

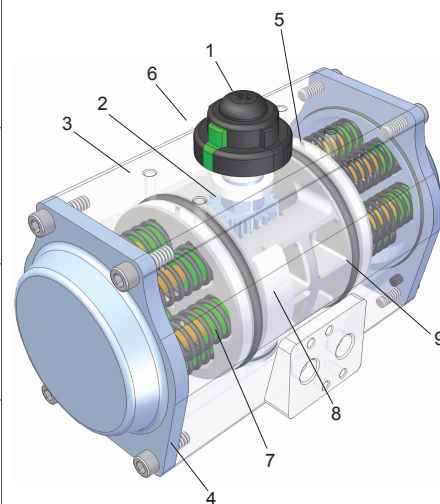
## Descrizione - Description

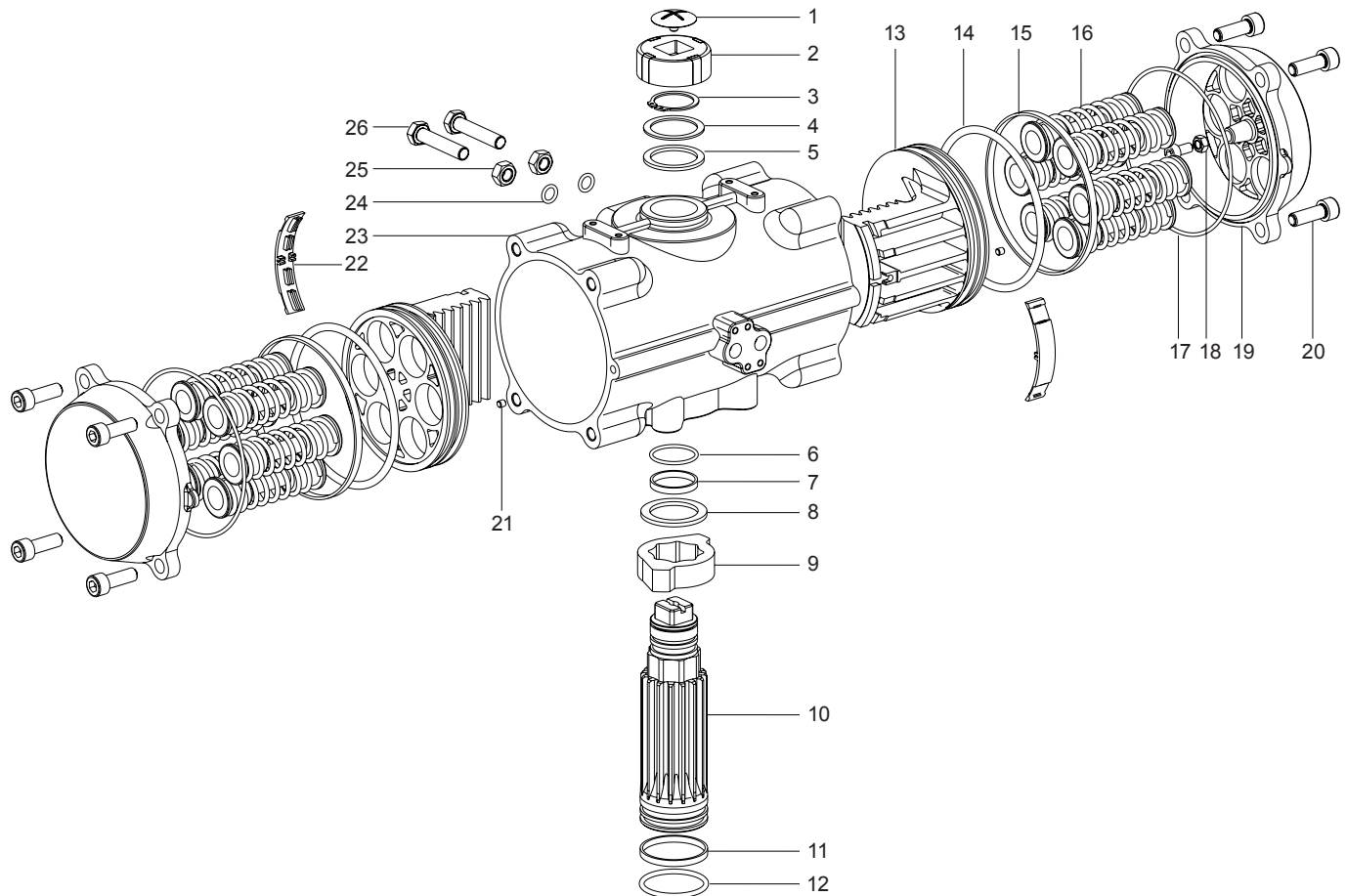
La nostra nuova serie di attuatori pneumatici RAX è stata progettata con pignone e cremagliera, corpo in acciaio Inox AISI 316 con versioni a doppio e semplice effetto con molle di ritorno. Questo tipo di attuatore è dotato come standard di un indicatore superiore multi funzione open-close e della regolazione dell'apertura / chiusura. La caratteristica principale di questi attuatori è l'altissima resistenza in ambienti con condizioni aggressive. La struttura generale e l'assieme delle parti interne garantiscono prestazioni e cicli di vita elevati. Tutti gli attuatori della Serie sono inoltre certificati SIL (in conformità alla normativa IEC 61508:2010), e sono altresì conformi alla Direttiva ATEX 2014/34/UE (per maggiori informazioni sulle classificazioni ATEX vedi pag. II).

