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RHINO AUTOMATION EUROPE

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FICHA TÉCNICA Serie C / DATA SHEET C Series

Descripción



Actuador neumático con mecanismo de piñón y cremallera, con dos tipos de operación; simple acción, y doble acción. El actuador neumático Rhino Automation Europe serie C es capaz de operar dispositivos de un cuarto de vuelta con su amplia gama de torques, diseñado para el cumplimiento extenso de las normatividades nacionales e internacionales de montaje y conexión.

Description

With two modes of operation; single action and double action. The pneumatic actuator series C Rhino Automation Europe is capable of operating devices fourth back with its extensive range of torques, designed for widespread compliance with national and international normativity's installation and connection.

Construcción

Construction

**Cuerpo :** Aleación de Aluminio extruido ASTM 6005  
**Recubrimiento:** Anodizado duro  
**Opción:** Recubrimiento PFA, Niquelado Pintura Especial  
**Piñón:** Acero aleado, Niquelado.  
**Pistón:** Aluminio fundido a presión  
**Tapas:** Aluminio fundido a presión pintado en polvo de polister

**Body :** Extruded aluminum Alloy ASTM 6005  
**Coated:** Hard anodized  
**Option:** Coated PFA  
**Pinion:** Alloy Steel Nickel plated  
**Piston:** Die-Cast aluminum  
**End cap:** Die-Cast aluminum powder polyester painted

Características

Features

**Rango de temperatura:** Estándar NBR -20°C a 80° C  
**Opción:** LNBR -35°C a 80° C HNBR -15 °C a 150° C  
**Rango de presión:** 2-8.5 bar  
**Presión máxima:** 10 bar  
**Lubricación:** Desde fabrica  
**Porcentaje de ajuste:** 90° ±5° sentido del reloj  
**Grados de giro:** 90° default.  
**Fluido :** Aire seco, aceite lubricado o gas no corrosivo  
**Conexiones:** Conexión inferior de acuerdo al estándar ISO 5211 /DIN 3337, conexiones con válvula solenoide y para accesorios en parte superior de acuerdo con la norma internacional VDI /VDE 3845 NAMUR  
**Conexión Neumática:** 1/4" NPT Modelo C-270 1/2" NPT

**Range temperature:** Standard NBR -4 °F to 176 °F  
**Option:** LNBR -31°F to 176°F HNBR 5°F to 302°F  
**Range pressure:** 30-120 psi  
**Maximum working pressure:** 145 psi  
**Lube:** All parts are lubricated for longer life  
**Percentage adjustment:** 90° ±5° CW  
**Degrees of rotation:** 90° default  
**Supply:** Dry air, lubricated or non-corrosive gas  
**Connections:** Bottom connection according to ISO 5211 / DIN 3337 standard, connections with solenoid valve and top accessories according to the international standard VDI /VDE 3845 NAMUR  
**Pneumatic Connection:** 1/4" NPT C-270 Model 1/2" NPT



## ACTUADORES NEUMÁTICOS PNEUMATIC ACTUATORS

### Principio de Operación / Operation principle

#### Doble Acción

**Rotación estándar sentido contrario a manecillas del reloj. (CCW)**

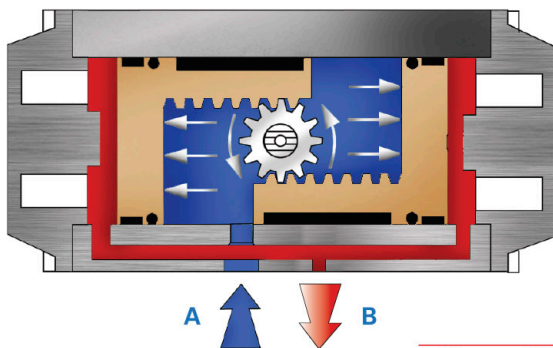
El aire entra por el Puerto "A" ejerciendo una fuerza en la parte interna del pistón, (mostrado de color azul oscuro) causando que el piñón gire en sentido contrario a las manecillas del reloj, mientras que el aire contenido en la parte externa del pistón (color azul claro) es desalojado por el Puerto "B". Para regresar a la posición inicial; el aire entra por el Puerto "B" ejerciendo una fuerza en la parte externa del pistón, ocasionando que el piñón gire en sentido de las manecillas del reloj mientras el aire desalojado por el Puerto "A"

#### Double action

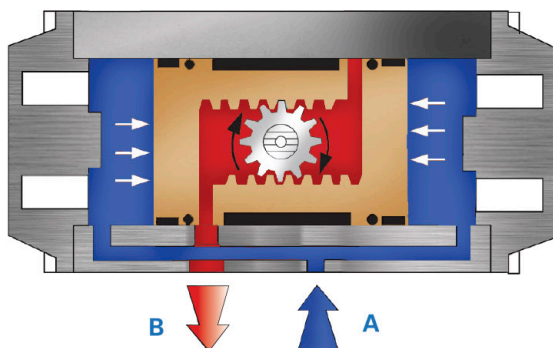
**Standard rotation CCW**

*Air to port "A" forces the pistons outwards, causing the pinion to turn counterclockwise 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".*

Apertura / Open



Cierre / Close



#### Simple Acción

**Rotación estándar sentido contrario a manecillas del reloj. (CCW)**

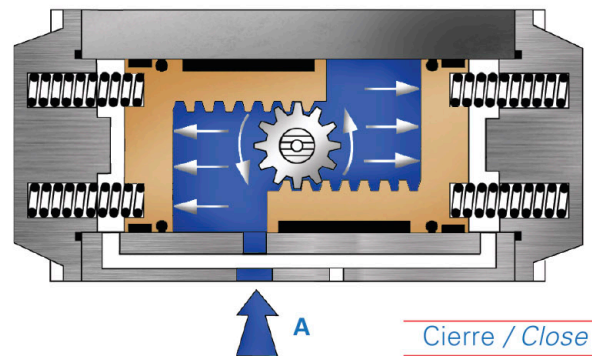
El aire entra por el Puerto "A" ejerciendo una fuerza en la parte interna del pistón, comprimiendo los resortes y causando que el piñón gire en sentido contrario a las manecillas del reloj. Cuando el aire entrante en el puerto "A" deja de ser suministrado y pierde presión, el aire es desalojado por el movimiento ocasionado por los resortes comprimidos que regresan a su estado normal ocasionando que el piñón gire en sentido de las manecillas del reloj.

#### Spring return

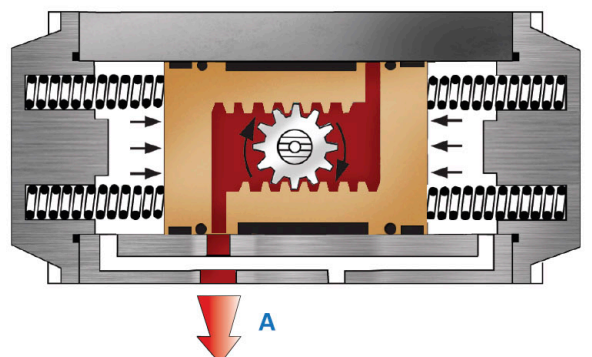
**Standard rotation CCW**

*Air to port "A" forces the pistons outwards, causing the springs to compress, the pinion turns counterclockwise while 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 turns clockwise while air is being exhausted from port "A".*

