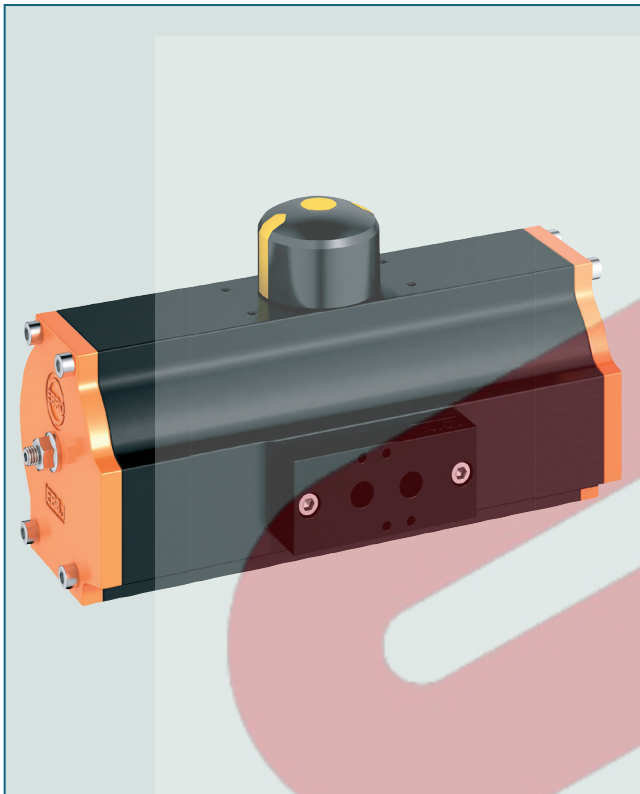


# PNEUMATIC ACTUATOR EB-SYD, DOUBLE ACTING



The double acting version of this series is available in 13 sizes, constructed to the scotch-yoke principle.

## TECHNICAL DATA

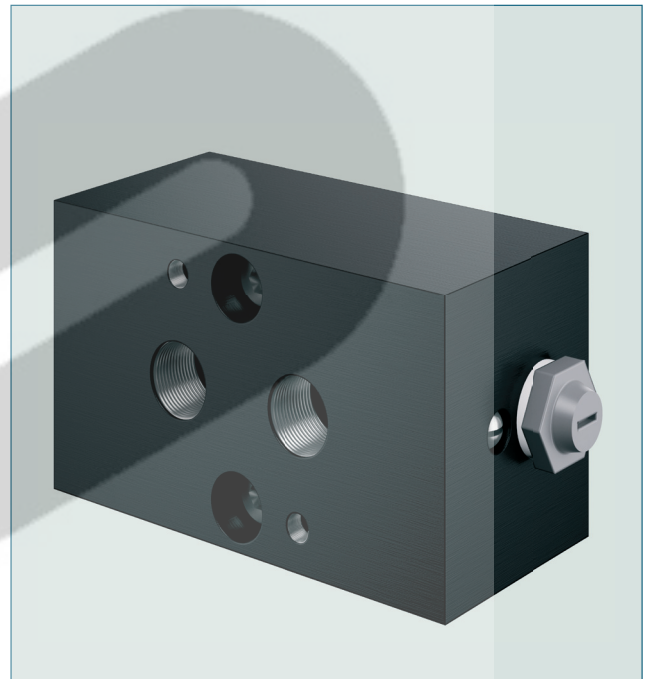
|                                             |                                                                                                                                                                                                                                                                                                                                                                                          |
|---------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Torque:                                     | 27 - 9768 Nm<br>(supply pressure of 6 bar)                                                                                                                                                                                                                                                                                                                                               |
| Limit of travel:                            | exactly adjustable between $-8^{\circ}/+3^{\circ}$                                                                                                                                                                                                                                                                                                                                       |
| Limit switches and solenoid valve mounting: | VDI / VDE 3845                                                                                                                                                                                                                                                                                                                                                                           |
| Supply pressure:                            | min. 2,5 bar, max. 8 bar                                                                                                                                                                                                                                                                                                                                                                 |
| Supply quality:                             | Filtered compressed air dry or lubricated.<br>The pressure condensation point in accordance with (ISO 8573-1:2010, Class 3) has to be $\geq -20^{\circ}\text{C}$ or $10^{\circ}\text{C}$ under ambient temperature.<br>The maximum particle size in accordance with (ISO 8573-1:2010, Class 5) should not exceed $40\text{ }\mu\text{m}$ .<br>For cycles $\geq 4$ /min please lubricate. |
| Temperature range:                          | $-20^{\circ}\text{C}$ to $+80^{\circ}\text{C}$ (standard)<br>$-40^{\circ}\text{C}$ to $+80^{\circ}\text{C}$ (low temperature)<br>$-15^{\circ}\text{C}$ to $+120^{\circ}\text{C}$ (high temperature)                                                                                                                                                                                      |
| Valve interface:                            | EN ISO 5211                                                                                                                                                                                                                                                                                                                                                                              |
| Actuator cylinder:                          | Anodized aluminium,<br>Other coatings upon request.                                                                                                                                                                                                                                                                                                                                      |

