Air Bellows

oria



egaña group

GENERAL INFORMATION



Manufacturas Oria is a global company (member of Egaña Group) specialized in industrial air bellow product design and manufacturing. Established in 1970, we rely on more than 50 years of manufacturing knowledge and experience, counting with advanced technologies and qualified personnel.

The Oria bellow is a corrugated flexible body composed of high-quality materials. An inner and outer rubber cover with reinforcing fabric plies in between and steel beads are joined vulcanized together, producing single, double and triple convoluted bodies with central rings among convolutions.

The complete air spring is set up fitting the metallic end closures to the bellow ends, offering the following three design alternatives:







Dismountable Design:

Removable set assembled with two clamping bead rings and top and bottom plates, with an air inlet connection in the top plate and studs or threaded holes for fixation.

Available in D Series air springs.

Crimped Design:

Not dismountable set assembled mechanically crimping top and bottom bead plates, with blind nuts for fixation and with an air inlet connection in the top plate.

Available in F Series air springs.

Bead Ring Design:

Dismountable set assembled with socket head, threaded, or countersunk type bead rings. The air bellow is directly assembled to the machine or plates are requiered.

Available in F Series air bellows.

The air bellow sealed with the metallic end closures are single-acting air containers that operate with air pressure, exerting an internal force in the axial direction to produce an upward stroke, thrust and tension for actuator applications, or to provide a high-performance vibration isolation with more than 99% of isolation of unwanted vibrations.





PRESSURE

The maximum allowable pressure during operation when using a standard construction air spring is 8 bar pressure. In case of being required a greater pressure, it should be consulted to the manufacturer or distributor.

Oria air bellows can be supplied with an alternative four-ply construction (high strength construction). The advantage of the four-ply version air actuator is that it is able to work with higher pressures, achieving greater forces. Basically, the four-ply air bellow has a pressure capability of 12 bar.

METALLIC PARTS

The metallic parts of the air bellows can be supplied in different qualities. The standard in most air springs is the electro galvanized steel, but they can also be supplied in stainless AISI-304, with high wear resistance and durability for media such as acids, chemicals and cleaning agents. Other stainless steel qualities as AISI-316L available upon request.



ELASTOMER COMPOUNDS

- **Natural (NR/SBR):**
  Standard material with excellent universal properties and very high dynamic capability. Temperature range from -40 °C to +70 °C.
- **Chlorobutyl (CIIR):**
  Highly used material due to its outstanding resistance to acids.
  Temperature range from -30 ºC to +115 °C.
- **Nitrile (NBR):**
  Excellent resistance to oils, fuels, ozone and outdoors.
  Temperature range from -25 °C to +110 °C.
- **Ethylene Propylene Diene (EPDM):**
  Excellent resistance to high temperatures, ozone and outdoors.
  Temperature range from -20 °C to +115 °C.
- **Chloroprene (CR):**
  Excellent weathering resistant and medium resistance to oils.
  Temperature range from -20 °C to +110 °C.

WORKING MEDIA

The air springs have been designed to work with compressed air. However, they can also work with nitrogen, oil, water and compressed air containing oil. In case of working with water, stainless steel metal parts are required to avoid corrosion.

