

Bettis RPX-Series

Rack and Pinion Pneumatic Actuators



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General Specifications

Features

- Direct mounting to all ISO 5211 butterfly valves and ball valves.
- Double Rack and Pinion design nullifies side loads on the pinion shaft, minimizing bearing wear and extending life.
- Optimized product flow with standard mounted travel stops for valve position adjustment in open and close position (+/- 5° at each end)
- Anodized aluminium body with electrostatic powder coating (ESPC) finish provides durable protection against corrosive environments.
- Double-acting and spring-return versions available for cost effective and safe operation.
- Up to 12 individual springs offer flexible torque range for both ball as butterfly valves.
- Pre-compressed spring design and anti-blowout drive pinion means safe maintenance and operation.



Technical Data

Materials

- Body: Extruded aluminium (ESPC finish)
- End caps: Cast aluminium (ESPC finish)

Mounting specifications

- Actuator to valve: ISO 5211
- Accessories: Namur VDI/VDE 3845

Torque output range:

- Double-Acting: 17 - 4173 Nm (51 - 36820 lbf.in)
- Spring-Return: 6- 1663 Nm (51 - 14718 lbf.in) spring-end

Pressure media

- Operating medium: Compressed air, dry or lubricated
- Air supply pressure: MOP: 8.3 bar (120 psi) max. dynamic
MAP: 10 bar (145 psi) max. static
- Travel adjustment: +/- 5° at each end of travel
Option: End Cap Stroke Limitor allows adjustment between full open and 30° before closed position.
- Temperature range: -20 °C to +80 °C (-4 °F to +176 °F)
- Low temp version: -40 °C to +65 °C (-40 °F to +149 °F)
- Extreme low temp version: -52 °C to +65 °C (-62 °F to +149 °F)
- High temp version: -15 °C to + 150 °C (+5 °F to +302 °F)
- Certification: ATEX II 2G Ex h IIC T80°C Gb
ATEX II 2D Ex h IIIC T80°C Db

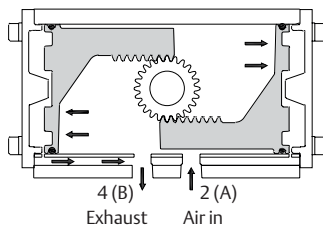
Principle of Operation

Both the double-acting and spring-return actuators feature a compact design each with their own set of end caps. The unit can be converted from double-acting to single acting (or reverse) in the field without the requirement of special tools. The spring-return actuator is available with spring sets representing 2.8 bar (40 psi) to 8.3 bar (120 psi) in 0.7 bar (10 psi) increments. The springs are manufactured from heavy gauge wire to assure long life and ESPC coated for corrosion resistance. They are pre-compressed using a special container to ensure safe operation and maintenance.

Double-Acting

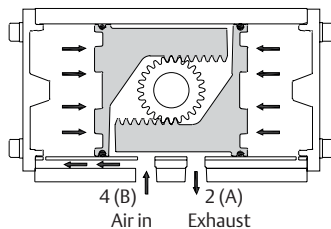
To open valve

In a double-acting application, air pressure is introduced to Port 2 (A), pressurizing the space between the pistons and driving the pistons out towards the actuator ends. The volume of air above the piston heads is exhausted to atmosphere. This causes the piston racks to drive the pinion in a counterclockwise direction, resulting in a quarter-turn rotation. This rotation is transferred to the valve shaft, opening the valve.



To close valve

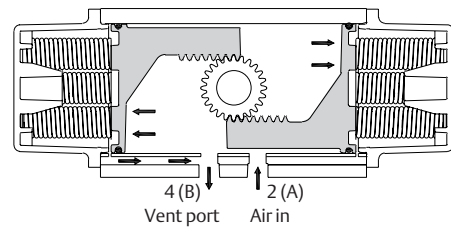
Air pressure introduced to Port 4 (B), pressurizes the spaces above each piston head and drives the pistons inward. The volume of air between the pistons is exhausted to atmosphere. This causes the piston racks to drive the pinion in a clockwise direction, resulting in a quarter-turn rotation. This rotation is transferred to the valve shaft, closing the valve.



Spring-Return

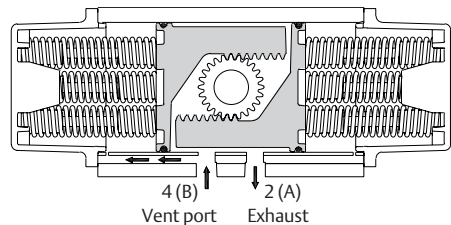
To open valve

In a single acting application, air pressure is introduced to Port 2 (A), pressurizing the space between the pistons and driving the pistons out towards the actuator ends while at the same time compressing the springs. This causes the piston racks to drive the pinion in a counterclockwise direction, resulting in a quarter-turn rotation. This rotation is transferred to the valve shaft, opening the valve.



To close valve

When the air pressure is relieved, the spring tension moves the pistons inward and exhausts the air through Port 2 (A). This causes the piston racks to drive the pinion in a clockwise direction, resulting in a quarter-turn rotation. This rotation is transferred to the valve shaft, closing the valve.