## FEATURES

- Maintenance-free
- Suitable for all  $\frac{1}{4}$  turn valves
- Blow-out proofed shaft
- Torques in agreement with EN ISO 5211
- Optical position indicator with integrated operator for limit switches
- All fasteners made of stainless steel
- SIL 2 (SIL 3 as redundant system) acc. to IEC 61508

## KEY BENEFITS

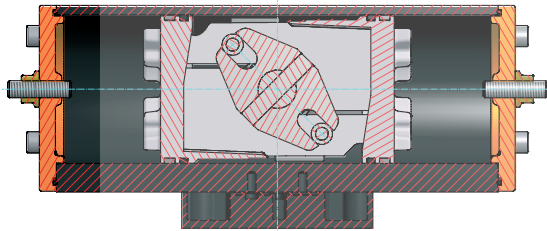
- High opening- and closing- torques provided by scotch-yoke concept
- Ideal sliding properties provided by low friction multiple piston guides
- Operational safety and long service life assured by precise machining of parts
- Low air consumption
- ATEX: EX II 2 GD c Tx



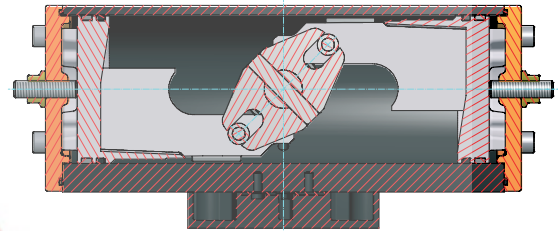
The EBRO Speed Control block allows the adjustment of closing/opening times up to 60 sec. (depending on actuator size). It can be mounted directly onto the actuator.

# PNEUMATIC ACTUATOR EB-SYD, DOUBLE ACTING

## FUNCTION



Open



Close

When the left control connection is pressurized, the pistons are pushed together with the yoke turning counter-clockwise to open the valve. When the right control connection is pressurized,

the yoke turns clockwise to close the valve.

The stroke of the piston can be limited by adjusting the screws located in the end covers.

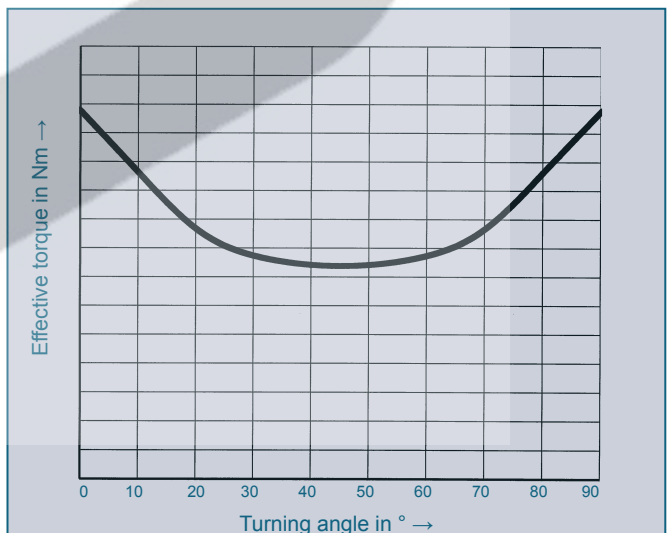
## TORQUE (Nm)

