

reliable actuators  
to **Fit**  
& **Forget**



**EL Matic™**

Year: 2015  
Type: F0150U  
Serial no.: SAMPLE 3  
PED group: 2  
PS max: 8 Bar (120 PSI)  
Temp range: -20°C (-5°F) to +75°C (+165°F) @ T6  
-20°C (-5°F) to +80°C (+175°F) @ T5  
For surface temp. "T5" see the Safety Guide 1900-100-01 (1. Table 5.1)  
Mark the Ref: 2015-CEM102, Emerson, Hangzhou 311126, CN

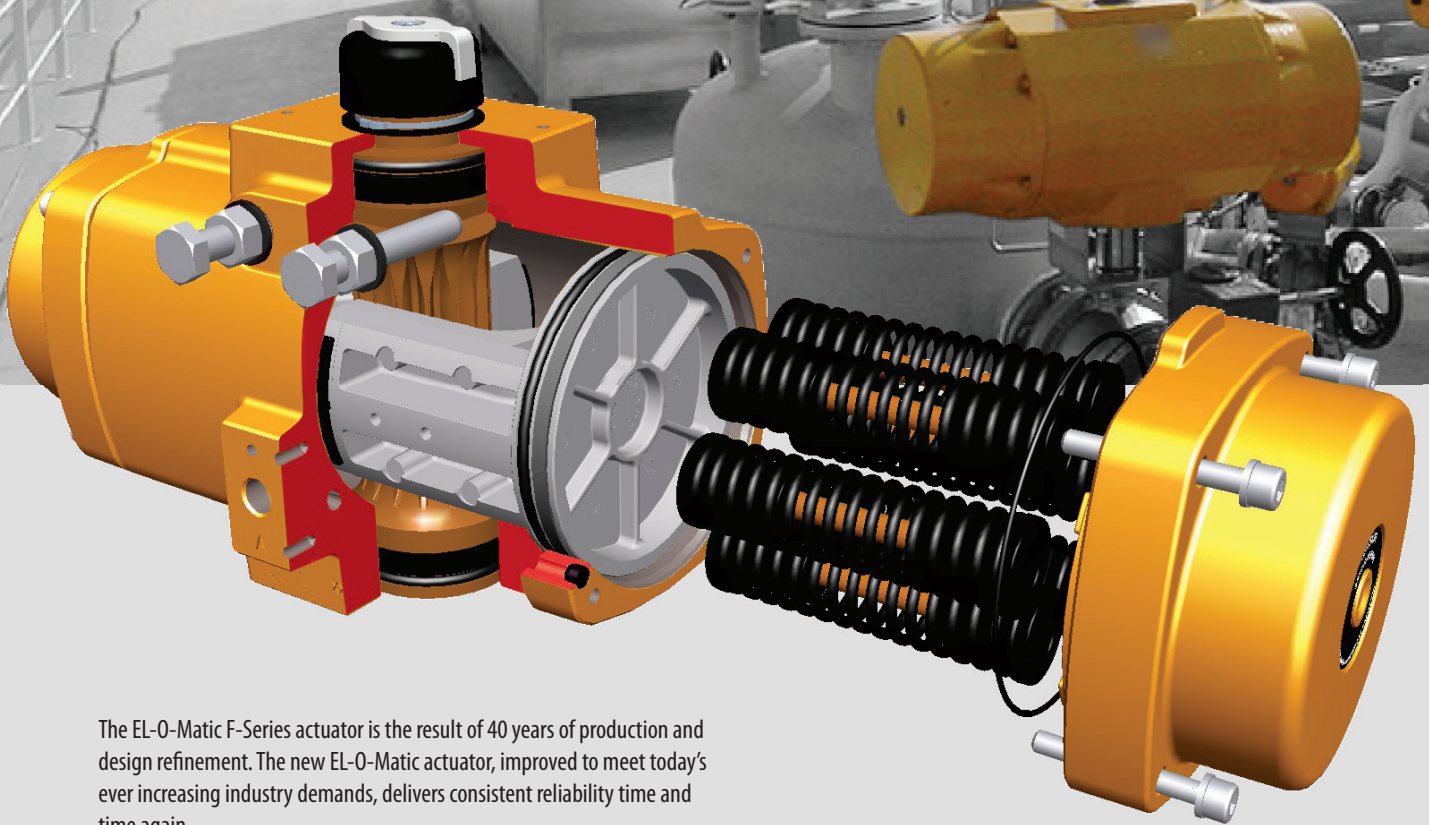
**EL Matic™**

Pneumatic Rack & Pinion Actuators

a new look

# Reliable As Ever

40 years of success and still delivering



The EL-0-Matic F-Series actuator is the result of 40 years of production and design refinement. The new EL-0-Matic actuator, improved to meet today's ever increasing industry demands, delivers consistent reliability time and time again.



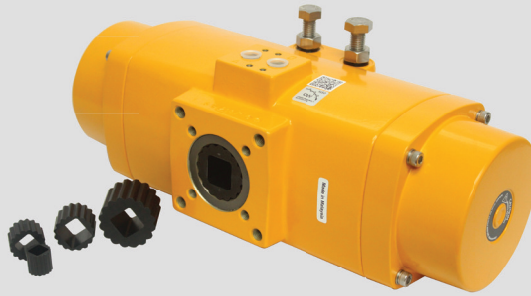


Pneumatic Rack & Pinion Actuators

# Fit & Forget Sets the standard for quality

EL-O-Matic continues to set the standard high with innovative features and greater customer benefits thus completing the Emerson's portfolio of rack & pinion actuators.