Apertura / Open

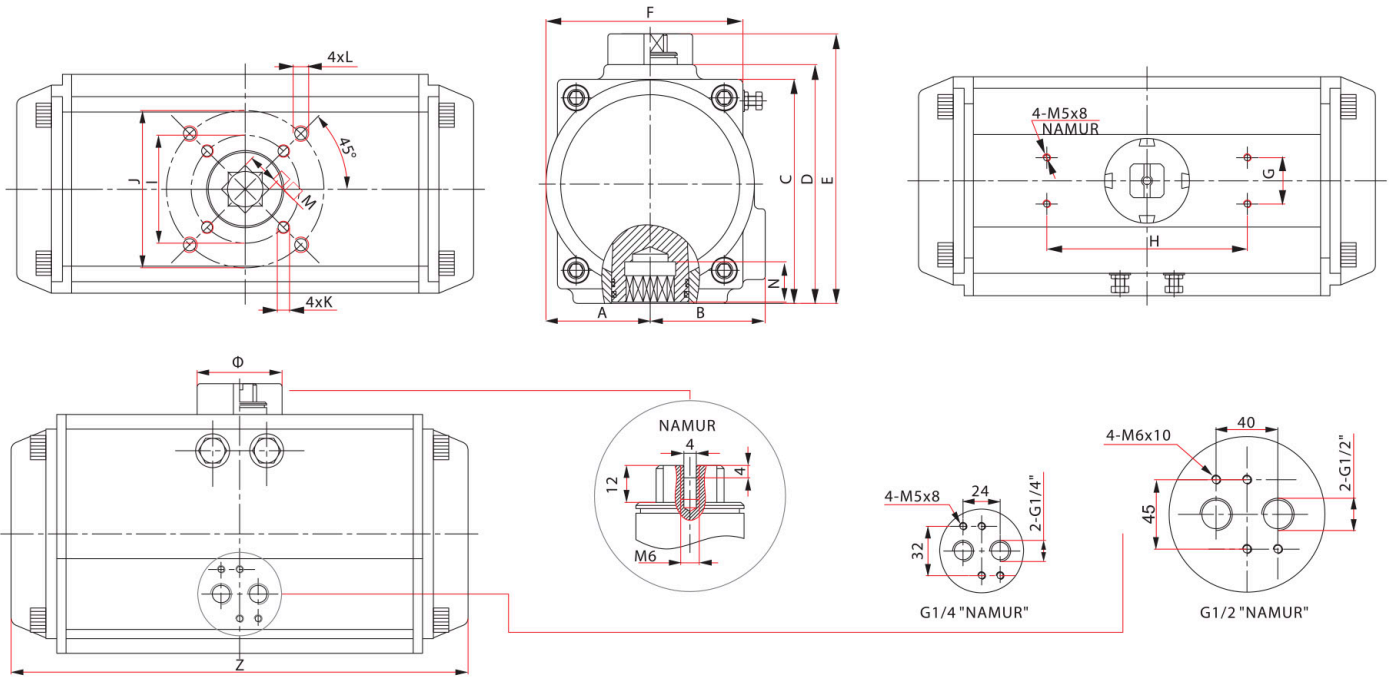


Cierre / Close





Dimensiones / Dimensions



| Modelo<br>Model | A    | B    | C      | D     | E     | F     | G  | H   | I    | J    | K      | L      | ISO<br>5211 | M  | N  | Z   | Φ   | Conexión<br>Aire |
|-----------------|------|------|--------|-------|-------|-------|----|-----|------|------|--------|--------|-------------|----|----|-----|-----|------------------|
| C-40            | 28.5 | 36.5 | 60     | ---   | 80    | 52    | 30 | 80  | Φ36  | Φ50  | M5x8   | M6X10  | F03/F05     | 11 | 14 | 122 | Φ40 | Namur 1/4"       |
| C-52            | 30   | 41.5 | 65.5   | 72    | 92    | 65    | 30 | 80  | Φ36  | Φ50  | M5x8   | M6X10  | F03/F05     | 11 | 14 | 147 | Φ40 | Namur 1/4"       |
| C-63            | 36   | 47   | 81     | 87.5  | 107.5 | 72    | 30 | 80  | Φ50  | Φ70  | M6x10  | M8x13  | F05/F07     | 14 | 18 | 168 | Φ40 | Namur 1/4"       |
| C-75            | 42   | 53   | 94     | 99.5  | 119.5 | 81    | 30 | 80  | Φ50  | Φ70  | M6x10  | M8x13  | F05/F07     | 14 | 18 | 184 | Φ40 | Namur 1/4"       |
| C-83            | 46   | 57   | 98.5   | 108.7 | 128.7 | 92    | 30 | 80  | Φ50  | Φ70  | M6x10  | M8x13  | F05/F07     | 17 | 21 | 204 | Φ40 | Namur 1/4"       |
| C-92            | 50   | 58.5 | 111    | 116.8 | 136.8 | 98    | 30 | 80  | Φ50  | Φ70  | M6x10  | M8x13  | F05/F07     | 17 | 21 | 262 | Φ40 | Namur 1/4"       |
| C-105           | 57.5 | 64   | 122.5  | 133   | 153   | 109.5 | 30 | 80  | Φ70  | Φ102 | M8x13  | M10x16 | F07/F10     | 22 | 26 | 268 | Φ40 | Namur 1/4"       |
| C-125           | 67.5 | 74.5 | 145.5  | 155   | 175   | 127.5 | 30 | 130 | Φ70  | Φ102 | M8x13  | M10x16 | F07/F10     | 22 | 26 | 296 | Φ55 | Namur 1/4"       |
| C-140           | 75   | 77   | 160.75 | 171.5 | 191.5 | 137.5 | 30 | 130 | Φ102 | Φ125 | M10x16 | M12x20 | F10/F12     | 27 | 31 | 390 | Φ55 | Namur 1/4"       |
| C-160           | 87   | 87   | 184    | 197   | 217   | 158   | 30 | 130 | Φ102 | Φ125 | M10x16 | M12x20 | F10/F12     | 27 | 31 | 454 | Φ55 | Namur 1/4"       |
| C-190           | 103  | 103  | 216    | 230   | 260   | 189   | 30 | 130 | ---  | Φ140 | ---    | M16x25 | F14         | 36 | 40 | 525 | Φ80 | Namur 1/4"       |
| C-210           | 113  | 113  | 235.5  | 255   | 285   | 210   | 30 | 130 | ---  | Φ140 | ---    | M16x25 | F14         | 36 | 40 | 532 | Φ80 | Namur 1/4"       |
| C-240           | 130  | 130  | 264    | 288   | 318   | 245   | 30 | 130 | ---  | Φ165 | ---    | M20x25 | F16         | 46 | 50 | 610 | Φ80 | Namur 1/4"       |
| C-270           | 147  | 147  | 299    | 326   | 356   | 273   | 30 | 130 | ---  | Φ165 | ---    | M20x25 | F16         | 46 | 50 | 722 | Φ80 | Namur 1/2"       |