Parallel or perpendicular mounting

The dual-keyed output shaft allows parallel or perpendicular mounting to the valve flow direction. In normal conditions the actuator is mounted in parallel with the valve flow direction, operating in a counterclockwise (CCW) rotation from the closed to the open position.

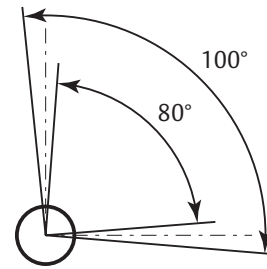
The standard operation direction

The standard operation direction of the spring fail close action is clockwise (CW). By rotating the pistons 180 degrees in the body in relation to the pinion, the actuator operation direction can be reversed. Although rotating the actuator 90 degrees will have a similar effect, the piston rotation is preferred as it maintains the parallel mounting and keeps the valve operation in the correct quadrant.

Travel adjustment

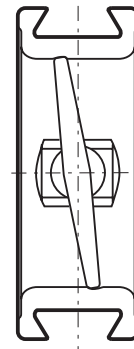
Within the mechanical connections of the drive between the valve and the actuator there are several points of manufacturing tolerance, including valve disc or ball to stem, stem to adapter, and adapter to actuator that must be compensated for in the operation of the assembly. Therefore, adjustment is necessary to ensure that valve operation is as precise as required. The F89 dual travel stops allow $\pm 5^\circ$ adjustment at both ends of the stroke, resulting in a total stroke range of 80° to 100° rotation.

For special applications an optional linear travel stop is available, which reduces the stroke from 0 - 100%.



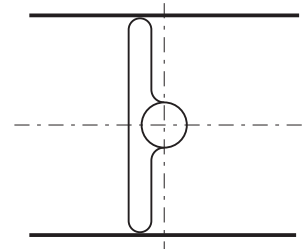
Resilient seated butterfly valves

Shut-off occurs before the disc has rotated a full 90° from the open position. Travel adjustment is therefore desirable to prevent over travel, which would result in unnecessary operating torque and premature deterioration of seat life. In the open position, adjustment is necessary to ensure maximum flow through the valve and minimum dynamic forces acting on the disc.



High performance butterfly valves

The double offset design of high performance butterfly valves results in the disc moving into the seat with a camming action. It is important that the disc does not travel beyond the seat position, otherwise damage to the seat will occur.



Ball and plug valves

The ball or plug must be precisely in line with the valve port to prevent damage to the seat in the open position. Adjustment at the closed position is necessary to ensure that complete shut-off is achieved.

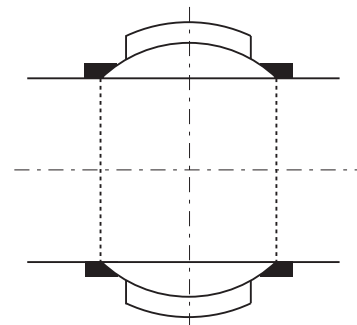


Table 1. Actuator piston displacement

| Model | Opening | | Closing | |
|------------|---------|-------|---------|-------|
| | litres | cu.in | litres | cu.in |
| RPX003 | 0.17 | 10.4 | 0.14 | 8.5 |
| RPX004 | 0.25 | 15.3 | 0.21 | 12.8 |
| RPX006 | 0.36 | 21.8 | 0.29 | 17.7 |
| RPX009 | 0.57 | 34.9 | 0.48 | 29.3 |
| RPX014 | 0.9 | 54.9 | 0.73 | 44.5 |
| RPX020 | 1.37 | 83.8 | 1.08 | 65.9 |
| RPX032 | 2.1 | 128.2 | 1.66 | 101.3 |
| RPX052 | 3.1 | 189.2 | 2.63 | 160.5 |
| RPX084/085 | 5.09 | 310.6 | 3.87 | 236.2 |
| RPX140/141 | 8.92 | 544.3 | 6.81 | 415.6 |
| RPX240 | 15.4 | 939.8 | 12.63 | 770.7 |

1. Piston displacement is the total volume of pressurized air after the actuator has completed its stroke.

Table 2. Weight

| Model | Double-Acting | | Spring-Return | |
|------------|---------------|-------|---------------|-------|
| | kg | lb | kg | lb |
| RPX003 | 1.7 | 3.7 | 2.0 | 4.4 |
| RPX004 | 2.2 | 4.9 | 2.7 | 5.9 |
| RPX006 | 3.0 | 6.6 | 3.8 | 8.3 |
| RPX009 | 3.8 | 8.4 | 4.9 | 10.9 |
| RPX014 | 5.5 | 12.1 | 7.5 | 16.6 |
| RPX020 | 8.1 | 17.8 | 11.2 | 24.6 |
| RPX032 | 12.3 | 27.1 | 17.0 | 37.4 |
| RPX052 | 18.5 | 40.7 | 25.1 | 55.4 |
| RPX084/085 | 29.2 | 64.4 | 41.9 | 92.4 |
| RPX140/141 | 45.8 | 101.0 | 70.6 | 155.7 |
| RPX240 | 79.5 | 175.3 | 116.4 | 256.6 |

