

## Siłowniki obrotowe ACTUBAR




| Dane techniczne:      |   |   |
|-----------------------|---|---|
|                       | Wersja standardowa  | Wersja opcjonalna   |
| Opis                  | - Siłownik z dwustronnym tłoczyskiem<br>- Typ AD - dwustronnego działania<br>- Typ AS - jednostronnego działania (powrót sprężyną)  |   |
| Cechy konstrukcji     | Technika mechanizmu zębatkowego oraz wału wraz z elementem samocentrowania; jednostronnego działania: ze sprężynami bezpieczeństwa  |   |
| Pozycja pracy         | Dowolna   | Dowolna   |
| Standardy             | - Konstrukcja jednostki sygnalizacyjnej siłownika: zgodnie z VDI / VDE 3845 (NAMUR) oraz VDI / VDE 3847<br>- Konstrukcja siłownika / zaworu sterującego zgodnie z NAMUR tj. VDI / VDE 3845<br>Konstrukcja siłownika / zaworu gwint wewnętrzny 4 lub 8 w siłownikach zgodnie z EN ISO 5211 | - Alternatywne wymiary mocowania i połączenia: wał o kształcie podwójnego D lub zgodnie z DIN ISO 5211  |
| Dyrektywy             | - ATEX, Machine Guidwline   |   |
| Materiały             | Tuleja: stop aluminium, anodowany<br>Pokrywy: Stop aluminium<br>Tłoczysko/Zębatki: Stop aluminium<br>Wał: stop aluminium<br>Uszczelki: NBR<br>Łożyska: samosmarujący się polimer<br>Śruby: stal nierdzewna A2   | Tuleja: anodowana, proszkowana, SILACOAT®<br>Pokrywy: SILACOAT®<br>Wał: stal nierdzewna AISI 303; AISI 316 na życzenie                                |
| Temperatura otoczenia | od -20°C do +80°C   | - Modele przeznaczone do pracy w niskich temperaturach: od -40°C do 80°C<br>- Modele przeznaczone do pracy w wysokich temperaturach: od 20°C do 160°C |
| Kąt obrotu            | - Dwustronnego i jednostronnego działania: 90°<br>- Regulowany kąt obrotowy standardowo od +5° do -10° w obu pozycjach  |   |
| Moment obrotowy       | od 2.5 do 6000 Nm   |   |
| Ciśnienie             | od 2 do 8 bar   |   |
| Medium/Jakość         | Powietrze przefiltrowane z minimalnymi pozostałościami oleju, pyłu oraz wody zgodnie z Klasą 4 DIN ISO 8573-1   | Wykonanie specjalne - inne nie agresywne gazy lub ciecze  |






| Budowa numerów katalogowych  |  |
|--|--|
| Wersja dwustronna:   |  |
| $\frac{\text{AD}}{1} - \frac{050}{2} / \frac{090}{3} - \frac{\text{Z...}}{5} - \frac{\text{A}}{6}$               |  |
| Wersja jednostronna:   |  |
| $\frac{\text{AS}}{1} - \frac{050}{2} / \frac{090}{3} - \frac{08}{4} - \frac{\text{V22}}{5} - \frac{\text{F}}{6}$ |  |
| 1. Funkcja:  | - AD - Siłowniki obrotowe dwustronne;<br>- AS - Siłowniki obrotowe jednostronne.           |
| 2. Wielkość:   | Wielkość siłownika dobierana z tabel.  |
| 3. Kąt obrotu:   | 90°  |
| 4. Ilość sprężyn:  | Np. 08 - osiem sprężyn   |
| 5. Model wału:   | - V - ośmiokąt<br>- Z - podwójne „D”   |
| 6. Typ montażu:  | Zróżnicowany sposób montażu siłownika. Rodzaje montażu zaprezentowane na kolejnej stronie. |

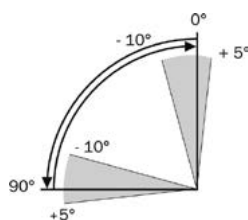
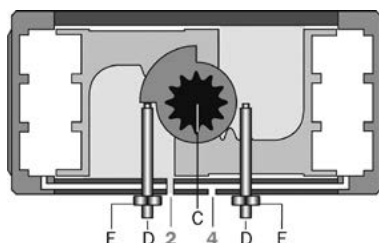
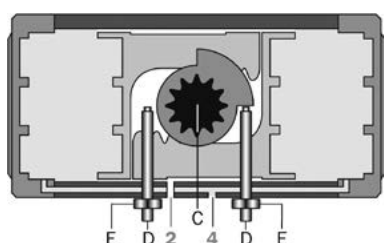


## Montaż siłowników obrotowych

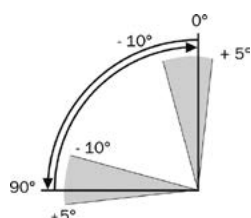
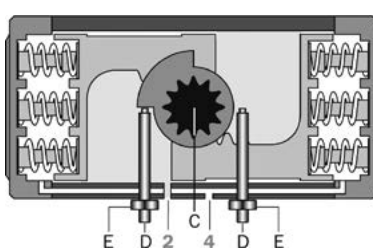
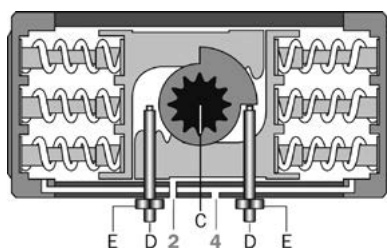
| Zawór 2/2  | Model wału  | Funkcja   | Typ montażu |
|--|---|---|-------------|
|  |  | Jednostronnego działania:<br>– sprężyna zamyka  | A           |
|  |   | Jednostronnego działania:<br>– sprężyna otwiera | D           |
|  |  | Jednostronnego działania:<br>– sprężyna zamyka  | F           |
|  |   | Jednostronnego działania:<br>– sprężyna otwiera | H           |

| Zawór 2/2   | Model wału   | Funkcja   | Typ Montażu |
|---|--|---|-------------|
|  |  | Jednostronnego działania:<br>– sprężyna zamyka  | A           |
|   |  | Jednostronnego działania:<br>– sprężyna otwiera | D           |
|   |  | Jednostronnego działania:<br>– sprężyna zamyka  | F           |
|   |  | Jednostronnego działania:<br>– sprężyna otwiera | H           |