| Type    | Control pressure |       |         |       |         |       |         |       |       |       |
|---------|------------------|-------|---------|-------|---------|-------|---------|-------|-------|-------|
|         | 2,5 bar          | 3 bar | 3,5 bar | 4 bar | 4,5 bar | 5 bar | 5,5 bar | 6 bar | 7 bar | 8 bar |
| EB 4.1  | 11               | 13    | 16      | 18    | 20      | 22    | 25      | 27    | 31    | 36    |
| EB 5.1  | 32               | 38    | 44      | 51    | 57      | 63    | 70      | 76    | 89    | 101   |
| EB 6.1  | 65               | 78    | 91      | 104   | 117     | 130   | 143     | 156   | 182   | 208   |
| EB 8.1  | 104              | 125   | 146     | 166   | 187     | 208   | 229     | 250   | 292   | 333   |
| EB 9.1  | 157              | 189   | 220     | 252   | 283     | 315   | 346     | 378   | 441   | 504   |
| EB 10.1 | 220              | 265   | 309     | 353   | 397     | 441   | 485     | 530   | 618   | 706   |
| EB 12.1 | 381              | 457   | 534     | 610   | 686     | 762   | 839     | 935   | 1067  | 1220  |
| EB 14.1 | 557              | 668   | 780     | 891   | 1002    | 1114  | 1226    | 1337  | 1560  | 1782  |
| EB 16.1 | 846              | 1011  | 1180    | 1348  | 1517    | 1685  | 1854    | 2022  | 2359  | 2696  |
| EB 18.1 | 1098             | 1317  | 1537    | 1756  | 1976    | 2195  | 2415    | 2634  | 3073  | 3512  |
| EB 20.1 | 1541             | 1850  | 2158    | 2466  | 2775    | 3082  | 3391    | 3700  | 4316  | 4932  |
| EB 22.1 | 2125             | 2550  | 2975    | 3400  | 3825    | 4250  | 4675    | 5100  | 5950  | 6800  |
| EB 26.1 | 4070             | 4884  | 5698    | 6512  | 7326    | 8140  | 8954    | 9768  | 11396 | 13024 |

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The torques shown in the diagram are measured values. The required size of the actuator can be established by comparing the values of the actuator with the required torque of the valve.

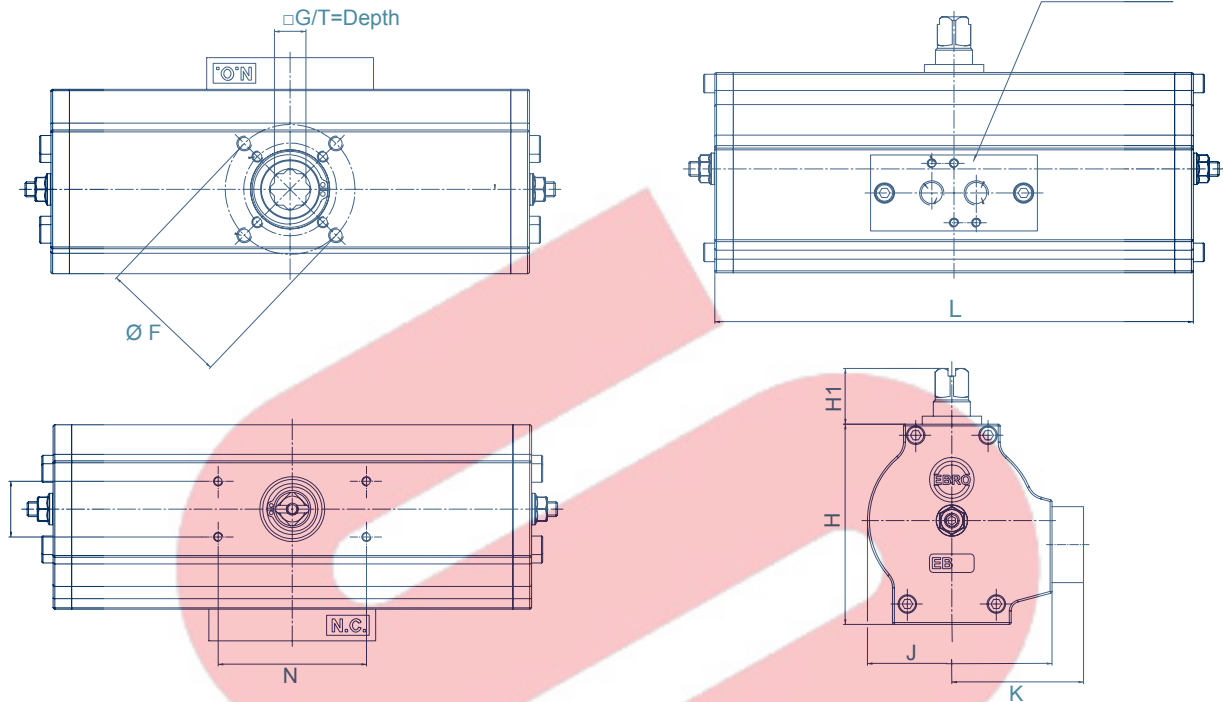
Especially non-lubricant media (e.g. bulk goods and dry gases) may cause an increase of the valve torque. Choosing an actuator in critical limits, please contact our engineers.