## ACTUADORES NEUMÁTICOS PNEUMATIC ACTUATORS

### Lista de partes y materiales Parts and material table

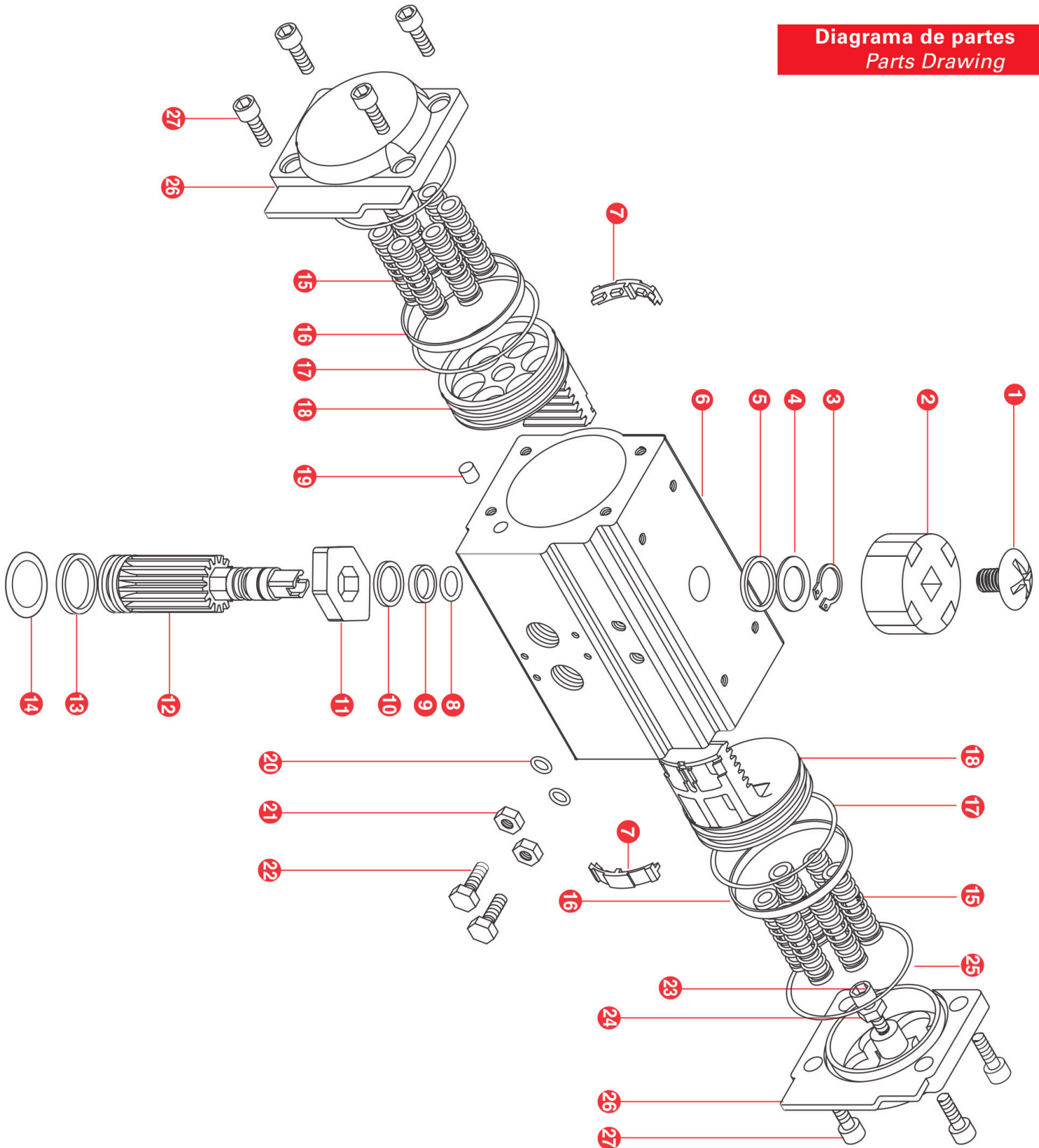


| No. | Descripción               | Cant. | Material             | No. | Descripción                  | Cant. | Material                   |
|-----|---------------------------|-------|----------------------|-----|------------------------------|-------|----------------------------|
| 1   | Tornillo del Indicador    | 1     | Plástico (ABS)       | 15  | Resortes                     | 0-12  | Acero para Muelles         |
| 2   | Indicador                 | 1     | Plástico (ABS)       | 16  | Cojinete (pistón)            | 2     | Polioximetileno            |
| 3   | Anillo de Seguridad       | 1     | Acero Inoxidable 304 | 17  | O-ring pistón                | 2     | NBR                        |
| 4   | Arandela de empuje        | 1     | Acero Inoxidable 304 | 18  | Pistón                       | 2     | Aluminio fundido a presión |
| 5   | Arandela exterior         | 1     | Polioximetileno      | 19  | Tapón                        | 2     | NBR                        |
| 6   | Cuerpo                    | 1     | Aluminio Extruido    | 20  | O-ring de tornillo de ajuste | 2     | NBR                        |
| 7   | Guía (pistón)             | 1     | Polioximetileno      | 21  | Tuerca de Ajuste             | 2     | Acero Inoxidable 304       |
| 8   | O-ring superior del piñón | 1     | NBR                  | 22  | Tornillo de Ajuste           | 2     | Acero Inoxidable 304       |
| 9   | Cojinete piñón superior   | 1     | Polioximetileno      | 23  | Tornillo de Tope             | 2     | Acero Inoxidable 304       |
| 10  | Arandela interior         | 1     | Polioximetileno      | 24  | Tuerca de tornillo tope      | 2     | Acero Inoxidable 304       |
| 11  | Limitador de carrera      | 1     | Acero aleado         | 25  | O-ring de tapa               | 2     | NBR                        |
| 12  | Piñón                     | 1     | Acero aleado         | 26  | Tapa                         | 2     | Aluminio fundido a presión |
| 13  | Cojinete piñón inferior   | 1     | Polioximetileno      | 27  | Tornillo de tapa             | 8     | Acero Inoxidable 304       |
| 14  | O-ring inferior del piñón | 1     | NBR                  |     |                              |       |                            |

| No. | Description             | Qty. | Material          | No. | Description         | Qty. | Material          |
|-----|-------------------------|------|-------------------|-----|---------------------|------|-------------------|
| 1   | Indicator screw         | 1    | Plastic (ABS)     | 15  | Spring              | 0-12 | Spring Steel      |
| 2   | Indicator               | 1    | Plastic (ABS)     | 16  | Bearing (piston)    | 2    | Polyoxymethylene  |
| 3   | Circlip                 | 1    | SS 304            | 17  | O-ring piston       | 2    | NBR               |
| 4   | Thrust washer           | 1    | SS 304            | 18  | Piston              | 2    | Die-Cast Aluminum |
| 5   | Outside washer          | 1    | Polyoxymethylene  | 19  | plug                | 2    | NBR               |
| 6   | Body                    | 1    | Extruded Aluminum | 20  | O-ring adjust screw | 2    | NBR               |
| 7   | Guide (piston)          | 1    | Polyoxymethylene  | 21  | Nut (adjust screw)  | 2    | SS 304            |
| 8   | O-ring pinion top       | 1    | NBR               | 22  | adjust screw        | 2    | SS 304            |
| 9   | Bearing (pinion top)    | 1    | Polyoxymethylene  | 23  | Stop screw          | 2    | SS 304            |
| 10  | Inside washer           | 1    | Polyoxymethylene  | 24  | Nut (stopscrew)     | 2    | SS 304            |
| 11  | Travel Adjustment       | 1    | Alloy steel       | 25  | O-ring (end cap)    | 2    | NBR               |
| 12  | Pinion                  | 1    | Alloy steel       | 26  | End cap             | 2    | Die-Cast Aluminum |
| 13  | Bearing (pinion bottom) | 1    | Polyoxymethylene  | 27  | End-capscrew        | 8    | SS 304            |
| 14  | O-ring (pinion bottom)  | 1    | NBR               |     |                     |      |                   |



**Diagrama de partes**  
**Parts Drawing**







## ACTUADORES NEUMÁTICOS PNEUMATIC ACTUATORS

**Peso**  
Weight (Kg)

**Volumen de aire\***  
Air Volume (lt)

**Tiempo de operación DA**  
Operation time DA (s)

| Modelo<br>Model | DA    | SR    |
|-----------------|-------|-------|
| C-40            | 1.25  | N/A   |
| C-52            | 1.38  | 1.45  |
| C-63            | 2.03  | 2.05  |
| C-75            | 2.7   | 2.9   |
| C-83            | 3.13  | 3.6   |
| C-92            | 4.6   | 5.22  |
| C-105           | 6.77  | 6.85  |
| C-125           | 8.9   | 10.11 |
| C-140           | 13.25 | 15.55 |
| C-160           | 20.14 | 24    |
| C-190           | 31.3  | 35.25 |
| C-210           | 46.8  | 54.8  |
| C-240           | 67.3  | 80.2  |
| C-270           | 97    | 118   |

| Modelo<br>Model | Abrir | Cerrar |
|-----------------|-------|--------|
| C-40            | 0.08  | 0.11   |
| C-52            | 0.12  | 0.16   |
| C-63            | 0.21  | 0.23   |
| C-75            | 0.3   | 0.34   |
| C-83            | 0.43  | 0.47   |
| C-92            | 0.64  | 0.73   |
| C-105           | 0.95  | 0.88   |
| C-125           | 1.6   | 1.4    |
| C-140           | 2.5   | 2.2    |
| C-160           | 3.7   | 3.2    |
| C-190           | 5.9   | 5.4    |
| C-210           | 7.5   | 7.5    |
| C-240           | 11    | 9      |
| C-270           | 17    | 14     |

| Modelo<br>Model | 0°-90° | 90°- 0° |
|-----------------|--------|---------|
| C-40            | 0.5    | 0.55    |
| C-52            | 0.6    | 0.53    |
| C-63            | 0.66   | 0.58    |
| C-75            | 0.72   | 0.64    |
| C-83            | 0.83   | 0.73    |
| C-92            | 1      | 0.86    |
| C-105           | 1.35   | 1.3     |
| C-125           | 2.4    | 1.79    |
| C-140           | 2.5    | 2.1     |
| C-160           | 3.93   | 2.6     |
| C-190           | 4.55   | 3.45    |
| C-210           | 5.5    | 4.35    |
| C-240           | 8.4    | 8.33    |
| C-270           | 10.9   | 8.53    |

$$* \text{Consumo de Aire} = (A_o + A_c) \times \left[ \frac{A_s (\text{Kpa}) + 101.3}{101.3} \right] \times \left[ \text{No. de Ciclos por Minuto} \right]$$