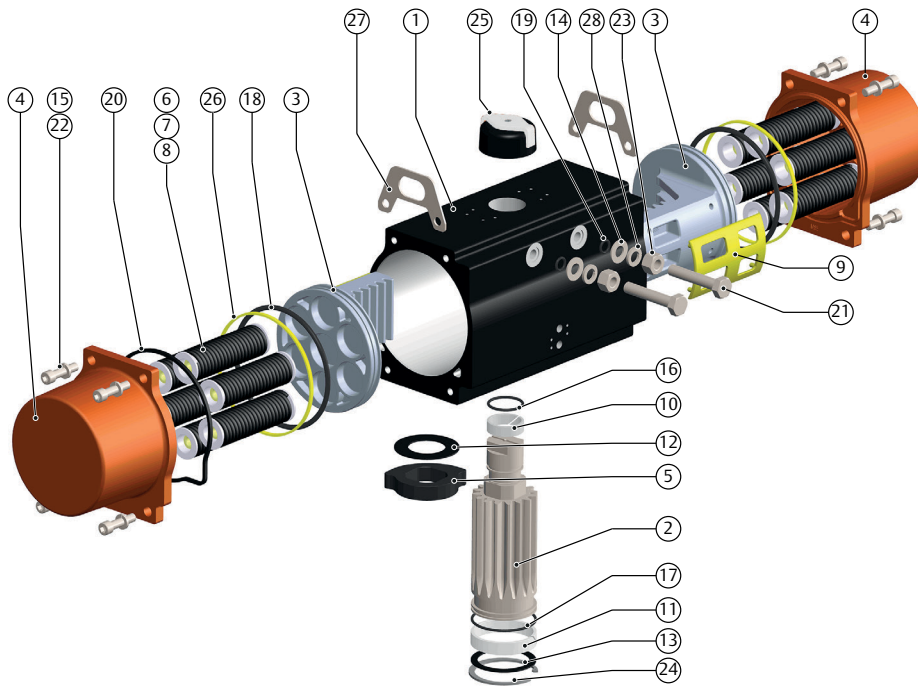
Table 3. Actuator cycling time (seconds)

| Model | Double-Acting | | | | Spring-Return | | | |
|------------|---------------|---------|------------|---------|---------------|---------|------------|---------|
| | Travel time | | Total time | | Travel time | | Total time | |
| | Opening | Closing | Opening | Closing | Opening | Closing | Opening | Closing |
| RPX003 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 |
| RPX004 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 |
| RPX006 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 |
| RPX009 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 |
| RPX014 | 0.3 | 0.2 | 0.3 | 0.3 | 0.4 | 0.2 | 0.5 | 0.2 |
| RPX020 | 0.4 | 0.3 | 0.5 | 0.4 | 0.9 | 0.3 | 1.0 | 0.4 |
| RPX032 | 0.5 | 0.5 | 0.7 | 0.6 | 1.0 | 0.5 | 1.2 | 0.7 |
| RPX052 | 0.8 | 0.7 | 1.1 | 0.9 | 1.2 | 0.7 | 1.5 | 0.9 |
| RPX084/085 | 0.8 | 0.8 | 1.8 | 1.7 | 1.9 | 0.6 | 3.0 | 1.1 |
| RPX140/141 | 1.4 | 1.5 | 3.1 | 2.9 | 3.2 | 1.1 | 5.0 | 1.8 |
| RPX240 | 2.9 | 3.4 | 6.5 | 6.0 | 6.1 | 4.1 | 9.7 | 6.9 |

Notes:

1. The actuator cycling time consist of a time required to build up the pressure and secondly move the pistons and valve [travel time]. The sum of these values is the total cycling time.
2. The actuator cycle time varies with the supplied air pressure, solenoid valve, and required valve torque, and are for indication only.
3. Indicated times above are based on bare actuator using 5.5 bar (80 psi) air pressure and a solenoid valve with Cv of 1300 l/m 146 CFM).

Construction, Parts and Materials



Notes:

1. Included in repair kit
2. SS = Stainless steel
3. Anodized: 5 - 8 microns + ESPC 60 - 130 microns
4. Zinc-Nickel plated: 8 - 12 microns
5. Anodized
6. ESPC 60 - 130 microns
7. Blackodised
8. Epoxy coated 20 - 30 microns
9. Zinc plated
10. Only on size 084 and larger.

