

## P1A Pneumatic ISO Cylinders

### Cylinder forces, double acting variants

| Cyl. bore/<br>pist. rod mm | Stroke | Piston area<br>cm <sup>2</sup> | Max theoretical force in N (bar) |     |     |     |     |            |     |     |     |      |
|----------------------------|--------|--------------------------------|----------------------------------|-----|-----|-----|-----|------------|-----|-----|-----|------|
|                            |        |                                | 1.0                              | 2.0 | 3.0 | 4.0 | 5.0 | 6.0        | 7.0 | 8.0 | 9.0 | 10.0 |
| <b>10/4</b>                | +      | 0.8                            | 8                                | 16  | 24  | 31  | 39  | <b>47</b>  | 55  | 63  | 71  | 79   |
|                            | -      | 0.7                            | 7                                | 13  | 20  | 26  | 33  | <b>40</b>  | 46  | 53  | 59  | 66   |
| <b>12/6</b>                | +      | 1.1                            | 11                               | 23  | 34  | 45  | 57  | <b>68</b>  | 79  | 90  | 102 | 113  |
|                            | -      | 0.8                            | 8                                | 17  | 25  | 34  | 42  | <b>51</b>  | 59  | 68  | 76  | 85   |
| <b>16/6</b>                | +      | 2.0                            | 20                               | 40  | 60  | 80  | 100 | <b>120</b> | 141 | 161 | 181 | 201  |
|                            | -      | 1.7                            | 17                               | 35  | 52  | 69  | 86  | <b>104</b> | 121 | 138 | 156 | 173  |
| <b>20/8</b>                | +      | 3.1                            | 31                               | 63  | 94  | 126 | 157 | <b>188</b> | 220 | 251 | 283 | 314  |
|                            | -      | 2.6                            | 26                               | 53  | 79  | 106 | 132 | <b>158</b> | 185 | 211 | 238 | 264  |
| <b>25/10</b>               | +      | 4.9                            | 49                               | 98  | 147 | 196 | 245 | <b>295</b> | 344 | 393 | 442 | 491  |
|                            | -      | 4.1                            | 41                               | 82  | 124 | 165 | 206 | <b>247</b> | 289 | 330 | 371 | 412  |

+ = Outward stroke  
- = Return stroke

#### Note!

Select a theoretical force 50-100%  
larger than the force required

### Cylinder forces single acting variants

Indicated cylinder forces are theoretical and should be reduced according to the working conditions.

