

# 9109 & SP Air Bellows

## Removable and Crimped Types



Air bellows are the ideal choice for applications requiring short stroke, high thrust single acting actuators. Manufactured from fabric reinforced synthetic rubber in one, two or three convolutions according to stroke and model. They incorporate no reciprocating metal parts and so provide virtually frictionless thrust compared with conventional pneumatic cylinders. All models are single acting only. The return stroke is provided in part by the natural spring action of the bellows but more usually by the load itself. The simplicity of construction provides an extremely long, virtually maintenance-free service life even under arduous conditions. Air bellows are suitable for vibration applications i.e. device feeders at high frequency.

- **10 sizes, diameters 70 to 660 mm, Strokes from 20 to 410 mm, single, double or triple convolutions (removable type)**
- **7 sizes, diameters 82 to 288 mm, Strokes from 55 to 170 mm, single or double convolutions (crimped type)**
- **High thrust and frictionless movement**
- **Oil free**
- **Short stroke for high force application**
- **Easy to install**
- **Easy to work**
- **Single acting**
- **Use as a cylinder or an isolator**

Air bellows are the ideal choice for applications requiring short stroke, high thrust single acting actuators.

Manufactured from fabric reinforced synthetic rubber in one, two or three convolutions according to stroke and model. They incorporate no reciprocating metal parts and so provide virtually frictionless thrust compared with conventional pneumatic cylinders.

- 10 sizes, diameters 70-660 mm
- Strokes from 45 to 375 mm
- Single, double or triple convolutions
- High thrust and frictionless movement
- Maintenance free



### Operating information

Working pressure: Max 8 bar  
 Working temperature: -30°C to +70°C  
 High temperature version  
 Working temperature: -30°C to +90°C  
 Operation: Dry air



It is recommended that external mechanical stops are used to limit the stroke. The units should not achieve maximum stroke or be allowed to 'bottom out'.

Air Bellows may not be stacked, use singly only.

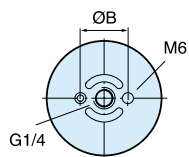
Air bellows are suitable for vibration applications i.e. device feeders at high frequency.

For more information see [www.parker.com/euro\\_pneumatic](http://www.parker.com/euro_pneumatic)

