

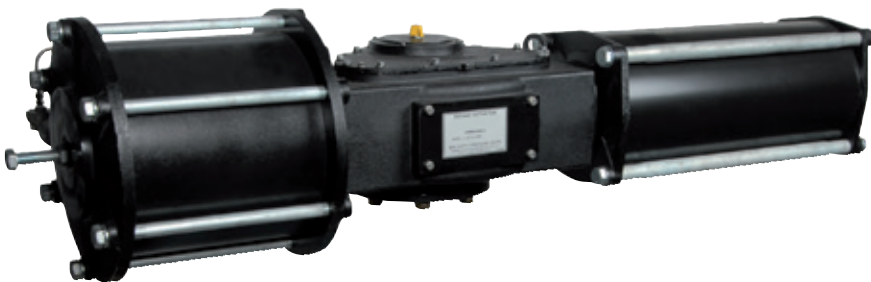
## MORIN B AND C SERIES ACTUATORS

B series - Ductile iron w/ stainless steel cylinders, C series - Ductile iron w/ carbon steel cylinders  
 Spring return and double acting actuators  
 Quarter-turn output torques to 158200 Nm



B SERIES

C SERIES



### FEATURES AND BENEFITS

- Ductile iron housing, piston and end caps provide long life and durable, cost-effective operation.
- High strength alloy steel or 17-4PH stainless output shaft transmits torque without fatigue.
- Sintered bronze or PTFE composite output shaft bushings eliminate side loading of valve stem to maximize stem packing performance.
- Strong, corrosion-resistant chrome-plated steel piston rod for enduring high cycle applications.
- Sintered bronze piston rod bushings provide low-friction support and precise alignment to increase efficiency, reduce maintenance and extend actuator life.
- Heat-treated stainless steel thrust pin and rollers transfer piston force to yoke to reduce friction for longer life and more efficient torque transmission.
- PTFE guide bands ensure low-friction piston guidance, protecting cylinder walls from scoring and extending seal performance with a continuous cylinder wiping action.
- Bi-directional travel stops provide accurate valve rotation adjustment.
- NAMUR drive slot maintains a compact assembly for accessory-driven components with no couplings necessary.
- Tectyl-coated springs need no special tools to be disarmed safely and easily, reducing down time.
- Easily removable housing cover provides easy access for yoke mechanism inspection.

**ALGA/ALGAS models available over the 1150 size**

### GENERAL APPLICATIONS

For remote control of any quarter-turn application: ball, butterfly, rotary plug or damper style valves, etc. for use in chemical process, food and beverage, iron and steel, pharmaceutical, power, oil and gas, pulp and paper and textile industries.

### TECHNICAL DATA

|                    |  |
|--------------------|--|
| Supply pressure:   | 3 to 11 barg<br>(see torque chart)                       |
| Supply medium:     | Air or any gas compatible with materials of construction |
| Temperature rating |  |
| Standard range:    | -29°C to 99°C  |
| Optional range:    | -54°C to 149°C   |
| Angular rotation:  | 90 degrees<br>(adjustable between 82 and 98 degrees)     |
| Mounting pattern:  | ISO 5211   |
| Protection:        | IP66   |
| Certification:     | SIL3 capable   |



# MORIN B AND C SERIES ACTUATORS

## DESIGNED WITH A RUGGED HEART

### Scotch yoke design

The heart of any scotch yoke actuator is the yoke. B and C series actuators use either 17-4PH or ductile iron for this critical area as standard.

The yoke is the mechanism used to convert linear force to torque. The yoke is critical to actuator performance, it must be rugged yet precisely machined to give long life at high efficiency - all our yoke designs meet this test.

### Principles of construction

Using high quality materials of construction and modern rugged design concepts, provides the standard for high quality, low cost valve actuation.

The actuator housings are all machined from ductile iron castings. This produces a rugged, low cost product through reduced machining time and by eliminating wasteful excess material.

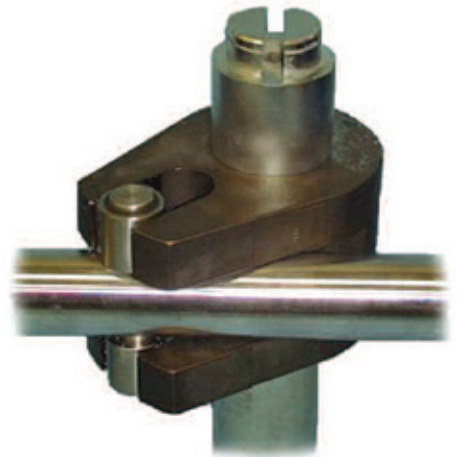
Any components that rotate or slide during operation, such as the high strength output shaft, chrome-plated piston rod, stainless steel thrust pin or the ductile iron piston, are all supported by replaceable friction reducing bearings.

### Bi-directional travel stops

Adjustable stops on each end cap provide the flexibility of accurate valve rotation positioning at the end of the 'open' and 'close' stroke. Both stops are located on the cylinder centerline, the optimal position to maximize travel adjustment and eliminate any detrimental side loading on the travel stops. Adjustable from 82° to 98°.

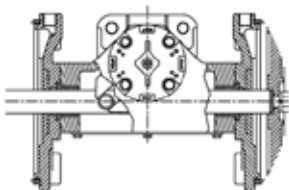
### Spring designed for safety

All spring return models incorporate a 'man safe' spring design that allows the actuator to be safely assembled and disassembled in the field without the need for special tools. The integral tie rods are bored and tapped to provide a means of loading and unloading the spring in a safe and convenient manner.

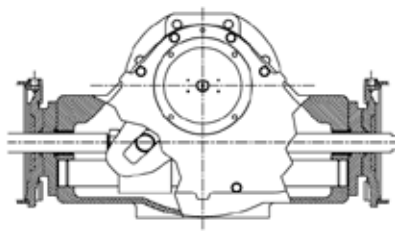


### Experts in actuator design

We understand that the most efficient design for one torque range is not the most efficient for another. Our actuators use the standard scotch yoke design for lower torque ranges and a guide bar design for the higher torque ranges. This gives a rugged design with economic cost.



STANDARD DESIGN, SCOTCH YOKE

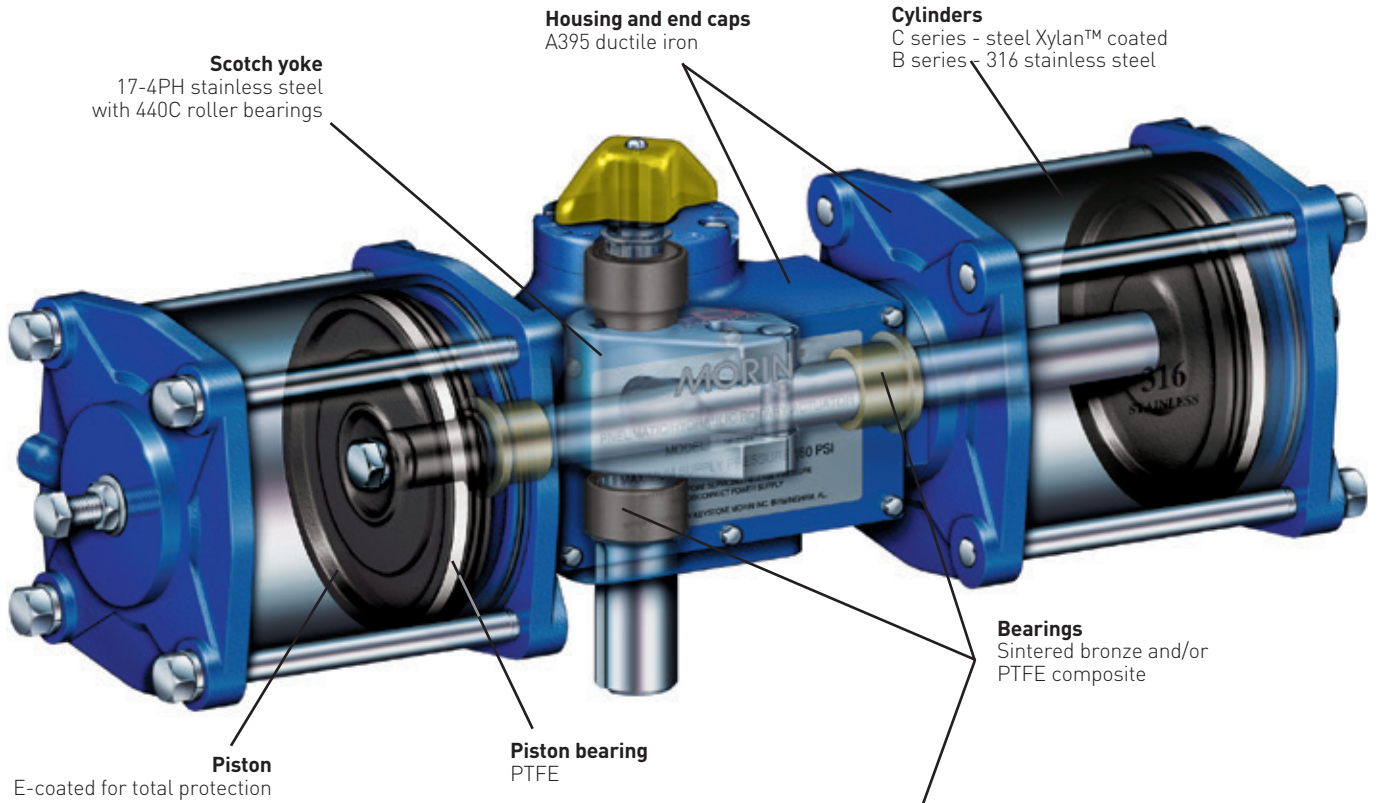


GUIDE BAR DESIGN, SCOTCH YOKE

# MORIN B AND C SERIES ACTUATORS

Superior materials of construction offer long life, and mean less downtime

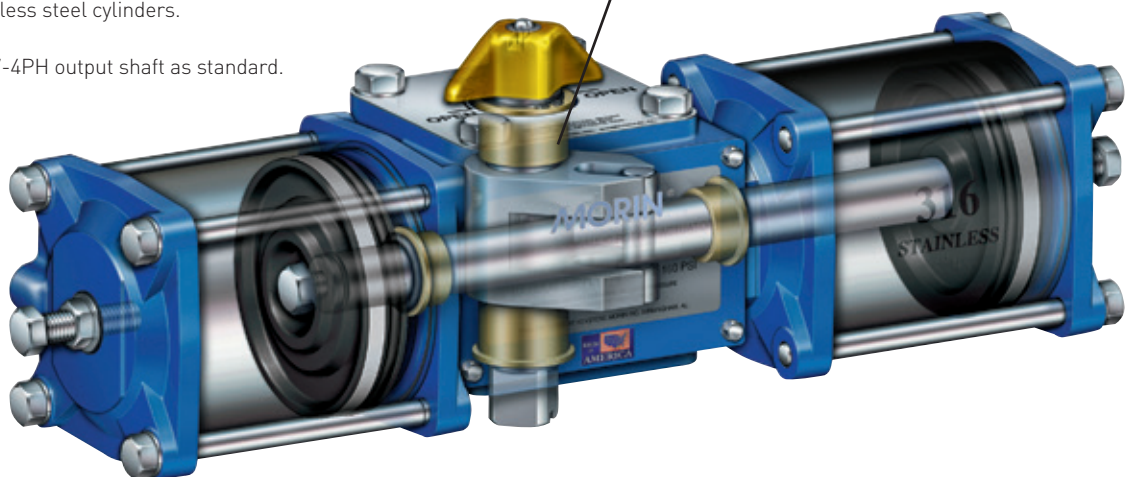
B OR C SERIES, MODELS 135 TO 1150



B SERIES MODELS 006 TO 100

B series actuators use construction identical to the C series, but with 316 stainless steel cylinders.

Models 006 to 100 use 17-4PH output shaft as standard.



## NOTE

See B/C/S series IOM for a complete bill of materials.

# MORIN B AND C SERIES ACTUATORS

## SYMMETRICAL AND CANTED YOKES

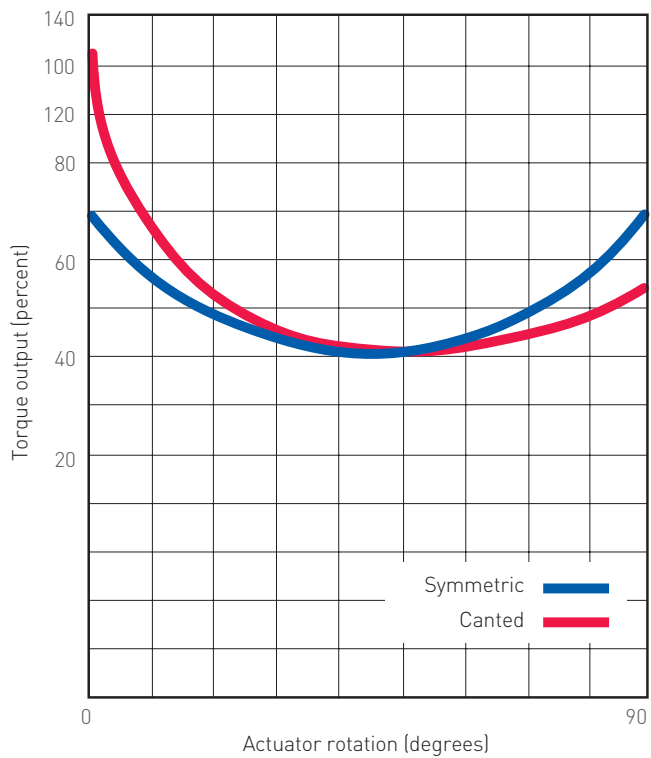
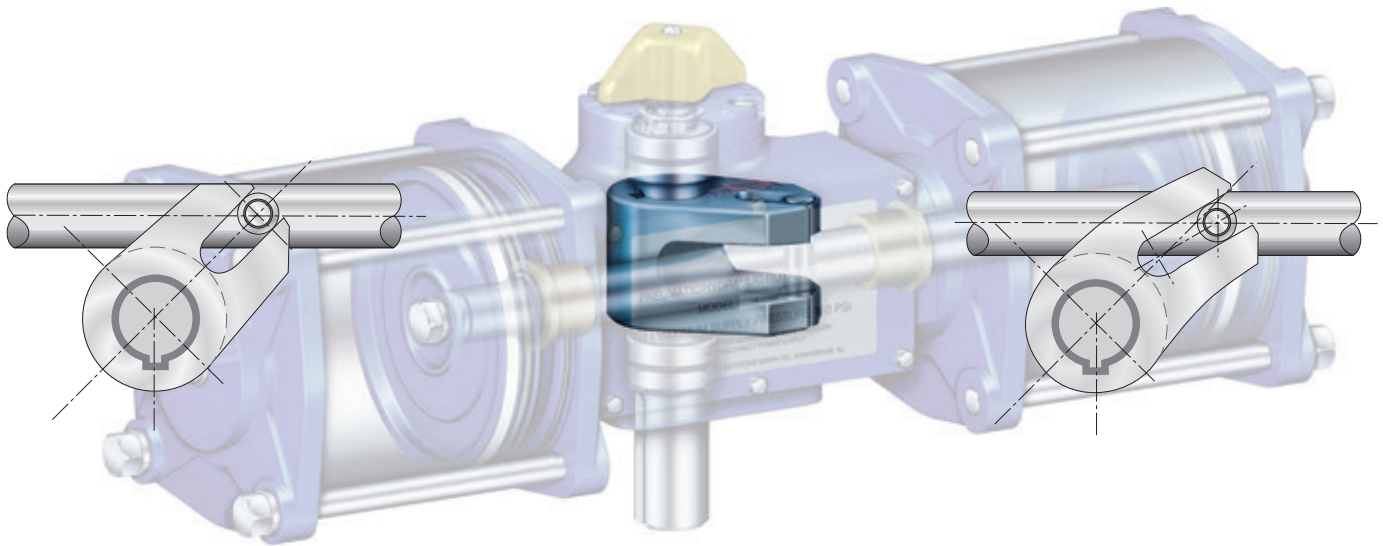
It's about fitting the torque curve of the actuator to the valve . . .  
It's about lower cost, lighter weight, smaller actuators . . .  
It's about CHOICE . . .

### Symmetric

Symmetrical yoke design offers the standard torque curve seen most often in relation to scotch yoke actuators. It offers the increased torque advantage at both ends of the 90° stroke as shown on the blue curve below. This torque curve covers most quarter-turn applications.

### Canted

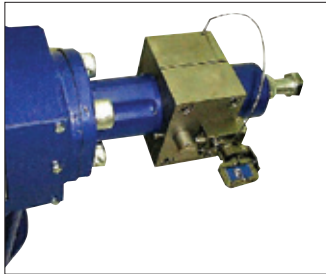
Canted yoke design moves the torque curve to where it's needed most, gaining as much as 35% more break and reseal torque for the same size actuator. The canted yoke curve is shown in red below. Canted yoke actuators allow selection of smaller, lighter, and less expensive actuator packages.



# MORIN B AND C SERIES ACTUATORS

## OPTIONS

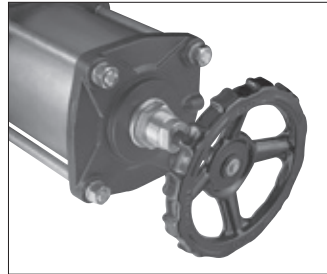
To provide the actuation package best suited for your application, we offer a full range of manual accessories.



**Partial stroke test device (PSTD)**  
Provides a method of testing ESD packages without shutdown.



**Lockout**  
Integral lockout allows safe shutdowns for maintenance and isolation of systems.



**Jackscrew override (JSO)**  
Manual operation when power is lost. Simple and effective.



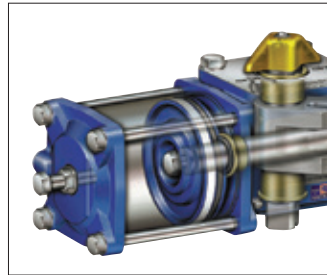
**Hydraulic override (MHP)**  
Manual operation when power is lost. Includes speed controls.



**AWWA**  
Tested per American Waterworks Association C540. Available for pneumatic or water service operation.



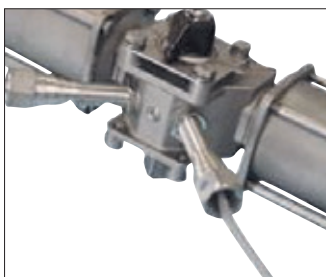
**Direct mounting cast adapters**  
Many valve top works covered, including some ISO mounting. Assures economic but correct mounting alignment.



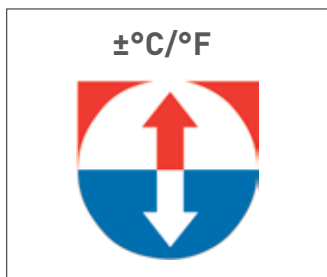
**Full stroke adjuster**  
Provides mechanical control of maximum and/or minimum valve stroke.



**Epoxy painting (EX)**  
Offshore rated, three-part coating system for high level of environmental protection.



**Proximity switch preparation**  
Allows installation of cartridge style proximity switches. Leaves top works open for mounting of other devices.



**High or low temperature ratings**  
Standard rating of -29°C to 99°C [-20°F to 210°F] covers most applications. Optional ratings down to -54°C [-65°F] and up to 149°C [300°F].



**Optional certification for CE**  
Manufactured in accordance with the Pressure Equipment Directive 97/23/EC and ATEX 94/9/EC.



# MORIN B AND C SERIES ACTUATORS

## MECHANICAL DATA

| Actuator model       | Closing torque at 5.5 barg |          | Number of pistons | Cylinder bore (mm) | Stroke (mm) | Volume <sup>[1]</sup> (liters) 90° stroke | Cycle time <sup>[2]</sup> (seconds) 90° stroke |       | Weight (kg) |
|----------------------|----------------------------|----------|-------------------|--------------------|-------------|---|--|-------|-------------|
|                      | Symmetrical                | Canted   |                   |                    |             |   |  |       |             |
| <b>Double acting</b> |                            |          |                   |                    |             |   |  |       |             |
| 006                  | 68                         | -        | 1                 | 69.9               | 50.8        | 0.20                                      | 1  | 5.0   |             |
| 015                  | 170                        | -        | 1                 | 111.1              | 50.8        | 0.49                                      | 1  | 6.5   |             |
| 023                  | 260                        | 338      | 1                 | 111.1              | 76.2        | 0.74                                      | 1  | 13.5  |             |
| 036                  | 447                        | 582      | 1                 | 138.1              | 76.2        | 1.15                                      | 2  | 15.0  |             |
| 050                  | 565                        | 735      | 1                 | 158.8              | 76.2        | 1.51                                      | 2  | 17.5  |             |
| 059                  | 667                        | 867      | 2                 | 111.1/138.1        | 76.2        | 1.84                                      | 2  | 16.5  |             |
| 072                  | 895                        | *1018    | 2                 | 138.1              | 76.2        | 2.25                                      | 3  | 18.5  |             |
| 100                  | 1130                       | **1102   | 2                 | 158.8              | 76.2        | 2.98                                      | 3  | 22.0  |             |
| 135                  | 1602                       | 2082     | 1                 | 209.6              | 127.0       | 4.38                                      | 5  | 75.0  |             |
| 210                  | 2610                       | 3393     | 1                 | 260.4              | 127.0       | 6.77                                      | 5  | 84.0  |             |
| 270                  | 3204                       | 4165     | 2                 | 209.6              | 127.0       | 8.62                                      | 6  | 95.5  |             |
| 345                  | 4093                       | *4656    | 2                 | 209.6/260.4        | 127.0       | 11.00                                     | 7  | 106.0 |             |
| 370                  | 4181                       | 5816     | 1                 | 311.2              | 152.4       | 11.59                                     | 8  | 177.0 |             |
| 420                  | 4746                       | **4627   | 2                 | 260.4              | 127.0       | 13.37                                     | 9  | 116.5 |             |
| 575                  | 7212                       | 9376     | 1                 | 393.7              | 152.4       | 18.55                                     | 10   | 235.5 |             |
| 740                  | 8780                       | 11414    | 2                 | 311.2              | 152.4       | 22.86                                     | 10   | 240.5 |             |
| 945                  | 11426                      | **11140  | 2                 | 311.2/393.7        | 152.4       | 29.82                                     | 11   | 296.0 |             |
| 1150                 | 13645                      | ***11086 | 2                 | 393.7              | 152.4       | 36.79                                     | 12   | 351.5 |             |
| 1485                 | •                          | •        | •                 | •                  | •           | •   | •  | •     |             |
| 1935                 | •                          | •        | •                 | •                  | •           | •   | •  | •     |             |
| 2385                 | •                          | •        | •                 | •                  | •           | •   | •  | •     |             |
| 3071                 | •                          | •        | •                 | •                  | •           | •   | •  | •     |             |
| 3731                 | •                          | •        | •                 | •                  | •           | •   | •  | •     |             |
| 4534                 | •                          | •        | •                 | •                  | •           | •   | •  | •     |             |
| 5336                 | •                          | •        | •                 | •                  | •           | •   | •  | •     |             |
| 7114                 | •                          | •        | •                 | •                  | •           | •   | •  | •     |             |

• Use ALGA model

### Spring return

|      |          |          |   |             |       |        |     |       |
|------|----------|----------|---|-------------|-------|--------|-----|-------|
| 006  | 25       | -        | 1 | 69.9        | 50.8  | 0.20   | 0.5 | 6.0   |
| 015  | 59       | -        | 1 | 111.1       | 50.8  | 0.49   | 1   | 9.0   |
| 023  | 90       | 127      | 1 | 111.1       | 76.2  | 0.74   | 1   | 17.0  |
| 036  | 142      | 199      | 1 | 138.1       | 76.2  | 1.15   | 1.5 | 21.0  |
| 046  | 181      | 235      | 2 | 111.1       | 76.2  | 1.44   | 2   | 21.5  |
| 058  | *181     | *253     | 2 | 138.1/111.1 | 76.2  | 1.84   | 2.3 | 24.5  |
| 059  | 214      | 299      | 2 | 111.1/138.1 | 76.2  | 1.84   | 2.4 | 24.5  |
| 072  | 283      | 396      | 2 | 138.1       | 76.2  | 2.25   | 2.5 | 27.0  |
| 100  | 396      | 554      | 2 | 158.8       | 76.2  | 2.98   | 3   | 39.0  |
| 135  | 641      | 897      | 1 | 209.6       | 127.0 | 4.38   | 4.5 | 95.5  |
| 210  | 914      | 1279     | 1 | 260.4       | 127.0 | 6.77   | 5   | 106.5 |
| 270  | 1175     | 1644     | 2 | 209.6       | 127.0 | 8.62   | 6   | 113.5 |
| 344  | 1428     | 1999     | 2 | 260.4/209.6 | 127.0 | 11.00  | 7   | 143.0 |
| 345  | ****1555 | ****2177 | 2 | 209.6/260.4 | 127.0 | 11.00  | 7   | 143.0 |
| 370  | 1683     | 2356     | 1 | 311.2       | 152.4 | 11.59  | 8   | 245.0 |
| 420  | 1744     | 2442     | 2 | 260.4       | 127.0 | 13.37  | 8.5 | 172.0 |
| 575  | 2388     | 3108     | 1 | 393.7       | 152.4 | 18.55  | 9.5 | 353.5 |
| 740  | 3366     | 4712     | 2 | 311.2       | 152.4 | 186.73 | 10  | 299.5 |
| 944  | *3132    | *4384    | 2 | 393.7/311.2 | 152.4 | 29.82  | 11  | 395.0 |
| 945  | 3650     | 5110     | 2 | 311.2/393.7 | 152.4 | 29.82  | 11  | 395.0 |
| 1150 | 4776     | 6686     | 2 | 393.7       | 152.4 | 36.79  | 12  | 491.0 |
| 1485 | ✦        | ✦        | ✦ | ✦           | ✦     | ✦      | ✦   | ✦     |
| 1934 | ✦        | ✦        | ✦ | ✦           | ✦     | ✦      | ✦   | ✦     |
| 1935 | ✦        | ✦        | ✦ | ✦           | ✦     | ✦      | ✦   | ✦     |
| 2385 | ✦        | ✦        | ✦ | ✦           | ✦     | ✦      | ✦   | ✦     |
| 3071 | ✦        | ✦        | ✦ | ✦           | ✦     | ✦      | ✦   | ✦     |
| 3072 | ✦        | ✦        | ✦ | ✦           | ✦     | ✦      | ✦   | ✦     |
| 3731 | ✦        | ✦        | ✦ | ✦           | ✦     | ✦      | ✦   | ✦     |
| 4534 | ✦        | ✦        | ✦ | ✦           | ✦     | ✦      | ✦   | ✦     |
| 5336 | ✦        | ✦        | ✦ | ✦           | ✦     | ✦      | ✦   | ✦     |
| 6044 | ✦        | ✦        | ✦ | ✦           | ✦     | ✦      | ✦   | ✦     |
| 7114 | ✦        | ✦        | ✦ | ✦           | ✦     | ✦      | ✦   | ✦     |

✦ Use ALGAS model

### NOTES

#### 1. Air consumption:

Liter shown in chart represent actual free air volume in cylinder between piston and end cap when furthest apart. Air consumption will vary depending on supply pressure. To determine standard cubic meter per second use the following formula:

$$SCMS = \left( \frac{\text{Vol. ltr.}}{1000} \right) \left( \frac{\text{Supply air barg} + 1}{1 \text{ barg}} \right) \left( \frac{\text{Strokes/min}}{60} \right)$$

Example: calculate SCMS for model 023 double acting using 5.5 barg air supply and 5 strokes/minute.

$$SCMS = \left( \frac{0.737}{1000} \right) \left( \frac{5.5 + 1}{1} \right) \left( \frac{5}{60} \right) = 0.000401$$

2. Cycle times shown represent average time to stroke 90 degrees using standard pilot valves and should be used as a guide only. Cycle times can be increased or decreased dramatically by using speed controls, oversized pilot valves or quick exhaust valves.

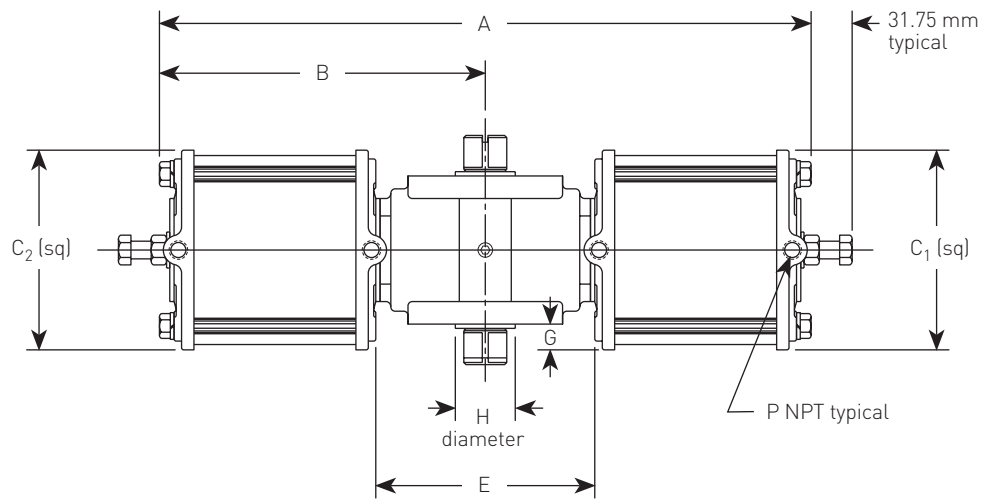
\* at 4.8 barg;  
\*\* at 4.1 barg;

\*\*\* at 3.4 barg;  
\*\*\*\* at 6.2 barg

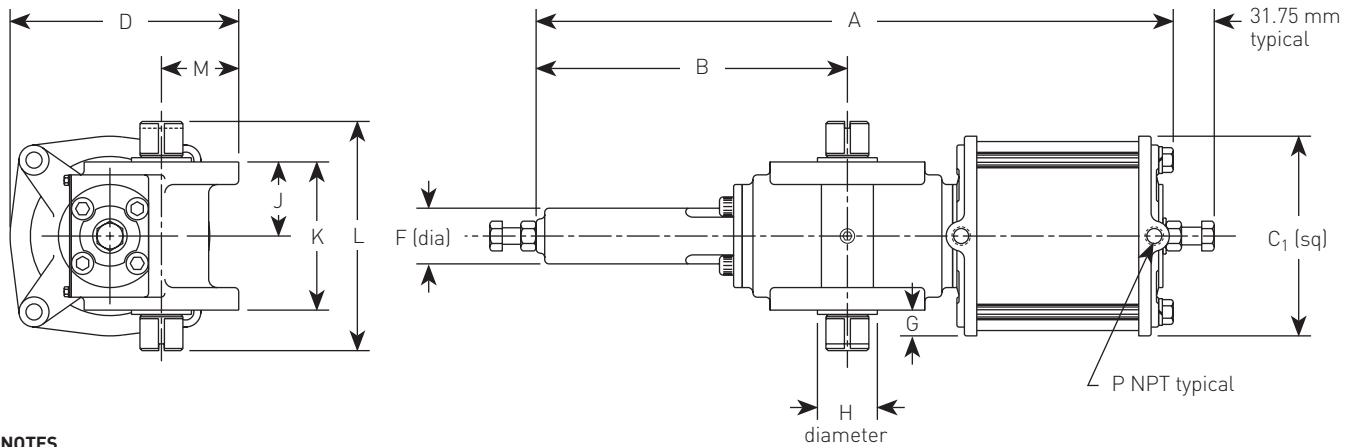
# MORIN B AND C SERIES ACTUATORS

## DIMENSIONS

MODELS 046, 058, 059, 072 AND 100



MODELS 006, 015, 023, 036 AND 050



### NOTES

1. Shown without pointer for clarity.
2. For mounting dimensions, refer to page 10.

### DIMENSIONS (mm) DOUBLE ACTING

| Model | A     | B     | C <sub>1</sub> | C <sub>2</sub> | D     | E     | F    | G    | H    | J    | K     | L     | M    | P   |
|-------|-------|-------|----------------|----------------|-------|-------|------|------|------|------|-------|-------|------|-----|
| 006DA | 326.9 | 134.1 | 80.8           | -              | 98.3  | -     | 27.7 | 4.6  | 38.1 | 38.1 | 76.2  | 120.7 | 33.3 | 1/8 |
| 015DA | 312.7 | 134.1 | 122.2          | -              | 122.2 | -     | 27.7 | 25.4 | 38.1 | 38.1 | 76.2  | 120.7 | 33.3 | 1/4 |
| 023DA | 470.9 | 225.6 | 122.2          | -              | 156.5 | -     | 44.5 | 6.4  | 44.5 | 54.9 | 109.5 | 169.9 | 57.2 | 1/4 |
| 036DA | 472.4 | 225.6 | 147.6          | -              | 169.2 | -     | 44.5 | 19.1 | 44.5 | 54.9 | 109.5 | 169.9 | 57.2 | 1/4 |
| 050DA | 471.2 | 225.6 | 180.8          | -              | 185.7 | -     | 44.5 | 35.1 | 44.5 | 54.9 | 109.5 | 169.9 | 57.2 | 1/4 |
| 059DA | 492.8 | 245.4 | 122.2          | 147.6          | 169.2 | 161.0 | -    | 19.1 | 44.5 | 54.9 | 109.5 | 169.9 | 57.2 | 1/4 |
| 072DA | 491.5 | 245.9 | 147.6          | 147.6          | 169.2 | 162.1 | -    | 19.1 | 44.5 | 54.9 | 109.5 | 169.9 | 57.2 | 1/4 |
| 100DA | 482.1 | 245.9 | 180.8          | 180.8          | 185.7 | 162.1 | -    | 35.1 | 44.5 | 54.9 | 109.5 | 169.9 | 57.2 | 1/4 |

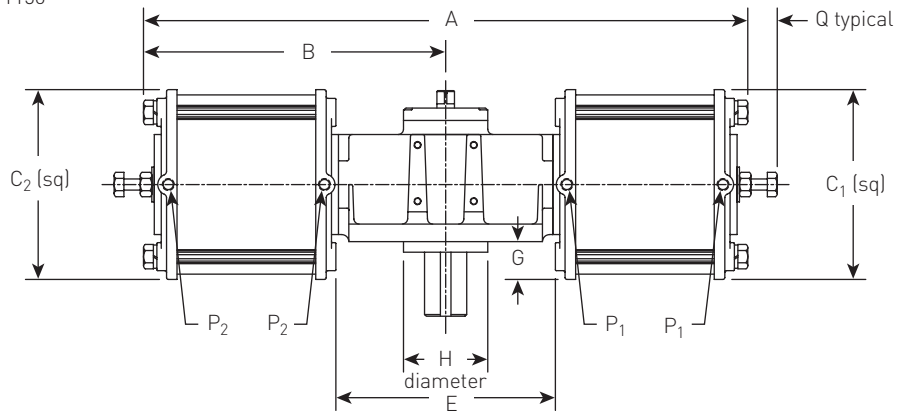
### DIMENSIONS (mm) SPRING RETURN

| Model | A     | B     | C <sub>1</sub> | C <sub>2</sub> | D     | E     | F    | G    | H    | J    | K     | L     | M    | P   |
|-------|-------|-------|----------------|----------------|-------|-------|------|------|------|------|-------|-------|------|-----|
| 006SR | 326.9 | 134.1 | 80.8           | -              | 98.3  | -     | 27.7 | 4.6  | 38.1 | 38.1 | 76.2  | 120.7 | 33.3 | 1/8 |
| 015SR | 368.3 | 134.1 | 122.2          | -              | 122.2 | -     | 27.7 | 25.4 | 38.1 | 38.1 | 76.2  | 120.7 | 33.3 | 1/4 |
| 023SR | 557.5 | 225.6 | 122.2          | -              | 156.6 | -     | 44.5 | 6.4  | 44.5 | 54.9 | 109.5 | 169.9 | 57.2 | 1/4 |
| 036SR | 600.7 | 225.6 | 147.6          | -              | 169.2 | -     | 44.5 | 19.1 | 44.5 | 54.9 | 109.5 | 169.9 | 57.2 | 1/4 |
| 046SR | 577.3 | 245.4 | 122.2          | 122.2          | 156.5 | 141.7 | -    | 6.4  | 44.5 | 54.9 | 109.5 | 169.9 | 57.2 | 1/4 |
| 058SR | 578.9 | 247.1 | 147.6          | 122.2          | 169.2 | 141.7 | -    | 19.1 | 44.5 | 54.9 | 109.5 | 169.9 | 57.2 | 1/4 |
| 059SR | 620.8 | 245.4 | 122.2          | 147.6          | 169.2 | 138.2 | -    | 19.1 | 44.5 | 54.9 | 109.5 | 169.9 | 57.2 | 1/4 |
| 072SR | 621.0 | 245.9 | 147.6          | 147.6          | 169.2 | 138.2 | -    | 19.1 | 44.5 | 54.9 | 109.5 | 169.9 | 57.2 | 1/4 |
| 100SR | 622.6 | 247.1 | 180.8          | 180.8          | 185.7 | 138.2 | -    | 35.1 | 44.5 | 54.9 | 109.5 | 169.9 | 57.2 | 1/4 |

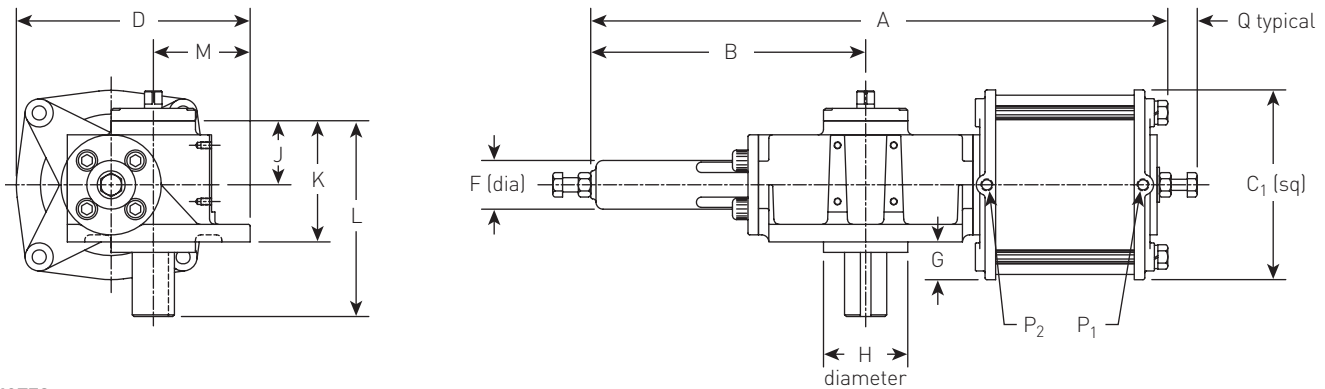
# MORIN B AND C SERIES ACTUATORS

## DIMENSIONS

MODELS 270, 344, 345, 420, 740, 944, 945 AND 1150



MODELS 135, 210, 370 AND 575



### NOTES

1. Shown without pointer for clarity.
2. For mounting dimensions, refer to pages 10-11.

### DIMENSIONS (mm) DOUBLE ACTING

| Model  | A      | B     | C <sub>1</sub> | C <sub>2</sub> | D     | E     | F    | G     | H     | J     | K     | L     | M     | P <sub>1</sub> | P <sub>2</sub> | Q    |
|--------|--------|-------|----------------|----------------|-------|-------|------|-------|-------|-------|-------|-------|-------|----------------|----------------|------|
| 135DA  | 831.6  | 403.4 | 241.3          | -              | 265.2 | -     | 69.9 | 25.4  | -     | 111.3 | 206.5 | 300.2 | 81.0  | 3/8            | 3/8            | 44.5 |
| 210DA  | 844.8  | 403.4 | 292.1          | -              | 290.6 | -     | 69.9 | 50.8  | -     | 111.3 | 206.5 | 300.2 | 81.0  | 1/2            | 1/2            | 53.8 |
| 270DA  | 857.8  | 429.0 | 241.3          | 241.3          | 265.2 | 297.7 | -    | 25.4  | -     | 111.3 | 206.5 | 300.2 | 81.0  | 3/8            | 3/8            | 44.5 |
| 345DA  | 870.2  | 429.0 | 241.3          | 292.1          | 290.6 | 291.3 | -    | 50.8  | -     | 111.3 | 206.5 | 300.2 | 81.0  | 3/8            | 1/2            | 53.8 |
| 370DA  | 1057.7 | 496.8 | 342.9          | -              | 425.5 | -     | 88.9 | 68.3  | 149.9 | 138.2 | 241.3 | 376.2 | 174.8 | 1/2            | 1/2            | 44.5 |
| 420DA  | 882.7  | 441.5 | 292.1          | 292.1          | 290.6 | 285.0 | -    | 50.8  | -     | 111.3 | 206.5 | 300.2 | 81.0  | 1/2            | 1/2            | 53.8 |
| 575DA  | 1073.4 | 496.8 | 431.8          | -              | 469.9 | -     | 88.9 | 112.8 | 149.9 | 138.2 | 241.3 | 376.2 | 174.8 | 3/4            | 3/4            | 63.5 |
| 740DA  | 1121.4 | 560.6 | 342.9          | 342.9          | 425.5 | 396.7 | -    | 68.3  | 149.9 | 138.2 | 241.3 | 376.2 | 174.8 | 1/2            | 1/2            | 44.5 |
| 945DA  | 1137.2 | 560.6 | 342.9          | 431.8          | 469.9 | 387.4 | -    | 112.8 | 149.9 | 138.2 | 241.3 | 376.2 | 174.8 | 1/2            | 3/4            | 63.5 |
| 1150DA | 1152.9 | 576.3 | 431.8          | 431.8          | 469.9 | 378.0 | -    | 112.8 | 149.9 | 138.2 | 241.3 | 376.2 | 174.8 | 3/4            | 3/4            | 63.5 |