*Our new series of pneumatic actuators RAX was designed with rack and pinion, Stainless Steel AISI 316 body with double and single acting version with return springs. This type of actuator is equipped with a top indicator multi open-close function and the adjustment of the opening / closing as standard. The main feature of these actuators is the very high resistance in environments with aggressive conditions. The general structure and the assembly of the internal parts ensure high performance and long life cycles. Furthermore all the actuators of the series are SIL certified (according to IEC 61508:2010), and also conforming to 2014/34/EU ATEX Directive (for more information about ATEX classification, please see page III).*

## Componenti - Components

| N° | Descrizione<br>Description               | Materiali<br>Materials  |
|----|--|---|
| 1  | Indicatore<br>Indicator                  | Indicatore di posizione a normativa NAMUR per montaggio di accessori tipo: box fine-corsa, posizionatori, ecc.<br><i>Position indicator conforming to NAMUR normative for convenient assembly of accessories such as limit switch box, positioner and so on.</i>  |
| 2  | Pignone<br>Pinion                        | Ad alta precisione, in lega d'acciaio nichelato, conforme alle normative ISO 5211, DIN 3337 e NAMUR. Su richiesta fornibile in acciaio Inox.<br><i>High-precision, in steel alloy nickel-plated, conforming to normatives ISO 5211, DIN 3337 and NAMUR. On request available in Stainless Steel.</i>  |
| 3  | Corpo<br>Body                            | Secondo i differenti requisiti, il corpo in acciaio Inox con finitura elettrolucidata offre eccellente resistenza alla maggior parte dei prodotti chimici corrosivi presenti nelle atmosfere industriali.<br><i>According to the different requirements, the Stainless Steel body with electro-polish finish offers excellent resistance to most corrosive chemicals in industrial atmospheres.</i> |
| 4  | Testate<br>Heads                         | Le testate in acciaio Inox con finitura elettrolucidata offrono eccellente resistenza alla maggior parte dei prodotti chimici corrosivi presenti nelle atmosfere industriali.<br><i>The stainless steel end-caps with electro-polish finish offers excellent resistance to most corrosive chemicals in industrial atmospheres.</i>  |
| 5  | Pistoni<br>Pistons                       | I pistoni a doppia cremagliera sono fatti in acciaio inossidabile resistente alla maggior parte dei prodotti chimici corrosivi presenti nelle atmosfere industriali.<br><i>The twin-rack pistons are made in Stainless Steel resistant to most corrosive chemicals in industrial atmospheres.</i>   |
| 6  | Viti di regolazione<br>Adjustment screw  | Le due viti di regolazione indipendenti possono regolare $\pm 5^\circ$ in entrambe le operazioni di apertura e chiusura con precisione.<br><i>The two independent adjustment screws can adjust <math>\pm 5^\circ</math> at both open and close operations easily and precisely.</i>   |
| 7  | Molle<br>Springs                         | In materiale di alta qualità, garantiscono resistenza alla corrosione e lunga durata. Possono essere smontate facilmente per soddisfare diverse necessità di forze cambiando il numero di molle.<br><i>In high quality material, grant resistance to corrosion and long life. Can easily be demounted to satisfy different torque requirement by changing spring number.</i>                        |
| 8  | Cuscinetti e guide<br>Bearing and guides | In materiali a bassa frizione per evitare il diretto contatto tra le parti metalliche. Facili da sostituire.<br><i>In low friction materials to avoid direct contact between metal parts. Easy to replace.</i>  |
| 9  | O-rings<br>O-rings                       | O-ring in NBR / NBR O-ring: $-20^\circ\text{C} \div +80^\circ\text{C}$ (standard)<br>O-ring in LNBR / LNBR O-ring: $-40^\circ\text{C} \div +80^\circ\text{C}$ (option)<br>O-ring in viton / Viton O-ring: $-15^\circ\text{C} \div +150^\circ\text{C}$ (option)  |