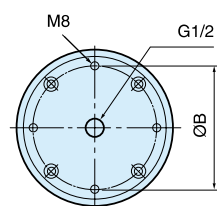
| Symbol                                                                                                           | Ø<br>(mm)  | Types<br>inch x nb conv.              | Port<br>size | Max<br>stroke<br>(mm) | Order code<br>Standard | Order code<br>High temp | Order code<br>With<br>stainless<br>steel<br>parts |
|------------------------------------------------------------------------------------------------------------------|------------|---------------------------------------|--------------|-----------------------|------------------------|-------------------------|---------------------------------------------------|
| <b>One convolution</b><br>    | <b>70</b>  | 2¾ x 1 (alu.)                         | G1/4         | 20                    | <b>9109025A</b>        | <b>9109225A</b>         | /                                                 |
|                                                                                                                  | <b>110</b> | 4½ x 1 (alu.)                         | G3/8         | 45                    | <b>9109400</b>         | <b>9109600</b>          | <b>9109400N</b>                                   |
|                                                                                                                  | <b>150</b> | 6 x 1 (alu.)                          | G1/2         | 55                    | <b>9109004A</b>        | <b>9109204A</b>         | /                                                 |
|                                                                                                                  | <b>150</b> | 6 x 1 (steel)                         | G1/2         | 55                    | <b>9109004</b>         | <b>9109204</b>          | <b>9109004N</b>                                   |
|                                                                                                                  | <b>200</b> | 8 x 1 (steel)                         | G1/2         | 75                    | <b>9109014</b>         | <b>9109214</b>          | <b>9109014N</b>                                   |
|                                                                                                                  | <b>250</b> | 10 x 1 (steel)                        | G1/2         | 100                   | <b>9109024</b>         | <b>9109224</b>          | <b>9109024N</b>                                   |
|                                                                                                                  | <b>300</b> | 12 x 1 (steel)                        | G1/2         | 100                   | <b>9109044</b>         | <b>9109244</b>          | <b>9109044N</b>                                   |
|                                                                                                                  | <b>370</b> | 14½ x 1 (steel)                       | G1/2         | 115                   | <b>9109064</b>         | <b>9109264</b>          | <b>9109064N</b>                                   |
|                                                                                                                  | <b>410</b> | 16 x 1 (steel)                        | G1/2         | 160                   | <b>9109026</b>         | <b>9109226</b>          | <b>9109026N</b>                                   |
|                                                                                                                  | <b>550</b> | 21½ x 1 (alu.)                        | G3/4         | XXX                   | <b>9109027A</b>        | <b>9109227A</b>         | /                                                 |
| <b>Two convolutions</b><br>   | <b>70</b>  | 2¾ x 2 (alu.)                         | G1/4         | 50                    | <b>9109009</b>         | <b>9109509</b>          | /                                                 |
|                                                                                                                  | <b>110</b> | 4½ x 2 (alu.)                         | G3/8         | 80                    | <b>9109401</b>         | <b>9109502</b>          | <b>9109401N</b>                                   |
|                                                                                                                  | <b>150</b> | 6 x 2 (alu.)                          | G1/2         | 112                   | <b>9109001A</b>        | <b>9109201A</b>         | /                                                 |
|                                                                                                                  | <b>150</b> | 6 x 2 (steel)                         | G1/2         | 112                   | <b>9109001</b>         | <b>9109201</b>          | <b>9109001N</b>                                   |
|                                                                                                                  | <b>200</b> | 8 x 2 (steel)                         | G1/2         | 180                   | <b>9109011</b>         | <b>9109211</b>          | <b>9109011N</b>                                   |
|                                                                                                                  | <b>250</b> | 10 x 2 (steel)                        | G1/2         | 200                   | <b>9109021</b>         | <b>9109221</b>          | <b>9109021N</b>                                   |
|                                                                                                                  | <b>300</b> | 12 x 2 (steel)                        | G1/2         | 195                   | <b>9109041</b>         | <b>9109241</b>          | <b>9109041N</b>                                   |
|                                                                                                                  | <b>370</b> | 14½ x 2 (steel)                       | G1/2         | 225                   | <b>9109061</b>         | <b>9109261</b>          | <b>9109061N</b>                                   |
|                                                                                                                  | <b>410</b> | 16 x 2 (steel)                        | G1/2         | 250                   | <b>9109171</b>         | <b>9109271</b>          | <b>9109171N</b>                                   |
|                                                                                                                  | <b>550</b> | 21½ x 2 (alu.)                        | G3/4         | 300                   | <b>9109150</b>         | <b>9109250</b>          | /                                                 |
|                                                                                                                  |            | 21½ x 2<br>(Air bellow less end caps) |              |                       | <b>9109153</b>         | <b>9109253</b>          | /                                                 |
|                                                                                                                  | <b>660</b> | 26 x 2 (steel)                        | G3/4         | 310                   | <b>9109156</b>         | /                       | /                                                 |
|                                                                                                                  |            | 26 x 2<br>(Air bellow less end caps)  |              |                       | <b>9109159</b>         | /                       | /                                                 |
| <b>Three convolutions</b><br> | <b>70</b>  | 2¾ x 3 (alu.)                         | G1/4         | 65                    | <b>9109010</b>         | <b>9109510</b>          | /                                                 |
|                                                                                                                  | <b>110</b> | 4½ x 3 (alu.)                         | G3/8         | 100                   | <b>9109402</b>         | <b>9109503</b>          | <b>9109402N</b>                                   |
|                                                                                                                  | <b>150</b> | 6 x 3 (alu.)                          | G1/2         | 173                   | <b>9109007A</b>        | <b>9109207A</b>         | /                                                 |
|                                                                                                                  | <b>150</b> | 6 x 3 (steel)                         | G1/2         | 173                   | <b>9109007</b>         | <b>9109207</b>          | <b>9109007N</b>                                   |
|                                                                                                                  | <b>200</b> | 8 x 3 (steel)                         | G1/2         | 225                   | <b>9109017</b>         | <b>9109217</b>          | <b>9109017N</b>                                   |
|                                                                                                                  | <b>250</b> | 10 x 3 (steel)                        | G1/2         | 300                   | <b>9109031</b>         | <b>9109231</b>          | <b>9109031N</b>                                   |
|                                                                                                                  | <b>300</b> | 12 x 3 (steel)                        | G1/2         | 330                   | <b>9109051</b>         | <b>9109251</b>          | <b>9109051N</b>                                   |
|                                                                                                                  | <b>370</b> | 14½ x 3 (steel)                       | G1/2         | 350                   | <b>9109069</b>         | <b>9109269</b>          | <b>9109069N</b>                                   |
|                                                                                                                  | <b>410</b> | 16 x 3 * (steel)                      | G1/2         | 375                   | <b>9109177</b>         | <b>9109277</b>          | <b>9109177N</b>                                   |