Typical torque curve of a scotch-yoke actuator.

# PNEUMATIC ACTUATOR EB-SYD, DOUBLE-ACTING

EB4.1-SYD - EB26.1-SYD



| Type    | ØF         | G**            | Dimensions [mm] |    |     |     |     |    |       | Weight [kg] |
|---------|------------|----------------|-----------------|----|-----|-----|-----|----|-------|-------------|
|         |            |                | H               | H1 | J   | K   | L   | N  | T     |             |
| EB 4.1  | F04/05*    | 10/11/12/14    | 66              | 30 | 57  | 49  | 148 | 80 | 13/16 | 1,1         |
| EB 5.1  | F04/05*    | 10/11/12/14    | 77              | 30 | 72  | 57  | 174 | 80 | 13/16 | 1,7         |
| EB 6.1  | F04/05/07* | 11/12/14/16/17 | 91              | 30 | 88  | 66  | 224 | 80 | 19    | 3,0         |
| EB 8.1  | F05/07/10  | 12/14/16/17/22 | 108             | 30 | 100 | 71  | 258 | 80 | 19    | 4,1         |
| EB 9.1  | F07/10     | 14/16/17/22    | 120             | 30 | 113 | 78  | 311 | 80 | 19    | 6,7         |
| EB 10.1 | F07/10     | 14/16/17/22    | 129             | 30 | 122 | 82  | 334 | 80 | 24    | 7,5         |
| EB 12.1 | F10/12     | 17/22/24/27    | 156             | 30 | 145 | 93  | 392 | 80 | 29    | 12,7        |
| EB 14.1 | F12/16     | <b>36</b>      | 189             | 30 | 154 | 102 | 433 | 80 | 38    | 21,3        |
| EB 16.1 | F12/16     | <b>46</b>      | 212             | 30 | 172 | 102 | 525 | 80 | 48    | 29,0        |
| EB 18.1 | F12/16     | <b>46</b>      | 243             | 30 | 196 | 103 | 590 | 80 | 48    | 41,0        |
| EB 20.1 | F12/16     | <b>46</b>      | 272             | 30 | 234 | 120 | 611 | 80 | 48    | 57,1        |
| EB 22.1 | F16        | <b>55</b>      | 283             | 30 | 244 | 125 | 698 | 80 | 59    | 72,5        |
| EB 26.1 | F16        | <b>55</b>      | 350             | 30 | 336 | 168 | 896 | 80 | 59    | 130,2       |

\* F04/F05 no combined flange available

\*\* Options (Standard = **BOLD**)

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## CLOSING TIME AND AIR CONSUMPTION

| Type                                                | EB4.1 | EB 5.1 | EB 6.1 | EB 8.1 | EB 9.1 | EB 10.1 | EB 12.1 | EB 14.1 | EB 16.1 | EB 18.1 | EB 20.1 | EB 22.1 | EB26.1 |
|-----------------------------------------------------|-------|--------|--------|--------|--------|---------|---------|---------|---------|---------|---------|---------|--------|
| Closing time EB-SYD in sec.*                        | 0,25  | 0,25   | 0,35   | 0,45   | 0,55   | 0,70    | 1,00    | <1,5    | <1,5    | <2,0    | <2,0    | <2,0    | <2,0   |
| Filling volume<br>Standard liter/stroke at 1 atm:** | 0,18  | 0,46   | 0,91   | 1,49   | 2,33   | 3,26    | 5,63    | 7,52    | 11,01   | 16,49   | 22,79   | 29,7    | 60,94  |