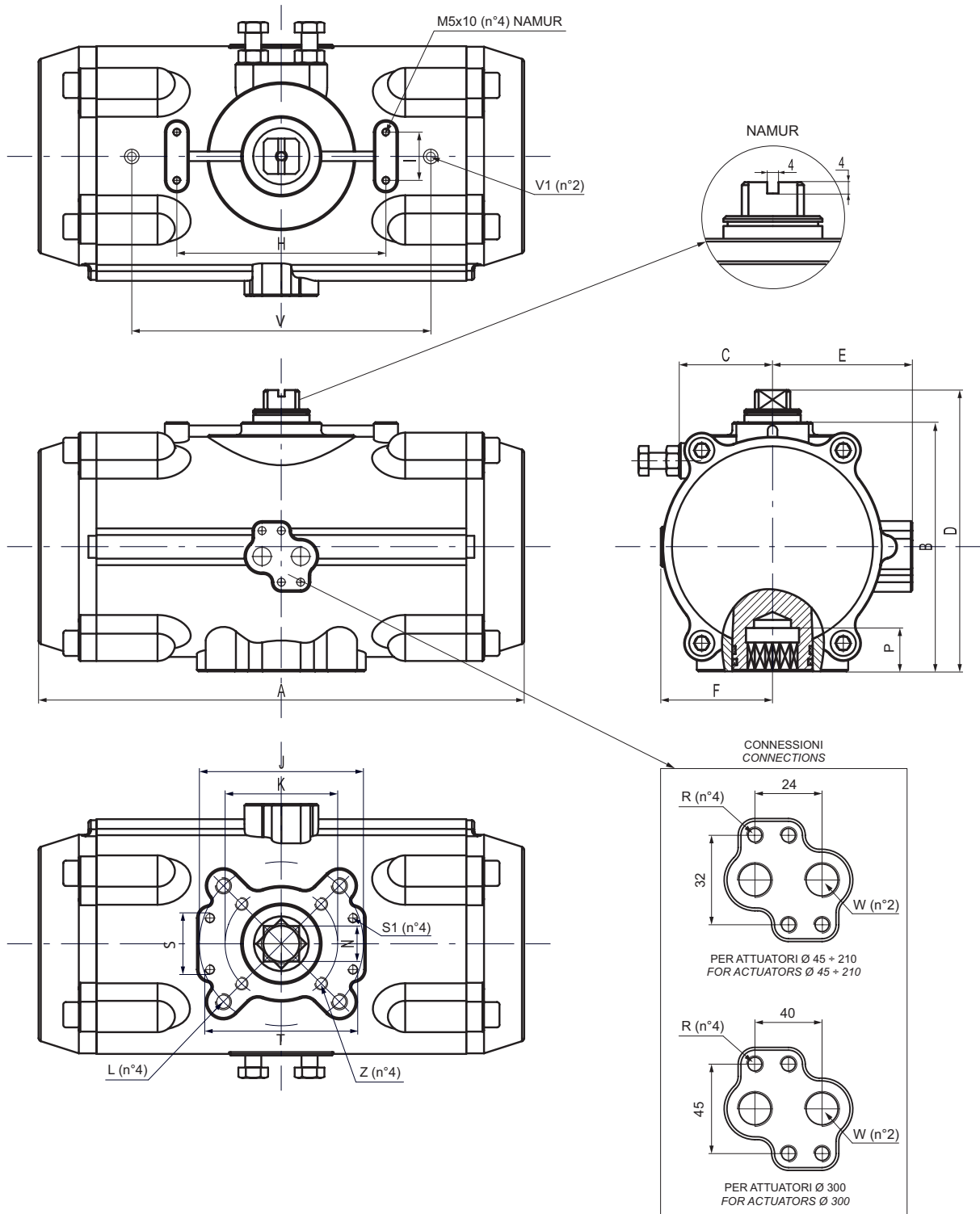




| N° | Descrizione / Description                                | Q.tà / Q.ty | Materiali / Materials   |
|----|--|-------------|---|
| 1  | Vite indicatore / Indicator screw                        | 1           | ABS   |
| 2  | Indicatore / Indicator                                   | 1           | ABS   |
| 3  | Anello di tenuta / Snap ring                             | 1           | Acciaio Inox AISI 316 / Stainless Steel AISI 316                    |
| 4  | Rosetta / Washer   | 1           | Acciaio Inox AISI 316 / Stainless Steel AISI 316                    |
| 5  | Rosetta esterna / Outside washer                         | 1           | Polioossimetilene / Polyoxymethylene                                |
| 6  | O-ring (Pignone superiore) / O-ring (Pinion top)         | 1           | NBR   |
| 7  | Anello (Pignone superiore) / Bearing (Pinion top)        | 1           | Polioossimetilene / Polyoxymethylene                                |
| 8  | Rosetta interna / Inside washer                          | 1           | Polioossimetilene / Polyoxymethylene                                |
| 9  | Camma / Cam  | 1           | Acciaio Inox AISI 316 / Stainless Steel AISI 316                    |
| 10 | Pignone / Pinion   | 1           | Acciaio Inox AISI 316 / Stainless Steel AISI 316                    |
| 11 | Anello (Pignone inferiore) / Bearing (Pinion bottom)     | 1           | Polioossimetilene / Polyoxymethylene                                |
| 12 | O-ring (Pignone inferiore) / O-ring (Pinion bottom)      | 1           | NBR   |
| 13 | Pistone / Piston   | 2           | Acciaio Inox AISI 316 / Stainless Steel AISI 316                    |
| 14 | O-ring (Pistone) / O-ring (Piston)                       | 2           | NBR   |
| 15 | Anello (Pistone) / Bearing (Piston)                      | 2           | Polioossimetilene / Polyoxymethylene                                |
| 16 | Kit Molla / Spring cartridge                             | 0 ÷ 12      | Acciaio armonico / Spring steel                                     |
| 16 | Fermo Molla (Dx e Sx) / Spring retainer (L & R)          |             | Nylon 66  |
|    | Connettore del fermo molla / Spring retainer connector   |             | Acciaio Inox AISI 316 e ottone / Stainless Steel AISI 316 and Brass |
| 17 | O-ring (Testata) / O-ring (End cap)                      | 2           | NBR   |
| 18 | Vite d'arresto / Stop screw                              | 2           | Acciaio Inox AISI 316 / Stainless Steel AISI 316                    |
| 19 | Testata / End cap  | 2           | Acciaio Inox AISI 316 / Stainless Steel AISI 316                    |
| 20 | Vite testata / Cap screw                                 | 8           | Acciaio Inox AISI 316 / Stainless Steel AISI 316                    |
| 21 | Tappo / Plug   | 2           | NBR   |
| 22 | Guida pistone / Piston guide                             | 2           | Nylon 66  |
| 23 | Corpo / Body   | 1           | Acciaio Inox AISI 316 / Stainless Steel AISI 316                    |
| 24 | O-ring (Vite di regolazione) / O-ring (Adjustment screw) | 2           | NBR   |
| 25 | Dado (Vite di regolazione) / Nut (Adjustment screw)      | 2           | Acciaio Inox AISI 316 / Stainless Steel AISI 316                    |
| 26 | Vite di regolazione / Adjustment screw                   | 2           | Acciaio Inox AISI 316 / Stainless Steel AISI 316                    |

Fornibili su richiesta con guarnizioni per alte temperature (Viton -15°C ÷ +150°C) e basse temperature (LNBR -40°C ÷ +80°C)  
 On request available with seals for high temperatures (Viton -15°C ÷ +150°C) and low temperatures (LNBR -40°C ÷ +80°C)

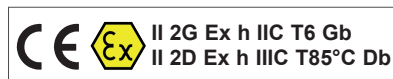
Specifiche tecniche attuatori 0-90° - Technical features actuators 0-90°



