Pneumatic cylinders

Series P1G
Cartridge Cylinders
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**Important**

Before attempting any external or internal work on the cylinder or any connected components, make sure the cylinder is vented and disconnect the air supply in order to ensure isolation of the air supply.

**Note**

All technical data in this catalogue are typical data only. Air quality is essential for maximum cylinder service life (see ISO 8573).

### Features

<table>
<thead>
<tr>
<th>Feature</th>
<th>Air cylinder</th>
<th>Hydraulic cylinder</th>
<th>Electro mechanical actuators</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overload safe</td>
<td>***</td>
<td>***</td>
<td>*</td>
</tr>
<tr>
<td>Easy to limit force</td>
<td>***</td>
<td>***</td>
<td>*</td>
</tr>
<tr>
<td>Easy to vary speed</td>
<td>***</td>
<td>***</td>
<td>*</td>
</tr>
<tr>
<td>Speed</td>
<td>***</td>
<td>**</td>
<td>**</td>
</tr>
<tr>
<td>Reliability</td>
<td>***</td>
<td>***</td>
<td>***</td>
</tr>
<tr>
<td>Robustness</td>
<td>***</td>
<td>***</td>
<td>*</td>
</tr>
<tr>
<td>Installation cost</td>
<td>***</td>
<td>*</td>
<td>**</td>
</tr>
<tr>
<td>Ease of service</td>
<td>***</td>
<td>**</td>
<td>*</td>
</tr>
<tr>
<td>Safety in damp environments</td>
<td>***</td>
<td>***</td>
<td>*</td>
</tr>
<tr>
<td>Safety in explosive atmospheres</td>
<td>***</td>
<td>***</td>
<td>*</td>
</tr>
<tr>
<td>Safety risk with electrical installations</td>
<td>***</td>
<td>***</td>
<td>*</td>
</tr>
<tr>
<td>Risk of oil leak</td>
<td>***</td>
<td>*</td>
<td>***</td>
</tr>
<tr>
<td>Clean, hygienic</td>
<td>***</td>
<td>**</td>
<td>*</td>
</tr>
<tr>
<td>Standardised measurements</td>
<td>***</td>
<td>***</td>
<td>*</td>
</tr>
<tr>
<td>Service life</td>
<td>***</td>
<td>***</td>
<td>*</td>
</tr>
<tr>
<td>Hydraulic system required</td>
<td>***</td>
<td>*</td>
<td>***</td>
</tr>
<tr>
<td>Weight</td>
<td>***</td>
<td>**</td>
<td>*</td>
</tr>
<tr>
<td>Purchase price</td>
<td>***</td>
<td>**</td>
<td>*</td>
</tr>
<tr>
<td>Power density</td>
<td>**</td>
<td>***</td>
<td>*</td>
</tr>
<tr>
<td>Noise level during operation</td>
<td>**</td>
<td>***</td>
<td>**</td>
</tr>
<tr>
<td>High force for size</td>
<td>**</td>
<td>***</td>
<td>*</td>
</tr>
<tr>
<td>Positioning possibilities</td>
<td>*</td>
<td>***</td>
<td>***</td>
</tr>
<tr>
<td>Total energy consumption</td>
<td>*</td>
<td>**</td>
<td>***</td>
</tr>
<tr>
<td>Service interval</td>
<td>*</td>
<td>**</td>
<td>***</td>
</tr>
<tr>
<td>Compressor capacity required</td>
<td>*</td>
<td>***</td>
<td>***</td>
</tr>
</tbody>
</table>

* = good, **=average, ***=excellent
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Cartridge cylinder P1G

P1G cartridge cylinders are the perfect solution for compact installation requirements. The cylinders are fully threaded on the outside, allowing them to be screwed into bores in tools, machine stands, etc. This means they require no additional space—instead they virtually disappear into the machine/equipment. They are designed for a long service life, and for non-lube operation. P1G cylinders are made of a material that allows them to be used in applications requiring a high level of corrosion resistance. They are all single acting, and are available with 6, 10 and 16 mm bore sizes. Each of the P1G cylinders is available with a choice of stroke length: 5, 10 or 15 mm. P1G cylinders are supplied complete with one piston rod nut and two lock nuts for easy installation.
**Cylinder forces**
Indicated cylinder forces are theoretical and should be reduced according to the working conditions.