Ao= Aire para Apertura Ac= Aire para Cierre  
As= Suministro Neumatico Kpa

**Tiempo de operación SA**  
Operation time SR (s)

| Modelo<br>Model | 0°-90°<br>90°-0° | 0°-90°<br>90°-0° | 0°-90°<br>90°-0° | 0°-90°<br>90°-0° | 0°-90°<br>90°-0° | 0°-90°<br>90°-0° | 0°-90°<br>90°-0° |
|-----------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|
| Resortes        | 3 x 3            | 3 x 4            | 4 x 4            | 4 x 5            | 5 x 5            | 5 x 6            | 6 x 6            |
| C-40            | N/A              | N/A              | N/A              | N/A              | N/A              | N/A              | N/A              |
| C-52            | 2.46<br>0.48     | 2.48<br>0.46     | 2.5<br>0.44      | 2.52<br>0.42     | 2.54<br>0.4      | 2.56<br>0.38     | 2.58<br>0.36     |
| C-63            | 2.54<br>0.56     | 2.56<br>0.54     | 2.58<br>0.52     | 2.6<br>0.5       | 2.62<br>0.48     | 2.64<br>0.46     | 2.66<br>0.44     |
| C-75            | 2.62<br>0.64     | 2.64<br>0.62     | 2.66<br>0.6      | 2.68<br>0.58     | 2.7<br>0.56      | 2.72<br>0.54     | 2.74<br>0.52     |
| C-83            | 2.71<br>0.73     | 2.73<br>0.71     | 2.75<br>0.69     | 2.77<br>0.67     | 2.79<br>0.65     | 2.81<br>0.63     | 2.83<br>0.61     |
| C-92            | 2.89<br>0.86     | 2.91<br>0.84     | 2.93<br>0.82     | 2.95<br>0.8      | 2.97<br>0.78     | 2.99<br>0.76     | 3.01<br>0.74     |
| C-105           | 3.14<br>0.91     | 3.16<br>0.89     | 3.18<br>0.87     | 3.2<br>0.85      | 3.22<br>0.83     | 3.24<br>0.81     | 3.26<br>0.79     |
| C-125           | 4.24<br>1.2      | 4.26<br>1.18     | 4.28<br>1.16     | 4.3<br>1.14      | 4.32<br>1.12     | 4.34<br>1.1      | 4.36<br>1.08     |
| C-140           | 4.4<br>1.35      | 4.4<br>1.33      | 4.62<br>1.31     | 4.64<br>1.29     | 4.66<br>1.27     | 4.68<br>1.25     | 4.68<br>1.22     |
| C-160           | 4.74<br>1.77     | 4.76<br>1.75     | 4.78<br>1.73     | 4.8<br>1.71      | 4.82<br>1.69     | 4.82<br>1.67     | 4.84<br>1.65     |
| C-190           | 5.75<br>3.7      | 5.77<br>3.5      | 5.75<br>3.48     | 5.77<br>3.46     | 5.79<br>3.44     | 5.8<br>3.42      | 5.83<br>3.4      |
| C-210           | 8.25<br>4.8      | 8.4<br>4.6       | 8.42<br>4.58     | 8.44<br>4.56     | 8.46<br>4.54     | 8.48<br>4.52     | 8.5<br>4.5       |
| C-240           | 16.2<br>5.14     | 16.4<br>5.12     | 16.42<br>5.1     | 16.44<br>4.9     | 16.6<br>4.98     | 16.8<br>4.86     | 17<br>4.84       |
| C-270           | 17.6<br>6.28     | 17.8<br>6.26     | 17.6<br>6.24     | 17.8<br>6.2      | 18<br>6.18       | 18.2<br>6.16     | 18.4<br>6.14     |

\* (Tiempos a 80 psig)  
\* (80 psig supply)



TABLAS DE TORQUES Serie C / TORQUE TABLE C Series

Doble Acción / Double Action

| Modelo<br>Model | Suministro AIRE (psig) / Air Supply |          |          |          |          |          |          |          |          |          |
|-----------------|-------------------------------------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
|                 | 30                                  | 35       | 40       | 60       | 65       | 70       | 80       | 90       | 100      | 120      |
| C-40DA          | 42.5                                | 53.1     | 63.7     | 84.1     | 94.7     | 105.3    | 115.9    | 126.6    | 147.8    | 169.1    |
| C-52DA          | 70.8                                | 88.5     | 106.2    | 141.6    | 159.3    | 177.0    | 193.8    | 211.5    | 246.9    | 282.3    |
| C-63DA          | 129.2                               | 161.1    | 193.8    | 258.4    | 290.3    | 323.1    | 354.9    | 387.7    | 452.3    | 516.9    |
| C-75DA          | 177.9                               | 222.2    | 266.4    | 354.9    | 399.2    | 444.3    | 488.6    | 532.8    | 621.3    | 710.7    |
| C-83DA          | 277.9                               | 347.0    | 416.0    | 555.0    | 624.0    | 693.9    | 763.0    | 832.9    | 971.0    | 1,109.9  |
| C-92DA          | 399.2                               | 499.2    | 599.2    | 799.2    | 899.3    | 999.3    | 1,098.4  | 1,198.4  | 1,398.5  | 1,598.5  |
| C-105DA         | 585.1                               | 732.0    | 878.0    | 1,170.1  | 1,317.0  | 1,463.1  | 1,609.1  | 1,756.0  | 2,048.1  | 2,341.1  |
| C-125DA         | 887.7                               | 1,109.9  | 1,332.1  | 1,775.5  | 1,997.7  | 2,219.8  | 2,442.0  | 2,664.2  | 3,107.6  | 3,551.9  |
| C-140DA         | 1,513.5                             | 1,892.3  | 2,270.3  | 3,027.0  | 3,405.9  | 3,783.8  | 4,162.6  | 4,540.6  | 5,292.9  | 6,054.1  |
| C-160DA         | 2,354.4                             | 2,943.0  | 3,531.5  | 4,708.7  | 5,297.3  | 5,885.9  | 6,474.5  | 6,979.6  | 8,240.3  | 9,417.5  |
| C-190DA         | 3,767.0                             | 4,708.7  | 5,650.5  | 7,534.0  | 8,475.7  | 9,417.5  | 10,359.2 | 11,301.0 | 13,184.4 | 15,067.9 |
| C-210DA         | 4,708.7                             | 5,885.9  | 7,063.1  | 9,417.5  | 10,594.6 | 11,771.8 | 12,949.0 | 14,126.2 | 16,480.6 | 18,834.9 |
| C-240DA         | 6,810.8                             | 8,513.8  | 10,216.7 | 13,621.7 | 15,324.6 | 17,027.6 | 18,729.6 | 20,432.5 | 23,838.4 | 27,243.4 |
| C-270DA         | 10,352.1                            | 12,941.0 | 15,529.1 | 20,705.1 | 23,293.2 | 25,881.2 | 28,469.2 | 31,057.3 | 36,233.3 | 41,410.3 |

\*Unidades de Torque ( lbf in )

