DATA SHEET - PNEUMATIC LINEAR ACTUATOR

*CFP20140 DOUBLE ACTING SERIES*

- Product configurator
- Product breakdown
- Product information
- Dimensions
- Manual override function
- Company information
1.0 Product Configurator

CFP 20140 - Pneumatic Linear Actuator

Part number breakdown:

**CFP20140 - C/F - M/I - BORE - STROKE**

- **‘CFP20140’** denotes Cotswold Fluid Power’s range of double-acting, aluminium construction Pneumatic Liner Actuators.

- **‘C/F’** determines whether the actuator will be fitted with adjustable pneumatic cushioning. Cushioning will impact both the actuators size and function.
  - ‘C’ - Actuator is fitted with adjustable pneumatic cushioning.
  - ‘F’ - Actuator is NOT fitted with adjustable pneumatic cushioning.

- **‘M/I’** determines whether the actuator will be fitted with magnetic position sensing. Position sensing will impact the function of the actuator but not the size.
  - ‘M’ - Actuator is fitted with magnetic position sensing.
  - ‘I’ - Actuator is NOT fitted with magnetic position sensing.

- **‘BORE’** is the diameter in millimeters of pressure area within the Actuator. Bore size determines the amount of force that the Actuator produces. There are 6 Bore sizes in this range.
  - ‘100’
  - ‘125’
  - ‘160’
  - ‘200’
  - ‘250’
  - ‘320’

- **‘STROKE’** is the linear travel of the Actuator. This is bespoke to order and can be chosen in increments of 1mm. Standard stroke values are detailed in the technical information section.

**Example:**

Part number ‘CFP20140 - C - I - 200 - 400’ describes a double-acting aluminium construction Pneumatic Liner Actuator, that has a 200mm bore, a 400mm stroke, is fitted with adjustable pneumatic cushioning and has no magnetic position sensing.
2.0 Product Breakdown

CFP 20140 - Pneumatic Linear Actuator

END-CAPS
CNC machined from aluminium billets, with a clear, hard anodized finish for improved corrosion resistance. All porting and interface connections machined as standard.

PISTON
A two part piston design CNC machined from aluminium billets, with a clear, hard anodized finish for improved corrosion resistance.

CYLINDER BARREL
Clear, hard anodized cylinder barrel, bore sizes range from ø100mm - ø320mm.

PISTON ROD
CNC machined 316 stainless steel piston rod with a precision ground finish for optimum performance.

PISTON SEALS
2 x U-seals isolate either end of the actuator, separated by a bearing strip to assure smooth actuation.

FRONT SEAL
Dual function seal both wipes and seals around the piston rod, allows for a more compact design.

MAGNETIC SENSING
2 part piston design allows option of including magnetic position sensing within the piston.

CUSHION ADJUSTING
Cushioning force can be adjusted manually on either direction of stroke.

CUSHIONING FUNCTION
Adjustable function can be included on either end of the actuator stroke.

BEARING
Composite bearing consisting of steel outer layer and an inner layer of porous bronze with a lead and PTFE inlay ensures smooth rod travel.

TIE-RODS
316 SS bar stock secured at either end using zinc plated steel polymer locking nuts (nyloc).
Product information

The ‘CFP20140’ is a range of double acting linear pneumatic actuators. Bore sizes range from \( \Phi 100 \text{mm} \) to \( \Phi 320 \text{mm} \). Actuator stroke length is bespoke to customer request.

The actuator offers a robust tie-rod construction utilising Anodized Aluminium in the end-caps, piston and body, as well as precision ground 316 Stainless Steel piston rod and tie rods.

The materials achieve a base C3 Class corrosion resistance.

Alternative paint finish specifications are available upon request.

Complete stainless steel construction option available upon request.

Features

- Double acting pneumatic linear actuator
- Threaded air connection ports located on either end of the actuator
- Optional magnetic position sensing installed
- Optional adjustable cushioning function installed in either stroke direction
- Optional manual override control
- Working pressure range: 1 - 10 bar
- Working temperature range: -20°C - +70°C

Technical data (5 bar working pressure)

<table>
<thead>
<tr>
<th>Ø Bore (mm)</th>
<th>Min. Stroke (mm)</th>
<th>Max. Stroke * (mm)</th>
<th>Theoretical Actuation Force (Extend) (N)</th>
<th>Theoretical Actuation Force (Retract) (N)</th>
</tr>
</thead>
<tbody>
<tr>
<td>100</td>
<td>10</td>
<td>1000</td>
<td>3,927</td>
<td>3,681</td>
</tr>
<tr>
<td>125</td>
<td>10</td>
<td>1000</td>
<td>6,136</td>
<td>5,734</td>
</tr>
<tr>
<td>160</td>
<td>10</td>
<td>1000</td>
<td>10,053</td>
<td>9,651</td>
</tr>
<tr>
<td>200</td>
<td>10</td>
<td>1000</td>
<td>15,708</td>
<td>15,080</td>
</tr>
<tr>
<td>250</td>
<td>10</td>
<td>1000</td>
<td>24,543</td>
<td>23,915</td>
</tr>
<tr>
<td>320</td>
<td>10</td>
<td>1000</td>
<td>40,212</td>
<td>39,584</td>
</tr>
</tbody>
</table>

*Larger strokes are available upon special request.