Table 4.

| Pos. | Description | Qty | Notes | Material | Material standards: | | |
|------|-------------------------|--------|--------|---------------------------------------------------------------------------------|---------------------|--------------------------|---------------------------|
| | | | | | US ASTM | British | DIN |
| 1 | Body | 1 | 3 | Extruded Aluminium | B221: 6063T6 | BS 1474: 6063 | DIN 3.33206.51 |
| 2 | Pinion | 1 | 4 | Hot rolled carbon steel | A108: grade 1045 | BS 970: 080M40 | V40 |
| 3 | Piston | 2 | 5 | Die cast aluminium alloy | B85 A380 | BS 1490: grade LM24 | DIN1725: 2300 or 226 |
| 4 | End cap | 2 | 6 | Die cast aluminium alloy | B85 A380 | BS 1490: grade LM24 | DIN1725: 2300 or 226 |
| 5 | Cam | 1 | 7 | Cast grade SAE 1045/C45/ EN8 | | | |
| 6 | Spring | max 12 | 8 | Spring steel | A401 | BS 5216 HS3 | DIN 17223 Pti |
| 7 | Spring retainer | max 12 | 9 | Carbon steel | | | |
| 8 | Spring cup | max 12 | - 5 | Polyamide grade 66 (up to size 052) Die cast aluminium (size 084 and larger) | - B85 A380 | - BS 1490: grade LM24 | - DIN1725: 2300 or 226 |
| 9 | Backing pad | 2 | 1 | Zytel 101F NCO10 | | | |
| 10 | Top bearing | 1 | 1 | POM Acetal Resin + 25% glass filled | | | |
| 11 | Bottom bearing | 1 | 1 | POM Acetal Resin + 25% glass filled | | | |
| 12 | Top thrust washer | 1 | 1 | Polyamide grade 66 | | | |
| 13 | Bottom thrust washer | 1 | 1 | Polyamide grade 66 | | | |
| 14 | Travel stop washer | 2 | 2 | SS ISO 3506 A2-70 grade | | | |
| 15 | End cap washer | 8 | 2 | SS ISO 3506 A2-70 grade | | | |
| 16 | O-ring pinion top | 1 | 1 | NBR shore 70 A | | | |
| 17 | O-ring pinion bottom | 1 | 1 | NBR shore 70 A | | | |
| 18 | O-ring Piston | 2 | 1 | NBR shore 70 A | | | |
| 19 | O-ring travel stop | 2 | 1 | NBR shore 70 A | | | |
| 20 | Gasket end cap | 2 | 1 | NBR shore 70 A | | | |
| 21 | Travel stop screw | 2 | 2 | SS ISO 3506 A2-70 grade | | | |
| 22 | End cap screw | 8 | 2 | SS ISO 3506 A2-70 grade | | | |
| 23 | Travel stop nut | 2 | 2 | SS ISO 3506 A2-70 grade | | | |
| 24 | Circlip | 1 | 1 / 4 | Carbon steel | | | |
| 25 | Indicator assy | 1 | | ABS + SS A2-70 grade screw | | | |
| 26 | Piston head guide | 2 | 1 / 10 | Zytel 101F NCO10 | | | |
| 27 | Lifting eye | 2 | 10 | Stainless steel | | | |
| 28 | Travel stop lock washer | 2 | 2 | SS ISO 3506 A2-70 grade | | | |

Product Configuration Code

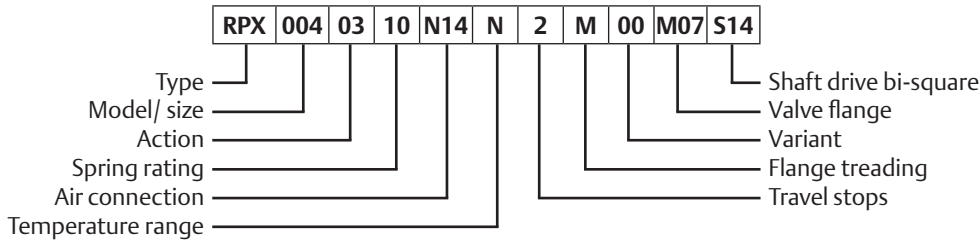


Table 5.

| Type | | | | | |
|----------------------------|----------------------------------------------------|------------|------------|------------|----------------|
| RPX | Bettis RPX-Series Rack and Pinion actuators | | | | |
| Model / Size: (Notes 1) | | | | | |
| Code | Size | Code | Size | Code | Size |
| 003 | 003 | 014 | 014 | 084 | 084 |
| 004 | 004 | 020 | 020 | 085 | 085 |
| 006 | 006 | 032 | 032 | 140 | 140 |
| 009 | 009 | 052 | 052 | 141 | 141 |
| | | | | 240 | 240 |
| Action: (Notes 2) | | | | | |
| 01 | DA | | | | |
| 03 | SR FC CW [std] | | | | |
| 04 | SR FC CCW | | | | |
| Spring rating | | | | | |
| 04 | 4 springs | 08 | 8 springs | 12 | 12 springs |
| 05 | 5 springs | 09 | 9 springs | XX | not applicable |
| 06 | 6 springs | 10 | 10 springs | | |
| 07 | 7 springs | 11 | 11 springs | | |
| Air connection (Notes 3) | | | | | |
| N14 | 1/4" NPT | P14 | 1/4" BSPP | | |
| N12 | 1/2" NPT | P12 | 1/2" BSPP | | |
| Temperature range | | | | | |
| H | High temp. -15°/+150 °C +5°/+302 °F (FKM) | | | | |
| N | Standard temp. -20°/+80 °C -4°/+176 °F (NBR) | | | | |
| L | Low temp. -40°/+65 °C -40°/+149 °F (L-NBR) | | | | |
| Travel stops | | | | | |
| 2 | Dual shaft (std) | | | | |
| 3 | 30° - 90° stroke limiter ≤ 5.5 bar/80 psi (single) | | | | |
| 4 | 30° - 90° stroke limiter > 5.5 bar/80 psi (double) | | | | |
| Flange threading (Notes 3) | | | | | |
| M | Metric | | | | |
| U | Imperial | | | | |
| Variant | | | | | |
| 00 | Standard visual indicator knob | | | | |
| NO | No Indicator | | | | |
| N4 | A4 SST bolts, no indicator | | | | |
| A4 | Stainless Steel Bolts grade A4 | | | | |