## Siłownik dwustronnego działania



## Siłownik jednostronnego działania



## Moment obrotowy siłowników jednostronnego działania, Typ AS [Nm]

Moment obrotowy siłowników jednostronnego działania, typ AS [Nm]

| Typ siłownika | Liczba sprężyny | Siła sprężyny |        | Moment obrotowy Md N [Nm] przy ciśnieniu [bar] |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |  |
|---------------|-----------------|---------------|--------|--|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|--|
|               |                 | Md F [Nm]     |        | 2,0  |     | 2,5 |     | 3,0 |     | 3,5 |     | 4,0 |     | 4,5 |     | 5,0 |     | 5,5 |     | 6,0 |     | 7,0 |     | 8,0 |     |     |  |
|               |                 | MD min        | MD max | min  | max | min | max | min | max | min | max | min | max | min | max | min | max | min | max | min | max | min | max | min | max |     |  |
| AS-004        | 2               | 1             | 3      | 5  | 7   | 7   | 9   | 9   | 11  | 11  | 12  | 13  | 14  | 15  | 16  | 17  | 18  | 19  | 20  | 21  | 22  | 25  | 26  | 29  | 30  |     |  |
|               | 4               | 3             | 5      | 3  | 5   | 5   | 7   | 7   | 9   | 9   | 11  | 10  | 13  | 12  | 15  | 14  | 17  | 16  | 19  | 18  | 21  | 22  | 25  | 26  | 29  |     |  |
|               | 6               | 4             | 8      |  |     | 2   | 6   | 4   | 8   | 6   | 10  | 8   | 12  | 10  | 14  | 12  | 16  | 4   | 18  | 16  | 20  | 20  | 24  | 24  | 28  |     |  |
|               | 8               | 5             | 11     |  |     |     |     | 1   | 7   | 3   | 9   | 5   | 10  | 7   | 12  | 9   | 14  | 11  | 16  | 13  | 18  | 17  | 22  | 21  | 26  |     |  |
|               | 10              | 7             | 13     |  |     |     |     |     | 1   | 7   | 3   | 9   | 4   | 11  | 6   | 13  | 8   | 15  | 10  | 17  | 14  | 21  | 18  | 25  |     |     |  |
|               | 12              | 8             | 16     |  |     |     |     |     |     |     |     |     | 2   | 10  | 4   | 12  | 6   | 14  | 8   | 16  | 12  | 20  | 16  | 24  |     |     |  |
| AS-006        | 2               | 2             | 4      | 8  | 11  | 12  | 14  | 15  | 17  | 18  | 20  | 21  | 23  | 24  | 26  | 27  | 30  | 31  | 33  | 34  | 36  | 40  | 42  | 46  | 48  |     |  |
|               | 4               | 4             | 8      | 4  | 8   | 7   | 12  | 11  | 15  | 14  | 18  | 17  | 21  | 20  | 24  | 23  | 27  | 26  | 31  | 30  | 34  | 36  | 40  | 42  | 46  |     |  |
|               | 6               | 6             | 13     |  |     | 3   | 10  | 6   | 13  | 10  | 16  | 13  | 19  | 16  | 22  | 19  | 25  | 22  | 28  | 25  | 32  | 32  | 38  | 38  | 44  |     |  |
|               | 8               | 8             | 17     |  |     |     | 2   | 11  | 5   | 14  | 8   | 17  | 12  | 20  | 15  | 23  | 18  | 26  | 21  | 30  | 27  | 36  | 34  | 42  |     |     |  |
|               | 10              | 11            | 21     |  |     |     |     | 1   | 12  | 4   | 15  | 7   | 18  | 11  | 21  | 14  | 24  | 17  | 27  | 23  | 34  | 30  | 40  |     |     |     |  |
|               | 12              | 13            | 25     |  |     |     |     |     |     |     |     | 3   | 16  | 6   | 19  | 10  | 22  | 13  | 25  | 19  | 32  | 25  | 38  |     |     |     |  |
| AS-008        | 3               | 5             | 8      | 8  | 12  | 12  | 16  | 16  | 20  | 20  | 24  | 24  | 28  | 32  | 32  | 36  | 36  | 40  | 44  | 48  | 52  | 56  | 60  | 60  |     |     |  |
|               | 4               | 6             | 11     | 5  | 10  | 9   | 14  | 13  | 18  | 17  | 22  | 21  | 26  | 25  | 30  | 29  | 34  | 33  | 38  | 37  | 42  | 45  | 50  | 53  | 58  |     |  |
|               | 5               | 8             | 14     | 2  | 9   | 6   | 13  | 10  | 17  | 14  | 21  | 18  | 25  | 22  | 29  | 26  | 33  | 30  | 37  | 34  | 41  | 42  | 49  | 50  | 57  |     |  |
|               | 6               | 9             | 17     |  |     | 3   | 11  | 7   | 15  | 11  | 19  | 15  | 23  | 19  | 27  | 23  | 31  | 27  | 35  | 31  | 39  | 39  | 47  | 47  | 55  |     |  |
|               | 7               | 11            | 20     |  |     |     | 4   | 14  | 8   | 18  | 12  | 22  | 16  | 26  | 20  | 30  | 24  | 34  | 29  | 38  | 36  | 46  | 44  | 54  |     |     |  |
