# Airsprings

The GUO airsprings consist of a flexible neoprene rubber body with nylon mesh reinforcements, and rustproof plates with an air inlet and mounting blind nuts.

The GUO airsprings can be used both as anti-vibration elements and as pneumatic cylinders.

The GUO airsprings absorb up to 99% of the unwanted vibrations, which avoid further damage to the machines and metallic structures. At the same time, they reduce the noise level.

The GUO airspring have been developed to replace air or hydraulic cylinders. Due to their design, the air pressure inside the bellow produces an upward stroke, thrust, tension, rotary movements or fast anchoring movements.

Advantages in comparison with pneumatic cylinders:

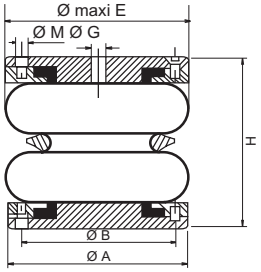
- Lower cost.
- Maintenance saving: no moving parts, no sealing parts, no friction between parts.
- No greasing required.
- Small space requirement.

## CHARACTERISTICS OF THE "D" SERIES (1, 2, 3 CONVOLUTIONS)

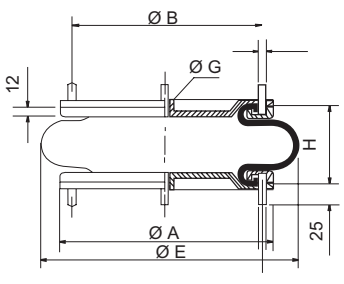
| MODEL | END MATERIALS | HEIGHT (mm) | | | STROKE | ØE | ØA | ØB | ØM | ØG BSP | PRESSURE BAR | FORCE AT 7 BARS (KN) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | MIN. | STATIC | MAX. | MAX. | MAX. | | | | | MAX. | MIN. HEIGHT | MAX. HEIGHT |
| 4 1/2x1 | Alu | 45 | 70 | 90 | 45 | 120 | 110 | 93 | M6 | 3/8" | 8 | 8 | 1 |
| 4 1/2x2 | Alu | 65 | 100 | 145 | 80 | 120 | 110 | 93 | M6 | 3/8" | 8 | 7 | 1,70 |
| 4 1/2X2E | Alu | 60 | 100 | 130 | 70 | 120 | 110 | 93 | M6 | 3/8" | 8 | 7 | 0,70 |
| 4 1/2x3E | Alu | 85 | 130 | 190 | 105 | 120 | 110 | 93 | M6 | 3/8" | 8 | 6,20 | 1 |
| 6x1P | Alu | 50 | 80 | 100 | 50 | 165 | 152 | 127 | M8 | 1/2" | 8 | 10,10 | 4,6 |
| 6x1M | Steel | 50 | 80 | 100 | 50 | 165 | 154 | 127 | M10 | 1/2" | 8 | 10,10 | 4,6 |
| 6x2P | Alu | 75 | 130 | 190 | 115 | 165 | 152 | 127 | M8 | 1/2" | 8 | 12,80 | 1,70 |
