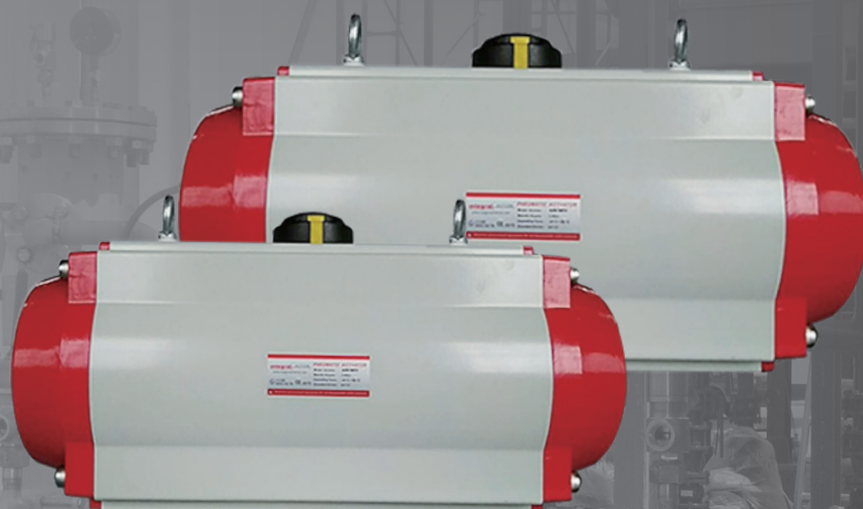
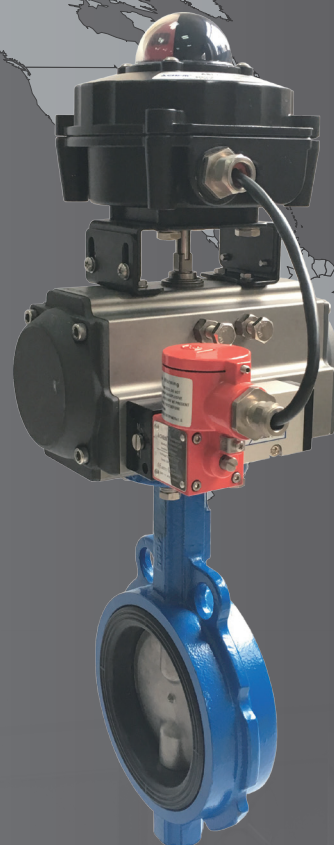




# integral

## IA SERIES PNEUMATIC ACTUATORS



## CONTENTS

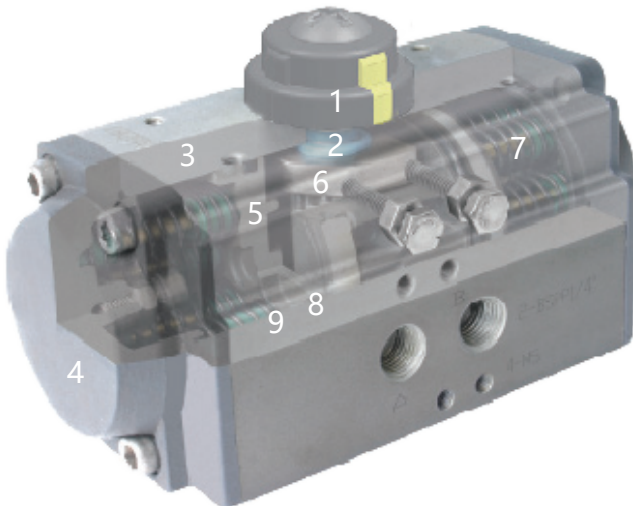
|                                                    |       |
|----------------------------------------------------|-------|
| ■ Design and Structure .....                       | 1     |
| ■ Operating Principle .....                        | 2     |
| ■ Assembly, Parts and Material .....               | 3     |
| ■ Dimension for IA-32 .....                        | 4     |
| ■ Dimension for IA-40 .....                        | 5     |
| ■ Dimension for IA-52~IA-350 .....                 | 6     |
| ■ Dimension for IA-400 .....                       | 7     |
| ■ Output Torque Table of Double Acting .....       | 8     |
| ■ Output Torque Table of Spring Return .....       | 8-10  |
| ■ Operating Conditions, Air Consumption .....      | 11    |
| ■ Weight, Operation Time, Mounting Operation ..... | 12    |
| ■ Maintenance .....                                | 13-13 |
| ■ Sizing Information and How to Order .....        | 14-15 |
| ■ Accessories .....                                | 15-17 |

## Design

Our newly-designed IA Series Pneumatic Actuator is an aluminum rack & pinion actuator available in double acting and spring return. This type of actuator features a top mounted multifunction indicator and open-close stop adjustment as a standard. In addition, state-of-the-art engineering has allowed us to reduce the size of the actuator without losing any torque. The features and characteristics of the actuator have kept pace with 4th generation pneumatic actuators around the world.



## Structure



### 1. Indicator

Position indicator with NAMUR is convenient for mounting accessories such as a limit switch box, positioner and so on.

### 2. Pinion

The pinion is high-precision and integrative, made from carbon alloy steel with nickel coating and fully conforms to the latest standards of ISO5211, DIN3337, NAMUR. The dimensions can be customized and stainless steel is also available.

### 3. Actuator body

Depending on the requirements, the extruded aluminum alloy ASTM6005 body can be hard anodized, powder polyester painted, PTFE or nickel plated.

### 4. End caps

Die-cast aluminum powder polyester painted, PTFE or nickel plated.

### 5. Pistons

The twin rack pistons are made from die-cast anodized aluminum or from galvanized cast steel. Symmetric mounting position, long cycle life and fast operation, reversing rotation can be achieved by inverting the pistons.

### 6. Travel adjustment

The two independent external travel stop adjustment bolts can adjust 5° at both open and close directions easily and precisely.

### 7. High performance springs

Preloaded coated springs are made from high quality material resistant to corrosion and long cycle life. Different torque requirements can be achieved by changing the quantity of springs.

### 8. Bearings & guides

Made from low friction, long-life compound material, avoids the direct contact between metals. Maintenance and replacement are easy and convenient.

### 9. O-rings

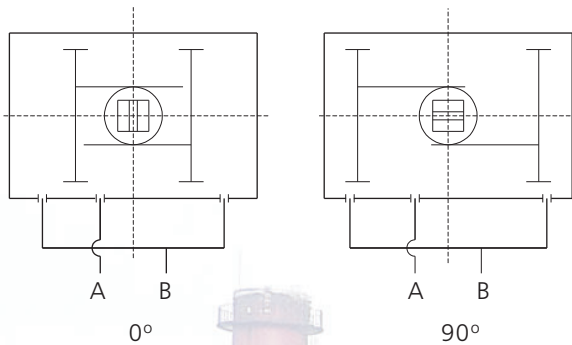
NBR rubber o-rings provide trouble-free operation at standard temperature ranges. For high temperature viton is used. For low temperature NBR is used.



## Operating Principle

### Double acting

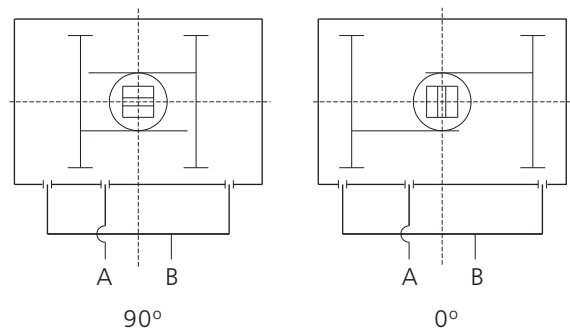
#### Standard rotation



#### Standard Rotation:

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.

#### Reverse rotation



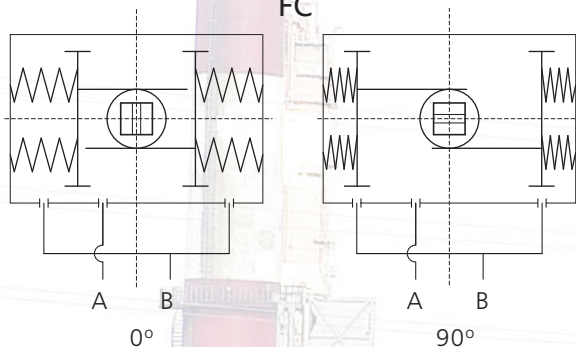
#### Reverse Rotation:

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

### Spring return

#### Standard rotation

FC

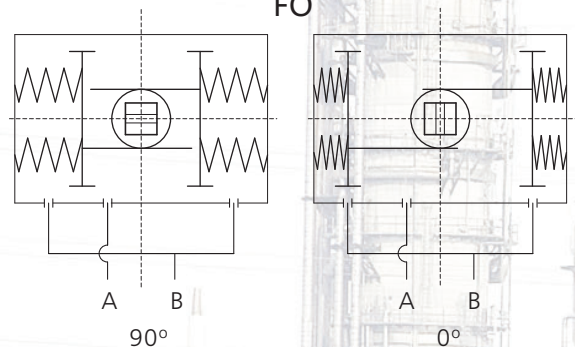


#### Standard Rotation:

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.