| Ø Attuatore Actuator Ø | A   | B   | C   | D   | E   | F    | ∅P   | H   | I  | N  | S  | S1     | T   | V   | V1  | J     | K     | L      | Z      | R     | W (NAMUR) | Flangia ISO ISO flange |
|------------------------|-----|-----|-----|-----|-----|------|------|-----|----|----|----|--------|-----|-----|-----|-------|-------|--------|--------|-------|-----------|------------------------|
| <b>45</b>              | 133 | 64  | 28  | 133 | 84  | 25   | 14   | 80  | 30 | 11 | -  | -      | -   | -   | -   | ∅ 50  | ∅ 36  | M6x10  | M5x7,5 | M5x8  | G 1/4"    | F03 / F05              |
| <b>52</b>              | 146 | 72  | 30  | 146 | 92  | 32   | 14   | 80  | 30 | 11 | -  | -      | -   | -   | -   | ∅ 50  | ∅ 36  | M6x10  | M5x7,5 | M5x8  | G 1/4"    | F03 / F05              |
| <b>63</b>              | 173 | 88  | 36  | 173 | 108 | 38   | 18   | 80  | 30 | 14 | -  | -      | -   | -   | -   | ∅ 70  | ∅ 50  | M8x13  | M6x10  | M5x8  | G 1/4"    | F05 / F07              |
| <b>83</b>              | 204 | 108 | 48  | 204 | 128 | 48   | 21   | 80  | 30 | 17 | -  | -      | -   | -   | -   | ∅ 70  | ∅ 50  | M8x13  | M6x10  | M5x8  | G 1/4"    | F05 / F07              |
| <b>105</b>             | 270 | 133 | 50  | 270 | 153 | 60   | 26   | 80  | 30 | 22 | -  | -      | -   | -   | -   | ∅ 102 | ∅ 70  | M10x16 | M8x13  | M5x8  | G 1/4"    | F07 / F10              |
| <b>125</b>             | 302 | 155 | 58  | 302 | 175 | 69,5 | 27,5 | 80  | 30 | 22 | -  | -      | -   | -   | -   | ∅ 102 | ∅ 70  | M10x16 | M8x13  | M5x8  | G 1/4"    | F07 / F10              |
| <b>140</b>             | 394 | 172 | 69  | 394 | 192 | 77   | 32   | 80  | 30 | 27 | -  | -      | -   | -   | -   | ∅ 125 | ∅ 102 | M12x20 | M10x16 | M5x8  | G 1/4"    | F10 / F12              |
| <b>160</b>             | 456 | 198 | 75  | 456 | 218 | 87   | 34   | 80  | 30 | 27 | -  | -      | -   | -   | -   | ∅ 125 | ∅ 102 | M12x20 | M10x16 | M5x8  | G 1/4"    | F10 / F12              |
| <b>210</b>             | 532 | 255 | 101 | 285 | 140 | 114  | 40   | 130 | 30 | 36 | 55 | M12x20 | 180 | -   | -   | ∅ 140 | -     | M16x14 | -      | M5x10 | G 1/4"    | F14                    |
| <b>300</b>             | 782 | 354 | 144 | 384 | 194 | 160  | 62   | 130 | 30 | 46 | 44 | M10    | 200 | 400 | M16 | ∅ 165 | -     | M20    | -      | M6    | G 1/2"    | F16                    |

## Attuatori Inox a doppio effetto, 0-90°

Stainless Steel actuators double acting, 0-90°

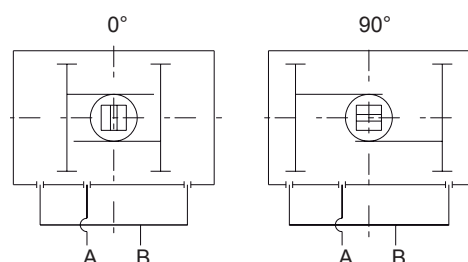


| Doppio effetto<br>Double acting |                    |                          |                           |
|---------------------------------|--------------------|--------------------------|---------------------------|
| Codice / Code                   | Articolo / Article | Ø Attuatore / Actuator Ø | Peso in kg / Weight in kg |
| 40394                           | RAX045DA-316       | 45                       | 1,80                      |
| 40395                           | RAX052DA-316       | 52                       | 2,50                      |
| 40396                           | RAX063DA-316       | 63                       | 3,60                      |
| 40397                           | RAX083DA-316       | 83                       | 6,50                      |
| 40398                           | RAX105DA-316       | 105                      | 10,00                     |
| 40399                           | RAX125DA-316       | 125                      | 13,50                     |
| 40400                           | RAX140DA-316       | 140                      | 15,50                     |
| 40401                           | RAX160DA-316       | 160                      | 28,00                     |
| 40402                           | RAX210DA-316       | 210                      | 71,50                     |
| 40403                           | RAX300DA-316       | 300                      | 170,50                    |

### Rotazione Standard - Standard rotation

L'aria sulla connessione A forza i pistoni all'esterno, muovendo il pignone in senso antiorario mentre l'aria viene scaricata dalla connessione B. L'aria nella connessione B forza il pistone verso l'interno, muovendo il pignone in senso orario mentre l'aria viene scaricata dalla connessione A.

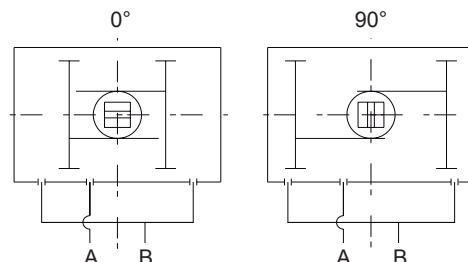
*Air to port A forces the pistons outwards, causing the pinion to turn counter-clockwise while the air is being exhausted from port B. Air to port B forces the pistons inwards, causing the pinion to turn clockwise while the air is being exhausted from port A.*



### Rotazione inversa - Reverse rotation (a richiesta - on request)

L'aria sulla connessione A forza i pistoni all'esterno, muovendo il pignone in senso orario mentre l'aria viene scaricata dalla connessione B. L'aria nella connessione B forza il pistone verso l'interno, muovendo il pignone in senso antiorario mentre l'aria viene scaricata dalla connessione A.