Built upon more than 40 years of field experience, EL-O-Matic actuators remain second to none in dependability, providing the optimum "Fit & Forget" performance in a wide range of process industry applications such as chemical, refining, power generation, pulp & paper, pharmaceutical and food & beverage. Designed and produced according to standards for high engineering accuracy, and ISO 9000:2008 certified, assures a long cycle life.



Valve drive adaptors make the EL-O-Matic's installation quick and reliable.

## Fit & Forget Means Reliability

Product reliability is key to customer satisfaction. The F-Series is easy to install and performs continuously and faultlessly throughout their long working life.

Rugged, cast aluminum body and advanced powder coated finishing provide corrosion protection even in the harshest of environments.

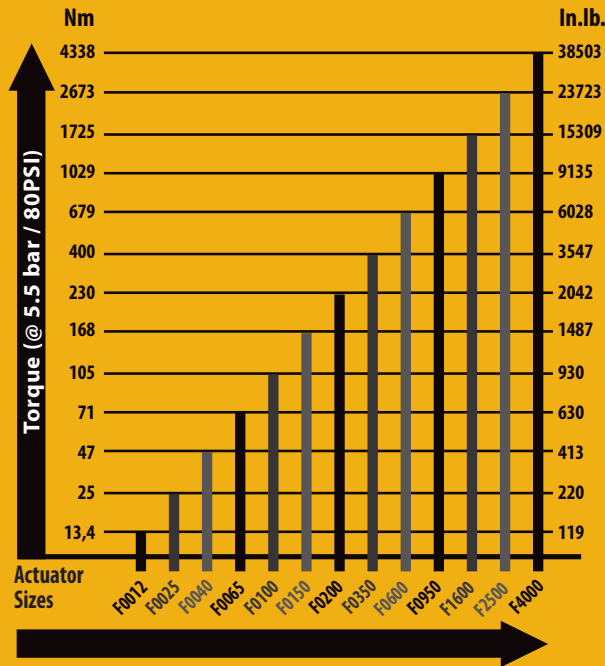
Modular construction, interchangeable components, dual drilled mounting holes and pinion inserts provide the widest range of mounting options. Drive pinions of aircraft grade ASTM 7075 T6 aluminum alloy ensure the ultimate combination of strength/weight ratio and additional protection against galvanic corrosion. Stainless steel external fasteners complete the corrosion protection specification and provides greater cost savings and long-term value.

Cast aluminum with two part coating with powder coating provides superior corrosion protection.