| Order code                          | Theoretical piston force<br>at 6 bar |      |                           |      | Order code                            | Theoretical piston force<br>at 6 bar |      |                           |      |
|-------------------------------------|--------------------------------------|------|---------------------------|------|---------------------------------------|--------------------------------------|------|---------------------------|------|
|                                     | Nmax                                 | Nmin | Spring retraction<br>Nmax | Nmin |                                       | Nmax                                 | Nmin | Spring retraction<br>Nmax | Nmin |
| <b>Single acting, spring return</b> |                                      |      |                           |      | <b>Single acting, spring-extended</b> |                                      |      |                           |      |
| P1A-S010SS-0010                     | 38                                   | 36   | 10                        | 8.5  | P1A-S016TS-0010                       | 85                                   | 84   | 22.3                      | 20.2 |
| P1A-S010SS-0015                     | 38                                   | 36   | 10                        | 7.8  | P1A-S016TS-0015                       | 86                                   | 84   | 22.3                      | 19   |
| P1A-S010SS-0025                     | 39                                   | 36   | 10                        | 6.6  | P1A-S016TS-0025                       | 88                                   | 84   | 22.3                      | 17   |
| P1A-S010SS-0040                     | 38                                   | 34   | 13                        | 9    | P1A-S016TS-0040                       | 90                                   | 84   | 22.3                      | 14   |
| P1A-S010SS-0050                     | 39                                   | 34   | 13                        | 8    | P1A-S016TS-0050                       | 91                                   | 84   | 22.3                      | 12   |
| P1A-S010SS-0080                     | 39                                   | 34   | 12                        | 7    |                                       |                                      |      |                           |      |
| P1A-S012SS-0010                     | 53                                   | 51   | 16                        | 14.4 | P1A-S020TS-0010                       | 132                                  | 130  | 30                        | 28   |
| P1A-S012SS-0015                     | 53                                   | 51   | 16                        | 13.6 | P1A-S020TS-0015                       | 133                                  | 130  | 30                        | 27   |
| P1A-S012SS-0025                     | 55                                   | 51   | 16                        | 12   | P1A-S020TS-0025                       | 135                                  | 130  | 30                        | 25   |
| P1A-S012SS-0040                     | 52                                   | 48   | 19                        | 13.4 | P1A-S020TS-0040                       | 138                                  | 130  | 30                        | 22   |
| P1A-S012SS-0050                     | 53                                   | 48   | 19                        | 12   | P1A-S020TS-0050                       | 140                                  | 130  | 30                        | 20   |
| P1A-S012SS-0080                     | 55                                   | 48   | 21.4                      | 12   | P1A-S020TS-0080                       | 139                                  | 108  | 31                        | 17   |
| P1A-S016SS-0010                     | 102                                  | 99   | 22.3                      | 20.2 | P1A-S025TS-0010                       | 205                                  | 203  | 38.5                      | 36   |
| P1A-S016SS-0015                     | 103                                  | 99   | 22.3                      | 19   | P1A-S025TS-0015                       | 207                                  | 203  | 38.5                      | 34.7 |
| P1A-S016SS-0025                     | 105                                  | 99   | 22.3                      | 17   | P1A-S025TS-0025                       | 210                                  | 203  | 38.5                      | 32   |
| P1A-S016SS-0040                     | 106                                  | 95   | 22.3                      | 14   | P1A-S025TS-0040                       | 214                                  | 203  | 38.5                      | 28.5 |
| P1A-S016SS-0050                     | 108                                  | 95   | 22.3                      | 12   | P1A-S025TS-0050                       | 217                                  | 203  | 38.5                      | 26   |
| P1A-S016SS-0080                     | 107                                  | 95   | 22.5                      | 12   | P1A-S025TS-0080                       | 223                                  | 206  | 36                        | 21   |
| P1A-S020SS-0010                     | 163                                  | 161  | 30                        | 28   |                                       |                                      |      |                           |      |
| P1A-S020SS-0015                     | 164                                  | 161  | 30                        | 27   |                                       |                                      |      |                           |      |
| P1A-S020SS-0025                     | 167                                  | 161  | 30                        | 25   |                                       |                                      |      |                           |      |
| P1A-S020SS-0040                     | 166                                  | 159  | 30                        | 22   |                                       |                                      |      |                           |      |
| P1A-S020SS-0050                     | 168                                  | 159  | 30                        | 20   |                                       |                                      |      |                           |      |
| P1A-S020SS-0080                     | 170                                  | 161  | 29.4                      | 18   |                                       |                                      |      |                           |      |
| P1A-S025SS-0010                     | 256                                  | 253  | 44.3                      | 41.4 |                                       |                                      |      |                           |      |
| P1A-S025SS-0015                     | 258                                  | 253  | 44.3                      | 40   |                                       |                                      |      |                           |      |
| P1A-S025SS-0025                     | 262                                  | 253  | 44.3                      | 37   |                                       |                                      |      |                           |      |
| P1A-S025SS-0040                     | 261                                  | 250  | 44.3                      | 32   |                                       |                                      |      |                           |      |
| P1A-S025SS-0050                     | 264                                  | 250  | 44.3                      | 30   |                                       |                                      |      |                           |      |
| P1A-S025SS-0080                     | 264                                  | 251  | 44.4                      | 30   |                                       |                                      |      |                           |      |