Simple Acción / Spring Return

| Modelo<br>Model | Número<br>Resortes<br>Qty<br>Springs | Suministro AIRE (psig) / Air Supply |                     |                       |                     |                       |                     |                       |                     |                       |                     |                       |                     |         |       | Resorte<br>Spring |              |       |
|-----------------|--------------------------------------|-------------------------------------|---------------------|-----------------------|---------------------|-----------------------|---------------------|-----------------------|---------------------|-----------------------|---------------------|-----------------------|---------------------|---------|-------|-------------------|--------------|-------|
|                 |                                      | 30                                  |                     | 40                    |                     | 60                    |                     | 80                    |                     | 90                    |                     | 100                   |                     | 120     |       | Inicio<br>Start   | Final<br>End |       |
|                 |                                      | Inicio<br>Start<br>0°               | Final<br>End<br>90° | Inicio<br>Start<br>0° | Final<br>End<br>90° | Inicio<br>Start<br>0° | Final<br>End<br>90° | Inicio<br>Start<br>0° | Final<br>End<br>90° | Inicio<br>Start<br>0° | Final<br>End<br>90° | Inicio<br>Start<br>0° | Final<br>End<br>90° |         |       |                   |              |       |
| C52SR           | 5                                    | 50.5                                | 33.6                | 67.3                  | 50.5                | 0.0                   | 0.0                 | 0.0                   | 0.0                 | 0.0                   | 0.0                 | 0.0                   | 0.0                 | 0.0     | 0.0   | 0.0               | 54.9         | 38.1  |
|                 | 6                                    | 43.4                                | 22.1                | 61.1                  | 39.8                | 96.5                  | 75.2                | 0.0                   | 0.0                 | 0.0                   | 0.0                 | 0.0                   | 0.0                 | 0.0     | 0.0   | 0.0               | 65.5         | 44.3  |
|                 | 7                                    | 35.4                                | 11.5                | 53.1                  | 29.2                | 86.7                  | 64.6                | 123.9                 | 92.1                | 0.0                   | 0.0                 | 0.0                   | 0.0                 | 0.0     | 0.0   | 0.0               | 76.1         | 52.2  |
|                 | 8                                    | 0.0                                 | 0.0                 | 46.0                  | 17.7                | 81.4                  | 53.1                | 116.8                 | 80.5                | 152.2                 | 124.8               | 0.0                   | 0.0                 | 0.0     | 0.0   | 0.0               | 87.6         | 59.3  |
|                 | 9                                    | 0.0                                 | 0.0                 | 38.1                  | 7.1                 | 73.5                  | 42.5                | 108.9                 | 69.9                | 144.3                 | 113.3               | 179.7                 | 148.7               | 0.0     | 0.0   | 0.0               | 98.2         | 67.3  |
|                 | 10                                   | 0.0                                 | 0.0                 | 0.0                   | 0.0                 | 65.5                  | 31.9                | 101.8                 | 59.3                | 137.2                 | 102.7               | 172.6                 | 138.1               | 0.0     | 0.0   | 0.0               | 109.8        | 75.2  |
| C63SR           | 5                                    | 100.9                               | 68.2                | 132.8                 | 100.9               | 197.4                 | 131.9               | 0.0                   | 0.0                 | 0.0                   | 0.0                 | 0.0                   | 0.0                 | 0.0     | 0.0   | 0.0               | 92.1         | 60.2  |
|                 | 6                                    | 89.4                                | 50.5                | 120.4                 | 82.3                | 185.0                 | 146.9               | 250.5                 | 211.5               | 0.0                   | 0.0                 | 0.0                   | 0.0                 | 0.0     | 0.0   | 0.0               | 110.6        | 72.6  |
|                 | 7                                    | 76.1                                | 31.9                | 110.6                 | 63.7                | 172.6                 | 128.3               | 237.2                 | 193.8               | 0.0                   | 0.0                 | 0.0                   | 0.0                 | 0.0     | 0.0   | 0.0               | 129.2        | 85.0  |
|                 | 8                                    | 0.0                                 | 0.0                 | 96.5                  | 45.1                | 161.1                 | 109.8               | 225.7                 | 175.2               | 290.3                 | 239.0               | 354.9                 | 303.6               | 0.0     | 0.0   | 0.0               | 147.8        | 96.5  |
|                 | 9                                    | 0.0                                 | 0.0                 | 0.0                   | 0.0                 | 148.7                 | 92.1                | 213.3                 | 156.7               | 277.9                 | 220.4               | 342.5                 | 285.0               | 0.0     | 0.0   | 0.0               | 166.4        | 108.9 |
|                 | 10                                   | 0.0                                 | 0.0                 | 0.0                   | 0.0                 | 0.0                   | 0.0                 | 201.8                 | 138.1               | 265.5                 | 201.8               | 330.1                 | 266.4               | 395.6   | 331.0 | 0.0               | 185.0        | 121.3 |
| C75SR           | 5                                    | 128.3                               | 93.8                | 171.7                 | 137.2               | 261.1                 | 227.5               | 0.0                   | 0.0                 | 0.0                   | 0.0                 | 0.0                   | 0.0                 | 0.0     | 0.0   | 0.0               | 128.3        | 92.9  |
|                 | 6                                    | 109.8                               | 67.3                | 153.1                 | 111.5               | 242.5                 | 200.9               | 331.9                 | 290.3               | 0.0                   | 0.0                 | 0.0                   | 0.0                 | 0.0     | 0.0   | 0.0               | 154.0        | 112.4 |
|                 | 7                                    | 92.1                                | 42.5                | 134.5                 | 85.9                | 223.9                 | 176.1               | 313.3                 | 264.6               | 0.0                   | 0.0                 | 0.0                   | 0.0                 | 0.0     | 0.0   | 0.0               | 179.7        | 131.0 |
|                 | 8                                    | 0.0                                 | 0.0                 | 115.9                 | 60.2                | 204.5                 | 149.6               | 292.1                 | 239.0               | 382.4                 | 327.5               | 471.8                 | 416.0               | 0.0     | 0.0   | 0.0               | 205.3        | 167.3 |
|                 | 9                                    | 0.0                                 | 0.0                 | 0.0                   | 0.0                 | 185.9                 | 124.8               | 276.2                 | 213.3               | 363.8                 | 301.8               | 453.2                 | 391.2               | 0.0     | 0.0   | 0.0               | 231.0        | 168.2 |
|                 | 10                                   | 0.0                                 | 0.0                 | 0.0                   | 0.0                 | 168.2                 | 98.2                | 247.8                 | 187.6               | 345.2                 | 276.2               | 434.6                 | 364.7               | 523.1   | 453.2 | 256.7             | 186.8        |       |
| C83SR           | 5                                    | 206.2                               | 142.5               | 275.3                 | 212.4               | 414.2                 | 351.4               | 0.0                   | 0.0                 | 0.0                   | 0.0                 | 0.0                   | 0.0                 | 0.0     | 0.0   | 0.0               | 203.6        | 139.8 |
|                 | 6                                    | 177.9                               | 101.8               | 247.8                 | 170.8               | 386.8                 | 310.7               | 525.7                 | 448.7               | 0.0                   | 0.0                 | 0.0                   | 0.0                 | 0.0     | 0.0   | 0.0               | 244.3        | 168.2 |
|                 | 7                                    | 150.5                               | 61.1                | 219.5                 | 131.0               | 358.5                 | 270.0               | 497.4                 | 408.9               | 0.0                   | 0.0                 | 0.0                   | 0.0                 | 0.0     | 0.0   | 0.0               | 285.0        | 195.6 |
|                 | 8                                    | 0.0                                 | 0.0                 | 192.1                 | 89.4                | 331.0                 | 228.4               | 470.0                 | 367.3               | 608.9                 | 506.3               | 747.9                 | 645.2               | 0.0     | 0.0   | 0.0               | 343.4        | 223.9 |
|                 | 9                                    | 0.0                                 | 0.0                 | 0.0                   | 0.0                 | 302.7                 | 188.5               | 441.7                 | 327.5               | 580.6                 | 465.6               | 718.7                 | 604.5               | 0.0     | 0.0   | 0.0               | 366.4        | 252.3 |
|                 | 10                                   | 0.0                                 | 0.0                 | 0.0                   | 0.0                 | 274.4                 | 146.9               | 413.3                 | 285.9               | 552.3                 | 424.8               | 691.3                 | 563.8               | 830.2   | 701.9 | 407.1             | 279.7        |       |
| C92SR           | 5                                    | 293.0                               | 194.7               | 391.2                 | 293.9               | 591.2                 | 494.8               | 0.0                   | 0.0                 | 0.0                   | 0.0                 | 0.0                   | 0.0                 | 0.0     | 0.0   | 0.0               | 304.5        | 206.2 |
|                 | 6                                    | 251.4                               | 134.5               | 349.6                 | 233.7               | 550.5                 | 433.7               | 750.6                 | 633.7               | 0.0                   | 0.0                 | 0.0                   | 0.0                 | 0.0     | 0.0   | 0.0               | 364.7        | 247.8 |
|                 | 7                                    | 210.7                               | 72.6                | 308.9                 | 171.7               | 508.9                 | 372.6               | 709.9                 | 572.7               | 0.0                   | 0.0                 | 0.0                   | 0.0                 | 0.0     | 0.0   | 0.0               | 425.7        | 289.4 |
|                 | 8                                    | 0.0                                 | 0.0                 | 277.0                 | 111.5               | 468.2                 | 311.6               | 668.3                 | 512.5               | 868.3                 | 712.5               | 1,068.3               | 911.7               | 0.0     | 0.0   | 0.0               | 486.8        | 330.1 |
|                 | 9                                    | 0.0                                 | 0.0                 | 0.0                   | 0.0                 | 426.6                 | 251.4               | 627.5                 | 451.4               | 827.6                 | 651.4               | 1,026.7               | 850.6               | 0.0     | 0.0   | 0.0               | 547.9        | 371.7 |
|                 | 10                                   | 0.0                                 | 0.0                 | 0.0                   | 0.0                 | 385.9                 | 190.3               | 585.9                 | 390.3               | 786.0                 | 590.4               | 985.1                 | 789.5               | 1,186.0 | 989.5 | 608.1             | 413.3        |       |