## Dimensions (mm)

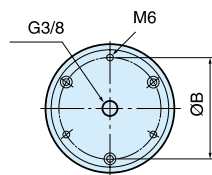
Ø70 mm (2¾")  
Aluminium end plate version



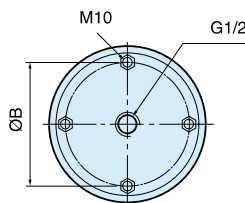
Ø150 mm (6")  
Aluminium end plate version



Ø110 mm (4½")  
Aluminium end plate version

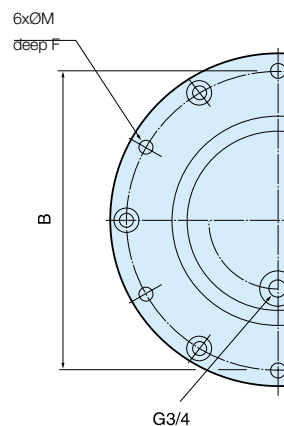


Ø200-410 mm (8-16")  
Aluminium end plate version



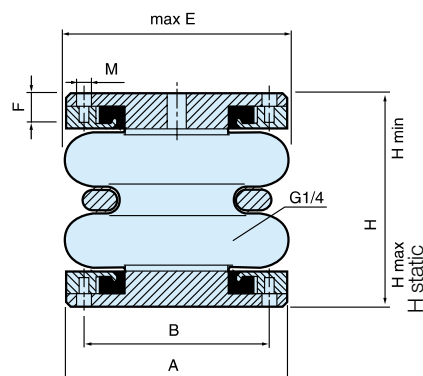
Ø550 mm (21½")  
Steel end plate version