| 6x2M | Steel | 75 | 130 | 190 | 115 | 165 | 154 | 127 | M10 | 1/2" | 8 | 12,80 | 1,70 |
| 6x3P | Alu | 100 | 175 | 270 | 170 | 165 | 153 | 127 | M8 | 1/2" | 8 | 12,10 | 2,70 |
| 6x3M | Steel | 100 | 175 | 270 | 170 | 165 | 154 | 127 | M10 | 1/2" | 8 | 12,10 | 2,70 |
| 8x1 | Steel | 50 | 89 | 120 | 70 | 215 | 184 | 156 | M10 | 1/2" | 8 | 18 | 7,2 |
| 8x2 | Steel | 75 | 160 | 225 | 150 | 215 | 184 | 156 | M10 | 1/2" | 8 | 19,50 | 6,0 |
| 8x3 | Steel | 110 | 220 | 335 | 225 | 215 | 184 | 156 | M10 | 1/2" | 8 | 18,80 | 5,8 |
| 10x1 | Steel | 50 | 92 | 135 | 85 | 260 | 210 | 181 | M10 | 1/2" | 10 | 26 | 10,10 |
| 10x2 | Steel | 75 | 170 | 270 | 195 | 260 | 210 | 181 | M10 | 1/2" | 10 | 27,10 | 6,6 |
| 10x3 | Steel | 100 | 250 | 380 | 280 | 260 | 210 | 181 | M10 | 1/2" | 8 | 31 | 5,7 |
| 12x1 | Steel | 55 | 95 | 140 | 185 | 310 | 260 | 232 | M10 | 1/2" | 8 | 41,20 | 11,55 |
| 12x2 | Steel | 75 | 170 | 275 | 200 | 310 | 260 | 232 | M10 | 1/2" | 8 | 43 | 4,80 |
| 12x2E | Steel | 75 | 195 | 290 | 215 | 325 | 260 | 232 | M10 | 1/2" | 8 | 55 | 12 |
| 12x3 | Steel | 100 | 250 | 400 | 300 | 310 | 260 | 232 | M10 | 1/2" | 8 | 44,50 | 14 |
| 14 1/2x1 | Steel | 50 | 110 | 165 | 115 | 378 | 310 | 283 | M10 | 1/2" | 8 | 67 | 24,90 |
| 14 1/2x2 | Steel | 75 | 200 | 310 | 235 | 378 | 310 | 283 | M10 | 1/2" | 8 | 69 | 21 |
| 14 1/2x3 | Steel | 100 | 285 | 500 | 390 | 378 | 310 | 283 | M10 | 1/2" | 8 | 70,40 | 27,20 |
| 16x1 | Steel | 60 | 130 | 190 | 130 | 410 | 310 | 283 | M10 | 1/2" | 8 | 70 | 29,50 |
| 16x2 | Steel | 75 | 225 | 340 | 265 | 410 | 310 | 283 | M10 | 1/2" | 8 | 73 | 21 |
| 16x3 | Steel | 125 | 290 | 475 | 375 | 410 | 310 | 283 | M10 | 1/2" | 8 | 75 | 20 |
| 21 1/2x2 | Alu | 90 | 200 | 400 | 310 | 580 | 498 | 470 | M10 | 3/4" | 8 | 180 | 70 |
| 26x2 | Alu | 100 | 200 | 500 | 400 | 700 | 498 | 470 | M10 | 1/2" | 8 | 248 | 105 |