*Air to port A forces the pistons outwards, causing the pinion to turn clockwise while the air is being exhausted from port B. Air to port B forces the pistons inwards, causing the pinion to turn counter-clockwise while the air is being exhausted from port A.*

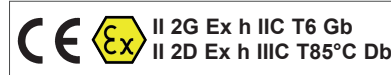


### Momenti torcenti degli attuatori doppio effetto (Nm)

Output torque of double acting actuators (Nm)

| Ø Attuatore<br>Actuator Ø | Pressione (bar) / Pressure (bar) |         |         |         |         |         |         |
|---------------------------|----------------------------------|---------|---------|---------|---------|---------|---------|
|                           | 2                                | 3       | 4       | 5       | 6       | 7       | 8       |
| 45                        | 6,0                              | 9,1     | 12,1    | 15,1    | 18,1    | 21,1    | 24,1    |
| 52                        | 8,0                              | 12,0    | 16,0    | 20,0    | 23,9    | 27,9    | 31,9    |
| 63                        | 14,6                             | 21,9    | 29,2    | 36,5    | 43,8    | 51,1    | 58,4    |
| 83                        | 31,4                             | 47,0    | 62,7    | 78,4    | 94,1    | 109,7   | 125,4   |
| 105                       | 66,1                             | 99,2    | 132,2   | 165,3   | 198,4   | 231,4   | 264,5   |
| 125                       | 100,3                            | 150,5   | 200,6   | 250,8   | 301,0   | 351,0   | 401,3   |
| 140                       | 171,0                            | 256,5   | 342,0   | 427,5   | 513,0   | 598,5   | 684,0   |
| 160                       | 266,0                            | 399,0   | 532,0   | 665,0   | 798,0   | 931,0   | 1.064,0 |
| 210                       | 523,0                            | 798,0   | 1.064,0 | 1.330,0 | 1.569,0 | 1.862,0 | 2.128,0 |
| 300                       | 1.526,0                          | 2.671,0 | 3.052,0 | 3.815,0 | 4.578,0 | 5.341,0 | 6.104,0 |

Momento torcente costante / Output torque constant 0° - 90° e 90° - 0°

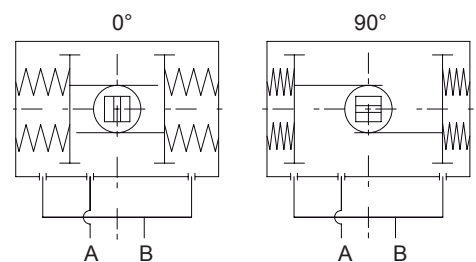
**Attuatori Inox a semplice effetto, 0-90°**  
*Stainless Steel actuators spring return, 0-90°*


| <b>Semplice effetto (standard 12 molle)</b><br><i>Spring return (standard 12 springs)</i> |                           |                                 |                                  |
|---|---------------------------|---------------------------------|----------------------------------|
| <i>Codice / Code</i>  | <i>Articolo / Article</i> | <i>Ø Attuatore / Actuator Ø</i> | <i>Peso in kg / Weight in kg</i> |
| 40404   | RAX045SR-316              | 45                              | 2,10                             |
| 40405   | RAX052SR-316              | 52                              | 2,63                             |
| 40406   | RAX063SR-316              | 63                              | 3,75                             |
| 40407   | RAX083SR-316              | 83                              | 6,80                             |
| 40408   | RAX105SR-316              | 105                             | 10,80                            |
| 40409   | RAX125SR-316              | 125                             | 13,95                            |
| 40410   | RAX140SR-316              | 140                             | 18,65                            |
| 40411   | RAX160SR-316              | 160                             | 31,70                            |
| 40412   | RAX210SR-316              | 210                             | 80,00                            |
| 40413   | RAX300SR-316              | 300                             | 198,10                           |

**Rotazione Standard - Standard rotation**

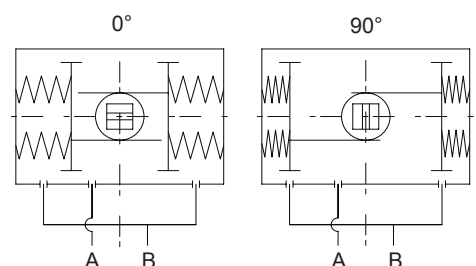
L'aria sulla connessione A forza i pistoni all'esterno, comprimendo le molle e muovendo il pignone in senso antiorario mentre l'aria viene scaricata dalla connessione B. Togliendo l'aria dalla connessione A l'energia immagazzinata dalle molle forza il pistone verso l'interno. Il pignone ruota in senso orario mentre l'aria viene scaricata dalla connessione A.

*Air to port A forces the pistons outwards, causing the spring to compress, the pinion to turn counter-clockwise while the air is being exhausted from port B. Loss of air pressure on port A, the stored energy in the springs forces the pistons inwards. The pinion turn clockwise while the air is being exhausted from port A.*


**Rotazione inversa - Reverse rotation (a richiesta - on request)**

L'aria sulla connessione A forza i pistoni all'esterno, comprimendo le molle e muovendo il pignone in senso orario mentre l'aria viene scaricata dalla connessione B. Togliendo l'aria dalla connessione A l'energia immagazzinata dalle molle forza il pistone verso l'interno. Il pignone ruota in senso antiorario mentre l'aria viene scaricata dalla connessione A.

*Air to port A forces the pistons outwards, causing the spring to compress, the pinion to turn clockwise while the air is being exhausted from port B. Loss of air pressure on port A, the stored energy in the springs forces the pistons inwards. The pinion turn counter-clockwise while the air is being exhausted from port A.*