#### Reverse rotation

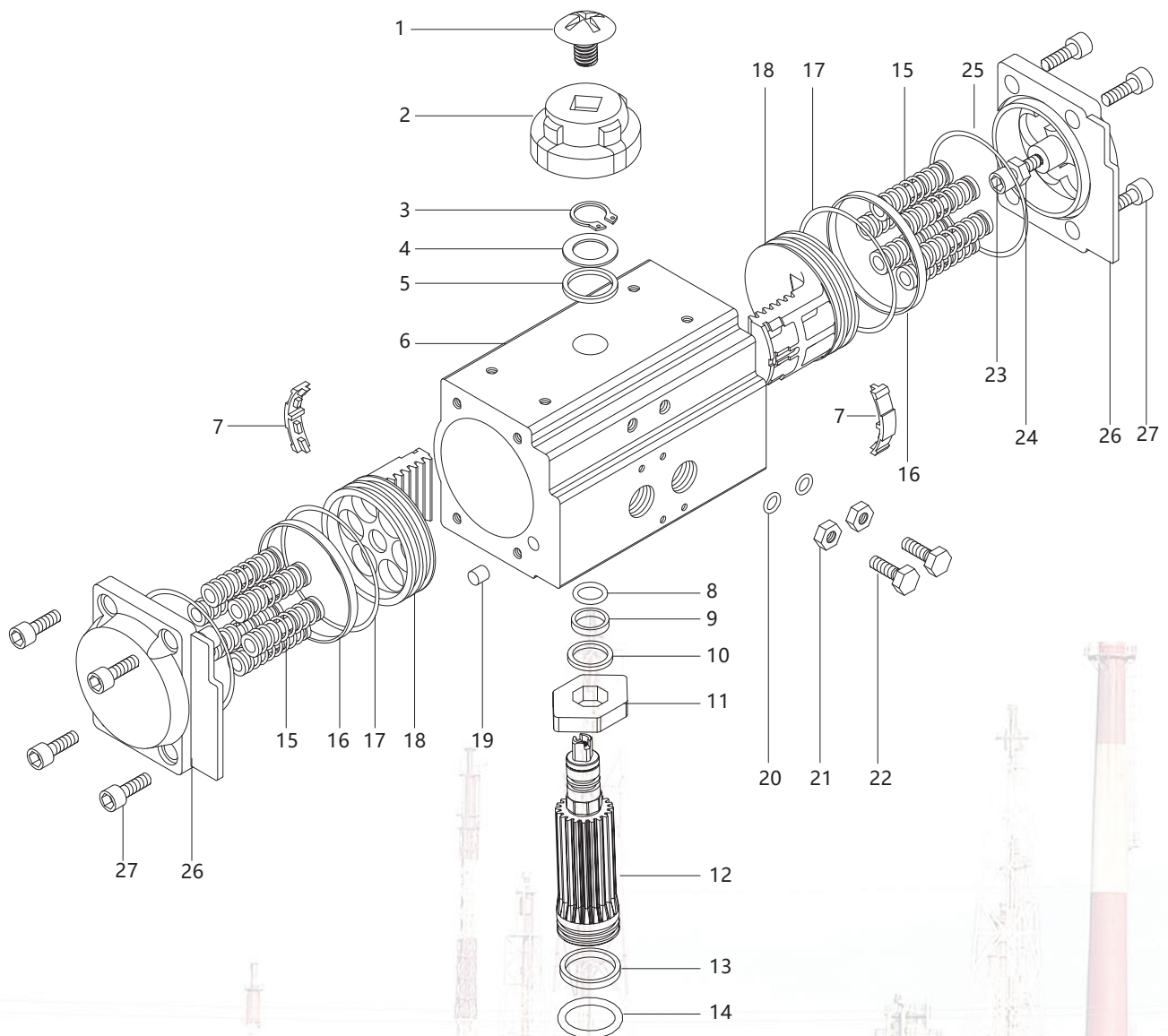
FO



#### Reverse Rotation:

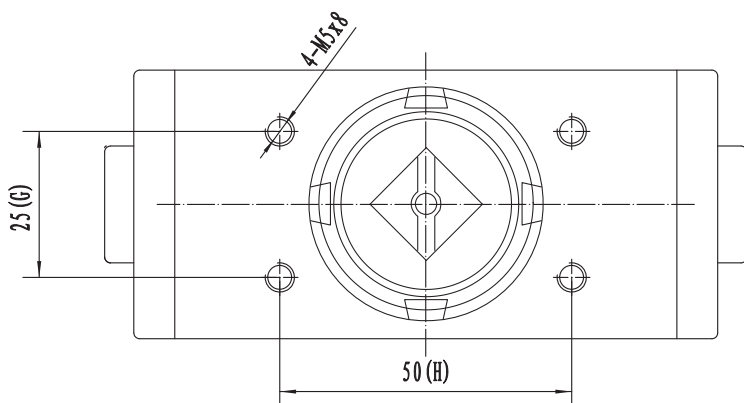
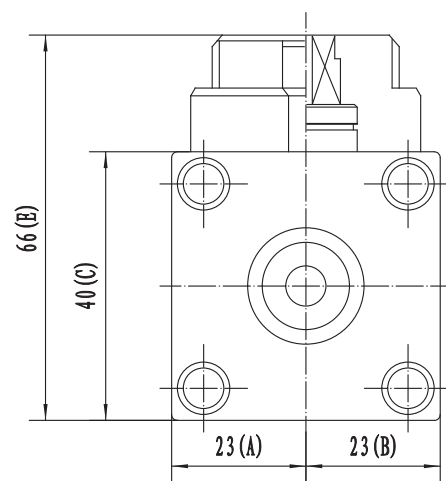
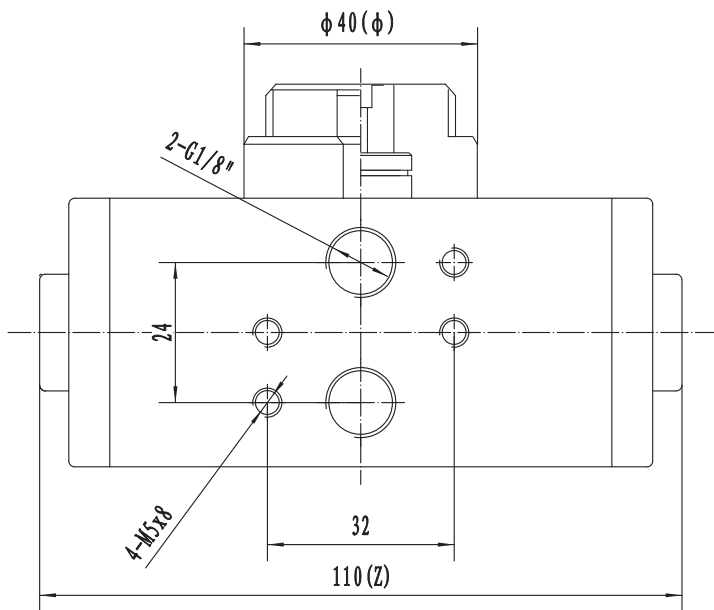
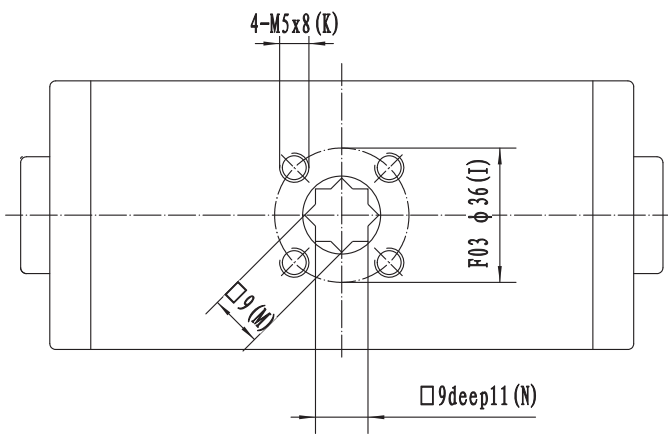
Air to port A forces the pistons outwards, causing the springs to compress, the pinion turns clockwise while air is being exhausted from port B. Loss of air pressure on port A, the stored energy in the springs forces the pistons inwards. The pinion turns counterclockwise while air is being exhausted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

## Parts and Material

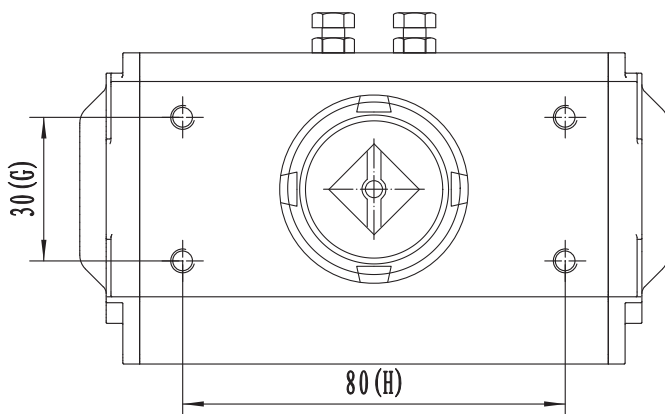
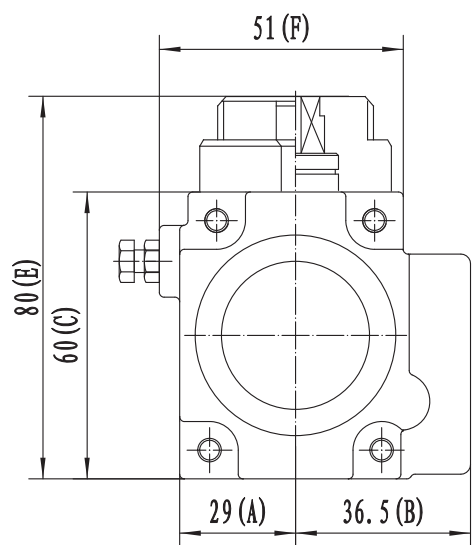
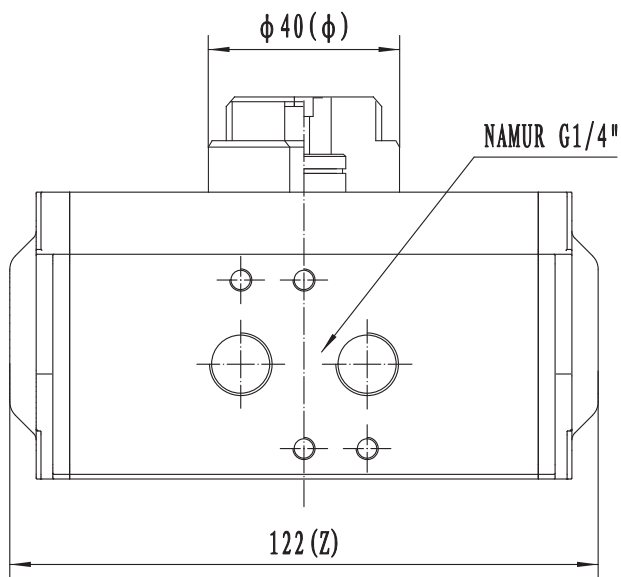
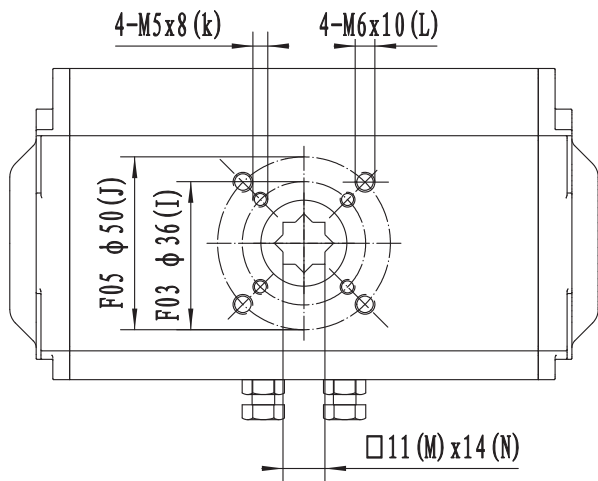


| No. | Description             | Qty. | Material                          | No. | Description           | Qty. | Material                 |
|-----|-------------------------|------|-----------------------------------|-----|-----------------------|------|--------------------------|
| 1   | Indicator Screw         | 1    | Plastic (ABS)                     | 15  | Sping                 | 0~12 | Spring Steel             |
| 2   | Indicator               | 1    | Plastic (ABS)                     | 16  | Bearing (piston)      | 2    | Polyoxymethylene         |
| 3   | Cirdip                  | 1    | Stainless Steel (304)             | 17  | O-ring (piston)       | 2    | NBR or Viton             |
| 4   | Thrust Washer           | 1    | Stainless Steel (304)             | 18  | Piston                | 2    | Die-Cast Aluminum (A380) |
| 5   | Outside Washer          | 1    | Polyoxymethylene                  | 19  | Plug                  | 2    | NBR or Viton             |
| 6   | Body                    | 1    | Extruded Aluminum Alloy (6005-T5) | 20  | O-ring (adjust screw) | 2    | NBR or Viton             |
| 7   | Guide (piston)          | 2    | Polyoxymethylene                  | 21  | Nut (adjust screw)    | 2    | Stainless Steel (304)    |
| 8   | O-ring (pinion top)     | 1    | NBR or Viton                      | 22  | Adjust Screw          | 2    | Stainless Steel (304)    |
| 9   | Bearing (pinion top)    | 1    | Polyoxymethylene                  | 23  | Stop Screw            | 2    | Stainless Steel (304)    |
| 10  | Inside Washer           | 1    | Polyoxymethylene                  | 24  | Nut (stop screw)      | 2    | Stainless Steel (304)    |
| 11  | Cam                     | 1    | (Alloy Steel)#45                  | 25  | O-ring (end-cap)      | 2    | NBR or Viton             |
| 12  | Pinion                  | 1    | (Alloy Steel)#45                  | 26  | End-cap               | 2    | Die-Cast Aluminum (A380) |
| 13  | Bearing (pinion bottom) | 1    | Polyoxymethylene                  | 27  | End-cap Screw         | 8    | Stainless Steel (304)    |
| 14  | O-ring (pinion bottom)  | 1    | NBR or Viton                      |     |                       |      |                          |