|               | 8               | 12            | 22     |  |     |     | 2   | 12  | 6   | 16  | 10  | 20  | 14  | 24  | 18  | 28  | 22  | 32  | 26  | 36  | 34  | 44  | 42  | 52  |     |     |  |
|               | 9               | 14            | 25     |  |     |     |     | 3   | 15  | 7   | 19  | 11  | 23  | 15  | 27  | 19  | 31  | 23  | 35  | 31  | 43  | 39  | 51  |     |     |     |  |
|               | 10              | 15            | 28     |  |     |     |     |     | 4   | 17  | 8   | 21  | 12  | 25  | 16  | 29  | 20  | 33  | 29  | 41  | 36  | 49  |     |     |     |     |  |
|               | 11              | 17            | 31     |  |     |     |     |     | 1   | 16  | 5   | 20  | 9   | 24  | 13  | 28  | 17  | 32  | 25  | 40  | 33  | 48  |     |     |     |     |  |
|               | 12              | 18            | 34     |  |     |     |     |     |     | 2   | 18  | 6   | 22  | 10  | 26  | 14  | 30  | 22  | 38  | 30  | 46  |     |     |     |     |     |  |
|               | 13              | 20            | 36     |  |     |     |     |     |     |     | 4   | 21  | 8   | 25  | 12  | 29  | 20  | 37  | 28  | 45  |     |     |     |     |     |     |  |
|               | 14              | 21            | 39     |  |     |     |     |     |     |     |     | 1   | 19  | 5   | 23  | 9   | 27  | 17  | 35  | 25  | 43  |     |     |     |     |     |  |
|               | AS-011          | 3             | 6      | 12   | 11  | 17  | 17  | 23  | 23  | 29  | 28  | 34  | 34  | 40  | 46  | 46  | 52  | 51  | 57  | 57  | 63  | 69  | 75  | 80  | 86  |     |  |
|               |                 | 4             | 8      | 16   | 7   | 15  | 13  | 21  | 19  | 27  | 24  | 32  | 30  | 38  | 36  | 44  | 42  | 50  | 47  | 55  | 53  | 61  | 65  | 73  | 76  | 84  |  |
| 5             |                 | 10            | 20     | 3  | 13  | 9   | 19  | 15  | 25  | 20  | 30  | 26  | 36  | 32  | 42  | 38  | 48  | 43  | 53  | 49  | 59  | 61  | 71  | 72  | 82  |     |  |
| 6             |                 | 12            | 24     |  |     | 5   | 17  | 11  | 23  | 16  | 28  | 22  | 34  | 28  | 40  | 34  | 46  | 39  | 51  | 45  | 57  | 57  | 69  | 68  | 80  |     |  |
| 7             |                 | 14            | 28     |  |     | 1   | 15  | 7   | 21  | 12  | 26  | 18  | 32  | 24  | 38  | 30  | 44  | 35  | 49  | 41  | 55  | 53  | 67  | 64  | 78  |     |  |
| 8             |                 | 16            | 31     |  |     |     | 4   | 19  | 9   | 24  | 15  | 30  | 21  | 36  | 27  | 42  | 32  | 47  | 38  | 53  | 50  | 65  | 61  | 76  |     |     |  |
| 9             |                 | 18            | 35     |  |     |     |     | 5   | 22  | 11  | 28  | 17  | 34  | 23  | 40  | 28  | 45  | 34  | 51  | 46  | 63  | 57  | 74  |     |     |     |  |
| 10            |                 | 20            | 39     |  |     |     |     | 1   | 20  | 7   | 26  | 13  | 32  | 19  | 38  | 24  | 43  | 30  | 49  | 42  | 61  | 53  | 72  |     |     |     |  |
| 11            |                 | 22            | 43     |  |     |     |     |     | 3   | 24  | 9   | 30  | 15  | 36  | 20  | 41  | 26  | 47  | 38  | 59  | 49  | 70  |     |     |     |     |  |
| 12            |                 | 24            | 47     |  |     |     |     |     |     | 5   | 28  | 11  | 34  | 16  | 39  | 22  | 45  | 34  | 57  | 45  | 68  |     |     |     |     |     |  |
| 13            |                 | 26            | 51     |  |     |     |     |     |     | 1   | 26  | 7   | 32  | 12  | 37  | 18  | 46  | 30  | 55  | 41  | 66  |     |     |     |     |     |  |
| 14            |                 | 28            | 55     |  |     |     |     |     |     |     |     | 3   | 30  | 8   | 35  | 14  | 41  | 26  | 53  | 37  | 64  |     |     |     |     |     |  |
| AS-018        |                 | 3             | 9      | 18   | 18  | 27  | 27  | 36  | 36  | 45  | 45  | 54  | 54  | 63  | 63  | 72  | 72  | 81  | 81  | 90  | 90  | 99  | 108 | 117 | 126 | 135 |  |
|               |                 | 4             | 12     | 24   | 12  | 24  | 21  | 33  | 30  | 42  | 39  | 51  | 48  | 60  | 57  | 69  | 66  | 78  | 75  | 87  | 84  | 96  | 102 | 114 | 120 | 132 |  |