| Valve flange: (Notes 1, 3) | | | |
|---------------------------------|------------|-----------------------|-------|
| Actuator size | Code | ISO drilling patterns | |
| 003 | M07 | = F05 + F07 | |
| 004 | M07 | = F05 + F07 | |
| 006 | M07 | = F05 + F07 | |
| 009 | M07 | = F05 + F07 | |
| 014 | F07 | = F07 | |
| 020 | M11 | = F07 + F10 + F12 | |
| 032 | M12 | = F10 + F12 | |
| 052 | M12 | = F10 + F12 | |
| 084 | F14 | = F14 | |
| 085 | M16 | = F12 + F16 | |
| 140 | F14 | = F14 | |
| 141 | M16 | = F12 + F16 | |
| 240 | M25 | = F16 + F25 | |
| Shaft drive bi-square (Notes 1) | | | |
| Actuator size | Code | mm | inch |
| 003 | S14 | 14 | 0.551 |
| 004 | S14 | 14 | 0.551 |
| 006 | S17 | 17 | 0.669 |
| 009 | S17 | 17 | 0.669 |
| 014 | S17 | 17 | 0.669 |
| 020 | S22 | 22 | 0.866 |
| 032 | S27 | 27 | 1.063 |
| 052 | S27 | 27 | 1.063 |
| 084 | S36 | 36 | 1.417 |
| 085 | S36 | 36 | 1.417 |
| 140 | S46 | 46 | 1.811 |
| 141 | S46 | 46 | 1.811 |
| 240 | S46 | 46 | 1.811 |

Notes:

- Sizes 084 and 085 generate the same torque output but have different valve flange drilling patterns. Sizes 140 and 141 generate the same torque output but have different valve flange drilling patterns.
- In case of a double-acting actuator, the spring rating is XX
- Actuator sizes 003 up to 141 come with 1/4" air connections. Size 240 comes with 1/2" air connections. Metric units come with BSPP air connections and metric threaded valve flange. Imperial units come with NPT air connections and UNC threaded valve flange.

Spring-Return Actuator Torque (Nm)

Table 6.