Contact “Sales@cotswoldfluidpower.co.uk” for further information.
4.0 Dimensions

CFP 20140 - Pneumatic Linear Actuator

**Major Dimensions** *(All units in 'mm' unless otherwise stated)*

<table>
<thead>
<tr>
<th>øBore</th>
<th>øB</th>
<th>L **</th>
<th>W</th>
<th>V</th>
<th>øT</th>
<th>H (A/F)</th>
<th>P</th>
<th>X</th>
<th>L***</th>
</tr>
</thead>
<tbody>
<tr>
<td>100</td>
<td>20</td>
<td>130 (+ STROKE)</td>
<td>110</td>
<td>30</td>
<td>10</td>
<td>17</td>
<td>87</td>
<td>G 1/4”</td>
<td>F07</td>
</tr>
<tr>
<td>125</td>
<td>32</td>
<td>134 (+ STROKE)</td>
<td>140</td>
<td>30</td>
<td>12</td>
<td>19</td>
<td>108</td>
<td>G 1/4”</td>
<td>F10</td>
</tr>
<tr>
<td>160</td>
<td>32</td>
<td>165 (+ STROKE)</td>
<td>180</td>
<td>44</td>
<td>16</td>
<td>24</td>
<td>140</td>
<td>G 1/4”</td>
<td>F10</td>
</tr>
<tr>
<td>200</td>
<td>40</td>
<td>178 (+ STROKE)</td>
<td>220</td>
<td>44</td>
<td>16</td>
<td>24</td>
<td>180</td>
<td>G 1/2”</td>
<td>F10 + F14</td>
</tr>
<tr>
<td>250</td>
<td>40</td>
<td>181 (+ STROKE)</td>
<td>270</td>
<td>50</td>
<td>16</td>
<td>24</td>
<td>226</td>
<td>G 1/2”</td>
<td>F10 + F14</td>
</tr>
<tr>
<td>320</td>
<td>40</td>
<td>186 (+ STROKE)</td>
<td>350</td>
<td>50</td>
<td>18</td>
<td>27</td>
<td>290</td>
<td>G 1/2”</td>
<td>F10 + F14</td>
</tr>
</tbody>
</table>

**”L”** specifies the length of the of the “NON-CUSHIONED” configuration of the cylinder.

Length of cylinder on a “CUSHIONED” configuration will vary depending on the direction and length of cushioning required.

*** “I” states standard ISO flange interface connections. Alternative interface connections are available upon special request.

Contact “Sales@cotswoldfluidpower.co.uk” for further information.

**Piston-Rod Dimensions**

<table>
<thead>
<tr>
<th>øBore</th>
<th>øB</th>
<th>MA</th>
<th>C</th>
<th>D</th>
<th>CH</th>
<th>øB1</th>
</tr>
</thead>
<tbody>
<tr>
<td>100</td>
<td>20</td>
<td>M16 x 1.5</td>
<td>32</td>
<td>16</td>
<td>16</td>
<td>18</td>
</tr>
<tr>
<td>125</td>
<td>32</td>
<td>M20 x 1.5</td>
<td>54</td>
<td>24</td>
<td>26</td>
<td>28</td>
</tr>
<tr>
<td>160</td>
<td>32</td>
<td>M20 x 1.5</td>
<td>54</td>
<td>24</td>
<td>26</td>
<td>28</td>
</tr>
<tr>
<td>200</td>
<td>40</td>
<td>M30 x 1.5 (stroke &lt; 450mm)</td>
<td>72</td>
<td>30</td>
<td>32</td>
<td>38</td>
</tr>
<tr>
<td></td>
<td></td>
<td>M36 x 2 (stroke ≥ 450mm)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>250</td>
<td>40</td>
<td>M30 x 1.5 (stroke &lt; 450mm)</td>
<td>72</td>
<td>30</td>
<td>32</td>
<td>38</td>
</tr>
<tr>
<td></td>
<td></td>
<td>M36 x 2 (stroke ≥ 450mm)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>320</td>
<td>40</td>
<td>M36 x 2</td>
<td>72</td>
<td>30</td>
<td>32</td>
<td>38</td>
</tr>
</tbody>
</table>
5.0 Manual override function

**Manual override information**

- The CFP20140 series of pneumatic actuators has the ability to be installed with a manual override function. If installed this will give the user manual control over the actuator in the form of a hand wheel in the event of air supply failure.
- The manual override is operated by turning the handwheel attached to the gear box mounted to the rear of the cylinder.
- Manual override can be installed to any bore and/or stroke actuator within the CFP20140 range.
- All operation/maintenance instructions concerning the manual override function will be provided.

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**Handwheel**

Painted steel handwheel, size will vary depending on the bore/stroke of the actuator.

**Leadscrew**

The stainless steel leadscrew will be pitched specific to each actuator bore size. This will ensure smooth actuation when under manual control.

**Gearbox**

CFP utilises a gearbox based manual override design. This allows the overall length of the product to be greatly reduced as well as providing a more user friendly handwheel operation.

**Bridgeworks**

The mountings and bridge works for the manual override feature are stainless steel construction. All materials achieve a standard C3 corrosion resistance class, higher corrosion resistance can be achieved upon special request.

**Coupling**

Under normal air conditions the manual override will be not be used. In case of air fail the manual override can be manually coupled to the actuator to engage manual override control.

**Through-rod**

Actuator is fitted with through-rod design to allow interface with manual override. Rear piston rod will match material/finish spec of the front facing piston rod as standard.

**Standard function**

Under normal air conditions the actuator will function as a standard CFP20140 series actuator, stroke and forces will not be altered by the manual override system.
6.0 Company information

COTSWOLD FLUID POWER LTD design, manufacture and supply fluid power components and provide complete solutions for our customers with over 30 years’ experience.

We have a standard range of pneumatic components as well as having the ability to source fluid power components from a wide range of manufacturers world wide.

We design and manufacture special valves, control systems, manifolds and actuators to meet customers’ specific requirements.

For all sales and design enquiries or further information please do not hesitate to contact one of our team:

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