|               | 5               | 15            | 30     | 6  | 21  | 15  | 30  | 24  | 39  | 33  | 48  | 42  | 57  | 51  | 66  | 60  | 75  | 69  | 84  | 78  | 93  | 96  | 111 | 114 | 129 |     |  |
|               | 6               | 18            | 36     |  |     | 9   | 27  | 18  | 36  | 28  | 45  | 36  | 54  | 45  | 63  | 54  | 72  | 63  | 81  | 72  | 90  | 90  | 108 | 108 | 126 |     |  |
|               | 7               | 21            | 42     |  |     | 3   | 24  | 12  | 33  | 21  | 45  | 30  | 51  | 39  | 60  | 48  | 69  | 57  | 78  | 66  | 87  | 84  | 105 | 102 | 123 |     |  |
|               | 8               | 24            | 48     |  |     |     | 6   | 30  | 15  | 39  | 24  | 48  | 33  | 57  | 42  | 66  | 51  | 75  | 60  | 84  | 78  | 102 | 96  | 120 |     |     |  |
|               | 9               | 27            | 54     |  |     |     |     | 9   | 36  | 18  | 45  | 27  | 54  | 36  | 63  | 45  | 72  | 54  | 81  | 72  | 99  | 90  | 117 |     |     |     |  |
|               | 10              | 30            | 60     |  |     |     |     | 3   | 33  | 12  | 42  | 21  | 51  | 30  | 60  | 39  | 69  | 48  | 78  | 66  | 96  | 84  | 114 |     |     |     |  |
|               | 11              | 33            | 66     |  |     |     |     |     | 6   | 39  | 15  | 48  | 24  | 57  | 33  | 66  | 42  | 75  | 60  | 93  | 78  | 111 |     |     |     |     |  |
|               | 12              | 36            | 72     |  |     |     |     |     |     | 9   | 45  | 18  | 54  | 36  | 72  | 45  | 81  | 63  | 72  | 54  | 90  | 72  | 108 |     |     |     |  |
|               | 13              | 39            | 78     |  |     |     |     |     |     |     | 3   | 42  | 12  | 51  | 21  | 60  | 30  | 69  | 48  | 87  | 66  | 105 |     |     |     |     |  |
|               | 14              | 42            | 84     |  |     |     |     |     |     |     |     | 6   | 48  | 15  | 57  | 24  | 66  | 42  | 84  | 60  | 102 |     |     |     |     |     |  |
|               | AS-026          | 3             | 13     | 27   | 25  | 39  | 38  | 52  | 51  | 65  | 64  | 78  | 77  | 91  | 90  | 104 | 103 | 117 | 116 | 130 | 129 | 143 | 155 | 169 | 181 | 195 |  |
|               |                 | 4             | 17     | 35   | 17  | 35  | 30  | 48  | 43  | 61  | 56  | 74  | 69  | 87  | 82  | 100 | 95  | 113 | 108 | 126 | 121 | 139 | 147 | 165 | 173 | 191 |  |
| 5             |                 | 21            | 44     | 8  | 31  | 21  | 44  | 34  | 57  | 47  | 70  | 60  | 83  | 73  | 96  | 86  | 109 | 99  | 122 | 112 | 135 | 138 | 161 | 164 | 187 |     |  |
| 6             |                 | 26            | 53     |  |     | 12  | 40  | 25  | 53  | 38  | 66  | 51  | 79  | 64  | 92  | 77  | 105 | 90  | 118 | 103 | 131 | 129 | 157 | 155 | 183 |     |  |
| 7             |                 | 30            | 62     |  |     | 3   | 35  | 16  | 48  | 29  | 61  | 42  | 74  | 55  | 87  | 68  | 100 | 81  | 113 | 94  | 126 | 120 | 152 | 146 | 178 |     |  |
| 8             |                 | 34            | 71     |  |     |     | 7   | 44  | 20  | 57  | 33  | 70  | 46  | 83  | 59  | 96  | 72  | 109 | 85  | 122 | 11  | 148 | 137 | 174 |     |     |  |
| 9             |                 | 38            | 80     |  |     |     |     | 11  | 53  | 24  | 66  | 37  | 79  | 50  | 92  | 63  | 105 | 76  | 118 | 102 | 144 | 128 | 170 |     |     |     |  |
| 10            |                 | 43            | 89     |  |     |     |     | 2   | 49  | 15  | 62  | 28  | 75  | 41  | 88  | 54  | 101 | 67  | 114 | 93  | 140 | 119 | 166 |     |     |     |  |
| 11            |                 | 47            | 98     |  |     |     |     |     | 6   | 57  | 19  | 70  | 32  | 83  | 45  | 96  | 58  | 109 | 84  | 135 | 110 | 161 |     |     |     |     |  |
| 12            |                 | 51            | 106    |  |     |     |     |     |     | 11  | 66  | 24  | 79  | 37  | 92  | 50  | 105 | 76  | 131 | 102 | 157 |     |     |     |     |     |  |
| 13            |                 | 5             | 115    |  |     |     |     |     |     | 2   | 62  | 15  | 75  | 28  | 88  | 41  | 101 | 67  | 127 | 93  | 153 |     |     |     |     |     |  |
| 14            |                 | 60            | 124    |  |     |     |     |     |     |     | 6   | 71  | 19  | 84  | 32  | 97  | 58  | 123 | 84  | 149 |     |     |     |     |     |     |  |



