

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.

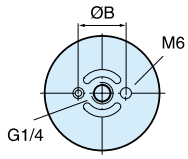
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Symbol	Ø (mm)	Types inch x nb conv.	Port size	Max stroke (mm)	Order code Standard	Order code High temp	Order code With stainless steel parts
One convolution 	70	2¾ x 1 (alu.)	G1/4	20	9109025A	9109225A	/
	110	4½ x 1 (alu.)	G3/8	45	9109400	9109600	9109400N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

Dimensions (mm)

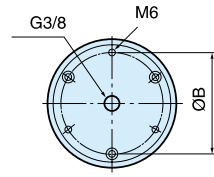
Ø70 mm (2¾")

Aluminium end plate version



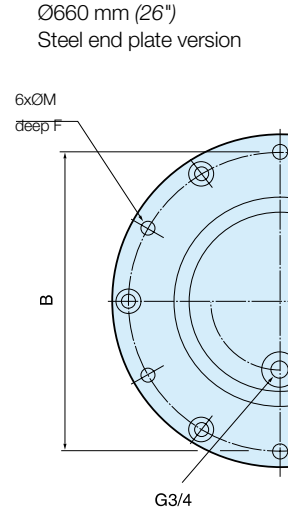
Ø110 mm (4½")

Aluminium end plate version



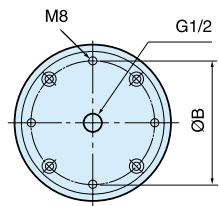
Ø550 mm (21½")

Steel end plate version



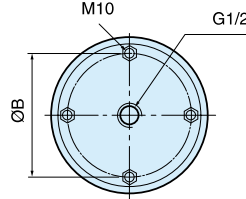
Ø150 mm (6")

Aluminium end plate version



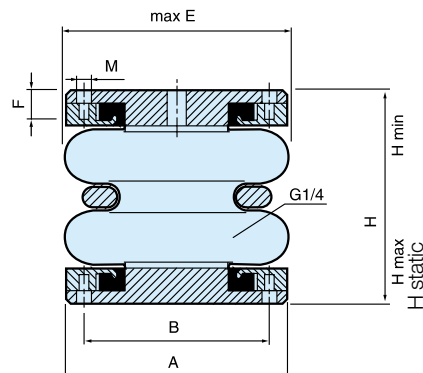
Ø200-410 mm (8-16")

Aluminium end plate version



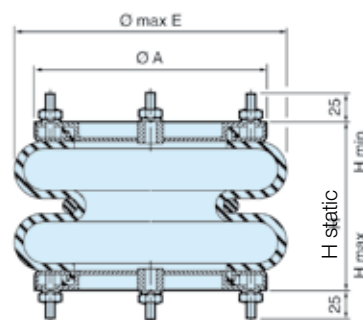
Ø	Number of convolutions	H min	H static	H max	Stroke max	ØE max	ØA	ØB	ØM	F
70	2	65	90	115	50	80	78	36	M6	9
70	3	80	110	145	65	80	78	36	M6	9
110	1	45	65	90	45	125	110	93	M6	13
110	2	65	100	145	80	125	110	93	M6	13
110	3	100	145	200	100	125	110	93	M6	13
150	1	50	80	105	55	175	155	127	M8	16
150	2	78	130	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

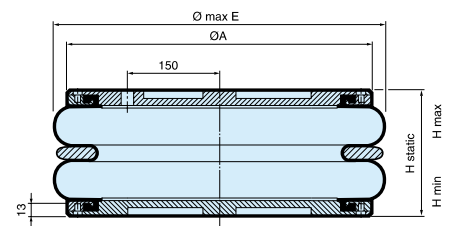


Ø550 mm (21½")