STORAGE

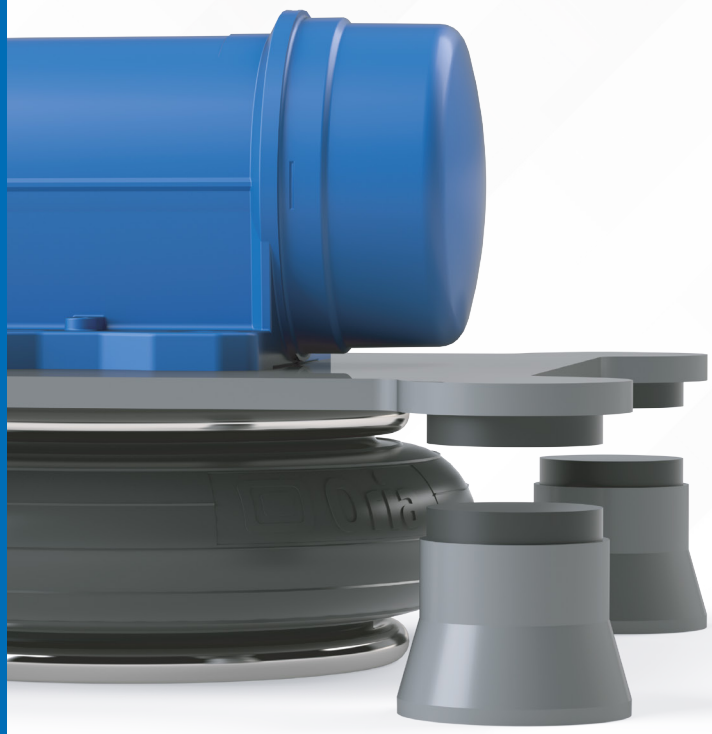
The rubber bellows stocked in the warehouse should not be exposed or located in high or very low temperature environments. Rubber bellows should be stored in cool, dark and dry conditions away from direct sunlight or ozone producing equipment (see ISO 2230).

ADVANTAGES AS ISOLATOR

Due to air springs extremely low natural frequency, they can be used instead of coil springs or other types of isolators, obtaining the following advantages.

Best Isolation Degree in the Market
The rubber bellow isolator is able to absorb more than 99% of the unwanted vibrations.

Uniform Isolation Properties
The air isolators maintain constant natural frequency values with changing loads.



Extended Product Life
Air springs are unaffected by weathering and can be manufactured with a wide range of elastomers and steel qualities, being suitable for use in harsh ambient conditions.

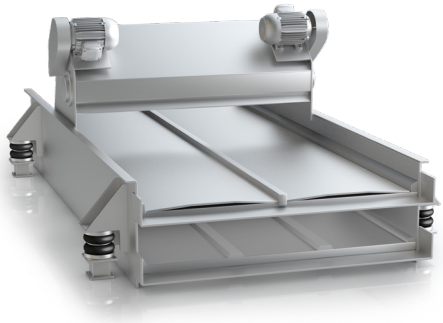
Effective Noise Reduction
The rubber air bellow's natural frequency reduces structurally transmitted noise.

Compact Installation Height
Rubber air bellows have a very low design height allowing compact constructions.

Extended Machinery Life
Air bellows extends the life cycle of the equipment, due to their outstanding isolation properties.

Height Control
The air pressure can be regulated guarantying a uniform operating height with alternating loads.

Wide Size Range
The air bellows are able to isolate loads up to 380 kN per bellow.







ADVANTAGES AS ACTUATOR

The air actuator has been developed to be used instead of traditional rigid actuators such as pneumatic or hydraulic cylinders, adding the following benefits:

Maintenance Free
Due to the rubber bellow long-life service (without sliding sealing elements), the operational costs are lower than a conventional cylinder.

Low Purchasing Cost
The purchasing cost of a rubber actuator is much lower than a conventional pneumatic cylinder.

Lateral Misalignament Absortion
Due to their flexibility, the air bellows can operate with lateral misalignments up to 30 mm, reducing costs by avoiding use of precision guides.



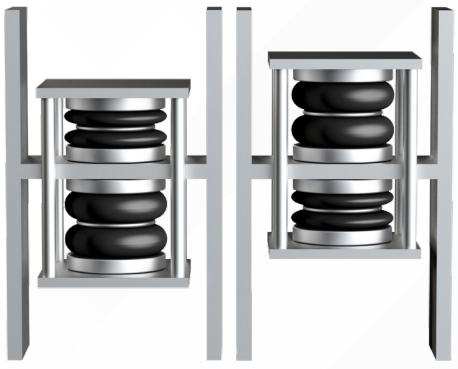
Wide Size Range
The rubber bellows range covers external diameter dimensions from 80 to 950 mm with loads from 0,5 to 450 kN.