### DIMENSIONS (mm) SPRING RETURN

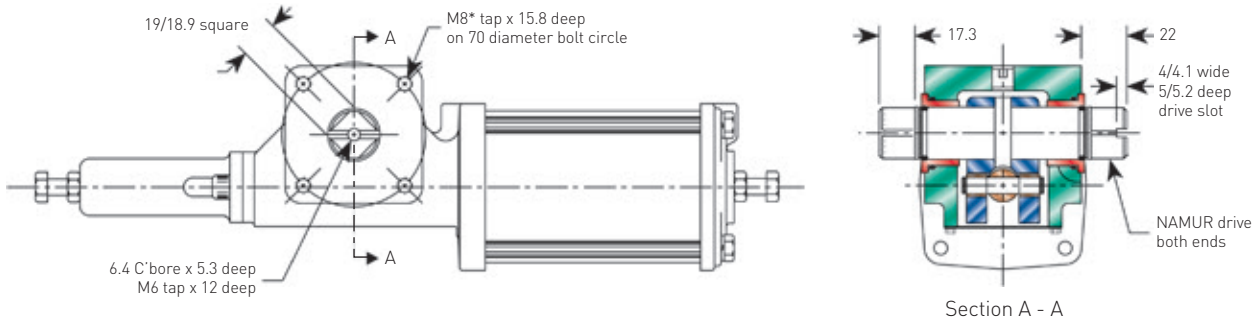
| Model  | A      | B     | C <sub>1</sub> | C <sub>2</sub> | D     | E     | F    | G     | H     | J     | K     | L     | M     | P <sub>1</sub> | P <sub>2</sub> | Q    |
|--------|--------|-------|----------------|----------------|-------|-------|------|-------|-------|-------|-------|-------|-------|----------------|----------------|------|
| 135SR  | 1002.3 | 403.4 | 241.3          | -              | 265.2 | -     | 69.9 | 25.4  | -     | 111.3 | 206.5 | 300.2 | 81.0  | 3/8            | 3/8            | 44.5 |
| 210SR  | 1083.8 | 403.4 | 292.1          | -              | 290.6 | -     | 69.9 | 50.8  | -     | 111.3 | 206.5 | 300.2 | 81.0  | 1/2            | 1/2            | 53.8 |
| 270SR  | 1030.5 | 431.5 | 241.3          | 241.3          | 265.2 | 278.1 | -    | 25.4  | -     | 111.3 | 206.5 | 300.2 | 81.0  | 3/8            | 3/8            | 44.5 |
| 344SR  | 1040.1 | 441.5 | 292.1          | 241.3          | 290.6 | 271.8 | -    | 50.8  | -     | 111.3 | 206.5 | 300.2 | 81.0  | 1/2            | 3/8            | 53.8 |
| 345SR  | 1112.3 | 431.5 | 241.3          | 292.1          | 290.6 | 269.5 | -    | 50.8  | -     | 111.3 | 206.5 | 300.2 | 81.0  | 3/8            | 1/2            | 53.8 |
| 370SR  | 1307.6 | 496.8 | 342.9          | -              | 425.5 | -     | 88.9 | 68.3  | 149.9 | 138.2 | 241.3 | 376.2 | 174.8 | 1/2            | 1/2            | 44.5 |
| 420SR  | 1121.9 | 441.5 | 292.1          | 292.1          | 290.6 | 263.1 | -    | 50.8  | -     | 111.3 | 206.5 | 300.2 | 81.0  | 1/2            | 1/2            | 53.8 |
| 575SR  | 1374.6 | 496.8 | 431.8          | -              | 469.9 | -     | 88.9 | 112.8 | 149.9 | 138.2 | 241.3 | 376.2 | 174.8 | 3/4            | 3/4            | 63.5 |
| 740SR  | 1371.3 | 560.6 | 342.9          | 342.9          | 425.5 | 374.7 | -    | 68.3  | 149.9 | 138.2 | 241.3 | 376.2 | 174.8 | 1/2            | 1/2            | 44.5 |
| 944SR  | 1386.6 | 575.8 | 431.8          | 342.9          | 469.9 | 365.0 | -    | 112.8 | 149.9 | 138.2 | 241.3 | 376.2 | 174.8 | 3/4            | 1/2            | 63.5 |
| 945SR  | 1438.4 | 560.6 | 342.9          | 431.8          | 469.9 | 359.7 | -    | 112.8 | 149.9 | 138.2 | 241.3 | 376.2 | 174.8 | 1/2            | 3/4            | 63.5 |
| 1150SR | 1453.4 | 576.3 | 431.8          | 431.8          | 469.9 | 350.3 | -    | 112.8 | 149.9 | 138.2 | 241.3 | 376.2 | 174.8 | 3/4            | 3/4            | 63.5 |



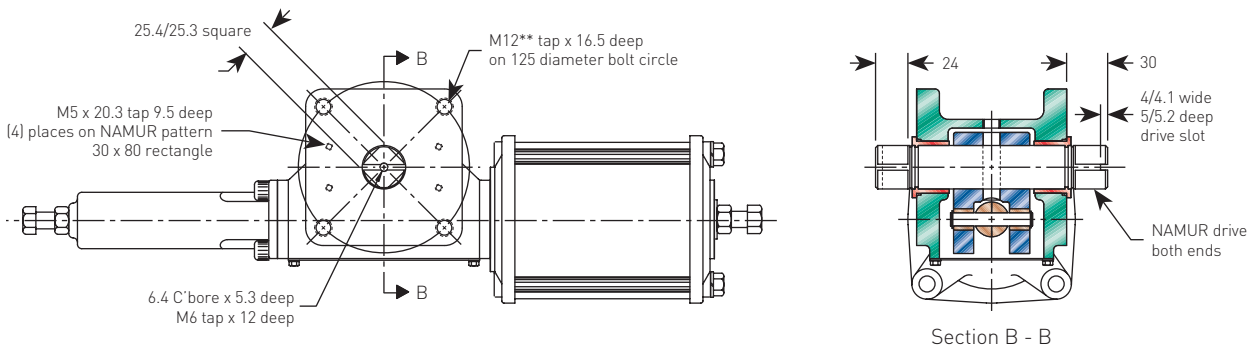
# MORIN B AND C SERIES ACTUATORS

## MOUNTING DETAILS

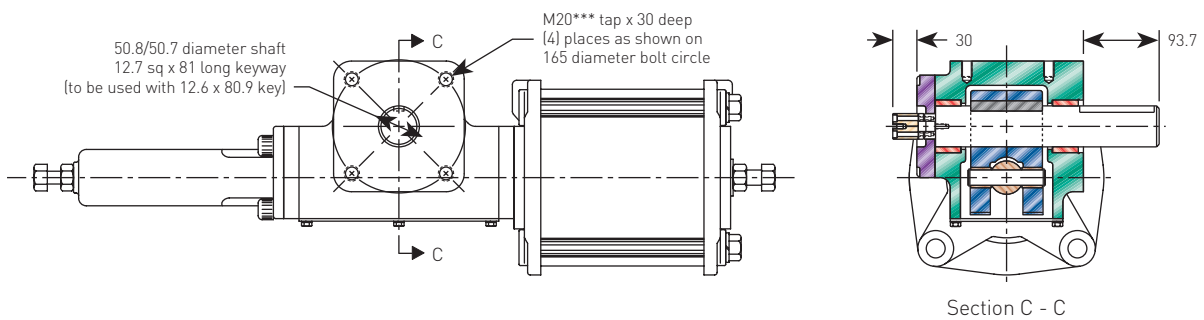
MODELS 006 AND 015 - TOP AND BOTTOM OF HOUSING (SYMMETRICAL) ISO 5211-F07



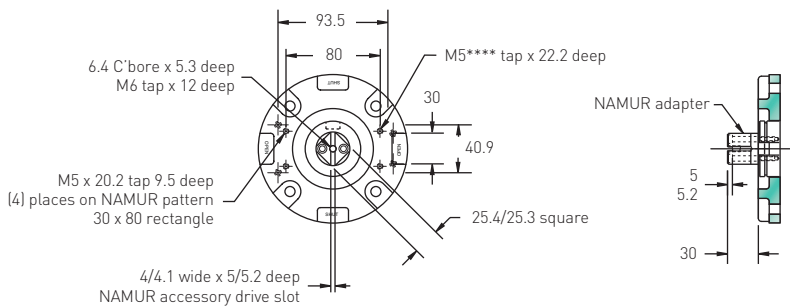
MODELS 023 THROUGH 100 - TOP AND BOTTOM OF HOUSING (SYMMETRICAL) ISO 5211-F12



MODELS 135, 210, 270, 344, 345 AND 420 - BOTTOM OF HOUSING ISO 5211-F16



MODELS 135, 210, 270, 344, 345 AND 420 - TOP OF HOUSING - MOUNTING DETAILS



### IMPERIAL THREAD OPTION

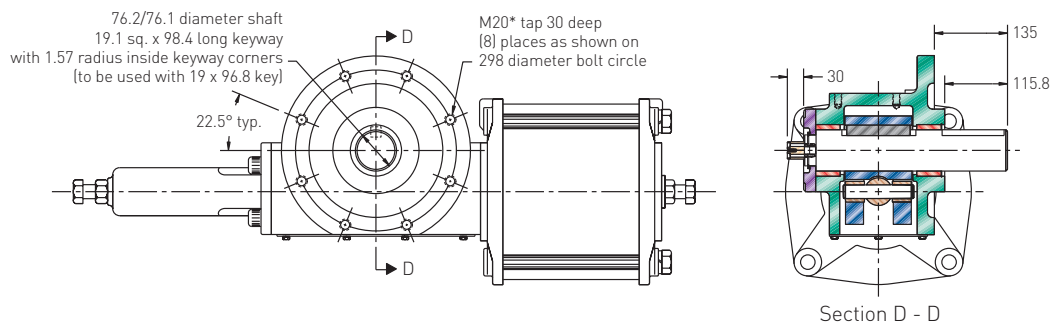
| Standard tap     | Model number |
|------------------|--------------|
| * 5/16 - 18 UNC  | 006 and 015  |
| ** 1/2 - 13 UNC  | 023 to 100   |
| *** 3/4 - 10 UNC | 135 to 1150  |
| **** 10 - 32 UNC | 135 to 1150  |

Replace 'M' with 'U' in order number designation (refer to page 12).

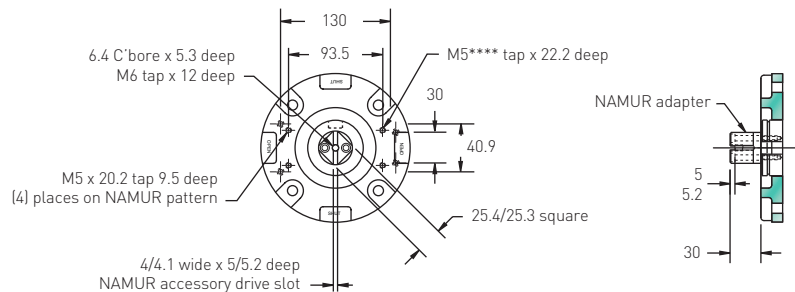
# MORIN B AND C SERIES ACTUATORS

## MOUNTING DETAILS

### MODELS 370, 575, 740, 944, 945 AND 1150 - BOTTOM OF HOUSING ISO 5211-F30



### MODELS 370, 575, 740, 944, 945 AND 1150 - TOP OF HOUSING - MOUNTING DETAILS



### IMPERIAL THREAD OPTION

| Standard tap | Model number                     |
|--------------|----------------------------------|
| *            | 3/4 - 10 UNC 370 and 575 to 1150 |
| ****         | 10 - 32 UNC 135 to 1150          |

Replace 'M' with 'U' in order number designation  
[refer to page 12].

# MORIN B AND C SERIES ACTUATORS

## ORDERING INFORMATION

### SELECTION GUIDE

| Actuator model  |   |
|---|---|
| B-  |   |
| C-  |   |
| Actuator size Model code based on approximate torque of symmetrical double acting at 5.5 barg |   |
| 270   | 006 059 370   |
|   | 012 072 420   |
|   | 015 100 575   |
|   | 023 135 740   |
|   | 036 210 944   |
|   | 046 270 945   |
|   | 050 344 1150  |
|   | 058 345   |
| Interface bolting   |   |
| U -   | UNC mounting threads  |
| M -   | Metric mounting threads   |
| Yoke design   |   |
| (blank) -   | Symmetrical yoke  |
| C -   | Canted yoke   |
| Function  |   |
| D -   | Double acting   |
| S -   | Spring return   |
| Spring code   |   |
| 00  | 00 - No spring - Double acting  |
|   | 04 - 40 pound spring  |
|   | 05 - 50 pound spring  |
|   | 06 - 60 pound spring  |
|   | Etc. see Morin Torque Book for available springs                                |
| Spring return failure rotation  |   |
| 0 -   | No spring (double acting OR actuator rotates clockwise on loss of air)          |
| 1 -   | Actuator rotates counterclockwise on loss of air                                |
| Option  |   |
| (blank) -   | No options (standard configuration)   |
|   | See complete modules code listing   |
| <b>Note:</b>  | Some codes can be used in combination. Indicate by "stacking" separated by "-". |
|   | Consult factory for possible combinations combinations.                         |

B- 270 U C - D 00 0 - JSO = Model number **S-270UC-D000-JSO**

### HOW TO ORDER

#### 1. Double acting (symmetrical yoke) example

Air supply: 5.5 barg  
Break/end torque: 2610 Nm

#### B-210U-D000

**B** Series  
**210** Model number  
**U** UNC mounting threads  
**D** Double acting  
**000** No spring

#### 2. Spring return (symmetrical yoke) example

Air supply: 5.5 barg  
End torque: 914Nm

#### B-210U-S080

**B** Series  
**210** Model number  
**U** UNC mounting threads  
**S** Spring return  
**080** Spring set

#### 3. Double acting (canted yoke) example

Air supply: 5.5 barg  
Break (CCW) torque: 3524 Nm  
End (CW) torque: 3393 Nm

#### B-210UC-D000

**B** Series  
**210** Model number  
**U** UNC mounting threads  
**C** Canted yoke  
**D** Double acting  
**000** No spring

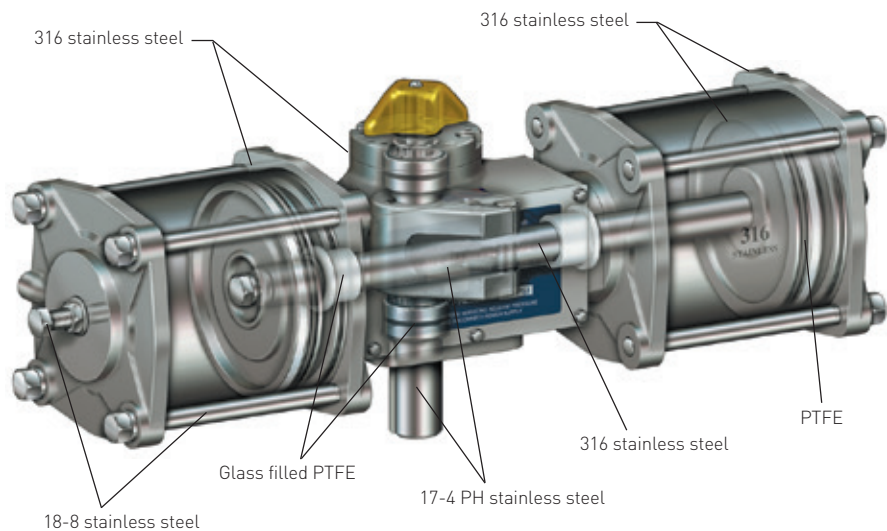
#### 4. For all spring return models

Use required torque to determine spring set code (see torque chart)  
All spring sets ending with '0' fail clockwise (40, 50, 60, etc.)  
All spring sets ending with '1' fail counterclockwise (41, 51, 61, etc.)  
All symmetrical yoke models between 006 and 100 may be mounted to fail clockwise or counterclockwise by 'flipping' along the longitudinal axis

## MORIN B AND C SERIES ACTUATORS

ALSO AVAILABLE

### THE S SERIES ACTUATOR (ALL STAINLESS)



Setting an unrivaled standard in actuation at a price unexpectedly low for stainless steel.

- Up to 11 barg max operating pressure [see torque chart].
- Double acting break torques to 27120 Nm.
- Spring end torques to 11766 Nm.

For additional information, refer to S series data sheet.

### THE HP SERIES ACTUATOR



High pressure actuation with carbon steel cylinders for superior corrosion resistance.

- Up to 155 bar max operating pressure [see torque chart].
- Double acting torques to 90400 Nm.
- Spring end torques to 45200 Nm.

For additional information, refer to HP series data sheet.

# MORIN ALGA/ALGAS PNEUMATIC ACTUATORS

## SCOTCH YOKE DESIGN

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Double acting and spring return pneumatic quarter turn actuators for on-off and modulating control of valves in heavy duty service. Available for output torques to 750,000 Nm.



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### GENERAL APPLICATION

ALGA and ALGAS pneumatic actuators are designed for on-off or modulating control of quarter turn ball, butterfly, plug or damper style valves.

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### TECHNICAL DATA

|                       |   |
|-----------------------|---|
| Design pressure:      | 12 bar g  |
| Supply medium:        | Air, nitrogen or sweet gas (Sour gas version available)                       |
| Output torque         |   |
| ALGA:                 | Double acting torque up to 750,000 Nm   |
| ALGAS/ALGAS-QA:       | Spring starting torque up to 335,000 Nm<br>Spring end torque up to 235,000 Nm |
| Ambient temperature   |   |
| Standard range:       | -20°C to +100°C (-20°F to +210°F)   |
| Extended temperature: | -60°C to +135°C (-70°F to +275°F)   |

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### FEATURES

- Totally enclosed, weatherproof housing in fabricated carbon steel for maximum strength.
- Guide bar resists transverse loads and supports the piston rod.
- Hard chromium plated alloy steel material guarantees corrosion protection and minimal friction.
- PTFE-impregnated bronze or sintered bronze bushings provide minimal friction and extended service life.
- Scotch yoke design with canted or symmetric torque arm allows close working to distinctive valve torque profiles.
- External travel stops for precise angular stroke adjustment between 82° and 98°.
- Electroless nickel plated and polished cylinder provides maximum corrosion resistance and reduces friction.
- Floating type piston seals provide low hysteresis and high sensitivity, preventing sticking problems.
- ALGAS spring return pack incorporates up to four springs, fully encapsulated in a factory welded cartridge ensuring personnel safety and simplifying assembly.
- ALGAS spring action can be changed easily in the field from to close to open or vice versa.
- Special coatings for offshore or corrosive environments.

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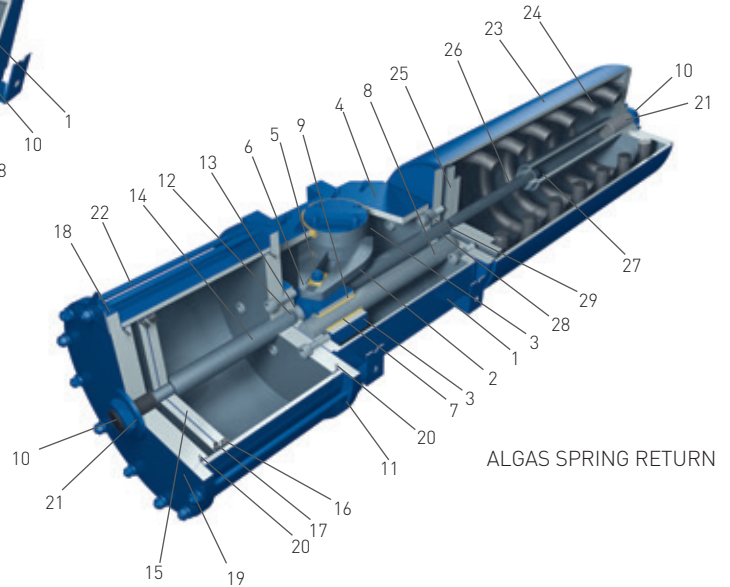
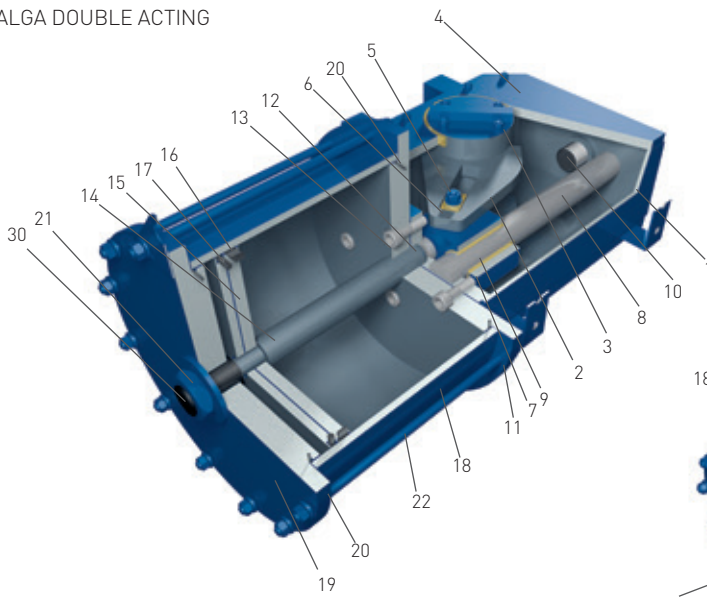
### APPROVALS

Safety Integrity Level:  
(IEC 61508-1÷7:2010): SIL 3  
Area Classification:  
(ATEX): II 2G 135° T4  
Enclosure standards:  
(IEC 60529): IP66, IP66M, IP67M  
(ANSI/NEMA 250): NEMA 4, 4X, 6  
Pressure Equipment Directive:  
2014/68/EU  
Machinery Directive:  
2006/42/EC

# MORIN ALGA / ALGAS PNEUMATIC ACTUATORS

## SCOTCH YOKE DESIGN

### ALGA DOUBLE ACTING



ALGAS SPRING RETURN

### MATERIALS

| Part                         | Material                         |
|------------------------------|----------------------------------|
| 1 Housing                    | Carbon steel                     |
| 2 Yoke                       | Carbon steel                     |
| 3 Yoke bushing               | Bronze                           |
| 4 Cover                      | Carbon steel                     |
| 5 Guide block pin            | Alloy steel                      |
| 6 Sliding block              | Bronze                           |
| 7 Guide block                | Carbon steel                     |
| 8 Guide bar                  | Alloy steel (hard chrome plated) |
| 9 Guide block bushing        | Steel + bronze + PTFE            |
| 10 Travel stop screw         | Carbon steel                     |
| 11 Cylinder head flange      | Carbon steel                     |
| 12 Piston rod bushing        | Steel + bronze + PTFE            |
| 13 Piston rod seal           | NBR rubber                       |
| 14 Piston rod                | Alloy steel (hard chrome plated) |
| 15 Piston                    | Carbon steel                     |
| 16 Piston guide sliding ring | PTFE + graphite                  |
| 17 Piston seal O-ring        | NBR rubber                       |
| 18 Cylinder tube             | Carbon steel (ENP)               |
| 19 Cylinder end flange       | Carbon steel                     |
| 20 Cylinder seal O-ring      | NBR rubber                       |
| 21 Sealing washer            | PVC                              |
| 22 Tie rod                   | Alloy steel                      |
| 23 Spring container          | Carbon steel                     |
| 24 Spring                    | Carbon steel                     |
| 25 Spring thrust flange      | Carbon steel                     |
| 26 Guide rod                 | Alloy steel (hard chrome plated) |
| 27 Guide rod bushing         | Steel + bronze + PTFE            |
| 28 Container rod             | Alloy steel (hard chrome plated) |
| 29 Container rod bushing     | Steel + bronze + PTFE            |
| 30 Travel stop screw         | Carbon steel                     |

Mounting brackets and tie rods available in stainless steel as an option.

Fluoroelastomer and fluorosilicone seals available as an option.



# MORIN ALGA DOUBLE ACTING PNEUMATIC ACTUATOR

OUTPUT TORQUES (Nm) - CANTED YOKE DESIGN, MODELS 1.5C-280 TO 6C-585

| Model    | Position | Operating supply pressure (bar g) |       |       |       |       |       |       |       |       |       |       |       | MOP*<br>(bar g) |
|----------|----------|-----------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-----------------|
|          |          | 3.5                               |       | 4     |       | 4.5   |       | 5     |       | 5.5   |       | 6     |       |                 |
|          |          | OP                                | CL    | OP    | CL    | OP    | CL    | OP    | CL    | OP    | CL    | OP    | CL    |                 |
| 1.5C-280 | 0°       | 4556                              | 4950  | 5228  | 5680  | 5900  | 6411  | 6572  | 7142  | 7244  | 7872  | 7916  | 8603  | 10,3            |
|          | 45°      | 1781                              | 1744  | 2043  | 2002  | 2306  | 2259  | 2569  | 2517  | 2831  | 2774  | 3094  | 3032  |                 |
|          | 90°      | 2568                              | 2416  | 2947  | 2773  | 3325  | 3130  | 3704  | 3487  | 4083  | 3843  | 4462  | 4200  |                 |
| 1.5C-335 | 0°       | 6541                              | 7153  | 7503  | 8205  | 8465  | 9258  | 9427  | 10310 | 10389 | 11363 | 11351 | 12415 | 7,2             |
|          | 45°      | 2557                              | 2521  | 2933  | 2892  | 3309  | 3263  | 3685  | 3634  | 4061  | 4005  | 4437  | 4376  |                 |
|          | 90°      | 3687                              | 3492  | 4229  | 4006  | 4771  | 4520  | 5313  | 5034  | 5856  | 5547  | 6398  | 6061  |                 |
| 1.5C-385 | 0°       | 8691                              | 9538  | 9961  | 10933 | 11232 | 12328 | 12502 | 13723 | -     | -     | -     | -     | 5,4             |
|          | 45°      | 3397                              | 3362  | 3893  | 3853  | 4390  | 4345  | 4887  | 4837  | -     | -     | -     | -     |                 |
|          | 90°      | 4898                              | 4657  | 5614  | 5338  | 6330  | 6019  | 7047  | 6700  | -     | -     | -     | -     |                 |
| 3C-335   | 0°       | 10827                             | 11840 | 12420 | 13582 | 14012 | 15324 | 15604 | 17066 | 17197 | 18807 | 18789 | 20549 | 8,7             |
|          | 45°      | 4232                              | 4173  | 4854  | 4787  | 5477  | 5401  | 6099  | 6015  | 6722  | 6629  | 7344  | 7243  |                 |
|          | 90°      | 6102                              | 5780  | 7000  | 6631  | 7897  | 7481  | 8795  | 8332  | 9692  | 9182  | 10590 | 10033 |                 |
| 3C-385   | 0°       | 14385                             | 15788 | 16488 | 18097 | 18591 | 20405 | 20694 | 22714 | 22797 | 25023 | 24900 | 27332 | 6,5             |
|          | 45°      | 5623                              | 5564  | 6445  | 6378  | 7267  | 7192  | 8089  | 8006  | 8911  | 8820  | 9733  | 9633  |                 |
|          | 90°      | 8108                              | 7708  | 9293  | 8835  | 10478 | 9963  | 11664 | 11090 | 12849 | 12217 | 14035 | 13344 |                 |
| 3C-435   | 0°       | 18418                             | 20263 | 21102 | 23218 | 23787 | 26172 | 26472 | 29127 | -     | -     | -     | -     | 5,1             |
|          | 45°      | 7199                              | 7142  | 8248  | 8183  | 9298  | 9225  | 10347 | 10266 | -     | -     | -     | -     |                 |
|          | 90°      | 10381                             | 9893  | 11894 | 11336 | 13407 | 12778 | 14920 | 14221 | -     | -     | -     | -     |                 |
| 3C-485   | 0°       | 22962                             | 25306 | 26299 | 28985 | -     | -     | -     | -     | -     | -     | -     | -     | 4,1             |
|          | 45°      | 8975                              | 8919  | 10280 | 10216 | -     | -     | -     | -     | -     | -     | -     | -     |                 |
|          | 90°      | 12942                             | 12355 | 14823 | 14151 | -     | -     | -     | -     | -     | -     | -     | -     |                 |
| 6C-485   | 0°       | 26844                             | 29586 | 30746 | 33886 | 34648 | 38187 | 38550 | 42488 | 42452 | 46789 | 46354 | 51090 | 7               |
|          | 45°      | 10493                             | 10428 | 12018 | 11944 | 13543 | 13459 | 15069 | 14975 | 16594 | 16491 | 18119 | 18007 |                 |
|          | 90°      | 15130                             | 14445 | 17330 | 16545 | 19529 | 18644 | 21728 | 20744 | 23927 | 22844 | 26127 | 24944 |                 |
| 6C-535   | 0°       | 32760                             | 36150 | 37508 | 41390 | 42255 | 46630 | 47003 | 51869 | 51751 | 57109 | -     | -     | 5,7             |
|          | 45°      | 12805                             | 12742 | 14661 | 14588 | 16517 | 16435 | 18373 | 18282 | 20229 | 20129 | -     | -     |                 |
|          | 90°      | 18464                             | 17650 | 21140 | 20208 | 23817 | 22766 | 26493 | 25325 | 29169 | 27883 | -     | -     |                 |
| 6C-585   | 0°       | 39169                             | 43264 | 44846 | 49534 | 50523 | 55805 | -     | -     | -     | -     | -     | -     | 4,8             |
|          | 45°      | 15311                             | 15249 | 17530 | 17459 | 19749 | 19669 | -     | -     | -     | -     | -     | -     |                 |
|          | 90°      | 22077                             | 21123 | 25277 | 24184 | 28476 | 27246 | -     | -     | -     | -     | -     | -     |                 |

\* MOP = Maximum Operating Pressure (bar g)

# MORIN ALGA DOUBLE ACTING PNEUMATIC ACTUATOR

OUTPUT TORQUES (Nm) - CANTED YOKE DESIGN, MODELS 1.5C-280 TO 6C-585

| Model    | Position | Operating supply pressure (bar g) |       |       |       |       |       |       |       |    |    |    |    | MOP*<br>(bar g) |
|----------|----------|-----------------------------------|-------|-------|-------|-------|-------|-------|-------|----|----|----|----|-----------------|
|          |          | 7                                 |       | 8     |       | 9     |       | 10    |       | 11 |    | 12 |    |                 |
|          |          | OP                                | CL    | OP    | CL    | OP    | CL    | OP    | CL    | OP | CL | OP | CL |                 |
| 1.5C-280 | 0°       | 9261                              | 10064 | 10605 | 11526 | 11949 | 12987 | 13293 | 14448 | -  | -  | -  | -  | 10,3            |
|          | 45°      | 3620                              | 3547  | 4145  | 4062  | 4670  | 4577  | 5196  | 5092  | -  | -  | -  | -  |                 |
|          | 90°      | 5219                              | 4914  | 5977  | 5627  | 6735  | 6340  | 7492  | 7054  | -  | -  | -  | -  |                 |
| 1.5C-335 | 0°       | 13275                             | 14520 | -     | -     | -     | -     | -     | -     | -  | -  | -  | -  | 7,2             |
|          | 45°      | 5189                              | 5117  | -     | -     | -     | -     | -     | -     | -  | -  | -  | -  |                 |
|          | 90°      | 7482                              | 7089  | -     | -     | -     | -     | -     | -     | -  | -  | -  | -  |                 |
| 1.5C-385 | 0°       | -                                 | -     | -     | -     | -     | -     | -     | -     | -  | -  | -  | -  | 5,4             |
|          | 45°      | -                                 | -     | -     | -     | -     | -     | -     | -     | -  | -  | -  | -  |                 |
|          | 90°      | -                                 | -     | -     | -     | -     | -     | -     | -     | -  | -  | -  | -  |                 |
| 3C-335   | 0°       | 21973                             | 24033 | 25158 | 27517 | -     | -     | -     | -     | -  | -  | -  | -  | 8,7             |
|          | 45°      | 8589                              | 8471  | 9834  | 9699  | -     | -     | -     | -     | -  | -  | -  | -  |                 |
|          | 90°      | 12385                             | 11734 | 14180 | 13435 | -     | -     | -     | -     | -  | -  | -  | -  |                 |
| 3C-385   | 0°       | -                                 | -     | -     | -     | -     | -     | -     | -     | -  | -  | -  | -  | 6,5             |
|          | 45°      | -                                 | -     | -     | -     | -     | -     | -     | -     | -  | -  | -  | -  |                 |
|          | 90°      | -                                 | -     | -     | -     | -     | -     | -     | -     | -  | -  | -  | -  |                 |
| 3C-435   | 0°       | -                                 | -     | -     | -     | -     | -     | -     | -     | -  | -  | -  | -  | 5,1             |
|          | 45°      | -                                 | -     | -     | -     | -     | -     | -     | -     | -  | -  | -  | -  |                 |
|          | 90°      | -                                 | -     | -     | -     | -     | -     | -     | -     | -  | -  | -  | -  |                 |
| 3C-485   | 0°       | -                                 | -     | -     | -     | -     | -     | -     | -     | -  | -  | -  | -  | 4,1             |
|          | 45°      | -                                 | -     | -     | -     | -     | -     | -     | -     | -  | -  | -  | -  |                 |
|          | 90°      | -                                 | -     | -     | -     | -     | -     | -     | -     | -  | -  | -  | -  |                 |
| 6C-485   | 0°       | 54158                             | 59691 | -     | -     | -     | -     | -     | -     | -  | -  | -  | -  | 7               |
|          | 45°      | 21169                             | 21039 | -     | -     | -     | -     | -     | -     | -  | -  | -  | -  |                 |
|          | 90°      | 30525                             | 29144 | -     | -     | -     | -     | -     | -     | -  | -  | -  | -  |                 |
| 6C-535   | 0°       | -                                 | -     | -     | -     | -     | -     | -     | -     | -  | -  | -  | -  | 5,7             |
|          | 45°      | -                                 | -     | -     | -     | -     | -     | -     | -     | -  | -  | -  | -  |                 |
|          | 90°      | -                                 | -     | -     | -     | -     | -     | -     | -     | -  | -  | -  | -  |                 |
| 6C-585   | 0°       | -                                 | -     | -     | -     | -     | -     | -     | -     | -  | -  | -  | -  | 4,8             |
|          | 45°      | -                                 | -     | -     | -     | -     | -     | -     | -     | -  | -  | -  | -  |                 |
|          | 90°      | -                                 | -     | -     | -     | -     | -     | -     | -     | -  | -  | -  | -  |                 |

\* MOP = Maximum Operating Pressure (bar g)

# MORIN ALGA DOUBLE ACTING PNEUMATIC ACTUATOR

## OUTPUT TORQUES (Nm) - CANTED YOKE DESIGN, MODELS 14C-635 TO 18C2-685

| Model    | Position | Operating supply pressure (bar g) |        |        |        |        |        |        |        |        |        |        |        | MOP* (bar g) |
|----------|----------|-----------------------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------------|
|          |          | 3.5                               |        | 4      |        | 4.5    |        | 5      |        | 5.5    |        | 6      |        |              |
|          |          | OP                                | CL     | OP     | CL     | OP     | CL     | OP     | CL     | OP     | CL     | OP     | CL     |              |
| 14C-635  | 0°       | 50441                             | 55473  | 57752  | 63513  | 65062  | 71554  | 72373  | 79594  | 79683  | 87635  | 86994  | 95676  | 7,5          |
|          | 45°      | 19717                             | 19552  | 22574  | 22386  | 25432  | 25220  | 28290  | 28054  | 31147  | 30888  | 34005  | 33722  |              |
|          | 90°      | 28430                             | 27084  | 32551  | 31010  | 36671  | 34935  | 40792  | 38861  | 44912  | 42787  | 49033  | 46713  |              |
| 14C-735  | 0°       | 67580                             | 74492  | 77374  | 85290  | 87168  | 96087  | 96962  | 106884 | 106757 | 117681 | -      | -      | 5,6          |
|          | 45°      | 26416                             | 26256  | 30244  | 30062  | 34073  | 33867  | 37901  | 37673  | 41730  | 41478  | -      | -      |              |
|          | 90°      | 38090                             | 36370  | 43611  | 41642  | 49131  | 46913  | 54651  | 52185  | 60172  | 57456  | -      | -      |              |
| 18C-635  | 0°       | 58008                             | 63794  | 66415  | 73040  | 74822  | 82287  | 83229  | 91534  | 91636  | 100780 | 100043 | 110027 | 9,7          |
|          | 45°      | 22674                             | 22485  | 25961  | 25744  | 29247  | 29003  | 32533  | 32262  | 35819  | 35522  | 39105  | 38781  |              |
|          | 90°      | 32695                             | 31146  | 37434  | 35661  | 42172  | 40176  | 46911  | 44690  | 51649  | 49205  | 56388  | 53720  |              |
| 18C-685  | 0°       | 67503                             | 74331  | 77286  | 85105  | 87069  | 95879  | 96852  | 106652 | 106635 | 117426 | 116418 | 128200 | 8,4          |
|          | 45°      | 26386                             | 26199  | 30210  | 29996  | 34034  | 33794  | 37858  | 37591  | 41682  | 41389  | 45506  | 45186  |              |
|          | 90°      | 38047                             | 36291  | 43561  | 41551  | 49075  | 46812  | 54589  | 52072  | 60103  | 57332  | 65617  | 62592  |              |
| 18C-735  | 0°       | 77717                             | 85666  | 88980  | 98083  | 100243 | 110500 | 111507 | 122916 | 122770 | 135333 | 134033 | 147750 | 7,2          |
|          | 45°      | 30378                             | 30194  | 34781  | 34571  | 39184  | 38947  | 43587  | 43324  | 47989  | 47700  | 52392  | 52077  |              |
|          | 90°      | 43804                             | 41826  | 50152  | 47888  | 56501  | 53950  | 62849  | 60013  | 69198  | 66075  | 75546  | 72137  |              |
| 18C2-635 | 0°       | 115491                            | 128171 | 132230 | 146747 | 148968 | 165324 | -      | -      | -      | -      | -      | -      | 4,8          |
|          | 45°      | 45144                             | 45176  | 51687  | 51723  | 58230  | 58271  | -      | -      | -      | -      | -      | -      |              |
|          | 90°      | 65095                             | 62578  | 74529  | 71648  | 83964  | 80718  | -      | -      | -      | -      | -      | -      |              |
| 18C2-685 | 0°       | 134480                            | 149245 | 153971 | 170876 | -      | -      | -      | -      | -      | -      | -      | -      | 4,2          |
|          | 45°      | 52567                             | 52604  | 60186  | 60228  | -      | -      | -      | -      | -      | -      | -      | -      |              |
|          | 90°      | 75798                             | 72867  | 86784  | 83429  | -      | -      | -      | -      | -      | -      | -      | -      |              |

\* MOP = Maximum Operating Pressure (bar g)

| Model    | Position | Operating supply pressure (bar g) |        |        |        |        |        |    |    |    |    |    |    | MOP* (bar g) |
|----------|----------|-----------------------------------|--------|--------|--------|--------|--------|----|----|----|----|----|----|--------------|
|          |          | 7                                 |        | 8      |        | 9      |        | 10 |    | 11 |    | 12 |    |              |
|          |          | OP                                | CL     | OP     | CL     | OP     | CL     | OP | CL | OP | CL | OP | CL |              |
| 14C-635  | 0°       | 101614                            | 111757 | -      | -      | -      | -      | -  | -  | -  | -  | -  | -  | 7,5          |
|          | 45°      | 39720                             | 39390  | -      | -      | -      | -      | -  | -  | -  | -  | -  | -  |              |
|          | 90°      | 57273                             | 54564  | -      | -      | -      | -      | -  | -  | -  | -  | -  | -  |              |
| 14C-735  | 0°       | -                                 | -      | -      | -      | -      | -      | -  | -  | -  | -  | -  | -  | 5,6          |
|          | 45°      | -                                 | -      | -      | -      | -      | -      | -  | -  | -  | -  | -  | -  |              |
|          | 90°      | -                                 | -      | -      | -      | -      | -      | -  | -  | -  | -  | -  | -  |              |
| 18C-635  | 0°       | 116857                            | 128521 | 133671 | 147014 | 150485 | 165507 | -  | -  | -  | -  | -  | -  | 9,7          |
|          | 45°      | 45678                             | 45299  | 52250  | 51817  | 58823  | 58336  | -  | -  | -  | -  | -  | -  |              |
|          | 90°      | 65865                             | 62749  | 75342  | 71778  | 84819  | 80807  | -  | -  | -  | -  | -  | -  |              |
| 18C-685  | 0°       | 135984                            | 149748 | 155550 | 171296 | -      | -      | -  | -  | -  | -  | -  | -  | 8,4          |
|          | 45°      | 53155                             | 52781  | 60803  | 60376  | -      | -      | -  | -  | -  | -  | -  | -  |              |
|          | 90°      | 76645                             | 73113  | 87674  | 83633  | -      | -      | -  | -  | -  | -  | -  | -  |              |
| 18C-735  | 0°       | 156560                            | 172583 | -      | -      | -      | -      | -  | -  | -  | -  | -  | -  | 7,2          |
|          | 45°      | 61198                             | 60830  | -      | -      | -      | -      | -  | -  | -  | -  | -  | -  |              |
|          | 90°      | 88243                             | 84262  | -      | -      | -      | -      | -  | -  | -  | -  | -  | -  |              |
| 18C2-635 | 0°       | -                                 | -      | -      | -      | -      | -      | -  | -  | -  | -  | -  | -  | 4,8          |
|          | 45°      | -                                 | -      | -      | -      | -      | -      | -  | -  | -  | -  | -  | -  |              |
|          | 90°      | -                                 | -      | -      | -      | -      | -      | -  | -  | -  | -  | -  | -  |              |
| 18C2-685 | 0°       | -                                 | -      | -      | -      | -      | -      | -  | -  | -  | -  | -  | -  | 4,2          |
|          | 45°      | -                                 | -      | -      | -      | -      | -      | -  | -  | -  | -  | -  | -  |              |
|          | 90°      | -                                 | -      | -      | -      | -      | -      | -  | -  | -  | -  | -  | -  |              |

\* MOP = Maximum Operating Pressure (bar g)