# EL-O-Matic F-Series

Available in 13 Sizes

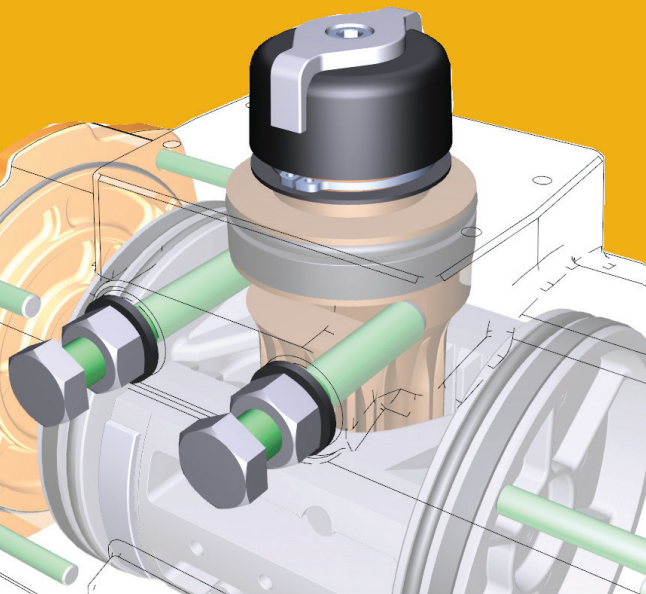


### Valve Types:

|                             |             |
|-----------------------------|-------------|
| <b>Ball:</b> 1/2" / DN12    | 12" / DN300 |
| <b>Butterfly:</b> 2" / DN50 | 30" / DN750 |

### Temperature Range

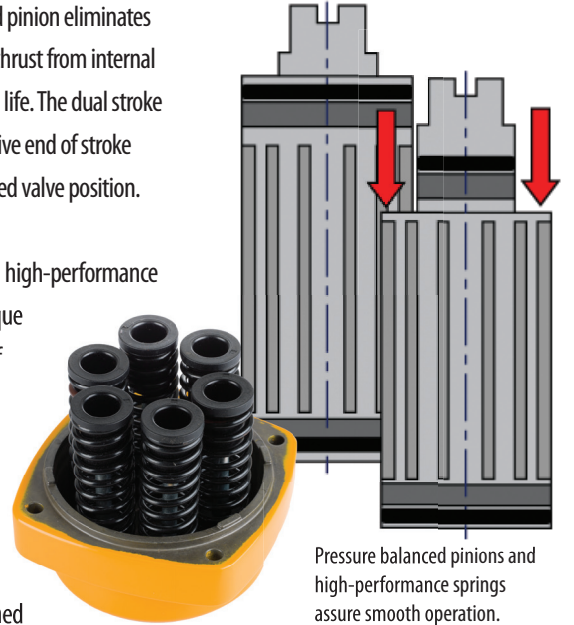
|                         |                                       |
|-------------------------|---------------------------------------|
| <b>Standard</b>         | -20 °C to +80 °C (-4 °F to +176 °F)   |
| <b>High Temperature</b> | -10 °C to +120 °C (+14 °F to +250 °F) |
| <b>Low Temperature</b>  | -40 °C to +80 °C (-40 °F to +176 °F)  |



# designed to improve Operation and Easy Maintenance

The EL-O-Matic pressure balanced pinion eliminates "endwise" forces and downward thrust from internal pressures to extend their working life. The dual stroke adjustment provide precise intuitive end of stroke adjustment for the open and closed valve position.

Actuator torque is optimized with high-performance springs, designed to deliver a torque range suitable for a wide range of applications. Six separate spring sets allow proper sizing to all quarter-turn valve types with a wide range of supply pressures. Maximum safety and ease of conversion are accomplished with pre-assembled springs.



Pressure balanced pinions and high-performance springs assure smooth operation.

The F-Series offers a wide torque range to meet all cycle speed demands with 13 sizes ranging from 13.4 to 4338 Nm (119 to 38503 lbf.in) for ball valves from 1/2" to 12" and butterfly valves to 30". Cycle speeds are maximized by the use of large internal air ports. Optional "super-fast" and reduced speed versions are also available.

### Direct Mounting Spindle Insert Fastenings



### Indirect Mounting Box Section Bracket Drive Adaptor Fastenings





# designed for **Safety** and **Reliability**

Compliance to relevant industry standards ensures EL-O-Matic actuators afford customers the widest range of applications, and the longest working life, safety and reliability.