<table>
<thead>
<tr>
<th>Order code</th>
<th>Theoretical piston force at 6 bar</th>
<th>Spring retraction</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Nmax</td>
<td>Nmin</td>
</tr>
</tbody>
</table>

**Single acting, spring return**

<p>| | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>P1G-S006SS-0005</td>
<td>15,0</td>
<td>12,9</td>
<td>3,7</td>
<td>1,6</td>
</tr>
<tr>
<td>P1G-S006SS-0010</td>
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<td>12,7</td>
<td>3,9</td>
<td>1,7</td>
</tr>
<tr>
<td>P1G-S006SS-0015</td>
<td>15,0</td>
<td>12,7</td>
<td>3,9</td>
<td>1,6</td>
</tr>
<tr>
<td>P1G-S010SS-0005</td>
<td>38,8</td>
<td>34,6</td>
<td>11,6</td>
<td>7,4</td>
</tr>
<tr>
<td>P1G-S010SS-0010</td>
<td>40,2</td>
<td>34,2</td>
<td>12,0</td>
<td>6,0</td>
</tr>
<tr>
<td>P1G-S010SS-0015</td>
<td>39,4</td>
<td>33,4</td>
<td>12,8</td>
<td>6,8</td>
</tr>
<tr>
<td>P1G-S016SS-0005</td>
<td>109,6</td>
<td>108,8</td>
<td>9,6</td>
<td>8,8</td>
</tr>
<tr>
<td>P1G-S016SS-0010</td>
<td>104,4</td>
<td>100,3</td>
<td>18,1</td>
<td>14,0</td>
</tr>
<tr>
<td>P1G-S016SS-0015</td>
<td>104,4</td>
<td>100,3</td>
<td>18,1</td>
<td>14,0</td>
</tr>
</tbody>
</table>

**Material specification**

- **Cylinder housing**: Stainless steel
- **Piston rod bearing**: Nickel plated brass
- **Front end cover**: Nickel plated brass
- **Cylinder bush**: Nickel plated brass
- **Piston seal, Ø6**: Nitrilgummi NBR
- **Piston seal, Ø10 and 16**: Polyurethane
- **Return spring**: Stainless steel
- **Piston rod nut**: Nickel plated steel
- **Mounting nut**: Nickel plated brass

Spare part = new cylinder

**Working medium, air quality**

Working medium: Dry, filtered compressed air to ISO 8573-1 class 3.4.3.

**Recommended air quality for cylinders**

For best possible service life and trouble-free operation, ISO 8573-1 quality class 3.4.3 should be used. This means 5 µm filter (standard filter) dew point +3 °C for indoor operation (a lower dew point should be selected for outdoor operation) and oil concentration 1.0 mg oil/m³, which is what a standard compressor with a standard filter gives.

**ISO 8573-1 quality classes**

<table>
<thead>
<tr>
<th>Quality class</th>
<th>Pollution particle size (µm)</th>
<th>Pollution max concentration (mg/m³)</th>
<th>Water max. press. dew point (°C)</th>
<th>Oil max concentration (mg/m³)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0.1</td>
<td>0.1</td>
<td>-70</td>
<td>0.01</td>
</tr>
<tr>
<td>2</td>
<td>1</td>
<td>1</td>
<td>-40</td>
<td>0.1</td>
</tr>
<tr>
<td>3</td>
<td>5</td>
<td>5</td>
<td>-20</td>
<td>1.0</td>
</tr>
<tr>
<td>4</td>
<td>15</td>
<td>8</td>
<td>+3</td>
<td>5.0</td>
</tr>
<tr>
<td>5</td>
<td>40</td>
<td>10</td>
<td>+7</td>
<td>25</td>
</tr>
<tr>
<td>6</td>
<td>-</td>
<td>-</td>
<td>+10</td>
<td>-</td>
</tr>
</tbody>
</table>

**Additional data**

- **Working pressure**: max 7 bar, min 2 bar
- **Working temperature**: max +80 °C, min -20 °C