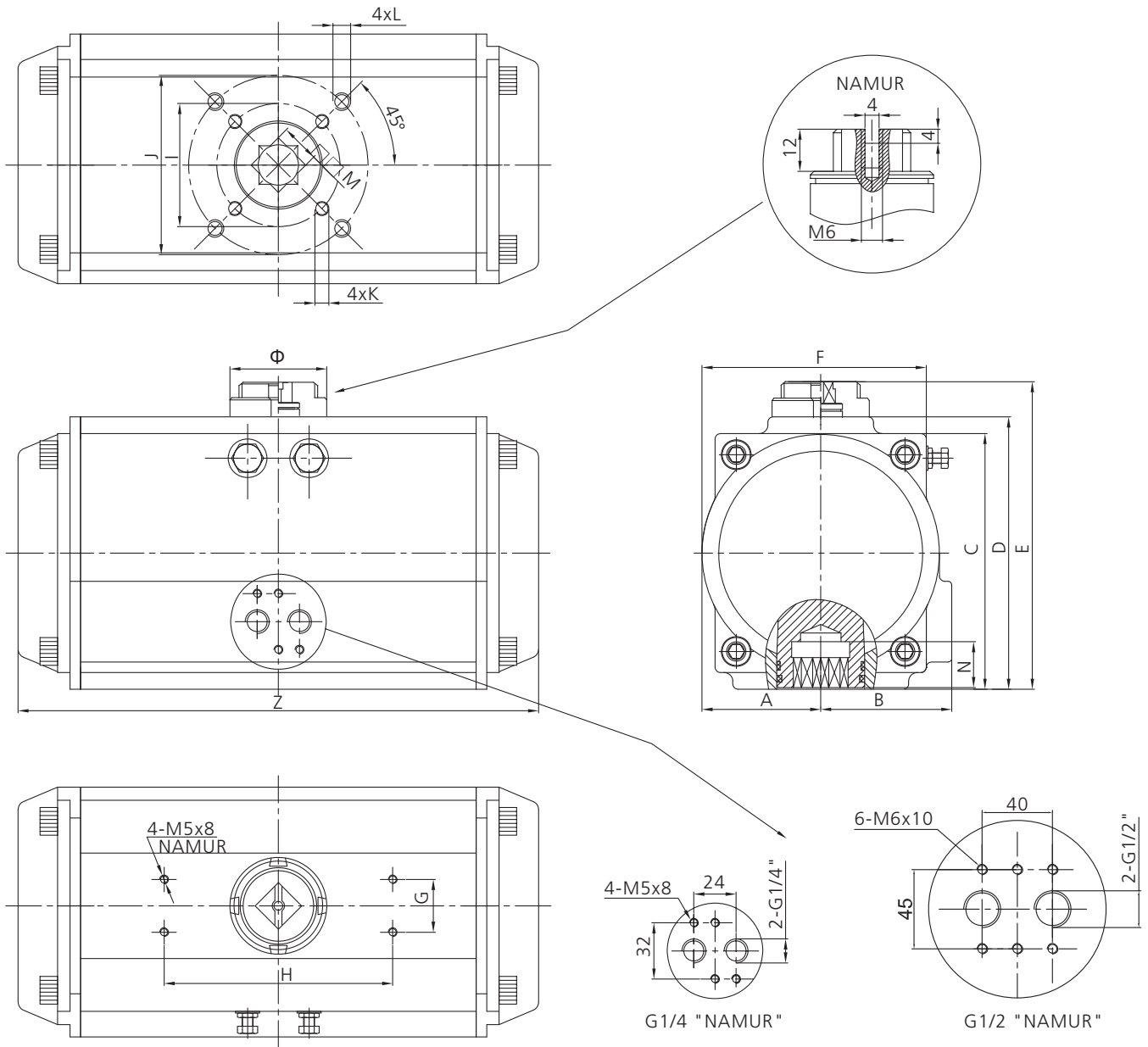
Dimension For IA-32



## Dimension For IA-40



## Dimension For IA-52 ~ IA-350

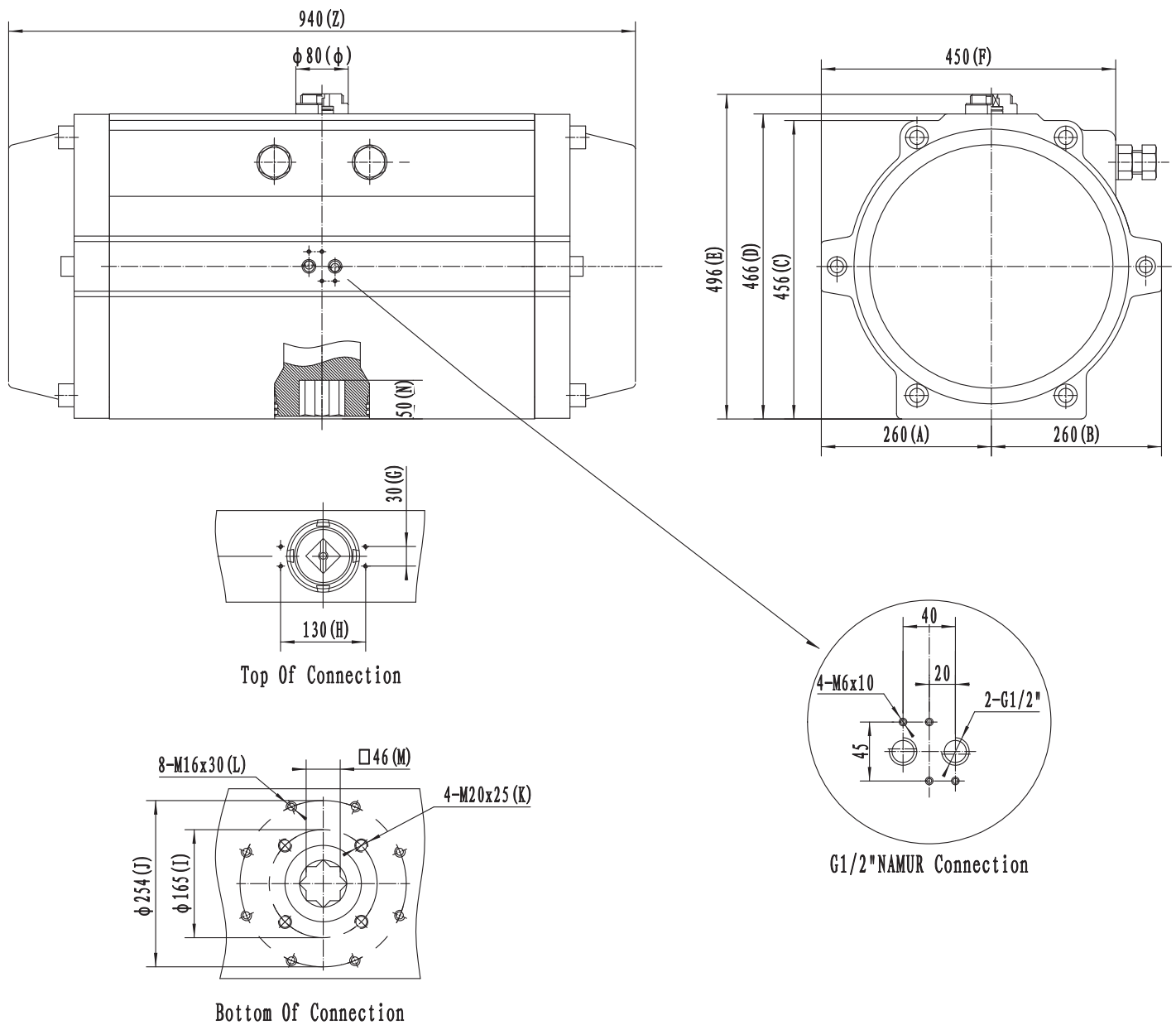


Unit: mm

| Model  | A   | B    | C   | D   | E   | F   | G  | H        | I     | J     | K      | L      | M  | N  | Z   | Φ    | Air Connection |
|--------|-----|------|-----|-----|-----|-----|----|----------|-------|-------|--------|--------|----|----|-----|------|----------------|
| IA-32  | 23  | 23   | 46  | -   | 66  | -   | 25 | 50       | Φ 36  | -     | M5x8   | -      | 9  | 11 | 110 | Φ 40 | G1/8"          |
| IA-40  | 29  | 36.5 | 60  | -   | 80  | 51  | 30 | 80       | Φ 36  | Φ 50  | M5x8   | M6x10  | 11 | 14 | 122 | Φ 40 | G1/4"          |
| IA-52  | 32  | 40   | 70  | 72  | 92  | 64  | 30 | 80       | Φ 36  | Φ 50  | M5x8   | M6x10  | 11 | 14 | 147 | Φ 40 | G1/4"          |
| IA-63  | 37  | 46   | 82  | 88  | 108 | 74  | 30 | 80       | Φ 50  | Φ 70  | M6x10  | M8x13  | 14 | 18 | 168 | Φ 40 | G1/4"          |
| IA-75  | 42  | 53   | 91  | 100 | 120 | 85  | 30 | 80       | Φ 50  | Φ 70  | M6x10  | M8x13  | 14 | 18 | 184 | Φ 40 | G1/4"          |
| IA-83  | 46  | 57   | 98  | 109 | 129 | 92  | 30 | 80       | Φ 50  | Φ 70  | M6x10  | M8x13  | 17 | 21 | 204 | Φ 40 | G1/4"          |
| IA-92  | 48  | 60   | 104 | 117 | 137 | 97  | 30 | 80       | Φ 50  | Φ 70  | M6x10  | M8x13  | 17 | 21 | 262 | Φ 40 | G1/4"          |
| IA-105 | 54  | 67   | 117 | 133 | 153 | 108 | 30 | 80       | Φ 70  | Φ 102 | M8x13  | M10x16 | 22 | 26 | 268 | Φ 40 | G1/4"          |
| IA-125 | 63  | 79   | 141 | 155 | 175 | 127 | 30 | 80 (130) | Φ 70  | Φ 102 | M8x13  | M10x16 | 22 | 26 | 301 | Φ 55 | G1/4"          |
| IA-140 | 76  | 76   | 163 | 172 | 192 | 141 | 30 | 80 (130) | Φ 102 | Φ 125 | M10x16 | M12x20 | 27 | 31 | 394 | Φ 55 | G1/4"          |
| IA-160 | 87  | 87   | 183 | 197 | 217 | 161 | 30 | 80 (130) | Φ 102 | Φ 125 | M10x16 | M12x20 | 27 | 31 | 458 | Φ 55 | G1/4"          |
| IA-190 | 103 | 103  | 210 | 230 | 260 | 191 | 30 | 130      | -     | Φ 140 | -      | M16x20 | 36 | 40 | 534 | Φ 80 | G1/4"          |
| IA-210 | 113 | 113  | 230 | 255 | 285 | 209 | 30 | 130      | -     | Φ 140 | -      | M16x20 | 36 | 40 | 532 | Φ 80 | G1/4"          |
| IA-240 | 130 | 130  | 258 | 289 | 319 | 241 | 30 | 130      | -     | Φ 165 | -      | M20x25 | 46 | 50 | 602 | Φ 80 | G1/4"          |
| IA-270 | 147 | 147  | 288 | 326 | 356 | 272 | 30 | 130      | -     | Φ 165 | -      | M20x25 | 46 | 50 | 722 | Φ 80 | G1/2"          |
| IA-300 | 165 | 170  | 331 | 350 | 380 | 315 | 30 | 130      | Φ 165 | -     | M20x25 | -      | 46 | 50 | 760 | Φ 80 | G1/2"          |
| IA-350 | 190 | 195  | 383 | 410 | 440 | 362 | 30 | 130      | Φ 165 | Φ 254 | M20x25 | M16x30 | 46 | 50 | 920 | Φ 80 | G1/2"          |
| IA-400 | 260 | 260  | 456 | 466 | 496 | 450 | 30 | 130      | Φ 165 | Φ 254 | M20x25 | M16x30 | 46 | 50 | 940 | Φ 80 | G1/2"          |

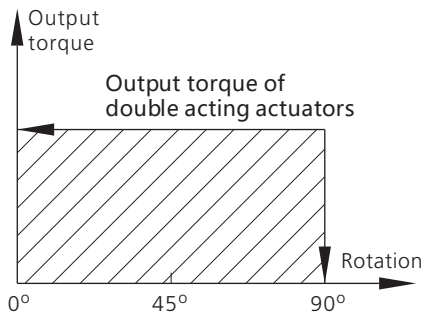


## Dimension For IA-400



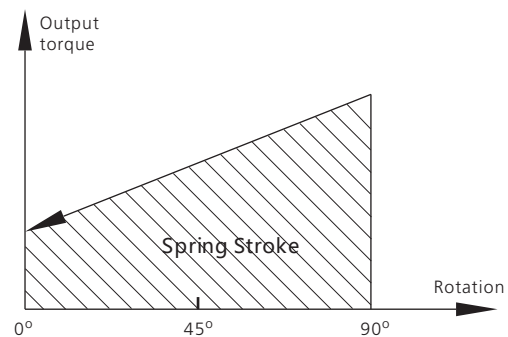
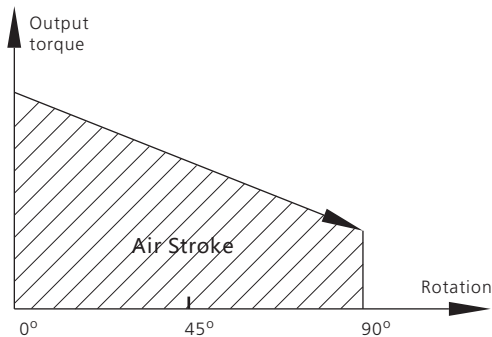
## Output torque

### For Double Acting Actuator



| Output Torque of IA Series Pneumatic Actuator with Double Acting (unit:Nm) |                   |        |        |        |        |        |        |        |        |        |
|----------------------------------------------------------------------------|-------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Model                                                                      | Air pressure(Bar) |        |        |        |        |        |        |        |        |        |
|                                                                            | 2                 | 2.5    | 3      | 4      | 4.5    | 5      | 5.5    | 6      | 7      | 8      |
| IA32DA                                                                     | 3.1               | 3.8    | 4.6    | 6.1    | 6.9    | 7.6    | 8.4    | 9.2    | 10.7   | 12.2   |
| IA40DA                                                                     | 4.8               | 6.0    | 7.2    | 9.5    | 10.7   | 11.9   | 13.1   | 14.3   | 16.7   | 19.1   |
| IA52DA                                                                     | 8.0               | 10.0   | 12.0   | 16.0   | 18.0   | 20.0   | 21.9   | 23.9   | 27.9   | 31.9   |
| IA63DA                                                                     | 14.6              | 18.2   | 21.9   | 29.2   | 32.8   | 36.5   | 40.1   | 43.8   | 51.1   | 58.4   |
| IA75DA                                                                     | 20.1              | 25.1   | 30.1   | 40.1   | 45.1   | 50.2   | 55.2   | 60.2   | 70.2   | 80.3   |
| IA83DA                                                                     | 31.4              | 39.2   | 47.0   | 62.7   | 70.5   | 78.4   | 86.2   | 94.1   | 109.7  | 125.4  |
| IA92DA                                                                     | 45.1              | 56.4   | 67.7   | 90.3   | 101.6  | 112.9  | 124.1  | 135.4  | 158.0  | 180.6  |
| IA105DA                                                                    | 66.1              | 82.7   | 99.2   | 132.2  | 148.8  | 165.3  | 181.8  | 198.4  | 231.4  | 264.5  |
| IA125DA                                                                    | 100.3             | 125.4  | 150.5  | 200.6  | 225.7  | 250.8  | 275.9  | 301.0  | 351.1  | 401.3  |
| IA140DA                                                                    | 171.0             | 213.8  | 256.5  | 342.0  | 384.8  | 427.5  | 470.3  | 513.0  | 598.5  | 684.0  |
| IA160DA                                                                    | 266.0             | 332.5  | 399.0  | 532.0  | 598.5  | 665.0  | 731.5  | 798.0  | 931.0  | 1064.0 |
| IA190DA                                                                    | 425.6             | 532.0  | 638.4  | 851.2  | 957.6  | 1064.0 | 1170.4 | 1276.8 | 1489.6 | 1702.4 |
| IA210DA                                                                    | 532.0             | 665.0  | 798.0  | 1064.0 | 1197.0 | 1330.0 | 1463.0 | 1596.0 | 1862.0 | 2128.0 |
| IA240DA                                                                    | 769.5             | 961.9  | 1154.3 | 1539.0 | 1731.4 | 1923.8 | 2116.1 | 2308.5 | 2693.3 | 3078.0 |
| IA270DA                                                                    | 1169.6            | 1462.1 | 1754.5 | 2339.3 | 2631.7 | 2924.1 | 3216.5 | 3508.9 | 4093.7 | 4678.6 |
| IA300DA                                                                    | 1526              | 1908   | 2671   | 3052   | 3434   | 3815   | 4197   | 4578   | 5341   | 6104   |
| IA350DA                                                                    | 2285              | 2856   | 3999   | 4570   | 5141   | 5712   | 6283   | 6854   | 7997   | 9139   |