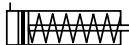
## P1A Pneumatic ISO Cylinders

### Data

|                     |             |
|---------------------|-------------|
| Working pressure    | max. 10 bar |
| Working temperature | max. +80 °C |
|                     | min. -20 °C |



### Single-acting spring return Fixed end cushioning



| Cyl.bore<br>mm          | Stroke<br>mm | Order code      |
|-------------------------|--------------|-----------------|
| <b>10</b><br>Conn. M5   | 10           | P1A-S010SS-0010 |
|                         | 15           | P1A-S010SS-0015 |
|                         | 25           | P1A-S010SS-0025 |
|                         | 40           | P1A-S010SS-0040 |
|                         | 50           | P1A-S010SS-0050 |
|                         | 80           | P1A-S010SS-0080 |
| <b>12</b><br>Conn. M5   | 10           | P1A-S012SS-0010 |
|                         | 15           | P1A-S012SS-0015 |
|                         | 25           | P1A-S012SS-0025 |
|                         | 40           | P1A-S012SS-0040 |
|                         | 50           | P1A-S012SS-0050 |
|                         | 80           | P1A-S012SS-0080 |
| <b>16</b><br>Conn. M5   | 10           | P1A-S016SS-0010 |
|                         | 15           | P1A-S016SS-0015 |
|                         | 25           | P1A-S016SS-0025 |
|                         | 40           | P1A-S016SS-0040 |
|                         | 50           | P1A-S016SS-0050 |
|                         | 80           | P1A-S016SS-0080 |
| <b>20</b><br>Conn. G1/8 | 10           | P1A-S020SS-0010 |
|                         | 15           | P1A-S020SS-0015 |
|                         | 25           | P1A-S020SS-0025 |
|                         | 40           | P1A-S020SS-0040 |
|                         | 50           | P1A-S020SS-0050 |
|                         | 80           | P1A-S020SS-0080 |
| <b>25</b><br>Conn. G1/8 | 10           | P1A-S025SS-0010 |
|                         | 15           | P1A-S025SS-0015 |
|                         | 25           | P1A-S025SS-0025 |
|                         | 40           | P1A-S025SS-0040 |
|                         | 50           | P1A-S025SS-0050 |
|                         | 80           | P1A-S025SS-0080 |

Cylinders are supplied complete with neck mounting and piston rod nuts.



### Single-acting spring-extended Fixed end cushioning



| Cyl.bore<br>mm          | Stroke<br>mm | Order code      |
|-------------------------|--------------|-----------------|
| <b>16</b><br>Conn. M5   | 10           | P1A-S016TS-0010 |
|                         | 15           | P1A-S016TS-0015 |
|                         | 25           | P1A-S016TS-0025 |
|                         | 40           | P1A-S016TS-0040 |
|                         | 50           | P1A-S016TS-0050 |
|                         |              |                 |
| <b>20</b><br>Conn. G1/8 | 10           | P1A-S020TS-0010 |
|                         | 15           | P1A-S020TS-0015 |
|                         | 25           | P1A-S020TS-0025 |
|                         | 40           | P1A-S020TS-0040 |
|                         | 50           | P1A-S020TS-0050 |
|                         | 80           | P1A-S020TS-0080 |
| <b>25</b><br>Conn. G1/8 | 10           | P1A-S025TS-0010 |
|                         | 15           | P1A-S025TS-0015 |
|                         | 25           | P1A-S025TS-0025 |
|                         | 40           | P1A-S025TS-0040 |
|                         | 50           | P1A-S025TS-0050 |
|                         | 80           | P1A-S025TS-0080 |

Cylinders are supplied complete with neck mounting and piston rod nuts.