- Rubber bellows and bead rings can be supplied separately.
- Angular capability: Angular motion of up to 15% is possible.

Aluminium bead plates from 4 1x2 x 1 to 6 x 3




Steel bead plates from 6 x 1 to 16 x 3



# MODELS

## SINGLE CONVOLUTION

## DOUBLE CONVOLUTION

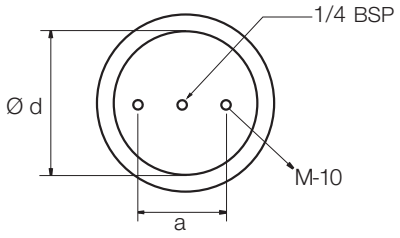
## TRIPLE CONVOLUTION

| CHARACTERISTICS | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| MODEL STYLE | Ø MAX 7 BAR | STANDARD FIXATION | | | | | ALTERNATIVE FIXATION | | | MIN. HEIGHT | MAX. HEIGHT |
| | | TYPE | a (mm) | b (mm) | d (mm) | NUMBER OF BOLTS | TYPE | a (mm) | NUMBER OF BOLTS | | |
| 10 | 140 | A | 44,5 | | 114 | | | | | 50 | 88 |
| 20 | 165 | A | 44,5 | | 114 | | | | | 50 | 100 |
| 25 | 195 | A | 44,5 | | 114 | | | | | 50 | 130 |
| 25E | 200 | A | 44,5 | | 114 | | | | | 50 | 130 |
| 30 | 220 | A | 70 | | 135 | | | | | 50 | 125 |
| 35 | 260 | C | 88,9 | 44,5 | 160 | | D | 160,3 | M8X8 | 50 | 130 |
| 35E | 244 | C | 88,9 | 44,5 | 160 | | D | 160,3 | M8X8 | 50 | 130 |
| 40 | 310 | C | 157,5 | 72,9 | 230 | | D | 228,6 | M8X12 | 50 | 140 |
| 40E | 343 | C | 157,5 | 72,9 | 230 | | D | 228,6 | M8X12 | 50 | 150 |
| 45 | 378 | B | 158,8 | | 287 | | D | 287,3 | M8X12 | 50 | 147 |
| 45E | 404 | B | 158,8 | | 287 | | D | 287,3 | M8X12 | 52 | 169 |
| 48 | 420 | D | 350,8 | | 384 | M10X18 | | | | 50 | 160 |
| 60 | 515 | D | 419 | | 451 | M10X24 | | | | 50 | 142 |
| 65 | 590 | D | 482,6 | | 517 | M10X24 | | | | 50 | 160 |
| 50 | 707 | D | 597 | | 638 | M10X32 | | | | 50 | 185 |
| 140-1 | 950 | D | 830 | | 890 | M10X40 | | | | 65 | 185 |
| 12 | 130 | A | 44,5 | | | | D | 114,3 | M8x6 | 70 | 150 |
| 2600 | 195 | | | | | | | | | 75 | 200 |
| 70 | 165 | A | 44,5 | 136,4 | 114 | | D | 114,3 | M8x6 | 70 | 160 |
| 70E | 160 | A | 44,5 | 136,4 | 120 | | D | 114,3 | M8X6 | 73 | 180 |
| 80 | 220 | A | 70 | | 135 | | | | | 75 | 225 |
| 85 | 260 | C | 88,9 | 44,5 | 160 | | D | 160,3 | M8X8 | 75 | 270 |
| 85E | 244 | C | 88,9 | 44,5 | 160 | | D | 160,3 | M8X8 | 75 | 278 |
| 90 | 310 | C | 157,5 | 72,9 | 230 | | D | 228,6 | M8X12 | 75 | 250 |
| 90E | 350 | C | 157,5 | 72,9 | 230 | | D | 228,6 | M8X12 | 80 | 280 |
| 100 | 380 | B | 158,8 | | 287 | | D | 287,3 | M8X12 | 75 | 300 |
| 100E | 410 | B | 158,8 | | 287 | | D | 287,3 | M8X12 | 80 | 300 |
| 110 | 420 | D | 350,8 | | 384 | M10X18 | | | | 75 | 250 |
| 110E | 485 | D | 350,8 | | 384 | M10X18 | | | | 85 | 345 |
| 118 | 575 | D | 482 | | 517 | | | | | 80 | 280 |
| 120 | 660 | D | 558 | | 600 | M10X24 | | | | 80 | 265 |
| 130 | 700 | D | 597 | | 638 | M10X32 | | | | 80 | 310 |
| 140-2 | 950 | D | 830 | | 890 | | | | | 110 | 335 |
| 13 | 130 | A | 44,5 | | | | D | 114,3 | M8x6 | 85 | 225 |
| 83 | 220 | A | 70 | | 135 | | | | | 110 | 350 |
| 88 | 260 | C | 88,9 | 44,5 | 160 | | | | | 110 | 360 |
| 73E | 147 | A | 44,5 | 44,5 | 120 | | | | | 90 | 265 |
| 93 | 310 | C | 157,5 | 72,9 | 230 | | | | | 110 | 360 |
| 103 | 378 | B | 158,8 | | 287 | | | | | 125 | 425 |
| 113 | 420 | D | 350,8 | | 384 | M10X18 | | | | 125 | 405 |
| 118-3 | 569 | D | 482 | | 517 | M10X24 | | | | 115 | 415 |
| 130-3 | 709 | D | 597 | | 638 | M10X32 | | | | 115 | 475 |
| 140-3 | 950 | D | 830 | | 890 | M10X40 | | | | 140 | 490 |