| <b>Momenti torcenti degli attuatori semplice effetto (Nm)</b><br><i>Output torque of spring return actuators (Nm)</i> |                      |   |     |     |     |      |     |      |      |      |      |      |      |      |      |  |      |
|---|----------------------|---|-----|-----|-----|------|-----|------|------|------|------|------|------|------|------|--|------|
| <i>Ø Attuatore Actuator Ø</i>   | <i>Molle Springs</i> | <i>Pressione (bar) / Pressure (bar)</i> |     |     |     |      |     |      |      |      |      |      |      |      |      | <i>Forza della molla Springs' output</i> |      |
|   |                      | 2                                       |     | 3   |     | 4    |     | 5    |      | 6    |      | 7    |      | 8    |      |  |      |
|   |                      | 0°                                      | 90° | 0°  | 90° | 0°   | 90° | 0°   | 90°  | 0°   | 90°  | 0°   | 90°  | 0°   | 90°  | 90°                                      | 0°   |
| <b>45</b>   | 2                    |   |     | 4,2 | 1,3 | 7,2  | 4,3 | 10,2 | 7,3  |      |      |      |      |      |      | 7,4                                      | 4,6  |
|   | 3                    |   |     |     |     | 6,0  | 4,2 | 9,0  | 5,4  | 12,0 | 8,4  | 15,0 | 11,4 | 18,1 | 14,5 | 9,2                                      | 5,8  |
|   | 4                    |   |     |     |     |      |     | 7,8  | 3,5  | 10,8 | 6,5  | 13,8 | 9,5  | 16,9 | 12,6 | 11,1                                     | 7,0  |
| <b>52</b>   | 4                    | 4,6                                     | 3,0 | 8,6 | 7,0 |      |     |      |      |      |      |      |      |      |      | 5,0                                      | 3,4  |
|   | 5                    |   |     | 7,6 | 5,7 |      |     |      |      |      |      |      |      |      |      | 6,2                                      | 4,3  |
|   | 6                    |   |     | 6,9 | 4,5 | 10,9 | 8,5 |      |      |      |      |      |      |      |      | 7,4                                      | 5,0  |
|   | 7                    |   |     | 6,0 | 3,3 | 9,8  | 7,3 | 14,0 | 10,4 |      |      |      |      |      |      | 8,6                                      | 5,9  |
|   | 8                    |   |     | 5,2 | 2,0 | 9,2  | 6,0 | 13,2 | 9,1  | 17,2 | 14,1 |      |      |      |      | 9,9                                      | 6,7  |
|   | 9                    |   |     | 4,3 | 0,8 | 8,3  | 4,8 | 12,3 | 7,9  | 16,3 | 12,8 | 20,3 | 16,8 |      |      | 11,1                                     | 7,6  |
|   | 10                   |   |     |     |     | 7,4  | 3,6 | 11,5 | 6,7  | 15,5 | 11,6 | 19,5 | 15,6 |      |      | 12,4                                     | 8,5  |
|   | 11                   |   |     |     |     | 6,6  | 2,3 | 10,6 | 5,4  | 14,6 | 10,4 | 18,6 | 14,3 | 22,6 | 18,3 | 13,6                                     | 9,3  |
|   | 12                   |   |     |     |     |      |     | 9,7  | 4,2  | 13,8 | 9,1  | 17,8 | 12,2 | 21,8 | 17,1 | 14,8                                     | 10,2 |