## Moment obrotowy siłowników jednostronnego działania, Typ AS [Nm]

| Typ siłownika | Liczba sprężyn | Siła sprężyny |        | Moment obrotowy Md N [Nm] przy ciśnieniu [bar] |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |  |
|---------------|----------------|---------------|--------|--|-----|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|--|
|               |                | Md F [Nm]     |        | 2,0  |     | 2,5  |      | 3,0  |      | 3,5  |      | 4,0  |      | 4,5  |      | 5,0  |      | 5,5  |      | 6,0  |      | 7,0  |      | 8,0  |      |      |  |
|               |                | MD min        | MD max | min  | max | min  | max  | min  | max  | min  | max  | min  | max  | min  | max  | min  | max  | min  | max  | min  | max  | min  | max  | min  | max  |      |  |
| AS-230        | 3              | 128           | 221    | 242  | 335 | 358  | 451  | 474  | 567  | 590  | 683  | 706  | 799  | 822  | 915  | 938  | 1030 | 1053 | 1146 | 1169 | 1262 | 1401 | 1494 | 1633 | 1725 |      |  |
|               | 4              | 171           | 295    | 169  | 293 | 285  | 408  | 400  | 524  | 516  | 640  | 632  | 756  | 748  | 872  | 864  | 988  | 980  | 1103 | 1096 | 1219 | 1327 | 1451 | 1559 | 1683 |      |  |
|               | 5              | 214           | 368    | 95   | 250 | 211  | 366  | 327  | 482  | 443  | 597  | 559  | 713  | 674  | 829  | 790  | 945  | 906  | 1061 | 1022 | 1177 | 1254 | 1408 | 1485 | 1640 |      |  |
|               | 6              | 256           | 442    | 21   | 207 | 137  | 323  | 253  | 439  | 369  | 555  | 485  | 671  | 601  | 786  | 717  | 902  | 832  | 1018 | 948  | 1134 | 1180 | 1366 | 1412 | 1597 |      |  |
|               | 7              | 299           | 516    |  | 64  | 280  | 180  | 396  | 295  | 512  | 411  | 628  | 527  | 744  | 643  | 860  | 759  | 975  | 8757 | 1091 | 1106 | 1323 | 1338 | 1555 |      |      |  |
|               | 8              | 342           | 589    |  |     |      | 106  | 353  | 222  | 469  | 338  | 585  | 453  | 701  | 569  | 817  | 685  | 933  | 801  | 1048 | 1033 | 1280 | 1264 | 1512 |      |      |  |
|               | 9              | 384           | 663    |  |     |      | 32   | 311  | 148  | 427  | 264  | 542  | 380  | 658  | 496  | 774  | 611  | 890  | 727  | 1006 | 959  | 1237 | 1191 | 1469 |      |      |  |
|               | 10             | 427           | 737    |  |     |      |      |      | 74   | 384  | 190  | 500  | 306  | 616  | 422  | 731  | 538  | 847  | 654  | 963  | 885  | 1195 | 1117 | 1426 |      |      |  |
|               | 11             | 470           | 810    |  |     |      |      |      |      |      | 117  | 457  | 232  | 573  | 348  | 689  | 464  | 804  | 580  | 920  | 812  | 1152 | 1043 | 1384 |      |      |  |
|               | 12             | 513           | 884    |  |     |      |      |      |      |      |      |      | 159  | 530  | 275  | 646  | 390  | 762  | 506  | 878  | 738  | 1109 | 970  | 1341 |      |      |  |
|               | 13             | 555           | 958    |  |     |      |      |      |      |      |      |      |      |      | 201  | 603  | 317  | 719  | 433  | 835  | 664  | 1067 | 896  | 1298 |      |      |  |
|               | 14             | 598           | 1031   |  |     |      |      |      |      |      |      |      |      |      |      |      |      | 243  | 676  | 359  | 792  | 591  | 1024 | 822  | 1256 |      |  |
|               | AS-350         | 3             | 171    | 339  | 341 | 509  | 511  | 679  | 681  | 849  | 851  | 1019 | 1021 | 1189 | 1191 | 1359 | 1361 | 1529 | 1531 | 1699 | 1701 | 1869 | 2041 | 2209 | 2381 | 2549 |  |
|               |                | 4             | 227    | 452  | 228 | 453  | 398  | 623  | 568  | 793  | 738  | 963  | 908  | 1133 | 1078 | 1303 | 1248 | 1473 | 1418 | 1643 | 1588 | 1813 | 1928 | 2153 | 2268 | 2493 |  |
| 5             |                | 284           | 566    | 114  | 396 | 284  | 566  | 454  | 736  | 624  | 906  | 794  | 1076 | 964  | 1246 | 1134 | 1416 | 1304 | 1586 | 1474 | 1756 | 1814 | 2096 | 2154 | 2436 |      |  |
| 6             |                | 341           | 679    |  | 171 | 509  | 341  | 679  | 511  | 849  | 681  | 1019 | 851  | 1189 | 1021 | 1359 | 1191 | 1529 | 1361 | 1699 | 1701 | 2039 | 2041 | 2379 |      |      |  |
| 7             |                | 398           | 792    |  |     | 228  | 622  | 398  | 792  | 568  | 962  | 738  | 1132 | 908  | 1302 | 1078 | 1472 | 1248 | 1642 | 1588 | 1982 | 1928 | 2322 |      |      |      |  |
| 8             |                | 455           | 905    |  |     |      |      | 285  | 735  | 455  | 905  | 625  | 1075 | 795  | 1245 | 965  | 1415 | 1135 | 1585 | 1475 | 1925 | 1815 | 2265 |      |      |      |  |
| 9             |                | 512           | 1018   |  |     |      |      |      |      | 342  | 848  | 512  | 1018 | 982  | 1188 | 852  | 1358 | 1022 | 1528 | 1362 | 1868 | 1702 | 2208 |      |      |      |  |
| 10            |                | 569           | 1131   |  |     |      |      |      |      |      | 399  | 961  | 569  | 1131 | 739  | 1301 | 909  | 1471 | 1249 | 1811 | 1589 | 2151 |      |      |      |      |  |
| 11            |                | 625           | 1244   |  |     |      |      |      |      |      |      |      | 456  | 1075 | 626  | 1245 | 796  | 1415 | 1136 | 1755 | 1476 | 2095 |      |      |      |      |  |
| 12            |                | 682           | 1357   |  |     |      |      |      |      |      |      |      |      |      | 513  | 1188 | 683  | 1358 | 1023 | 1698 | 1363 | 2038 |      |      |      |      |  |