The F-Series Blow-Out-Proof pinion design improves safe maintenance ensuring the pinion remains in the housing. Actuators not having this feature are in danger of sudden ejection of the pinion when the actuator is pressurized and the clip has been removed.

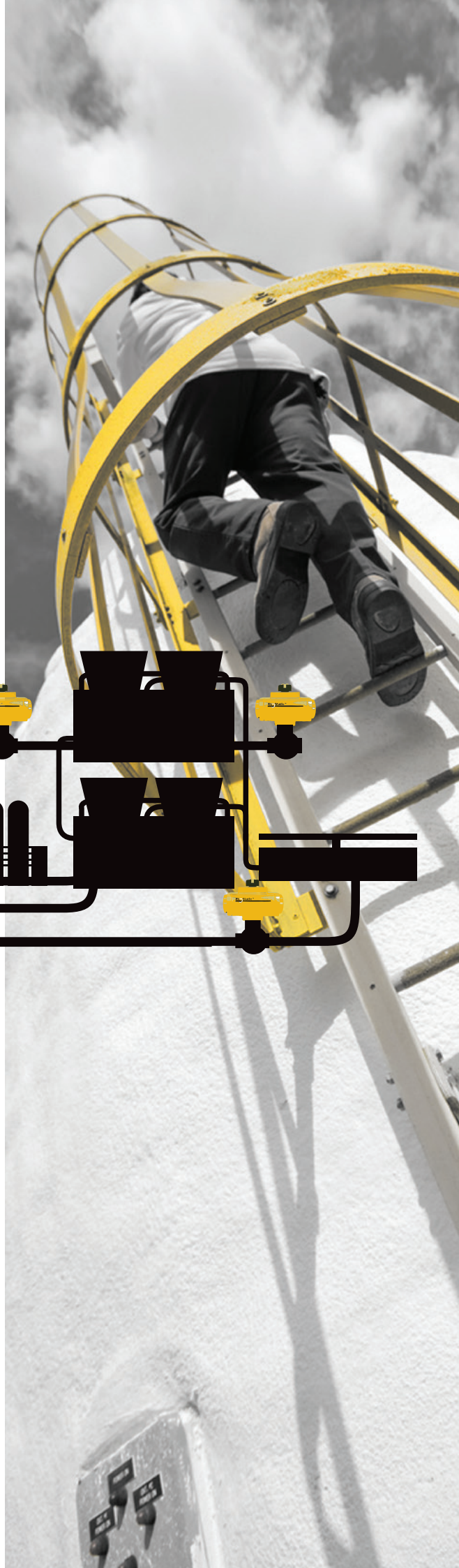


EL-O-Matic actuators comply with the following standards:

- ISO 5211 for the valve interface
- VDI/VDE 3845 (NAMUR) for air connection interface (solenoid valve) and top mount interface (switch box or positioner)
- EN 15714 part 3 for working life and performance
- ASTM B117 for corrosion protection
- IEC 61508: 2010 for Functional Safety related systems (SIL 3 rating)

EL-O-Matic F-Series actuators also comply with all relevant health and safety standards across all areas of operation including:

- EU Machinery Directive 2006/42/EC for mechanical safety
- EU Pressure Equipment Directive 97/23/EC for pressure safety
- EU ATEX Directive 94/9/EC for explosive safety
- TR 010 Certificate for EAC Customs union (Mechanical Safety)
- TR 012 Certificate for EAC Customs union (Explosion Safety)