**MORIN ALGA DOUBLE ACTING PNEUMATIC ACTUATOR**  
 OUTPUT TORQUES (Nm) - SYMMETRIC YOKE DESIGN, MODELS 1.5S-280 TO 6S-585

| Model    | Pos. | Operating supply pressure (bar g) |       |       |       |       |       |       |       |       |       |       |       | MOP*<br>(bar g) |       |      |
|----------|------|-----------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-----------------|-------|------|
|          |      | 3                                 |       | 3.5   |       | 4     |       | 4.5   |       | 5     |       | 5.5   |       |                 | 6     |      |
|          |      | OP                                | CL    | OP    | CL    | OP    | CL    | OP    | CL    | OP    | CL    | OP    | CL    | OP              | CL    |      |
| 1.5S-280 | 0°   | 2645                              | 2901  | 3102  | 3404  | 3560  | 3906  | 4017  | 4409  | 4475  | 4911  | 4933  | 5413  | 5390            | 5916  | 12   |
|          | 45°  | 1547                              | 1510  | 1815  | 1772  | 2082  | 2034  | 2350  | 2295  | 2618  | 2557  | 2885  | 2818  | 3153            | 3080  |      |
|          | 90°  | 2551                              | 2271  | 2993  | 2664  | 3434  | 3058  | 3876  | 3451  | 4317  | 3844  | 4759  | 4238  | 5200            | 4631  |      |
| 1.5S-335 | 0°   | 3799                              | 4195  | 4454  | 4919  | 5109  | 5642  | 5764  | 6366  | 6419  | 7090  | 7074  | 7814  | 7729            | 8537  | 10,4 |
|          | 45°  | 2222                              | 2184  | 2605  | 2561  | 2989  | 2938  | 3372  | 3314  | 3755  | 3691  | 4138  | 4068  | 4521            | 4445  |      |
|          | 90°  | 3665                              | 3284  | 4297  | 3850  | 4929  | 4417  | 5561  | 4984  | 6193  | 5550  | 6825  | 6117  | 7457            | 6683  |      |
| 1.5S-385 | 0°   | 5052                              | 5600  | 5917  | 6559  | 6783  | 7518  | 7648  | 8477  | 8513  | 9437  | 9378  | 10396 | 10243           | 11355 | 7,9  |
|          | 45°  | 2955                              | 2915  | 3461  | 3415  | 3968  | 3914  | 4474  | 4414  | 4980  | 4913  | 5486  | 5412  | 5992            | 5912  |      |
|          | 90°  | 4874                              | 4384  | 5709  | 5135  | 6544  | 5885  | 7378  | 6636  | 8213  | 7387  | 9048  | 8138  | 9883            | 8889  |      |
| 3S-335   | 0°   | 6206                              | 6853  | 7276  | 8035  | 8346  | 9218  | 9416  | 10400 | 10486 | 11582 | 11556 | 12764 | 12627           | 13947 | 12   |
|          | 45°  | 3680                              | 3619  | 4314  | 4244  | 4949  | 4868  | 5584  | 5492  | 6218  | 6117  | 6853  | 6741  | 7487            | 7366  |      |
|          | 90°  | 6160                              | 5520  | 7223  | 6472  | 8285  | 7424  | 9347  | 8376  | 10409 | 9329  | 11471 | 10281 | 12534           | 11233 |      |
| 3S-385   | 0°   | 8253                              | 9148  | 9667  | 10715 | 11080 | 12282 | 12494 | 13849 | 13907 | 15416 | 15320 | 16983 | 16734           | 18550 | 9,6  |
|          | 45°  | 4894                              | 4831  | 5732  | 5659  | 6570  | 6486  | 7408  | 7314  | 8247  | 8142  | 9085  | 8969  | 9923            | 9797  |      |
|          | 90°  | 8193                              | 7368  | 9596  | 8630  | 10999 | 9892  | 12402 | 11154 | 13805 | 12417 | 15208 | 13679 | 16611           | 14941 |      |
| 3S-435   | 0°   | 10573                             | 11747 | 12377 | 13753 | 14181 | 15758 | 15986 | 17763 | 17790 | 19768 | 19594 | 21773 | 21398           | 23778 | 7,5  |
|          | 45°  | 6269                              | 6204  | 7339  | 7263  | 8409  | 8322  | 9479  | 9381  | 10549 | 10440 | 11619 | 11499 | 12689           | 12558 |      |
|          | 90°  | 10495                             | 9462  | 12286 | 11077 | 14077 | 12692 | 15868 | 14307 | 17659 | 15922 | 19450 | 17537 | 21241           | 19152 |      |
| 3S-485   | 0°   | 13188                             | 14678 | 15431 | 17175 | 17674 | 19672 | 19917 | 22169 | 22160 | 24666 | 24402 | 27162 | 26645           | 29659 | 6    |
|          | 45°  | 7820                              | 7752  | 9150  | 9071  | 10480 | 10389 | 11810 | 11708 | 13140 | 13027 | 14470 | 14345 | 15800           | 15664 |      |
|          | 90°  | 13091                             | 11822 | 15317 | 13833 | 17544 | 15844 | 19770 | 17855 | 21997 | 19866 | 24223 | 21877 | 26449           | 23888 |      |
| 6S-485   | 0°   | 15390                             | 17130 | 18008 | 20044 | 20625 | 22958 | 23243 | 25871 | 25860 | 28785 | 28478 | 31699 | 31095           | 34613 | 10,3 |
|          | 45°  | 9143                              | 9064  | 10698 | 10606 | 12253 | 12148 | 13808 | 13690 | 15363 | 15232 | 16918 | 16774 | 18473           | 18316 |      |
|          | 90°  | 15336                             | 13850 | 17944 | 16206 | 20553 | 18562 | 23161 | 20918 | 25769 | 23274 | 28377 | 25630 | 30986           | 27985 |      |
| 6S-535   | 0°   | 18791                             | 20941 | 21976 | 24491 | 25161 | 28041 | 28346 | 31591 | 31531 | 35141 | 34716 | 38691 | 37901           | 42240 | 8,5  |
|          | 45°  | 11163                             | 11081 | 13055 | 12960 | 14948 | 14838 | 16840 | 16717 | 18732 | 18595 | 20624 | 20474 | 22516           | 22352 |      |
|          | 90°  | 18725                             | 16932 | 21899 | 19802 | 25072 | 22672 | 28246 | 25542 | 31420 | 28413 | 34594 | 31283 | 37767           | 34153 |      |
| 6S-585   | 0°   | 22468                             | 25062 | 26276 | 29310 | 30084 | 33559 | 33892 | 37807 | 37700 | 42055 | 41509 | 46303 | 45317           | 50552 | 7,1  |
|          | 45°  | 13347                             | 13262 | 15610 | 15510 | 17872 | 17758 | 20135 | 20006 | 22397 | 22254 | 24659 | 24502 | 26922           | 26750 |      |
|          | 90°  | 22388                             | 20264 | 26183 | 23698 | 29978 | 27133 | 33773 | 30568 | 37567 | 34003 | 41362 | 37438 | 45157           | 40873 |      |

\* MOP = Maximum Operating Pressure (bar g)

**MORIN ALGA DOUBLE ACTING PNEUMATIC ACTUATOR**  
 OUTPUT TORQUES (Nm) - SYMMETRIC YOKE DESIGN, MODELS 1.5S-280 TO 6S-585

| Model    | Position | Operating supply pressure (bar g) |       |       |       |       |       |       |       |       |       |       |       | MOP*<br>(bar g) |
|----------|----------|-----------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-----------------|
|          |          | 7                                 |       | 8     |       | 9     |       | 10    |       | 11    |       | 12    |       |                 |
|          |          | OP                                | CL    | OP    | CL    | OP    | CL    | OP    | CL    | OP    | CL    | OP    | CL    |                 |
| 1.5S-280 | 0°       | 6305                              | 6921  | 7221  | 7926  | 8136  | 8930  | 9051  | 9935  | 9966  | 10940 | 10882 | 11945 | 12              |
|          | 45°      | 3689                              | 3603  | 4224  | 4126  | 4759  | 4649  | 5295  | 5173  | 5830  | 5696  | 6366  | 6219  |                 |
|          | 90°      | 6083                              | 5418  | 6966  | 6204  | 7850  | 6991  | 8733  | 7778  | 9616  | 8564  | 10499 | 9351  |                 |
| 1.5S-335 | 0°       | 9039                              | 9985  | 10349 | 11432 | 11659 | 12880 | 12970 | 14327 | -     | -     | -     | -     | 10,4            |
|          | 45°      | 5288                              | 5198  | 6054  | 5952  | 6821  | 6706  | 7587  | 7459  | -     | -     | -     | -     |                 |
|          | 90°      | 8721                              | 7816  | 9985  | 8949  | 11249 | 10083 | 12513 | 11216 | -     | -     | -     | -     |                 |
| 1.5S-385 | 0°       | 11974                             | 13274 | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | 7,9             |
|          | 45°      | 7004                              | 6911  | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |                 |
|          | 90°      | 11552                             | 10391 | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |                 |
| 3S-335   | 0°       | 14767                             | 16311 | 16907 | 18676 | 19047 | 21040 | 21187 | 23405 | 23327 | 25769 | 25468 | 28134 | 12              |
|          | 45°      | 8756                              | 8614  | 10025 | 9863  | 11295 | 11112 | 12564 | 12361 | 13833 | 13610 | 15102 | 14859 |                 |
|          | 90°      | 14658                             | 13138 | 16783 | 15042 | 18907 | 16947 | 21031 | 18851 | 23156 | 20755 | 25280 | 22660 |                 |
| 3S-385   | 0°       | 19560                             | 21684 | 22387 | 24818 | 25214 | 27952 | -     | -     | -     | -     | -     | -     | 9,6             |
|          | 45°      | 11599                             | 11452 | 13275 | 13107 | 14951 | 14762 | -     | -     | -     | -     | -     | -     |                 |
|          | 90°      | 19417                             | 17465 | 22222 | 19989 | 25028 | 22513 | -     | -     | -     | -     | -     | -     |                 |
| 3S-435   | 0°       | 25007                             | 27789 | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | 7,5             |
|          | 45°      | 14829                             | 14676 | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |                 |
|          | 90°      | 24823                             | 22382 | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |                 |
| 3S-485   | 0°       | -                                 | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | 6               |
|          | 45°      | -                                 | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |                 |
|          | 90°      | -                                 | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |                 |
| 6S-485   | 0°       | 36331                             | 40440 | 41566 | 46268 | 46801 | 52095 | 52036 | 57923 | -     | -     | -     | -     | 10,3            |
|          | 45°      | 21583                             | 21399 | 24693 | 24483 | 27803 | 27567 | 30913 | 30650 | -     | -     | -     | -     |                 |
|          | 90°      | 36202                             | 32697 | 41419 | 37409 | 46635 | 42121 | 51852 | 46832 | -     | -     | -     | -     |                 |
| 6S-535   | 0°       | 44271                             | 49340 | 50641 | 56440 | -     | -     | -     | -     | -     | -     | -     | -     | 8,5             |
|          | 45°      | 26301                             | 26109 | 30085 | 29866 | -     | -     | -     | -     | -     | -     | -     | -     |                 |
|          | 90°      | 44115                             | 39893 | 50462 | 45633 | -     | -     | -     | -     | -     | -     | -     | -     |                 |
| 6S-585   | 0°       | 52933                             | 59048 | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | 7,1             |
|          | 45°      | 31446                             | 31246 | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |                 |
|          | 90°      | 52746                             | 47743 | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |                 |

\* MOP = Maximum Operating Pressure (bar g)

# MORIN ALGA DOUBLE ACTING PNEUMATIC ACTUATOR

## OUTPUT TORQUES (Nm) - SYMMETRIC YOKE DESIGN, MODELS 14S-635 TO 18S2-685

| Model    | Pos. | Operating supply pressure (bar g) |       |       |        |        |        |        |        |        |        |        |        | MOP* (bar g) |        |      |
|----------|------|-----------------------------------|-------|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------------|--------|------|
|          |      | 3                                 |       | 3.5   |        | 4      |        | 4.5    |        | 5      |        | 5.5    |        |              | 6      |      |
|          |      | OP                                | CL    | OP    | CL     | OP     | CL     | OP     | CL     | OP     | CL     | OP     | CL     | OP           | CL     |      |
| 14S-635  | 0°   | 29368                             | 32617 | 34346 | 38146  | 39324  | 43676  | 44301  | 49205  | 49279  | 54734  | 54257  | 60263  | 59234        | 65793  | 10,9 |
|          | 45°  | 17180                             | 16982 | 20092 | 19861  | 23004  | 22740  | 25916  | 25619  | 28828  | 28497  | 31740  | 31376  | 34652        | 34255  |      |
|          | 90°  | 28334                             | 25534 | 33137 | 29862  | 37939  | 34191  | 42742  | 38519  | 47544  | 42848  | 52347  | 47176  | 57149        | 51505  |      |
| 14S-735  | 0°   | 39346                             | 43801 | 46015 | 51226  | 52684  | 58650  | 59353  | 66075  | 66022  | 73500  | 72691  | 80925  | 79360        | 88350  | 8,1  |
|          | 45°  | 23018                             | 22805 | 26919 | 26671  | 30820  | 30536  | 34722  | 34402  | 38623  | 38268  | 42524  | 42134  | 46426        | 46000  |      |
|          | 90°  | 37961                             | 34289 | 44396 | 40101  | 50830  | 45914  | 57264  | 51726  | 63698  | 57539  | 70132  | 63351  | 76567        | 69163  |      |
| 18S-635  | 0°   | 33764                             | 37499 | 39487 | 43856  | 45209  | 50213  | 50932  | 56570  | 56655  | 62926  | 62378  | 69283  | 68100        | 75640  | 12   |
|          | 45°  | 19758                             | 19530 | 23107 | 22841  | 26455  | 26152  | 29804  | 29462  | 33153  | 32773  | 36502  | 36084  | 39851        | 39395  |      |
|          | 90°  | 32595                             | 29374 | 38120 | 34353  | 43645  | 39333  | 49170  | 44312  | 54694  | 49292  | 60219  | 54271  | 65744        | 59251  |      |
| 18S-685  | 0°   | 39290                             | 43693 | 45950 | 51100  | 52609  | 58507  | 59269  | 65913  | 65928  | 73320  | 72588  | 80727  | 79247        | 88133  | 12   |
|          | 45°  | 22992                             | 22756 | 26889 | 26614  | 30786  | 30471  | 34683  | 34329  | 38580  | 38186  | 42477  | 42044  | 46374        | 45901  |      |
|          | 90°  | 37931                             | 34226 | 44360 | 40028  | 50789  | 45830  | 57218  | 51631  | 63647  | 57433  | 70076  | 63235  | 76505        | 69037  |      |
| 18S-735  | 0°   | 45236                             | 50357 | 52903 | 58893  | 60570  | 67429  | 68237  | 75965  | 75904  | 84501  | 83571  | 93037  | 91238        | 101573 | 10,5 |
|          | 45°  | 26471                             | 26227 | 30957 | 30672  | 35444  | 35118  | 39931  | 39564  | 44417  | 44010  | 48904  | 48455  | 53391        | 52901  |      |
|          | 90°  | 43670                             | 39446 | 51072 | 46132  | 58474  | 52819  | 65876  | 59505  | 73278  | 66192  | 80679  | 72878  | 88081        | 79565  |      |
| 18S2-635 | 0°   | 67222                             | 75342 | 78616 | 88113  | 90010  | 100884 | 101405 | 113655 | 112799 | 126426 | 124194 | 139197 | 135588       | 151968 | 7    |
|          | 45°  | 39336                             | 39240 | 46004 | 45891  | 52672  | 52542  | 59340  | 59194  | 66008  | 65845  | 72675  | 72496  | 79343        | 79148  |      |
|          | 90°  | 64895                             | 59017 | 75896 | 69021  | 86896  | 79025  | 97896  | 89029  | 108896 | 99032  | 119896 | 109036 | 130896       | 119040 |      |
| 18S2-685 | 0°   | 78275                             | 87731 | 91543 | 102601 | 104810 | 117472 | 118078 | 132343 | 131346 | 147213 | 144614 | 162084 | 157882       | 176954 | 6,1  |
|          | 45°  | 45804                             | 45692 | 53569 | 53437  | 61333  | 61182  | 69097  | 68926  | 76861  | 76671  | 84625  | 84416  | 92389        | 92161  |      |
|          | 90°  | 75566                             | 68721 | 88375 | 80370  | 101184 | 92019  | 113992 | 103667 | 126801 | 115316 | 139610 | 126964 | 152419       | 138613 |      |

\* MOP = Maximum Operating Pressure (bar g)

| Model    | Position | Operating supply pressure (bar g) |        |        |        |        |        |        |        |        |        | MOP* (bar g) |        |      |
|----------|----------|-----------------------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------------|--------|------|
|          |          | 7                                 |        | 8      |        | 9      |        | 10     |        | 11     |        |              | 12     |      |
|          |          | OP                                | CL     | OP     | CL     | OP     | CL     | OP     | CL     | OP     | CL     | OP           | CL     |      |
| 14S-635  | 0°       | 69190                             | 76851  | 79145  | 87910  | 89101  | 98968  | 99056  | 110027 | -      | -      | -            | -      | 10,9 |
|          | 45°      | 40476                             | 40013  | 46300  | 45770  | 52124  | 51528  | 57948  | 57286  | -      | -      | -            | -      |      |
|          | 90°      | 66754                             | 60162  | 76359  | 68819  | 85964  | 77476  | 95569  | 86133  | -      | -      | -            | -      |      |
| 14S-735  | 0°       | 92698                             | 103199 | 106036 | 118049 | -      | -      | -      | -      | -      | -      | -            | -      | 8,1  |
|          | 45°      | 54229                             | 53731  | 62031  | 61463  | -      | -      | -      | -      | -      | -      | -            | -      |      |
|          | 90°      | 89435                             | 80788  | 102303 | 92413  | -      | -      | -      | -      | -      | -      | -            | -      |      |
| 18S-635  | 0°       | 79546                             | 88354  | 90991  | 101067 | 102437 | 113781 | 113883 | 126495 | 125328 | 139208 | 136774       | 151922 | 12   |
|          | 45°      | 46548                             | 46016  | 53246  | 52638  | 59944  | 59259  | 66641  | 65881  | 73339  | 72502  | 80037        | 79124  |      |
|          | 90°      | 76793                             | 69210  | 87843  | 79168  | 98892  | 89127  | 109942 | 99086  | 120991 | 109045 | 132041       | 119004 |      |
| 18S-685  | 0°       | 92566                             | 102947 | 105885 | 117760 | 119204 | 132574 | 132523 | 147387 | 145842 | 162200 | 159161       | 177014 | 12   |
|          | 45°      | 54168                             | 53617  | 61962  | 61332  | 69755  | 69047  | 77549  | 76762  | 85343  | 84477  | 93137        | 92192  |      |
|          | 90°      | 89363                             | 80641  | 102221 | 92244  | 115079 | 103848 | 127937 | 115452 | 140795 | 127055 | 153653       | 138659 |      |
| 18S-735  | 0°       | 106573                            | 118645 | 121907 | 135718 | 137241 | 152790 | 152576 | 169862 | -      | -      | -            | -      | 10,5 |
|          | 45°      | 62364                             | 61793  | 71337  | 70684  | 80310  | 79576  | 89284  | 88467  | -      | -      | -            | -      |      |
|          | 90°      | 102885                            | 92938  | 117689 | 106311 | 132492 | 119684 | 147296 | 133057 | -      | -      | -            | -      |      |
| 18S2-635 | 0°       | 158377                            | 177510 | -      | -      | -      | -      | -      | -      | -      | -      | -            | -      | 7    |
|          | 45°      | 92679                             | 92450  | -      | -      | -      | -      | -      | -      | -      | -      | -            | -      |      |
|          | 90°      | 152897                            | 139048 | -      | -      | -      | -      | -      | -      | -      | -      | -            | -      |      |
| 18S2-685 | 0°       | -                                 | -      | -      | -      | -      | -      | -      | -      | -      | -      | -            | -      | 6,1  |
|          | 45°      | -                                 | -      | -      | -      | -      | -      | -      | -      | -      | -      | -            | -      |      |
|          | 90°      | -                                 | -      | -      | -      | -      | -      | -      | -      | -      | -      | -            | -      |      |

\* MOP = Maximum Operating Pressure (bar g)



# MORIN ALGAS SPRING RETURN PNEUMATIC ACTUATOR

OUTPUT TORQUES (Nm) - CANTED YOKE DESIGN, SPRING TO CLOSE. MODELS 1.5C-1100-385-CL TO 1.5C-1200-585-CL

| Model            | MOP (bar g) | BTC  | RTC  | ETC  | Operating supply pressure (bar g) |       |       |        |       |       |        |       |       |        |       |       |
|------------------|-------------|------|------|------|-----------------------------------|-------|-------|--------|-------|-------|--------|-------|-------|--------|-------|-------|
|                  |             |      |      |      | 3                                 |       |       | 3.5    |       |       | 4      |       |       | 4.5    |       |       |
|                  |             |      |      |      | BTO                               | RTO   | ETO   | BTO    | RTO   | ETO   | BTO    | RTO   | ETO   | BTO    | RTO   | ETO   |
| 1.5C-1100-385-CL | 8           | 5705 | 3194 | 5167 | -                                 | -     | -     | -      | -     | -     | -      | -     | -     | -      | -     | -     |
| 1.5C-1100-435-CL | 6,3         | 5692 | 3184 | 5141 | -                                 | -     | -     | -      | -     | -     | 7.378  | 848   | 848   | 9.000  | 1.762 | 1.762 |
| 1.5C-1100-485-CL | 5,1         | 5684 | 3178 | 5124 | 6.485                             | 344   | 344   | 8.501  | 1.481 | 1.481 | 10.517 | 2.496 | 2.617 | 12.534 | 3.329 | 3.754 |
| 1.5C-1100-535-CL | 4,2         | 5682 | 3177 | 5121 | 9.104                             | 1.821 | 1.821 | 11.558 | 2.930 | 3.204 | 14.012 | 3.926 | 4.587 | -      | -     | -     |
| 1.5C-1100-585-CL | 3           | 5656 | 3157 | 5067 | 11.937                            | 3.086 | 3.417 | 14.870 | 4.270 | 5.071 | -      | -     | -     | -      | -     | -     |
| 1.5C-1200-385-CL | 8,8         | 6617 | 3887 | 7096 | -                                 | -     | -     | -      | -     | -     | -      | -     | -     | -      | -     | -     |
| 1.5C-1200-435-CL | 6,9         | 6604 | 3877 | 7069 | -                                 | -     | -     | -      | -     | -     | -      | -     | -     | -      | -     | -     |
| 1.5C-1200-485-CL | 5,5         | 6596 | 3871 | 7053 | -                                 | -     | -     | 6.580  | 429   | 429   | 8.597  | 1.566 | 1.566 | 10.613 | 2.554 | 2.702 |
| 1.5C-1200-535-CL | 4,5         | 6594 | 3870 | 7049 | 7.184                             | 769   | 769   | 9.637  | 2.131 | 2.152 | 12.091 | 3.166 | 3.535 | 14.544 | 4.155 | 4.918 |
| 1.5C-1200-585-CL | 3           | 6568 | 3850 | 6996 | 10.016                            | 2.299 | 2.365 | 12.950 | 3.514 | 4.019 | -      | -     | -     | -      | -     | -     |

| Model            | MOP (bar g) | BTC  | RTC  | ETC  | Operating supply pressure (bar g) |      |      |       |      |      |       |      |      |       |      |      |
|------------------|-------------|------|------|------|-----------------------------------|------|------|-------|------|------|-------|------|------|-------|------|------|
|                  |             |      |      |      | 5                                 |      |      | 5.5   |      |      | 6     |      |      | 7     |      |      |
|                  |             |      |      |      | BTO                               | RTO  | ETO  | BTO   | RTO  | ETO  | BTO   | RTO  | ETO  | BTO   | RTO  | ETO  |
| 1.5C-1100-385-CL | 8           | 5705 | 3194 | 5167 | 7131                              | 709  | 709  | 8402  | 1425 | 1425 | 9672  | 2126 | 2141 | 12214 | 3199 | 3573 |
| 1.5C-1100-435-CL | 6,3         | 5692 | 3184 | 5141 | 10622                             | 2540 | 2676 | 12244 | 3212 | 3590 | 13866 | 3867 | 4505 | -     | -    | -    |
| 1.5C-1100-485-CL | 5,1         | 5684 | 3178 | 5124 | 14550                             | 4142 | 4890 | -     | -    | -    | -     | -    | -    | -     | -    | -    |
| 1.5C-1100-535-CL | 4,2         | 5682 | 3177 | 5121 | -                                 | -    | -    | -     | -    | -    | -     | -    | -    | -     | -    | -    |
| 1.5C-1100-585-CL | 3           | 5656 | 3157 | 5067 | -                                 | -    | -    | -     | -    | -    | -     | -    | -    | -     | -    | -    |
| 1.5C-1200-385-CL | 8,8         | 6617 | 3887 | 7096 | -                                 | -    | -    | -     | -    | -    | 7752  | 1089 | 1089 | 10293 | 2418 | 2522 |
| 1.5C-1200-435-CL | 6,9         | 6604 | 3877 | 7069 | 8701                              | 1624 | 1624 | 10323 | 2432 | 2539 | 11945 | 3106 | 3453 | -     | -    | -    |
| 1.5C-1200-485-CL | 5,5         | 6596 | 3871 | 7053 | 12630                             | 3385 | 3839 | 14646 | 4195 | 4975 | -     | -    | -    | -     | -    | -    |
| 1.5C-1200-535-CL | 4,5         | 6594 | 3870 | 7049 | -                                 | -    | -    | -     | -    | -    | -     | -    | -    | -     | -    | -    |
| 1.5C-1200-585-CL | 3           | 6568 | 3850 | 6996 | -                                 | -    | -    | -     | -    | -    | -     | -    | -    | -     | -    | -    |

| Model            | MOP (bar g) | BTC  | RTC  | ETC  | Operating supply pressure (bar g) |     |     |     |     |     |     |     |     |
|------------------|-------------|------|------|------|-----------------------------------|-----|-----|-----|-----|-----|-----|-----|-----|
|                  |             |      |      |      | 9                                 |     |     | 10  |     |     | 12  |     |     |
|                  |             |      |      |      | BTO                               | RTO | ETO | BTO | RTO | ETO | BTO | RTO | ETO |
| 1.5C-1100-385-CL | 8           | 5705 | 3194 | 5167 | -                                 | -   | -   | -   | -   | -   | -   | -   | -   |
| 1.5C-1100-435-CL | 6,3         | 5692 | 3184 | 5141 | -                                 | -   | -   | -   | -   | -   | -   | -   | -   |
| 1.5C-1100-485-CL | 5,1         | 5684 | 3178 | 5124 | -                                 | -   | -   | -   | -   | -   | -   | -   | -   |
| 1.5C-1100-535-CL | 4,2         | 5682 | 3177 | 5121 | -                                 | -   | -   | -   | -   | -   | -   | -   | -   |
| 1.5C-1100-585-CL | 3           | 5656 | 3157 | 5067 | -                                 | -   | -   | -   | -   | -   | -   | -   | -   |
| 1.5C-1200-385-CL | 8,8         | 6617 | 3887 | 7096 | -                                 | -   | -   | -   | -   | -   | -   | -   | -   |
| 1.5C-1200-435-CL | 6,9         | 6604 | 3877 | 7069 | -                                 | -   | -   | -   | -   | -   | -   | -   | -   |
| 1.5C-1200-485-CL | 5,5         | 6596 | 3871 | 7053 | -                                 | -   | -   | -   | -   | -   | -   | -   | -   |
| 1.5C-1200-535-CL | 4,5         | 6594 | 3870 | 7049 | -                                 | -   | -   | -   | -   | -   | -   | -   | -   |
| 1.5C-1200-585-CL | 3           | 6568 | 3850 | 6996 | -                                 | -   | -   | -   | -   | -   | -   | -   | -   |

## NOTES

MOP: Maximum Operating Pressure

BTC: Break to Close

RTC: Run to Close

ETC: End to Close

BTO: Break to Open

RTO: Run to Open

ETO: End to Open

# MORIN ALGAS SPRING RETURN PNEUMATIC ACTUATOR

OUTPUT TORQUES (Nm) - CANTED YOKE DESIGN, SPRING TO CLOSE. MODELS 3C-2000-385-CL TO 14C-8300-935-CL

| Model           | MOP<br>(bar g) | Operating supply pressure (bar g) |       |       |       |       |       |       |       |       |       |       |       |        |       |       |
|-----------------|----------------|-----------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|--------|-------|-------|
|                 |                | BTC                               | RTC   | ETC   | 3     |       |       | 3.5   |       |       | 4     |       |       | 4.5    |       |       |
|                 |                |                                   |       |       | BTO   | RTO   | ETO   | BTO   | RTO   | ETO   | BTO   | RTO   | ETO   | BTO    | RTO   | ETO   |
| 3C-2000-385-CL  | 9,9            | 9735                              | 5856  | 11307 | -     | -     | -     | -     | -     | -     | -     | -     | -     | -      | -     | -     |
| 3C-2000-435-CL  | 7,8            | 9713                              | 5840  | 11264 | -     | -     | -     | -     | -     | -     | -     | -     | -     | 12153  | 2466  | 2466  |
| 3C-2000-485-CL  | 6,2            | 9700                              | 5830  | 11236 | -     | -     | -     | 11328 | 2001  | 2001  | 14665 | 3615  | 3882  | 18003  | 4977  | 5763  |
| 3C-2000-535-CL  | 5,1            | 9697                              | 5828  | 11230 | 12326 | 2564  | 2564  | 16387 | 4324  | 4853  | 20449 | 5956  | 7142  | 24510  | 7568  | 9431  |
| 3C-2000-585-CL  | 4,3            | 9654                              | 5796  | 11142 | 17014 | 4578  | 5206  | 21870 | 6522  | 7943  | 26726 | 8443  | 10680 | -      | -     | -     |
| 6C-2500-485-CL  | 9,9            | 13894                             | 8477  | 16899 | -     | -     | -     | -     | -     | -     | -     | -     | -     | 17299  | 3838  | 3880  |
| 6C-2500-535-CL  | 8,1            | 13891                             | 8474  | 16892 | -     | -     | -     | 15411 | 2816  | 2816  | 20159 | 5058  | 5492  | 24907  | 6986  | 8168  |
| 6C-2500-585-CL  | 6,8            | 13840                             | 8437  | 16789 | 16144 | 3229  | 3229  | 21821 | 5740  | 6428  | 27497 | 8022  | 9628  | 33174  | 10273 | 12828 |
| 6C-2500-635-CL  | 5,8            | 13785                             | 8396  | 16677 | 22114 | 5859  | 6594  | 28802 | 8541  | 10364 | 35491 | 11188 | 14134 | 42180  | 13823 | 17904 |
| 6C-2500-735-CL  | 4,3            | 13662                             | 8305  | 16425 | 35522 | 11200 | 14151 | 44483 | 14727 | 19202 | 53444 | 18245 | 24253 | -      | -     | -     |
| 6C-3800-535-CL  | 9              | 18816                             | 11838 | 25340 | -     | -     | -     | -     | -     | -     | -     | -     | -     | 16493  | 2592  | 2592  |
| 6C-3800-585-CL  | 7,6            | 18766                             | 11801 | 25237 | -     | -     | -     | 13407 | 853   | 853   | 19084 | 4053  | 4053  | 24761  | 6490  | 7252  |
| 6C-3800-635-CL  | 6,4            | 18711                             | 11761 | 25125 | 13700 | 1018  | 1018  | 20389 | 4663  | 4788  | 27078 | 7429  | 8558  | 33766  | 10101 | 12328 |
| 6C-3800-735-CL  | 4,8            | 18588                             | 11671 | 24872 | 27108 | 7442  | 8575  | 36070 | 11014 | 13626 | 45031 | 14550 | 18677 | 53992  | 18073 | 23728 |
| 14C-5100-635-CL | 10,3           | 22483                             | 14170 | 30454 | -     | -     | -     | 19303 | 2959  | 2959  | 26614 | 6581  | 7079  | 33924  | 9554  | 11200 |
| 14C-5100-735-CL | 7,7            | 22348                             | 14071 | 30178 | 26647 | 6595  | 7098  | 36442 | 10561 | 12619 | 46236 | 14444 | 18139 | 56030  | 18304 | 23660 |
| 14C-5100-785-CL | 6,8            | 22274                             | 14017 | 30025 | 34777 | 9895  | 11680 | 45949 | 14330 | 17977 | 57121 | 18733 | 24274 | 68293  | 23121 | 30571 |
| 14C-5100-835-CL | 6              | 22194                             | 13959 | 29862 | 43441 | 13340 | 16564 | 56082 | 18324 | 23689 | 68722 | 23289 | 30813 | 81363  | 28245 | 37938 |
| 14C-5100-885-CL | 5,3            | 22110                             | 13897 | 29689 | 52640 | 16969 | 21749 | 66840 | 22551 | 29752 | 81040 | 28118 | 37756 | 95240  | 33680 | 45759 |
| 14C-5100-935-CL | 4,8            | 22020                             | 13832 | 29506 | 62374 | 20796 | 27235 | 78224 | 27014 | 36169 | 94073 | 33224 | 45102 | 109923 | 39429 | 54036 |
| 14C-5400-635-CL | 10,8           | 29197                             | 17959 | 36493 | -     | -     | -     | -     | -     | -     | -     | -     | -     | -      | -     | -     |
| 14C-5400-735-CL | 8,6            | 29062                             | 17861 | 36217 | -     | -     | -     | 30427 | 5312  | 5312  | 40221 | 10021 | 10832 | 50016  | 14004 | 16353 |
| 14C-5400-785-CL | 7              | 28988                             | 17806 | 36064 | 28762 | 4374  | 4374  | 39934 | 9902  | 10671 | 51107 | 14442 | 16968 | 62279  | 18889 | 23265 |
| 14C-5400-835-CL | 6,2            | 28908                             | 17748 | 35901 | 37427 | 8847  | 9257  | 50067 | 14024 | 16382 | 62708 | 19059 | 23507 | 75348  | 24052 | 30631 |
| 14C-5400-885-CL | 5,5            | 28824                             | 17686 | 35728 | 46626 | 12639 | 14442 | 60826 | 18313 | 22446 | 75025 | 23924 | 30449 | 89225  | 29512 | 38453 |
| 14C-5400-935-CL | 5              | 28734                             | 17620 | 35545 | 56360 | 16538 | 19928 | 72209 | 22815 | 28862 | 88059 | 29053 | 37795 | 103909 | 35277 | 46729 |
| 14C-8300-735-CL | 8,4            | 37471                             | 23145 | 47494 | -     | -     | -     | -     | -     | -     | -     | -     | -     | 38785  | 7003  | 7003  |
| 14C-8300-785-CL | 7,5            | 37396                             | 23091 | 47341 | -     | -     | -     | 28704 | 1321  | 1321  | 39876 | 7618  | 7618  | 51048  | 12812 | 13915 |
| 14C-8300-835-CL | 6,7            | 37317                             | 23032 | 47178 | -     | -     | -     | 38836 | 7032  | 7032  | 51477 | 12990 | 14157 | 64118  | 18116 | 21282 |
| 14C-8300-885-CL | 5,9            | 37232                             | 22971 | 47005 | 35395 | 5093  | 5093  | 49595 | 12209 | 13096 | 63795 | 17986 | 21100 | 77994  | 23639 | 29103 |
| 14C-8300-935-CL | 5,3            | 37143                             | 22905 | 46822 | 45129 | 10310 | 10579 | 60979 | 16855 | 19512 | 76828 | 23177 | 28446 | 92678  | 29442 | 37379 |

## NOTES

MOP: Maximum Operating Pressure

BTC: Break to Close

RTC: Run to Close

ETC: End to Close

BTO: Break to Open

RTO: Run to Open

ETO: End to Open

# MORIN ALGAS SPRING RETURN PNEUMATIC ACTUATOR

OUTPUT TORQUES (Nm) - CANTED YOKE DESIGN, SPRING TO CLOSE. MODELS 3C-2000-385-CL TO 14C-8300-935-CL

| Model           | MOP<br>(bar g) | Operating supply pressure (bar g) |       |       |        |       |       |        |       |       |        |       |       |        |       |       |
|-----------------|----------------|-----------------------------------|-------|-------|--------|-------|-------|--------|-------|-------|--------|-------|-------|--------|-------|-------|
|                 |                | BTC                               | RTC   | ETC   | 5      |       |       | 5.5    |       |       | 6      |       |       | 7      |       |       |
|                 |                |                                   |       |       | BTO    | RTO   | ETO   | BTO    | RTO   | ETO   | BTO    | RTO   | ETO   | BTO    | RTO   | ETO   |
| 3C-2000-385-CL  | 9,9            | 9735                              | 5856  | 11307 | -      | -     | -     | 11163  | 1908  | 1908  | 13266  | 3020  | 3094  | 17473  | 4763  | 5464  |
| 3C-2000-435-CL  | 7,8            | 9713                              | 5840  | 11264 | 14838  | 3687  | 3980  | 17523  | 4784  | 5493  | 20208  | 5860  | 7006  | 25577  | 7989  | 10033 |
| 3C-2000-485-CL  | 6,2            | 9700                              | 5830  | 11236 | 21340  | 6311  | 7644  | 24678  | 7634  | 9526  | 28015  | 8951  | 11407 | -      | -     | -     |
| 3C-2000-535-CL  | 5,1            | 9697                              | 5828  | 11230 | 28571  | 9170  | 11720 | -      | -     | -     | -      | -     | -     | -      | -     | -     |
| 3C-2000-585-CL  | 4,3            | 9654                              | 5796  | 11142 | -      | -     | -     | -      | -     | -     | -      | -     | -     | -      | -     | -     |
| 6C-2500-485-CL  | 9,9            | 13894                             | 8477  | 16899 | 21201  | 5487  | 6079  | 25103  | 7065  | 8279  | 29005  | 8622  | 10478 | 36809  | 11708 | 14876 |
| 6C-2500-535-CL  | 8,1            | 13891                             | 8474  | 16892 | 29655  | 8879  | 10844 | 34403  | 10758 | 13520 | 39150  | 12630 | 16196 | 48646  | 16363 | 21548 |
| 6C-2500-585-CL  | 6,8            | 13840                             | 8437  | 16789 | 38851  | 12512 | 16027 | 44528  | 14745 | 19227 | 50205  | 16975 | 22427 | -      | -     | -     |
| 6C-2500-635-CL  | 5,8            | 13785                             | 8396  | 16677 | 48868  | 16450 | 21674 | 55557  | 19074 | 25444 | -      | -     | -     | -      | -     | -     |
| 6C-2500-735-CL  | 4,3            | 13662                             | 8305  | 16425 | -      | -     | -     | -      | -     | -     | -      | -     | -     | -      | -     | -     |
| 6C-3800-535-CL  | 9              | 18816                             | 11838 | 25340 | 21241  | 5030  | 5269  | 25989  | 6989  | 7945  | 30737  | 8896  | 10621 | 40233  | 12659 | 15973 |
| 6C-3800-585-CL  | 7,6            | 18766                             | 11801 | 25237 | 30438  | 8776  | 10452 | 36114  | 11032 | 13652 | 41791  | 13274 | 16851 | 53145  | 17740 | 23250 |
| 6C-3800-635-CL  | 6,4            | 18711                             | 11761 | 25125 | 40455  | 12747 | 16098 | 47144  | 15382 | 19868 | 53832  | 18010 | 23638 | -      | -     | -     |
| 6C-3800-735-CL  | 4,8            | 18588                             | 11671 | 24872 | -      | -     | -     | -      | -     | -     | -      | -     | -     | -      | -     | -     |
| 14C-5100-635-CL | 10,3           | 22483                             | 14170 | 30454 | 41235  | 12465 | 15320 | 48545  | 15356 | 19441 | 55856  | 18235 | 23561 | 70476  | 23977 | 31802 |
| 14C-5100-735-CL | 7,7            | 22348                             | 14071 | 30178 | 65824  | 22152 | 29180 | 75619  | 25993 | 34700 | 85413  | 29833 | 40221 | 105001 | 37502 | 51261 |
| 14C-5100-785-CL | 6,8            | 22274                             | 14017 | 30025 | 79465  | 27501 | 36868 | 90637  | 31879 | 43165 | 101809 | 36252 | 49462 | -      | -     | -     |
| 14C-5100-835-CL | 6              | 22194                             | 13959 | 29862 | 94004  | 33197 | 45063 | 106644 | 38145 | 52188 | 119285 | 43094 | 59312 | -      | -     | -     |
| 14C-5100-885-CL | 5,3            | 22110                             | 13897 | 29689 | 109439 | 39239 | 53763 | -      | -     | -     | -      | -     | -     | -      | -     | -     |
| 14C-5100-935-CL | 4,8            | 22020                             | 13832 | 29506 | -      | -     | -     | -      | -     | -     | -      | -     | -     | -      | -     | -     |
| 14C-5400-635-CL | 10,8           | 29197                             | 17959 | 36493 | 35220  | 7889  | 8013  | 42531  | 10973 | 12134 | 49841  | 13933 | 16254 | 64462  | 19754 | 24495 |
| 14C-5400-735-CL | 8,6            | 29062                             | 17861 | 36217 | 59810  | 17910 | 21873 | 69604  | 21786 | 27393 | 79398  | 25647 | 32914 | 98987  | 33346 | 43955 |
| 14C-5400-785-CL | 7              | 28988                             | 17806 | 36064 | 73451  | 23304 | 29562 | 84623  | 27703 | 35859 | 95795  | 32093 | 42156 | 118139 | 40857 | 54750 |
| 14C-5400-835-CL | 6,2            | 28908                             | 17748 | 35901 | 87989  | 29026 | 37756 | 100630 | 33992 | 44881 | 113270 | 38948 | 52005 | -      | -     | -     |
| 14C-5400-885-CL | 5,5            | 28824                             | 17686 | 35728 | 103425 | 35088 | 46456 | 117625 | 40655 | 54460 | -      | -     | -     | -      | -     | -     |
| 14C-5400-935-CL | 5              | 28734                             | 17620 | 35545 | 119758 | 41492 | 55662 | -      | -     | -     | -      | -     | -     | -      | -     | -     |
| 14C-8300-735-CL | 8,4            | 37471                             | 23145 | 47494 | 48579  | 11784 | 12524 | 58373  | 15804 | 18044 | 68167  | 19734 | 23564 | 87756  | 27500 | 34605 |
| 14C-8300-785-CL | 7,5            | 37396                             | 23091 | 47341 | 62220  | 17353 | 20212 | 73392  | 21814 | 26509 | 84564  | 26239 | 32806 | 106908 | 35045 | 45400 |
| 14C-8300-835-CL | 6,7            | 37317                             | 23032 | 47178 | 76758  | 23149 | 28407 | 89399  | 28149 | 35531 | 102040 | 33129 | 42656 | -      | -     | -     |
| 14C-8300-885-CL | 5,9            | 37232                             | 22971 | 47005 | 92194  | 29252 | 37107 | 106394 | 34843 | 45110 | -      | -     | -     | -      | -     | -     |
| 14C-8300-935-CL | 5,3            | 37143                             | 22905 | 46822 | 108527 | 35681 | 46313 | -      | -     | -     | -      | -     | -     | -      | -     | -     |