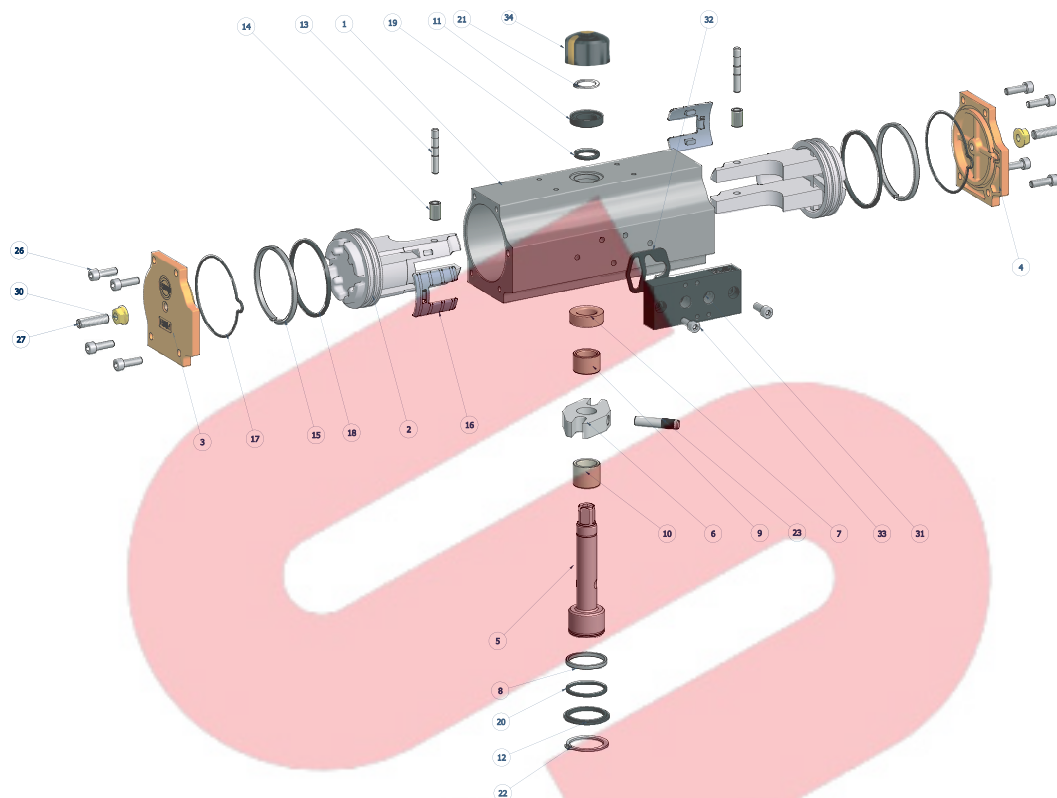
\* closing times with unthrottled air exhaust and air supply, 6 bar control pressure at no load operation

\*\* loadair consumption = filling volume x control

Closing-/ opening times can be adjusted up to 60 sec. by using the EBRO speed control block (depending on type of actuator).

# PNEUMATIC ACTUATOR EB-SYD, DOUBLE ACTING

## MATERIAL SPECIFICATION AND PARTS LIST



Only for EB-SYD (4.1 - 26.1)

## COMPONENT PARTS

| Pt. | Description          | Qty. | Material              | Pt. | Description            | Qty. | Material       |
|-----|----------------------|------|-----------------------|-----|------------------------|------|----------------|
| 1   | Actuator cylinder    | 1    | EN AW 6063-T6         | 17D | End cover sealing      | 2    | 70 NBR         |
| 2   | Piston               | 2    | Aluminium             | 18D | Piston O-Ring          | 2    | 70 NBR         |
| 3   | End cover L          | 1    | Aluminium             | 19D | O-Ring, upper shaft    | 1    | 70 NBR         |
| 4   | End cover R          | 1    | Aluminium             | 20D | O-Ring, lower shaft    | 1    | 70 NBR         |
| 5   | Drive shaft          | 1    | 16 Mn Cr 5            | 21D | Upper safety ring      | 1    | C 75 chromated |
| 6   | Yoke                 | 1    | 16 Mn Cr 5 / Sint D30 | 22D | Lower safety ring      | 1    | C 75 chromated |
| 7   | Upper shaft bearing  | 1    | Polymer blend/ Ms     | 23  | Bolt                   | 1    | 42 Cr Mo 4 V   |
| 8   | Lower shaft bearing  | 1    | Polymer blend/ Ms     | 26  | Hex. socket screw      | 8    | A2-70          |
| 9   | Upper piston bearing | 1    | Polymer blend         | 27  | Stroke adjusting screw | 2    | A2-70          |
| 10  | Lower piston bearing | 1    | Polymer blend         | 30  | Seal nut               | 2    | A2-70          |
| 11  | Upper washer bearing | 1    | Polymer blend         | 31  | Valve connection plate | 1    | Aluminium      |
| 12  | Lower washer bearing | 1    | Polymer blend         | 32D | Shaped gasket          | 1    | 70 NBR         |
| 13  | Piston bolt          | 2    | 16 Mn Cr S 5          | 33  | Hex. socket screw      | 2    | A2-70          |
| 14  | Roller               | 2    | 100 Cr 6              | 34  | Position indicator     | 1    | Polymer blend  |
| 15  | Guide band           | 2    | Polymer blend         |     |                        |      |                |
| 16  | Slidepad             | 2    | Polymer blend         |     |                        |      |                |

The spare parts marked with D are integrated in the standard seal set.

Subject to change without notice