| IA400DA                                                                    | 3256              | 4070   | 4884   | 6512   | 7326   | 8140   | 8954   | 9768   | 11396  | 13024  |

### For Spring Return Actuator



| Output Torque of IA Series Pneumatic Actuator with Spring Return (unit:Nm) |                   |             |            |             |            |             |            |             |            |             |            |             |            |             |            |              |                 |  |
|----------------------------------------------------------------------------|-------------------|-------------|------------|-------------|------------|-------------|------------|-------------|------------|-------------|------------|-------------|------------|-------------|------------|--------------|-----------------|--|
| Model                                                                      | Air pressure(Bar) |             |            |             |            |             |            |             |            |             |            |             |            |             |            |              | Springs' output |  |
|                                                                            | Spring Qty        | 2.5         |            | 3           |            | 4           |            | 5           |            | 6           |            | 7           |            | 8           |            |              |                 |  |
|                                                                            |                   | 0°<br>Start | 90°<br>End | 0°<br>Start | 90°<br>End | 0°<br>Start | 90°<br>End | 0°<br>Start | 90°<br>End | 0°<br>Start | 90°<br>End | 0°<br>Start | 90°<br>End | 0°<br>Start | 90°<br>End | 90°<br>Start | 0°<br>End       |  |
| IA52SR                                                                     | 5                 | 5.7         | 3.8        | 7.6         | 5.7        |             |            |             |            |             |            |             |            |             |            | 6.2          | 4.3             |  |
|                                                                            | 6                 | 4.9         | 2.5        | 6.9         | 4.5        | 10.9        | 8.5        |             |            |             |            |             |            |             |            | 7.4          | 5.0             |  |
|                                                                            | 7                 | 4.0         | 1.3        | 6.0         | 3.3        | 9.8         | 7.3        | 14.0        | 10.4       |             |            |             |            |             |            | 8.6          | 5.9             |  |
|                                                                            | 8                 |             |            | 5.2         | 2.0        | 9.2         | 6.0        | 13.2        | 9.1        | 17.2        | 14.1       |             |            |             |            | 9.9          | 6.7             |  |
|                                                                            | 9                 |             |            | 4.3         | 0.8        | 8.3         | 4.8        | 12.3        | 7.9        | 16.3        | 12.8       | 20.3        | 16.8       |             |            | 11.1         | 7.6             |  |
|                                                                            | 10                |             |            |             |            | 7.4         | 3.6        | 11.5        | 6.7        | 15.5        | 11.6       | 19.5        | 15.6       |             |            | 12.4         | 8.5             |  |
|                                                                            | 11                |             |            |             |            | 6.6         | 2.3        | 10.6        | 5.4        | 14.6        | 10.4       | 18.6        | 14.3       | 22.6        | 18.3       | 13.6         | 9.3             |  |
|                                                                            | 12                |             |            |             |            |             |            | 9.7         | 4.2        | 13.8        | 9.1        | 17.8        | 12.2       | 21.8        | 17.1       | 14.8         | 10.2            |  |
| IA63SR                                                                     | 5                 | 11.4        | 7.7        | 15.0        | 11.4       | 22.3        | 14.9       |             |            |             |            |             |            |             |            | 10.4         | 6.8             |  |
|                                                                            | 6                 | 10.1        | 5.7        | 13.6        | 9.3        | 20.9        | 16.6       | 28.3        | 23.9       |             |            |             |            |             |            | 12.5         | 8.2             |  |
|                                                                            | 7                 | 8.6         | 3.6        | 12.5        | 7.2        | 19.5        | 14.5       | 26.8        | 21.9       |             |            |             |            |             |            | 14.6         | 9.6             |  |
|                                                                            | 8                 |             |            | 10.9        | 5.1        | 18.2        | 12.4       | 25.5        | 19.8       | 32.8        | 27.0       | 40.1        | 34.3       |             |            | 16.7         | 10.9            |  |
|                                                                            | 9                 |             |            |             |            | 16.8        | 10.4       | 24.1        | 17.7       | 31.4        | 24.9       | 38.7        | 32.2       |             |            | 18.8         | 12.3            |  |
|                                                                            | 10                |             |            |             |            | 15.5        | 8.2        | 22.8        | 15.6       | 30.0        | 22.8       | 37.3        | 30.1       | 44.7        | 37.4       | 20.9         | 13.7            |  |
|                                                                            | 11                |             |            |             |            |             |            | 21.5        | 13.5       | 28.7        | 20.7       | 36.0        | 28.0       | 43.3        | 35.3       | 22.9         | 15.0            |  |
|                                                                            | 12                |             |            |             |            |             |            | 20.0        | 11.4       | 27.3        | 18.6       | 34.6        | 25.9       | 41.9        | 33.3       | 25.0         | 16.4            |  |

