 mm]
   FOR EACH 1 mm OF STROKE REDUCTION.
**U19 MAC ISO 2 SERIES VALVE TOP ORIENTED DIN CONNECTION**

A MAC ISO 2 Series valve is optionally provided and assembled to the unit by specifying the -U19 option. The valve is equipped with a top oriented DIN 43650, shape A connector, and is lubricated with FDA Regulation 21 CFR 1789.3570 food grade lubrication. Refer to valve specification chart on page 4.

**NOTES:**
1) UNIT SHOWN AT 390 mm TRAVEL
2) ALL DIMENSIONS ARE REFERENCE ONLY
3) DIMENSIONS IN [ ] INDICATE VALUES IN mm
4) MAXIMUM STROKE IS 15.354 [390]
5) MINIMUM STROKE IS 6.457 [164]
6) FOR STROKES SHORTER THAN 390 SUBTRACT .019 [.5 mm]
   FOR EACH 1 mm OF STROKE REDUCTION.

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**U23 MAC ISO 2 SERIES VALVE SIDE ORIENTED DIN CONNECTION**

A MAC ISO 2 Series valve with side oriented DIN connection is an option and assembled to the unit by specifying the -U23 option. The valve is equipped with a DIN 43650, shape A connector, and is lubricated with FDA Regulation 21 CFR 1789.3570 food grade lubrication. Refer to valve specification chart on page 4.

**NOTES:**
1) UNIT SHOWN AT 390 mm TRAVEL
2) ALL DIMENSIONS ARE REFERENCE ONLY
3) DIMENSIONS IN [ ] INDICATE VALUES IN mm
4) MAXIMUM STROKE IS 15.354 [390]
5) MINIMUM STROKE IS 6.457 [164]
6) FOR STROKES SHORTER THAN 390 SUBTRACT .019 [.5 mm]
   FOR EACH 1 mm OF STROKE REDUCTION.

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**CAUTION:** When attaching the -U23 Option to the cylinder manifold, the two M3 SHCS holding the pilot block to the valve body must be removed in order to properly attach the valve to the manifold. If the M6 SHCS are not properly torqued, the valve may leak and the SHCS will damage both the pilot block and the valve body.
**OPTIONS: SERIES BCK STRETCH ROD CYLINDERS**

**R13**

**ROD EYE MOUNTING WITH SPHERICAL BEARING (DIN 8139)**

This option includes a rod eye attached to the rod end of the cylinder.

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**K**

**EXTRA ROD EXTENSION**

Extra rod extension can be achieved by specifying the option -K followed by the length code. Rod extension is available in 1 mm increments. Contact PHD for other combinations.

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**STANDARD**

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**NOTES:**

1) -K = Extra rod extension in 1 mm increment lengths
   - Code examples: -K5 = 5 mm extension
   -K15 = 15 mm extension

2) Rod extension shown at -K15 (15mm)