| Momenti torcenti degli attuatori semplice effetto (Nm)<br>Output torque of spring return actuators (Nm) |                  |                                  |       |         |         |         |         |         |         |         |         |         |         |         |         |                                      |         |       |
|---|------------------|----------------------------------|-------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|--------------------------------------|---------|-------|
| Ø Attuatore<br>Actuator Ø   | Molle<br>Springs | Pressione (bar) / Pressure (bar) |       |         |         |         |         |         |         |         |         |         |         |         |         | Forza della molla<br>Springs' output |         |       |
|   |                  | 2                                |       | 3       |         | 4       |         | 5       |         | 6       |         | 7       |         | 8       |         |                                      |         |       |
|   |                  | 0°                               | 90°   | 0°      | 90°     | 0°      | 90°     | 0°      | 90°     | 0°      | 90°     | 0°      | 90°     | 0°      | 90°     |                                      |         |       |
| 63  | 4                | 9,2                              | 6,3   | 16,5    | 13,6    | 23,8    | 20,9    |         |         |         |         |         |         |         |         | 8,3                                  | 5,4     |       |
|   | 5                |                                  |       | 15,0    | 11,4    | 22,3    | 14,9    |         |         |         |         |         |         |         |         | 10,4                                 | 6,8     |       |
|   | 6                |                                  |       | 13,6    | 9,3     | 20,9    | 16,6    | 28,3    | 23,9    |         |         |         |         |         |         | 12,5                                 | 8,2     |       |
|   | 7                |                                  |       | 12,5    | 7,2     | 19,5    | 14,5    | 26,8    | 21,9    |         |         |         |         |         |         | 14,6                                 | 9,6     |       |
|   | 8                |                                  |       | 10,9    | 6,1     | 18,2    | 12,4    | 25,5    | 19,8    | 32,8    | 27,0    | 40,1    | 34,3    |         |         | 16,7                                 | 10,9    |       |
|   | 9                |                                  |       |         |         | 16,8    | 10,4    | 24,1    | 17,7    | 31,4    | 24,9    | 38,7    | 32,3    |         |         | 18,8                                 | 12,3    |       |
|   | 10               |                                  |       |         |         | 15,5    | 8,2     | 22,8    | 15,6    | 30,0    | 22,8    | 37,3    | 30,1    | 44,7    | 37,4    | 20,9                                 | 13,7    |       |
|   | 11               |                                  |       |         |         |         |         | 21,5    | 13,5    | 28,7    | 20,7    | 36,0    | 28,0    | 43,3    | 35,3    | 22,9                                 | 15,0    |       |
|   | 12               |                                  |       |         |         |         |         | 20,0    | 11,4    | 27,3    | 18,6    | 34,6    | 25,9    | 41,9    | 33,3    | 25,0                                 | 16,4    |       |
|   | 83               | 4                                | 18,7  | 13,0    | 34,3    | 28,6    | 50,0    | 44,3    |         |         |         |         |         |         |         |                                      | 18,4    | 12,7  |
|   |                  | 5                                |       |         | 31,1    | 24,0    | 46,8    | 37,9    |         |         |         |         |         |         |         |                                      | 23,0    | 15,8  |
|   |                  | 6                                |       |         | 28,0    | 19,3    | 43,7    | 35,1    | 59,4    | 50,7    |         |         |         |         |         |                                      | 27,6    | 19,0  |
| 7   |                  |                                  |       | 24,8    | 14,8    | 40,5    | 30,5    | 56,2    | 46,2    |         |         |         |         |         |         | 32,2                                 | 22,1    |       |
| 8   |                  |                                  |       | 21,7    | 10,1    | 37,4    | 25,8    | 53,1    | 41,5    | 68,8    | 57,2    | 84,5    | 72,9    |         |         | 36,8                                 | 25,3    |       |
| 9   |                  |                                  |       |         |         | 34,2    | 21,3    | 49,9    | 37,0    | 65,6    | 52,6    | 81,2    | 68,3    |         |         | 41,4                                 | 28,5    |       |
| 10  |                  |                                  |       |         |         | 31,0    | 16,6    | 46,7    | 32,3    | 62,4    | 48,0    | 78,1    | 63,7    | 93,8    | 79,3    | 46,0                                 | 31,6    |       |
| 11  |                  |                                  |       |         |         |         |         | 43,6    | 27,7    | 59,3    | 43,4    | 75,0    | 59,1    | 90,6    | 74,8    | 50,6                                 | 34,8    |       |
| 12  |                  |                                  |       |         |         |         |         | 40,4    | 23,2    | 56,1    | 38,9    | 71,7    | 54,5    | 87,4    | 70,2    | 55,2                                 | 38,0    |       |
| 105   |                  | 4                                | 40,8  | 26,7    | 73,3    | 59,8    | 106,9   | 92,8    |         |         |         |         |         |         |         |                                      | 39,4    | 25,3  |
|   |                  | 5                                |       |         | 67,5    | 49,9    | 100,6   | 83,0    |         |         |         |         |         |         |         |                                      | 49,2    | 31,6  |
|   |                  | 6                                |       |         | 61,1    | 40,0    | 94,2    | 73,2    | 127,3   | 106,2   |         |         |         |         |         |                                      | 59,1    | 38,0  |
|   | 7                |                                  |       | 54,9    | 30,3    | 87,9    | 63,4    | 121,0   | 96,4    |         |         |         |         |         |         | 68,9                                 | 44,3    |       |
|   | 8                |                                  |       | 48,5    | 20,4    | 81,6    | 53,5    | 114,7   | 86,5    | 147,7   | 119,6   | 180,8   | 152,7   |         |         | 78,7                                 | 50,6    |       |
|   | 9                |                                  |       |         |         | 75,3    | 43,7    | 108,4   | 76,8    | 141,5   | 109,8   | 174,5   | 142,9   |         |         | 88,6                                 | 56,9    |       |
|   | 10               |                                  |       |         |         | 68,9    | 33,4    | 102,0   | 66,5    | 135,1   | 99,6    | 168,2   | 132,6   | 201,2   | 165,7   | 98,4                                 | 63,3    |       |
|   | 11               |                                  |       |         |         |         |         | 95,7    | 57,0    | 128,7   | 90,1    | 161,8   | 123,1   | 194,8   | 156,2   | 108,3                                | 69,6    |       |
|   | 12               |                                  |       |         |         |         |         | 89,4    | 47,5    | 122,5   | 80,6    | 155,5   | 113,6   | 188,6   | 146,7   | 118,1                                | 75,9    |       |
|   | 125              | 4                                | 59,0  | 37,0    | 109,0   | 87,0    | 159,0   | 137,0   |         |         |         |         |         |         |         |                                      | 63,0    | 42,0  |
|   |                  | 5                                |       |         | 98,0    | 72,0    | 148,0   | 122,0   |         |         |         |         |         |         |         |                                      | 79,0    | 52,0  |
|   |                  | 6                                |       |         | 88,0    | 56,0    | 138,0   | 107,0   | 188,0   | 157,0   |         |         |         |         |         |                                      | 94,0    | 63,0  |
| 7   |                  |                                  |       | 77,0    | 40,0    | 127,0   | 90,0    | 178,0   | 141,0   |         |         |         |         |         |         | 110,0                                | 73,0    |       |
| 8   |                  |                                  |       | 67,0    | 25,0    | 117,0   | 75,0    | 167,0   | 125,0   | 217,0   | 176,0   | 268,0   | 226,0   |         |         | 125,0                                | 84,0    |       |
| 9   |                  |                                  |       |         |         | 107,0   | 59,0    | 157,0   | 109,0   | 207,0   | 159,0   | 257,0   | 210,0   |         |         | 141,0                                | 94,0    |       |
| 10  |                  |                                  |       |         |         | 96,0    | 44,0    | 146,0   | 94,0    | 196,0   | 144,0   | 247,0   | 194,0   | 297,0   | 245,0   | 157,0                                | 105,0   |       |