# Metric Tables

## Torque Double Acting

| Actuator Size | Torque in Nm<br>Supply pressure (barg) |      |      |      |
|---------------|--|------|------|------|
|               | 4                                      | 5    | 5.5  | 6    |
| FD0012        | 9.7                                    | 12.2 | 13.4 | 14.6 |
| FD0025        | 18                                     | 23   | 25   | 27   |
| FD0040        | 34                                     | 42   | 47   | 51   |
| FD0065        | 51                                     | 64   | 71   | 77   |
| FD0100        | 76                                     | 95   | 105  | 115  |
| FD0150        | 122                                    | 153  | 168  | 183  |
| FD0200        | 167                                    | 209  | 230  | 251  |
| FD0350        | 290                                    | 363  | 400  | 436  |
| FD0600        | 492                                    | 617  | 679  | 741  |
| FD0950        | 746                                    | 935  | 1029 | 1124 |
| FD1600        | 1250                                   | 1566 | 1725 | 1883 |
| FD2500        | 1937                                   | 2427 | 2673 | 2918 |
| FD4000        | 3144                                   | 3940 | 4338 | 4736 |

More technical information is available at:  
[www.EL-O-Matic.com/F-Series/Documentation](http://www.EL-O-Matic.com/F-Series/Documentation)



## Torque Spring Return

| Actuator Size | Spring Set | Spring Stroke (Nm) |      | Air Stroke (Nm)<br>Supply pressure in barg |      |          |      |          |      |
|---------------|------------|--------------------|------|--|------|----------|------|----------|------|
|               |            |                    |      | 5.0 barg                                   |      | 5.5 barg |      | 6.0 barg |      |
|               |            | Start              | End  | Start                                      | End  | Start    | End  | Start    | End  |
| FS0012        | 20         | 7                  | 5    | 8  | 5    | 9        | 6    | 10       | 7    |
| FS0025        | 40         | 14                 | 9    | 14   | 8    | 16       | 10   | 18       | 12   |
|               | 50         | 18                 | 11   | 11   | 4    | 14       | 6    | 16       | 8    |
|               | 60         | 21                 | 13   | -  | -    | 11       | 2    | 13       | 4    |
| FS0040        | 40         | 26                 | 17   | 26   | 15   | 30       | 19   | 35       | 24   |
|               | 50         | 33                 | 21   | 21   | 7    | 26       | 12   | 30       | 16   |
|               | 60         | 39                 | 25   | -  | -    | 21       | 4    | 25       | 9    |
| FS0065        | 40         | 41                 | 26   | 39   | 21   | 46       | 28   | 52       | 35   |
|               | 50         | 51                 | 32   | 31   | 10   | 38       | 17   | 45       | 23   |
|               | 60         | 61                 | 39   | -  | -    | 31       | 5    | 38       | 12   |
| FS0100        | 40         | 59                 | 37   | 58   | 33   | 68       | 43   | 78       | 53   |
|               | 50         | 74                 | 47   | 47   | 16   | 57       | 26   | 68       | 36   |
|               | 60         | 89                 | 56   | -  | -    | 47       | 9    | 57       | 19   |
| FS0150        | 40         | 94                 | 59   | 94   | 54   | 110      | 70   | 126      | 86   |
|               | 50         | 118                | 74   | 77   | 26   | 93       | 43   | 109      | 59   |
|               | 60         | 141                | 89   | -  | -    | 76       | 16   | 92       | 32   |
| FS0200        | 40         | 131                | 82   | 127  | 71   | 149      | 93   | 171      | 116  |
|               | 50         | 163                | 103  | 103  | 34   | 125      | 56   | 148      | 78   |
|               | 60         | 196                | 124  | -  | -    | 102      | 18   | 124      | 41   |
| FS0350        | 40         | 224                | 141  | 222  | 127  | 261      | 166  | 300      | 205  |
|               | 50         | 280                | 176  | 182  | 63   | 221      | 102  | 260      | 141  |
|               | 60         | 335                | 211  | -  | -    | 180      | 38   | 219      | 77   |
| FS0600        | 40         | 383                | 241  | 376  | 213  | 442      | 279  | 508      | 345  |
|               | 50         | 479                | 302  | 307  | 103  | 373      | 169  | 439      | 235  |
|               | 60         | 575                | 362  | -  | -    | 303      | 59   | 369      | 125  |
| FS0950        | 40         | 484                | 309  | 583  | 365  | 681      | 463  | 779      | 561  |
|               | 50         | 605                | 387  | 487  | 214  | 585      | 312  | 683      | 410  |
|               | 60         | 726                | 464  | 390  | 63   | 488      | 161  | 586      | 259  |
| FS1600        | 40         | 830                | 516  | 981  | 589  | 1146     | 753  | 1310     | 917  |
|               | 50         | 1037               | 644  | 820  | 330  | 984      | 494  | 1149     | 658  |
|               | 60         | 1244               | 773  | 659  | 70   | 823      | 234  | 988      | 399  |
| FS2500        | 40         | 1178               | 722  | 1617                                       | 1046 | 1871     | 1301 | 2126     | 1555 |
|               | 50         | 1473               | 902  | 1391                                       | 678  | 1646     | 932  | 1900     | 1187 |
|               | 60         | 1768               | 1083 | 1166                                       | 310  | 1420     | 564  | 1675     | 819  |
| FS4000        | 40         | 1891               | 1195 | 2595                                       | 1725 | 3008     | 2138 | 3421     | 2551 |
|               | 50         | 2363               | 1494 | 2221                                       | 1135 | 2634     | 1548 | 3047     | 1961 |
|               | 60         | 2836               | 1793 | 1848                                       | 544  | 2261     | 957  | 2674     | 1370 |