\*Unidades de Torque ( lbf in )





# ACTUADORES NEUMÁTICOS PNEUMATIC ACTUATORS

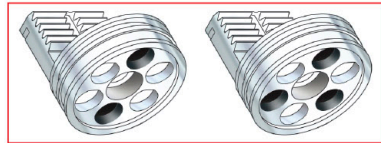
## Simple Acción / Spring Return

| Modelo<br>Model | Número<br>Resortes<br>Qty<br>Springs | Suministro AIRE (psig) / Air Supply |                     |                       |                     |                       |                     |                       |                     |                       |                     |                       |                     |                        |                    | Resorte<br>Spring      |                    |          |       |
|-----------------|--------------------------------------|-------------------------------------|---------------------|-----------------------|---------------------|-----------------------|---------------------|-----------------------|---------------------|-----------------------|---------------------|-----------------------|---------------------|------------------------|--------------------|------------------------|--------------------|----------|-------|
|                 |                                      | 30                                  |                     | 40                    |                     | 60                    |                     | 80                    |                     | 90                    |                     | 100                   |                     | 120                    |                    | Inicio<br>Start<br>90° | Final<br>End<br>0° |          |       |
|                 |                                      | Inicio<br>Start<br>0°               | Final<br>End<br>90° | Inicio<br>Start<br>0° | Final<br>End<br>90° | Inicio<br>Start<br>0° | Final<br>End<br>90° | Inicio<br>Start<br>0° | Final<br>End<br>90° | Inicio<br>Start<br>0° | Final<br>End<br>90° | Inicio<br>Start<br>0° | Final<br>End<br>90° | Inicio<br>Start<br>90° | Final<br>End<br>0° |                        |                    |          |       |
| C105SR          | 5                                    | 451.4                               | 295.6               | 597.4                 | 441.7               | 890.4                 | 734.6               |                       |                     |                       |                     |                       |                     |                        |                    |                        | 435.5              | 279.7    |       |
|                 | 6                                    | 395.6                               | 208.0               | 540.8                 | 354.0               | 833.8                 | 647.9               | 1,126.7               | 940.0               | 0.0                   | 0.0                 | 0.0                   | 0.0                 | 0.0                    | 0.0                | 0.0                    | 523.1              | 336.3    |       |
|                 | 7                                    | 339.9                               | 121.3               | 485.9                 | 268.2               | 778.0                 | 561.2               | 1,071.0               | 853.2               | 0.0                   | 0.0                 | 0.0                   | 0.0                 | 0.0                    | 0.0                | 0.0                    | 609.8              | 392.1    |       |
|                 | 8                                    | 0.0                                 | 0.0                 | 429.3                 | 180.6               | 722.2                 | 473.5               | 1,015.2               | 765.6               | 1,307.3               | 1,060.3             | 1,600.3               | 1,351.5             | 0.0                    | 0.0                | 0.0                    | 0.0                | 696.6    | 447.9 |
|                 | 9                                    | 0.0                                 | 0.0                 | 0.0                   | 0.0                 | 666.5                 | 386.8               | 959.4                 | 679.8               | 1,252.4               | 971.8               | 1,544.5               | 1,264.8             | 0.0                    | 0.0                | 0.0                    | 0.0                | 784.2    | 503.6 |
|                 | 10                                   | 0.0                                 | 0.0                 | 0.0                   | 0.0                 | 609.8                 | 295.6               | 609.8                 | 295.6               | 902.8                 | 588.6               | 1,195.8               | 881.6               | 1,488.7                | 1,173.6            | 1,780.8                | 1,466.6            | 870.9    | 560.3 |
|                 | 11                                   |                                     |                     |                       |                     |                       |                     |                       | 847.0               | 504.5                 | 1,139.1             | 797.5                 | 1,432.1             | 1,089.6                | 1,724.2            | 1,382.5                | 958.6              | 616.0    |       |
| 12              |                                      |                                     |                     |                       |                     |                       |                     | 791.3                 | 420.4               | 1,084.2               | 713.4               | 1,376.3               | 1,005.5             | 1,669.3                | 1,298.4            | 1,045.3                | 671.8              |          |       |
| C125SR          | 5                                    | 646.1                               | 416.0               | 867.4                 | 637.3               | 1,309.9               | 1,079.8             |                       |                     |                       |                     |                       |                     |                        |                    |                        | 699.2              | 460.3    |       |
|                 | 6                                    | 557.6                               | 274.4               | 778.9                 | 495.7               | 1,221.4               | 947.1               | 1,664.0               | 1,389.6             |                       |                     |                       |                     |                        |                    |                        | 832.0              | 557.6    |       |
|                 | 7                                    | 460.3                               | 132.8               | 681.5                 | 354.0               | 1,124.1               | 796.6               | 1,575.5               | 1,248.0             |                       |                     |                       |                     |                        |                    |                        | 973.6              | 646.1    |       |
|                 | 8                                    |                                     |                     | 593.0                 | 221.3               | 1,035.6               | 663.8               | 1,478.1               | 1,106.4             | 1,920.7               | 1,557.8             | 2,372.1               | 2,000.3             |                        |                    |                        | 1,106.4            | 743.5    |       |
|                 | 9                                    |                                     |                     |                       |                     | 947.1                 | 522.2               | 1,389.6               | 964.8               | 1,832.2               | 1,407.3             | 2,274.7               | 1,858.7             |                        |                    |                        | 1,248.0            | 832.0    |       |
|                 | 10                                   |                                     |                     |                       |                     | 849.7                 | 389.4               | 1,292.2               | 832.0               | 1,734.8               | 1,274.5             | 2,186.2               | 1,717.1             | 2,628.7                | 2,168.5            | 2,168.5                | 1,389.6            | 929.4    |       |
|                 | 11                                   |                                     |                     |                       |                     |                       |                     |                       | 1,203.7             | 690.4                 | 1,646.3             | 1,132.9               | 2,088.8             | 1,575.5                | 2,531.4            | 2,018.0                | 1,531.2            | 1,017.9  |       |
| 12              |                                      |                                     |                     |                       |                     |                       |                     | 1,106.4               | 557.6               | 1,557.8               | 1,000.2             | 2,000.3               | 1,442.7             | 2,442.9                | 1,885.3            | 1,664.0                | 1,106.4            |          |       |
| C140SR          | 5                                    | 1,132.9                             | 752.3               | 1,513.5               | 1,124.1             | 2,265.9               | 1,885.3             |                       |                     |                       |                     |                       |                     |                        |                    |                        | 1,141.8            | 761.2    |       |
|                 | 6                                    | 982.5                               | 522.2               | 1,363.1               | 902.8               | 2,115.4               | 1,655.1             | 2,876.6               | 2,416.3             |                       |                     |                       |                     |                        |                    |                        | 1,371.9            | 911.7    |       |
|                 | 7                                    | 832.0                               | 292.1               | 1,212.6               | 672.7               | 1,964.9               | 1,433.9             | 2,726.1               | 2,186.2             |                       |                     |                       |                     |                        |                    |                        | 1,602.0            | 1,062.1  |       |
|                 | 8                                    |                                     |                     | 1,062.1               | 442.6               | 1,814.5               | 1,203.7             | 2,575.6               | 1,956.1             | 3,328.0               | 2,717.3             | 4,089.2               | 3,469.6             |                        |                    |                        | 1,823.3            | 1,212.6  |       |
|                 | 9                                    |                                     |                     |                       |                     | 1,655.1               | 973.6               | 2,416.3               | 1,734.8             | 3,168.7               | 2,487.1             | 3,929.8               | 3,248.3             |                        |                    |                        | 2,053.4            | 1,371.9  |       |
|                 | 10                                   |                                     |                     |                       |                     | 1,504.7               | 743.5               | 2,265.9               | 1,495.8             | 3,018.2               | 2,257.0             | 3,779.4               | 3,009.3             | 4,531.7                | 3,770.5            | 2,283.6                | 1,522.4            |          |       |
|                 | 11                                   |                                     |                     |                       |                     |                       |                     |                       | 2,106.5             | 1,265.7               | 2,867.7             | 2,026.9               | 3,620.1             | 2,779.2                | 4,381.2            | 3,540.4                | 2,513.7            | 1,672.8  |       |
| 12              |                                      |                                     |                     |                       |                     |                       |                     | 1,956.1               | 1,044.4             | 2,717.3               | 1,796.8             | 3,469.6               | 2,557.9             | 4,230.8                | 3,310.3            | 2,743.8                | 1,823.3            |          |       |
| C160SR          | 5                                    | 1,708.2                             | 1,097.5             | 2,292.4               | 1,690.5             | 3,469.6               | 2,867.7             |                       |                     |                       |                     |                       |                     |                        |                    |                        | 1,841.0            | 1,239.1  |       |
|                 | 6                                    | 1,460.4                             | 734.6               | 2,053.4               | 1,318.8             | 3,230.6               | 2,496.0             | 4,407.8               | 3,673.2             |                       |                     |                       |                     |                        |                    |                        | 2,212.8            | 1,487.0  |       |
|                 | 7                                    | 1,212.6                             | 362.9               | 1,796.8               | 947.1               | 2,973.9               | 2,124.2             | 4,151.1               | 3,301.4             |                       |                     |                       |                     |                        |                    |                        | 2,584.5            | 1,734.8  |       |
|                 | 8                                    |                                     |                     | 1,557.8               | 584.2               | 2,735.0               | 1,761.3             | 3,912.1               | 2,097.7             | 5,089.3               | 4,115.7             | 6,266.5               | 5,292.9             |                        |                    |                        | 2,947.4            | 1,973.8  |       |
|                 | 9                                    |                                     |                     |                       |                     | 2,478.3               | 1,389.6             | 3,655.5               | 2,566.8             | 4,832.6               | 3,744.0             | 6,009.8               | 4,921.2             |                        |                    |                        | 3,319.1            | 2,221.6  |       |
|                 | 10                                   |                                     |                     |                       |                     | 2,239.3               | 1,017.9             | 3,416.5               | 2,195.0             | 4,593.7               | 3,372.2             | 5,770.9               | 4,549.4             | 6,948.0                | 5,726.6            | 3,690.9                | 2,469.4            |          |       |