Ø660 mm (26")  
Steel end plate version

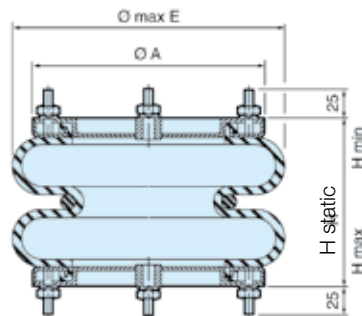


| Ø   | Number of convolutions | H min | H static | H max | Stroke max | ØE max | ØA    | ØB    | ØM  | F  |
|-----|------------------------|-------|----------|-------|------------|--------|-------|-------|-----|----|
| 70  | 2                      | 65    | 90       | 115   | 50         | 80     | 78    | 36    | M6  | 9  |
| 70  | 3                      | 80    | 110      | 145   | 65         | 80     | 78    | 36    | M6  | 9  |
| 110 | 1                      | 45    | 65       | 90    | 45         | 125    | 110   | 93    | M6  | 13 |
| 110 | 2                      | 65    | 100      | 145   | 80         | 125    | 110   | 93    | M6  | 13 |
| 110 | 3                      | 100   | 145      | 200   | 100        | 125    | 110   | 93    | M6  | 13 |
| 150 | 1                      | 50    | 80       | 105   | 55         | 175    | 155   | 127   | M8  | 16 |
| 150 | 2                      | 78    | 130      | 190   | 172        | 175    | 155   | 127   | M8  | 16 |
| 150 | 3                      | 102   | 190      | 275   | 173        | 175    | 155   | 127   | M8  | 16 |
| 200 | 1                      | 50    | 90       | 125   | 75         | 230    | 184   | 155,5 | M10 |    |
| 200 | 2                      | 70    | 160      | 250   | 180        | 230    | 184   | 155,5 | M10 |    |
| 200 | 3                      | 100   | 205      | 325   | 225        | 230    | 184   | 155,5 | M10 |    |
| 250 | 1                      | 50    | 100      | 150   | 100        | 280    | 210   | 181   | M10 |    |
| 250 | 2                      | 70    | 170      | 270   | 250        | 280    | 210   | 181   | M10 |    |
| 250 | 3                      | 100   | 250      | 400   | 300        | 280    | 210   | 181   | M10 |    |
| 300 | 1                      | 50    | 100      | 150   | 100        | 330    | 260   | 232   | M10 |    |
| 300 | 2                      | 75    | 170      | 270   | 195        | 330    | 260   | 232   | M10 |    |
| 300 | 3                      | 100   | 250      | 430   | 330        | 330    | 260   | 232   | M10 |    |
| 370 | 1                      | 50    | 110      | 165   | 115        | 395    | 310   | 282,5 | M10 |    |
| 370 | 2                      | 70    | 180      | 295   | 225        | 395    | 310   | 282,5 | M10 |    |
| 370 | 3                      | 100   | 280      | 450   | 350        | 395    | 310   | 282,5 | M10 |    |
| 410 | 2                      | 75    | 200      | 325   | 250        | 440    | 310   | 282,5 | M10 |    |
| 410 | 3                      | 125   | 300      | 500   | 375        | 440    | 310   | 282,5 | M10 |    |
| 550 | 2                      | 90    | 200      | 390   | 300        | 580    | 498,5 | 470   | M10 | 19 |
| 660 | 2                      | 90    | 200      | 400   | 310        | 700    | 498,5 | 470   | M10 | 19 |

Ø70-150 mm (2¾-6")

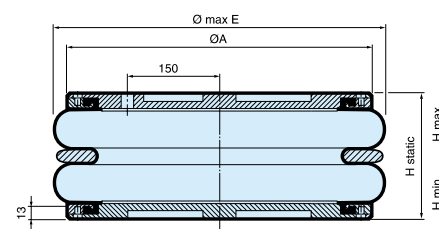


Ø200-410 mm (8-16")  
Steel end plate version



Ø550 mm (21½")  
Aluminium end plate version

Ø660 mm (26")  
Steel end plate version



Air bellows are the ideal choice for applications requiring short stroke, high thrust single acting actuators.

Manufactured from fabric reinforced synthetic rubber in one or two convolutions according to stroke and model. They incorporate no reciprocating metal parts and so provide virtually frictionless thrust compared with conventional pneumatic cylinders.

- 13 variants, diameters 150 to 420 mm
- Strokes from 45 to 170 mm
- Single or double convolutions
- High thrust and frictionless movement
- Maintenance free



#### Operating information

Working pressure: Max 8 bar  
 Working temperature: -40°C to +70°C  
 Operation: Dry air



It is recommended that external mechanical stops are used to limit the stroke. The units should not achieve maximum stroke or be allowed to 'bottom out'. Air Bellows may not be stacked, use singly only.