## Accessories for your Valve Operating System™



Wireless Transmitters



Solenoids

Pressure Regulators

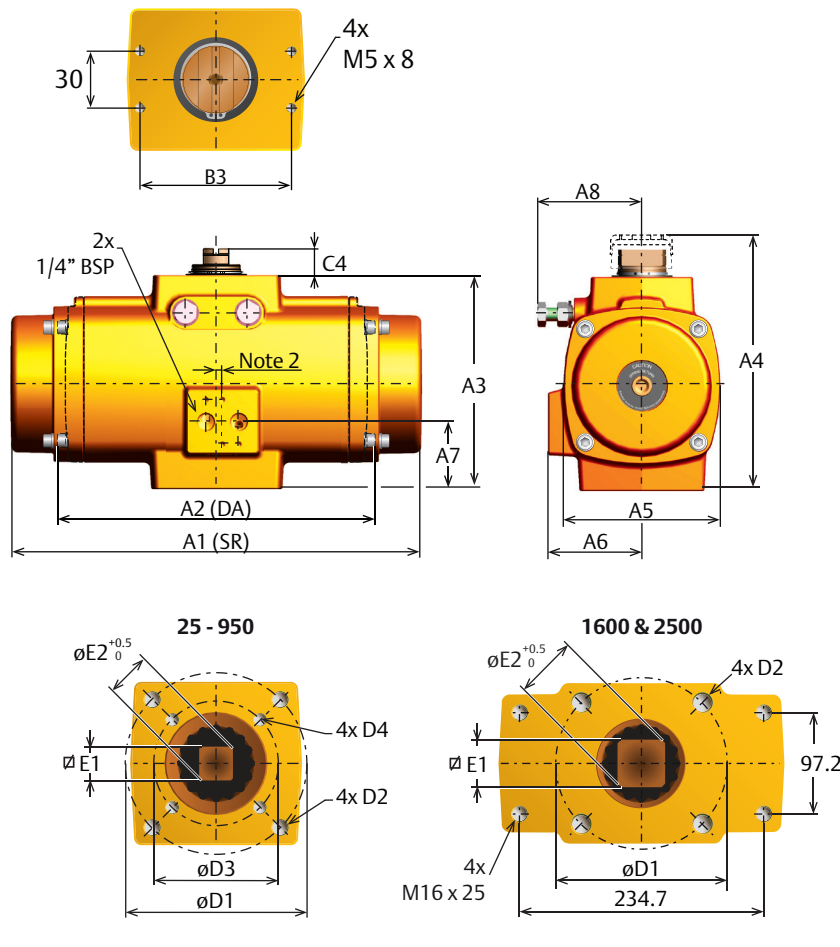


Digital Valve Positioners (DVCs)



# Metric Tables

## Dimensions



### Note:

1. DA = Double Acting, SR = Spring Return.
2. The solenoid drilling pattern is shifted versus the centerline of the actuator.  
- 4 mm for size 0025  
- 2 mm for size 0040  
- 12 mm for sizes 0950 to 4000
3. Solenoid interface and top mounting interface according VDI/VDE3845 (NAMUR).
4. F25\* = For sizes 1600 and 2500 drilling pattern 234.7 x 97.2 represent 4 holes of a F25 drilling pattern.
5. [Dimension data sheets available online](#) contain detailed dimensional information.