|                 | 11                                   |                                     |                     |                       |                     |                       |                     |                       | 3,168.7             | 1,832.2               | 4,345.8             | 3,009.3               | 5,523.0             | 4,186.5                | 6,700.2            | 5,363.7                | 4,053.8            | 2,717.3  |       |
| 12              |                                      |                                     |                     |                       |                     |                       |                     | 2,920.8               | 1,460.4             | 4,098.0               | 2,637.6             | 5,275.2               | 3,814.8             | 6,452.4                | 4,992.0            | 4,425.5                | 2,965.1            |          |       |
| C190SR          | 5                                    | 2,938.5                             | 1,964.9             | 3,876.7               | 2,912.0             | 5,762.0               | 4,797.2             |                       |                     |                       |                     |                       |                     |                        |                    |                        | 2,735.0            | 1,770.2  |       |
|                 | 6                                    | 2,584.5                             | 1,425.0             | 3,522.7               | 2,363.2             | 5,408.0               | 4,248.5             | 7,293.2               | 6,133.7             |                       |                     |                       |                     |                        |                    |                        | 3,283.7            | 2,124.2  |       |
|                 | 7                                    | 2,230.5                             | 876.2               | 3,168.7               | 1,814.5             | 5,053.9               | 3,699.7             | 6,939.2               | 5,585.0             |                       |                     |                       |                     |                        |                    |                        | 3,832.5            | 2,478.3  |       |
|                 | 8                                    |                                     |                     | 2,814.6               | 1,265.7             | 4,699.9               | 3,151.0             | 6,585.1               | 5,036.2             | 8,470.4               | 6,921.5             | 10,346.8              | 8,806.7             |                        |                    |                        | 4,381.2            | 2,832.3  |       |
|                 | 9                                    |                                     |                     |                       |                     | 4,345.8               | 2,611.0             | 6,231.1               | 4,487.5             | 8,116.4               | 6,372.7             | 10,001.6              | 8,258.0             |                        |                    |                        | 4,930.0            | 3,186.4  |       |
|                 | 10                                   |                                     |                     |                       |                     | 3,991.8               | 2,062.3             | 5,877.1               | 3,947.5             | 7,762.3               | 5,824.0             | 9,647.6               | 7,709.2             | 11,524.0               | 9,594.5            | 5,469.9                | 3,540.4            |          |       |
|                 | 11                                   |                                     |                     |                       |                     |                       |                     |                       | 5,523.0             | 3,398.8               | 7,408.3             | 5,284.0               | 9,293.6             | 7,160.5                | 11,178.8           | 9,045.7                | 6,018.7            | 3,894.4  |       |
| 12              |                                      |                                     |                     |                       |                     |                       |                     | 5,169.0               | 2,850.0             | 7,054.2               | 4,735.3             | 8,939.5               | 6,620.5             | 10,824.8               | 8,497.0            | 6,567.4                | 4,248.5            |          |       |
| C210SR          | 5                                    | 3,451.9                             | 2,522.5             | 4,629.1               | 3,699.7             | 6,983.4               | 6,054.1             |                       |                     |                       |                     |                       |                     |                        |                    |                        | 3,363.4            | 2,434.0  |       |
|                 | 6                                    | 2,965.1                             | 1,849.9             | 4,142.3               | 3,027.0             | 6,496.6               | 5,381.4             | 8,851.0               | 7,735.8             |                       |                     |                       |                     |                        |                    |                        | 4,018.4            | 2,920.8  |       |
|                 | 7                                    | 2,478.3                             | 1,177.2             | 3,655.5               | 2,354.4             | 6,009.8               | 4,708.7             | 8,364.2               | 7,063.1             |                       |                     |                       |                     |                        |                    |                        | 4,708.7            | 3,407.6  |       |
|                 | 8                                    |                                     |                     | 3,168.7               | 1,681.7             | 5,523.0               | 4,036.1             | 7,877.4               | 6,390.4             | 10,231.8              | 8,744.8             | 12,586.1              | 11,099.2            |                        |                    |                        | 5,381.4            | 3,894.4  |       |
|                 | 9                                    |                                     |                     |                       |                     | 5,036.2               | 3,363.4             | 7,390.6               | 5,717.7             | 9,745.0               | 8,072.1             | 12,099.3              | 10,426.5            |                        |                    |                        | 6,054.1            | 4,381.2  |       |
|                 | 10                                   |                                     |                     |                       |                     | 4,549.4               | 2,690.7             | 6,903.8               | 5,045.1             | 9,399.4               | 7,399.4             | 11,612.5              | 9,753.8             | 13,966.9               | 12,108.2           | 6,726.8                | 4,868.1            |          |       |
|                 | 11                                   |                                     |                     |                       |                     |                       |                     |                       | 6,417.0             | 4,372.4               | 8,771.3             | 6,726.8               | 11,125.7            | 9,081.1                | 13,480.1           | 11,435.5               | 7,399.4            | 5,354.9  |       |
| 12              |                                      |                                     |                     |                       |                     |                       |                     | 5,930.2               | 3,699.7             | 8,284.5               | 6,054.1             | 10,638.9              | 8,408.5             | 12,993.3               | 10,762.8           | 8,072.1                | 5,841.7            |          |       |
| C240SR          | 5                                    | 4,885.8                             | 3,620.1             | 6,585.1               | 5,310.6             | 9,992.8               | 8,718.2             |                       |                     |                       |                     |                       |                     |                        |                    |                        | 4,903.5            | 3,628.9  |       |
|                 | 6                                    | 4,160.0                             | 2,628.7             | 5,859.4               | 4,328.1             | 9,267.0               | 7,735.8             | 12,674.6              | 11,143.4            |                       |                     |                       |                     |                        |                    |                        | 5,885.9            | 4,354.7  |       |
|                 | 7                                    | 3,434.2                             | 1,655.1             | 5,133.6               | 3,354.5             | 8,532.4               | 6,762.2             | 11,940.0              | 10,169.8            |                       |                     |                       |                     |                        |                    |                        | 6,859.5            | 5,089.3  |       |
|                 | 8                                    |                                     |                     | 4,407.8               | 2,549.1             | 7,815.4               | 5,779.7             | 11,214.2              | 9,178.5             | 14,621.9              | 12,586.1            | 18,029.5              | 15,993.8            |                        |                    |                        | 7,842.0            | 5,806.3  |       |
|                 | 9                                    |                                     |                     |                       |                     | 7,080.8               | 4,797.2             | 10,488.4              | 8,196.0             | 13,887.2              | 11,603.7            | 17,294.9              | 15,011.3            |                        |                    |                        | 8,833.3            | 6,540.9  |       |
|                 | 10                                   |                                     |                     |                       |                     | 6,355.0               | 3,814.8             | 9,762.7               | 7,222.4             | 13,170.3              | 10,630.1            | 16,569.1              | 14,037.7            | 19,976.7               | 17,436.5           | 9,806.9                | 7,266.7            |          |       |
|                 | 11                                   |                                     |                     |                       |                     |                       |                     |                       | 9,036.9             | 6,240.0               | 12,444.5            | 9,647.6               | 15,852.1            | 13,046.4               | 19,259.8           | 16,454.0               | 10,789.4           | 7,992.5  |       |
| 12              |                                      |                                     |                     |                       |                     |                       |                     | 8,311.1               | 5,257.5             | 11,709.9              | 8,665.1             | 15,117.5              | 12,063.9            | 18,525.1               | 15,471.5           | 11,771.8               | 8,718.2            |          |       |
| C270SR          | 5                                    | 7,992.5                             | 5,974.4             | 10,576.9              | 8,567.8             | 15,745.9              | 13,736.8            |                       |                     |                       |                     |                       |                     |                        |                    |                        | 6,965.7            | 4,956.6  |       |
|                 | 6                                    | 6,992.3                             | 4,593.7             | 9,585.6               | 7,178.2             | 14,754.6              | 12,356.0            | 19,932.5              | 17,533.8            |                       |                     |                       |                     |                        |                    |                        | 8,346.5            | 5,947.9  |       |
|                 | 7                                    | 6,009.8                             | 3,195.2             | 8,603.2               | 5,788.6             | 13,772.2              | 10,957.5            | 18,950.0              | 16,135.4            |                       |                     |                       |                     |                        |                    |                        | 9,745.0            | 6,930.3  |       |
|                 | 8                                    |                                     |                     | 7,611.9               | 4,398.9             | 12,780.8              | 9,567.9             | 17,958.7              | 14,745.8            | 23,136.5              | 19,932.5            | 28,314.3              | 25,101.4            |                        |                    |                        | 11,134.6           | 7,921.6  |       |
|                 | 9                                    |                                     |                     |                       |                     | 11,789.5              | 8,169.5             | 16,967.4              | 13,356.2            | 22,145.2              | 18,534.0            | 27,323.0              | 23,703.0            |                        |                    |                        | 12,533.0           | 8,913.0  |       |
|                 | 10                                   |                                     |                     |                       |                     | 10,798.2              | 6,788.7             | 15,976.1              | 11,966.6            | 21,153.9              | 17,144.4            | 26,322.9              | 22,313.4            | 31,509.6               | 27,500.1           | 13,913.8               | 9,904.3            |          |       |
|                 | 11                                   |                                     |                     |                       |                     |                       |                     |                       | 14,984.7            | 10,568.1              | 20,162.6            | 15,745.9              | 25,331.6            | 20,923.8               | 30,518.2           | 26,101.6               | 15,312.2           | 10,895.6 |       |
| 12              |                                      |                                     |                     |                       |                     |                       |                     | 14,002.3              | 9,178.5             | 19,180.1              | 14,365.2            | 24,349.1              | 19,534.2            | 29,526.9               | 24,712.0           | 16,701.8               | 11,878.0           |          |       |