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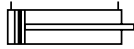
## Data

Working pressure  
Working temperature

max. 10 bar  
max. +80 °C  
min. -20 °C

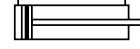


## Double-acting Fixed end cushioning



| Cyl.bore<br>mm        | Stroke<br>mm | Order code      |
|-----------------------|--------------|-----------------|
| <b>10</b><br>Conn. M5 | 10           | P1A-S010DS-0010 |
|                       | 15           | P1A-S010DS-0015 |
|                       | 20           | P1A-S010DS-0020 |
|                       | 25           | P1A-S010DS-0025 |
|                       | 30           | P1A-S010DS-0030 |
|                       | 40           | P1A-S010DS-0040 |
|                       | 50           | P1A-S010DS-0050 |
|                       | 80           | P1A-S010DS-0080 |
|                       | 100          | P1A-S010DS-0100 |
|                       | 125          | P1A-S010DS-0125 |
| Max stroke 500 mm     |              |                 |
| <b>12</b><br>Conn. M5 | 10           | P1A-S012DS-0010 |
|                       | 15           | P1A-S012DS-0015 |
|                       | 20           | P1A-S012DS-0020 |
|                       | 25           | P1A-S012DS-0025 |
|                       | 30           | P1A-S012DS-0030 |
|                       | 40           | P1A-S012DS-0040 |
|                       | 50           | P1A-S012DS-0050 |
|                       | 80           | P1A-S012DS-0080 |
|                       | 100          | P1A-S012DS-0100 |
|                       | 125          | P1A-S012DS-0125 |
| Max stroke 500 mm     | 160          | P1A-S012DS-0160 |
|                       | 200          | P1A-S012DS-0200 |
|                       |              |                 |
| <b>16</b><br>Conn. M5 | 10           | P1A-S016DS-0010 |
|                       | 15           | P1A-S016DS-0015 |
|                       | 20           | P1A-S016DS-0020 |
|                       | 25           | P1A-S016DS-0025 |
|                       | 30           | P1A-S016DS-0030 |
|                       | 40           | P1A-S016DS-0040 |
|                       | 50           | P1A-S016DS-0050 |
|                       | 80           | P1A-S016DS-0080 |
|                       | 100          | P1A-S016DS-0100 |
|                       | 125          | P1A-S016DS-0125 |
| Max stroke 500 mm     | 160          | P1A-S016DS-0160 |
|                       | 200          | P1A-S016DS-0200 |
|                       |              |                 |

## Fixed end cushioning



| Cyl.bore<br>mm          | Stroke<br>mm | Order code      |
|-------------------------|--------------|-----------------|
| <b>20</b><br>Conn. G1/8 | 10           | P1A-S020DS-0010 |
|                         | 15           | P1A-S020DS-0015 |
|                         | 20           | P1A-S020DS-0020 |
|                         | 25           | P1A-S020DS-0025 |
|                         | 30           | P1A-S020DS-0030 |
|                         | 40           | P1A-S020DS-0040 |
|                         | 50           | P1A-S020DS-0050 |
|                         | 80           | P1A-S020DS-0080 |
|                         | 100          | P1A-S020DS-0100 |
|                         | 125          | P1A-S020DS-0125 |
| Max stroke 1000 mm      | 160          | P1A-S020DS-0160 |
|                         | 200          | P1A-S020DS-0200 |
|                         | 250          | P1A-S020DS-0250 |
|                         | 320          | P1A-S020DS-0320 |
|                         |              |                 |
| <b>25</b><br>Conn. G1/8 | 10           | P1A-S025DS-0010 |
|                         | 15           | P1A-S025DS-0015 |
|                         | 20           | P1A-S025DS-0020 |
|                         | 25           | P1A-S025DS-0025 |
|                         | 30           | P1A-S025DS-0030 |
|                         | 40           | P1A-S025DS-0040 |
|                         | 50           | P1A-S025DS-0050 |
|                         | 80           | P1A-S025DS-0080 |
|                         | 100          | P1A-S025DS-0100 |
|                         | 125          | P1A-S025DS-0125 |
| Max stroke 1000 mm      | 160          | P1A-S025DS-0160 |
|                         | 200          | P1A-S025DS-0200 |
|                         | 250          | P1A-S025DS-0250 |
|                         | 320          | P1A-S025DS-0320 |
|                         |              |                 |