| 13            |                | 739           | 1470   |  |     |      |      |      |      |      |      |      |      |      |      |      |      |      | 570  | 1301 | 910  | 1641 | 1250 | 1981 |      |      |  |
| 14            |                | 796           | 1584   |  |     |      |      |      |      |      |      |      |      |      |      |      |      |      | 456  | 1244 | 796  | 1584 | 1136 | 1924 |      |      |  |
| AS-510        |                | 3             | 272    | 496  | 526 | 750  | 782  | 1005 | 1037 | 1261 | 1293 | 1516 | 1548 | 1772 | 1804 | 2027 | 2059 | 2283 | 2315 | 2538 | 2570 | 2794 | 3081 | 3305 | 3592 | 3816 |  |
|               |                | 4             | 363    | 661  | 361 | 659  | 616  | 915  | 872  | 1170 | 1127 | 1426 | 1383 | 1681 | 1638 | 1937 | 1894 | 2192 | 2149 | 2448 | 2405 | 2703 | 2916 | 3214 | 3427 | 3725 |  |
|               | 5              | 454           | 826    | 196  | 568 | 451  | 824  | 707  | 1079 | 962  | 1335 | 1218 | 1590 | 1473 | 1846 | 1729 | 2101 | 1984 | 2357 | 2240 | 2612 | 2751 | 3123 | 3262 | 3634 |      |  |
|               | 6              | 545           | 992    | 30   | 478 | 286  | 733  | 541  | 989  | 797  | 1244 | 1052 | 1500 | 1308 | 1755 | 1563 | 2011 | 1819 | 2266 | 2074 | 2522 | 2585 | 3033 | 2931 | 3544 |      |  |
|               | 7              | 635           | 1157   |  | 121 | 642  | 376  | 898  | 632  | 1153 | 887  | 1409 | 1143 | 1664 | 1398 | 1920 | 1654 | 2175 | 1909 | 2431 | 2420 | 2942 | 2766 | 3453 |      |      |  |
|               | 8              | 726           | 1322   |  |     | 211  | 807  | 466  | 1063 | 772  | 1318 | 977  | 1574 | 1233 | 1829 | 1488 | 2085 | 1744 | 2340 | 2255 | 2851 | 2766 | 3362 |      |      |      |  |
|               | 9              | 817           | 1487   |  |     | 46   | 716  | 301  | 972  | 557  | 1227 | 812  | 1483 | 1068 | 1738 | 1323 | 1994 | 1579 | 2249 | 2090 | 2760 | 2601 | 3271 |      |      |      |  |
|               | 10             | 908           | 1653   |  |     |      | 136  | 881  | 391  | 1137 | 647  | 1392 | 902  | 1648 | 1158 | 1903 | 1413 | 2159 | 1924 | 2670 | 2435 | 3181 |      |      |      |      |  |
|               | 11             | 998           | 1818   |  |     |      |      |      |      | 226  | 1046 | 482  | 1301 | 737  | 1557 | 993  | 1812 | 1248 | 2068 | 1759 | 2579 | 2270 | 3090 |      |      |      |  |
|               | 12             | 1089          | 1983   |  |     |      |      |      |      |      | 61   | 955  | 316  | 1211 | 572  | 1466 | 827  | 1722 | 1083 | 1977 | 1594 | 2488 | 2105 | 2999 |      |      |  |
|               | 13             | 1180          | 2148   |  |     |      |      |      |      |      |      |      | 151  | 1120 | 407  | 1375 | 62   | 1631 | 918  | 1886 | 1429 | 2397 | 1940 | 2908 |      |      |  |
|               | 14             | 1271          | 2314   |  |     |      |      |      |      |      |      |      |      |      | 241  | 1285 | 497  | 1540 | 752  | 1796 | 1263 | 2307 | 1774 | 2818 |      |      |  |
|               | AS-750         | 3             | 407    | 721  | 783 | 1097 | 1159 | 1473 | 1535 | 1849 | 1911 | 2225 | 2287 | 2601 | 2663 | 2977 | 3039 | 3353 | 3415 | 3729 | 3791 | 4105 | 4543 | 4857 | 5295 | 5609 |  |
|               |                | 4             | 543    | 961  | 543 | 961  | 919  | 1337 | 1295 | 1713 | 1671 | 2089 | 2047 | 2465 | 2423 | 2841 | 2799 | 3217 | 3175 | 3593 | 3551 | 3969 | 4303 | 4721 | 5055 | 5473 |  |
| 5             |                | 679           | 1202   | 302  | 825 | 678  | 1201 | 1054 | 1577 | 1430 | 1953 | 1806 | 2329 | 2182 | 2705 | 2558 | 3081 | 2934 | 3457 | 3310 | 3833 | 4062 | 4585 | 4814 | 5337 |      |  |
| 6             |                | 815           | 1442   |  | 438 | 1065 | 814  | 1441 | 1190 | 1817 | 1566 | 2193 | 1942 | 2569 | 2318 | 2945 | 2694 | 3321 | 3070 | 3697 | 3822 | 4449 | 4574 | 5201 |      |      |  |
| 7             |                | 951           | 1682   |  |     | 574  | 1305 | 950  | 1681 | 1326 | 2057 | 1702 | 2433 | 2078 | 2809 | 2454 | 3185 | 2830 | 3561 | 3582 | 4313 | 4334 | 5065 |      |      |      |  |
| 8             |                | 1086          | 1923   |  |     |      | 709  | 1546 | 1085 | 1922 | 1461 | 2298 | 1837 | 2674 | 2213 | 3050 | 2589 | 3426 | 3341 | 4178 | 4093 | 4930 |      |      |      |      |  |
| 9             |                | 1222          | 2163   |  |     |      |      |      |      |      |      |      | 845  | 1786 | 1221 | 2162 | 1597 | 2538 | 1973 | 2914 | 2349 | 3290 | 3101 | 4042 | 3853 | 4794 |  |
| 10            |                | 1358          | 2403   |  |     |      |      |      |      |      |      |      | 605  | 1650 | 981  | 2026 | 1357 | 2402 | 1733 | 2778 | 2109 | 3154 | 2861 | 3906 | 3613 | 4658 |  |
| 11            |                | 1494          | 2644   |  |     |      |      |      |      |      |      |      |      | 740  | 1890 | 1116 | 2266 | 1492 | 2642 | 1868 | 3018 | 2620 | 3770 | 3372 | 4522 |      |  |
| 12            |                | 1630          | 2884   |  |     |      |      |      |      |      |      |      |      |      |      | 876  | 2130 | 1252 | 2506 | 1628 | 2882 | 2380 | 3634 | 3132 | 4386 |      |  |
| 13            |                | 1765          | 3124   |  |     |      |      |      |      |      |      |      |      |      |      |      |      | 1012 | 2371 | 1388 | 2747 | 2140 | 3499 | 2892 | 4251 |      |  |
| 14            |                | 1901          | 3365   |  |     |      |      |      |      |      |      |      |      |      |      |      |      |      | 771  | 2235 | 1147 | 2611 | 1899 | 3363 | 2651 | 4115 |  |