Prelubricated, further lubrication is not normally necessary. If additional lubrication is introduced it must be continued.
P1G Cartridge Cylinder

Order key

<table>
<thead>
<tr>
<th>Cylinder type / function</th>
<th>Sealing material</th>
</tr>
</thead>
<tbody>
<tr>
<td>Single-acting, spring return for retract stroke</td>
<td>Standard, -20 °C to +80 °C</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Cylinder bore mm</th>
<th>Sealing material</th>
</tr>
</thead>
<tbody>
<tr>
<td>006</td>
<td>0005 5</td>
</tr>
<tr>
<td>010</td>
<td>0010 10</td>
</tr>
<tr>
<td>016</td>
<td>0015 15</td>
</tr>
</tbody>
</table>

Cylinders are supplied complete with two mounting nuts and one piston rod nut.

Single-acting spring return

<table>
<thead>
<tr>
<th>Cyl. bore mm</th>
<th>Stroke mm</th>
<th>Weight g</th>
<th>Order code</th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td>5</td>
<td>10</td>
<td>P1G-S006SS-0005</td>
</tr>
<tr>
<td></td>
<td>10</td>
<td>13</td>
<td>P1G-S006SS-0010</td>
</tr>
<tr>
<td></td>
<td>15</td>
<td>15</td>
<td>P1G-S006SS-0015</td>
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<td>10</td>
<td>5</td>
<td>27</td>
<td>P1G-S010SS-0005</td>
</tr>
<tr>
<td></td>
<td>10</td>
<td>32</td>
<td>P1G-S010SS-0010</td>
</tr>
<tr>
<td></td>
<td>15</td>
<td>36</td>
<td>P1G-S010SS-0015</td>
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<td>16</td>
<td>5</td>
<td>70</td>
<td>P1G-S016SS-0005</td>
</tr>
<tr>
<td></td>
<td>10</td>
<td>78</td>
<td>P1G-S016SS-0010</td>
</tr>
<tr>
<td></td>
<td>15</td>
<td>87</td>
<td>P1G-S016SS-0015</td>
</tr>
</tbody>
</table>
### Cartridge Cylinder Dimensions

**Caution**
- Avoid side loads on the piston rod
- Avoid loading the piston rod during retraction
- Do not operate the cylinders with excessive inertia.

<table>
<thead>
<tr>
<th>Cylinder bore</th>
<th>A</th>
<th>ØB</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>G</th>
<th>H</th>
<th>J</th>
<th>KV</th>
<th>KV1</th>
<th>M</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>6 mm</td>
<td>M10x1</td>
<td>8.5</td>
<td>M5</td>
<td>M3x0.5</td>
<td>9</td>
<td>5</td>
<td>18.5</td>
<td>25.5</td>
<td>32.5</td>
<td>9</td>
<td>9</td>
<td>14</td>
<td>5.5</td>
</tr>
<tr>
<td>10 mm</td>
<td>M15x1.5</td>
<td>13</td>
<td>M6</td>
<td>M4x0.7</td>
<td>14</td>
<td>5</td>
<td>20.5</td>
<td>27</td>
<td>34</td>
<td>11.5</td>
<td>11</td>
<td>19</td>
<td>7</td>
</tr>
<tr>
<td>16 mm</td>
<td>M22x1.5</td>
<td>19</td>
<td>M5</td>
<td>M5x0.8</td>
<td>20</td>
<td>6</td>
<td>23.5</td>
<td>29.5</td>
<td>36</td>
<td>14</td>
<td>12</td>
<td>27</td>
<td>8</td>
</tr>
</tbody>
</table>

1) Stroke length in mm
Parker Worldwide

AE – UAE, Dubai
Tel: +971 4 8875600
parker.me@parker.com

AR – Argentina, Buenos Aires
Tel: +54 3327 44 4129

AT – Austria, Vienna
Tel: +43 (0)2622 23501-0
parker.austria@parker.com

AT – Eastern Europe, Vienna
Tel: +43 (0)2622 23501 970
parker.easteurope@parker.com