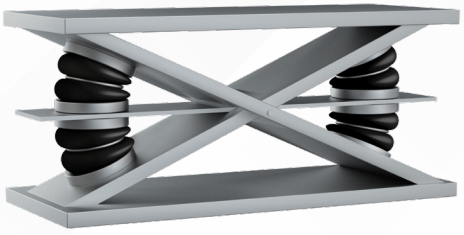
Tilt Motion
Rubber bellows have an angular capability up to 25°.

Uniform Movements
The stick-slip effect, present in the conventional cylinders, is avoided.

Extended Product Life
Rubber actuators are unaffected by weathering and can be manufactured with a wide range of elastomers and steel qualities, being suitable for use in harsh ambient conditions.

Compact Installation Height
Rubber air bellows have a very low design height allowing compact constructions.

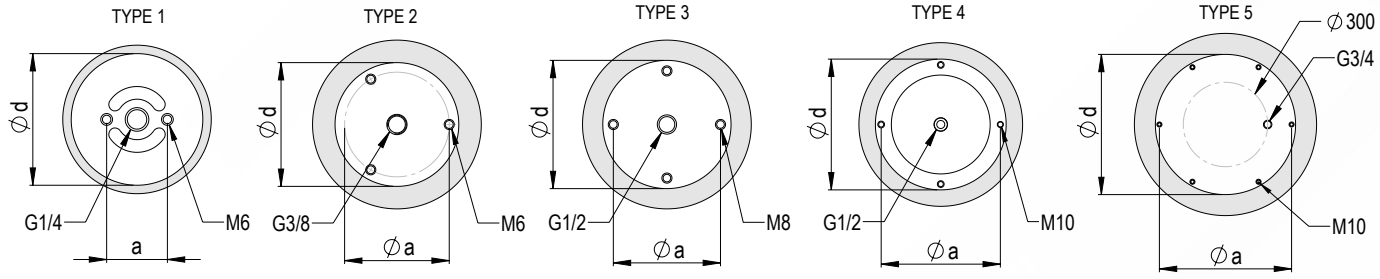






D SERIES

	MODEL	GENERAL CHARACTERISTICS					AS ACTUATOR			AS ISOLATOR	
		Ø Max. [mm]	Min. height [mm]	End closure characteristics			Stroke [mm]	Force at 7 bar [kN]		Design height [mm]	Natural frecuency at 6 bar [Hz]
				Type	a [mm]	d [mm]		Min. height	Max. height		
SINGLE CONVOLUTION	2¾x1	80	50	1	36	78	20	3	1	60	4,6
	4½x1	120	45	2	93	110	45	8	1	70	3,75
	6x1 P	165	50	3	127	152	50	10,1	4,6	90	3,08
	6x1 M	165	50	4	127	154	50	10,1	4,6	90	3,08
	8x1	215	50	4	156	184	70	18	7,2	105	2,72
	10x1	260	50	4	181	210	85	26	10,1	120	2,57
	12x1	310	55	4	232	260	85	41,2	11,5	125	2,52
	14½x1	378	50	4	283	310	115	67	24,9	130	2,46
	16x1	410	60	4	283	310	130	70	29,5	140	2,16
DOUBLE CONVOLUTION	2¾x2	80	65	1	36	78	45	2,4	0,6	90	3,57
	4½x2	120	65	2	93	110	80	7	2	130	2,66
	6x2 P	165	75	3	127	152	115	12,8	1,7	162	2,48
	6x2 M	165	75	4	127	154	115	12,8	1,7	162	2,48
	8x2	215	75	4	156	184	150	19,5	6	210	1,85
	10x2	260	75	4	181	210	195	27,1	6,6	220	1,83
	12x2	310	75	4	232	260	200	43	4,8	225	1,77
	12x2-E	340	75	4	232	260	215	55	12	305	1,42
	14½x2	378	75	4	283	310	235	69	21	250	1,72
	16x2	410	75	4	283	310	265	73	21	285	1,58
	21½x2	580	90	5	470	498	310	180	70	300	1,5
	26x2	700	100	5	470	498	400	248	105	345	1,21
TRIPLE CONVOLUTION	2¾x3	80	80	1	36	78	60	2,6	0,8		
	4½x3	120	85	2	93	110	105	6,2	2,6		
	6x3 P	165	100	3	127	152	170	12,1	2,7		
	6x3 M	165	100	4	127	154	170	12,1	2,7		
	8x3	215	110	4	156	184	225	18,8	5,8		
	10x3	260	100	4	181	210	280	31	5,7		
	12x3	310	100	4	232	260	300	44,4	14		
	14½x3	378	100	4	283	310	375	70,4	27,2		
	16x3	410	125	4	283	310	375	75	20		