## NOTES

MOP: Maximum Operating Pressure

BTC: Break to Close

RTC: Run to Close

ETC: End to Close

BTO: Break to Open

RTO: Run to Open

ETO: End to Open

# MORIN ALGAS SPRING RETURN PNEUMATIC ACTUATOR

OUTPUT TORQUES (Nm) - CANTED YOKE DESIGN, SPRING TO CLOSE. MODELS 3C-2000-385-CL TO 14C-8300-985-CL

| Model           | MOP<br>(bar g) | BTC   | RTC   | ETC   | Operating supply pressure (bar g) |       |       |        |       |       |     |     |     |
|-----------------|----------------|-------|-------|-------|-----------------------------------|-------|-------|--------|-------|-------|-----|-----|-----|
|                 |                |       |       |       | 9                                 |       |       | 10     |       |       | 12  |     |     |
|                 |                |       |       |       | BTO                               | RTO   | ETO   | BTO    | RTO   | ETO   | BTO | RTO | ETO |
| 3C-2000-385-CL  | 9,9            | 9735  | 5856  | 11307 | 25885                             | 8111  | 10206 | -      | -     | -     | -   | -   | -   |
| 3C-2000-435-CL  | 7,8            | 9713  | 5840  | 11264 | -                                 | -     | -     | -      | -     | -     | -   | -   | -   |
| 3C-2000-485-CL  | 6,2            | 9700  | 5830  | 11236 | -                                 | -     | -     | -      | -     | -     | -   | -   | -   |
| 3C-2000-535-CL  | 5,1            | 9697  | 5828  | 11230 | -                                 | -     | -     | -      | -     | -     | -   | -   | -   |
| 3C-2000-585-CL  | 4,3            | 9654  | 5796  | 11142 | -                                 | -     | -     | -      | -     | -     | -   | -   | -   |
| 6C-2500-485-CL  | 9,9            | 13894 | 8477  | 16899 | 52416                             | 17842 | 23673 | -      | -     | -     | -   | -   | -   |
| 6C-2500-535-CL  | 8,1            | 13891 | 8474  | 16892 | -                                 | -     | -     | -      | -     | -     | -   | -   | -   |
| 6C-2500-585-CL  | 6,8            | 13840 | 8437  | 16789 | -                                 | -     | -     | -      | -     | -     | -   | -   | -   |
| 6C-2500-635-CL  | 5,8            | 13785 | 8396  | 16677 | -                                 | -     | -     | -      | -     | -     | -   | -   | -   |
| 6C-2500-735-CL  | 4,3            | 13662 | 8305  | 16425 | -                                 | -     | -     | -      | -     | -     | -   | -   | -   |
| 6C-3800-535-CL  | 9              | 18816 | 11838 | 25340 | 59224                             | 20127 | 26677 | -      | -     | -     | -   | -   | -   |
| 6C-3800-585-CL  | 7,6            | 18766 | 11801 | 25237 | -                                 | -     | -     | -      | -     | -     | -   | -   | -   |
| 6C-3800-635-CL  | 6,4            | 18711 | 11761 | 25125 | -                                 | -     | -     | -      | -     | -     | -   | -   | -   |
| 6C-3800-735-CL  | 4,8            | 18588 | 11671 | 24872 | -                                 | -     | -     | -      | -     | -     | -   | -   | -   |
| 14C-5100-635-CL | 10,3           | 22483 | 14170 | 30454 | 99718                             | 35434 | 48284 | 114339 | 41157 | 56525 | -   | -   | -   |
| 14C-5100-735-CL | 7,7            | 22348 | 14071 | 30178 | -                                 | -     | -     | -      | -     | -     | -   | -   | -   |
| 14C-5100-785-CL | 6,8            | 22274 | 14017 | 30025 | -                                 | -     | -     | -      | -     | -     | -   | -   | -   |
| 14C-5100-835-CL | 6              | 22194 | 13959 | 29862 | -                                 | -     | -     | -      | -     | -     | -   | -   | -   |
| 14C-5100-885-CL | 5,3            | 22110 | 13897 | 29689 | -                                 | -     | -     | -      | -     | -     | -   | -   | -   |
| 14C-5100-935-CL | 4,8            | 22020 | 13832 | 29506 | -                                 | -     | -     | -      | -     | -     | -   | -   | -   |
| 14C-5400-635-CL | 10,8           | 29197 | 17959 | 36493 | 93704                             | 31271 | 40977 | 108325 | 37009 | 49218 | -   | -   | -   |
| 14C-5400-735-CL | 8,6            | 29062 | 17861 | 36217 | -                                 | -     | -     | -      | -     | -     | -   | -   | -   |
| 14C-5400-785-CL | 7              | 28988 | 17806 | 36064 | -                                 | -     | -     | -      | -     | -     | -   | -   | -   |
| 14C-5400-835-CL | 6,2            | 28908 | 17748 | 35901 | -                                 | -     | -     | -      | -     | -     | -   | -   | -   |
| 14C-5400-885-CL | 5,5            | 28824 | 17686 | 35728 | -                                 | -     | -     | -      | -     | -     | -   | -   | -   |
| 14C-5400-935-CL | 5              | 28734 | 17620 | 35545 | -                                 | -     | -     | -      | -     | -     | -   | -   | -   |
| 14C-8300-735-CL | 8,4            | 37471 | 23145 | 47494 | -                                 | -     | -     | -      | -     | -     | -   | -   | -   |
| 14C-8300-785-CL | 7,5            | 37396 | 23091 | 47341 | -                                 | -     | -     | -      | -     | -     | -   | -   | -   |
| 14C-8300-835-CL | 6,7            | 37317 | 23032 | 47178 | -                                 | -     | -     | -      | -     | -     | -   | -   | -   |
| 14C-8300-885-CL | 5,9            | 37232 | 22971 | 47005 | -                                 | -     | -     | -      | -     | -     | -   | -   | -   |
| 14C-8300-935-CL | 5,3            | 37143 | 22905 | 46822 | -                                 | -     | -     | -      | -     | -     | -   | -   | -   |

## NOTES

MOP: Maximum Operating Pressure

BTC: Break to Close

RTC: Run to Close

ETC: End to Close

BTO: Break to Open

RTO: Run to Open

ETO: End to Open

# MORIN ALGAS SPRING RETURN PNEUMATIC ACTUATOR

OUTPUT TORQUES (Nm) - CANTED YOKE DESIGN, SPRING TO CLOSE. MODELS 18C-9600-835-CL TO 18C-11000-1300-CL

| Model             | MOP (bar g) | BTC   | RTC   | ETC    | Operating supply pressure (bar g) |       |       |        |       |       |        |       |       |        |       |       |
|-------------------|-------------|-------|-------|--------|-----------------------------------|-------|-------|--------|-------|-------|--------|-------|-------|--------|-------|-------|
|                   |             |       |       |        | 3                                 |       |       | 3.5    |       |       | 4      |       |       | 4.5    |       |       |
|                   |             |       |       |        | BTO                               | RTO   | ETO   | BTO    | RTO   | ETO   | BTO    | RTO   | ETO   | BTO    | RTO   | ETO   |
| 18C-9600-835-CL   | 8           | 60605 | 35385 | 63670  | -                                 | -     | -     | -      | -     | -     | -      | -     | -     | -      | -     | -     |
| 18C-9600-935-CL   | 6,7         | 60405 | 35236 | 63260  | -                                 | -     | -     | 60748  | 3533  | 3533  | 78975  | 13806 | 13806 | 97202  | 23001 | 24080 |
| 18C-9600-1000-CL  | 5,9         | 60263 | 35130 | 62969  | 57993                             | 1980  | 1980  | 78842  | 13732 | 13732 | 99691  | 24055 | 25483 | 120541 | 32621 | 37234 |
| 18C-9600-1100-CL  | 4,9         | 60026 | 34953 | 62483  | 83825                             | 16540 | 16540 | 109053 | 27943 | 30759 | 134281 | 38146 | 44979 | 159508 | 48188 | 59198 |
| 18C-9600-1200-CL  | 4,1         | 59766 | 34760 | 61951  | 112118                            | 29198 | 32487 | 142141 | 41287 | 49409 | 172164 | 53199 | 66331 | -      | -     | -     |
| 18C-9600-1300-CL  | 3,5         | 59484 | 34549 | 61373  | 142870                            | 41577 | 49820 | 178106 | 55546 | 69680 | -      | -     | -     | -      | -     | -     |
| 18C-9800-835-CL   | 9           | 76919 | 44620 | 79020  | -                                 | -     | -     | -      | -     | -     | -      | -     | -     | -      | -     | -     |
| 18C-9800-935-CL   | 7,1         | 76719 | 44471 | 78611  | -                                 | -     | -     | -      | -     | -     | -      | -     | -     | -      | -     | -     |
| 18C-9800-1000-CL  | 6,2         | 76577 | 44366 | 78320  | -                                 | -     | -     | -      | -     | -     | -      | -     | -     | 105253 | 19444 | 19444 |
| 18C-9800-1100-CL  | 5,2         | 76339 | 44189 | 77834  | -                                 | -     | -     | 93765  | 12969 | 12969 | 118992 | 26730 | 27189 | 144220 | 37352 | 41408 |
| 18C-9800-1200-CL  | 4,3         | 76079 | 43995 | 77302  | 96829                             | 14697 | 14697 | 126853 | 30133 | 31619 | 156876 | 42497 | 48541 | -      | -     | -     |
| 18C-9800-1300-CL  | 3           | 75797 | 43784 | 76723  | 127582                            | 30443 | 32030 | 162818 | 44896 | 51890 | -      | -     | -     | -      | -     | -     |
| 18C-10500-935-CL  | 7,3         | 86028 | 49417 | 85409  | -                                 | -     | -     | -      | -     | -     | -      | -     | -     | -      | -     | -     |
| 18C-10500-1000-CL | 6,4         | 85886 | 49311 | 85118  | -                                 | -     | -     | -      | -     | -     | -      | -     | -     | -      | -     | -     |
| 18C-10500-1100-CL | 5,3         | 85648 | 49133 | 84632  | -                                 | -     | -     | 86993  | 2922  | 2922  | 112221 | 17142 | 17142 | 137449 | 30847 | 31361 |
| 18C-10500-1200-CL | 4,4         | 85388 | 48939 | 84100  | 90058                             | 4650  | 4650  | 120081 | 21572 | 21572 | 150105 | 36292 | 38494 | -      | -     | -     |
| 18C-10500-1300-CL | 3           | 85106 | 48727 | 83522  | 120811                            | 21983 | 21983 | 156047 | 38776 | 41843 | -      | -     | -     | -      | -     | -     |
| 18C-11000-935-CL  | 7,9         | 96334 | 57101 | 106518 | -                                 | -     | -     | -      | -     | -     | -      | -     | -     | -      | -     | -     |
| 18C-11000-1000-CL | 6,9         | 96192 | 56996 | 106227 | -                                 | -     | -     | -      | -     | -     | -      | -     | -     | -      | -     | -     |
| 18C-11000-1100-CL | 5,7         | 95954 | 56820 | 105741 | -                                 | -     | -     | -      | -     | -     | -      | -     | -     | 116427 | 19512 | 19512 |
| 18C-11000-1200-CL | 4,8         | 95694 | 56627 | 105209 | -                                 | -     | -     | 99059  | 9723  | 9723  | 129082 | 26645 | 26645 | 159105 | 40044 | 43567 |
| 18C-11000-1300-CL | 4,1         | 95412 | 56417 | 104630 | 99789                             | 10134 | 10134 | 135024 | 29758 | 29994 | 170260 | 44622 | 49854 | -      | -     | -     |

| Model             | MOP (bar g) | BTC   | RTC   | ETC    | Operating supply pressure (bar g) |       |       |        |       |       |        |       |       |        |       |       |
|-------------------|-------------|-------|-------|--------|-----------------------------------|-------|-------|--------|-------|-------|--------|-------|-------|--------|-------|-------|
|                   |             |       |       |        | 5                                 |       |       | 5.5    |       |       | 6      |       |       | 7      |       |       |
|                   |             |       |       |        | BTO                               | RTO   | ETO   | BTO    | RTO   | ETO   | BTO    | RTO   | ETO   | BTO    | RTO   | ETO   |
| 18C-9600-835-CL   | 8           | 60605 | 35385 | 63670  | -                                 | -     | -     | 93431  | 21378 | 21955 | 107968 | 27497 | 30148 | 137042 | 39250 | 46535 |
| 18C-9600-935-CL   | 6,7         | 60405 | 35236 | 63260  | 115429                            | 30548 | 34353 | 133656 | 37896 | 44627 | 151883 | 45164 | 54900 | -      | -     | -     |
| 18C-9600-1000-CL  | 5,9         | 60263 | 35130 | 62969  | 141390                            | 40988 | 48986 | 162240 | 49271 | 60737 | -      | -     | -     | -      | -     | -     |
| 18C-9600-1100-CL  | 4,9         | 60026 | 34953 | 62483  | -                                 | -     | -     | -      | -     | -     | -      | -     | -     | -      | -     | -     |
| 18C-9600-1200-CL  | 4,1         | 59766 | 34760 | 61951  | -                                 | -     | -     | -      | -     | -     | -      | -     | -     | -      | -     | -     |
| 18C-9600-1300-CL  | 3,5         | 59484 | 34549 | 61373  | -                                 | -     | -     | -      | -     | -     | -      | -     | -     | -      | -     | -     |
| 18C-9800-835-CL   | 9           | 76919 | 44620 | 79020  | -                                 | -     | -     | -      | -     | -     | 92680  | 12358 | 12358 | 121753 | 27943 | 28745 |
| 18C-9800-935-CL   | 7,1         | 76719 | 44471 | 78611  | 100141                            | 16563 | 16563 | 118368 | 26452 | 26837 | 136595 | 34214 | 37110 | 173049 | 49004 | 57657 |
| 18C-9800-1000-CL  | 6,2         | 76577 | 44366 | 78320  | 126102                            | 29813 | 31196 | 146951 | 38469 | 42947 | 167801 | 46898 | 54699 | -      | -     | -     |
| 18C-9800-1100-CL  | 5,2         | 76339 | 44189 | 77834  | 169448                            | 47559 | 55627 | -      | -     | -     | -      | -     | -     | -      | -     | -     |
| 18C-9800-1200-CL  | 4,3         | 76079 | 43995 | 77302  | -                                 | -     | -     | -      | -     | -     | -      | -     | -     | -      | -     | -     |
| 18C-9800-1300-CL  | 3           | 75797 | 43784 | 76723  | -                                 | -     | -     | -      | -     | -     | -      | -     | -     | -      | -     | -     |
| 18C-10500-935-CL  | 7,3         | 86028 | 49417 | 85409  | -                                 | -     | -     | 111597 | 16790 | 16790 | 129824 | 27063 | 27063 | 166278 | 42994 | 47610 |
| 18C-10500-1000-CL | 6,4         | 85886 | 49311 | 85118  | 119331                            | 21149 | 21149 | 140180 | 32049 | 32900 | 161030 | 40837 | 44652 | -      | -     | -     |
| 18C-10500-1100-CL | 5,3         | 85648 | 49133 | 84632  | 162677                            | 41515 | 45580 | -      | -     | -     | -      | -     | -     | -      | -     | -     |
| 18C-10500-1200-CL | 4,4         | 85388 | 48939 | 84100  | -                                 | -     | -     | -      | -     | -     | -      | -     | -     | -      | -     | -     |
| 18C-10500-1300-CL | 3           | 85106 | 48727 | 83522  | -                                 | -     | -     | -      | -     | -     | -      | -     | -     | -      | -     | -     |
| 18C-11000-935-CL  | 7,9         | 96334 | 57101 | 106518 | -                                 | -     | -     | -      | -     | -     | 108802 | 15214 | 15214 | 145256 | 34239 | 35761 |
| 18C-11000-1000-CL | 6,9         | 96192 | 56996 | 106227 | -                                 | -     | -     | 119158 | 21051 | 21051 | 140007 | 31973 | 32803 | -      | -     | -     |
| 18C-11000-1100-CL | 5,7         | 95954 | 56820 | 105741 | 141654                            | 32690 | 33731 | 166882 | 43241 | 47951 | -      | -     | -     | -      | -     | -     |
| 18C-11000-1200-CL | 4,8         | 95694 | 56627 | 105209 | -                                 | -     | -     | -      | -     | -     | -      | -     | -     | -      | -     | -     |
| 18C-11000-1300-CL | 4,1         | 95412 | 56417 | 104630 | -                                 | -     | -     | -      | -     | -     | -      | -     | -     | -      | -     | -     |

## NOTES

MOP: Maximum Operating Pressure

BTC: Break to Close

RTC: Run to Close

ETC: End to Close

BTO: Break to Open

RTO: Run to Open

ETO: End to Open

# MORIN ALGAS SPRING RETURN PNEUMATIC ACTUATOR

OUTPUT TORQUES (Nm) - CANTED YOKE DESIGN, SPRING TO CLOSE. MODELS 18C-9600-835-CL TO 18C-11000-1300-CL

| Model             | MOP<br>(bar g) | BTC   | RTC   | ETC    | Operating supply pressure (bar g) |       |       |     |     |     |     |     |     |
|-------------------|----------------|-------|-------|--------|-----------------------------------|-------|-------|-----|-----|-----|-----|-----|-----|
|                   |                |       |       |        | 9                                 |       |       | 10  |     |     | 12  |     |     |
|                   |                |       |       |        | BTO                               | RTO   | ETO   | BTO | RTO | ETO | BTO | RTO | ETO |
| 18C-9600-835-CL   | 8              | 60605 | 35385 | 63670  | -                                 | -     | -     | -   | -   | -   | -   | -   | -   |
| 18C-9600-935-CL   | 6,7            | 60405 | 35236 | 63260  | -                                 | -     | -     | -   | -   | -   | -   | -   | -   |
| 18C-9600-1000-CL  | 5,9            | 60263 | 35130 | 62969  | -                                 | -     | -     | -   | -   | -   | -   | -   | -   |
| 18C-9600-1100-CL  | 4,9            | 60026 | 34953 | 62483  | -                                 | -     | -     | -   | -   | -   | -   | -   | -   |
| 18C-9600-1200-CL  | 4,1            | 59766 | 34760 | 61951  | -                                 | -     | -     | -   | -   | -   | -   | -   | -   |
| 18C-9600-1300-CL  | 3,5            | 59484 | 34549 | 61373  | -                                 | -     | -     | -   | -   | -   | -   | -   | -   |
| 18C-9800-835-CL   | 9              | 76919 | 44620 | 79020  | 179900                            | 51742 | 61519 | -   | -   | -   | -   | -   | -   |
| 18C-9800-935-CL   | 7,1            | 76719 | 44471 | 78611  | -                                 | -     | -     | -   | -   | -   | -   | -   | -   |
| 18C-9800-1000-CL  | 6,2            | 76577 | 44366 | 78320  | -                                 | -     | -     | -   | -   | -   | -   | -   | -   |
| 18C-9800-1100-CL  | 5,2            | 76339 | 44189 | 77834  | -                                 | -     | -     | -   | -   | -   | -   | -   | -   |
| 18C-9800-1200-CL  | 4,3            | 76079 | 43995 | 77302  | -                                 | -     | -     | -   | -   | -   | -   | -   | -   |
| 18C-9800-1300-CL  | 3              | 75797 | 43784 | 76723  | -                                 | -     | -     | -   | -   | -   | -   | -   | -   |
| 18C-10500-935-CL  | 7,3            | 86028 | 49417 | 85409  | -                                 | -     | -     | -   | -   | -   | -   | -   | -   |
| 18C-10500-1000-CL | 6,4            | 85886 | 49311 | 85118  | -                                 | -     | -     | -   | -   | -   | -   | -   | -   |
| 18C-10500-1100-CL | 5,3            | 85648 | 49133 | 84632  | -                                 | -     | -     | -   | -   | -   | -   | -   | -   |
| 18C-10500-1200-CL | 4,4            | 85388 | 48939 | 84100  | -                                 | -     | -     | -   | -   | -   | -   | -   | -   |
| 18C-10500-1300-CL | 3              | 85106 | 48727 | 83522  | -                                 | -     | -     | -   | -   | -   | -   | -   | -   |
| 18C-11000-935-CL  | 7,9            | 96334 | 57101 | 106518 | -                                 | -     | -     | -   | -   | -   | -   | -   | -   |
| 18C-11000-1000-CL | 6,9            | 96192 | 56996 | 106227 | -                                 | -     | -     | -   | -   | -   | -   | -   | -   |
| 18C-11000-1100-CL | 5,7            | 95954 | 56820 | 105741 | -                                 | -     | -     | -   | -   | -   | -   | -   | -   |
| 18C-11000-1200-CL | 4,8            | 95694 | 56627 | 105209 | -                                 | -     | -     | -   | -   | -   | -   | -   | -   |
| 18C-11000-1300-CL | 4,1            | 95412 | 56417 | 104630 | -                                 | -     | -     | -   | -   | -   | -   | -   | -   |

## NOTES

MOP: Maximum Operating Pressure

BTC: Break to Close

RTC: Run to Close

ETC: End to Close

BTO: Break to Open

RTO: Run to Open

ETO: End to Open



# MORIN ALGAS SPRING RETURN PNEUMATIC ACTUATOR

OUTPUT TORQUES (Nm) - CANTED YOKE DESIGN, SPRING TO OPEN. MODELS 1.5C-1100-385-OP TO 1.5C-1200-585-OP

| Model            | MOP (bar g) | BTO   | RTO  | ETO  | Operating supply pressure (bar g) |      |      |      |      |      |      |      |       |       |      |       |
|------------------|-------------|-------|------|------|-----------------------------------|------|------|------|------|------|------|------|-------|-------|------|-------|
|                  |             |       |      |      | 3                                 |      |      | 3.5  |      |      | 4    |      |       | 4.5   |      |       |
|                  |             |       |      |      | BTC                               | RTC  | ETC  | BTC  | RTC  | ETC  | BTC  | RTC  | ETC   | BTC   | RTC  | ETC   |
| 1.5C-1100-385-OP | 9,8         | 10071 | 2304 | 2366 | -                                 | -    | -    | -    | -    | -    | -    | -    | -     | -     | -    | -     |
| 1.5C-1100-435-OP | 7,7         | 10047 | 2293 | 2352 | -                                 | -    | -    | -    | -    | -    | 3937 | 1546 | 1546  | 4816  | 2517 | 3346  |
| 1.5C-1100-485-OP | 6,2         | 10032 | 2287 | 2344 | 3453                              | 555  | 555  | 4546 | 2307 | 2793 | 5638 | 3144 | 5031  | 6731  | 3962 | 7268  |
| 1.5C-1100-535-OP | 5,1         | 10029 | 2285 | 2342 | 4873                              | 2561 | 3462 | 6202 | 3567 | 6185 | 7532 | 4556 | 8908  | 8861  | 5531 | 11631 |
| 1.5C-1100-585-OP | 4,2         | 9981  | 2264 | 2315 | 6407                              | 3720 | 6606 | 7997 | 4899 | 9861 | 9587 | 6061 | 13117 | -     | -    | -     |
| 1.5C-1200-385-OP | 10,6        | 11759 | 3030 | 3348 | -                                 | -    | -    | -    | -    | -    | -    | -    | -     | -     | -    | -     |
| 1.5C-1200-435-OP | 8,3         | 11735 | 3020 | 3334 | -                                 | -    | -    | -    | -    | -    | -    | -    | -     | 3775  | 1276 | 1276  |
| 1.5C-1200-485-OP | 6,6         | 11720 | 3014 | 3326 | -                                 | -    | -    | 3505 | 722  | 722  | 4598 | 2359 | 2960  | 5690  | 3193 | 5198  |
| 1.5C-1200-535-OP | 5,4         | 11717 | 3013 | 3324 | 3832                              | 1392 | 1392 | 5162 | 2793 | 4115 | 6491 | 3793 | 6838  | 7820  | 4779 | 9561  |
| 1.5C-1200-585-OP | 4,6         | 11669 | 2993 | 3297 | 5367                              | 2949 | 4535 | 6956 | 4139 | 7791 | 8546 | 5310 | 11046 | 10135 | 6469 | 14302 |

| Model            | MOP (bar g) | BTO   | RTO  | ETO  | Operating supply pressure (bar g) |      |       |      |      |       |       |      |       |      |      |       |
|------------------|-------------|-------|------|------|-----------------------------------|------|-------|------|------|-------|-------|------|-------|------|------|-------|
|                  |             |       |      |      | 5                                 |      |       | 5.5  |      |       | 6     |      |       | 7    |      |       |
|                  |             |       |      |      | BTC                               | RTC  | ETC   | BTC  | RTC  | ETC   | BTC   | RTC  | ETC   | BTC  | RTC  | ETC   |
| 1.5C-1100-385-OP | 9,8         | 10071 | 2304 | 2366 | 3803                              | 1272 | 1272  | 4492 | 2265 | 2683  | 5180  | 2797 | 4093  | 6557 | 3832 | 6913  |
| 1.5C-1100-435-OP | 7,7         | 10047 | 2293 | 2352 | 5695                              | 3186 | 5146  | 6574 | 3845 | 6947  | 7453  | 4497 | 8747  | 9211 | 5786 | 12347 |
| 1.5C-1100-485-OP | 6,2         | 10032 | 2287 | 2344 | 7824                              | 4771 | 9506  | 8916 | 5571 | 11744 | 10009 | 6368 | 13982 | -    | -    | -     |
| 1.5C-1100-535-OP | 5,1         | 10029 | 2285 | 2342 | 10191                             | 6500 | 14354 | -    | -    | -     | -     | -    | -     | -    | -    | -     |
| 1.5C-1100-585-OP | 4,2         | 9981  | 2264 | 2315 | -                                 | -    | -     | -    | -    | -     | -     | -    | -     | -    | -    | -     |
| 1.5C-1200-385-OP | 10,6        | 11759 | 3030 | 3348 | -                                 | -    | -     | 3451 | 612  | 612   | 4140  | 1996 | 2022  | 5517 | 3062 | 4842  |
| 1.5C-1200-435-OP | 8,3         | 11735 | 3020 | 3334 | 4654                              | 2403 | 3076  | 5533 | 3075 | 4876  | 6412  | 3734 | 6676  | 8170 | 5035 | 10277 |
| 1.5C-1200-485-OP | 6,6         | 11720 | 3014 | 3326 | 6783                              | 4010 | 7436  | 7876 | 4819 | 9673  | 8968  | 5618 | 11911 | -    | -    | -     |
| 1.5C-1200-535-OP | 5,4         | 11717 | 3013 | 3324 | 9150                              | 5751 | 12284 | -    | -    | -     | -     | -    | -     | -    | -    | -     |
| 1.5C-1200-585-OP | 4,6         | 11669 | 2993 | 3297 | -                                 | -    | -     | -    | -    | -     | -     | -    | -     | -    | -    | -     |

| Model            | MOP (bar g) | BTO   | RTO  | ETO  | Operating supply pressure (bar g) |      |       |      |      |       |     |     |     |
|------------------|-------------|-------|------|------|-----------------------------------|------|-------|------|------|-------|-----|-----|-----|
|                  |             |       |      |      | 9                                 |      |       | 10   |      |       | 12  |     |     |
|                  |             |       |      |      | BTC                               | RTC  | ETC   | BTC  | RTC  | ETC   | BTC | RTC | BTC |
| 1.5C-1100-385-OP | 9,8         | 10071 | 2304 | 2366 | 9311                              | 5860 | 12553 | -    | -    | -     | -   | -   | -   |
| 1.5C-1100-435-OP | 7,7         | 10047 | 2293 | 2352 | -                                 | -    | -     | -    | -    | -     | -   | -   | -   |
| 1.5C-1100-485-OP | 6,2         | 10032 | 2287 | 2344 | -                                 | -    | -     | -    | -    | -     | -   | -   | -   |
| 1.5C-1100-535-OP | 5,1         | 10029 | 2285 | 2342 | -                                 | -    | -     | -    | -    | -     | -   | -   | -   |
| 1.5C-1100-585-OP | 4,2         | 9981  | 2264 | 2315 | -                                 | -    | -     | -    | -    | -     | -   | -   | -   |
| 1.5C-1200-385-OP | 10,6        | 11759 | 3030 | 3348 | 8271                              | 5109 | 10483 | 9648 | 6114 | 13303 | -   | -   | -   |
| 1.5C-1200-435-OP | 8,3         | 11735 | 3020 | 3334 | -                                 | -    | -     | -    | -    | -     | -   | -   | -   |
| 1.5C-1200-485-OP | 6,6         | 11720 | 3014 | 3326 | -                                 | -    | -     | -    | -    | -     | -   | -   | -   |
| 1.5C-1200-535-OP | 5,4         | 11717 | 3013 | 3324 | -                                 | -    | -     | -    | -    | -     | -   | -   | -   |
| 1.5C-1200-585-OP | 4,6         | 11669 | 2993 | 3297 | -                                 | -    | -     | -    | -    | -     | -   | -   | -   |

## NOTES

MOP: Maximum Operating Pressure

BTC: Break to Close

RTC: Run to Close

ETC: End to Close

BTO: Break to Open

RTO: Run to Open

ETO: End to Open

# MORIN ALGAS SPRING RETURN PNEUMATIC ACTUATOR

OUTPUT TORQUES (Nm) - CANTED YOKE DESIGN, SPRING TO OPEN. MODELS 3C-2000-385-OP TO 1.5C-1100-385-OP

| Model           | MOP<br>(bar g) | BTO   | RTO   | ETO   | Operating supply pressure (bar g) |       |       |       |       |       |       |       |       |       |       |        |
|-----------------|----------------|-------|-------|-------|-----------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|--------|
|                 |                |       |       |       | 3                                 |       |       | 3.5   |       |       | 4     |       |       | 4.5   |       |        |
|                 |                |       |       |       | BTC                               | RTC   | ETC   | BTC   | RTC   | ETC   | BTC   | RTC   | ETC   | BTC   | RTC   | ETC    |
| 3C-2000-385-OP  | 11,1           | 17300 | 4694  | 5367  | -                                 | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -      |
| 3C-2000-435-OP  | 8,7            | 17261 | 4678  | 5345  | -                                 | -     | -     | -     | -     | -     | 5085  | 1785  | 1785  | 6540  | 3459  | 4765   |
| 3C-2000-485-OP  | 7,2            | 17236 | 4668  | 5331  | -                                 | -     | -     | 6093  | 3112  | 3849  | 7901  | 4490  | 7553  | 9710  | 5837  | 11256  |
| 3C-2000-535-OP  | 5,7            | 17231 | 4666  | 5328  | 6634                              | 3531  | 4957  | 8834  | 5187  | 9464  | 11035 | 6814  | 13971 | 13235 | 8420  | 18478  |
| 3C-2000-585-OP  | 4,8            | 17151 | 4634  | 5283  | 9174                              | 5440  | 10159 | 11805 | 7376  | 15548 | 14436 | 9293  | 20937 | 17067 | 11203 | 26326  |
| 6C-2500-485-OP  | 10,5           | 24670 | 6891  | 8034  | -                                 | -     | -     | -     | -     | -     | 7248  | 3287  | 3287  | 9362  | 5093  | 7617   |
| 6C-2500-535-OP  | 8,6            | 24663 | 6888  | 8031  | -                                 | -     | -     | 8339  | 4308  | 5521  | 10911 | 6261  | 10791 | 13484 | 8174  | 16060  |
| 6C-2500-585-OP  | 7,8            | 24570 | 6851  | 7978  | 8736                              | 4615  | 6335  | 11812 | 6933  | 12635 | 14888 | 9205  | 18935 | 17964 | 11449 | 25235  |
| 6C-2500-635-OP  | 6,1            | 24469 | 6810  | 7921  | 11971                             | 7051  | 12960 | 15595 | 9722  | 20383 | 19219 | 12362 | 27806 | 22843 | 14994 | 35229  |
| 6C-2500-735-OP  | 4,6            | 24242 | 6719  | 7793  | 19236                             | 12375 | 27840 | 24091 | 15900 | 37785 | 28947 | 19417 | 47730 | 33803 | 22931 | 57675  |
| 6C-3800-535-OP  | 9,7            | 33620 | 10043 | 12246 | -                                 | -     | -     | -     | -     | -     | -     | -     | -     | 8921  | 4448  | 5073   |
| 6C-3800-585-OP  | 8,1            | 33527 | 10006 | 12193 | -                                 | -     | -     | 7249  | 1648  | 1648  | 10325 | 5537  | 7948  | 13401 | 7851  | 14248  |
| 6C-3800-635-OP  | 6,9            | 33426 | 9966  | 12136 | 7408                              | 1973  | 1973  | 11032 | 6075  | 9396  | 14656 | 8784  | 16819 | 18280 | 11446 | 24242  |
| 6C-3800-735-OP  | 5,1            | 33199 | 9876  | 12008 | 14673                             | 8796  | 16853 | 19528 | 12357 | 26799 | 24384 | 15888 | 36744 | 29240 | 19410 | 46689  |
| 14C-5100-635-OP | 10,5           | 40170 | 12043 | 14720 | -                                 | -     | -     | 10451 | 5184  | 5810  | 14412 | 8215  | 13923 | 18373 | 11161 | 22036  |
| 14C-5100-735-OP | 7,4            | 39921 | 11945 | 14580 | 14430                             | 8228  | 13960 | 19737 | 12164 | 24830 | 25044 | 16035 | 35699 | 30351 | 19890 | 46569  |
| 14C-5100-785-OP | 6,9            | 39784 | 11890 | 14502 | 18835                             | 11502 | 22982 | 24889 | 15922 | 35381 | 30942 | 20319 | 47780 | 36996 | 24706 | 60178  |
| 14C-5100-835-OP | 6,1            | 39637 | 11832 | 14420 | 23530                             | 14933 | 32598 | 30379 | 19910 | 46626 | 37228 | 24874 | 60655 | 44078 | 29834 | 74683  |
| 14C-5100-885-OP | 5,4            | 39481 | 11770 | 14332 | 28514                             | 18557 | 42807 | 36209 | 24136 | 58566 | 43903 | 29707 | 74324 | 51597 | 35270 | 90083  |
| 14C-5100-935-OP | 4,8            | 39316 | 11704 | 14239 | 33789                             | 22384 | 53609 | 42377 | 28602 | 71199 | 50965 | 34813 | 88789 | 59553 | 41022 | 106379 |
| 14C-5400-635-OP | 11,4           | 51974 | 14788 | 17456 | -                                 | -     | -     | -     | -     | -     | -     | -     | -     | 15070 | 7309  | 7557   |
| 14C-5400-735-OP | 8,5            | 51725 | 14689 | 17316 | -                                 | -     | -     | 16434 | 8389  | 10351 | 21741 | 12428 | 21221 | 27048 | 16377 | 32090  |
| 14C-5400-785-OP | 7,2            | 51587 | 14634 | 17239 | 15532                             | 7678  | 8504  | 21585 | 12312 | 20902 | 27639 | 16813 | 33301 | 33692 | 21243 | 45700  |
| 14C-5400-835-OP | 6,6            | 51441 | 14575 | 17156 | 20226                             | 11290 | 18119 | 27076 | 16397 | 32148 | 33925 | 21413 | 46176 | 40774 | 26398 | 60204  |
| 14C-5400-885-OP | 5,9            | 51285 | 14513 | 17068 | 25211                             | 15015 | 28328 | 32905 | 20669 | 44087 | 40599 | 26270 | 59846 | 48293 | 31854 | 75605  |
| 14C-5400-935-OP | 5,2            | 51120 | 14447 | 16975 | 30485                             | 18903 | 39131 | 39073 | 25160 | 56721 | 47661 | 31395 | 74310 | 56249 | 37617 | 91900  |
| 14C-8300-735-OP | 9,3            | 66586 | 19102 | 22673 | -                                 | -     | -     | -     | -     | -     | 15744 | 2993  | 2993  | 21051 | 10860 | 13862  |
| 14C-8300-785-OP | 8,2            | 66448 | 19047 | 22595 | -                                 | -     | -     | 15588 | 2674  | 2674  | 21642 | 11318 | 15073 | 27695 | 15905 | 27472  |
| 14C-8300-835-OP | 7,7            | 66301 | 18988 | 22513 | -                                 | -     | -     | 21079 | 10882 | 13920 | 27928 | 16079 | 27948 | 34777 | 21167 | 41977  |
| 14C-8300-885-OP | 6,4            | 66145 | 18926 | 22425 | 19214                             | 9414  | 10100 | 26908 | 15315 | 25859 | 34602 | 21038 | 41618 | 42296 | 26669 | 57377  |
| 14C-8300-935-OP | 5,8            | 65980 | 18860 | 22332 | 24488                             | 13493 | 20903 | 33076 | 19908 | 38493 | 41664 | 26208 | 56082 | 50252 | 32460 | 73672  |

## NOTES

MOP: Maximum Operating Pressure

BTC: Break to Close

RTC: Run to Close

ETC: End to Close

BTO: Break to Open

RTO: Run to Open

ETO: End to Open

# MORIN ALGAS SPRING RETURN PNEUMATIC ACTUATOR

OUTPUT TORQUES (Nm) - CANTED YOKE DESIGN, SPRING TO OPEN. MODELS 3C-2000-385-OP TO 1.5C-1100-385-OP

| Model           | MOP<br>(bar g) | Operating supply pressure (bar g) |       |       |       |       |        |       |       |        |       |       |        |       |       |        |
|-----------------|----------------|-----------------------------------|-------|-------|-------|-------|--------|-------|-------|--------|-------|-------|--------|-------|-------|--------|
|                 |                | BTO                               | RTO   | ETO   | 5     |       |        | 5.5   |       |        | 6     |       |        | 7     |       |        |
|                 |                |                                   |       |       | BTC   | RTC   | ETC    | BTC   | RTC   | ETC    | BTC   | RTC   | ETC    | BTC   | RTC   | ETC    |
| 3C-2000-385-OP  | 11,1           | 17300                             | 4694  | 5367  | 4864  | 1332  | 1332   | 6004  | 3043  | 3666   | 7143  | 3919  | 6000   | 9422  | 5624  | 10668  |
| 3C-2000-435-OP  | 8,7            | 17261                             | 4678  | 5345  | 7995  | 4560  | 7744   | 9450  | 5645  | 10724  | 10904 | 6718  | 13704  | 13814 | 8840  | 19663  |
| 3C-2000-485-OP  | 7,2            | 17236                             | 4668  | 5331  | 11518 | 7167  | 14960  | 13327 | 8486  | 18664  | 15135 | 9801  | 22368  | 18752 | 12425 | 29776  |
| 3C-2000-535-OP  | 5,7            | 17231                             | 4666  | 5328  | 15436 | 10020 | 22985  | 17636 | 11616 | 27492  | -     | -     | -      | -     | -     | -      |
| 3C-2000-585-OP  | 4,8            | 17151                             | 4634  | 5283  | -     | -     | -      | -     | -     | -      | -     | -     | -      | -     | -     | -      |
| 6C-2500-485-OP  | 10,5           | 24670                             | 6891  | 8034  | 11476 | 6683  | 11948  | 13591 | 8252  | 16278  | 15705 | 9802  | 20608  | 19933 | 12882 | 29269  |
| 6C-2500-535-OP  | 8,6            | 24663                             | 6888  | 8031  | 16057 | 10059 | 21329  | 18629 | 11933 | 26598  | 21202 | 13803 | 31867  | 26347 | 17534 | 42405  |
| 6C-2500-585-OP  | 7,8            | 24570                             | 6851  | 7978  | 21040 | 13686 | 31535  | 24116 | 15917 | 37835  | 27192 | 18146 | 44135  | 33343 | 22600 | 56735  |
| 6C-2500-635-OP  | 6,1            | 24469                             | 6810  | 7921  | 26468 | 17622 | 42652  | 30092 | 20246 | 50075  | 33716 | 22869 | 57498  | -     | -     | -      |
| 6C-2500-735-OP  | 4,6            | 24242                             | 6719  | 7793  | -     | -     | -      | -     | -     | -      | -     | -     | -      | -     | -     | -      |
| 6C-3800-535-OP  | 9,7            | 33620                             | 10043 | 12246 | 11494 | 6423  | 10342  | 14066 | 8347  | 15611  | 16639 | 10247 | 20880  | 21784 | 13999 | 31419  |
| 6C-3800-585-OP  | 8,1            | 33527                             | 10006 | 12193 | 16477 | 10128 | 20548  | 19553 | 12375 | 26848  | 22629 | 14613 | 33148  | 28780 | 19077 | 45748  |
| 6C-3800-635-OP  | 6,9            | 33426                             | 9966  | 12136 | 21905 | 14086 | 31665  | 25529 | 16718 | 39088  | 29153 | 19347 | 46511  | -     | -     | -      |
| 6C-3800-735-OP  | 5,1            | 33199                             | 9876  | 12008 | 34095 | 22926 | 56634  | -     | -     | -      | -     | -     | -      | -     | -     | -      |
| 14C-5100-635-OP | 10,5           | 40170                             | 12043 | 14720 | 22334 | 14061 | 30149  | 26296 | 16945 | 38262  | 30257 | 19821 | 46375  | 38179 | 25563 | 62601  |
| 14C-5100-735-OP | 7,4            | 39921                             | 11945 | 14580 | 35658 | 23737 | 57438  | 40965 | 27580 | 68308  | 46272 | 31420 | 79177  | 56886 | 39094 | 100917 |
| 14C-5100-785-OP | 6,9            | 39784                             | 11890 | 14502 | 43049 | 29089 | 72577  | 49103 | 33467 | 84976  | 55157 | 37844 | 97374  | -     | -     | -      |
| 14C-5100-835-OP | 6,1            | 39637                             | 11832 | 14420 | 50927 | 34786 | 88712  | 57776 | 39738 | 102740 | 64626 | 44690 | 116768 | -     | -     | -      |
| 14C-5100-885-OP | 5,4            | 39481                             | 11770 | 14332 | 59291 | 40833 | 105842 | -     | -     | -      | -     | -     | -      | -     | -     | -      |
| 14C-5100-935-OP | 4,8            | 39316                             | 11704 | 14239 | -     | -     | -      | -     | -     | -      | -     | -     | -      | -     | -     | -      |
| 14C-5400-635-OP | 11,4           | 51974                             | 14788 | 17456 | 19031 | 10386 | 15670  | 22992 | 13364 | 23783  | 26953 | 16307 | 31897  | 34875 | 22106 | 48123  |
| 14C-5400-735-OP | 8,5            | 51725                             | 14689 | 17316 | 32355 | 20267 | 42960  | 37662 | 24133 | 53829  | 42969 | 27990 | 64699  | 53582 | 35686 | 86438  |
| 14C-5400-785-OP | 7,2            | 51587                             | 14634 | 17239 | 39746 | 25650 | 58098  | 45799 | 30044 | 70497  | 51853 | 34434 | 82896  | 63960 | 43201 | 107693 |
| 14C-5400-835-OP | 6,6            | 51441                             | 14575 | 17156 | 47623 | 31368 | 74233  | 54473 | 36331 | 88261  | 61322 | 41291 | 102290 | -     | -     | -      |
| 14C-5400-885-OP | 5,9            | 51285                             | 14513 | 17068 | 55987 | 37428 | 91363  | 63681 | 42999 | 107122 | -     | -     | -      | -     | -     | -      |
| 14C-5400-935-OP | 5,2            | 51120                             | 14447 | 16975 | 64837 | 43836 | 109490 | -     | -     | -      | -     | -     | -      | -     | -     | -      |
| 14C-8300-735-OP | 9,3            | 66586                             | 19102 | 22673 | 26358 | 14903 | 24732  | 31664 | 18862 | 35601  | 36971 | 22780 | 46471  | 47585 | 30520 | 68210  |
| 14C-8300-785-OP | 8,2            | 66448                             | 19047 | 22595 | 33749 | 20407 | 39870  | 39802 | 24849 | 52269  | 45856 | 29262 | 64668  | 57963 | 38057 | 89465  |
| 14C-8300-835-OP | 7,7            | 66301                             | 18988 | 22513 | 41626 | 26180 | 56005  | 48476 | 31168 | 70033  | 55325 | 36143 | 84062  | 69023 | 46073 | 112119 |
| 14C-8300-885-OP | 6,4            | 66145                             | 18926 | 22425 | 49990 | 32269 | 73136  | 57684 | 37855 | 88894  | 65378 | 43434 | 104653 | -     | -     | -      |
| 14C-8300-935-OP | 5,8            | 65980                             | 18860 | 22332 | 58840 | 38694 | 91262  | 67428 | 44918 | 108852 | -     | -     | -      | -     | -     | -      |