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

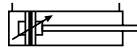
## P1A Pneumatic ISO Cylinders

### Data

|                     |                            |
|---------------------|----------------------------|
| Working pressure    | max. 10 bar                |
| Working temperature | max. +80 °C<br>min. -20 °C |

### Double-acting

#### Adjustable cushioning



| Cyl.bore<br>mm          | Stroke<br>mm | Order code             |
|-------------------------|--------------|------------------------|
| <b>16</b><br>Conn. M5   | 20           | <b>P1A-S016MS-0020</b> |
|                         | 25           | <b>P1A-S016MS-0025</b> |
|                         | 30           | <b>P1A-S016MS-0030</b> |
|                         | 40           | <b>P1A-S016MS-0040</b> |
|                         | 50           | <b>P1A-S016MS-0050</b> |
|                         | 80           | <b>P1A-S016MS-0080</b> |
|                         | 100          | <b>P1A-S016MS-0100</b> |
|                         | 125          | <b>P1A-S016MS-0125</b> |
|                         | 160          | <b>P1A-S016MS-0160</b> |
|                         | 200          | <b>P1A-S016MS-0200</b> |
|                         | 250          | <b>P1A-S016MS-0250</b> |
|                         | 320          | <b>P1A-S016MS-0320</b> |
|                         | 400          | <b>P1A-S016MS-0400</b> |
|                         | 500          | <b>P1A-S016MS-0500</b> |
| Max stroke 500 mm       |              |                        |
| <b>20</b><br>Conn. G1/8 | 20           | <b>P1A-S020MS-0020</b> |
|                         | 25           | <b>P1A-S020MS-0025</b> |
|                         | 30           | <b>P1A-S020MS-0030</b> |
|                         | 40           | <b>P1A-S020MS-0040</b> |
|                         | 50           | <b>P1A-S020MS-0050</b> |
|                         | 80           | <b>P1A-S020MS-0080</b> |
|                         | 100          | <b>P1A-S020MS-0100</b> |
|                         | 125          | <b>P1A-S020MS-0125</b> |
|                         | 160          | <b>P1A-S020MS-0160</b> |
|                         | 200          | <b>P1A-S020MS-0200</b> |
|                         | 250          | <b>P1A-S020MS-0250</b> |
|                         | 320          | <b>P1A-S020MS-0320</b> |
|                         | 400          | <b>P1A-S020MS-0400</b> |
|                         | 500          | <b>P1A-S020MS-0500</b> |
| Max stroke 1000 mm      |              |                        |



| Cyl.bore<br>mm          | Stroke<br>mm | Order code             |
|-------------------------|--------------|------------------------|
| <b>25</b><br>Conn. G1/8 | 20           | <b>P1A-S025MS-0020</b> |
|                         | 25           | <b>P1A-S025MS-0025</b> |
|                         | 30           | <b>P1A-S025MS-0030</b> |
|                         | 40           | <b>P1A-S025MS-0040</b> |
|                         | 50           | <b>P1A-S025MS-0050</b> |
|                         | 80           | <b>P1A-S025MS-0080</b> |
|                         | 100          | <b>P1A-S025MS-0100</b> |
|                         | 125          | <b>P1A-S025MS-0125</b> |
|                         | 160          | <b>P1A-S025MS-0160</b> |
|                         | 200          | <b>P1A-S025MS-0200</b> |
|                         | 250          | <b>P1A-S025MS-0250</b> |
|                         | 320          | <b>P1A-S025MS-0320</b> |
|                         | 400          | <b>P1A-S025MS-0400</b> |
|                         | 500          | <b>P1A-S025MS-0500</b> |
| Max stroke 1000 mm      |              |                        |

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