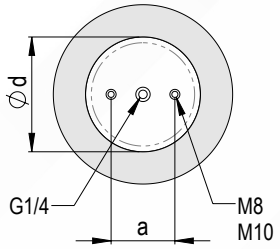


oria

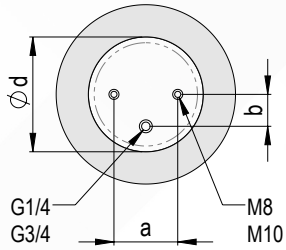
F SERIES

	MODEL	GENERAL CHARACTERISTICS								AS ACTUATOR			AS ISOLATOR	
		Ø Max. [mm]	Min. height [mm]	Bead plate closure Type	Bead plate closure a [mm]	Bead plate closure b [mm]	Bead ring closure Type	Bead ring closure a [mm]	Bead ring closure Bolt n°	Stroke [mm]	Force at 7 bar [kN] Min. height	Force at 7 bar [kN] Max. height	Design height [mm]	Natural frecuency at 6 bar [Hz]
SINGLE CONVOLUTION	M-10	140	53	1	44,5					35	7,5	2,7	76	3,95
	M-11	142	53	1	44,5					37	8,8	3,5	76	3,92
	M-20-E	160	53	1	44,5					52	10	6,2	90	2,98
	M-20	165	51	1	44,5					51	9	5	90	3,02
	M-25	195	53	1	44,5					77	12,5	5,1	114	2,70
	M-25-E	200	53	1	44,5					77	13	7,5	120	2,60
	MT-110	200	51				4	118	M8(x6)	77	13	7,5	118	2,60
	M-30	220	53	1	70		4	135	M8(x6)	72	16	8	115	2,72
	M-30-E	225	53	1	70		4	135	M8(x6)	82	17	8	120	2,68
	M-35-E	244	53	2	89	44,5	4	160,3	M8(x8)	77	20,5	11	116	2,71
	M-35	260	53	2	89	44,5	4	160,3	M8(x8)	77	21	12	114	2,77
	M-40	310	53	2	157,5	73	4	228,6	M8(x12)	87	40	20	125	2,60
	M-40-EE	315	60				4	182	M8(x12)	92	29	15	130	2,60
	M-40-E	343	53	2	157,5	73	4	228,6	M8(x12)	97	44	18	140	2,60
	M-45	378	53	3	158,8		4	287,3	M8(x12)	94	68	28	127	2,50
	M-45-E	404	53	3	158,8		4	287,3	M8(x12)	116	65	38	140	2,30
	M-48	420	53				4	350,8	M10(x18)	107	66	40	125	2,18
	M-60-1	515	53				4	419,1	M10(x24)	89	120	75	125	2,37
	M-118-1	575	53				4	482,6	M10(x24)	107	150	98	125	2,22
	M-130-1	707	53				4	597	M10(x32)	132	240	150	150	2,07
	M-140-1	950	65				4	830	M10(x40)	120	452	300	140	2,00
DOUBLE CONVOLUTION	M-12	130	70	1	44,5					80	8	1,6	150	2,72
	M-70-E	160	73	1	44,5					107	10	4,5	165	2,20
	M-70	165	70	1	44,5					90	10	3,8	140	2,57
	2600	195	75	2	70	30				125	15	5	165	2,01
	M-80	220	75	1	70		4	135	M8(x6)	150	17	7	200	1,85