| Size | Spring set | Spring Stroke (Nm) | | Air Stroke (supply pressure in barg) | | | | | | | | | | | | | | | | | |
|--------|------------|--------------------|-----|--------------------------------------|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| | | Start | End | 3 | | 3.5 | | 4 | | 4.5 | | 5 | | 5.5 | | 6 | | 7 | | 8.3 | |
| RPX003 | 4 | 9 | 6 | 11 | 8 | 14 | 11 | 16 | 13 | 19 | 16 | 22 | 19 | 25 | 22 | 27 | 24 | 33 | 30 | 40 | 37 |
| | 5 | 11 | 7 | 9 | 6 | 12 | 8 | 15 | 11 | 18 | 14 | 20 | 17 | 23 | 19 | 26 | 22 | 32 | 28 | 39 | 35 |
| | 6 | 13 | 9 | 8 | 3 | 11 | 6 | 13 | 9 | 16 | 12 | 19 | 14 | 22 | 17 | 25 | 20 | 30 | 26 | 37 | 33 |
| | 7 | 16 | 10 | 6 | 1 | 9 | 4 | 12 | 7 | 15 | 9 | 18 | 12 | 20 | 15 | 23 | 18 | 29 | 23 | 36 | 30 |
| | 8 | 18 | 12 | - | - | 8 | 2 | 11 | 4 | 13 | 7 | 16 | 10 | 19 | 13 | 22 | 16 | 27 | 21 | 34 | 28 |
| | 9 | 20 | 13 | - | - | - | - | 9 | 2 | 12 | 5 | 15 | 8 | 17 | 10 | 20 | 13 | 26 | 19 | 33 | 26 |
| | 10 | 22 | 15 | - | - | - | - | - | - | 10 | 3 | 13 | 5 | 16 | 8 | 19 | 11 | 24 | 17 | 32 | 24 |
| 11 | 24 | 16 | - | - | - | - | - | - | - | - | 12 | 3 | 15 | 6 | 17 | 9 | 23 | 14 | 30 | 22 | |
| 12 | 27 | 17 | - | - | - | - | - | - | - | - | 10 | 1 | 13 | 4 | 16 | 7 | 21 | 12 | 29 | 19 | |
| RPX004 | 4 | 13 | 9 | 17 | 12 | 21 | 16 | 25 | 21 | 29 | 25 | 33 | 29 | 38 | 33 | 42 | 37 | 50 | 46 | 61 | 57 |
| | 5 | 16 | 11 | 15 | 9 | 19 | 13 | 23 | 17 | 27 | 22 | 31 | 26 | 36 | 30 | 40 | 34 | 48 | 43 | 59 | 54 |
| | 6 | 19 | 13 | 12 | 6 | 17 | 10 | 21 | 14 | 25 | 18 | 29 | 23 | 33 | 27 | 38 | 31 | 46 | 39 | 57 | 50 |
| | 7 | 23 | 15 | 10 | 3 | 14 | 7 | 19 | 11 | 23 | 15 | 27 | 19 | 31 | 24 | 35 | 28 | 44 | 36 | 55 | 47 |
| | 8 | 26 | 17 | - | - | 12 | 3 | 17 | 8 | 21 | 12 | 25 | 16 | 29 | 20 | 33 | 24 | 42 | 33 | 53 | 44 |
| | 9 | 29 | 19 | - | - | - | - | 14 | 4 | 19 | 9 | 23 | 13 | 27 | 17 | 31 | 21 | 40 | 30 | 51 | 41 |
| | 10 | 32 | 21 | - | - | - | - | 12 | 1 | 16 | 5 | 21 | 10 | 25 | 14 | 29 | 18 | 37 | 26 | 48 | 37 |
| 11 | 36 | 23 | - | - | - | - | - | - | 14 | 2 | 19 | 6 | 23 | 11 | 27 | 15 | 35 | 23 | 46 | 34 | |
| 12 | 39 | 26 | - | - | - | - | - | - | - | - | 16 | 3 | 21 | 7 | 25 | 11 | 33 | 20 | 44 | 31 | |
| RPX006 | 4 | 24 | 12 | 23 | 12 | 29 | 18 | 35 | 24 | 42 | 30 | 48 | 36 | 54 | 42 | 60 | 48 | 72 | 60 | 88 | 76 |
| | 5 | 30 | 15 | 20 | 5 | 26 | 12 | 32 | 18 | 39 | 24 | 45 | 30 | 51 | 36 | 57 | 42 | 69 | 54 | 85 | 70 |
| | 6 | 36 | 18 | - | - | 23 | 6 | 29 | 12 | 35 | 18 | 42 | 24 | 48 | 30 | 54 | 36 | 66 | 48 | 82 | 64 |
| | 7 | 42 | 21 | - | - | - | - | 26 | 6 | 32 | 12 | 38 | 18 | 45 | 24 | 51 | 30 | 63 | 42 | 79 | 58 |
| | 8 | 48 | 25 | - | - | - | - | - | - | 29 | 6 | 35 | 12 | 42 | 18 | 48 | 24 | 60 | 36 | 76 | 52 |
| | 9 | 54 | 28 | - | - | - | - | - | - | - | - | 32 | 6 | 38 | 12 | 45 | 18 | 57 | 30 | 73 | 46 |
| | 10 | 60 | 31 | - | - | - | - | - | - | - | - | - | - | 35 | 6 | 41 | 12 | 54 | 24 | 70 | 40 |
| 11 | 66 | 34 | - | - | - | - | - | - | - | - | - | - | - | - | 38 | 6 | 51 | 18 | 67 | 34 | |
| 12 | 72 | 37 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 48 | 12 | 63 | 28 | |
| RPX009 | 4 | 29 | 19 | 38 | 29 | 48 | 38 | 58 | 48 | 67 | 58 | 77 | 67 | 87 | 77 | 96 | 86 | 115 | 106 | 140 | 131 |
| | 5 | 37 | 24 | 33 | 21 | 43 | 31 | 53 | 41 | 62 | 50 | 72 | 60 | 82 | 70 | 91 | 79 | 111 | 98 | 136 | 123 |
| | 6 | 44 | 29 | 29 | 14 | 38 | 24 | 48 | 33 | 58 | 43 | 67 | 53 | 77 | 62 | 86 | 72 | 106 | 91 | 131 | 116 |
| | 7 | 51 | 34 | 24 | 7 | 33 | 16 | 43 | 26 | 53 | 36 | 62 | 45 | 72 | 55 | 82 | 65 | 101 | 84 | 126 | 109 |
| | 8 | 58 | 39 | - | - | 29 | 9 | 38 | 19 | 48 | 28 | 57 | 38 | 67 | 48 | 77 | 57 | 96 | 77 | 121 | 102 |