| Dim. in mm | Actuator size |       |       |       |        |        |        |        |        |        |        |        |      |
|------------|---------------|-------|-------|-------|--------|--------|--------|--------|--------|--------|--------|--------|------|
|            | 0012          | 0025  | 0040  | 0065  | 0100   | 0150   | 0200   | 0350   | 0600   | 0950   | 1600   | 2500   | 4000 |
| A1         | 166           | 192   | 217   | 247   | 304    | 362    | 385    | 476    | 658    | 732    | 877    | 959    |      |
| A2         | 166           | 192   | 217   | 247   | 235    | 265    | 284    | 356    | 400    | 462    | 550    | 649    |      |
| A3         | 91            | 112   | 124   | 131   | 157    | 163    | 201    | 248    | 268    | 302    | 354    | 389    |      |
| A4         | 119           | 139   | 151   | 158   | 185    | 191    | 230    | 292    | 305    | 339    | 392    | 427    |      |
| A5         | 68            | 82    | 92    | 103   | 116    | 124    | 161    | 195    | 239    | 306    | 350    | 400    |      |
| A6         | 49            | 55    | 58    | 64    | 69     | 72     | 85     | 102    | 131    | 149    | 170    | 196    |      |
| A7         | 30            | 34    | 38    | 38    | 49     | 49     | 42     | 67     | 121    | 137    | 157    | 184    |      |
| A8         | 48            | 58    | 69    | 69    | 75     | 87     | 109    | 132    | 131    | 156    | 181    | 175    |      |
| B3         | 80            | 80    | 80    | 80    | 80     | 80     | 80     | 130    | 130    | 130    | 130    | 130    |      |
| C4         | 20            | 20    | 20    | 20    | 20     | 20     | 20     | 30     | 30     | 30     | 30     | 30     |      |
| ISO 1      | F05           | F07   | F07   | F07   | F10    | F10    | F10    | F12    | F14    | F16    | F16    | F25    |      |
| D1         | 50            | 70    | 70    | 70    | 102    | 102    | 102    | 125    | 140    | 165    | 165    | 254    |      |
| D2         | M6x10         | M8x13 | M8x13 | M8x13 | M10x15 | M10x15 | M10x15 | M12x18 | M16x25 | M20x20 | M20x20 | M16x25 |      |
| ISO 2      | F03           | F05   | F05   | F05   | F07    | F07    | F07    | F10    | F10    | F25*   | F25*   | F16    |      |
| D3         | 36            | 50    | 50    | 50    | 70     | 70     | 70     | 102    | 102    | -/-    | -/-    | 165    |      |
| D4         | M5x8          | M6x10 | M6x10 | M6x10 | M8x13  | M8x13  | M8x13  | M10x16 | M10x16 | M16x25 | M16x25 | M20x20 |      |
| E1 Max.    | 11.08         | 14.08 | 14.08 | 19.08 | 19.08  | 22.10  | 27.11  | 27.11  | 36.16  | 46.16  | 46.16  | 55.24  |      |
| E1 Min.    | 11.00         | 14.00 | 14.00 | 19.00 | 19.00  | 22.00  | 27.00  | 27.00  | 36.00  | 46.00  | 46.00  | 55.00  |      |
| E2         | 14.1          | 18.1  | 18.1  | 25.2  | 25.5   | 28.2   | 36.2   | 36.2   | 58.2   | 60.2   | 60.2   | 72.2   |      |

For dimensions of size 0012 see data sheet EFM.06.0012

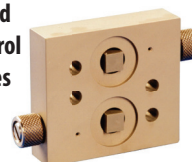


Manual  
Override  
Gear Boxes

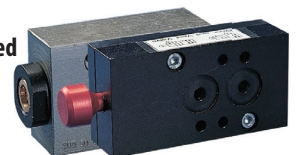
Switchbox



Speed  
Control  
Plates



Breather/  
Block & Bleed  
Valves



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