	M-85-E	244	75	2	89	44,5	4	160,3	M8(x8)	185	27	8	216	1,93
	M-85	260	75	2	89	44,5	4	160,3	M8(x8)	195	28	10	220	1,60
	M-90	310	75	2	157,5	73	4	228,6	M8(x12)	175	40	12	240	1,77
	M-90-E	350	80	2	157,5	73	4	228,6	M8(x12)	200	40	20	268	1,80
	M-100	380	75	3	158,8		4	287,3	M8(x12)	225	64	30	240	1,75
	M-100-E	410	80	3	158,8		4	287,3	M8(x12)	225	65	35	267	1,60
	M-110	420	75				4	350,8	M10(x18)	175	78	35	240	1,68
	M-110-E/2	460	80				4	350,8	M10(x18)	240	92	30	250	1,57
	M-60-2	515	80				4	419,1	M10(x24)	185	120	75	240	1,55
	M-118-2	575	80				4	482,6	M10(x24)	200	160	85	240	1,60
	M-130-2	707	80				4	597	M10(x32)	230	240	130	267	1,43
	M-140-2	950	110				4	830	M10(x40)	225	445	310	279	1,40
TRIPLE CONVOLUTION	M-13	130	85	1	44,5					140	9	1,8		
	M-73-E	160	90	1	44,5					175	10	4,6		
	M-83	220	110	1	70		4	135	M8(x6)	240	19	5		
	M-88	260	110	2	89	44,5	4	160,3	M8(x8)	250	30	10		
	M-93	310	110	2	157,5	73	4	228,6	M8(x12)	250	41	16		
	M-103	378	125	3	158,8		4	287,3	M8(x12)	300	69	30		
	M-113	420	125				4	530,8	M10(x18)	280	72	39		
	M-118-3	575	115				4	482,6	M10(x24)	300	140	98		
	M-130-3	707	115				4	597	M10(x32)	360	220	150		
	M-140-3	950	140				4	830	M10(x40)	350	400	290		

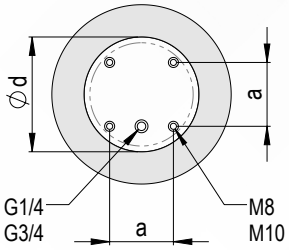
TYPE 1



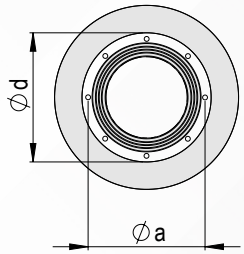
TYPE 2



TYPE 3



TYPE 4



egaña group

SPECIALISTS DESIGNING AND MANUFACTURING RUBBER-METAL AND REINFORCED-RUBBER INDUSTRIAL PRODUCTS



egaña
EGAÑA CAUCHO METAL, S.L.U.

oria
MANUFACTURAS ORIA, S.L.U.

e&b
E&B RUBBER METAL INDIA PVT. LTD.

une
MANUFACTURAS UNE, S.A.U.

Paseo Egiburuberri 19 C
20100 Renteria
Guipuzcoa, Spain
T. 34 943 46 88 35
eganasl@eganasl.com
www.eganagroup.com

Cr. GI-2632 Km 7,8
20709 Ezkio
Guipuzcoa, Spain
T. 34 943 72 07 65
comercial@grupooria.com
www.eganagroup.com