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

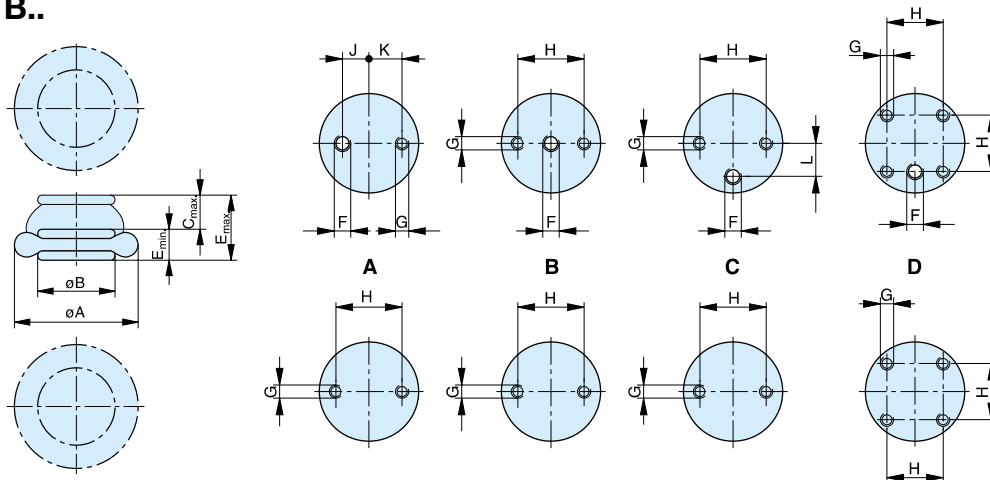
Symbol	Ø mm (inches)	Port size	Max force (N) at 1 bar (0 stroke)	Max stroke mm	Type	Order code
	150	G1/4	1250	55	SP-1B04	KY9500
	165	G1/4	1350	45	SP-1B05	KY8401
	205	G1/4	1550	90	SP-1B07	KY9501
	250	G3/4	2800	100	SP-1B12	KY9502
	350	G3/4	5050	110	SP-1B22	KY9590
	420	G3/4	7600	110	SP-1B34	KY8010

Double convolution

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

Dimensions Series SP-1B..

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



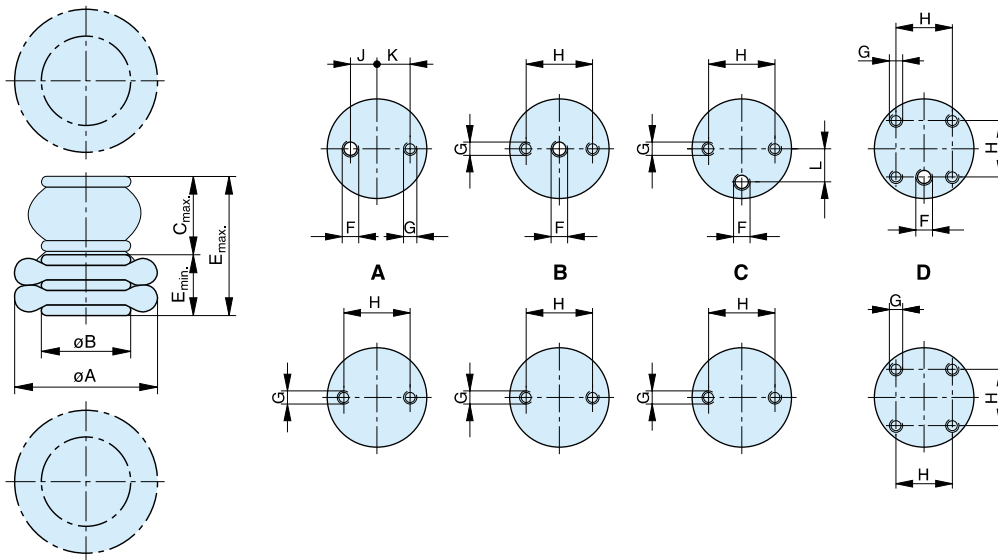
Type	Order-No.	Mounting plate	ØA at 8 bar	ØB	C _{max} **	E _{max} **	E _{min}	F	G*	H	J	K	L
SP-1B04	KY 9500	A	150	88	55	105	50	G1/4	M8	22	9	11	-
SP-1B05	KY 8401	B	165	110	45	95	50	G1/4	M8	44.5	-	-	-
SP-1B07	KY 9501	C	205	135	80	130	50	G1/4	M8	54	-	-	27
SP-1B12	KY 9502	C	250	160	100	150	50	G3/4	M8	89	-	-	38
SP-1B22	KY 9590	C	350	229	110	170	60	G3/4	M12	157.5	-	-	73
SP-1B34	KY 8010	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 at 8 bar	ØB	C _{max} **	E _{max} **	E _{min}	F	G*	H	J	K	L
SP-2B04	KY 9612	A	165	82	110	190	80	G1/4	M8	22	9	11	-
SP-2B05	KY 8011	B	165	110	80	160	80	G1/4	M8	44.5	-	-	-
SP-2B05A	KY 8012	B	170	110	105	185	80	G1/4	M8	44.5	-	-	-
SP-2B07	KY 9589	C	215	135	125	220	95	G1/4	M8	54	-	-	27
SP-2B12	KY 9611	C	250	160	150	240	90	G3/4	M8	89	-	-	38
SP-2B22	KY 9591	C	320	229	170	260	90	G3/4	M12	157.5	-	-	73
SP-2B34	KY 8007	D	390	288	170	260	90	G3/4	M8	158.8	-	-	-

*15 deep

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