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#### Single convolution

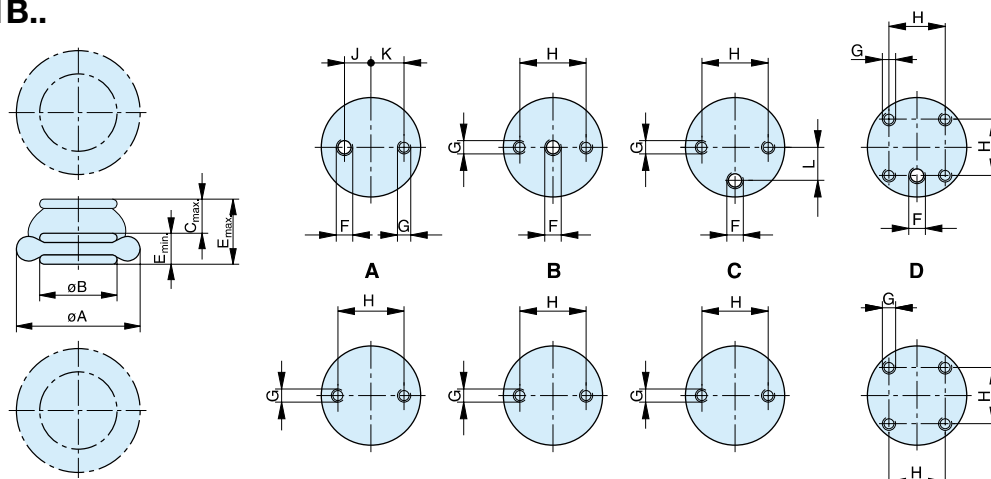
| Symbol                                                                              | Ø<br>mm (inches) | Port size | Max force (N) at<br>1 bar (0 stroke) | Max stroke<br>mm | Type    | Order code    |
|-------------------------------------------------------------------------------------|------------------|-----------|--------------------------------------|------------------|---------|---------------|
|  | 150              | G1/4      | 1250                                 | 55               | SP-1B04 | <b>KY9500</b> |
|                                                                                     | 165              | G1/4      | 1350                                 | 45               | SP-1B05 | <b>KY8401</b> |
|                                                                                     | 205              | G1/4      | 1550                                 | 90               | SP-1B07 | <b>KY9501</b> |
|                                                                                     | 250              | G3/4      | 2800                                 | 100              | SP-1B12 | <b>KY9502</b> |
|                                                                                     | 350              | G3/4      | 5050                                 | 110              | SP-1B22 | <b>KY9590</b> |
|                                                                                     | 420              | G3/4      | 7600                                 | 110              | SP-1B34 | <b>KY8010</b> |

#### Double convolution

| Symbol                                                                              | Ø<br>mm (inches) | Port size | Max force (N) at<br>1 bar (0 stroke) | Max stroke<br>mm | Type     | Order code    |
|-------------------------------------------------------------------------------------|------------------|-----------|--------------------------------------|------------------|----------|---------------|
|  | 165              | G1/4      | 1250                                 | 110              | SP-2B04  | <b>KY9612</b> |
|                                                                                     | 165              | G1/4      | 1350                                 | 80               | SP-2B05  | <b>KY8011</b> |
|                                                                                     | 170              | G1/4      | 1750                                 | 105              | SP-2B05A | <b>KY8012</b> |
|                                                                                     | 215              | G1/4      | 2200                                 | 125              | SP-2B07  | <b>KY9589</b> |
|                                                                                     | 250              | G3/4      | 3700                                 | 150              | SP-2B12  | <b>KY9611</b> |
|                                                                                     | 320              | G3/4      | 5000                                 | 170              | SP-2B22  | <b>KY9591</b> |
|                                                                                     | 390              | G3/4      | 8000                                 | 170              | SP-2B34  | <b>KY8007</b> |