## NOTES

MOP: Maximum Operating Pressure

BTC: Break to Close

RTC: Run to Close

ETC: End to Close

BTO: Break to Open

RTO: Run to Open

ETO: End to Open

# MORIN ALGAS SPRING RETURN PNEUMATIC ACTUATOR

OUTPUT TORQUES (Nm) - CANTED YOKE DESIGN, SPRING TO OPEN. MODELS 3C-2000-385-OP TO 14C-8300-985-OP

| Model           | MOP<br>(bar g) | BTO   | RTO   | ETO   | Operating supply pressure (bar g) |       |        |       |       |        |     |     |     |
|-----------------|----------------|-------|-------|-------|-----------------------------------|-------|--------|-------|-------|--------|-----|-----|-----|
|                 |                |       |       |       | 9                                 |       |        | 10    |       |        | 12  |     |     |
|                 |                |       |       |       | BTC                               | RTC   | ETC    | BTC   | RTC   | ETC    | BTC | RTC | BTC |
| 3C-2000-385-OP  | 11,1           | 17300 | 4694  | 5367  | 13981                             | 8962  | 20004  | 16260 | 10618 | 24672  | -   | -   | -   |
| 3C-2000-435-OP  | 8,7            | 17261 | 4678  | 5345  | -                                 | -     | -      | -     | -     | -      | -   | -   | -   |
| 3C-2000-485-OP  | 7,2            | 17236 | 4668  | 5331  | -                                 | -     | -      | -     | -     | -      | -   | -   | -   |
| 3C-2000-535-OP  | 5,7            | 17231 | 4666  | 5328  | -                                 | -     | -      | -     | -     | -      | -   | -   | -   |
| 3C-2000-585-OP  | 4,8            | 17151 | 4634  | 5283  | -                                 | -     | -      | -     | -     | -      | -   | -   | -   |
| 6C-2500-485-OP  | 10,5           | 24670 | 6891  | 8034  | 28390                             | 19014 | 46590  | 32619 | 22075 | 55250  | -   | -   | -   |
| 6C-2500-535-OP  | 8,6            | 24663 | 6888  | 8031  | -                                 | -     | -      | -     | -     | -      | -   | -   | -   |
| 6C-2500-585-OP  | 7,8            | 24570 | 6851  | 7978  | -                                 | -     | -      | -     | -     | -      | -   | -   | -   |
| 6C-2500-635-OP  | 6,1            | 24469 | 6810  | 7921  | -                                 | -     | -      | -     | -     | -      | -   | -   | -   |
| 6C-2500-735-OP  | 4,6            | 24242 | 6719  | 7793  | -                                 | -     | -      | -     | -     | -      | -   | -   | -   |
| 6C-3800-535-OP  | 9,7            | 33620 | 10043 | 12246 | 32075                             | 21462 | 52495  | -     | -     | -      | -   | -   | -   |
| 6C-3800-585-OP  | 8,1            | 33527 | 10006 | 12193 | -                                 | -     | -      | -     | -     | -      | -   | -   | -   |
| 6C-3800-635-OP  | 6,9            | 33426 | 9966  | 12136 | -                                 | -     | -      | -     | -     | -      | -   | -   | -   |
| 6C-3800-735-OP  | 5,1            | 33199 | 9876  | 12008 | -                                 | -     | -      | -     | -     | -      | -   | -   | -   |
| 14C-5100-635-OP | 10,5           | 40170 | 12043 | 14720 | 54023                             | 37025 | 95053  | 61946 | 42752 | 111280 | -   | -   | -   |
| 14C-5100-735-OP | 7,4            | 39921 | 11945 | 14580 | -                                 | -     | -      | -     | -     | -      | -   | -   | -   |
| 14C-5100-785-OP | 6,9            | 39784 | 11890 | 14502 | -                                 | -     | -      | -     | -     | -      | -   | -   | -   |
| 14C-5100-835-OP | 6,1            | 39637 | 11832 | 14420 | -                                 | -     | -      | -     | -     | -      | -   | -   | -   |
| 14C-5100-885-OP | 5,4            | 39481 | 11770 | 14332 | -                                 | -     | -      | -     | -     | -      | -   | -   | -   |
| 14C-5100-935-OP | 4,8            | 39316 | 11704 | 14239 | -                                 | -     | -      | -     | -     | -      | -   | -   | -   |
| 14C-5400-635-OP | 11,4           | 51974 | 14788 | 17456 | 50720                             | 33614 | 80575  | 58642 | 39350 | 96801  | -   | -   | -   |
| 14C-5400-735-OP | 8,5            | 51725 | 14689 | 17316 | -                                 | -     | -      | -     | -     | -      | -   | -   | -   |
| 14C-5400-785-OP | 7,2            | 51587 | 14634 | 17239 | -                                 | -     | -      | -     | -     | -      | -   | -   | -   |
| 14C-5400-835-OP | 6,6            | 51441 | 14575 | 17156 | -                                 | -     | -      | -     | -     | -      | -   | -   | -   |
| 14C-5400-885-OP | 5,9            | 51285 | 14513 | 17068 | -                                 | -     | -      | -     | -     | -      | -   | -   | -   |
| 14C-5400-935-OP | 5,2            | 51120 | 14447 | 16975 | -                                 | -     | -      | -     | -     | -      | -   | -   | -   |
| 14C-8300-735-OP | 9,3            | 66586 | 19102 | 22673 | 68813                             | 45921 | 111688 | -     | -     | -      | -   | -   | -   |
| 14C-8300-785-OP | 8,2            | 66448 | 19047 | 22595 | -                                 | -     | -      | -     | -     | -      | -   | -   | -   |
| 14C-8300-835-OP | 7,7            | 66301 | 18988 | 22513 | -                                 | -     | -      | -     | -     | -      | -   | -   | -   |
| 14C-8300-885-OP | 6,4            | 66145 | 18926 | 22425 | -                                 | -     | -      | -     | -     | -      | -   | -   | -   |
| 14C-8300-935-OP | 5,8            | 65980 | 18860 | 22332 | -                                 | -     | -      | -     | -     | -      | -   | -   | -   |

## NOTES

MOP: Maximum Operating Pressure

BTC: Break to Close

RTC: Run to Close

ETC: End to Close

BTO: Break to Open

RTO: Run to Open

ETO: End to Open

# MORIN ALGAS SPRING RETURN PNEUMATIC ACTUATOR

OUTPUT TORQUES (Nm) - CANTED YOKE DESIGN, SPRING TO OPEN. MODELS 18C-9600-835-OP TO 18C-11000-1300-OP

| Model             | MOP (bar g) | BTO    | RTO   | ETO   | Operating supply pressure (bar g) |       |       |       |       |        |        |       |        |        |       |        |
|-------------------|-------------|--------|-------|-------|-----------------------------------|-------|-------|-------|-------|--------|--------|-------|--------|--------|-------|--------|
|                   |             |        |       |       | 3                                 |       |       | 3.5   |       |        | 4      |       |        | 4.5    |       |        |
|                   |             |        |       |       | BTC                               | RTC   | ETC   | BTC   | RTC   | ETC    | BTC    | RTC   | ETC    | BTC    | RTC   | ETC    |
| 18C-9600-835-OP   | 9,7         | 105772 | 26591 | 28911 | -                                 | -     | -     | -     | -     | -      | -      | -     | -      | 35406  | 12057 | 12057  |
| 18C-9600-935-OP   | 7,5         | 105403 | 26438 | 28703 | -                                 | -     | -     | 33450 | 8050  | 8050   | 43326  | 22305 | 28278  | 53202  | 29841 | 48507  |
| 18C-9600-1000-OP  | 6,7         | 105141 | 26329 | 28555 | 31957                             | 4992  | 4992  | 43254 | 22249 | 28131  | 54551  | 30857 | 51269  | 65848  | 39283 | 74408  |
| 18C-9600-1100-OP  | 5,6         | 104703 | 26148 | 28308 | 45954                             | 24337 | 33661 | 59623 | 34653 | 61659  | 73293  | 44794 | 89656  | 86963  | 54787 | 117654 |
| 18C-9600-1200-OP  | 4,7         | 104224 | 25949 | 28038 | 61284                             | 35890 | 65060 | 77552 | 47916 | 98379  | 93820  | 59784 | 131699 | 110088 | 71611 | 165018 |
| 18C-9600-1300-OP  | 4           | 103703 | 25733 | 27744 | 77947                             | 48205 | 99189 | 97040 | 62126 | 138293 | 116132 | 75996 | 177397 | -      | -     | -      |
| 18C-9800-835-OP   | 10,7        | 134273 | 33251 | 35801 | -                                 | -     | -     | -     | -     | -      | -      | -     | -      | -      | -     | -      |
| 18C-9800-935-OP   | 8,6         | 133904 | 33097 | 35593 | -                                 | -     | -     | -     | -     | -      | -      | -     | -      | 44952  | 13548 | 13548  |
| 18C-9800-1000-OP  | 7,1         | 133642 | 32987 | 35446 | -                                 | -     | -     | -     | -     | -      | 46301  | 16310 | 16310  | 57598  | 30000 | 39449  |
| 18C-9800-1100-OP  | 6,2         | 133204 | 32805 | 35199 | -                                 | -     | -     | 51373 | 25108 | 26700  | 65043  | 35695 | 54697  | 78713  | 45957 | 82695  |
| 18C-9800-1200-OP  | 5,2         | 132724 | 32604 | 34929 | 53034                             | 26431 | 30101 | 69302 | 38912 | 63420  | 85570  | 51056 | 96740  | 101838 | 63049 | 130059 |
| 18C-9800-1300-OP  | 4,4         | 132203 | 32386 | 34635 | 69697                             | 39210 | 64230 | 88790 | 53443 | 103334 | 107882 | 67462 | 142438 | -      | -     | -      |
| 18C-10500-935-OP  | 9,2         | 156518 | 38971 | 42109 | -                                 | -     | -     | -     | -     | -      | -      | -     | -      | -      | -     | -      |
| 18C-10500-1000-OP | 8,1         | 156255 | 38862 | 41961 | -                                 | -     | -     | -     | -     | -      | -      | -     | -      | 50045  | 11711 | 11711  |
| 18C-10500-1100-OP | 6,7         | 155817 | 38681 | 41714 | -                                 | -     | -     | -     | -     | -      | 57490  | 26959 | 26959  | 71160  | 38193 | 54957  |
| 18C-10500-1200-OP | 5,6         | 155338 | 38482 | 41444 | 45481                             | 2363  | 2363  | 61749 | 30901 | 35683  | 78017  | 43399 | 69002  | 94285  | 55577 | 102322 |
| 18C-10500-1300-OP | 4,8         | 154817 | 38265 | 41150 | 62144                             | 31213 | 36493 | 81237 | 45826 | 75597  | 100329 | 60064 | 114701 | 119421 | 74124 | 153805 |
| 18C-11000-935-OP  | 9,9         | 175538 | 46768 | 52829 | -                                 | -     | -     | -     | -     | -      | -      | -     | -      | -      | -     | -      |
| 18C-11000-1000-OP | 8,6         | 175275 | 46662 | 52681 | -                                 | -     | -     | -     | -     | -      | -      | -     | -      | -      | -     | -      |
| 18C-11000-1100-OP | 7,3         | 174838 | 46484 | 52435 | -                                 | -     | -     | -     | -     | -      | 46099  | 3629  | 3629   | 59769  | 29327 | 31627  |
| 18C-11000-1200-OP | 6           | 174358 | 46289 | 52164 | -                                 | -     | -     | 50358 | 12352 | 12352  | 66626  | 34710 | 45672  | 82894  | 47069 | 78991  |
| 18C-11000-1300-OP | 5,1         | 173837 | 46077 | 51870 | 50754                             | 13162 | 13162 | 69846 | 37188 | 52266  | 88938  | 51593 | 91370  | 108030 | 65766 | 130474 |

| Model             | MOP (bar g) | BTO    | RTO   | ETO   | Operating supply pressure (bar g) |       |        |        |       |        |        |       |        |        |       |        |
|-------------------|-------------|--------|-------|-------|-----------------------------------|-------|--------|--------|-------|--------|--------|-------|--------|--------|-------|--------|
|                   |             |        |       |       | 5                                 |       |        | 5.5    |       |        | 6      |       |        | 7      |       |        |
|                   |             |        |       |       | BTC                               | RTC   | ETC    | BTC    | RTC   | ETC    | BTC    | RTC   | ETC    | BTC    | RTC   | ETC    |
| 18C-9600-835-OP   | 9,7         | 105772 | 26591 | 28911 | 43282                             | 22271 | 28189  | 51159  | 28301 | 44322  | 59036  | 34215 | 60455  | 74789  | 45892 | 92720  |
| 18C-9600-935-OP   | 7,5         | 105403 | 26438 | 28703 | 63078                             | 37227 | 68735  | 72955  | 44544 | 88963  | 82831  | 51772 | 109191 | 102583 | 66159 | 149648 |
| 18C-9600-1000-OP  | 6,7         | 105141 | 26329 | 28555 | 77145                             | 47618 | 97546  | 88442  | 55867 | 120685 | 99740  | 64090 | 143823 | -      | -     | -      |
| 18C-9600-1100-OP  | 5,6         | 104703 | 26148 | 28308 | 100632                            | 64739 | 145651 | 114302 | 74668 | 173649 | -      | -     | -      | -      | -     | -      |
| 18C-9600-1200-OP  | 4,7         | 104224 | 25949 | 28038 | -                                 | -     | -      | -      | -     | -      | -      | -     | -      | -      | -     | -      |
| 18C-9600-1300-OP  | 4           | 103703 | 25733 | 27744 | -                                 | -     | -      | -      | -     | -      | -      | -     | -      | -      | -     | -      |
| 18C-9800-835-OP   | 10,7        | 134273 | 33251 | 35801 | -                                 | -     | -      | 42909  | 9363  | 9363   | 50786  | 24636 | 25496  | 66539  | 36829 | 57761  |
| 18C-9800-935-OP   | 8,6         | 133904 | 33097 | 35593 | 54828                             | 27845 | 33776  | 64705  | 35438 | 54004  | 74581  | 42873 | 74233  | 94334  | 57545 | 114689 |
| 18C-9800-1000-OP  | 7,1         | 133642 | 32987 | 35446 | 68895                             | 38605 | 62587  | 80193  | 47060 | 85726  | 91490  | 55445 | 108864 | 114084 | 71988 | 155141 |
| 18C-9800-1100-OP  | 6,2         | 133204 | 32805 | 35199 | 92382                             | 56104 | 110692 | 106052 | 66127 | 138690 | 119721 | 76097 | 166688 | -      | -     | -      |
| 18C-9800-1200-OP  | 5,2         | 132724 | 32604 | 34929 | 118106                            | 74922 | 163379 | -      | -     | -      | -      | -     | -      | -      | -     | -      |
| 18C-9800-1300-OP  | 4,4         | 132203 | 32386 | 34635 | -                                 | -     | -      | -      | -     | -      | -      | -     | -      | -      | -     | -      |
| 18C-10500-935-OP  | 9,2         | 156518 | 38971 | 42109 | 47275                             | 6038  | 6038   | 57152  | 26267 | 26267  | 67028  | 35020 | 46495  | 86780  | 49982 | 86951  |
| 18C-10500-1000-OP | 8,1         | 156255 | 38862 | 41961 | 61342                             | 30579 | 34850  | 72639  | 39324 | 57988  | 83937  | 47851 | 81127  | 106531 | 64660 | 127404 |
| 18C-10500-1100-OP | 6,7         | 155817 | 38681 | 41714 | 84829                             | 48519 | 82955  | 98499  | 58707 | 110952 | 112168 | 68813 | 138950 | -      | -     | -      |
| 18C-10500-1200-OP | 5,6         | 155338 | 38482 | 41444 | 110553                            | 67629 | 135641 | 126821 | 79523 | 168960 | -      | -     | -      | -      | -     | -      |
| 18C-10500-1300-OP | 4,8         | 154817 | 38265 | 41150 | -                                 | -     | -      | -      | -     | -      | -      | -     | -      | -      | -     | -      |
| 18C-11000-935-OP  | 9,9         | 175538 | 46768 | 52829 | -                                 | -     | -      | 45761  | 2936  | 2936   | 55637  | 23164 | 23164  | 75390  | 41412 | 63621  |
| 18C-11000-1000-OP | 8,6         | 175275 | 46662 | 52681 | 49951                             | 11519 | 11519  | 61249  | 30504 | 34658  | 72546  | 39253 | 57796  | 95140  | 56215 | 104073 |
| 18C-11000-1100-OP | 7,3         | 174838 | 46484 | 52435 | 73438                             | 39930 | 59624  | 87108  | 50227 | 87622  | 100777 | 60396 | 115619 | 128117 | 80469 | 171615 |
| 18C-11000-1200-OP | 6           | 174358 | 46289 | 52164 | 99162                             | 59198 | 112311 | 115430 | 71201 | 145630 | 131698 | 83082 | 178950 | -      | -     | -      |
| 18C-11000-1300-OP | 5,1         | 173837 | 46077 | 51870 | 127122                            | 79743 | 169578 | -      | -     | -      | -      | -     | -      | -      | -     | -      |

## NOTES

MOP: Maximum Operating Pressure

BTC: Break to Close

RTC: Run to Close

ETC: End to Close

BTO: Break to Open

RTO: Run to Open

ETO: End to Open

# MORIN ALGAS SPRING RETURN PNEUMATIC ACTUATOR

OUTPUT TORQUES (Nm) - CANTED YOKE DESIGN, SPRING TO OPEN. MODELS 18C-9600-835-OP TO 18C-11000-1300-OP

| Model             | MOP<br>(bar g) | BTO    | RTO   | ETO   | Operating supply pressure (bar g) |       |        |        |       |        |     |     |     |
|-------------------|----------------|--------|-------|-------|-----------------------------------|-------|--------|--------|-------|--------|-----|-----|-----|
|                   |                |        |       |       | 9                                 |       |        | 10     |       |        | 12  |     |     |
|                   |                |        |       |       | BTC                               | RTC   | ETC    | BTC    | RTC   | ETC    | BTC | RTC | BTC |
| 18C-9600-835-OP   | 9,7            | 105772 | 26591 | 28911 | 106296                            | 68859 | 157251 | -      | -     | -      | -   | -   | -   |
| 18C-9600-935-OP   | 7,5            | 105403 | 26438 | 28703 | -                                 | -     | -      | -      | -     | -      | -   | -   | -   |
| 18C-9600-1000-OP  | 6,7            | 105141 | 26329 | 28555 | -                                 | -     | -      | -      | -     | -      | -   | -   | -   |
| 18C-9600-1100-OP  | 5,6            | 104703 | 26148 | 28308 | -                                 | -     | -      | -      | -     | -      | -   | -   | -   |
| 18C-9600-1200-OP  | 4,7            | 104224 | 25949 | 28038 | -                                 | -     | -      | -      | -     | -      | -   | -   | -   |
| 18C-9600-1300-OP  | 4              | 103703 | 25733 | 27744 | -                                 | -     | -      | -      | -     | -      | -   | -   | -   |
| 18C-9800-835-OP   | 10,7           | 134273 | 33251 | 35801 | 98046                             | 60272 | 122292 | 113799 | 71780 | 154558 | -   | -   | -   |
| 18C-9800-935-OP   | 8,6            | 133904 | 33097 | 35593 | -                                 | -     | -      | -      | -     | -      | -   | -   | -   |
| 18C-9800-1000-OP  | 7,1            | 133642 | 32987 | 35446 | -                                 | -     | -      | -      | -     | -      | -   | -   | -   |
| 18C-9800-1100-OP  | 6,2            | 133204 | 32805 | 35199 | -                                 | -     | -      | -      | -     | -      | -   | -   | -   |
| 18C-9800-1200-OP  | 5,2            | 132724 | 32604 | 34929 | -                                 | -     | -      | -      | -     | -      | -   | -   | -   |
| 18C-9800-1300-OP  | 4,4            | 132203 | 32386 | 34635 | -                                 | -     | -      | -      | -     | -      | -   | -   | -   |
| 18C-10500-935-OP  | 9,2            | 156518 | 38971 | 42109 | 126286                            | 79133 | 167864 | -      | -     | -      | -   | -   | -   |
| 18C-10500-1000-OP | 8,1            | 156255 | 38862 | 41961 | -                                 | -     | -      | -      | -     | -      | -   | -   | -   |
| 18C-10500-1100-OP | 6,7            | 155817 | 38681 | 41714 | -                                 | -     | -      | -      | -     | -      | -   | -   | -   |
| 18C-10500-1200-OP | 5,6            | 155338 | 38482 | 41444 | -                                 | -     | -      | -      | -     | -      | -   | -   | -   |
| 18C-10500-1300-OP | 4,8            | 154817 | 38265 | 41150 | -                                 | -     | -      | -      | -     | -      | -   | -   | -   |
| 18C-11000-935-OP  | 9,9            | 175538 | 46768 | 52829 | 114895                            | 70809 | 144534 | -      | -     | -      | -   | -   | -   |
| 18C-11000-1000-OP | 8,6            | 175275 | 46662 | 52681 | -                                 | -     | -      | -      | -     | -      | -   | -   | -   |
| 18C-11000-1100-OP | 7,3            | 174838 | 46484 | 52435 | -                                 | -     | -      | -      | -     | -      | -   | -   | -   |
| 18C-11000-1200-OP | 6              | 174358 | 46289 | 52164 | -                                 | -     | -      | -      | -     | -      | -   | -   | -   |
| 18C-11000-1300-OP | 5,1            | 173837 | 46077 | 51870 | -                                 | -     | -      | -      | -     | -      | -   | -   | -   |

## NOTES

MOP: Maximum Operating Pressure

BTC: Break to Close

RTC: Run to Close

ETC: End to Close

BTO: Break to Open

RTO: Run to Open

ETO: End to Open

# MORIN ALGAS SPRING RETURN PNEUMATIC ACTUATOR

OUTPUT TORQUES (Nm) - SYMMETRIC YOKE DESIGN, SPRING TO CLOSE. MODELS 1.5S-1100-385-CL TO 1.5S-1200-585-CL

| Model            | MOP<br>(bar g) | BTC  | RTC  | ETC  | Operating supply pressure (bar g) |      |      |       |      |      |       |      |      |       |      |      |
|------------------|----------------|------|------|------|-----------------------------------|------|------|-------|------|------|-------|------|------|-------|------|------|
|                  |                |      |      |      | 3                                 |      |      | 3.5   |      |      | 4     |      |      | 4.5   |      |      |
|                  |                |      |      |      | BTO                               | RTO  | ETO  | BTO   | RTO  | ETO  | BTO   | RTO  | ETO  | BTO   | RTO  | ETO  |
| 1.5S-1100-385-CL | 10,9           | 6209 | 3024 | 3643 | -                                 | -    | -    | -     | -    | -    | -     | -    | -    | -     | -    | -    |
| 1.5S-1100-435-CL | 8,5            | 6195 | 3014 | 3625 | -                                 | -    | -    | -     | -    | -    | 4935  | 1070 | 1070 | 6039  | 2109 | 2135 |
| 1.5S-1100-485-CL | 6,8            | 6186 | 3008 | 3614 | 4326                              | 483  | 483  | 5699  | 1808 | 1808 | 7072  | 2775 | 3132 | 8445  | 3616 | 4457 |
| 1.5S-1100-535-CL | 5,6            | 6184 | 3006 | 3611 | 6110                              | 2157 | 2204 | 7781  | 3212 | 3816 | 9452  | 4222 | 5428 | 11122 | 5219 | 7040 |
| 1.5S-1100-585-CL | 4,5            | 6155 | 2986 | 3574 | 8039                              | 3369 | 4065 | 10036 | 4572 | 5992 | 12034 | 5759 | 7919 | 14031 | 6940 | 9846 |
| 1.5S-1200-385-CL | 11,6           | 7216 | 3730 | 4969 | -                                 | -    | -    | -     | -    | -    | -     | -    | -    | -     | -    | -    |
| 1.5S-1200-435-CL | 9,1            | 7202 | 3720 | 4951 | -                                 | -    | -    | -     | -    | -    | -     | -    | -    | 4731  | 908  | 908  |
| 1.5S-1200-485-CL | 7,3            | 7193 | 3714 | 4940 | -                                 | -    | -    | 4392  | 580  | 580  | 5765  | 1905 | 1905 | 7138  | 2830 | 3230 |
| 1.5S-1200-535-CL | 6              | 7191 | 3713 | 4937 | -                                 | -    | -    | 6473  | 2412 | 2588 | 8144  | 3447 | 4200 | 9814  | 4453 | 5812 |
| 1.5S-1200-585-CL | 5              | 7162 | 3693 | 4901 | 6731                              | 2576 | 2837 | 8728  | 3801 | 4764 | 10726 | 4996 | 6692 | 12724 | 6181 | 8619 |

| Model            | MOP<br>(bar g) | BTC  | RTC  | ETC  | Operating supply pressure (bar g) |      |       |       |      |       |       |      |       |       |      |      |
|------------------|----------------|------|------|------|-----------------------------------|------|-------|-------|------|-------|-------|------|-------|-------|------|------|
|                  |                |      |      |      | 5                                 |      |       | 5.5   |      |       | 6     |      |       | 7     |      |      |
|                  |                |      |      |      | BTO                               | RTO  | ETO   | BTO   | RTO  | ETO   | BTO   | RTO  | ETO   | BTO   | RTO  | ETO  |
| 1.5S-1100-385-CL | 10,9           | 6209 | 3024 | 3643 | 4767                              | 908  | 908   | 5632  | 1742 | 1742  | 6497  | 2411 | 2577  | 8227  | 3484 | 4247 |
| 1.5S-1100-435-CL | 8,5            | 6195 | 3014 | 3625 | 7144                              | 2819 | 3201  | 8248  | 3497 | 4266  | 9353  | 4163 | 5332  | 11562 | 5480 | 7463 |
| 1.5S-1100-485-CL | 6,8            | 6186 | 3008 | 3614 | 9818                              | 4442 | 5782  | 11191 | 5260 | 7106  | 12564 | 6074 | 8431  | -     | -    | -    |
| 1.5S-1100-535-CL | 5,6            | 6184 | 3006 | 3611 | 12793                             | 6209 | 8651  | 14464 | 7196 | 10263 | -     | -    | -     | -     | -    | -    |
| 1.5S-1100-585-CL | 4,5            | 6155 | 2986 | 3574 | -                                 | -    | -     | -     | -    | -     | -     | -    | -     | -     | -    | -    |
| 1.5S-1200-385-CL | 11,6           | 7216 | 3730 | 4969 | -                                 | -    | -     | 4324  | 515  | 515   | 5189  | 1350 | 1350  | 6920  | 2694 | 3019 |
| 1.5S-1200-435-CL | 9,1            | 7202 | 3720 | 4951 | 5836                              | 1973 | 1973  | 6940  | 2707 | 3039  | 8045  | 3387 | 4105  | 10254 | 4715 | 6236 |
| 1.5S-1200-485-CL | 7,3            | 7193 | 3714 | 4940 | 8511                              | 3670 | 4554  | 9884  | 4494 | 5879  | 11257 | 5311 | 7204  | 14003 | 6936 | 9853 |
| 1.5S-1200-535-CL | 6              | 7191 | 3713 | 4937 | 11485                             | 5447 | 7424  | 13156 | 6436 | 9036  | 14826 | 7422 | 10648 | -     | -    | -    |
| 1.5S-1200-585-CL | 5              | 7162 | 3693 | 4901 | 14721                             | 7360 | 10546 | -     | -    | -     | -     | -    | -     | -     | -    | -    |

| Model            | MOP<br>(bar g) | BTC  | RTC  | ETC  | Operating supply pressure (bar g) |      |       |       |      |      |     |     |     |
|------------------|----------------|------|------|------|-----------------------------------|------|-------|-------|------|------|-----|-----|-----|
|                  |                |      |      |      | 9                                 |      |       | 10    |      |      | 12  |     |     |
|                  |                |      |      |      | BTO                               | RTO  | ETO   | BTO   | RTO  | ETO  | BTO | RTO | ETO |
| 1.5S-1100-385-CL | 10,9           | 6209 | 3024 | 3643 | 11688                             | 5555 | 7585  | 13418 | 6579 | 9255 | -   | -   | -   |
| 1.5S-1100-435-CL | 8,5            | 6195 | 3014 | 3625 | -                                 | -    | -     | -     | -    | -    | -   | -   | -   |
| 1.5S-1100-485-CL | 6,8            | 6186 | 3008 | 3614 | -                                 | -    | -     | -     | -    | -    | -   | -   | -   |
| 1.5S-1100-535-CL | 5,6            | 6184 | 3006 | 3611 | -                                 | -    | -     | -     | -    | -    | -   | -   | -   |
| 1.5S-1100-585-CL | 4,5            | 6155 | 2986 | 3574 | -                                 | -    | -     | -     | -    | -    | -   | -   | -   |
| 1.5S-1200-385-CL | 11,6           | 7216 | 3730 | 4969 | 10380                             | 4790 | 6358  | 12111 | 5818 | 8027 | -   | -   | -   |
| 1.5S-1200-435-CL | 9,1            | 7202 | 3720 | 4951 | 14672                             | 7331 | 10498 | -     | -    | -    | -   | -   | -   |
| 1.5S-1200-485-CL | 7,3            | 7193 | 3714 | 4940 | -                                 | -    | -     | -     | -    | -    | -   | -   | -   |
| 1.5S-1200-535-CL | 6              | 7191 | 3713 | 4937 | -                                 | -    | -     | -     | -    | -    | -   | -   | -   |
| 1.5S-1200-585-CL | 5              | 7162 | 3693 | 4901 | -                                 | -    | -     | -     | -    | -    | -   | -   | -   |

## NOTES

MOP: Maximum Operating Pressure

BTC: Break to Close

RTC: Run to Close

ETC: End to Close

BTO: Break to Open

RTO: Run to Open

ETO: End to Open

# MORIN ALGAS SPRING RETURN PNEUMATIC ACTUATOR

OUTPUT TORQUES (Nm) - SYMMETRIC YOKE DESIGN, SPRING TO CLOSE. MODELS 3S-2000-385-CL TO 14S-8300-935-CL

| Model           | MOP<br>(bar g) | BTC   | RTC   | ETC   | Operating supply pressure (bar g) |       |       |       |       |       |       |       |       |       |       |       |
|-----------------|----------------|-------|-------|-------|-----------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
|                 |                |       |       |       | 3                                 |       |       | 3.5   |       |       | 4     |       |       | 4.5   |       |       |
|                 |                |       |       |       | BTO                               | RTO   | ETO   | BTO   | RTO   | ETO   | BTO   | RTO   | ETO   | BTO   | RTO   | ETO   |
| 3S-2000-385-CL  | 12             | 10845 | 5668  | 7860  | -                                 | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
| 3S-2000-435-CL  | 10,6           | 10821 | 5652  | 7831  | -                                 | -     | -     | -     | -     | -     | 6179  | 1171  | 1171  | 7984  | 2891  | 2962  |
| 3S-2000-485-CL  | 8,5            | 10806 | 5642  | 7812  | -                                 | -     | -     | 7429  | 2411  | 2411  | 9672  | 3978  | 4637  | 11915 | 5360  | 6864  |
| 3S-2000-535-CL  | 7              | 10802 | 5640  | 7808  | 8100                              | 2970  | 3077  | 10829 | 4696  | 5786  | 13558 | 6356  | 8495  | 16288 | 7999  | 11205 |
| 3S-2000-585-CL  | 5,8            | 10754 | 5608  | 7748  | 11250                             | 4954  | 6204  | 14514 | 6933  | 9444  | 17777 | 8891  | 12683 | 21040 | 10841 | 15922 |
| 6S-2500-485-CL  | 12             | 15533 | 8240  | 11721 | -                                 | -     | -     | -     | -     | -     | 8720  | 2029  | 2029  | 11337 | 4320  | 4637  |
| 6S-2500-535-CL  | 11,3           | 15529 | 8238  | 11716 | -                                 | -     | -     | 10070 | 3374  | 3374  | 13255 | 5538  | 6548  | 16440 | 7496  | 9722  |
| 6S-2500-585-CL  | 9,4            | 15473 | 8200  | 11646 | 10562                             | 3803  | 3864  | 14370 | 6229  | 7659  | 18178 | 8551  | 11454 | 21986 | 10846 | 15248 |
| 6S-2500-635-CL  | 8              | 15411 | 8159  | 11570 | 14567                             | 6350  | 7855  | 19054 | 9080  | 12326 | 23541 | 11779 | 16797 | 28028 | 14466 | 21268 |
| 6S-2500-735-CL  | 6              | 15273 | 8067  | 11399 | 23561                             | 11792 | 16818 | 29573 | 15389 | 22808 | 35584 | 18976 | 28798 | 41596 | 22559 | 34788 |
| 6S-3800-535-CL  | 12             | 21051 | 11605 | 17481 | -                                 | -     | -     | -     | -     | -     | -     | -     | -     | 10755 | 3111  | 3111  |
| 6S-3800-585-CL  | 10,2           | 20994 | 11568 | 17411 | -                                 | -     | -     | 8684  | 1048  | 1048  | 12493 | 4634  | 4843  | 16301 | 7046  | 8637  |
| 6S-3800-635-CL  | 8,6            | 20933 | 11527 | 17335 | 8881                              | 1244  | 1244  | 13368 | 5206  | 5715  | 17855 | 8000  | 10186 | 22342 | 10721 | 14657 |
| 6S-3800-735-CL  | 6,5            | 20795 | 11436 | 17164 | 17876                             | 8012  | 10207 | 23887 | 11652 | 16197 | 29898 | 15259 | 22187 | 35910 | 18852 | 28177 |
| 14S-5100-635-CL | 12             | 24596 | 13852 | 21159 | -                                 | -     | -     | 12930 | 3643  | 3643  | 17907 | 7250  | 8445  | 22885 | 10264 | 13248 |
| 14S-5100-735-CL | 10,6           | 24447 | 13752 | 20969 | 17930                             | 7264  | 8467  | 24599 | 11289 | 14901 | 31268 | 15246 | 21336 | 37937 | 19179 | 27770 |
| 14S-5100-785-CL | 9,3            | 24365 | 13697 | 20864 | 23466                             | 10612 | 13808 | 31073 | 15131 | 21147 | 38680 | 19616 | 28486 | 46287 | 24089 | 35826 |
| 14S-5100-835-CL | 8,2            | 24277 | 13638 | 20752 | 29365                             | 14120 | 19500 | 37972 | 19199 | 27804 | 46579 | 24260 | 36108 | 55186 | 29312 | 44412 |
| 14S-5100-885-CL | 7,3            | 24184 | 13575 | 20633 | 35629                             | 17820 | 25543 | 45298 | 23507 | 34871 | 54966 | 29183 | 44200 | 64635 | 34853 | 53528 |
| 14S-5100-935-CL | 6,6            | 24086 | 13509 | 20507 | 42257                             | 21721 | 31937 | 53049 | 28059 | 42350 | 63841 | 34388 | 52762 | 74633 | 40711 | 63174 |
| 14S-5400-635-CL | 12             | 31902 | 17436 | 25418 | -                                 | -     | -     | -     | -     | -     | -     | -     | -     | 18684 | 4827  | 4827  |
| 14S-5400-735-CL | 10,9           | 31754 | 17336 | 25229 | -                                 | -     | -     | 20398 | 6481  | 6481  | 27067 | 11022 | 12915 | 33736 | 15061 | 19349 |
| 14S-5400-785-CL | 9,6            | 31671 | 17281 | 25124 | 19265                             | 5387  | 5387  | 26872 | 10902 | 12727 | 34479 | 15507 | 20066 | 42086 | 20036 | 27406 |
| 14S-5400-835-CL | 8,5            | 31584 | 17222 | 25012 | 25164                             | 9844  | 11079 | 33771 | 15082 | 19383 | 42379 | 20209 | 27688 | 50986 | 25297 | 35992 |
| 14S-5400-885-CL | 7,5            | 31491 | 17159 | 24893 | 31428                             | 13674 | 17123 | 41097 | 19449 | 26451 | 50766 | 25167 | 35779 | 60434 | 30863 | 45108 |
| 14S-5400-935-CL | 6,7            | 31392 | 17093 | 24767 | 38056                             | 17642 | 23517 | 48848 | 24035 | 33929 | 59640 | 30396 | 44342 | 70432 | 36738 | 54754 |
| 14S-8300-735-CL | 11,5           | 40951 | 22498 | 33067 | -                                 | -     | -     | -     | -     | -     | -     | -     | -     | 26007 | 8526  | 8526  |
| 14S-8300-785-CL | 10,1           | 40869 | 22443 | 32962 | -                                 | -     | -     | -     | -     | -     | 26750 | 9223  | 9242  | 34357 | 14070 | 16582 |
| 14S-8300-835-CL | 8,9            | 40781 | 22384 | 32850 | -                                 | -     | -     | 26042 | 8559  | 8559  | 34649 | 14249 | 16864 | 43256 | 19452 | 25168 |
| 14S-8300-885-CL | 7,9            | 40688 | 22321 | 32731 | 23699                             | 6299  | 6299  | 33367 | 13462 | 15627 | 43036 | 19320 | 24955 | 52705 | 25078 | 34284 |
| 14S-8300-935-CL | 7,1            | 40590 | 22254 | 32605 | 30327                             | 11565 | 12693 | 41119 | 18170 | 23105 | 51911 | 24607 | 33518 | 62703 | 30990 | 43930 |

## NOTES

MOP: Maximum Operating Pressure

BTC: Break to Close

RTC: Run to Close

ETC: End to Close

BTO: Break to Open

RTO: Run to Open

ETO: End to Open



# MORIN ALGAS SPRING RETURN PNEUMATIC ACTUATOR

OUTPUT TORQUES (Nm) - SYMMETRIC YOKE DESIGN, SPRING TO CLOSE. MODELS 3S-2000-385-CL TO 14S-8300-935-CL

| Model           | MOP<br>(bar g) | Operating supply pressure (bar g) |       |       |       |       |       |       |       |       |        |       |       |        |       |        |
|-----------------|----------------|-----------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|--------|-------|-------|--------|-------|--------|
|                 |                | BTC                               | RTC   | ETC   | 5     |       |       | 5.5   |       |       | 6      |       |       | 7      |       |        |
|                 |                |                                   |       |       | BTO   | RTO   | ETO   | BTO   | RTO   | ETO   | BTO    | RTO   | ETO   | BTO    | RTO   | ETO    |
| 3S-2000-385-CL  | 12             | 10845                             | 5668  | 7860  | 5905  | 898   | 898   | 7318  | 2301  | 2301  | 8732   | 3383  | 3704  | 11558  | 5142  | 6510   |
| 3S-2000-435-CL  | 10,6           | 10821                             | 5652  | 7831  | 9788  | 4051  | 4753  | 11592 | 5163  | 6544  | 13397  | 6259  | 8335  | 17005  | 8429  | 11917  |
| 3S-2000-485-CL  | 8,5            | 10806                             | 5642  | 7812  | 14158 | 6718  | 9090  | 16401 | 8066  | 11317 | 18643  | 9410  | 13543 | 23129  | 12087 | 17996  |
| 3S-2000-535-CL  | 7              | 10802                             | 5640  | 7808  | 19017 | 9633  | 13914 | 21746 | 11262 | 16623 | 24475  | 12889 | 19332 | 29934  | 16138 | 24750  |
| 3S-2500-585-CL  | 5,8            | 10754                             | 5608  | 7748  | 24303 | 12787 | 19161 | 27566 | 14729 | 22400 | -      | -     | -     | -      | -     | -      |
| 6S-2500-485-CL  | 12             | 15533                             | 8240  | 11721 | 13955 | 5972  | 7245  | 16572 | 7576  | 9853  | 19190  | 9162  | 12462 | 24425  | 12309 | 17678  |
| 6S-2500-535-CL  | 11,3           | 15529                             | 8238  | 11716 | 19625 | 9425  | 12896 | 22810 | 11342 | 16070 | 25995  | 13251 | 19243 | 32365  | 17057 | 25591  |
| 6S-2500-585-CL  | 9,4            | 15473                             | 8200  | 11646 | 25795 | 13130 | 19043 | 29603 | 15407 | 22838 | 33411  | 17680 | 26633 | 41027  | 22220 | 34222  |
| 6S-2500-635-CL  | 8              | 15411                             | 8159  | 11570 | 32515 | 17146 | 25739 | 37001 | 19822 | 30211 | 41488  | 22495 | 34682 | 50462  | 27838 | 43624  |
| 6S-2500-735-CL  | 6              | 15273                             | 8067  | 11399 | 47607 | 26138 | 40779 | 53618 | 29716 | 46769 | 59630  | 33291 | 52759 | -      | -     | -      |
| 6S-3800-535-CL  | 12             | 21051                             | 11605 | 17481 | 13940 | 5571  | 6285  | 17125 | 7553  | 9458  | 20310  | 9493  | 12632 | 26680  | 13330 | 18980  |
| 6S-3800-585-CL  | 10,2           | 20994                             | 11568 | 17411 | 20109 | 9371  | 12432 | 23917 | 11670 | 16227 | 27725  | 13957 | 20022 | 35342  | 18513 | 27611  |
| 6S-3800-635-CL  | 8,6            | 20933                             | 11527 | 17335 | 26829 | 13420 | 19128 | 31316 | 16106 | 23600 | 35803  | 18788 | 28071 | 44777  | 24139 | 37013  |
| 6S-3800-735-CL  | 6,5            | 20795                             | 11436 | 17164 | 41921 | 22437 | 34168 | 47933 | 26019 | 40158 | 53944  | 29598 | 46148 | -      | -     | -      |
| 14S-5100-635-CL | 12             | 24596                             | 13852 | 21159 | 27863 | 13230 | 18050 | 32840 | 16174 | 22853 | 37818  | 19109 | 27655 | 47774  | 24962 | 37260  |
| 14S-5100-735-CL | 10,6           | 24447                             | 13752 | 20969 | 44606 | 23101 | 34204 | 51275 | 27018 | 40638 | 57944  | 30929 | 47072 | 71282  | 38748 | 59941  |
| 14S-5100-785-CL | 9,3            | 24365                             | 13697 | 20864 | 53894 | 28554 | 43165 | 61501 | 33016 | 50505 | 69109  | 37476 | 57844 | 84323  | 46386 | 72523  |
| 14S-5100-835-CL | 8,2            | 24277                             | 13638 | 20752 | 63793 | 34360 | 52716 | 72401 | 39404 | 61020 | 81008  | 44445 | 69324 | 98222  | 54527 | 85933  |
| 14S-5100-885-CL | 7,3            | 24184                             | 13575 | 20633 | 74304 | 40518 | 62856 | 83973 | 46181 | 72185 | 93641  | 51844 | 81513 | 112979 | 63165 | 100170 |
| 14S-5100-935-CL | 6,6            | 24086                             | 13509 | 20507 | 85425 | 47032 | 73586 | 96217 | 53353 | 83999 | 107010 | 59672 | 94411 | -      | -     | -      |
| 14S-5400-635-CL | 12             | 31902                             | 17436 | 25418 | 23662 | 8896  | 9630  | 28640 | 11984 | 14432 | 33617  | 14990 | 19235 | 43573  | 20916 | 28840  |
| 14S-5400-735-CL | 10,9           | 31754                             | 17336 | 25229 | 40405 | 19038 | 25784 | 47074 | 22988 | 32218 | 53743  | 26923 | 38652 | 67081  | 34770 | 51521  |
| 14S-5400-785-CL | 9,6            | 31671                             | 17281 | 25124 | 49693 | 24534 | 34745 | 57301 | 29018 | 42084 | 64908  | 33493 | 49424 | 80122  | 42427 | 64103  |
| 14S-5400-835-CL | 8,5            | 31584                             | 17222 | 25012 | 59593 | 30368 | 44296 | 68200 | 35427 | 52600 | 76807  | 40483 | 60904 | 94021  | 50578 | 77512  |
| 14S-5400-885-CL | 7,5            | 31491                             | 17159 | 24893 | 70103 | 36545 | 54436 | 79772 | 42221 | 63765 | 89441  | 47892 | 73093 | 108778 | 59226 | 91750  |
| 14S-5400-935-CL | 6,7            | 31392                             | 17093 | 24767 | 81225 | 43073 | 65166 | 92017 | 49402 | 75578 | 102809 | 55730 | 85991 | -      | -     | -      |
| 14S-8300-735-CL | 11,5           | 40951                             | 22498 | 33067 | 32676 | 13034 | 14960 | 39345 | 17101 | 21394 | 46014  | 21099 | 27828 | 59352  | 29011 | 40697  |
| 14S-8300-785-CL | 10,1           | 40869                             | 22443 | 32962 | 41964 | 18677 | 23921 | 49571 | 23217 | 31260 | 57178  | 27727 | 38600 | 72393  | 36700 | 53279  |
| 14S-8300-835-CL | 8,9            | 40781                             | 22384 | 32850 | 51863 | 24579 | 33472 | 60470 | 29672 | 41776 | 69077  | 34748 | 50080 | 86292  | 44872 | 66688  |
| 14S-8300-885-CL | 7,9            | 40688                             | 22321 | 32731 | 62374 | 30795 | 43612 | 72042 | 36494 | 52941 | 81711  | 42181 | 62269 | 101049 | 53536 | 80926  |
| 14S-8300-935-CL | 7,1            | 40590                             | 22254 | 32605 | 73495 | 37349 | 54342 | 84287 | 43695 | 64754 | 95079  | 50035 | 75167 | 116664 | 62693 | 95991  |