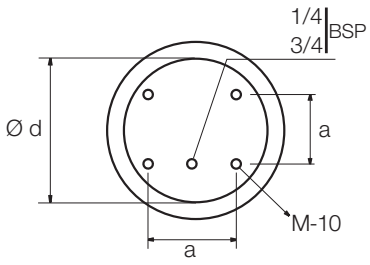
| ACTUATORS | | | ISOLATORS | | | | |
|---|---|---|---|---|---|---|---|
| | 7 Bars FORCE (KN) | | | | % OF ISOLATION AT FORCE | | |
| Max. STROKE (mm) | INITIAL STROKE | FINAL STROKE | DESIGN HEIGHT (mm) | NATURAL FREQUENCY 5.6 BAR (HZ) | 400 cpm | 800 cpm | 1500 cpm |
| 38 | 7,50 | 2,70 | 76 | 3,95 | | 90,3 | 97,4 |
| 50 | 9 | 5 | 90 | 3,02 | 74,4 | 94,6 | 98,5 |
| 80 | 12,50 | 5,1 | 114 | 2,70 | 80,2 | 95,7 | 98,8 |
| 80 | 13 | 7,50 | 120 | 2,60 | 81,3 | 96,8 | 99,3 |
| 75 | 16 | 8 | 115 | 2,72 | 80,2 | 95,7 | 98,8 |
| 80 | 21 | 12 | 114 | 2,77 | 79,1 | 95,5 | 98,8 |
| 80 | 20,50 | 11 | 116 | 2,71 | 80,3 | 160,9 | 98,9 |
| 90 | 40 | 20 | 125 | 2,60 | 82,1 | 96,0 | 98,9 |
| 100 | 44 | 18 | 140 | 2,6 | 82,6 | 96,2 | 98,9 |
| 97 | 68 | 28 | 127 | 2,50 | 83,6 | 96,4 | 99,0 |
| 117 | 65 | 38 | 140 | 2,3 | 86,9 | 97 | 99,2 |
| 110 | 66 | 40 | 125 | 2,18 | 84,3 | 96,6 | 99,0 |
| 92 | 120 | 75 | 125 | 2,37 | 85,5 | 96,7 | 99,1 |
| 110 | 150 | 98 | 125 | 2,22 | 87,5 | 97,1 | 99,2 |
| 135 | 240 | 150 | 150 | 2,07 | 89,3 | 97,5 | 99,3 |
| 120 | 452 | 300 | 140 | 2 | 90,3 | 97,7 | 99,4 |
| 80 | 8 | 1,6 | | | | | |
| 125 | 15 | 5 | | | | | |
| 90 | 10 | 3,8 | 140 | 2,57 | 82,5 | 96,1 | 98,9 |
| 110 | 10 | 4,5 | 165 | 2,2 | 87,6 | 97,2 | 99,2 |
| 150 | 17 | 7 | 200 | 1,85 | 91,6 | 98,0 | 99,4 |
| 195 | 28 | 10 | 216 | 1,93 | 91,3 | 98,5 | 99,4 |
| 203 | 27 | 8 | 254 | 1,6 | 92,1 | 98,5 | 99,5 |
| 175 | 40 | 12 | 240 | 1,77 | 92,4 | 98,2 | 99,5 |
| 200 | 40 | 20 | 268 | 1,8 | 92,3 | 98,2 | 99,2 |
| 190 | 64 | 30 | 240 | 1,75 | 92,6 | 98,3 | 99,5 |
| 220 | 62 | 35 | 267 | 1,6 | 94 | 98,5 | 99,6 |
| 175 | 78 | 35 | 240 | 1,68 | 93,2 | 98,4 | 99,5 |
| 260 | 105 | 55 | | | | | |
| 200 | 140 | 83 | | | | | |
| 185 | 200 | 120 | 240 | 1,55 | 94,2 | 98,6 | 99,6 |
| 230 | 240 | 130 | 267 | 1,43 | 95,1 | 98,8 | 99,7 |
| 225 | 445 | 310 | 279 | 1,4 | 95,6 | 98,9 | 99,7 |
| 140 | 9 | 1,8 | | | | | |
| 240 | 19 | 5 | | | | | |
| 250 | 30 | 10 | | | | | |
| 175 | 10 | 4,6 | | | | | |
| 250 | 41 | 16 | 343 | 1,3 | 95,9 | 99,0 | 99,7 |
| 300 | 69 | 30 | 330 | 1,4 | 95,5 | 98,9 | 99,7 |
| 280 | 72 | 39 | 330 | 1,4 | 95,5 | 98,9 | 99,7 |
| 300 | 140 | 98 | 356 | 1,3 | 96,2 | 99,1 | 99,7 |
| 360 | 220 | 150 | 381 | 1,2 | 96,8 | 99,2 | 99,8 |
| 350 | 400 | 290 | 381 | 1,1 | 97 | 99,3 | 99,8 |

Type of fixation depends on the model (for fixations type A, B, and C: theaded nuts M10).