| | 9 | 66 | 44 | - | - | 24 | 2 | 33 | 11 | 43 | 21 | 53 | 31 | 62 | 40 | 72 | 50 | 91 | 69 | 116 | 94 |
| | 10 | 73 | 49 | - | - | - | - | 28 | 4 | 38 | 14 | 48 | 23 | 57 | 33 | 67 | 43 | 86 | 62 | 111 | 87 |
| 11 | 80 | 53 | - | - | - | - | - | - | 33 | 6 | 43 | 16 | 52 | 26 | 62 | 35 | 81 | 55 | 106 | 80 | |
| 12 | 88 | 58 | - | - | - | - | - | - | - | - | 38 | 9 | 48 | 18 | 57 | 28 | 77 | 47 | 102 | 72 | |
| RPX014 | 4 | 45 | 30 | 60 | 46 | 75 | 61 | 91 | 76 | 106 | 91 | 121 | 106 | 136 | 121 | 151 | 136 | 181 | 166 | 220 | 205 |
| | 5 | 56 | 38 | 53 | 35 | 68 | 50 | 83 | 65 | 98 | 80 | 113 | 95 | 128 | 110 | 143 | 125 | 173 | 155 | 213 | 194 |
| | 6 | 67 | 45 | 45 | 23 | 60 | 38 | 75 | 53 | 91 | 69 | 106 | 84 | 121 | 99 | 136 | 114 | 166 | 144 | 205 | 183 |
| | 7 | 78 | 53 | 38 | 12 | 53 | 27 | 68 | 42 | 83 | 57 | 98 | 72 | 113 | 88 | 128 | 103 | 158 | 133 | 198 | 172 |
| | 8 | 89 | 60 | 30 | 1 | 45 | 16 | 60 | 31 | 76 | 46 | 91 | 61 | 106 | 76 | 121 | 91 | 151 | 122 | 190 | 161 |
| | 9 | 101 | 68 | - | - | 38 | 5 | 53 | 20 | 68 | 35 | 83 | 50 | 98 | 65 | 113 | 80 | 143 | 110 | 183 | 150 |
| | 10 | 112 | 75 | - | - | - | - | 45 | 9 | 61 | 24 | 76 | 39 | 91 | 54 | 106 | 69 | 136 | 99 | 175 | 138 |
| 11 | 123 | 83 | - | - | - | - | - | - | 53 | 13 | 68 | 28 | 83 | 43 | 98 | 58 | 128 | 88 | 168 | 127 | |
| 12 | 134 | 90 | - | - | - | - | - | - | 46 | 2 | 61 | 17 | 76 | 32 | 91 | 47 | 121 | 77 | 160 | 116 | |
| RPX020 | 4 | 70 | 47 | 86 | 62 | 108 | 84 | 130 | 107 | 152 | 129 | 174 | 151 | 196 | 173 | 218 | 195 | 262 | 239 | 320 | 296 |
| | 5 | 88 | 58 | 74 | 45 | 96 | 67 | 118 | 89 | 140 | 111 | 162 | 133 | 184 | 155 | 206 | 177 | 251 | 221 | 308 | 279 |
| | 6 | 105 | 70 | 62 | 27 | 84 | 49 | 107 | 72 | 129 | 94 | 151 | 116 | 173 | 138 | 195 | 160 | 239 | 204 | 296 | 261 |
| | 7 | 123 | 82 | 51 | 10 | 73 | 32 | 95 | 54 | 117 | 76 | 139 | 98 | 161 | 120 | 183 | 142 | 227 | 186 | 285 | 244 |
| | 8 | 140 | 93 | - | - | 61 | 14 | 83 | 37 | 105 | 59 | 127 | 81 | 149 | 103 | 171 | 125 | 216 | 169 | 273 | 226 |
| | 9 | 158 | 105 | - | - | - | - | 72 | 19 | 94 | 41 | 116 | 63 | 138 | 85 | 160 | 107 | 204 | 151 | 261 | 209 |
| | 10 | 175 | 117 | - | - | - | - | 60 | 1 | 82 | 24 | 104 | 46 | 126 | 68 | 148 | 90 | 192 | 134 | 250 | 191 |
| 11 | 193 | 128 | - | - | - | - | - | - | 70 | 6 | 92 | 28 | 114 | 50 | 136 | 72 | 181 | 116 | 238 | 174 | |
| 12 | 210 | 140 | - | - | - | - | - | - | - | - | 81 | 11 | 103 | 33 | 125 | 55 | 169 | 99 | 226 | 156 | |
| RPX032 | 4 | 111 | 74 | 134 | 96 | 168 | 131 | 203 | 166 | 237 | 200 | 272 | 235 | 307 | 270 | 341 | 304 | 411 | 374 | 501 | 464 |
| | 5 | 139 | 93 | 115 | 69 | 150 | 103 | 184 | 138 | 219 | 172 | 254 | 207 | 288 | 242 | 323 | 276 | 392 | 346 | 482 | 436 |
| | 6 | 167 | 111 | 96 | 41 | 131 | 75 | 166 | 110 | 200 | 145 | 235 | 179 | 270 | 214 | 304 | 249 | 374 | 318 | 464 | 408 |
| | 7 | 195 | 130 | 78 | 13 | 112 | 47 | 147 | 82 | 182 | 117 | 216 | 151 | 251 | 186 | 286 | 221 | 355 | 290 | 445 | 380 |
| | 8 | 223 | 149 | - | - | 94 | 20 | 129 | 54 | 163 | 89 | 198 | 124 | 232 | 158 | 267 | 193 | 336 | 262 | 426 | 352 |
| | 9 | 251 | 167 | - | - | - | - | 110 | 26 | 145 | 61 | 179 | 96 | 214 | 130 | 249 | 165 | 318 | 234 | 408 | 324 |
| | 10 | 279 | 186 | - | - | - | - | - | - | 126 | 33 | 161 | 68 | 195 | 102 | 230 | 137 | 299 | 206 | 389 | 296 |
| 11 | 307 | 204 | - | - | - | - | - | - | 107 | 5 | 142 | 40 | 177 | 75 | 211 | 109 | 281 | 179 | 371 | 269 | |
| 12 | 334 | 223 | - | - | - | - | - | - | - | - | 124 | 12 | 158 | 47 | 193 | 81 | 262 | 151 | 352 | 241 | |