## NOTES

MOP: Maximum Operating Pressure

BTC: Break to Close

RTC: Run to Close

ETC: End to Close

BTO: Break to Open

RTO: Run to Open

ETO: End to Open

# MORIN ALGAS SPRING RETURN PNEUMATIC ACTUATOR

OUTPUT TORQUES (Nm) - SYMMETRIC YOKE DESIGN, SPRING TO CLOSE. MODELS 3S-2000-385-CL TO 14S-8300-985-CL

| Model           | MOP<br>(bar g) | BTC   | RTC   | ETC   | Operating supply pressure (bar g) |       |        |        |       |       |       |       |       |
|-----------------|----------------|-------|-------|-------|-----------------------------------|-------|--------|--------|-------|-------|-------|-------|-------|
|                 |                |       |       |       | 9                                 |       |        | 10     |       |       | 12    |       |       |
|                 |                |       |       |       | BTO                               | RTO   | ETO    | BTO    | RTO   | ETO   | BTO   | RTO   | ETO   |
| 3S-2000-385-CL  | 12             | 10845 | 5668  | 7860  | 17212                             | 8553  | 12122  | 20039  | 10244 | 14928 | 25692 | 13613 | 20540 |
| 3S-2000-435-CL  | 10,6           | 10821 | 5652  | 7831  | 24222                             | 12738 | 19081  | 27831  | 14886 | 22663 | -     | -     | -     |
| 3S-2000-485-CL  | 8,5            | 10806 | 5642  | 7812  | -                                 | -     | -      | -      | -     | -     | -     | -     | -     |
| 3S-2000-535-CL  | 7              | 10802 | 5640  | 7808  | -                                 | -     | -      | -      | -     | -     | -     | -     | -     |
| 3S-2000-585-CL  | 5,8            | 10754 | 5608  | 7748  | -                                 | -     | -      | -      | -     | -     | -     | -     | -     |
| 6S-2500-485-CL  | 12             | 15533 | 8240  | 11721 | 34895                             | 18565 | 28111  | 40130  | 21686 | 33328 | 50600 | 27920 | 43761 |
| 6S-2500-535-CL  | 11,3           | 15529 | 8238  | 11716 | 45105                             | 24649 | 38286  | 51476  | 28442 | 44634 | -     | -     | -     |
| 6S-2500-585-CL  | 9,4            | 15473 | 8200  | 11646 | 56260                             | 31287 | 49401  | -      | -     | -     | -     | -     | -     |
| 6S-2500-635-CL  | 8              | 15411 | 8159  | 11570 | -                                 | -     | -      | -      | -     | -     | -     | -     | -     |
| 6S-2500-735-CL  | 6              | 15273 | 8067  | 11399 | -                                 | -     | -      | -      | -     | -     | -     | -     | -     |
| 6S-3800-535-CL  | 12             | 21051 | 11605 | 17481 | 39420                             | 20945 | 31675  | 45790  | 24743 | 38022 | 58530 | 32329 | 50718 |
| 6S-3800-585-CL  | 10,2           | 20994 | 11568 | 17411 | 50574                             | 27591 | 42790  | 58191  | 32126 | 50379 | -     | -     | -     |
| 6S-3800-635-CL  | 8,6            | 20933 | 11527 | 17335 | -                                 | -     | -      | -      | -     | -     | -     | -     | -     |
| 6S-3800-735-CL  | 6,5            | 20795 | 11436 | 17164 | -                                 | -     | -      | -      | -     | -     | -     | -     | -     |
| 14S-5100-635-CL | 12             | 24596 | 13852 | 21159 | 67685                             | 36642 | 56470  | 77640  | 42472 | 66075 | 97551 | 54134 | 85285 |
| 14S-5100-735-CL | 10,6           | 24447 | 13752 | 20969 | 97958                             | 54372 | 85678  | 111296 | 62180 | 98546 | -     | -     | -     |
| 14S-5100-785-CL | 9,3            | 24365 | 13697 | 20864 | 114752                            | 64202 | 101880 | -      | -     | -     | -     | -     | -     |
| 14S-5100-835-CL | 8,2            | 24277 | 13638 | 20752 | -                                 | -     | -      | -      | -     | -     | -     | -     | -     |
| 14S-5100-885-CL | 7,3            | 24184 | 13575 | 20633 | -                                 | -     | -      | -      | -     | -     | -     | -     | -     |
| 14S-5100-935-CL | 6,6            | 24086 | 13509 | 20507 | -                                 | -     | -      | -      | -     | -     | -     | -     | -     |
| 14S-5400-635-CL | 12             | 31902 | 17436 | 25418 | 63484                             | 32656 | 48050  | 73439  | 38505 | 57655 | 93350 | 50184 | 76865 |
| 14S-5400-735-CL | 10,9           | 31754 | 17336 | 25229 | 93757                             | 50423 | 77257  | 107095 | 58240 | 90126 | -     | -     | -     |
| 14S-5400-785-CL | 9,6            | 31671 | 17281 | 25124 | 110551                            | 60264 | 93460  | -      | -     | -     | -     | -     | -     |
| 14S-5400-835-CL | 8,5            | 31584 | 17222 | 25012 | -                                 | -     | -      | -      | -     | -     | -     | -     | -     |
| 14S-5400-885-CL | 7,5            | 31491 | 17159 | 24893 | -                                 | -     | -      | -      | -     | -     | -     | -     | -     |
| 14S-5400-935-CL | 6,7            | 31392 | 17093 | 24767 | -                                 | -     | -      | -      | -     | -     | -     | -     | -     |
| 14S-8300-735-CL | 11,5           | 40951 | 22498 | 33067 | 86028                             | 44717 | 66433  | 99365  | 52549 | 79302 | -     | -     | -     |
| 14S-8300-785-CL | 10,1           | 40869 | 22443 | 32962 | 102821                            | 54576 | 82636  | 118036 | 63498 | 97315 | -     | -     | -     |
| 14S-8300-835-CL | 8,9            | 40781 | 22384 | 32850 | -                                 | -     | -      | -      | -     | -     | -     | -     | -     |
| 14S-8300-885-CL | 7,9            | 40688 | 22321 | 32731 | -                                 | -     | -      | -      | -     | -     | -     | -     | -     |
| 14S-8300-935-CL | 7,1            | 40590 | 22254 | 32605 | -                                 | -     | -      | -      | -     | -     | -     | -     | -     |

## NOTES

MOP: Maximum Operating Pressure

BTC: Break to Close

RTC: Run to Close

ETC: End to Close

BTO: Break to Open

RTO: Run to Open

ETO: End to Open

# MORIN ALGAS SPRING RETURN PNEUMATIC ACTUATOR

OUTPUT TORQUES (Nm) - SYMMETRIC YOKE DESIGN, SPRING TO CLOSE. MODELS 18S-9600-835-CL TO 18S-11000-1300-CL

| Model             | MOP (bar g) | BTC    | RTC   | ETC   | Operating supply pressure (bar g) |       |       |        |       |       |        |       |        |        |       |        |
|-------------------|-------------|--------|-------|-------|-----------------------------------|-------|-------|--------|-------|-------|--------|-------|--------|--------|-------|--------|
|                   |             |        |       |       | 3                                 |       |       | 3.5    |       |       | 4      |       |        | 4.5    |       |        |
|                   |             |        |       |       | BTO                               | RTO   | ETO   | BTO    | RTO   | ETO   | BTO    | RTO   | ETO    | BTO    | RTO   | ETO    |
| 18S-9600-835-CL   | 11,4        | 66304  | 34048 | 44881 | -                                 | -     | -     | -      | -     | -     | -      | -     | -      | 42714  | 6986  | 6986   |
| 18S-9600-935-CL   | 9,1         | 66083  | 33897 | 44600 | -                                 | -     | -     | 40257  | 4614  | 4614  | 52664  | 16592 | 16592  | 65072  | 25424 | 28570  |
| 18S-9600-1000-CL  | 7,9         | 65927  | 33789 | 44400 | 38381                             | 2803  | 2803  | 52574  | 16505 | 16505 | 66766  | 26480 | 30206  | 80959  | 35148 | 43908  |
| 18S-9600-1100-CL  | 6,6         | 65665  | 33610 | 44065 | 55966                             | 19546 | 19779 | 73139  | 30402 | 36358 | 90312  | 40769 | 52937  | 107484 | 50998 | 69515  |
| 18S-9600-1200-CL  | 5,5         | 65378  | 33413 | 43700 | 75225                             | 31675 | 38372 | 95662  | 43964 | 58102 | 116099 | 56101 | 77832  | 136536 | 68177 | 97562  |
| 18S-9600-1300-CL  | 4,5         | 65067  | 33199 | 43302 | 96159                             | 44260 | 58582 | 120144 | 58497 | 81737 | 144129 | 72649 | 104892 | 168115 | 86765 | 128048 |
| 18S-9800-835-CL   | 11,9        | 83920  | 42715 | 55491 | -                                 | -     | -     | -      | -     | -     | -      | -     | -      | -      | -     | -      |
| 18S-9800-935-CL   | 9,5         | 83699  | 42564 | 55210 | -                                 | -     | -     | -      | -     | -     | -      | -     | -      | 54608  | 8237  | 8237   |
| 18S-9800-1000-CL  | 8,3         | 83543  | 42456 | 55010 | -                                 | -     | -     | -      | -     | -     | 56303  | 9873  | 9873   | 70495  | 23575 | 23575  |
| 18S-9800-1100-CL  | 6,9         | 83281  | 42276 | 54676 | -                                 | -     | -     | 62675  | 16025 | 16025 | 79848  | 30077 | 32604  | 97021  | 40725 | 49183  |
| 18S-9800-1200-CL  | 5,8         | 82994  | 42079 | 54310 | 64762                             | 18039 | 18039 | 85199  | 33448 | 37769 | 105636 | 45945 | 57499  | 126073 | 58192 | 77229  |
| 18S-9800-1300-CL  | 4,5         | 82683  | 41866 | 53912 | 85695                             | 33757 | 38249 | 109681 | 48383 | 61404 | 133666 | 62709 | 84560  | 157651 | 76926 | 107715 |
| 18S-10500-935-CL  | 9,6         | 92694  | 46404 | 58625 | -                                 | -     | -     | -      | -     | -     | -      | -     | -      | -      | -     | -      |
| 18S-10500-1000-CL | 8,4         | 92538  | 46296 | 58425 | -                                 | -     | -     | -      | -     | -     | -      | -     | -      | 67127  | 13374 | 13374  |
| 18S-10500-1100-CL | 7           | 92276  | 46115 | 58091 | -                                 | -     | -     | 59307  | 5824  | 5824  | 76480  | 22403 | 22403  | 93653  | 35620 | 38982  |
| 18S-10500-1200-CL | 5,9         | 91989  | 45917 | 57725 | 61394                             | 7838  | 7838  | 81831  | 27568 | 27568 | 102268 | 41008 | 47298  | 122705 | 53464 | 67028  |
| 18S-10500-1300-CL | 5           | 91678  | 45702 | 57327 | 82327                             | 28048 | 28048 | 106313 | 43500 | 51203 | 130298 | 58031 | 74359  | 154283 | 72348 | 97514  |
| 18S-11000-935-CL  | 10,2        | 104062 | 54199 | 73136 | -                                 | -     | -     | -      | -     | -     | -      | -     | -      | -      | -     | -      |
| 18S-11000-1000-CL | 8,9         | 103905 | 54092 | 72936 | -                                 | -     | -     | -      | -     | -     | -      | -     | -      | -      | -     | -      |
| 18S-11000-1100-CL | 7,4         | 103643 | 53913 | 72602 | -                                 | -     | -     | -      | -     | -     | 62170  | 8588  | 8588   | 79343  | 25167 | 25167  |
| 18S-11000-1200-CL | 6,2         | 103357 | 53717 | 72236 | -                                 | -     | -     | 67521  | 13753 | 13753 | 87958  | 31960 | 33483  | 108395 | 44779 | 53213  |
| 18S-11000-1300-CL | 5,3         | 103045 | 53504 | 71839 | 68017                             | 14233 | 14233 | 92003  | 34571 | 37388 | 115988 | 49402 | 60544  | 139973 | 63823 | 83699  |

| Model             | MOP (bar g) | BTC    | RTC   | ETC   | Operating supply pressure (bar g) |       |        |        |       |        |        |       |        |        |       |        |
|-------------------|-------------|--------|-------|-------|-----------------------------------|-------|--------|--------|-------|--------|--------|-------|--------|--------|-------|--------|
|                   |             |        |       |       | 5                                 |       |        | 5.5    |       |        | 6      |       |        | 7      |       |        |
|                   |             |        |       |       | BTO                               | RTO   | ETO    | BTO    | RTO   | ETO    | BTO    | RTO   | ETO    | BTO    | RTO   | ETO    |
| 18S-9600-835-CL   | 11,4        | 66304  | 34048 | 44881 | 52610                             | 16539 | 16539  | 62505  | 23808 | 26092  | 72400  | 29952 | 35645  | 92191  | 41891 | 54751  |
| 18S-9600-935-CL   | 9,1         | 66083  | 33897 | 44600 | 77479                             | 33043 | 40548  | 89886  | 40514 | 52526  | 102294 | 47912 | 64504  | 127109 | 62610 | 88461  |
| 18S-9600-1000-CL  | 7,9         | 65927  | 33789 | 44400 | 95151                             | 43659 | 57609  | 109344 | 52099 | 71310  | 123536 | 60500 | 85012  | 151921 | 77238 | 112414 |
| 18S-9600-1100-CL  | 6,6         | 65665  | 33610 | 44065 | 124657                            | 61162 | 86094  | 141830 | 71294 | 102673 | 159003 | 81409 | 119251 | -      | -     | -      |
| 18S-9600-1200-CL  | 5,5         | 65378  | 33413 | 43700 | 156974                            | 80213 | 117292 | 177411 | 92228 | 137022 | -      | -     | -      | -      | -     | -      |
| 18S-9600-1300-CL  | 4,5         | 65067  | 33199 | 43302 | -                                 | -     | -      | -      | -     | -      | -      | -     | -      | -      | -     | -      |
| 18S-9800-835-CL   | 11,9        | 83920  | 42715 | 55491 | -                                 | -     | -      | 52042  | 5759  | 5759   | 61937  | 15312 | 15312  | 81728  | 31269 | 34418  |
| 18S-9800-935-CL   | 9,5         | 83699  | 42564 | 55210 | 67016                             | 20215 | 20215  | 79423  | 29805 | 32194  | 91831  | 37551 | 44172  | 116645 | 52561 | 68128  |
| 18S-9800-1000-CL  | 8,3         | 83543  | 42456 | 55010 | 84688                             | 33129 | 37276  | 98880  | 41857 | 50977  | 113073 | 50418 | 64679  | 141458 | 67337 | 92082  |
| 18S-9800-1100-CL  | 6,9         | 83281  | 42276 | 54676 | 114194                            | 51091 | 65761  | 131367 | 61342 | 82340  | 148540 | 71533 | 98919  | -      | -     | -      |
| 18S-9800-1200-CL  | 5,8         | 82994  | 42079 | 54310 | 146510                            | 70330 | 96959  | 166947 | 82416 | 116689 | -      | -     | -      | -      | -     | -      |
| 18S-9800-1300-CL  | 4,5         | 82683  | 41866 | 53912 | -                                 | -     | -      | -      | -     | -      | -      | -     | -      | -      | -     | -      |
| 18S-10500-935-CL  | 9,6         | 92694  | 46404 | 58625 | 63648                             | 10015 | 10015  | 76055  | 21993 | 21993  | 88463  | 32289 | 33971  | 113277 | 47758 | 57927  |
| 18S-10500-1000-CL | 8,4         | 92538  | 46296 | 58425 | 81320                             | 27075 | 27075  | 95512  | 36795 | 40777  | 109705 | 45578 | 54478  | 138090 | 62698 | 81881  |
| 18S-10500-1100-CL | 7           | 92276  | 46115 | 58091 | 110826                            | 46262 | 55560  | 127999 | 56652 | 72139  | 145172 | 66926 | 88718  | 179518 | 87312 | 121875 |
| 18S-10500-1200-CL | 5,9         | 91989  | 45917 | 57725 | 143142                            | 65715 | 86758  | 163579 | 77870 | 106488 | -      | -     | -      | -      | -     | -      |
| 18S-10500-1300-CL | 5           | 91678  | 45702 | 57327 | 178269                            | 86572 | 120669 | -      | -     | -      | -      | -     | -      | -      | -     | -      |
| 18S-11000-935-CL  | 10,2        | 104062 | 54199 | 73136 | -                                 | -     | -      | 61745  | 8178  | 8178   | 74152  | 20156 | 20156  | 98967  | 38959 | 44112  |
| 18S-11000-1000-CL | 8,9         | 103905 | 54092 | 72936 | 67010                             | 13260 | 13260  | 81202  | 26962 | 26962  | 95395  | 36721 | 40663  | 123780 | 54112 | 68066  |
| 18S-11000-1100-CL | 7,4         | 103643 | 53913 | 72602 | 96516                             | 37426 | 41745  | 113689 | 48008 | 58324  | 130862 | 58369 | 74903  | 165207 | 78834 | 108060 |
| 18S-11000-1200-CL | 6,2         | 103357 | 53717 | 72236 | 128832                            | 57152 | 72943  | 149269 | 69367 | 92673  | 169707 | 81500 | 112403 | -      | -     | -      |
| 18S-11000-1300-CL | 5,3         | 103045 | 53504 | 71839 | 163959                            | 78095 | 106854 | -      | -     | -      | -      | -     | -      | -      | -     | -      |

## NOTES

MOP: Maximum Operating Pressure

BTC: Break to Close

RTC: Run to Close

ETC: End to Close

BTO: Break to Open

RTO: Run to Open

ETO: End to Open

## MORIN ALGAS SPRING RETURN PNEUMATIC ACTUATOR

OUTPUT TORQUES (Nm) - SYMMETRIC YOKE DESIGN, SPRING TO CLOSE. MODELS 18S-9600-835-CL TO 18S-11000-1300-CL

| Model             | MOP<br>(bar g) | BTC    | RTC   | ETC   | Operating supply pressure (bar g) |       |        |        |       |        |     |     |     |
|-------------------|----------------|--------|-------|-------|-----------------------------------|-------|--------|--------|-------|--------|-----|-----|-----|
|                   |                |        |       |       | 9                                 |       |        | 10     |       |        | 12  |     |     |
|                   |                |        |       |       | BTO                               | RTO   | ETO    | BTO    | RTO   | ETO    | BTO | RTO | ETO |
| 18S-9600-835-CL   | 11,4           | 66304  | 34048 | 44881 | 131772                            | 65364 | 92963  | 151563 | 77027 | 112069 | -   | -   | -   |
| 18S-9600-935-CL   | 9,1            | 66083  | 33897 | 44600 | 176738                            | 91833 | 136373 | -      | -     | -      | -   | -   | -   |
| 18S-9600-1000-CL  | 7,9            | 65927  | 33789 | 44400 | -                                 | -     | -      | -      | -     | -      | -   | -   | -   |
| 18S-9600-1100-CL  | 6,6            | 65665  | 33610 | 44065 | -                                 | -     | -      | -      | -     | -      | -   | -   | -   |
| 18S-9600-1200-CL  | 5,5            | 65378  | 33413 | 43700 | -                                 | -     | -      | -      | -     | -      | -   | -   | -   |
| 18S-9600-1300-CL  | 4,5            | 65067  | 33199 | 43302 | -                                 | -     | -      | -      | -     | -      | -   | -   | -   |
| 18S-9800-835-CL   | 11,9           | 83920  | 42715 | 55491 | 121309                            | 55348 | 72630  | 141100 | 67125 | 91736  | -   | -   | -   |
| 18S-9800-935-CL   | 9,5            | 83699  | 42564 | 55210 | 166275                            | 82019 | 116040 | -      | -     | -      | -   | -   | -   |
| 18S-9800-1000-CL  | 8,3            | 83543  | 42456 | 55010 | -                                 | -     | -      | -      | -     | -      | -   | -   | -   |
| 18S-9800-1100-CL  | 6,9            | 83281  | 42276 | 54676 | -                                 | -     | -      | -      | -     | -      | -   | -   | -   |
| 18S-9800-1200-CL  | 5,8            | 82994  | 42079 | 54310 | -                                 | -     | -      | -      | -     | -      | -   | -   | -   |
| 18S-9800-1300-CL  | 4,5            | 82683  | 41866 | 53912 | -                                 | -     | -      | -      | -     | -      | -   | -   | -   |
| 18S-10500-935-CL  | 9,6            | 92694  | 46404 | 58625 | 162907                            | 77472 | 105839 | -      | -     | -      | -   | -   | -   |
| 18S-10500-1000-CL | 8,4            | 92538  | 46296 | 58425 | -                                 | -     | -      | -      | -     | -      | -   | -   | -   |
| 18S-10500-1100-CL | 7              | 92276  | 46115 | 58091 | -                                 | -     | -      | -      | -     | -      | -   | -   | -   |
| 18S-10500-1200-CL | 5,9            | 91989  | 45917 | 57725 | -                                 | -     | -      | -      | -     | -      | -   | -   | -   |
| 18S-10500-1300-CL | 5              | 91678  | 45702 | 57327 | -                                 | -     | -      | -      | -     | -      | -   | -   | -   |
| 18S-11000-935-CL  | 10,2           | 104062 | 54199 | 73136 | 148597                            | 68967 | 92024  | 173412 | 83695 | 115981 | -   | -   | -   |
| 18S-11000-1000-CL | 8,9            | 103905 | 54092 | 72936 | -                                 | -     | -      | -      | -     | -      | -   | -   | -   |
| 18S-11000-1100-CL | 7,4            | 103643 | 53913 | 72602 | -                                 | -     | -      | -      | -     | -      | -   | -   | -   |
| 18S-11000-1200-CL | 6,2            | 103357 | 53717 | 72236 | -                                 | -     | -      | -      | -     | -      | -   | -   | -   |
| 18S-11000-1300-CL | 5,3            | 103045 | 53504 | 71839 | -                                 | -     | -      | -      | -     | -      | -   | -   | -   |

### NOTES

MOP: Maximum Operating Pressure

BTC: Break to Close

RTC: Run to Close

ETC: End to Close

BTO: Break to Open

RTO: Run to Open

ETO: End to Open

# MORIN ALGAS SPRING RETURN PNEUMATIC ACTUATOR

OUTPUT TORQUES (Nm) - SYMMETRIC YOKE DESIGN, SPRING TO OPEN. MODELS 1.5S-1100-385-OP TO 1.5S-1200-585-OP

| Model            | MOP<br>(bar g) | BTO  | RTO  | ETO  | Operating supply pressure (bar g) |      |      |      |      |      |       |      |      |       |      |       |
|------------------|----------------|------|------|------|-----------------------------------|------|------|------|------|------|-------|------|------|-------|------|-------|
|                  |                |      |      |      | 3                                 |      |      | 3.5  |      |      | 4     |      |      | 4.5   |      |       |
|                  |                |      |      |      | BTC                               | RTC  | ETC  | BTC  | RTC  | ETC  | BTC   | RTC  | ETC  | BTC   | RTC  | ETC   |
| 1.5S-1100-385-OP | 12             | 6777 | 2589 | 2847 | -                                 | -    | -    | -    | -    | -    | -     | -    | -    | -     | -    | -     |
| 1.5S-1100-435-OP | 9,5            | 6761 | 2579 | 2831 | -                                 | -    | -    | -    | -    | -    | 4267  | 1163 | 1163 | 5236  | 2329 | 2400  |
| 1.5S-1100-485-OP | 7,6            | 6750 | 2572 | 2822 | 3733                              | 481  | 481  | 4938 | 2020 | 2020 | 6143  | 2977 | 3559 | 7347  | 3809 | 5098  |
| 1.5S-1100-535-OP | 6,3            | 6748 | 2571 | 2819 | 5298                              | 2375 | 2480 | 6764 | 3409 | 4353 | 8230  | 4409 | 6225 | 9696  | 5397 | 8098  |
| 1.5S-1100-585-OP | 5,2            | 6716 | 2550 | 2788 | 6991                              | 3564 | 4642 | 8743 | 4756 | 6881 | 10496 | 5934 | 9119 | 12249 | 7107 | 11358 |
| 1.5S-1200-385-OP | 12             | 7926 | 3315 | 3990 | -                                 | -    | -    | -    | -    | -    | -     | -    | -    | -     | -    | -     |
| 1.5S-1200-435-OP | 10,1           | 7910 | 3305 | 3975 | -                                 | -    | -    | -    | -    | -    | -     | -    | -    | 4090  | 977  | 977   |
| 1.5S-1200-485-OP | 8,1            | 7900 | 3299 | 3965 | -                                 | -    | -    | 3792 | 596  | 596  | 4997  | 2135 | 2135 | 6201  | 3031 | 3674  |
| 1.5S-1200-535-OP | 6,7            | 7898 | 3297 | 3963 | 4152                              | 1056 | 1056 | 5618 | 2620 | 2929 | 7084  | 3640 | 4801 | 8550  | 4636 | 6674  |
| 1.5S-1200-585-OP | 5,5            | 7865 | 3278 | 3931 | 5845                              | 2780 | 3218 | 7597 | 3990 | 5457 | 9350  | 5175 | 7696 | 11103 | 6351 | 9934  |

| Model            | MOP<br>(bar g) | BTO  | RTO  | ETO  | Operating supply pressure (bar g) |      |       |       |      |       |       |      |       |       |      |       |
|------------------|----------------|------|------|------|-----------------------------------|------|-------|-------|------|-------|-------|------|-------|-------|------|-------|
|                  |                |      |      |      | 5                                 |      |       | 5.5   |      |       | 6     |      |       | 7     |      |       |
|                  |                |      |      |      | BTC                               | RTC  | ETC   | BTC   | RTC  | ETC   | BTC   | RTC  | ETC   | BTC   | RTC  | ETC   |
| 1.5S-1100-385-OP | 12             | 6777 | 2589 | 2847 | 4120                              | 974  | 974   | 4879  | 1944 | 1944  | 5638  | 2621 | 2914  | 7156  | 3678 | 4853  |
| 1.5S-1100-435-OP | 9,5            | 6761 | 2579 | 2831 | 6205                              | 3021 | 3638  | 7174  | 3690 | 4876  | 8143  | 4350 | 6114  | 10081 | 5656 | 8590  |
| 1.5S-1100-485-OP | 7,6            | 6750 | 2572 | 2822 | 8552                              | 4627 | 6636  | 9757  | 5438 | 8175  | 10961 | 6246 | 9714  | 13371 | 7856 | 12792 |
| 1.5S-1100-535-OP | 6,3            | 6748 | 2571 | 2819 | 11162                             | 6380 | 9970  | 12628 | 7360 | 11843 | 14094 | 8338 | 13715 | -     | -    | -     |
| 1.5S-1100-585-OP | 5,2            | 6716 | 2550 | 2788 | 14001                             | 8276 | 13597 | -     | -    | -     | -     | -    | -     | -     | -    | -     |
| 1.5S-1200-385-OP | 12             | 7926 | 3315 | 3990 | -                                 | -    | -     | 3733  | 520  | 520   | 4492  | 1490 | 1490  | 6010  | 2897 | 3429  |
| 1.5S-1200-435-OP | 10,1           | 7910 | 3305 | 3975 | 5059                              | 2211 | 2215  | 6028  | 2910 | 3452  | 6997  | 3581 | 4690  | 8935  | 4896 | 7166  |
| 1.5S-1200-485-OP | 8,1            | 7900 | 3299 | 3965 | 7406                              | 3860 | 5213  | 8611  | 4677 | 6751  | 9815  | 5488 | 8290  | 12225 | 7101 | 11368 |
| 1.5S-1200-535-OP | 6,7            | 7898 | 3297 | 3963 | 10016                             | 5622 | 8546  | 11482 | 6604 | 10419 | 12948 | 7583 | 12291 | -     | -    | -     |
| 1.5S-1200-585-OP | 5,5            | 7865 | 3278 | 3931 | 12855                             | 7522 | 12173 | 14608 | 8691 | 14412 | -     | -    | -     | -     | -    | -     |

| Model            | MOP<br>(bar g) | BTO  | RTO  | ETO  | Operating supply pressure (bar g) |      |       |       |      |       |       |      |       |
|------------------|----------------|------|------|------|-----------------------------------|------|-------|-------|------|-------|-------|------|-------|
|                  |                |      |      |      | 9                                 |      |       | 10    |      |       | 12    |      |       |
|                  |                |      |      |      | BTC                               | RTC  | ETC   | BTC   | RTC  | ETC   | BTC   | RTC  | ETC   |
| 1.5S-1100-385-OP | 12             | 6777 | 2589 | 2847 | 10192                             | 5731 | 8732  | 11711 | 6747 | 10671 | 14747 | 8774 | 14550 |
| 1.5S-1100-435-OP | 9,5            | 6761 | 2579 | 2831 | 13958                             | 8247 | 13542 | -     | -    | -     | -     | -    | -     |
| 1.5S-1100-485-OP | 7,6            | 6750 | 2572 | 2822 | -                                 | -    | -     | -     | -    | -     | -     | -    | -     |
| 1.5S-1100-535-OP | 6,3            | 6748 | 2571 | 2819 | -                                 | -    | -     | -     | -    | -     | -     | -    | -     |
| 1.5S-1100-585-OP | 5,2            | 6716 | 2550 | 2788 | -                                 | -    | -     | -     | -    | -     | -     | -    | -     |
| 1.5S-1200-385-OP | 12             | 7926 | 3315 | 3990 | 9046                              | 4971 | 7308  | 10565 | 5991 | 9247  | 13601 | 8019 | 13126 |
| 1.5S-1200-435-OP | 10,1           | 7910 | 3305 | 3975 | 12812                             | 7493 | 12118 | 14750 | 8786 | 14594 | -     | -    | -     |
| 1.5S-1200-485-OP | 8,1            | 7900 | 3299 | 3965 | -                                 | -    | -     | -     | -    | -     | -     | -    | -     |
| 1.5S-1200-535-OP | 6,7            | 7898 | 3297 | 3963 | -                                 | -    | -     | -     | -    | -     | -     | -    | -     |
| 1.5S-1200-585-OP | 5,5            | 7865 | 3278 | 3931 | -                                 | -    | -     | -     | -    | -     | -     | -    | -     |

## NOTES

MOP: Maximum Operating Pressure

BTC: Break to Close

RTC: Run to Close

ETC: End to Close

BTO: Break to Open

RTO: Run to Open

ETO: End to Open

# MORIN ALGAS SPRING RETURN PNEUMATIC ACTUATOR

OUTPUT TORQUES (Nm) - SYMMETRIC YOKE DESIGN, SPRING TO OPEN. MODELS 3S-2000-385-OP TO 14S-8300-935-OP

| Model           | MOP<br>(bar g) | BTO   | RTO   | ETO   | Operating supply pressure (bar g) |       |       |       |       |       |       |       |       |       |       |       |
|-----------------|----------------|-------|-------|-------|-----------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
|                 |                |       |       |       | 3                                 |       |       | 3.5   |       |       | 4     |       |       | 4.5   |       |       |
|                 |                |       |       |       | BTC                               | RTC   | ETC   | BTC   | RTC   | ETC   | BTC   | RTC   | ETC   | BTC   | RTC   | ETC   |
| 3S-2000-385-OP  | 12             | 11460 | 5082  | 6413  | -                                 | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
| 3S-2000-435-OP  | 11             | 11434 | 5066  | 6386  | -                                 | -     | -     | -     | -     | -     | 5655  | 1417  | 1417  | 7284  | 3231  | 3439  |
| 3S-2000-485-OP  | 8,9            | 11417 | 5056  | 6370  | 4758                              | 304   | 304   | 6783  | 2818  | 2818  | 8808  | 4293  | 5331  | 10832 | 5660  | 7845  |
| 3S-2000-535-OP  | 7,3            | 11413 | 5054  | 6366  | 7389                              | 3306  | 3570  | 9853  | 5002  | 6629  | 12316 | 6649  | 9688  | 14780 | 8281  | 12746 |
| 3S-2000-585-OP  | 6,1            | 11360 | 5021  | 6313  | 10233                             | 5258  | 7101  | 13179 | 7221  | 10758 | 16124 | 9168  | 14416 | 19070 | 11107 | 18073 |
| 6S-2500-485-OP  | 12             | 16307 | 7415  | 9589  | -                                 | -     | -     | -     | -     | -     | 8100  | 2527  | 2527  | 10472 | 4816  | 5461  |
| 6S-2500-535-OP  | 11,3           | 16303 | 7412  | 9585  | 6438                              | 471   | 471   | 9324  | 3994  | 4041  | 12210 | 6011  | 7610  | 15097 | 7949  | 11180 |
| 6S-2500-585-OP  | 9,4            | 16240 | 7374  | 9523  | 9769                              | 4318  | 4592  | 13220 | 6693  | 8860  | 16671 | 8996  | 13128 | 20122 | 11276 | 17396 |
| 6S-2500-635-OP  | 8              | 16172 | 7333  | 9455  | 13399                             | 6813  | 9080  | 17465 | 9522  | 14109 | 21531 | 12205 | 19138 | 25597 | 14876 | 24167 |
| 6S-2500-735-OP  | 6              | 16020 | 7240  | 9303  | 21550                             | 12217 | 19161 | 26997 | 15794 | 25899 | 32445 | 19366 | 32637 | 37892 | 22937 | 39374 |
| 6S-3800-535-OP  | 12             | 22273 | 10680 | 14589 | -                                 | -     | -     | -     | -     | -     | 7090  | 214   | 214   | 9976  | 3784  | 3784  |
| 6S-3800-585-OP  | 10,3           | 22211 | 10642 | 14527 | -                                 | -     | -     | 8100  | 1463  | 1463  | 11551 | 5212  | 5731  | 15002 | 7579  | 10000 |
| 6S-3800-635-OP  | 8,7            | 22143 | 10601 | 14459 | 8278                              | 1684  | 1684  | 12344 | 5768  | 6713  | 16410 | 8524  | 11742 | 20476 | 11225 | 16771 |
| 6S-3800-735-OP  | 6,5            | 21991 | 10510 | 14307 | 16429                             | 8537  | 11765 | 21877 | 12151 | 18502 | 27324 | 15736 | 25240 | 32772 | 19309 | 31978 |
| 14S-5100-635-OP | 12             | 27158 | 12811 | 17370 | -                                 | -     | -     | 11347 | 4235  | 4235  | 15715 | 7832  | 9814  | 20082 | 10813 | 15393 |
| 14S-5100-735-OP | 10,3           | 26989 | 12711 | 17207 | 15735                             | 7846  | 9840  | 21586 | 11828 | 17314 | 27438 | 15755 | 24789 | 33289 | 19661 | 32264 |
| 14S-5100-785-OP | 9              | 26895 | 12655 | 17117 | 20592                             | 11158 | 16044 | 27266 | 15640 | 24570 | 33941 | 20096 | 33096 | 40615 | 24549 | 41622 |
| 14S-5100-835-OP | 8              | 26795 | 12596 | 17020 | 25768                             | 14638 | 22656 | 33320 | 19682 | 32303 | 40872 | 24720 | 41950 | 48424 | 29758 | 51597 |
| 14S-5100-885-OP | 7,1            | 26689 | 12533 | 16918 | 31264                             | 18310 | 29676 | 39747 | 23970 | 40513 | 48231 | 29629 | 51350 | 56714 | 35286 | 62187 |
| 14S-5100-935-OP | 6,4            | 26577 | 12466 | 16809 | 37079                             | 22190 | 37105 | 46548 | 28507 | 49201 | 56017 | 34821 | 61297 | 65486 | 41130 | 73393 |
| 14S-5400-635-OP | 12             | 35100 | 15878 | 20665 | -                                 | -     | -     | -     | -     | -     | -     | -     | -     | 16352 | 5555  | 5555  |
| 14S-5400-735-OP | 11             | 34931 | 15777 | 20502 | -                                 | -     | -     | 17856 | 7476  | 7476  | 23708 | 11858 | 14951 | 29559 | 15853 | 22425 |
| 14S-5400-785-OP | 9,6            | 34837 | 15721 | 20412 | 16862                             | 6206  | 6206  | 23536 | 11740 | 14732 | 30211 | 16294 | 23258 | 36885 | 20787 | 31784 |
| 14S-5400-835-OP | 8,5            | 34737 | 15661 | 20315 | 22038                             | 10698 | 12818 | 29590 | 15874 | 22465 | 37142 | 20959 | 32112 | 44694 | 26011 | 41758 |
| 14S-5400-885-OP | 7,6            | 34631 | 15598 | 20213 | 27534                             | 14479 | 19838 | 36017 | 20204 | 30675 | 44501 | 25882 | 41512 | 52984 | 31541 | 52349 |
| 14S-5400-935-OP | 6,8            | 34519 | 15530 | 20104 | 33349                             | 18411 | 27267 | 42818 | 24758 | 39363 | 52287 | 31077 | 51459 | 61756 | 37394 | 63554 |
| 14S-8300-735-OP | 11,8           | 44975 | 20479 | 26826 | -                                 | -     | -     | -     | -     | -     | 17029 | 2508  | 2508  | 22880 | 9983  | 9983  |
| 14S-8300-785-OP | 10,4           | 44881 | 20423 | 26736 | -                                 | -     | -     | 16857 | 2289  | 2289  | 23532 | 10477 | 10815 | 30207 | 15195 | 19342 |
| 14S-8300-835-OP | 9,2            | 44781 | 20363 | 26639 | -                                 | -     | -     | 22911 | 10013 | 10022 | 30463 | 15372 | 19669 | 38015 | 20517 | 29316 |
| 14S-8300-885-OP | 8,1            | 44675 | 20300 | 26537 | 20855                             | 7396  | 7396  | 29338 | 14595 | 18233 | 37822 | 20386 | 29069 | 46305 | 26097 | 39906 |
| 14S-8300-935-OP | 7,3            | 44563 | 20233 | 26428 | 26670                             | 12733 | 14824 | 36139 | 19248 | 26920 | 45609 | 25629 | 39016 | 55078 | 31968 | 51112 |