| Output Torque of IA Series Pneumatic Actuator with Spring Return (unit:Nm) |                   |       |      |       |      |       |      |       |       |       |       |       |       |       |       |                 |      |
|----------------------------------------------------------------------------|-------------------|-------|------|-------|------|-------|------|-------|-------|-------|-------|-------|-------|-------|-------|-----------------|------|
| Model                                                                      | Air pressure(Bar) |       |      |       |      |       |      |       |       |       |       |       |       |       |       | Springs' output |      |
|                                                                            | Spring Qty        | 2.5   |      | 3     |      | 4     |      | 5     |       | 6     |       | 7     |       | 8     |       |                 |      |
|                                                                            |                   | 0°    | 90°  | 0°    | 90°  | 0°    | 90°  | 0°    | 90°   | 0°    | 90°   | 0°    | 90°   | 0°    | 90°   | 90°             | 0°   |
|                                                                            |                   | Start | End  | Start | End  | Start | End  | Start | End   | Start | End   | Start | End   | Start | End   | Start           | End  |
| IA75SR                                                                     | 5                 | 14.5  | 10.6 | 19.4  | 15.5 | 29.5  | 25.7 |       |       |       |       |       |       |       |       | 14.5            | 10.5 |
|                                                                            | 6                 | 12.4  | 7.6  | 17.3  | 12.6 | 27.4  | 22.7 | 37.5  | 32.8  |       |       |       |       |       |       | 17.4            | 12.7 |
|                                                                            | 7                 | 10.4  | 4.8  | 15.2  | 9.7  | 25.3  | 19.9 | 35.4  | 29.9  |       |       |       |       |       |       | 20.3            | 14.8 |
|                                                                            | 8                 |       |      | 13.1  | 6.8  | 23.1  | 16.9 | 33.3  | 27.0  | 43.2  | 37.0  | 53.3  | 47.0  |       |       | 23.2            | 16.9 |
|                                                                            | 9                 |       |      |       |      | 21.0  | 14.1 | 31.2  | 24.1  | 41.1  | 34.1  | 51.2  | 44.2  |       |       | 26.1            | 19.0 |
|                                                                            | 10                |       |      |       |      | 19.0  | 11.1 | 28.8  | 21.2  | 39.0  | 31.2  | 49.1  | 41.2  | 59.1  | 51.2  | 29.0            | 21.1 |
|                                                                            | 11                |       |      |       |      |       |      | 27.0  | 18.3  | 37.0  | 28.3  | 47.0  | 38.4  | 57.0  | 48.4  | 31.9            | 23.2 |
|                                                                            | 12                |       |      |       |      |       |      | 24.9  | 15.4  | 34.9  | 25.4  | 44.9  | 35.4  | 54.9  | 45.4  | 34.7            | 25.3 |
| IA83SR                                                                     | 5                 | 23.7  | 16.1 | 31.1  | 24.0 | 46.8  | 37.9 |       |       |       |       |       |       |       |       | 23.0            | 15.8 |
|                                                                            | 6                 | 20.1  | 11.5 | 28.0  | 19.3 | 43.7  | 35.1 | 59.4  | 50.7  |       |       |       |       |       |       | 27.6            | 19.0 |
|                                                                            | 7                 | 17.0  | 6.9  | 24.8  | 14.8 | 40.5  | 30.5 | 56.2  | 46.2  |       |       |       |       |       |       | 32.2            | 22.1 |
|                                                                            | 8                 |       |      | 21.7  | 10.1 | 37.4  | 25.8 | 53.1  | 41.5  | 68.8  | 57.2  | 84.5  | 72.9  |       |       | 36.8            | 25.3 |
|                                                                            | 9                 |       |      |       |      | 34.2  | 21.3 | 49.9  | 37.0  | 65.6  | 52.6  | 81.2  | 68.3  |       |       | 41.4            | 28.5 |
|                                                                            | 10                |       |      |       |      | 31.0  | 16.6 | 46.7  | 32.3  | 62.4  | 48.0  | 78.1  | 63.7  | 93.8  | 79.3  | 46.0            | 31.6 |
|                                                                            | 11                |       |      |       |      |       |      | 43.6  | 27.7  | 59.3  | 43.4  | 75.0  | 59.1  | 90.6  | 74.8  | 50.6            | 34.8 |
|                                                                            | 12                |       |      |       |      |       |      | 40.4  | 23.2  | 56.1  | 38.9  | 71.7  | 54.5  | 87.4  | 70.2  | 55.2            | 38.0 |
| IA92SR                                                                     | 5                 | 33.1  | 22.0 | 44.2  | 33.2 | 66.8  | 55.9 |       |       |       |       |       |       |       |       | 34.4            | 23.3 |
|                                                                            | 6                 | 28.4  | 15.2 | 39.6  | 26.4 | 62.2  | 49.0 | 84.8  | 71.6  |       |       |       |       |       |       | 41.2            | 28.0 |
|                                                                            | 7                 | 23.8  | 8.2  | 34.9  | 19.4 | 57.5  | 42.1 | 80.2  | 64.7  |       |       |       |       |       |       | 48.1            | 32.7 |
|                                                                            | 8                 |       |      | 31.3  | 12.6 | 52.9  | 35.2 | 75.5  | 57.9  | 98.1  | 80.5  | 120.7 | 103.0 |       |       | 55.0            | 37.3 |
|                                                                            | 9                 |       |      |       |      | 48.2  | 28.4 | 70.9  | 51.0  | 93.5  | 73.6  | 116.0 | 96.1  |       |       | 61.9            | 42.0 |
|                                                                            | 10                |       |      |       |      | 43.6  | 21.5 | 66.2  | 44.1  | 88.8  | 66.7  | 111.3 | 89.2  | 134.0 | 111.8 | 68.7            | 46.7 |
|                                                                            | 11                |       |      |       |      |       |      | 61.5  | 37.2  | 84.1  | 59.9  | 106.6 | 82.4  | 129.2 | 105.0 | 75.6            | 51.4 |
|                                                                            | 12                |       |      |       |      |       |      | 56.8  | 30.4  | 79.4  | 53.0  | 101.9 | 75.5  | 124.5 | 98.1  | 82.5            | 56.0 |
| IA105SR                                                                    | 5                 | 51.0  | 33.4 | 67.5  | 49.9 | 100.6 | 83.0 |       |       |       |       |       |       |       |       | 49.2            | 31.6 |
|                                                                            | 6                 | 44.7  | 23.5 | 61.1  | 40.0 | 94.2  | 73.2 | 127.3 | 106.2 |       |       |       |       |       |       | 59.1            | 38.0 |
|                                                                            | 7                 | 38.4  | 13.7 | 54.9  | 30.3 | 87.9  | 63.4 | 121.0 | 96.4  |       |       |       |       |       |       | 68.9            | 44.3 |
|                                                                            | 8                 |       |      | 48.5  | 20.4 | 81.6  | 53.5 | 114.7 | 86.5  | 147.7 | 119.6 | 180.8 | 152.7 |       |       | 78.7            | 50.6 |
|                                                                            | 9                 |       |      |       |      | 75.3  | 43.7 | 108.4 | 76.8  | 141.5 | 109.8 | 174.5 | 142.9 |       |       | 88.6            | 56.9 |
|                                                                            | 10                |       |      |       |      | 68.9  | 33.4 | 102.0 | 66.5  | 135.1 | 99.6  | 168.2 | 132.6 | 201.2 | 165.7 | 98.4            | 63.3 |
|                                                                            | 11                |       |      |       |      |       |      | 95.7  | 57.0  | 128.7 | 90.1  | 161.8 | 123.1 | 194.8 | 156.2 | 108.3           | 69.6 |
|                                                                            | 12                |       |      |       |      |       |      | 89.4  | 47.5  | 122.5 | 80.6  | 155.5 | 113.6 | 188.6 | 146.7 | 118.1           | 75.9 |
| IA125SR                                                                    | 5                 | 73    | 47   | 98    | 72   | 148   | 122  |       |       |       |       |       |       |       |       | 79              | 52   |
|                                                                            | 6                 | 63    | 31   | 88    | 56   | 138   | 107  | 188   | 157   |       |       |       |       |       |       | 94              | 63   |
|                                                                            | 7                 | 52    | 15   | 77    | 40   | 127   | 90   | 178   | 141   |       |       |       |       |       |       | 110             | 73   |
|                                                                            | 8                 |       |      | 67    | 25   | 117   | 75   | 167   | 125   | 217   | 176   | 268   | 226   |       |       | 125             | 84   |
|                                                                            | 9                 |       |      |       |      | 107   | 59   | 157   | 109   | 207   | 159   | 257   | 210   |       |       | 141             | 94   |
|                                                                            | 10                |       |      |       |      | 96    | 44   | 146   | 94    | 196   | 144   | 247   | 194   | 297   | 245   | 157             | 105  |
|                                                                            | 11                |       |      |       |      |       |      | 136   | 78    | 186   | 128   | 236   | 178   | 286   | 228   | 173             | 115  |
|                                                                            | 12                |       |      |       |      |       |      | 125   | 63    | 176   | 113   | 226   | 163   | 276   | 213   | 188             | 125  |
| IA140SR                                                                    | 5                 | 128   | 85   | 171   | 127  | 256   | 213  |       |       |       |       |       |       |       |       | 129             | 86   |
|                                                                            | 6                 | 111   | 59   | 154   | 102  | 239   | 187  | 325   | 273   |       |       |       |       |       |       | 155             | 103  |
|                                                                            | 7                 | 94    | 33   | 137   | 76   | 222   | 162  | 308   | 247   |       |       |       |       |       |       | 181             | 120  |
|                                                                            | 8                 |       |      | 120   | 50   | 205   | 136  | 291   | 221   | 376   | 307   | 462   | 392   |       |       | 206             | 137  |
|                                                                            | 9                 |       |      |       |      | 187   | 110  | 273   | 196   | 358   | 281   | 444   | 367   |       |       | 232             | 155  |
|                                                                            | 10                |       |      |       |      | 170   | 84   | 256   | 169   | 341   | 255   | 427   | 340   | 512   | 426   | 258             | 172  |
|                                                                            | 11                |       |      |       |      |       |      | 238   | 143   | 324   | 229   | 409   | 314   | 495   | 400   | 284             | 189  |
|                                                                            | 12                |       |      |       |      |       |      | 221   | 118   | 307   | 203   | 392   | 289   | 478   | 374   | 310             | 206  |
| IA160SR                                                                    | 5                 | 193   | 124  | 259   | 191  | 392   | 324  |       |       |       |       |       |       |       |       | 208             | 140  |
|                                                                            | 6                 | 165   | 83   | 232   | 149  | 365   | 282  | 498   | 415   |       |       |       |       |       |       | 250             | 168  |
|                                                                            | 7                 | 137   | 41   | 203   | 107  | 336   | 240  | 469   | 373   |       |       |       |       |       |       | 292             | 196  |
|                                                                            | 8                 |       |      | 176   | 66   | 309   | 199  | 442   | 332   | 575   | 465   | 708   | 598   |       |       | 333             | 223  |
|                                                                            | 9                 |       |      |       |      | 280   | 157  | 413   | 290   | 546   | 423   | 679   | 556   |       |       | 375             | 251  |
|                                                                            | 10                |       |      |       |      | 253   | 115  | 386   | 248   | 519   | 381   | 652   | 514   | 785   | 647   | 417             | 279  |
|                                                                            | 11                |       |      |       |      |       |      | 358   | 207   | 491   | 340   | 624   | 473   | 757   | 606   | 458             | 307  |
|                                                                            | 12                |       |      |       |      |       |      | 330   | 165   | 463   | 298   | 596   | 431   | 729   | 564   | 500             | 335  |