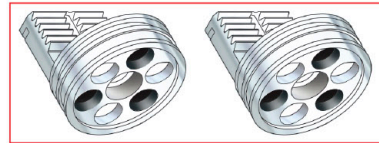
\*Unidades de Torque ( lbf in )



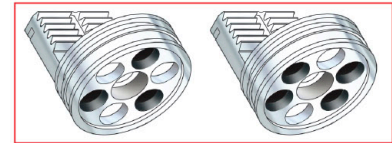
**Montaje de resortes**  
*Spring mounting*



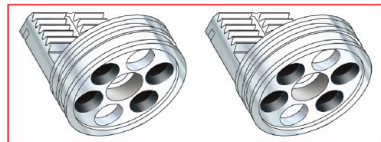
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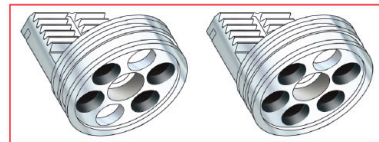
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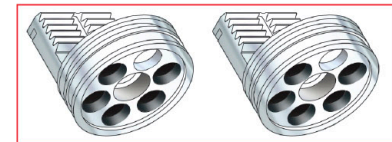
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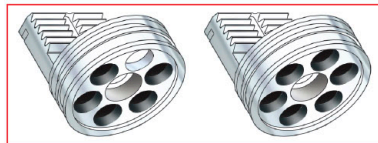
SR-8



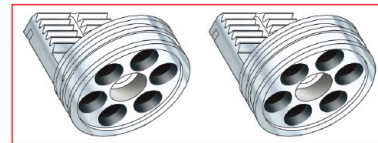
SR-9



SR-10



SR-11



SR-12

**RECOMENDACIONES DE OPERACIÓN**

Dada la naturaleza de diseño y fabricación, los actuadores neumáticos Rhino Automation Europe tienen la capacidad de operar hasta 1,000,000 de ciclos sin requerir un mantenimiento correctivo bajo condiciones normales de operación. Por lo que se recomienda operar siempre con aire seco con la ayuda de filtros que limpien las impurezas y humedad.

Si se requiere un mantenimiento mayor en cambio de sellos y/o resortes favor de solicitar el manual de mantenimiento o contactar su representante de ventas para evaluar la acción necesaria directamente en planta.

**Recomendaciones:**

- Realizar revisiones periódicas a acoplamientos, garantizando el ajuste de tornillería
- Revisar que el suministro de aire se encuentre libre de humedad y partículas que puedan afectar su operación
- Cuando el actuador sea simple acción y amerite cambio de resortes por el tiempo de vida de los mismos, reemplazar en juegos completos.

**OPERATIONAL GUIDE**

Given the nature of design and manufacturing pneumatic actuators Rhino Automation Europe have the ability to operate up to 1,000,000 cycles without requiring corrective maintenance under normal operating conditions. So it is recommended to always operate with dry air with the help of filters to clean the impurities and moisture.

If more maintenance is required instead of seals and / or springs please request the maintenance manual or contact your sales representative to assess the necessary action directly on the factory.

**Recommendations:**

- Conduct periodic reviews to links, ensuring adjustment screws
- Check that the air supply free of moisture and particles that may affect its operation be
- When the actuator is spring return and the lifetime of springs are finished, replace in complete sets