| 11  |                  |                                  |       |         |         |         |         | 136,0   | 78,0    | 186,0   | 128,0   | 236,0   | 178,0   | 286,0   | 228,0   | 173,0                                | 115,0   |       |
| 12  |                  |                                  |       |         |         |         |         | 125,0   | 63,0    | 176,0   | 113,0   | 226,0   | 163,0   | 276,0   | 213,0   | 188,0                                | 125,0   |       |
| 140   |                  | 4                                | 102,0 | 68,0    | 188,0   | 153,0   | 273,0   | 239,0   |         |         |         |         |         |         |         |                                      | 103,0   | 69,0  |
|   |                  | 5                                |       |         | 171,0   | 127,0   | 256,0   | 213,0   |         |         |         |         |         |         |         |                                      | 129,0   | 86,0  |
|   |                  | 6                                |       |         | 154,0   | 102,0   | 239,0   | 187,0   | 325,0   | 273,0   |         |         |         |         |         |                                      | 155,0   | 103,0 |
|   | 7                |                                  |       | 137,0   | 76,0    | 222,0   | 162,0   | 308,0   | 247,0   |         |         |         |         |         |         | 181,0                                | 120,0   |       |
|   | 8                |                                  |       | 120,0   | 50,0    | 205,0   | 136,0   | 291,0   | 221,0   | 376,0   | 307,0   | 462,0   | 392,0   |         |         | 206,0                                | 137,0   |       |
|   | 9                |                                  |       |         |         | 187,0   | 110,0   | 273,0   | 196,0   | 358,0   | 281,0   | 444,0   | 367,0   |         |         | 232,0                                | 155,0   |       |
|   | 10               |                                  |       |         |         | 170,0   | 84,0    | 256,0   | 169,0   | 341,0   | 255,0   | 427,0   | 340,0   | 512,0   | 426,0   | 258,0                                | 172,0   |       |
|   | 11               |                                  |       |         |         |         |         | 238,0   | 143,0   | 324,0   | 229,0   | 409,0   | 314,0   | 495,0   | 400,0   | 284,0                                | 189,0   |       |
|   | 12               |                                  |       |         |         |         |         | 221,0   | 118,0   | 307,0   | 203,0   | 392,0   | 289,0   | 478,0   | 374,0   | 310,0                                | 206,0   |       |
|   | 160              | 4                                | 154,0 | 100,0   | 278,0   | 233,0   | 420,0   | 366,0   |         |         |         |         |         |         |         |                                      | 166,0   | 112,0 |
|   |                  | 5                                |       |         | 259,0   | 191,0   | 392,0   | 324,0   |         |         |         |         |         |         |         |                                      | 208,0   | 140,0 |
|   |                  | 6                                |       |         | 232,0   | 149,0   | 365,0   | 282,0   | 498,0   | 415,0   |         |         |         |         |         |                                      | 250,0   | 168,0 |
| 7   |                  |                                  |       | 203,0   | 149,0   | 365,0   | 240,0   | 469,0   | 373,0   |         |         |         |         |         |         | 292,0                                | 196,0   |       |
| 8   |                  |                                  |       | 176,0   | 66,0    | 309,0   | 199,0   | 442,0   | 332,0   | 575,0   | 465,0   | 708,0   | 598,0   |         |         | 333,0                                | 223,0   |       |
| 9   |                  |                                  |       |         |         | 280,0   | 157,0   | 413,0   | 290,0   | 546,0   | 423,0   | 679,0   | 556,0   |         |         | 375,0                                | 251,0   |       |
| 10  |                  |                                  |       |         |         | 253,0   | 115,0   | 386,0   | 248,0   | 519,0   | 381,0   | 652,0   | 514,0   | 785,0   | 647,0   | 417,0                                | 279,0   |       |
| 11  |                  |                                  |       |         |         |         |         | 358,0   | 207,0   | 491,0   | 340,0   | 624,0   | 473,0   | 757,0   | 606,0   | 458,0                                | 307,0   |       |
| 12  |                  |                                  |       |         |         |         |         | 330,0   | 165,0   | 463,0   | 298,0   | 596,0   | 431,0   | 729,0   | 564,0   | 500,0                                | 335,0   |       |
| 210   |                  | 4                                | 312,0 | 228,0   | 578,0   | 498,0   | 844,0   | 760,0   |         |         |         |         |         |         |         |                                      | 304,0   | 220,0 |
|   |                  | 5                                |       |         | 523,0   | 418,0   | 789,0   | 684,0   |         |         |         |         |         |         |         |                                      | 380,0   | 275,0 |
|   |                  | 6                                |       |         | 468,0   | 342,0   | 734,0   | 608,0   | 1.000,0 | 874,0   |         |         |         |         |         |                                      | 456,0   | 330,0 |
|   | 7                |                                  |       | 413,0   | 266,0   | 679,0   | 532,0   | 945,0   | 798,0   |         |         |         |         |         |         | 532,0                                | 385,0   |       |
|   | 8                |                                  |       | 358,0   | 190,0   | 624,0   | 546,0   | 890,0   | 722,0   | 1.156,0 | 988,0   | 1.422,0 | 1.254,0 |         |         | 608,0                                | 440,0   |       |
|   | 9                |                                  |       |         |         | 569,0   | 380,0   | 835,0   | 646,0   | 1.101,0 | 912,0   | 1.367,0 | 1.178,0 |         |         | 684,0                                | 495,0   |       |
|   | 10               |                                  |       |         |         | 514,0   | 304,0   | 780,0   | 570,0   | 1.046,0 | 836,0   | 1.312,0 | 1.102,0 | 1.578,0 | 1.368,0 | 760,0                                | 550,0   |       |
|   | 11               |                                  |       |         |         |         |         | 725,0   | 494,0   | 991,0   | 760,0   | 1.257,0 | 1.026,0 | 1.523,0 | 1.292,0 | 836,0                                | 605,0   |       |
|   | 12               |                                  |       |         |         |         |         | 670,0   | 418,0   | 936,0   | 684,0   | 1.202,0 | 950     | 1.468,0 | 1.216,0 | 912,0                                | 660,0   |       |
|   | 300              | 4                                | 942,0 | 611,0   |         |         |         |         |         |         |         |         |         |         |         |                                      | 849,0   | 584,0 |
|   |                  | 5                                |       |         |         |         |         |         |         |         |         |         |         |         |         |                                      | 1.061,0 | 730,0 |
|   |                  | 6                                |       |         | 1.316,0 | 875,0   |         |         |         |         |         |         |         |         |         |                                      | 1.273,0 | 876,0 |
| 7   |                  |                                  |       | 1.153,0 | 639,0   | 1.916,0 | 1.402,0 |         |         |         |         |         |         |         |         | 1.485,0                              | 1.022,0 |       |
| 8   |                  |                                  |       | 991,0   | 403,0   | 1.754,0 | 1.166,0 | 2.517,0 | 1.929,0 |         |         |         |         |         |         | 1.697,0                              | 1.168,0 |       |
| 9   |                  |                                  |       |         |         | 1.592,0 | 930,0   | 2.355,0 | 1.693,0 | 3.118,0 | 2.456,0 |         |         |         |         | 1.909,0                              | 1.314,0 |       |
| 10  |                  |                                  |       |         |         | 1.430,0 | 695     | 2.193,0 | 1.458,0 | 2.956,0 | 2.221,0 | 3.791,0 | 2.984,0 | 4.482,0 | 3.747,0 | 2.122,0                              | 1.460,0 |       |
| 11  |                  |                                  |       |         |         |         |         | 2.030,0 | 1.222,0 | 2.793,0 | 1.985,0 | 3.556,0 | 2.748,0 | 4.319,0 | 3.511,0 | 2.334,0                              | 1.606,0 |       |
| 12  |                  |                                  |       |         |         |         |         | 1.868,0 | 986,0   | 2.631,0 | 1.749,0 | 3.394,0 | 2.512,0 | 4.157,0 | 3.275,0 | 2.546,0                              | 1.752,0 |       |

Momento torcente aria in decremento da 90° - 0° / Output torque air decreasing 90° - 0°  
 Momento torcente molle in decremento da 90° - 0° / Output torque springs decreasing 90° - 0°