## NOTES

MOP: Maximum Operating Pressure

BTC: Break to Close

RTC: Run to Close

ETC: End to Close

BTO: Break to Open

RTO: Run to Open

ETO: End to Open

# MORIN ALGAS SPRING RETURN PNEUMATIC ACTUATOR

OUTPUT TORQUES (Nm) - SYMMETRIC YOKE DESIGN, SPRING TO OPEN. MODELS 3S-2000-385-OP TO 14S-8300-935-OP

| Model           | MOP<br>(bar g) | Operating supply pressure (bar g) |       |       |       |       |       |       |       |       |       |       |        |        |       |        |
|-----------------|----------------|-----------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|--------|--------|-------|--------|
|                 |                | BTO                               | RTO   | ETO   | 5     |       |       | 5.5   |       |       | 6     |       |        | 7      |       |        |
|                 |                | BTC                               | RTC   | ETC   | BTC   | RTC   | ETC   | BTC   | RTC   | ETC   | BTC   | RTC   | ETC    | BTC    | RTC   | ETC    |
| 3S-2000-385-OP  | 12             | 11460                             | 5082  | 6413  | 5407  | 1110  | 1110  | 6683  | 2694  | 2694  | 7959  | 3708  | 4278   | 10511  | 5444  | 7446   |
| 3S-2000-435-OP  | 11             | 11434                             | 5066  | 6386  | 8913  | 4365  | 5462  | 10541 | 5465  | 7484  | 12170 | 6552  | 9506   | 15428  | 8709  | 13551  |
| 3S-2000-485-OP  | 8,9            | 11417                             | 5056  | 6370  | 12857 | 7008  | 10359 | 14882 | 8348  | 12873 | 16907 | 9683  | 15387  | 20956  | 12346 | 20415  |
| 3S-2000-535-OP  | 7,3            | 11413                             | 5054  | 6366  | 17244 | 9905  | 15805 | 19708 | 11526 | 18864 | 22171 | 13144 | 21923  | 27099  | 16382 | 28041  |
| 3S-2000-585-OP  | 6,1            | 11360                             | 5021  | 6313  | 22016 | 13042 | 21730 | 24962 | 14978 | 25388 | 27908 | 16913 | 29045  | -      | -     | -      |
| 6S-2500-485-OP  | 12             | 16307                             | 7415  | 9589  | 12844 | 6440  | 8394  | 15216 | 8029  | 11328 | 17588 | 9603  | 14262  | 22332  | 12731 | 20129  |
| 6S-2500-535-OP  | 11,3           | 16303                             | 7412  | 9585  | 17983 | 9864  | 14750 | 20869 | 11769 | 18320 | 23755 | 13667 | 21890  | 29528  | 17453 | 29029  |
| 6S-2500-585-OP  | 9,4            | 16240                             | 7374  | 9523  | 23573 | 13547 | 21664 | 27024 | 15812 | 25933 | 30475 | 18074 | 30201  | 37377  | 22600 | 38737  |
| 6S-2500-635-OP  | 8              | 16172                             | 7333  | 9455  | 29663 | 17542 | 29196 | 33729 | 20208 | 34225 | 37795 | 22874 | 39254  | 45928  | 28205 | 49312  |
| 6S-2500-735-OP  | 6              | 16020                             | 7240  | 9303  | 43340 | 26509 | 46112 | 48788 | 30080 | 52850 | 54235 | 33652 | 59587  | -      | -     | -      |
| 6S-3800-535-OP  | 12             | 22273                             | 10680 | 14589 | 12862 | 6126  | 7353  | 15748 | 8081  | 10923 | 18635 | 10005 | 14493  | 24407  | 13819 | 21632  |
| 6S-3800-585-OP  | 10,3           | 22211                             | 10642 | 14527 | 18453 | 9884  | 14268 | 21904 | 12169 | 18536 | 25355 | 14442 | 22804  | 32257  | 18972 | 31341  |
| 6S-3800-635-OP  | 8,7            | 22143                             | 10601 | 14459 | 24542 | 13908 | 21800 | 28609 | 16580 | 26829 | 32675 | 19246 | 31858  | 40807  | 24577 | 41916  |
| 6S-3800-735-OP  | 6,5            | 21991                             | 10510 | 14307 | 38219 | 22881 | 38715 | 43667 | 26453 | 45453 | 49115 | 30024 | 52191  | -      | -     | -      |
| 14S-5100-635-OP | 12             | 27158                             | 12811 | 17370 | 24450 | 13754 | 20972 | 28817 | 16678 | 26551 | 33185 | 19592 | 32130  | 41920  | 25419 | 43288  |
| 14S-5100-735-OP | 10,3           | 26989                             | 12711 | 17207 | 39140 | 23565 | 39738 | 44992 | 27469 | 47213 | 50843 | 31372 | 54687  | 62546  | 39171 | 69636  |
| 14S-5100-785-OP | 9              | 26895                             | 12655 | 17117 | 47290 | 29002 | 50148 | 53965 | 33454 | 58675 | 60639 | 37900 | 67201  | 73988  | 46793 | 84253  |
| 14S-5100-835-OP | 8              | 26795                             | 12596 | 17020 | 55976 | 34794 | 61244 | 63528 | 39825 | 70890 | 71080 | 44856 | 80537  | 86183  | 54910 | 99831  |
| 14S-5100-885-OP | 7,1            | 26689                             | 12533 | 16918 | 65198 | 40937 | 73024 | 73681 | 46589 | 83860 | 82164 | 52235 | 94697  | 99131  | 63527 | 116371 |
| 14S-5100-935-OP | 6,4            | 26577                             | 12466 | 16809 | 74956 | 47438 | 85488 | 84425 | 53740 | 97584 | 93894 | 60041 | 109680 | -      | -     | -      |
| 14S-5400-635-OP | 12             | 35100                             | 15878 | 20665 | 20720 | 9770  | 11134 | 25087 | 12808 | 16713 | 29455 | 15783 | 22292  | 38190  | 21662 | 33450  |
| 14S-5400-735-OP | 11             | 34931                             | 15777 | 20502 | 35410 | 19797 | 29900 | 41262 | 23717 | 37374 | 47113 | 27625 | 44849  | 58816  | 35432 | 59798  |
| 14S-5400-785-OP | 9,6            | 34837                             | 15721 | 20412 | 43560 | 25254 | 40310 | 50235 | 29707 | 48836 | 56909 | 34160 | 57362  | 70258  | 43065 | 74415  |
| 14S-5400-835-OP | 8,5            | 34737                             | 15661 | 20315 | 52246 | 31049 | 51405 | 59798 | 36087 | 61052 | 67350 | 41125 | 70699  | 82453  | 51198 | 89993  |
| 14S-5400-885-OP | 7,6            | 34631                             | 15598 | 20213 | 61468 | 37201 | 63185 | 69951 | 42860 | 74022 | 78434 | 48520 | 84859  | 95401  | 59824 | 106532 |
| 14S-5400-935-OP | 6,8            | 34519                             | 15530 | 20104 | 71226 | 43711 | 75650 | 80695 | 50027 | 87746 | 90164 | 56335 | 99842  | -      | -     | -      |
| 14S-8300-735-OP | 11,8           | 44975                             | 20479 | 26826 | 28732 | 14174 | 17457 | 34583 | 18190 | 24932 | 40434 | 22150 | 32407  | 52137  | 30001 | 47356  |
| 14S-8300-785-OP | 10,4           | 44881                             | 20423 | 26736 | 36881 | 19750 | 27868 | 43556 | 24251 | 36394 | 50230 | 28726 | 44920  | 63580  | 37639 | 61972  |
| 14S-8300-835-OP | 9,2            | 44781                             | 20363 | 26639 | 45567 | 25601 | 38963 | 53119 | 30658 | 48610 | 60671 | 35699 | 58257  | 75775  | 45775 | 77550  |
| 14S-8300-885-OP | 8,1            | 44675                             | 20300 | 26537 | 54789 | 31775 | 50743 | 63272 | 37434 | 61580 | 71756 | 43094 | 72416  | 88723  | 54413 | 94090  |
| 14S-8300-935-OP | 7,3            | 44563                             | 20233 | 26428 | 64547 | 38285 | 63208 | 74016 | 44602 | 75304 | 83485 | 50919 | 87400  | 102423 | 63550 | 111591 |

## NOTES

MOP: Maximum Operating Pressure

BTC: Break to Close

RTC: Run to Close

ETC: End to Close

BTO: Break to Open

RTO: Run to Open

ETO: End to Open

# MORIN ALGAS SPRING RETURN PNEUMATIC ACTUATOR

OUTPUT TORQUES (Nm) - SYMMETRIC YOKE DESIGN, SPRING TO OPEN. MODELS 3S-2000-385-OP TO 14S-8300-985-OP

| Model           | MOP<br>(bar g) | BTO   | RTO   | ETO   | Operating supply pressure (bar g) |       |        |        |       |        |       |       |       |
|-----------------|----------------|-------|-------|-------|-----------------------------------|-------|--------|--------|-------|--------|-------|-------|-------|
|                 |                |       |       |       | 9                                 |       |        | 10     |       |        | 12    |       |       |
|                 |                |       |       |       | BTC                               | RTC   | ETC    | BTC    | RTC   | ETC    | BTC   | RTC   | BTC   |
| 3S-2000-385-OP  | 12             | 11460 | 5082  | 6413  | 15614                             | 8832  | 13782  | 18166  | 10513 | 16951  | 23270 | 13866 | 23287 |
| 3S-2000-435-OP  | 11             | 11434 | 5066  | 6386  | 21943                             | 12994 | 21640  | 25201  | 15134 | 25684  | -     | -     | -     |
| 3S-2000-485-OP  | 8,9            | 11417 | 5056  | 6370  | -                                 | -     | -      | -      | -     | -      | -     | -     | -     |
| 3S-2000-535-OP  | 7,3            | 11413 | 5054  | 6366  | -                                 | -     | -      | -      | -     | -      | -     | -     | -     |
| 3S-2000-585-OP  | 6,1            | 11360 | 5021  | 6313  | -                                 | -     | -      | -      | -     | -      | -     | -     | -     |
| 6S-2500-485-OP  | 12             | 16307 | 7415  | 9589  | 31820                             | 18956 | 31864  | 36564  | 22066 | 37731  | 46052 | 28287 | 49466 |
| 6S-2500-535-OP  | 11,3           | 16303 | 7412  | 9585  | 41073                             | 25023 | 43308  | 46846  | 28807 | 50448  | -     | -     | -     |
| 6S-2500-585-OP  | 9,4            | 16240 | 7374  | 9523  | 51181                             | 31650 | 55810  | -      | -     | -      | -     | -     | -     |
| 6S-2500-635-OP  | 8              | 16172 | 7333  | 9455  | -                                 | -     | -      | -      | -     | -      | -     | -     | -     |
| 6S-2500-735-OP  | 6              | 16020 | 7240  | 9303  | -                                 | -     | -      | -      | -     | -      | -     | -     | -     |
| 6S-3800-535-OP  | 12             | 22273 | 10680 | 14589 | 35953                             | 21395 | 35912  | 41725  | 25179 | 43051  | 53270 | 32749 | 57330 |
| 6S-3800-585-OP  | 10,3           | 22211 | 10642 | 14527 | 46061                             | 28022 | 48413  | 52963  | 32547 | 56950  | -     | -     | -     |
| 6S-3800-635-OP  | 8,7            | 22143 | 10601 | 14459 | -                                 | -     | -      | -      | -     | -      | -     | -     | -     |
| 6S-3800-735-OP  | 6,5            | 21991 | 10510 | 14307 | -                                 | -     | -      | -      | -     | -      | -     | -     | -     |
| 14S-5100-635-OP | 12             | 27158 | 12811 | 17370 | 59390                             | 37068 | 65605  | 68125  | 42887 | 76763  | 85595 | 54518 | 99079 |
| 14S-5100-735-OP | 10,3           | 26989 | 12711 | 17207 | 85952                             | 54756 | 99535  | 97654  | 62544 | 114484 | -     | -     | -     |
| 14S-5100-785-OP | 9              | 26895 | 12655 | 17117 | 100687                            | 64562 | 118358 | -      | -     | -      | -     | -     | -     |
| 14S-5100-835-OP | 8              | 26795 | 12596 | 17020 | -                                 | -     | -      | -      | -     | -      | -     | -     | -     |
| 14S-5100-885-OP | 7,1            | 26689 | 12533 | 16918 | -                                 | -     | -      | -      | -     | -      | -     | -     | -     |
| 14S-5100-935-OP | 6,4            | 26577 | 12466 | 16809 | -                                 | -     | -      | -      | -     | -      | -     | -     | -     |
| 14S-5400-635-OP | 12             | 35100 | 15878 | 20665 | 55660                             | 33326 | 55766  | 64395  | 39154 | 66925  | 81865 | 50806 | 89241 |
| 14S-5400-735-OP | 11             | 34931 | 15777 | 20502 | 82222                             | 51044 | 89697  | 93925  | 58840 | 104646 | -     | -     | -     |
| 14S-5400-785-OP | 9,6            | 34837 | 15721 | 20412 | 96957                             | 60860 | 108519 | -      | -     | -      | -     | -     | -     |
| 14S-5400-835-OP | 8,5            | 34737 | 15661 | 20315 | -                                 | -     | -      | -      | -     | -      | -     | -     | -     |
| 14S-5400-885-OP | 7,6            | 34631 | 15598 | 20213 | -                                 | -     | -      | -      | -     | -      | -     | -     | -     |
| 14S-5400-935-OP | 6,8            | 34519 | 15530 | 20104 | -                                 | -     | -      | -      | -     | -      | -     | -     | -     |
| 14S-8300-735-OP | 11,8           | 44975 | 20479 | 26826 | 75543                             | 45620 | 77254  | 87246  | 53427 | 92203  | -     | -     | -     |
| 14S-8300-785-OP | 10,4           | 44881 | 20423 | 26736 | 90278                             | 55450 | 96077  | 103627 | 64352 | 113129 | -     | -     | -     |
| 14S-8300-835-OP | 9,2            | 44781 | 20363 | 26639 | 105982                            | 65922 | 116138 | -      | -     | -      | -     | -     | -     |
| 14S-8300-885-OP | 8,1            | 44675 | 20300 | 26537 | -                                 | -     | -      | -      | -     | -      | -     | -     | -     |
| 14S-8300-935-OP | 7,3            | 44563 | 20233 | 26428 | -                                 | -     | -      | -      | -     | -      | -     | -     | -     |

## NOTES

MOP: Maximum Operating Pressure

BTC: Break to Close

RTC: Run to Close

ETC: End to Close

BTO: Break to Open

RTO: Run to Open

ETO: End to Open



# MORIN ALGAS SPRING RETURN PNEUMATIC ACTUATOR

OUTPUT TORQUES (Nm) - SYMMETRIC YOKE DESIGN, SPRING TO OPEN. MODELS 18S-9600-835-OP TO 18S-11000-1300-OP

| Model             | MOP (bar g) | BTO    | RTO   | ETO   | Operating supply pressure (bar g) |       |       |        |       |       |        |       |        |        |       |        |
|-------------------|-------------|--------|-------|-------|-----------------------------------|-------|-------|--------|-------|-------|--------|-------|--------|--------|-------|--------|
|                   |             |        |       |       | 3                                 |       |       | 3.5    |       |       | 4      |       |        | 4.5    |       |        |
|                   |             |        |       |       | BTC                               | RTC   | ETC   | BTC    | RTC   | ETC   | BTC    | RTC   | ETC    | BTC    | RTC   | ETC    |
| 18S-9600-835-OP   | 12          | 71007  | 29097 | 34300 | -                                 | -     | -     | -      | -     | -     | -      | -     | -      | 38605  | 9520  | 9520   |
| 18S-9600-935-OP   | 9,7         | 70755  | 28943 | 34057 | -                                 | -     | -     | 36447  | 6766  | 6766  | 47340  | 20669 | 20672  | 58233  | 28479 | 34578  |
| 18S-9600-1000-OP  | 8,6         | 70577  | 28833 | 33885 | 34800                             | 4664  | 4664  | 47261  | 20571 | 20571 | 59721  | 29514 | 36478  | 72181  | 38054 | 52385  |
| 18S-9600-1100-OP  | 7           | 70279  | 28650 | 33597 | 50239                             | 22812 | 24372 | 65316  | 33370 | 43620 | 80393  | 43616 | 62867  | 95470  | 53755 | 82115  |
| 18S-9600-1200-OP  | 5,5         | 69952  | 28449 | 33282 | 67147                             | 34624 | 45958 | 85090  | 46782 | 68864 | 103033 | 58821 | 91770  | 120976 | 70806 | 114676 |
| 18S-9600-1300-OP  | 5           | 69598  | 28232 | 32940 | 85526                             | 47075 | 69421 | 106584 | 61196 | 96304 | 127642 | 75252 | 123187 | 148700 | 89295 | 150069 |
| 18S-9800-835-OP   | 12          | 90360  | 36648 | 42752 | -                                 | -     | -     | -      | -     | -     | -      | -     | -      | -      | -     | -      |
| 18S-9800-935-OP   | 10,5        | 90109  | 36493 | 42509 | -                                 | -     | -     | -      | -     | -     | -      | -     | -      | -      | -     | -      |
| 18S-9800-1000-OP  | 9,2         | 89930  | 36383 | 42337 | -                                 | -     | -     | -      | -     | -     | 50246  | 12503 | 12503  | 62707  | 27761 | 28410  |
| 18S-9800-1100-OP  | 7,6         | 89632  | 36198 | 42049 | -                                 | -     | -     | 55841  | 19646 | 19646 | 70918  | 33683 | 38893  | 85995  | 44140 | 58141  |
| 18S-9800-1200-OP  | 6,4         | 89306  | 35996 | 41734 | 57673                             | 21984 | 21984 | 75616  | 36977 | 44890 | 93559  | 49296 | 67796  | 111501 | 61425 | 90702  |
| 18S-9800-1300-OP  | 5,4         | 88951  | 35777 | 41392 | 76052                             | 37280 | 45447 | 97110  | 51709 | 72330 | 118168 | 65908 | 99212  | 139226 | 80013 | 126095 |
| 18S-10500-935-OP  | 10,9        | 105334 | 42899 | 50258 | -                                 | -     | -     | -      | -     | -     | -      | -     | -      | -      | -     | -      |
| 18S-10500-1000-OP | 9,5         | 105156 | 42790 | 50086 | -                                 | -     | -     | -      | -     | -     | -      | -     | -      | 54253  | 9550  | 9550   |
| 18S-10500-1100-OP | 7,8         | 104858 | 42607 | 49798 | -                                 | -     | -     | -      | -     | -     | 62464  | 20032 | 20032  | 77541  | 35772 | 39280  |
| 18S-10500-1200-OP | 6,6         | 104531 | 42406 | 49483 | 49219                             | 3123  | 3123  | 67161  | 26029 | 26029 | 85104  | 41130 | 48935  | 103047 | 53506 | 71841  |
| 18S-10500-1300-OP | 5,5         | 104176 | 42188 | 49141 | 67598                             | 26586 | 26586 | 88656  | 43607 | 53469 | 109714 | 58043 | 80352  | 130771 | 72267 | 107234 |
| 18S-11000-935-OP  | 1,4         | 118281 | 50792 | 62758 | -                                 | -     | -     | -      | -     | -     | -      | -     | -      | -      | -     | -      |
| 18S-11000-1000-OP | 10          | 118103 | 50684 | 62585 | -                                 | -     | -     | -      | -     | -     | -      | -     | -      | -      | -     | -      |
| 18S-11000-1100-OP | 8,3         | 117805 | 50504 | 62298 | -                                 | -     | -     | -      | -     | -     | -      | 3993  | 3993   | 64977  | 23241 | 23241  |
| 18S-11000-1200-OP | 6,9         | 117478 | 50306 | 61983 | -                                 | -     | -     | 54598  | 9990  | 9990  | 72541  | 32126 | 32896  | 90484  | 44876 | 55803  |
| 18S-11000-1300-OP | 5,5         | 117124 | 50091 | 61640 | 55034                             | 10547 | 10547 | 76092  | 34727 | 37430 | 97150  | 49470 | 64313  | 118208 | 63796 | 91196  |

| Model             | MOP (bar g) | BTO    | RTO   | ETO   | Operating supply pressure (bar g) |        |        |        |        |        |        |       |        |        |        |        |
|-------------------|-------------|--------|-------|-------|-----------------------------------|--------|--------|--------|--------|--------|--------|-------|--------|--------|--------|--------|
|                   |             |        |       |       | 5                                 |        |        | 5.5    |        |        | 6      |       |        | 7      |        |        |
|                   |             |        |       |       | BTC                               | RTC    | ETC    | BTC    | RTC    | ETC    | BTC    | RTC   | ETC    | BTC    | RTC    | ETC    |
| 18S-9600-835-OP   | 12          | 71007  | 29097 | 34300 | 47292                             | 20611  | 20611  | 55980  | 26903  | 31701  | 64668  | 32925 | 42792  | 82043  | 44730  | 64974  |
| 18S-9600-935-OP   | 9,7         | 70755  | 28943 | 34057 | 69126                             | 35975  | 48485  | 80020  | 43364  | 62391  | 90913  | 50698 | 76297  | 112699 | 65285  | 104110 |
| 18S-9600-1000-OP  | 8,6         | 70577  | 28833 | 33885 | 84642                             | 46480  | 68292  | 97102  | 54850  | 84198  | 109562 | 63188 | 100105 | 134483 | 79814  | 131919 |
| 18S-9600-1100-OP  | 7           | 70279  | 28650 | 33597 | 110547                            | 63846  | 101362 | 125624 | 73906  | 120610 | 140701 | 83960 | 139857 | 170855 | 104070 | 178352 |
| 18S-9600-1200-OP  | 5,5         | 69952  | 28449 | 33282 | 138919                            | 82772  | 137582 | 156862 | 94738  | 160488 | -      | -     | -      | -      | -      | -      |
| 18S-9600-1300-OP  | 5           | 69598  | 28232 | 32940 | 169758                            | 103339 | 176952 | -      | -      | -      | -      | -     | -      | -      | -      | -      |
| 18S-9800-835-OP   | 12          | 90360  | 36648 | 42752 | -                                 | -      | -      | 46505  | 7727   | 7727   | 55193  | 18818 | 18818  | 72568  | 34846  | 41000  |
| 18S-9800-935-OP   | 10,5        | 90109  | 36493 | 42509 | 59652                             | 24510  | 24510  | 70545  | 33419  | 38417  | 81438  | 41010 | 52323  | 103224 | 55845  | 80136  |
| 18S-9800-1000-OP  | 9,2         | 89930  | 36383 | 42337 | 75167                             | 36665  | 44317  | 87627  | 45254  | 60224  | 100088 | 53724 | 76131  | 125008 | 70497  | 107945 |
| 18S-9800-1100-OP  | 7,6         | 89632  | 36198 | 42049 | 101072                            | 54389  | 77388  | 116149 | 64553  | 96635  | 131226 | 74664 | 115883 | 161380 | 94802  | 154378 |
| 18S-9800-1200-OP  | 6,4         | 89306  | 35996 | 41734 | 129444                            | 73472  | 113608 | 147387 | 85470  | 136514 | 165330 | 97436 | 159420 | -      | -      | -      |
| 18S-9800-1300-OP  | 5,4         | 88951  | 35777 | 41392 | 160284                            | 94071  | 152978 | -      | -      | -      | -      | -     | -      | -      | -      | -      |
| 18S-10500-935-OP  | 10,9        | 105334 | 42899 | 50258 | 51198                             | 5650   | 5650   | 62091  | 19556  | 19556  | 72984  | 32454 | 33462  | 94770  | 47836  | 61275  |
| 18S-10500-1000-OP | 9,5         | 105156 | 42790 | 50086 | 66713                             | 25457  | 25457  | 79173  | 36941  | 41364  | 91634  | 45671 | 57271  | 116554 | 62678  | 89085  |
| 18S-10500-1100-OP | 7,8         | 104858 | 42607 | 49798 | 92618                             | 46351  | 58527  | 107695 | 56671  | 77775  | 122772 | 66880 | 97022  | 152926 | 87130  | 135517 |
| 18S-10500-1200-OP | 6,6         | 104531 | 42406 | 49483 | 120990                            | 65678  | 94747  | 138933 | 77750  | 117654 | 156876 | 89771 | 140560 | -      | -      | -      |
| 18S-10500-1300-OP | 5,5         | 104176 | 42188 | 49141 | 151829                            | 86396  | 134117 | 172887 | 100473 | 161000 | -      | -     | -      | -      | -      | -      |
| 18S-11000-935-OP  | 11,4        | 118281 | 50792 | 62758 | -                                 | -      | -      | 49527  | 3517   | 3517   | 60420  | 17423 | 17423  | 82207  | 39093  | 45236  |
| 18S-11000-1000-OP | 10          | 118103 | 50684 | 62585 | 54149                             | 9418   | 9418   | 66610  | 25325  | 25325  | 79070  | 36868 | 41232  | 103991 | 54150  | 73046  |
| 18S-11000-1100-OP | 8,3         | 117805 | 50504 | 62298 | 80054                             | 37568  | 42488  | 95131  | 48084  | 61736  | 110208 | 58379 | 80983  | 140362 | 78709  | 119478 |
| 18S-11000-1200-OP | 6,9         | 117478 | 50306 | 61983 | 108426                            | 57168  | 78709  | 126369 | 69303  | 101615 | 144312 | 81359 | 124521 | -      | -      | -      |
| 18S-11000-1300-OP | 5,5         | 117124 | 50091 | 61640 | 139266                            | 77973  | 118078 | 160324 | 92077  | 144961 | -      | -     | -      | -      | -      | -      |

## NOTES

MOP: Maximum Operating Pressure

BTC: Break to Close

RTC: Run to Close

ETC: End to Close

BTO: Break to Open

RTO: Run to Open

ETO: End to Open

# MORIN ALGAS SPRING RETURN PNEUMATIC ACTUATOR

OUTPUT TORQUES (Nm) - SYMMETRIC YOKE DESIGN, SPRING TO OPEN. MODELS 18S-9600-835-OP TO 18S-11000-1300-OP

| Model             | MOP<br>(bar g) | BTO    | RTO   | ETO   | Operating supply pressure (bar g) |        |        |        |        |        |        |        |        |
|-------------------|----------------|--------|-------|-------|-----------------------------------|--------|--------|--------|--------|--------|--------|--------|--------|
|                   |                |        |       |       | 9                                 |        |        | 10     |        |        | 12     |        |        |
|                   |                |        |       |       | BTC                               | RTC    | ETC    | BTC    | RTC    | ETC    | BTC    | RTC    | BTC    |
| 18S-9600-835-OP   | 12             | 71007  | 29097 | 34300 | 116793                            | 68017  | 109337 | 134169 | 79604  | 131518 | 168919 | 102779 | 175881 |
| 18S-9600-935-OP   | 9,7            | 70755  | 28943 | 34057 | 156272                            | 94344  | 159735 | -      | -      | -      | -      | -      | -      |
| 18S-9600-1000-OP  | 8,6            | 70577  | 28833 | 33885 | -                                 | -      | -      | -      | -      | -      | -      | -      | -      |
| 18S-9600-1100-OP  | 7              | 70279  | 28650 | 33597 | -                                 | -      | -      | -      | -      | -      | -      | -      | -      |
| 18S-9600-1200-OP  | 5,5            | 69952  | 28449 | 33282 | -                                 | -      | -      | -      | -      | -      | -      | -      | -      |
| 18S-9600-1300-OP  | 5              | 69598  | 28232 | 32940 | -                                 | -      | -      | -      | -      | -      | -      | -      | -      |
| 18S-9800-835-OP   | 12             | 90360  | 36648 | 42752 | 107319                            | 58608  | 85363  | 124694 | 70286  | 107544 | 159445 | 93512  | 151907 |
| 18S-9800-935-OP   | 10,5           | 90109  | 36493 | 42509 | 146797                            | 85076  | 135761 | 168583 | 99606  | 163573 | -      | -      | -      |
| 18S-9800-1000-OP  | 9,2            | 89930  | 36383 | 42337 | 174850                            | 103785 | 171573 | -      | -      | -      | -      | -      | -      |
| 18S-9800-1100-OP  | 7,6            | 89632  | 36198 | 42049 | -                                 | -      | -      | -      | -      | -      | -      | -      | -      |
| 18S-9800-1200-OP  | 6,4            | 89306  | 35996 | 41734 | -                                 | -      | -      | -      | -      | -      | -      | -      | -      |
| 18S-9800-1300-OP  | 5,4            | 88951  | 35777 | 41392 | -                                 | -      | -      | -      | -      | -      | -      | -      | -      |
| 18S-10500-935-OP  | 10,9           | 105334 | 42899 | 50258 | 138343                            | 77354  | 116900 | 160129 | 91947  | 144713 | -      | -      | -      |
| 18S-10500-1000-OP | 9,5            | 105156 | 42790 | 50086 | 166396                            | 96137  | 152713 | -      | -      | -      | -      | -      | -      |
| 18S-10500-1100-OP | 7,8            | 104858 | 42607 | 49798 | -                                 | -      | -      | -      | -      | -      | -      | -      | -      |
| 18S-10500-1200-OP | 6,6            | 104531 | 42406 | 49483 | -                                 | -      | -      | -      | -      | -      | -      | -      | -      |
| 18S-10500-1300-OP | 5,5            | 104176 | 42188 | 49141 | -                                 | -      | -      | -      | -      | -      | -      | -      | -      |
| 18S-11000-935-OP  | 1,4            | 118281 | 50792 | 62758 | 125779                            | 68905  | 100861 | 147565 | 83542  | 128674 | -      | -      | -      |
| 18S-11000-1000-OP | 10             | 118103 | 50684 | 62585 | 153832                            | 87736  | 136674 | 178753 | 104385 | 168488 | -      | -      | -      |
| 18S-11000-1100-OP | 8,3            | 117805 | 50504 | 62298 | -                                 | -      | -      | -      | -      | -      | -      | -      | -      |
| 18S-11000-1200-OP | 6,9            | 117478 | 50306 | 61983 | -                                 | -      | -      | -      | -      | -      | -      | -      | -      |
| 18S-11000-1300-OP | 5,5            | 117124 | 50091 | 61640 | -                                 | -      | -      | -      | -      | -      | -      | -      | -      |

## NOTES

MOP: Maximum Operating Pressure

BTC: Break to Close

RTC: Run to Close

ETC: End to Close

BTO: Break to Open

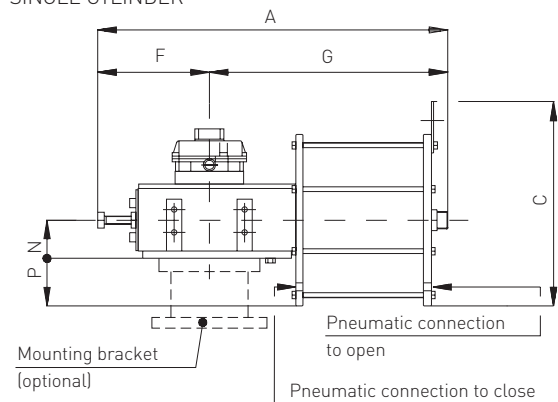
RTO: Run to Open

ETO: End to Open

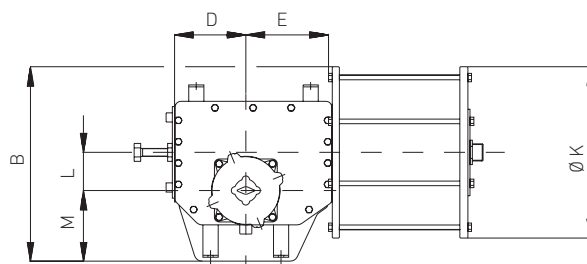
# MORIN ALGA DOUBLE ACTING PNEUMATIC ACTUATOR

## OVERALL DIMENSIONS - SINGLE CYLINDER / TWO CYLINDERS

### SINGLE CYLINDER



Top view

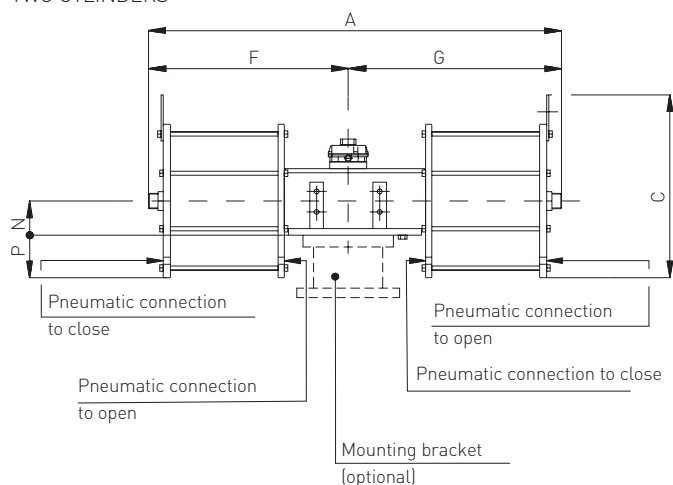


### DIMENSIONS (mm)

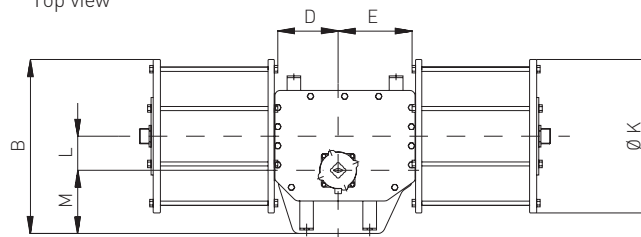
| Model   | A    | B   | C   | D   | E   | F   | G    | ØK  | L   | M   | N   | P   | Pneumatic connection* |      | Weight (kg) | Air consumption (liters) |
|---------|------|-----|-----|-----|-----|-----|------|-----|-----|-----|-----|-----|-----------------------|------|-------------|--------------------------|
|         |      |     |     |     |     |     |      |     |     |     |     |     | Close                 | Open |             |                          |
| 1.5-280 | 992  | 469 | 361 | 187 | 227 | 310 | 682  | 345 | 100 | 185 | 100 | 73  | 1/2                   | 3/4  | 166         | 16                       |
| 1.5-335 | 989  | 485 | 477 | 187 | 227 | 310 | 680  | 400 | 100 | 185 | 100 | 100 | 1/2                   | 1    | 194         | 23                       |
| 1.5-385 | 992  | 510 | 536 | 187 | 227 | 310 | 683  | 450 | 100 | 185 | 100 | 125 | 1/2                   | 1    | 227         | 31                       |
| 3-335   | 1313 | 586 | 477 | 285 | 330 | 391 | 921  | 400 | 160 | 215 | 106 | 95  | 1/2                   | 1    | 265         | 36                       |
| 3-385   | 1316 | 600 | 536 | 285 | 330 | 391 | 924  | 450 | 160 | 215 | 106 | 120 | 1/2                   | 1    | 308         | 47                       |
| 3-435   | 1316 | 625 | 579 | 285 | 330 | 391 | 925  | 500 | 160 | 215 | 106 | 142 | 3/4                   | 1    | 370         | 60                       |
| 3-485   | 1321 | 655 | 639 | 285 | 330 | 391 | 930  | 560 | 160 | 215 | 106 | 175 | 3/4                   | 1    | 388         | 74                       |
| 6-485   | 1497 | 740 | 639 | 327 | 379 | 430 | 1067 | 560 | 185 | 260 | 140 | 140 | 3/4                   | 1    | 512         | 85                       |
| 6-535   | 1508 | 755 | 705 | 327 | 379 | 430 | 1078 | 670 | 185 | 260 | 140 | 170 | 3/4                   | 1    | 660         | 104                      |
| 6-585   | 1505 | 780 | 758 | 327 | 379 | 430 | 1075 | 670 | 185 | 260 | 140 | 195 | 3/4                   | 1    | 704         | 124                      |
| 14-635  | 1676 | 855 | 809 | 376 | 435 | 497 | 1179 | 720 | 200 | 295 | 193 | 167 | 1                     | 1    | 1250        | 159                      |
| 14-735  | 1810 | 902 | 914 | 376 | 435 | 497 | 1313 | 815 | 200 | 295 | 193 | 217 | 1                     | 1    | 1475        | 213                      |
| 18-635  | 1927 | 940 | 813 | 425 | 493 | 546 | 1381 | 730 | 230 | 340 | 193 | 172 | 1                     | 1    | 799         | 184                      |
| 18-685  | 1952 | 955 | 889 | 425 | 493 | 546 | 1406 | 770 | 230 | 340 | 193 | 192 | 1                     | 1    | 1550        | 208                      |
| 18-735  | 1955 | 980 | 914 | 425 | 493 | 546 | 1409 | 820 | 230 | 340 | 193 | 217 | 1                     | 1    | 1650        | 239                      |

\* Pneumatic connection NPT (in)

### TWO CYLINDERS



Top view



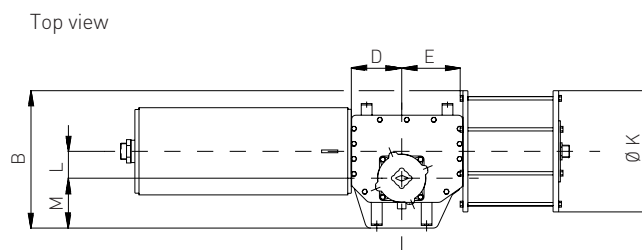
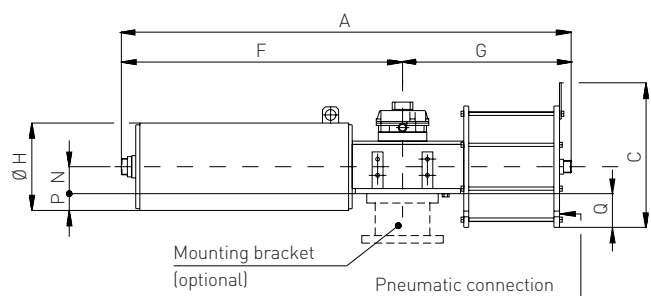
### DIMENSIONS (mm)

| Model    | A    | B   | C   | D   | E   | F    | G    | ØK  | L   | M   | N   | P   | Pneumatic connection* |      | Weight (kg) | Air consumption (liters) |
|----------|------|-----|-----|-----|-----|------|------|-----|-----|-----|-----|-----|-----------------------|------|-------------|--------------------------|
|          |      |     |     |     |     |      |      |     |     |     |     |     | Close                 | Open |             |                          |
| 18#2-635 | 2694 | 940 | 813 | 425 | 493 | 1313 | 1381 | 730 | 230 | 340 | 193 | 172 | 1                     | 1    | 1283        | 357                      |
| 18#2-685 | 2744 | 955 | 889 | 425 | 493 | 1338 | 1406 | 770 | 230 | 340 | 193 | 192 | 1                     | 1    | 2040        | 416                      |

\* Pneumatic connection NPT (in)

# MORIN ALGAS SPRING RETURN PNEUMATIC ACTUATOR

## OVERALL DIMENSIONS - SPRING TO CLOSE, MODELS 1.5-1100-385-CL TO 14-8300-935-CL

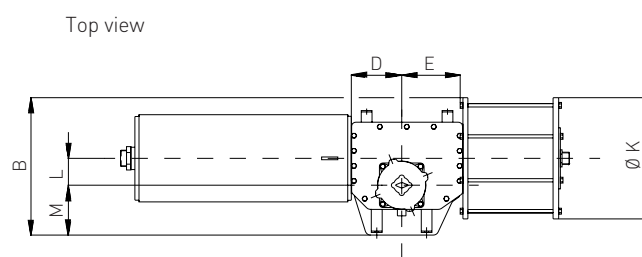
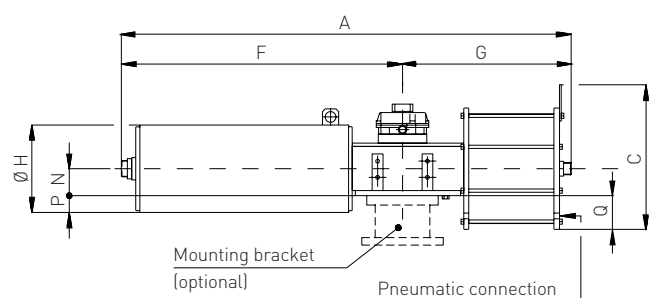