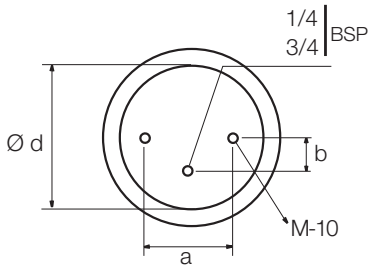
Type A, Bead Plate



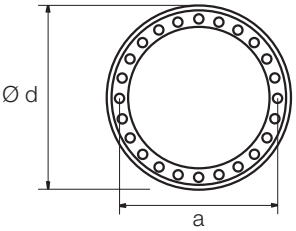

Type B, Bead Plate




Type C, Bead Plate

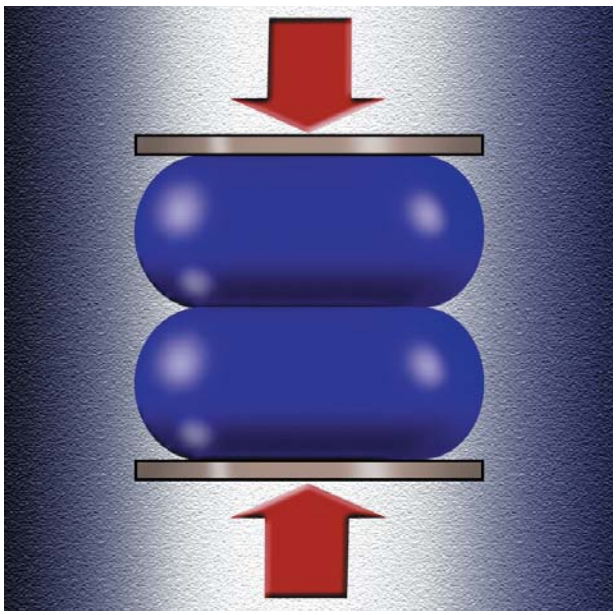


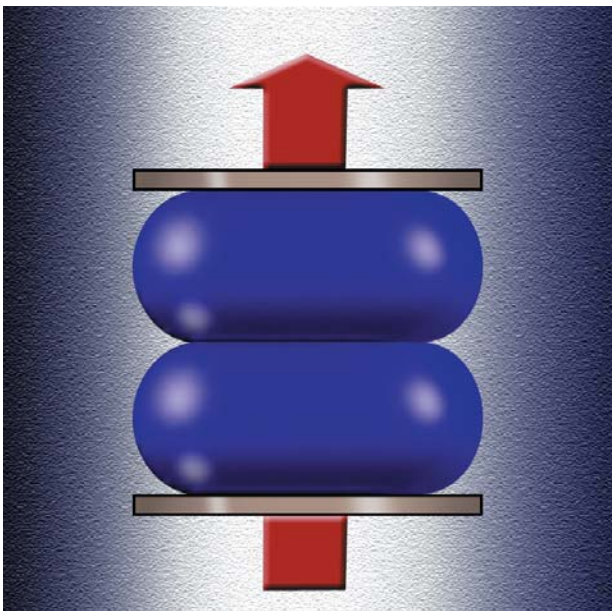

Type D, Bead Ring

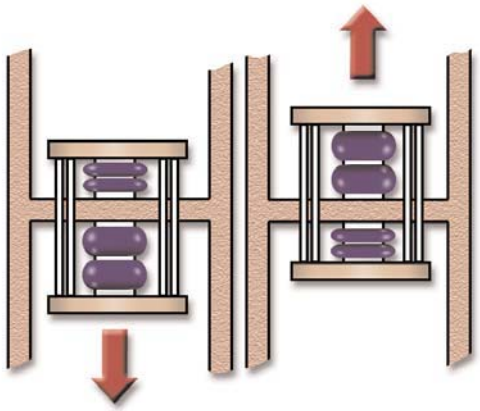


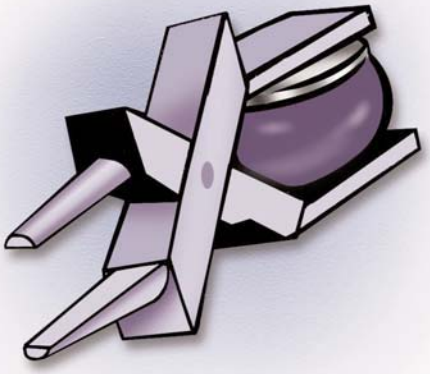
# Application Fields

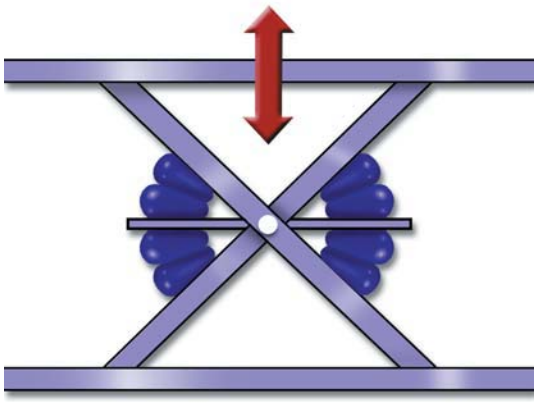
- Moulding sytems in foundry.
- Replacement of steel springs.
- Industrial suspension systems.
- Textile machinery.
- Paper mill machinery.
- Vibrating machinery.
- Presses and forges.
- Anti-vibrating isolators for Machinery, Compensators, Weighing equipment.
- Lifting tables.

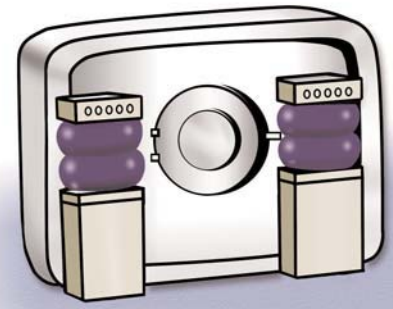


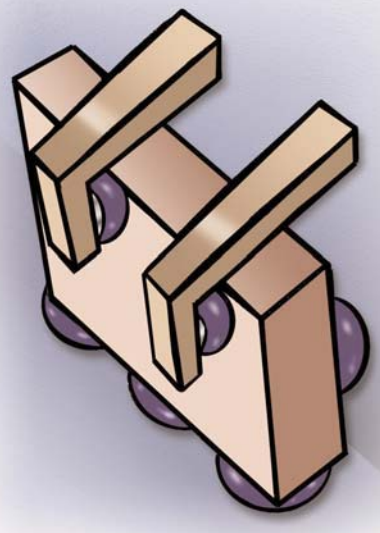


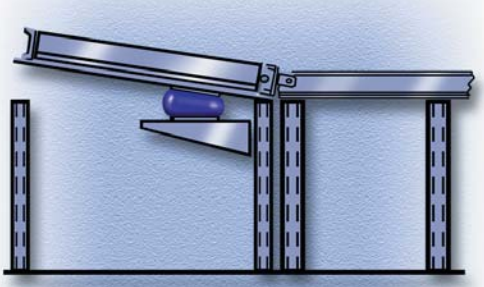












## PRECAUTIONS IN USE

- Airsprings must not be pressurised unless they are restricted by an outside frame or by a suitable load.
- Strokes must be limited by the direct use of bump stops or external stops.
- When stacking airsprings, special care must be taken to ensure the airsprings are guided and fixed.
- An airspring is a single acting air actuator and must not be used below atmospheric pressure.
- Please check the over-pressure in case of rapid compression.

## TEMPERATURE

According to the temperature conditions, the rubber compound must be chosen as follows :

| | |
|---|---|
| STANDARD : | - 40°C to + 70°C |
| BUTYL : | - 25°C to + 90°C |
| EPICHLORE : | - 20°C to + 110°C |

## ENVIRONMENT

Some products such as acids or hydrocarbons may cause problems to the air bellows. The resistance of air bellows depends on the compound. Epichlorohydrin, for the instance, is the best with hydrocarbons. A special treatments is available to increase the resistance against ozone and U.V.
In any case, please contact our technical sales department.