| Output Torque of IA Series Pneumatic Actuator with Spring Return (unit:Nm) |                   |             |            |             |            |             |            |             |            |             |            |             |            |             |            |                 |           |
|----------------------------------------------------------------------------|-------------------|-------------|------------|-------------|------------|-------------|------------|-------------|------------|-------------|------------|-------------|------------|-------------|------------|-----------------|-----------|
| Model                                                                      | Air pressure(Bar) |             |            |             |            |             |            |             |            |             |            |             |            |             |            | Springs' output |           |
|                                                                            | Spring Qty        | 2.5         |            | 3           |            | 4           |            | 5           |            | 6           |            | 7           |            | 8           |            |                 |           |
|                                                                            |                   | 0°<br>Start | 90°<br>End | 0°<br>Start | 90°<br>End | 0°<br>Start | 90°<br>End | 0°<br>Start | 90°<br>End | 0°<br>Start | 90°<br>End | 0°<br>Start | 90°<br>End | 0°<br>Start | 90°<br>End | 90°<br>Start    | 0°<br>End |
| IA190SR                                                                    | 5                 | 332         | 222        | 438         | 329        | 651         | 542        |             |            |             |            |             |            |             |            | 309             | 200       |
|                                                                            | 6                 | 292         | 161        | 398         | 267        | 611         | 480        | 824         | 693        |             |            |             |            |             |            | 371             | 240       |
|                                                                            | 7                 | 252         | 99         | 358         | 205        | 571         | 418        | 784         | 631        |             |            |             |            |             |            | 433             | 280       |
|                                                                            | 8                 |             |            | 318         | 143        | 531         | 356        | 744         | 569        | 957         | 782        | 1169        | 995        |             |            | 495             | 320       |
|                                                                            | 9                 |             |            |             |            | 491         | 295        | 704         | 507        | 917         | 720        | 1130        | 933        |             |            | 557             | 360       |
|                                                                            | 10                |             |            |             |            | 451         | 233        | 664         | 446        | 877         | 658        | 1090        | 871        | 1302        | 1084       | 618             | 400       |
|                                                                            | 11                |             |            |             |            |             |            | 624         | 384        | 837         | 597        | 1050        | 809        | 1263        | 1022       | 680             | 440       |
|                                                                            | 12                |             |            |             |            |             |            | 584         | 322        | 797         | 535        | 1010        | 748        | 1223        | 960        | 742             | 480       |
| IA210SR                                                                    | 5                 | 390         | 285        | 523         | 418        | 789         | 684        |             |            |             |            |             |            |             |            | 380             | 275       |
|                                                                            | 6                 | 335         | 209        | 468         | 342        | 734         | 608        | 1000        | 874        |             |            |             |            |             |            | 456             | 330       |
|                                                                            | 7                 | 280         | 133        | 413         | 266        | 679         | 532        | 945         | 798        |             |            |             |            |             |            | 532             | 385       |
|                                                                            | 8                 |             |            | 358         | 190        | 624         | 456        | 890         | 722        | 1156        | 988        | 1422        | 1254       |             |            | 608             | 440       |
|                                                                            | 9                 |             |            |             |            | 569         | 380        | 835         | 646        | 1101        | 912        | 1367        | 1178       |             |            | 684             | 495       |
|                                                                            | 10                |             |            |             |            | 514         | 304        | 780         | 570        | 1046        | 836        | 1312        | 1102       | 1578        | 1368       | 760             | 550       |
|                                                                            | 11                |             |            |             |            |             |            | 725         | 494        | 991         | 760        | 1257        | 1026       | 1523        | 1292       | 836             | 605       |
|                                                                            | 12                |             |            |             |            |             |            | 670         | 418        | 936         | 684        | 1202        | 950        | 1468        | 1216       | 912             | 660       |
| IA240SR                                                                    | 5                 | 552         | 409        | 744         | 600        | 1129        | 985        |             |            |             |            |             |            |             |            | 554             | 410       |
|                                                                            | 6                 | 470         | 297        | 662         | 489        | 1047        | 874        | 1432        | 1259       |             |            |             |            |             |            | 665             | 490       |
|                                                                            | 7                 | 388         | 187        | 580         | 379        | 964         | 764        | 1349        | 1149       |             |            |             |            |             |            | 775             | 575       |
|                                                                            | 8                 |             |            | 498         | 268        | 883         | 653        | 1267        | 1037       | 1652        | 1422       | 2037        | 1807       |             |            | 886             | 656       |
|                                                                            | 9                 |             |            |             |            | 800         | 542        | 1185        | 926        | 1569        | 1311       | 1954        | 1696       |             |            | 998             | 739       |
|                                                                            | 10                |             |            |             |            | 718         | 431        | 1103        | 816        | 1488        | 1201       | 1872        | 1586       | 2257        | 1970       | 1108            | 821       |
|                                                                            | 11                |             |            |             |            |             |            | 1021        | 705        | 1406        | 1090       | 1791        | 1471       | 2176        | 1859       | 1219            | 903       |
|                                                                            | 12                |             |            |             |            |             |            | 939         | 594        | 1323        | 979        | 1708        | 1363       | 2093        | 1748       | 1330            | 985       |
| IA270SR                                                                    | 5                 | 903         | 675        | 1195        | 968        | 1779        | 1552       |             |            |             |            |             |            |             |            | 787             | 560       |
|                                                                            | 6                 | 790         | 519        | 1083        | 811        | 1667        | 1396       | 2252        | 1981       |             |            |             |            |             |            | 943             | 672       |
|                                                                            | 7                 | 679         | 361        | 972         | 654        | 1556        | 1238       | 2141        | 1823       |             |            |             |            |             |            | 1101            | 783       |
|                                                                            | 8                 |             |            | 860         | 497        | 1444        | 1081       | 2029        | 1666       | 2614        | 2252       | 3199        | 2836       |             |            | 1258            | 895       |
|                                                                            | 9                 |             |            |             |            | 1332        | 923        | 1917        | 1509       | 2502        | 2094       | 3087        | 2678       |             |            | 1416            | 1007      |
|                                                                            | 10                |             |            |             |            | 1220        | 767        | 1805        | 1352       | 2390        | 1937       | 2974        | 2521       | 3560        | 3107       | 1572            | 1119      |
|                                                                            | 11                |             |            |             |            |             |            | 1693        | 1197       | 2278        | 1779       | 2862        | 2364       | 3448        | 2949       | 1730            | 1231      |
|                                                                            | 12                |             |            |             |            |             |            | 1582        | 1037       | 2167        | 1623       | 2751        | 2207       | 3336        | 2792       | 1887            | 1342      |
| IA300SR                                                                    | 5                 | 1097        | 729        |             |            |             |            |             |            |             |            |             |            |             |            | 1061            | 730       |
|                                                                            | 6                 | 935         | 494        | 1316        | 875        |             |            |             |            |             |            |             |            |             |            | 1273            | 876       |
|                                                                            | 7                 | 772         | 258        | 1153        | 639        | 1916        | 1402       |             |            |             |            |             |            |             |            | 1485            | 1022      |
|                                                                            | 8                 |             |            | 991         | 403        | 1754        | 1166       | 2517        | 1929       |             |            |             |            |             |            | 1697            | 1168      |
|                                                                            | 9                 |             |            |             |            | 1592        | 930        | 2355        | 1693       | 3118        | 2456       |             |            |             |            | 1909            | 1314      |
|                                                                            | 10                |             |            |             |            | 1430        | 695        | 2193        | 1458       | 2956        | 2221       | 3719        | 2984       | 4482        | 3747       | 2122            | 1460      |
|                                                                            | 11                |             |            |             |            |             |            | 2030        | 1222       | 2793        | 1985       | 3556        | 2748       | 4319        | 3511       | 2334            | 1606      |
|                                                                            | 12                |             |            |             |            |             |            | 1868        | 986        | 2631        | 1749       | 3394        | 2512       | 4157        | 3275       | 2546            | 1752      |
| IA350SR                                                                    | 5                 | 1553        | 964        |             |            |             |            |             |            |             |            |             |            |             |            | 1702            | 1173      |
|                                                                            | 6                 | 1292        | 586        | 1863        | 1157       |             |            |             |            |             |            |             |            |             |            | 2043            | 1408      |
|                                                                            | 7                 | 1031        | 208        | 1602        | 779        | 2745        | 1922       |             |            |             |            |             |            |             |            | 2383            | 1640      |
|                                                                            | 8                 |             |            | 1341        | 401        | 2484        | 1544       | 3626        | 2686       |             |            |             |            |             |            | 2724            | 1877      |
|                                                                            | 9                 |             |            |             |            | 2224        | 1165       | 3366        | 2307       | 4508        | 3449       |             |            |             |            | 3064            | 2112      |
|                                                                            | 10                |             |            |             |            | 1963        | 787        | 3105        | 1929       | 4247        | 3071       | 5390        | 4214       | 6532        | 5356       | 3405            | 2346      |
|                                                                            | 11                |             |            |             |            |             |            | 2844        | 1551       | 3986        | 2693       | 5129        | 3836       | 6271        | 4978       | 3745            | 2581      |
|                                                                            | 12                |             |            |             |            |             |            | 2584        | 1172       | 3726        | 2314       | 4869        | 3457       | 6011        | 4599       | 4086            | 2816      |
| IA400SR                                                                    | 7                 | 2028        | 869        |             |            |             |            |             |            |             |            |             |            |             |            | 2880            | 1837      |
|                                                                            | 8                 | 1736        | 411        | 2550        | 1225       |             |            |             |            |             |            |             |            |             |            | 3292            | 2100      |
|                                                                            | 9                 |             |            | 2259        | 768        | 3887        | 2396       |             |            |             |            |             |            |             |            | 3703            | 2362      |
|                                                                            | 10                |             |            | 1967        | 311        | 3595        | 1939       | 5223        | 3567       |             |            |             |            |             |            | 4115            | 2624      |
|                                                                            | 11                |             |            |             |            | 3303        | 1482       | 4931        | 3110       | 6559        | 4738       |             |            |             |            | 4526            | 2887      |
|                                                                            | 12                |             |            |             |            | 3012        | 1025       | 4640        | 2653       | 6268        | 4281       | 7895        | 5908       | 9523        | 7536       | 4938            | 3149      |
|                                                                            | 13                |             |            |             |            |             |            | 4348        | 2195       | 5976        | 3823       | 7603        | 5450       | 9231        | 7078       | 5349            | 3412      |
|                                                                            | 14                |             |            |             |            |             |            | 4057        | 1738       | 5685        | 3366       | 7312        | 4993       | 8940        | 6621       | 5761            | 3674      |
|                                                                            | 15                |             |            |             |            |             |            | 3765        | 1281       | 5393        | 2909       | 7020        | 4536       | 8648        | 6164       | 6172            | 3937      |
| 16                                                                         |                   |             |            |             |            |             |            |             | 5101       | 2452        | 6728       | 4079        | 8356       | 5707        | 6584       | 4199            |           |