### DIMENSIONS (mm)

| Model           | A    | B    | C    | D   | E   | F    | G    | H   | K    | L   | M   | N   | P   | Q   | NPT (in) | Weight (kg) | Air consumption (liters) |
|-----------------|------|------|------|-----|-----|------|------|-----|------|-----|-----|-----|-----|-----|----------|-------------|--------------------------|
| 1.5-1100-385-CL | 1691 | 510  | 536  | 187 | 227 | 1048 | 643  | 400 | 450  | 100 | 185 | 100 | 100 | 125 | 1"       | 476         | 31                       |
| 1.5-1100-435-CL | 1691 | 535  | 579  | 187 | 227 | 1048 | 643  | 400 | 500  | 100 | 185 | 100 | 100 | 150 | 1"       | 511         | 39                       |
| 1.5-1100-485-CL | 1697 | 565  | 639  | 187 | 227 | 1048 | 649  | 400 | 560  | 100 | 185 | 100 | 100 | 180 | 1"       | 547         | 48                       |
| 1.5-1100-535-CL | 1706 | 620  | 710  | 187 | 227 | 1048 | 658  | 400 | 620  | 100 | 185 | 100 | 100 | 210 | 1"       | 564         | 59                       |
| 1.5-1100-585-CL | 1701 | 670  | 758  | 187 | 227 | 1048 | 653  | 400 | 670  | 100 | 185 | 100 | 100 | 235 | 1"       | 581         | 70                       |
| 1.5-1200-385-CL | 1760 | 510  | 536  | 187 | 227 | 1117 | 643  | 322 | 450  | 100 | 185 | 100 | 61  | 125 | 1"       | 478         | 31                       |
| 1.5-1200-435-CL | 1760 | 535  | 579  | 187 | 227 | 1117 | 643  | 322 | 500  | 100 | 185 | 100 | 61  | 150 | 1"       | 503         | 39                       |
| 1.5-1200-485-CL | 1766 | 565  | 639  | 187 | 227 | 1117 | 649  | 322 | 560  | 100 | 185 | 100 | 61  | 180 | 1"       | 539         | 48                       |
| 1.5-1200-535-CL | 1775 | 620  | 710  | 187 | 227 | 1117 | 658  | 322 | 620  | 100 | 185 | 100 | 61  | 210 | 1"       | 556         | 59                       |
| 1.5-1200-585-CL | 1770 | 670  | 758  | 187 | 227 | 1117 | 653  | 322 | 670  | 100 | 185 | 100 | 61  | 235 | 1"       | 573         | 70                       |
| 3-2000-385-CL   | 2354 | 600  | 536  | 285 | 330 | 1474 | 880  | 415 | 450  | 160 | 215 | 106 | 102 | 120 | 1"       | 774         | 47                       |
| 3-2000-435-CL   | 2354 | 625  | 582  | 285 | 330 | 1474 | 880  | 415 | 500  | 160 | 215 | 106 | 102 | 145 | 1"       | 809         | 60                       |
| 3-2000-485-CL   | 2359 | 655  | 674  | 285 | 330 | 1474 | 885  | 415 | 560  | 160 | 215 | 106 | 102 | 175 | 1"       | 843         | 74                       |
| 3-2000-535-CL   | 2372 | 685  | 710  | 285 | 330 | 1474 | 898  | 415 | 620  | 160 | 215 | 106 | 102 | 205 | 1"       | 929         | 90                       |
| 3-2000-585-CL   | 2397 | 710  | 758  | 285 | 330 | 1474 | 923  | 415 | 670  | 160 | 215 | 106 | 102 | 230 | 1"       | 1015        | 108                      |
| 6-2500-485-CL   | 2974 | 740  | 640  | 327 | 379 | 1958 | 1016 | 383 | 560  | 185 | 260 | 140 | 52  | 140 | 1"       | 1068        | 85                       |
| 6-2500-535-CL   | 2984 | 754  | 705  | 327 | 379 | 1958 | 1024 | 383 | 620  | 185 | 260 | 140 | 52  | 170 | 1"       | 1265        | 104                      |
| 6-2500-585-CL   | 2987 | 780  | 758  | 327 | 379 | 1958 | 1029 | 383 | 670  | 185 | 260 | 140 | 52  | 195 | 1"       | 1245        | 124                      |
| 6-2500-635-CL   | 3029 | 805  | 809  | 327 | 379 | 1958 | 1071 | 383 | 720  | 185 | 260 | 140 | 52  | 220 | 1"       | 1323        | 146                      |
| 6-2500-735-CL   | 3048 | 853  | 912  | 327 | 379 | 1958 | 1090 | 383 | 815  | 185 | 260 | 140 | 52  | 267 | 1"       | 1498        | 196                      |
| 6-3800-535-CL   | 3214 | 755  | 705  | 327 | 379 | 2186 | 1028 | 530 | 620  | 185 | 260 | 140 | 125 | 170 | 1"       | 1600        | 104                      |
| 6-3800-585-CL   | 3211 | 780  | 758  | 327 | 379 | 2186 | 1025 | 530 | 670  | 185 | 260 | 140 | 125 | 195 | 1"       | 1640        | 124                      |
| 6-3800-635-CL   | 3259 | 805  | 809  | 327 | 379 | 2188 | 1071 | 530 | 720  | 185 | 260 | 140 | 125 | 220 | 1"       | 1720        | 146                      |
| 6-3800-735-CL   | 3278 | 853  | 912  | 327 | 379 | 2188 | 1090 | 530 | 815  | 185 | 260 | 140 | 125 | 268 | 1"       | 1934        | 196                      |
| 14-5100-635-CL  | 3271 | 890  | 809  | 376 | 435 | 2151 | 1120 | 530 | 720  | 200 | 330 | 192 | 72  | 168 | 1"       | 1810        | 159                      |
| 14-5100-735-CL  | 3290 | 938  | 912  | 376 | 435 | 2151 | 1138 | 530 | 815  | 200 | 330 | 192 | 72  | 214 | 1"       | 2026        | 213                      |
| 14-5100-785-CL  | 3290 | 973  | 993  | 376 | 435 | 2151 | 1138 | 530 | 885  | 200 | 330 | 192 | 72  | 251 | 1"       | 2026        | 243                      |
| 14-5100-835-CL  | 3330 | 992  | 1036 | 376 | 435 | 2151 | 1179 | 530 | 925  | 200 | 330 | 192 | 72  | 270 | 1"       | 2355        | 274                      |
| 14-5100-885-CL  | 3371 | 1030 | 1123 | 376 | 435 | 2151 | 1220 | 530 | 1000 | 200 | 330 | 192 | 72  | 307 | 1"       | 2455        | 308                      |
| 14-5100-935-CL  | 3369 | 1056 | 1179 | 376 | 435 | 2151 | 1218 | 530 | 1051 | 200 | 330 | 192 | 72  | 334 | 1"       | 2555        | 343                      |
| 14-5400-635-CL  | 3219 | 890  | 809  | 376 | 435 | 2101 | 1120 | 530 | 720  | 200 | 330 | 192 | 72  | 167 | 1"       | 1915        | 159                      |
| 14-5400-735-CL  | 3237 | 903  | 912  | 376 | 435 | 2099 | 1138 | 530 | 815  | 200 | 295 | 192 | 72  | 215 | 1"       | 2050        | 213                      |
| 14-5400-785-CL  | 3237 | 973  | 993  | 376 | 435 | 2099 | 1138 | 530 | 885  | 200 | 330 | 192 | 72  | 251 | 1"       | 2260        | 243                      |
| 14-5400-835-CL  | 3237 | 958  | 1036 | 376 | 435 | 2099 | 1138 | 530 | 925  | 200 | 295 | 192 | 72  | 270 | 1"       | 2250        | 274                      |
| 14-5400-885-CL  | 3172 | 1030 | 1123 | 376 | 435 | 2099 | 1073 | 530 | 1000 | 200 | 330 | 192 | 72  | 307 | 1"       | 2455        | 308                      |
| 14-5400-935-CL  | 3314 | 1051 | 1179 | 376 | 435 | 2099 | 1215 | 530 | 1051 | 200 | 326 | 192 | 72  | 335 | 1"       | 2600        | 343                      |
| 14-8300-735-CL  | 3300 | 903  | 912  | 376 | 435 | 2162 | 1138 | 530 | 815  | 200 | 295 | 192 | 72  | 215 | 1"       | 2100        | 213                      |
| 14-8300-785-CL  | 3300 | 973  | 993  | 376 | 435 | 2162 | 1138 | 530 | 885  | 200 | 330 | 192 | 72  | 251 | 1"       | 2540        | 243                      |
| 14-8300-835-CL  | 3300 | 958  | 1036 | 376 | 435 | 2162 | 1138 | 530 | 925  | 200 | 330 | 192 | 72  | 270 | 1"       | 2300        | 274                      |
| 14-8300-885-CL  | 3235 | 1030 | 1123 | 376 | 435 | 2162 | 1073 | 530 | 1000 | 200 | 330 | 192 | 72  | 307 | 1"       | 2330        | 308                      |
| 14-8300-935-CL  | 3377 | 1051 | 1179 | 376 | 435 | 2162 | 1215 | 530 | 1051 | 200 | 295 | 192 | 72  | 335 | 1"       | 2650        | 343                      |

# MORIN ALGAS SPRING RETURN PNEUMATIC ACTUATOR

## OVERALL DIMENSIONS - SPRING TO CLOSE, MODELS 18-9600-835-CL TO 18-11000-1300-CL

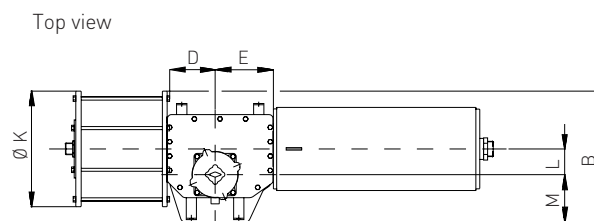
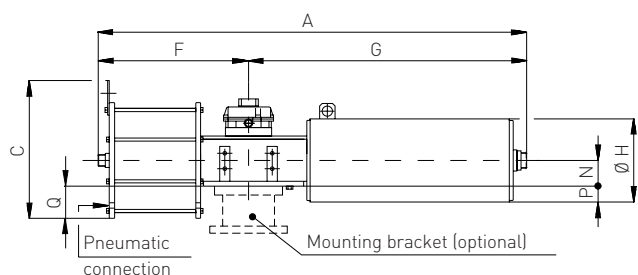


### DIMENSIONS (mm)

| Model            | A    | B    | C    | D   | E   | F    | G    | H   | K    | L   | M   | N   | P   | Q   | NPT (in) | Weight (kg) | Air consumption (liters) |
|------------------|------|------|------|-----|-----|------|------|-----|------|-----|-----|-----|-----|-----|----------|-------------|--------------------------|
| 18-9600-835-CL   | 4030 | 1033 | 1036 | 427 | 495 | 2765 | 1373 | 559 | 925  | 230 | 340 | 196 | 176 | 267 | 2 x 1    | 3350        | 318                      |
| 18-9600-935-CL   | 4107 | 1098 | 1179 | 427 | 495 | 2765 | 1410 | 559 | 1055 | 230 | 340 | 196 | 176 | 332 | 2 x 1    | 3750        | 398                      |
| 18-9600-1000-CL  | 4110 | 1145 | 1264 | 425 | 493 | 2763 | 1414 | 559 | 1120 | 230 | 355 | 193 | 176 | 367 | 2 x 1    | 3994        | 456                      |
| 18-9600-1100-CL  | 4107 | 1216 | 1364 | 427 | 495 | 2765 | 1414 | 559 | 1220 | 230 | 340 | 196 | 176 | 414 | 2 x 1    | 4350        | 552                      |
| 18-9600-1200-CL  | 4087 | 1320 | 1465 | 425 | 493 | 2763 | 1373 | 559 | 1320 | 230 | 340 | 193 | 176 | 467 | 2 x 1    | 4400        | 660                      |
| 18-9600-1300-CL  | 4152 | 1420 | 1575 | 425 | 493 | 2763 | 1443 | 559 | 1420 | 230 | 340 | 193 | 176 | 517 | 2 x 1    | 5660        | 770                      |
| 18-9800-835-CL   | 4020 | 1033 | 1036 | 427 | 495 | 2755 | 1375 | 559 | 925  | 230 | 340 | 196 | 176 | 267 | 2 x 1    | 3700        | 318                      |
| 18-9800-935-CL   | 4097 | 1098 | 1179 | 427 | 495 | 2755 | 1410 | 559 | 1055 | 230 | 340 | 196 | 176 | 332 | 2 x 1    | 4100        | 398                      |
| 18-9800-1000-CL  | 4100 | 1145 | 1264 | 427 | 495 | 2753 | 1414 | 559 | 1120 | 230 | 355 | 193 | 176 | 367 | 2 x 1    | 4190        | 456                      |
| 18-9800-1100-CL  | 4097 | 1216 | 1364 | 427 | 495 | 2755 | 1414 | 559 | 1220 | 230 | 340 | 196 | 176 | 414 | 2 x 1    | 4700        | 552                      |
| 18-9800-1200-CL  | 4077 | 1320 | 1465 | 427 | 495 | 2753 | 1394 | 559 | 1320 | 230 | 340 | 196 | 176 | 467 | 2 x 1    | 5080        | 660                      |
| 18-9800-1300-CL  | 4142 | 1420 | 1575 | 427 | 495 | 2753 | 1447 | 559 | 1420 | 230 | 340 | 193 | 176 | 517 | 2 x 1    | 5820        | 770                      |
| 18-10500-935-CL  | 4183 | 1098 | 1179 | 427 | 495 | 2841 | 1408 | 670 | 1055 | 230 | 340 | 196 | 232 | 332 | 2 x 1    | 4785        | 398                      |
| 18-10500-1000-CL | 4184 | 1145 | 1264 | 427 | 495 | 2837 | 1415 | 670 | 1120 | 230 | 355 | 193 | 232 | 367 | 2 x 1    | 5026        | 456                      |
| 18-10500-1100-CL | 4183 | 1216 | 1364 | 427 | 495 | 2841 | 1410 | 670 | 1220 | 230 | 340 | 196 | 232 | 414 | 2 x 1    | 4750        | 552                      |
| 18-10500-1200-CL | 4161 | 1245 | 1465 | 427 | 495 | 2837 | 1373 | 670 | 1320 | 230 | 355 | 193 | 232 | 467 | 2 x 1    | 5376        | 660                      |
| 18-10500-1300-CL | 4226 | 1420 | 1575 | 427 | 495 | 2837 | 1457 | 670 | 1420 | 230 | 340 | 196 | 232 | 514 | 2 x 1    | 5376        | 770                      |
| 18-11000-935-CL  | 4065 | 1098 | 1179 | 427 | 495 | 2723 | 1410 | 670 | 1055 | 230 | 340 | 196 | 232 | 332 | 2 x 1    | 4100        | 398                      |
| 18-11000-1000-CL | 4068 | 1145 | 1264 | 427 | 495 | 2721 | 1415 | 670 | 1120 | 230 | 355 | 193 | 232 | 367 | 2 x 1    | 4700        | 456                      |
| 18-11000-1100-CL | 4065 | 1216 | 1364 | 427 | 495 | 2723 | 1410 | 670 | 1220 | 230 | 340 | 196 | 232 | 414 | 2 x 1    | 4700        | 552                      |
| 18-11000-1200-CL | 4049 | 1320 | 1465 | 427 | 495 | 2723 | 1394 | 670 | 1320 | 230 | 340 | 196 | 232 | 464 | 2 x 1    | 4100        | 660                      |
| 18-11000-1300-CL | 4110 | 1295 | 1575 | 427 | 495 | 2721 | 1456 | 670 | 1420 | 230 | 355 | 193 | 232 | 517 | 2 x 1    | 6470        | 770                      |

# MORIN ALGAS SPRING RETURN PNEUMATIC ACTUATOR

## OVERALL DIMENSIONS - SPRING TO OPEN, MODELS 1.5-1100-385-OP TO 14-8300-935-OP

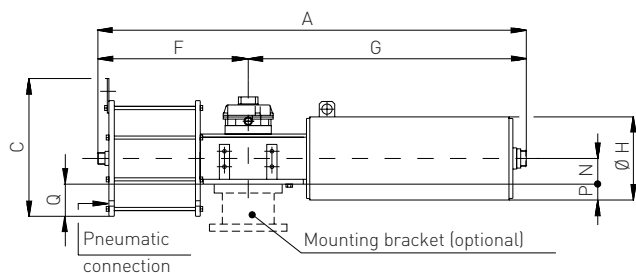


### DIMENSIONS (mm)

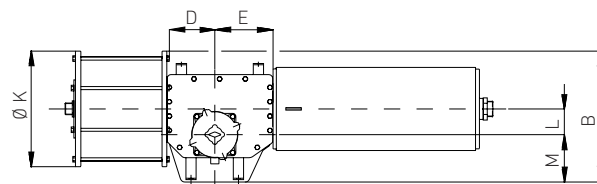
| Model           | A    | B    | C    | D   | E   | F    | G    | H   | K    | L   | M   | N   | P   | Q   | NPT (in) | Weight (kg) | Air consumption (liters) |
|-----------------|------|------|------|-----|-----|------|------|-----|------|-----|-----|-----|-----|-----|----------|-------------|--------------------------|
| 1.5-1100-385-OP | 1691 | 510  | 536  | 187 | 227 | 643  | 1048 | 400 | 450  | 100 | 185 | 100 | 100 | 125 | 1        | 476         | 31                       |
| 1.5-1100-435-OP | 1691 | 535  | 579  | 187 | 227 | 643  | 1048 | 400 | 500  | 100 | 185 | 100 | 100 | 150 | 1        | 511         | 39                       |
| 1.5-1100-485-OP | 1697 | 565  | 639  | 187 | 227 | 649  | 1048 | 400 | 560  | 100 | 185 | 100 | 100 | 180 | 1        | 547         | 48                       |
| 1.5-1100-535-OP | 1706 | 620  | 710  | 187 | 227 | 658  | 1048 | 400 | 620  | 100 | 185 | 100 | 100 | 210 | 1        | 564         | 59                       |
| 1.5-1100-585-OP | 1701 | 670  | 758  | 187 | 227 | 653  | 1048 | 400 | 670  | 100 | 185 | 100 | 100 | 235 | 1        | 581         | 70                       |
| 1.5-1200-385-OP | 1760 | 510  | 536  | 187 | 227 | 643  | 1117 | 322 | 450  | 100 | 185 | 100 | 61  | 125 | 1        | 478         | 31                       |
| 1.5-1200-435-OP | 1760 | 535  | 579  | 187 | 227 | 643  | 1117 | 322 | 500  | 100 | 185 | 100 | 61  | 150 | 1        | 503         | 39                       |
| 1.5-1200-485-OP | 1766 | 565  | 639  | 187 | 227 | 649  | 1117 | 322 | 560  | 100 | 185 | 100 | 61  | 180 | 1        | 539         | 48                       |
| 1.5-1200-535-OP | 1775 | 620  | 710  | 187 | 227 | 658  | 1117 | 322 | 620  | 100 | 185 | 100 | 61  | 210 | 1        | 556         | 59                       |
| 1.5-1200-585-OP | 1770 | 670  | 758  | 187 | 227 | 653  | 1117 | 322 | 670  | 100 | 185 | 100 | 61  | 235 | 1        | 573         | 70                       |
| 3-2000-385-OP   | 2354 | 600  | 536  | 285 | 330 | 880  | 1474 | 415 | 450  | 160 | 215 | 106 | 102 | 120 | 1        | 774         | 47                       |
| 3-2000-435-OP   | 2354 | 625  | 582  | 285 | 330 | 880  | 1474 | 415 | 500  | 160 | 215 | 106 | 102 | 145 | 1        | 809         | 60                       |
| 3-2000-485-OP   | 2359 | 655  | 674  | 285 | 330 | 885  | 1474 | 415 | 560  | 160 | 215 | 106 | 102 | 175 | 1        | 843         | 74                       |
| 3-2000-535-OP   | 2372 | 685  | 710  | 285 | 330 | 898  | 1474 | 415 | 620  | 160 | 215 | 106 | 102 | 205 | 1        | 929         | 90                       |
| 3-2000-585-OP   | 2397 | 710  | 758  | 285 | 330 | 923  | 1474 | 415 | 670  | 160 | 215 | 106 | 102 | 230 | 1        | 1015        | 108                      |
| 6-2500-485-OP   | 2974 | 740  | 640  | 327 | 379 | 1016 | 1958 | 383 | 560  | 185 | 260 | 140 | 52  | 140 | 1        | 1068        | 85                       |
| 6-2500-535-OP   | 2984 | 754  | 705  | 327 | 379 | 1024 | 1958 | 383 | 620  | 185 | 260 | 140 | 52  | 170 | 1        | 1265        | 104                      |
| 6-2500-585-OP   | 2987 | 780  | 758  | 327 | 379 | 1029 | 1958 | 383 | 670  | 185 | 260 | 140 | 52  | 195 | 1        | 1245        | 124                      |
| 6-2500-635-OP   | 3029 | 805  | 809  | 327 | 379 | 1071 | 1958 | 383 | 720  | 185 | 260 | 140 | 52  | 220 | 1        | 1323        | 146                      |
| 6-2500-735-OP   | 3048 | 853  | 912  | 327 | 379 | 1090 | 1958 | 383 | 815  | 185 | 260 | 140 | 52  | 267 | 2 x 1    | 1498        | 196                      |
| 6-3800-535-OP   | 3214 | 755  | 705  | 327 | 379 | 1028 | 2186 | 530 | 620  | 185 | 260 | 140 | 125 | 170 | 1        | 1600        | 104                      |
| 6-3800-585-OP   | 3211 | 780  | 758  | 327 | 379 | 1025 | 2186 | 530 | 670  | 185 | 260 | 140 | 125 | 195 | 1        | 1640        | 124                      |
| 6-3800-635-OP   | 3259 | 805  | 809  | 327 | 379 | 1071 | 2188 | 530 | 720  | 185 | 260 | 140 | 125 | 220 | 1        | 1720        | 146                      |
| 6-3800-735-OP   | 3278 | 853  | 912  | 327 | 379 | 1090 | 2188 | 530 | 815  | 185 | 260 | 140 | 125 | 268 | 2 x 1    | 1934        | 196                      |
| 14-5100-635-OP  | 3271 | 890  | 809  | 376 | 435 | 1120 | 2151 | 530 | 720  | 200 | 330 | 192 | 72  | 168 | 1        | 1810        | 159                      |
| 14-5100-735-OP  | 3290 | 938  | 912  | 376 | 435 | 1138 | 2151 | 530 | 815  | 200 | 330 | 192 | 72  | 214 | 2 x 1    | 2026        | 213                      |
| 14-5100-785-OP  | 3290 | 973  | 993  | 376 | 435 | 1138 | 2151 | 530 | 885  | 200 | 330 | 192 | 72  | 251 | 2 x 1    | 2026        | 243                      |
| 14-5100-835-OP  | 3330 | 992  | 1036 | 376 | 435 | 1179 | 2151 | 530 | 925  | 200 | 330 | 192 | 72  | 270 | 2 x 1    | 2355        | 274                      |
| 14-5100-885-OP  | 3371 | 1030 | 1123 | 376 | 435 | 1220 | 2151 | 530 | 1000 | 200 | 330 | 192 | 72  | 307 | 2 x 1    | 2455        | 308                      |
| 14-5100-935-OP  | 3369 | 1056 | 1179 | 376 | 435 | 1218 | 2151 | 530 | 1051 | 200 | 330 | 192 | 72  | 334 | 2 x 1    | 2555        | 343                      |
| 14-5400-635-OP  | 3219 | 890  | 809  | 376 | 435 | 1120 | 2101 | 530 | 720  | 200 | 330 | 192 | 72  | 167 | 1        | 1915        | 159                      |
| 14-5400-735-OP  | 3237 | 903  | 912  | 376 | 435 | 1138 | 2099 | 530 | 815  | 200 | 295 | 192 | 72  | 215 | 2 x 1    | 2050        | 213                      |
| 14-5400-785-OP  | 3237 | 973  | 993  | 376 | 435 | 1138 | 2099 | 530 | 885  | 200 | 330 | 192 | 72  | 251 | 2 x 1    | 2260        | 243                      |
| 14-5400-835-OP  | 3237 | 958  | 1036 | 376 | 435 | 1138 | 2099 | 530 | 925  | 200 | 295 | 192 | 72  | 270 | 2 x 1    | 2250        | 274                      |
| 14-5400-885-OP  | 3172 | 1030 | 1123 | 376 | 435 | 1073 | 2099 | 530 | 1000 | 200 | 330 | 192 | 72  | 307 | 2 x 1    | 2455        | 308                      |
| 14-5400-935-OP  | 3314 | 1051 | 1179 | 376 | 435 | 1215 | 2099 | 530 | 1051 | 200 | 326 | 192 | 72  | 335 | 2 x 1    | 2600        | 343                      |
| 14-8300-735-OP  | 3300 | 903  | 912  | 376 | 435 | 1138 | 2162 | 530 | 815  | 200 | 295 | 192 | 72  | 215 | 2 x 1    | 2100        | 213                      |
| 14-8300-785-OP  | 3300 | 973  | 993  | 376 | 435 | 1138 | 2162 | 530 | 885  | 200 | 330 | 192 | 72  | 251 | 2 x 1    | 2540        | 243                      |
| 14-8300-835-OP  | 3300 | 958  | 1036 | 376 | 435 | 1138 | 2162 | 530 | 925  | 200 | 330 | 192 | 72  | 270 | 2 x 1    | 2300        | 274                      |
| 14-8300-885-OP  | 3235 | 1030 | 1123 | 376 | 435 | 1073 | 2162 | 530 | 1000 | 200 | 330 | 192 | 72  | 307 | 2 x 1    | 2330        | 308                      |
| 14-8300-935-OP  | 3377 | 1051 | 1179 | 376 | 435 | 1215 | 2162 | 530 | 1051 | 200 | 295 | 192 | 72  | 335 | 2 x 1    | 2650        | 343                      |

# MORIN ALGAS SPRING RETURN PNEUMATIC ACTUATOR

OVERALL DIMENSIONS - SPRING TO OPEN, MODELS 18-9600-835-OP TO 18-11000-1300-OP



Top view



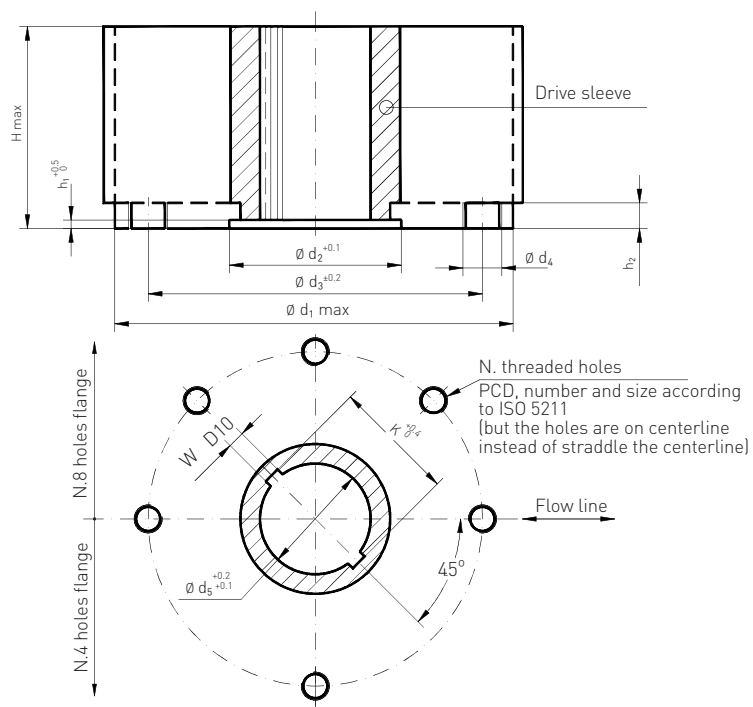
## DIMENSIONS (mm)

| Model            | A    | B    | C    | D   | E   | F    | G    | H   | K    | L   | M   | N   | P   | Q   | NPT<br>(in) | Weight<br>(kg) | Air consumption<br>(liters) |
|------------------|------|------|------|-----|-----|------|------|-----|------|-----|-----|-----|-----|-----|-------------|----------------|-----------------------------|
| 18-9600-835-OP   | 4030 | 1033 | 1036 | 427 | 495 | 1373 | 2765 | 559 | 925  | 230 | 340 | 196 | 176 | 267 | 2 x 1       | 3350           | 318                         |
| 18-9600-935-OP   | 4107 | 1098 | 1179 | 427 | 495 | 1410 | 2765 | 559 | 1055 | 230 | 340 | 196 | 176 | 332 | 2 x 1       | 3750           | 398                         |
| 18-9600-1000-OP  | 4110 | 1145 | 1264 | 425 | 493 | 1414 | 2763 | 559 | 1120 | 230 | 355 | 193 | 176 | 367 | 2 x 1       | 3994           | 456                         |
| 18-9600-1100-OP  | 4107 | 1216 | 1364 | 427 | 495 | 1414 | 2765 | 559 | 1220 | 230 | 340 | 196 | 176 | 414 | 2 x 1       | 4350           | 552                         |
| 18-9600-1200-OP  | 4087 | 1320 | 1465 | 425 | 493 | 1373 | 2763 | 559 | 1320 | 230 | 340 | 193 | 176 | 467 | 2 x 1       | 4400           | 660                         |
| 18-9600-1300-OP  | 4152 | 1420 | 1575 | 425 | 493 | 1443 | 2763 | 559 | 1420 | 230 | 340 | 193 | 176 | 517 | 2 x 1       | 5660           | 770                         |
| 18-9800-835-OP   | 4020 | 1033 | 1036 | 427 | 495 | 1375 | 2755 | 559 | 925  | 230 | 340 | 196 | 176 | 267 | 2 x 1       | 3700           | 318                         |
| 18-9800-935-OP   | 4097 | 1098 | 1179 | 427 | 495 | 1410 | 2755 | 559 | 1055 | 230 | 340 | 196 | 176 | 332 | 2 x 1       | 4100           | 398                         |
| 18-9800-1000-OP  | 4100 | 1145 | 1264 | 427 | 495 | 1414 | 2753 | 559 | 1120 | 230 | 355 | 193 | 176 | 367 | 2 x 1       | 4190           | 456                         |
| 18-9800-1100-OP  | 4097 | 1216 | 1364 | 427 | 495 | 1414 | 2755 | 559 | 1220 | 230 | 340 | 196 | 176 | 414 | 2 x 1       | 4700           | 552                         |
| 18-9800-1200-OP  | 4077 | 1320 | 1465 | 427 | 495 | 1394 | 2753 | 559 | 1320 | 230 | 340 | 196 | 176 | 467 | 2 x 1       | 5080           | 660                         |
| 18-9800-1300-OP  | 4142 | 1420 | 1575 | 427 | 495 | 1447 | 2753 | 559 | 1420 | 230 | 340 | 193 | 176 | 517 | 2 x 1       | 5820           | 770                         |
| 18-10500-935-OP  | 4183 | 1098 | 1179 | 427 | 495 | 1408 | 2841 | 670 | 1055 | 230 | 340 | 196 | 232 | 332 | 2 x 1       | 4785           | 398                         |
| 18-10500-1000-OP | 4184 | 1145 | 1264 | 427 | 495 | 1415 | 2837 | 670 | 1120 | 230 | 355 | 193 | 232 | 367 | 2 x 1       | 5026           | 456                         |
| 18-10500-1100-OP | 4183 | 1216 | 1364 | 427 | 495 | 1410 | 2841 | 670 | 1220 | 230 | 340 | 196 | 232 | 414 | 2 x 1       | 4750           | 552                         |
| 18-10500-1200-OP | 4161 | 1245 | 1465 | 427 | 495 | 1373 | 2837 | 670 | 1320 | 230 | 355 | 193 | 232 | 467 | 2 x 1       | 5376           | 660                         |
| 18-10500-1300-OP | 4226 | 1420 | 1575 | 427 | 495 | 1457 | 2837 | 670 | 1420 | 230 | 340 | 196 | 232 | 514 | 2 x 1       | 5376           | 770                         |
| 18-11000-935-OP  | 4065 | 1098 | 1179 | 427 | 495 | 1410 | 2723 | 670 | 1055 | 230 | 340 | 196 | 232 | 332 | 2 x 1       | 4100           | 398                         |
| 18-11000-1000-OP | 4068 | 1145 | 1264 | 427 | 495 | 1415 | 2721 | 670 | 1120 | 230 | 355 | 193 | 232 | 367 | 2 x 1       | 4700           | 456                         |
| 18-11000-1100-OP | 4065 | 1216 | 1364 | 427 | 495 | 1410 | 2723 | 670 | 1220 | 230 | 340 | 196 | 232 | 414 | 2 x 1       | 4700           | 552                         |
| 18-11000-1200-OP | 4049 | 1320 | 1465 | 427 | 495 | 1394 | 2723 | 670 | 1320 | 230 | 340 | 196 | 232 | 464 | 2 x 1       | 4100           | 660                         |
| 18-11000-1300-OP | 4110 | 1295 | 1575 | 427 | 495 | 1456 | 2721 | 670 | 1420 | 230 | 355 | 193 | 232 | 517 | 2 x 1       | 6470           | 770                         |

# MORIN ALGA / ALGAS PNEUMATIC ACTUATOR

## MOUNTING DIMENSIONS - COUPLINGS MODELS 0.1 TO 6

### ACTUATOR MODELS 1.5 TO 6.0



Top view of the Scotch yoke mechanism  
(actuator shown in closed position)

### COUPLING DIMENSIONS (mm) MODELS 0.3 TO 0.6 (mm)

| Actuator model | $\varnothing d_1$ | $\varnothing d_2$ | $\varnothing d_3$ | $\varnothing d_4$ | N | $h_1$ | $h_2$ | H max | $\varnothing d_5$ | W  | K     |
|----------------|-------------------|-------------------|-------------------|-------------------|---|-------|-------|-------|-------------------|----|-------|
| 1.5            | 360               | 144               | 298               | M20               | 8 | 6     | 19    | 190   | 112               | 18 | 119.0 |
| 3              | 430               | 195               | 356               | M30               | 8 | 9     | 23    | 200   | 157               | 25 | 167.8 |
| 6              | 520               | 250               | 406               | M36               | 8 | 14    | 29    | 260   | 200               | 28 | 212.8 |

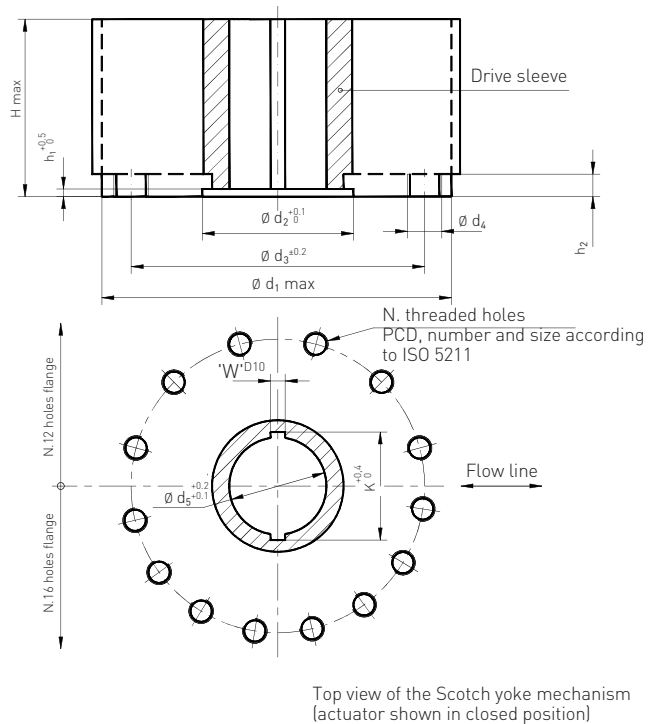
$\varnothing d_1$  is maximum adapter flange diameter.



# MORIN ALGA / ALGAS PNEUMATIC ACTUATOR

## MOUNTING DIMENSIONS - COUPLINGS MODELS 14 TO 18

### ACTUATOR MODELS 14 TO 18



Top view of the Scotch yoke mechanism  
(actuator shown in closed position)

### COUPLING DIMENSIONS (mm) MODELS 14 TO 18

| Actuator model | $\varnothing d_1$ | $\varnothing d_2$ | $\varnothing d_3$ | $\varnothing d_4$ | N  | $h_1$ | $h_2$ | H max | $\varnothing d_5$ | W  | K     |
|----------------|-------------------|-------------------|-------------------|-------------------|----|-------|-------|-------|-------------------|----|-------|
| 14             | 580               | 250               | 483               | M36               | 12 | 10    | 29    | 340   | 175               | 45 | 195.8 |
| 18             | 680               | 290               | 603               | M36               | 16 | 12    | 32    | 350   | 200               | 45 | 220.8 |

$\varnothing d_1$  is maximum adapter flange diameter.

# MORIN ALGA / ALGAS PNEUMATIC ACTUATOR

## MOUNTING DIMENSIONS - STEM ACCEPTANCE

### MOUNTING DIMENSIONS - STEM ACCEPTANCE

Square key



Rectangular key



Square stem



### STEM ACCEPTANCE DIMENSIONS FOR INSERT BUSHES (mm)

| Housing size | Max. stem diameter with square key<br>(key dimension) | Max. stem diameter with<br>rectangular key | Square stem |     | Maximum stem protrusion** |
|--------------|---|--|-------------|-----|---------------------------|
|              |   |  | W           | S*  |                           |
| 1.5          | 85(18)  | 90   | 73          | 103 | 180                       |
| 3            | 120(32)   | 130  | 104         | 147 | 190                       |
| 6            | 150(36)   | 170  | 133         | 188 | 250                       |
| 14           | 175(38)   | 197  | -           | -   | 360                       |
| 18           | 200(45)   | 220  | -           | -   | 360                       |

### NOTES

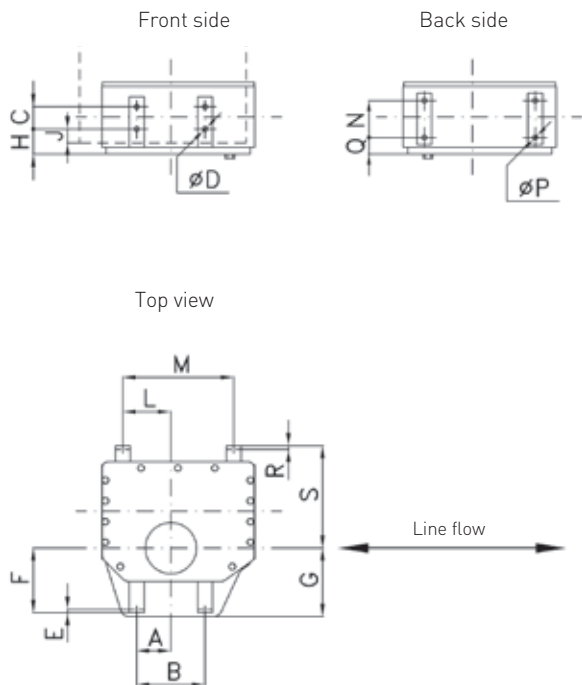
1. The listed maximum acceptance values are applicable for stems with keyway parallel or perpendicular to the flow line and for square stems with diagonal parallel with the flow line.
2. Key according to UNI6604 or DIN 6885 sh.1 or BS4325 part 1 or ISO 773 or equivalent.
3. \* S max: maximum external diameter in case of rounded edge.
4. \*\* Without adapter flange.

# MORIN ALGA / ALGAS PNEUMATIC ACTUATOR

## ACCESSORIES MOUNTING DIMENSIONS

### ACCESSORIES MOUNTING DIMENSIONS

Actuator models 1.5 to 18



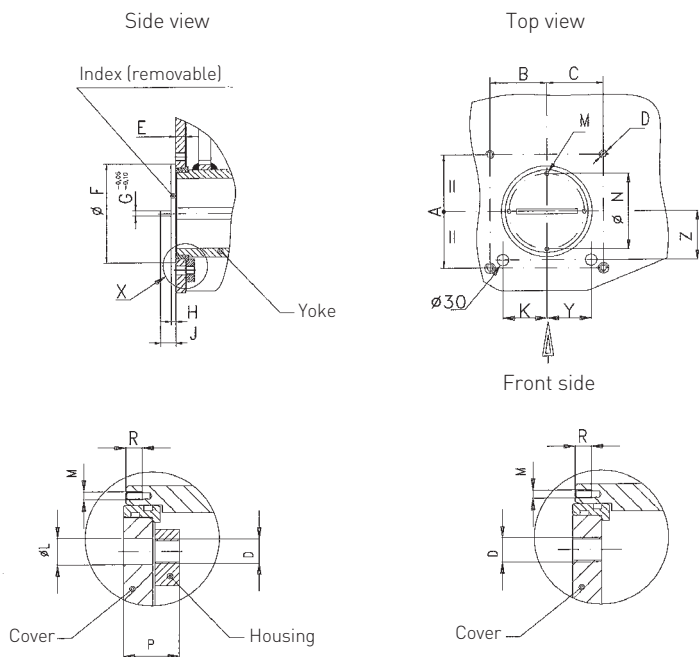
### ACCESSORIES MOUNTING DIMENSIONS (mm)

| Actuator model | A     | B   | C   | $\varnothing D$ | E  | F   | G   | H  | J  | L   | M   | N   | $\varnothing P$ | Q  | R  | S   |
|----------------|-------|-----|-----|-----------------|----|-----|-----|----|----|-----|-----|-----|-----------------|----|----|-----|
| 1.5            | 92.5  | 185 | 60  | 14              | 5  | 175 | 185 | 62 | 35 | 130 | 300 | 100 | 14              | 45 | 5  | 284 |
| 3              | 117.5 | 235 | 85  | 23              | 8  | 203 | 215 | 57 | 25 | 230 | 500 | 100 | 14              | 54 | 5  | 371 |
| 6              | 137.0 | 455 | 115 | 23              | 8  | 248 | 260 | 59 | 22 | 224 | 500 | 100 | 14              | 87 | 8  | 480 |
| 14             | 315.0 | 630 | 200 | 27              | 10 | 227 | 330 | 97 | 55 | 220 | 500 | 170 | 27              | 99 | 8  | 543 |
| 18             | 315.0 | 630 | 200 | 27              | 10 | 235 | 340 | 72 | 32 | 306 | 680 | 215 | 27              | 80 | 10 | 600 |

# MORIN ALGA / ALGAS PNEUMATIC ACTUATOR

## MOUNTING DIMENSIONS - ACCESSORIES ON ACTUATOR TOP

### ACCESSORIES MOUNTING HOLES ON ACTUATOR TOP (COVER AND YOKE)



X : for model  
6 - 18

X : for model  
3 - 14

The index is represented for actuator in end position (fully open or closed)

### ACCESSORIES MOUNTING HOLES DIMENSIONS (mm)

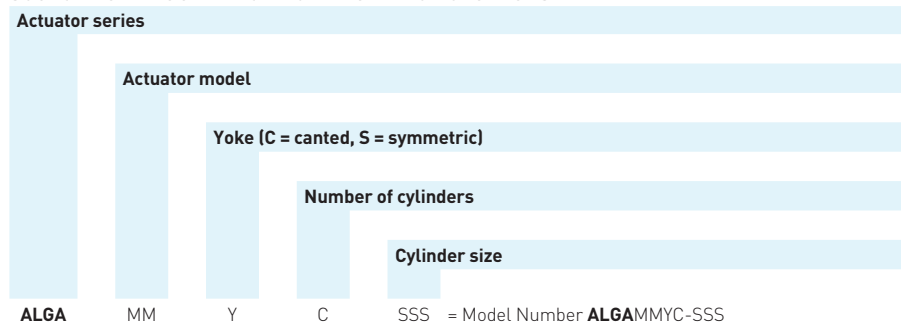
| Actuator model | A   | B   | C   | D       | E  | $\varnothing F$ | G | H   | J    | $\varnothing L$ | M      | $\varnothing N$ | P  | R  | K   | Y   | Z  |
|----------------|-----|-----|-----|---------|----|-----------------|---|-----|------|-----------------|--------|-----------------|----|----|-----|-----|----|
| 1.5            | 140 | 70  | 70  | 4 x M10 | 12 | 162.5           | 6 | 7   | 18   | 11.0            | 4 x M5 | 122             | 22 | 7  | -   | -   | -  |
| 3              | 160 | 127 | 136 | 4 x M16 | 12 | 220             | 6 | 8   | 20   | -               | 4 x M6 | 171             | -  | 10 | 107 | 115 | 76 |
| 6              | 160 | 127 | 136 | 4 x M16 | 12 | 270             | 6 | 8   | 20   | 16.5            | 4 x M6 | 216             | 30 | 10 | -   | -   | -  |
| 14             | 160 | 127 | 136 | 4 x M16 | 15 | 270             | 6 | 6.5 | 19.5 | -               | 4 x M6 | 216             | -  | 10 | -   | -   | -  |
| 18             | 314 | 109 | 109 | 4 x M16 | 18 | 310             | 6 | 8.6 | 14   | 16.5            | 4 x M6 | 240             | 35 | 10 | -   | -   | -  |

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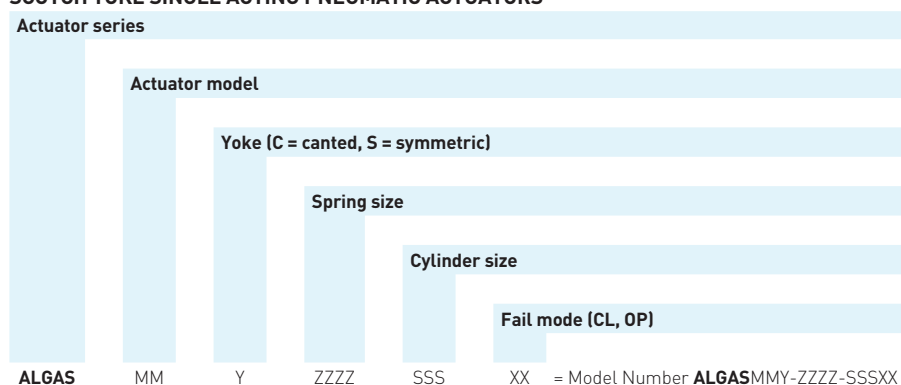
## SELECTION GUIDE

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### SCOTCH YOKE DOUBLE ACTING PNEUMATIC ACTUATORS



### SCOTCH YOKE SINGLE ACTING PNEUMATIC ACTUATORS



Biffi reserves the the right to change product designs and specifications without notice.

**Biffi Italia S.r.L.**

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