## Dimensions Series SP-1B..

### Dimensions of Mounting Plates – Series SP-1B..



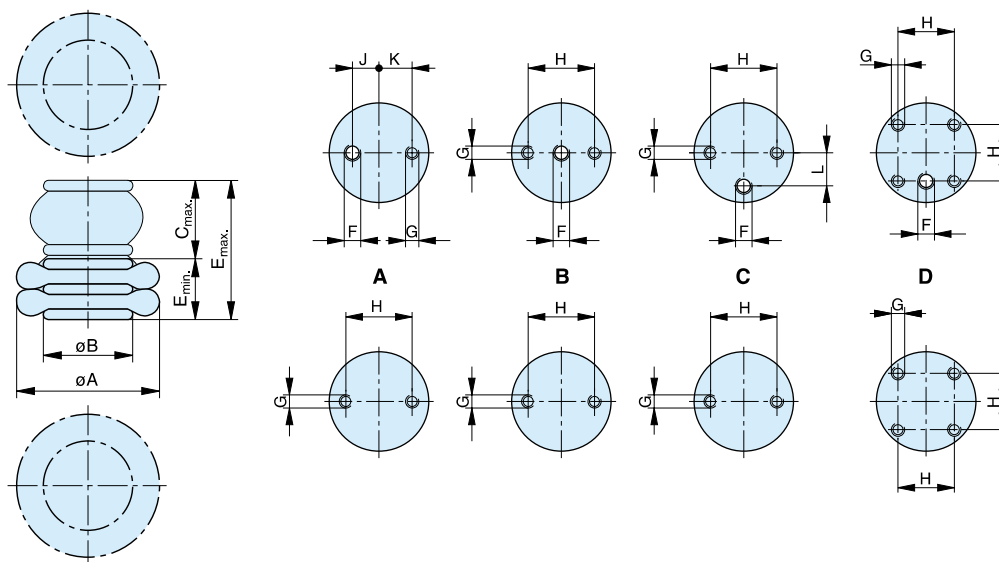
| Type    | Order-No.      | Mounting plate | ØA<br>at 8 bar | ØB  | C <sub>max</sub> ** | E <sub>max</sub> ** | E <sub>min</sub> | F    | G*  | H     | J | K  | L  |
|---------|----------------|----------------|----------------|-----|---------------------|---------------------|------------------|------|-----|-------|---|----|----|
| SP-1B04 | <b>KY 9500</b> | A              | 150            | 88  | 55                  | 105                 | 50               | G1/4 | M8  | 22    | 9 | 11 | –  |
| SP-1B05 | <b>KY 8401</b> | B              | 165            | 110 | 45                  | 95                  | 50               | G1/4 | M8  | 44.5  | – | –  | –  |
| SP-1B07 | <b>KY 9501</b> | C              | 205            | 135 | 80                  | 130                 | 50               | G1/4 | M8  | 54    | – | –  | 27 |
| SP-1B12 | <b>KY 9502</b> | C              | 250            | 160 | 100                 | 150                 | 50               | G3/4 | M8  | 89    | – | –  | 38 |
| SP-1B22 | <b>KY 9590</b> | C              | 350            | 229 | 110                 | 170                 | 60               | G3/4 | M12 | 157.5 | – | –  | 73 |
| SP-1B34 | <b>KY 8010</b> | D              | 420            | 288 | 110                 | 170                 | 60               | G3/4 | M8  | 158.8 | – | –  | –  |

\*15 deep

\*\*These dimensions depend on the operating pressure: see force diagrams

## Dimensions Series SP-2B..

### Dimensions of Mounting Plates – Series SP-2B..



| Type     | Order-No.      | Mounting plate | ØA<br>at 8 bar | ØB  | C <sub>max</sub> ** | E <sub>max</sub> ** | E <sub>min</sub> | F    | G*  | H     | J | K  | L  |
|----------|----------------|----------------|----------------|-----|---------------------|---------------------|------------------|------|-----|-------|---|----|----|
| SP-2B04  | <b>KY 9612</b> | A              | 165            | 82  | 110                 | 190                 | 80               | G1/4 | M8  | 22    | 9 | 11 | –  |
| SP-2B05  | <b>KY 8011</b> | B              | 165            | 110 | 80                  | 160                 | 80               | G1/4 | M8  | 44.5  | – | –  | –  |
| SP-2B05A | <b>KY 8012</b> | B              | 170            | 110 | 105                 | 185                 | 80               | G1/4 | M8  | 44.5  | – | –  | –  |
| SP-2B07  | <b>KY 9589</b> | C              | 215            | 135 | 125                 | 220                 | 95               | G1/4 | M8  | 54    | – | –  | 27 |
| SP-2B12  | <b>KY 9611</b> | C              | 250            | 160 | 150                 | 240                 | 90               | G3/4 | M8  | 89    | – | –  | 38 |
| SP-2B22  | <b>KY 9591</b> | C              | 320            | 229 | 170                 | 260                 | 90               | G3/4 | M12 | 157.5 | – | –  | 73 |
| SP-2B34  | <b>KY 8007</b> | D              | 390            | 288 | 170                 | 260                 | 90               | G3/4 | M8  | 158.8 | – | –  | –  |

\*15 deep

\*\*These dimensions depend on the operating pressure: see force diagrams