## Moment obrotowy siłowników dwustronnego działania, Typ AD [Nm]

| Typ siłownika | Ciśnienie [bar] |      |      |      |      |      |      |      |      |      |      |
|---------------|-----------------|------|------|------|------|------|------|------|------|------|------|
|               | 2               | 2,5  | 3    | 3,5  | 4    | 4,5  | 5    | 5,5  | 6    | 7    | 8    |
| AD – 001      | 2,5             | 3,2  | 3,8  | 4,4  | 5,1  | 5,7  | 6,4  | 7,0  | 7,6  | 8,9  | 10,2 |
| AD – 004      | 8               | 10   | 12   | 14   | 16   | 18   | 20   | 22   | 24   | 28   | 32   |
| AD – 006      | 13              | 16   | 19   | 22   | 25   | 28   | 32   | 35   | 38   | 44   | 51   |
| AD – 008      | 16              | 20   | 24   | 28   | 32   | 36   | 40   | 44   | 48   | 56   | 64   |
| AD – 011      | 23              | 29   | 35   | 40   | 46   | 52   | 58   | 63   | 69   | 81   | 92   |
| AD – 018      | 36              | 45   | 54   | 63   | 72   | 81   | 90   | 99   | 108  | 126  | 144  |
| AD – 026      | 52              | 65   | 78   | 91   | 104  | 117  | 130  | 143  | 156  | 182  | 208  |
| AD – 037      | 74              | 93   | 111  | 129  | 148  | 166  | 185  | 204  | 222  | 259  | 296  |
| AD – 050      | 100             | 125  | 150  | 175  | 200  | 225  | 250  | 275  | 300  | 350  | 400  |
| AD – 076      | 152             | 190  | 228  | 266  | 304  | 342  | 380  | 418  | 456  | 532  | 608  |
| AD – 110      | 220             | 275  | 330  | 385  | 440  | 495  | 550  | 605  | 660  | 770  | 880  |
| AD – 160      | 323             | 403  | 484  | 565  | 645  | 726  | 807  | 887  | 968  | 1129 | 1290 |
| AD – 230      | 463             | 579  | 695  | 811  | 927  | 1043 | 1159 | 1274 | 1390 | 1622 | 1854 |
| AD – 350      | 680             | 850  | 1020 | 1190 | 1360 | 1530 | 1700 | 1870 | 2040 | 2380 | 2720 |
| AD – 510      | 1022            | 1278 | 1533 | 1789 | 2044 | 2300 | 2555 | 2811 | 3066 | 3577 | 4088 |
| AD – 750      | 1504            | 1880 | 2256 | 2632 | 3008 | 3384 | 3760 | 4136 | 4512 | 5264 | 6016 |

## Tabela z wymiarami

| Typ AD/AS | A   | B   | C   | D   | E     | Fx     | Gx     | ISO H    | ISO I    | J    | K  | L   | M  | N  | O  | □     |
|-----------|-----|-----|-----|-----|-------|--------|--------|----------|----------|------|----|-----|----|----|----|-------|
| 001       | 80  | 45  | 45  |     | G1/8" | M5x8   |        | Ø36/F03  |          | 22,5 | 50 |     | 25 |    |    | 9x12  |
| 004       | 144 | 68  | 68  | 77  | G1/8" | M5x9   | M6x9   | Ø36/F03  | Ø50/F05  | 24   | 80 |     | 30 |    |    | 14x17 |
| 006       | 159 | 76  | 84  | 85  | G1/8" | M6x9   | M8x12  | Ø50/F05  | Ø70/F07  | 32   | 80 |     | 30 |    |    | 14x17 |
| 008       | 173 | 98  | 108 | 104 | G1/8" | M6x9   | M8x12  | Ø50/F05  | Ø70/F07  | 31   | 80 |     | 30 |    |    | 14x17 |
| 011       | 215 | 98  | 108 | 104 | G1/8" | M6x9   | M8x12  | Ø50/F05  | Ø70/F07  | 31   | 80 | 130 | 30 | 70 | 55 | 17x20 |
| 018       | 213 | 114 | 132 | 122 | G1/4" | M6x9   | M8x12  | Ø50/F05  | Ø70/F07  | 35   | 80 | 130 | 30 | 70 | 55 | 17x20 |
| 026       | 281 | 114 | 132 | 122 | G1/4" | M8x12  | M10x15 | Ø70/F07  | Ø102/F10 | 35   | 80 | 130 | 30 | 70 | 55 | 22x25 |
| 037       | 266 | 138 | 161 | 150 | G1/4" | M8x12  | M10x15 | Ø70/F07  | Ø102/F10 | 40,5 | 80 | 130 | 30 | 70 | 55 | 22x25 |
| 050       | 347 | 138 | 161 | 150 | G1/4" | M8x12  | M10x15 | Ø70/F07  | Ø102/F10 | 40,5 | 80 | 130 | 30 | 70 | 55 | 22x25 |
| 076       | 329 | 176 | 200 | 190 | G1/4" | M10x15 | M12x18 | Ø102/F10 | Ø125/F12 | 50   | 80 | 130 | 30 | 70 | 55 | 27x30 |
| 110       | 475 | 176 | 200 | 190 | G1/4" | M10x15 | M12x18 | Ø102/F10 | Ø125/F12 | 50   | 80 | 130 | 30 | 70 | 55 | 27x30 |
| 160       | 516 | 199 | 220 | 220 | G1/4" | M10x15 | M12x18 | Ø102/F10 | Ø125/F12 | 60   | 80 | 130 | 30 | 70 | 55 | 27x30 |
| 230       | 560 | 223 | 244 | 244 | G1/4" | M16x24 |        | Ø140/F14 |          | 72   | 80 | 130 | 30 | 70 | 55 | 36x40 |
| 350       | 617 | 280 | 290 | 94  | G1/4" | M20x40 |        | Ø165/F16 |          | 96   |    | 130 | 30 | 70 | 55 | 46x50 |
| 510       | 725 | 338 | 344 | 94  | G1/4" | M20x40 |        | Ø165/F16 |          | 96   |    | 130 | 30 | 70 | 55 | 46x50 |
| 750       | 816 | 363 | 378 | 110 | G1/4" | M20x40 | M20x35 | Ø165/F16 | Ø125/F25 | 109  |    | 130 | 30 | 70 | 55 | 46x50 |