AU – Australia, Castle Hill
Tel: +61 (0)2-9634 7777

AZ – Azerbaijan, Baku
Tel: +994 50 2233 458

BE/LX – Belgium, Nivelles
Tel: +32 (0)67 280 900
parker.belgium@parker.com

BR – Brazil, Cachoeirinha RS
Tel: +55 51 3470 9144

BY – Belarus, Minsk
Tel: +375 17 209 9399
parker.belarus@parker.com

CA – Canada, Milton, Ontario
Tel: +1 905 693 3000

CH – Switzerland, Etoy
Tel: +41 (0) 21 851 22 50
parker.switzerland@parker.com

CN – China, Shanghai
Tel: +86 21 5031 2525

CZ – Czech Republic, Klecany
Tel: +420 284 083 111
parker.czechrepublic@parker.com

DE – Germany, Karlsruhe
Tel: +49 (0)2131 4016 0
parker.germany@parker.com

DK – Denmark, Ballerup
Tel: +45 43 56 04 00
parker.denmark@parker.com

ES – Spain, Madrid
Tel: +34 902 33 00 01
parker.spain@parker.com

FI – Finland, Vantaa
Tel: +358 (0)20 753 2500
parker.finland@parker.com

FR – France, Contamine s/Arve
Tel: +33 (0)4 50 25 80 25
parker.france@parker.com

GR – Greece, Athens
Tel: +30 210 933 6450
parker.greece@parker.com

HK – Hong Kong
Tel: +852 2428 8008

HU – Hungary, Budapest
Tel: +36 1 220 4155
parker.hungary@parker.com

IE – Ireland, Dublin
Tel: +353 (01) 466 6370
parker.ie@parker.com

IN – India, Mumbai
Tel: +91 22 6513 7081-85

IT – Italy, Corsico (MI)
Tel: +39 02 33 00 01
parker.italy@parker.com

JP – Japan, Fujiwara
Tel: +(81) 4 6635 3050

KR – South Korea, Seoul
Tel: +82 2 559 0400

KZ – Kazakhstan, Almaty
Tel: +7 7272 505 800
parker.easteurope@parker.com

LV – Latvia, Riga
Tel: +371 6 745 2601
parker.latvia@parker.com

MX – Mexico, Apodaca
Tel: +52 81 8156 6000

MY – Malaysia, Subang Jaya
Tel: +60 3 5638 1476

NL – The Netherlands, Oldenzaal
Tel: +31 (0)541 585 000
parker.nl@parker.com

NO – Norway, Ski
Tel: +47 64 91 10 00
parker.norway@parker.com

NZ – New Zealand, Mt Wellington
Tel: +64 9 574 1744

PL – Poland, Warsaw
Tel: +48 (0)22 573 24 00
parker.poland@parker.com

PT – Portugal, Leca da Palmeira
Tel: +351 22 999 7360
parker.portugal@parker.com

RO – Romania, Bucharest
Tel: +40 21 252 1382
parker.romania@parker.com

RU – Russia, Moscow
Tel: +7 495 645-2156
parker.russia@parker.com

SE – Sweden, Stockholm
Tel: +46 (0) 8 59 79 50 00
parker.sweden@parker.com

SG – Singapore
Tel: +65 6887 1300

SK – Slovakia, Banská Bystrica
Tel: +421 484 162 252
parker.slovakia@parker.com

SL – Slovenia, Novo Mesto
Tel: +386 7 377 6650
parker.slovenia@parker.com

TH – Thailand, Bangkok
Tel: +662 717 8140

TR – Turkey, Istanbul
Tel: +90 216 4997081
parker.turkey@parker.com

TW – Taiwan, Taipei
Tel: +886 2 2298 9898

UA – Ukraine, Kiev
Tel: +380 44 494 2731
parker.ukraine@parker.com

UK – United Kingdom
Warwick
Tel: +44 (0)1926 317 878
parker.uk@parker.com

US – USA, Cleveland
Tel: +1 216 896 3000

VE – Venezuela, Caracas
Tel: +58 212 238 5422

ZA – South Africa, Kempton Park
Tel: +27 (011) 961 0700
parker.southafrica@parker.com

European Product Information Centre
Free phone: 00 800 27 27 5374
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