## Operating Conditions

### 1. Operating media

Dry or lubricated air, or non-corrosive gas.

The maximum particle diameter must be less than 30um.

### 2. Air supply pressure

The minimum supply pressure is 2 Bar

The maximum supply pressure is 8 Bar

### 3. Operating temperature

Standard (NBR O-ring): -20°C~+80°C

Low temperature (L NBR O-ring): -35°C~+80°C

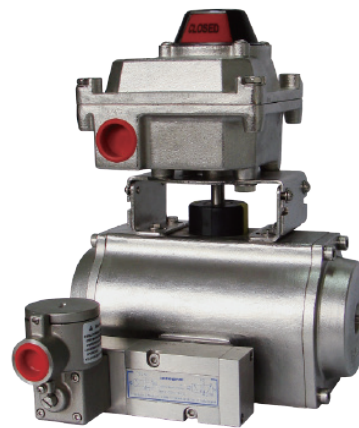
High temperature (Viton O-ring): -15°C~+150°C

### 4. Travel adjustment

Adjustment range of  $\pm 5^\circ$  for the rotation at  $0^\circ$  and  $90^\circ$

### 5. Application

Suitable both for indoor and outdoor



## Air Consumption

### Air volume opening & closing

Unit: L

| Model  | Air volume opening | Air volume closing | Model  | Air volume opening | Air volume closing |
|--------|--------------------|--------------------|--------|--------------------|--------------------|
| IA-32  | 0.04               | 0.04               | IA-140 | 2.5                | 2.2                |
| IA-40  | 0.05               | 0.06               | IA-160 | 3.7                | 3.2                |
| IA-52  | 0.12               | 0.16               | IA-190 | 5.9                | 5.4                |
| IA-63  | 0.21               | 0.23               | IA-210 | 7.5                | 7.5                |
| IA-75  | 0.3                | 0.34               | IA-240 | 11                 | 9                  |
| IA-83  | 0.43               | 0.47               | IA-270 | 17                 | 14                 |
| IA-92  | 0.64               | 0.73               | IA-300 | 23.8               | 29.7               |
| IA-105 | 0.95               | 0.88               | IA-350 | 35.1               | 46.3               |
| IA-125 | 1.60               | 1.40               | IA-400 | 52.6               | 56                 |

Air consumption depends on Air Supply. Air volume and Action cycle times, the calculation is as follows:

$$L/Min = \text{Air volume (Air volume Opening + Air volume Closing)} \times \left[ \frac{\text{Air Supply (Kpa)} + 101.3}{101.3} \right] \times \text{Action cycle time (/min)}$$

## Weight

Unit: Kg

| Model | IA-32 | IA-40 | IA-52 | IA-63 | IA-75 | IA-83 | IA-92 | IA-105 | IA-125 | IA-140 | IA-160 | IA-190 | IA-210 | IA-240 | IA-270 | IA-300 | IA-350 | IA-400 |
|-------|-------|-------|-------|-------|-------|-------|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| DA    | 0.7   | 1     | 1.4   | 2     | 2.7   | 3.1   | 4.6   | 6.8    | 8.9    | 13     | 20     | 31     | 47     | 67     | 97     | 110    | 186    | 289    |
| SR    | -     | -     | 1.5   | 2.1   | 2.9   | 3.6   | 5.2   | 6.9    | 10.1   | 15     | 24     | 35     | 55     | 80     | 118    | 130    | 234    | 360    |

## Operation Time

Unit: s

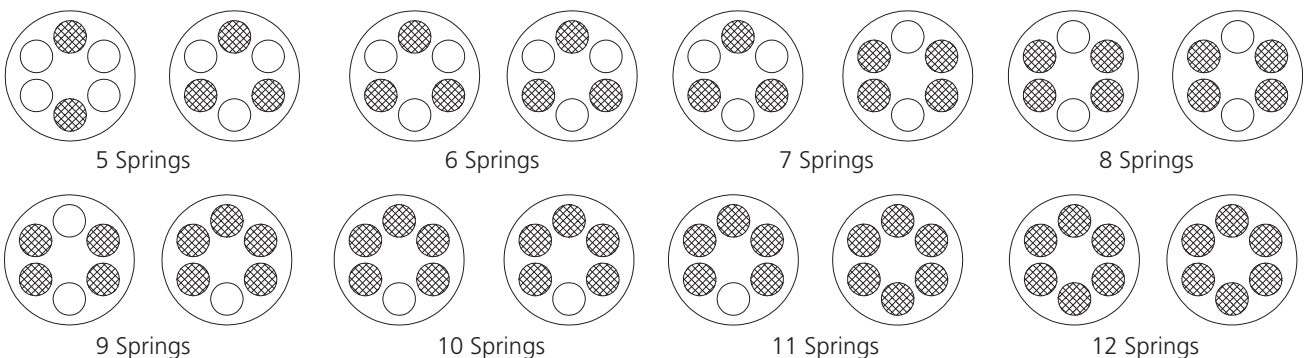
| Double Acting |        |        | Spring Return |             |        |        |        |        |        |        |        |        |        |        |        |        |        |
|---------------|--------|--------|---------------|-------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Size          | 0°-90° | 90°-0° | Size          | Spring Qty. |        |        |        |        |        |        |        |        |        |        |        |        |        |
|               |        |        |               | 3+3         |        | 3+4    |        | 4+4    |        | 4+5    |        | 5+5    |        | 5+6    |        | 6+6    |        |
|               |        |        |               | 0°-90°      | 90°-0° | 0°-90° | 90°-0° | 0°-90° | 90°-0° | 0°-90° | 90°-0° | 0°-90° | 90°-0° | 0°-90° | 90°-0° | 0°-90° | 90°-0° |
| 32DA          | 0.5    | 0.4    | -             | -           | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      |
| 40DA          | 0.5    | 0.5    | -             | -           | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      |
| 52DA          | 0.6    | 0.53   | 52SR          | 2.46        | 0.48   | 2.48   | 0.46   | 2.5    | 0.44   | 2.52   | 0.42   | 2.54   | 0.4    | 2.56   | 0.38   | 2.58   | 0.36   |
| 63DA          | 0.66   | 0.58   | 63SR          | 2.54        | 0.56   | 2.56   | 0.54   | 2.58   | 0.52   | 2.6    | 0.5    | 2.62   | 0.48   | 2.64   | 0.46   | 2.66   | 0.44   |
| 75DA          | 0.72   | 0.64   | 75SR          | 2.62        | 0.64   | 2.64   | 0.62   | 2.66   | 0.6    | 2.68   | 0.58   | 2.7    | 0.56   | 2.72   | 0.54   | 2.74   | 0.52   |
| 83DA          | 0.83   | 0.73   | 83SR          | 2.71        | 0.73   | 2.73   | 0.71   | 2.75   | 0.69   | 2.77   | 0.67   | 2.79   | 0.65   | 2.81   | 0.63   | 2.83   | 0.61   |
| 92DA          | 1      | 0.86   | 92SR          | 2.89        | 0.86   | 2.91   | 0.84   | 2.93   | 0.82   | 2.95   | 0.8    | 2.97   | 0.78   | 2.99   | 0.76   | 3.01   | 0.74   |
| 105DA         | 1.35   | 1.3    | 105SR         | 3.14        | 0.91   | 3.16   | 0.89   | 3.18   | 0.87   | 3.2    | 0.85   | 3.22   | 0.83   | 3.24   | 0.81   | 3.26   | 0.79   |
| 125DA         | 2.4    | 1.79   | 125SR         | 4.24        | 1.2    | 4.26   | 1.18   | 4.28   | 1.16   | 4.3    | 1.14   | 4.32   | 1.12   | 4.34   | 1.1    | 4.36   | 1.08   |
| 140DA         | 2.5    | 2.1    | 140SR         | 4.4         | 1.35   | 4.4    | 1.33   | 4.62   | 1.31   | 4.64   | 1.29   | 4.66   | 1.27   | 4.68   | 1.25   | 4.68   | 1.22   |
| 160DA         | 3.93   | 2.6    | 160SR         | 4.74        | 1.77   | 4.76   | 1.75   | 4.78   | 1.73   | 4.8    | 1.71   | 4.82   | 1.69   | 4.82   | 1.67   | 4.84   | 1.65   |
| 190DA         | 4.55   | 3.45   | 190SR         | 5.75        | 3.7    | 5.77   | 3.5    | 5.75   | 3.48   | 5.77   | 3.46   | 5.79   | 3.44   | 5.8    | 3.42   | 5.83   | 3.4    |
| 210DA         | 5.5    | 4.35   | 210SR         | 8.25        | 4.8    | 8.4    | 4.6    | 8.42   | 4.58   | 8.44   | 4.56   | 8.46   | 4.54   | 8.48   | 4.52   | 8.5    | 4.5    |
| 240DA         | 8.4    | 8.33   | 240SR         | 16.2        | 5.14   | 16.4   | 5.12   | 16.42  | 5.1    | 16.44  | 4.9    | 16.6   | 4.98   | 16.8   | 4.86   | 17     | 4.84   |
| 270DA         | 10.9   | 8.53   | 270SR         | 17.6        | 6.28   | 17.8   | 6.26   | 17.6   | 6.24   | 17.8   | 6.2    | 18     | 6.18   | 18.2   | 6.16   | 18.4   | 6.14   |
| 300DA         | 15     | 14.9   | 300SR         | 24          | 13.2   | 24.5   | 13     | 24.4   | 12.8   | 24.3   | 12.6   | 24.5   | 12.58  | 24.7   | 12.56  | 24.9   | 12.54  |
| 350DA         | 23.7   | 18.6   | 350SR         | 31          | 17.3   | 31.5   | 17     | 31.3   | 16.8   | 31     | 16.6   | 31.2   | 16.58  | 31.4   | 16.56  | 31.6   | 16.54  |
| 400DA         | 31     | 29     | 400SR         | 45          | 27     | 51     | 27     | 51.3   | 26.8   | 51.5   | 26.8   | 51.7   | 26.6   | 51.9   | 26.4   | 52.1   | 26.2   |