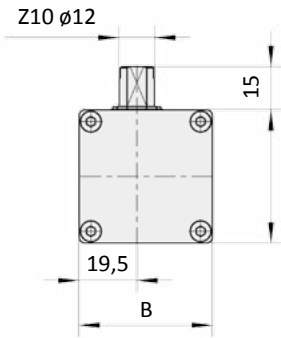
## Zużycie powietrza/waga siłownika

| Typ AD | Waga  | Objętość / Podwójny skok [L] |
|--------|-------|------------------------------|
| 001    | 0,34  | 0,05                         |
| 004    | 1,21  | 0,21                         |
| 006    | 1,81  | 0,28                         |
| 008    | 2,97  | 0,71                         |
| 011    | 3,59  | 0,92                         |
| 018    | 4,80  | 1,46                         |
| 026    | 6,27  | 1,99                         |
| 037    | 8,23  | 2,96                         |
| 050    | 11,25 | 3,92                         |
| 076    | 15,90 | 6,14                         |
| 110    | 22,94 | 9,02                         |
| 160    | 27,46 | 9,20                         |
| 230    | 38,00 | 12,60                        |
| 350    | 40,60 | 16,12                        |
| 510    | 55,90 | 25,09                        |
| 750    | 73,74 | 34,86                        |

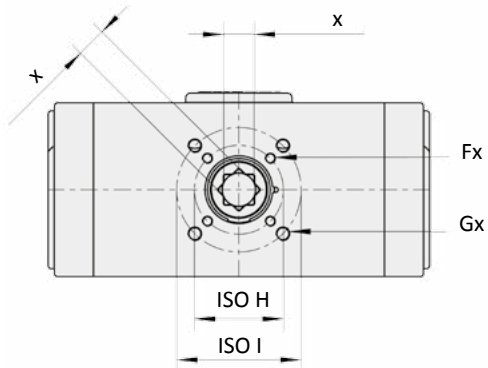
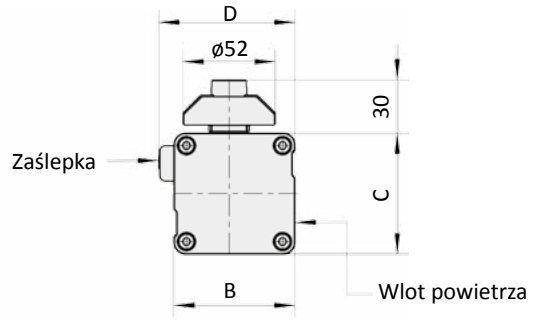
| Typ AS | Waga   | Objętość / Podwójny skok [L] |
|--------|--------|------------------------------|
| 004    | 1,38   | 0,09                         |
| 006    | 2,04   | 0,15                         |
| 008    | 3,13   | 0,24                         |
| 011    | 3,89   | 0,38                         |
| 018    | 5,28   | 0,56                         |
| 026    | 6,93   | 0,81                         |
| 037    | 9,43   | 1,18                         |
| 050    | 12,81  | 1,63                         |
| 076    | 18,66  | 2,40                         |
| 110    | 27,02  | 3,58                         |
| 160    | 34,60  | 4,32                         |
| 230    | 47,30  | 5,86                         |
| 350    | 48,00  | 10,80                        |
| 510    | 79,20  | 16,28                        |
| 750    | 105,16 | 23,77                        |

Schemat siłownika actubar typu AD / AS-001 do AD / AS-230

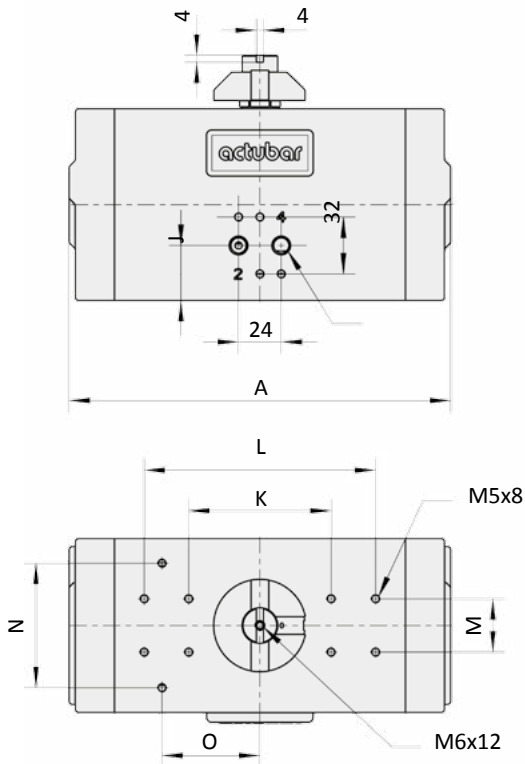
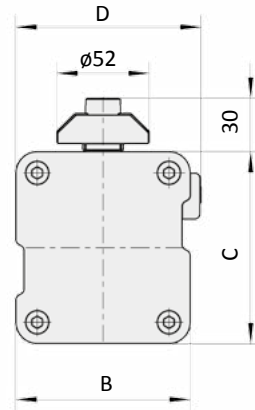
Typ AD-001



Typ AD/AS-004 and AD/AS-006



Typ AD/AS-008 to AD/AS-230



Schemat siłownika actubar typu AD / AS-350 do AD / AS-750