Air Pressure: 5 bar

## Mounting Operation

Remove any manual opening device from the valve, leaving the valve stem clear. Make sure that the shape of the stem fits the actuator output and that the rotation is not hindered in any way. Mount the actuator onto the valve, centering it on the stem. Make sure that the rotation direction is correct. Do Not insert your hands inside the valve. We strongly suggest checking the cleanliness of the air-supply, especially when the plant is not provided with filters. A spacer between actuator and valve will be necessary with fluids at high temperature.

Springs mounting positions for spring return actuators:

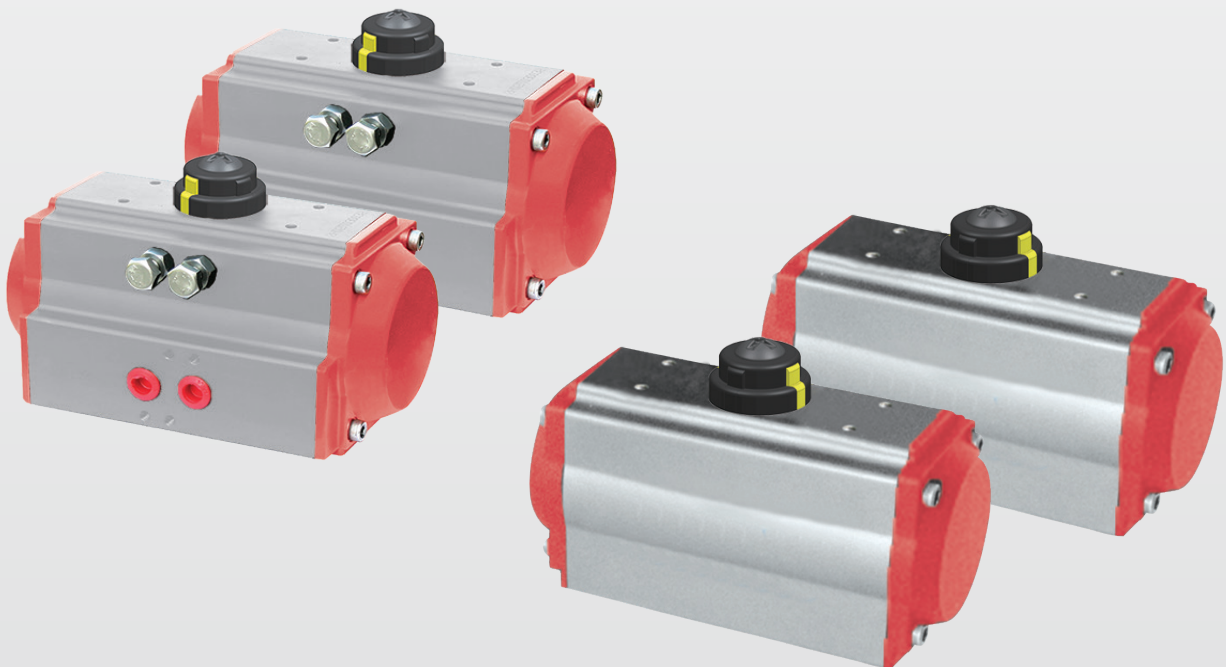


## Maintenance

1. It is recommended that periodic checks be performed to make sure that all fasteners remain tight.
2. The actuator is supplied ready lubricated-no further lubrication is required. If lubrication is deemed necessary, use EP-1 grease.
3. Under certain working conditions (heavy duty, non-compatible operating media or abnormal operating conditions) internal seals should be checked periodically and replaced when necessary.
4. On spring return actuators, spring fatigue may set in requiring the replacement of springs. Springs should always be replaced in full sets.

### NOTE

If an actuator is properly assembled and used, it will be maintenance free, as it has been lubricated enough to last a normal working life under normal working conditions. Should it be necessary to replace its seals, we suggest returning it to our company where the product will be overhauled first and then tested. On request, our company will be willing to provide our customers with kits and instructions.



**Standard Color: Red end cap, grey body.**



Special actuators:  
 Actuators with steel body  
 Actuators with stainless steel pinion and pistons  
 120°, 145°, 180° actuators  
 Three-position actuator  
 Speedy or slow act actuators

## Sizing information and How to Order

There are four parts in the model and specification of Integral Series Actuators.

Seeing follows please: **IA** —  —

Registered trade mark —

Diameter of Body (mm) —

Double Acting or Spring Return —

Example:

IA-85DA

Integral IA Series Actuator With Double Acting with 85mm body diameter .

IA-240SR

Integral IA Series Actuator With Spring Return with 240mm body diameter .

### Sizing: Double Acting Actuators

The suggested safety factor for double acting actuators under normal working conditions is 20%-30%.

#### Example:

- The torque needed by valve=100N.m
- The torque considered safety factor (1+30%)=130N.m
- Air Supply=5Bar

According to the output Torque Table the minimum model is IA-105DA.

### Sizing: Spring Return Actuators

The suggested safety factor for spring return actuator under normal working conditions is 30%-50%

#### Example:

The torque needed by valve=80N.m

The torque consider safety factor ( 1+30%)=104N.m

Air Supply=5Bar

According to the table of spring return actuators' output, the torque of IA-140SR is:

Air stroke 0°=308N.m

Air stroke 90°=247N.m

Spring stroke 90°=181N.m

Spring stroke 0°=120N.m

All the output torque is larger than we needed.

### Attention:

During the return stroke, the spring return actuators' output torque will not be affected by the incoming air from port B. On the contrary it will assist the springs.

## Accessories

ALV300/400F2C0A Solenoid Valve

Namur Connection: ALV300 for 1/4", ALV400 for 1/2"

IP64 Single or Double Coils

Wide Range of Voltages for both DC and AC



ALV510F3C0D Solenoid Valve

Namur Connection for 1/4"

IP66 Single or Double Coils

Wide Range of Voltages for both DC and AC

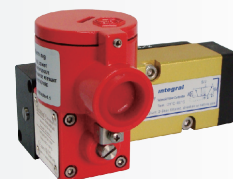


ALV510F3C5 Solenoid Valve

Namur Connection for 1/4"

Ex d IIC T6 (Class I Zone I AEx d IIC T6 Gb), IP66 Single or Double Coils

Wide Range of Voltages for both DC and AC





ALV510F3C3 Solenoid Valve  
 Namur Connection for 1/4"  
 Ex ia IIC T6, IP65 Single or Double Coils  
 24VDC, 0.7W



ALS-200 series Mini Type Limit Switch Box  
 Weather Protection IP67  
 ISO5211 Bracket Carbon Steel and Stainless Steel available  
 Mechanical Switches, Proximity Sensor and Magnet Sensor



ALS-300 series Mult-Function Type Limit Switch Box  
 Weather Protection IP67  
 ISO5211 Bracket Carbon Steel and Stainless Steel available  
 Mechanical Switches, Proximity Sensor and Magnet Sensor  
 Position Transmitter (4-20mA) available



ALS-400 series Explosion-Proof Limit Switch Box  
 Weather Protection IP66  
 Explosion-proof Ex d IIC T6  
 ISO5211 Bracket Carbon Steel and Stainless Steel available  
 Mechanical Switches, Proximity Sensor and Magnet Sensor





ALS-500 series Explosion-Proof Limit Switch Box  
Weather Protection IP66  
Explosion-proof Ex d IIB T6  
ISO5211 Bracket Carbon Steel and Stainless Steel available  
Mechanical Switches, Proximity Sensor and Magnet Sensor  
Stainless Steel Body and cover available



ALSD400 series Explosion-Proof Pneumatic Monitor  
Weather Protection IP66  
2/5, 2/3 Solenoid Valve  
ISO5211 Bracket Carbon Steel and Stainless Steel available  
Mechanical Switches, Proximity Sensor and Magnet Sensor  
Position Transmitter (4-20mA) available

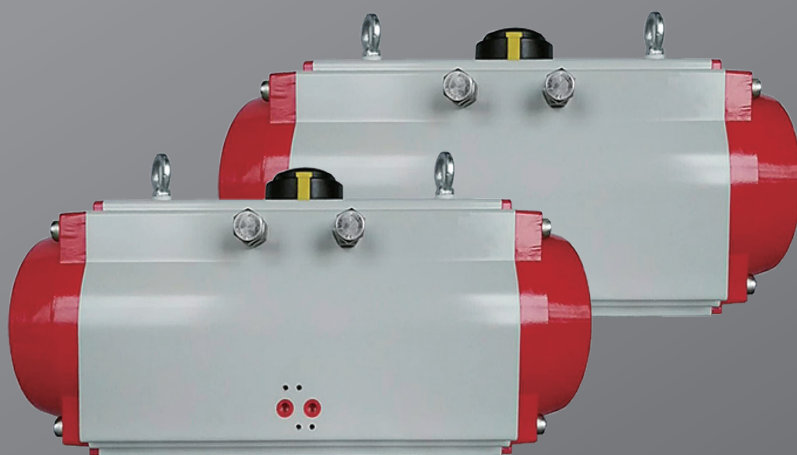


ALSD400 series Explosion-Proof Pneumatic Monitor  
Weather Protection IP66  
Explosion-proof Ex d IIC T6  
2/5, 2/3 Solenoid Valve  
ISO5211 Bracket Carbon Steel and Stainless Steel available  
Mechanical Switches, Proximity Sensor and Magnet Sensor  
Stainless Steel Body and cover available



ALSD500 series Explosion-Proof Pneumatic Monitor  
Weather Protection IP66  
Explosion-proof Ex d IIB T6  
2/5, 2/3 Solenoid Valve  
ISO5211 Bracket Carbon Steel and Stainless Steel available  
Mechanical Switches, Proximity Sensor and Magnet Sensor

# integral



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