Spring-Return Actuator Torque (Nm)

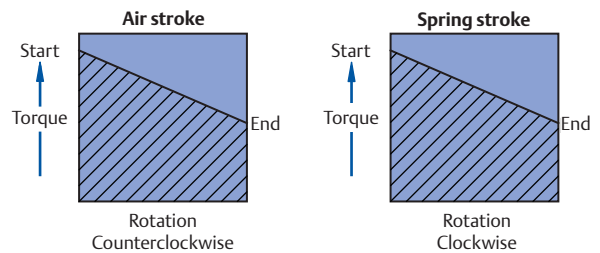
Table 7.

| Size | Spring set | Spring Stroke (Nm) | | Air Stroke (supply pressure in barg) | | | | | | | | | | | | | | | | | | |
|-------------------|-------------------|--------------------|------|--------------------------------------|-----|-----|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| | | Start | End | 3 | | 3.5 | | 4 | | 4.5 | | 5 | | 5.5 | | 6 | | 7 | | 8.3 | | |
| RPX052 | 4 | 180 | 120 | 195 | 135 | 248 | 188 | 300 | 240 | 353 | 293 | 405 | 345 | 457 | 398 | 510 | 450 | 615 | 555 | 751 | 691 | |
| | 5 | 225 | 150 | 165 | 90 | 218 | 143 | 270 | 195 | 323 | 248 | 375 | 300 | 428 | 353 | 480 | 405 | 585 | 510 | 721 | 647 | |
| | 6 | 269 | 180 | 135 | 45 | 188 | 98 | 240 | 150 | 293 | 203 | 345 | 255 | 398 | 308 | 450 | 360 | 555 | 465 | 691 | 602 | |
| | 7 | 314 | 210 | 105 | 1 | 158 | 53 | 210 | 106 | 263 | 158 | 315 | 210 | 368 | 263 | 420 | 315 | 525 | 420 | 662 | 557 | |
| | 8 | 359 | 240 | - | - | 128 | 8 | 180 | 61 | 233 | 113 | 285 | 166 | 338 | 218 | 390 | 271 | 495 | 375 | 632 | 512 | |
| | 9 | 404 | 269 | - | - | - | - | 150 | 16 | 203 | 68 | 255 | 121 | 308 | 173 | 360 | 226 | 465 | 331 | 602 | 467 | |
| | 10 | 449 | 299 | - | - | - | - | - | - | 173 | 23 | 225 | 76 | 278 | 128 | 330 | 181 | 435 | 286 | 572 | 422 | |
| | 11 | 494 | 329 | - | - | - | - | - | - | - | - | 195 | 31 | 248 | 83 | 300 | 136 | 405 | 241 | 542 | 377 | |
| | 12 | 539 | 359 | - | - | - | - | - | - | - | - | - | - | 218 | 38 | 271 | 91 | 375 | 196 | 512 | 332 | |
| | RPX084/ RPX085 | 4 | 294 | 196 | 329 | 231 | 417 | 319 | 504 | 406 | 592 | 494 | 679 | 581 | 767 | 669 | 855 | 756 | 1030 | 932 | 1257 | 1159 |
| | | 5 | 368 | 245 | 280 | 157 | 368 | 245 | 455 | 333 | 543 | 420 | 630 | 508 | 718 | 595 | 806 | 683 | 981 | 858 | 1208 | 1086 |
| | | 6 | 442 | 294 | 231 | 84 | 319 | 171 | 406 | 259 | 494 | 347 | 581 | 434 | 669 | 522 | 756 | 609 | 932 | 784 | 1159 | 1012 |
| 7 | | 515 | 344 | 182 | 10 | 270 | 98 | 357 | 185 | 445 | 273 | 532 | 360 | 620 | 448 | 707 | 536 | 883 | 711 | 1110 | 938 | |
| 8 | | 589 | 393 | - | - | 220 | 24 | 308 | 112 | 396 | 199 | 483 | 287 | 571 | 374 | 658 | 462 | 833 | 637 | 1061 | 865 | |
| 9 | | 663 | 442 | - | - | - | - | 259 | 38 | 347 | 126 | 434 | 213 | 522 | 301 | 609 | 388 | 784 | 564 | 1012 | 791 | |
| 10 | | 736 | 491 | - | - | - | - | - | - | 297 | 52 | 385 | 140 | 473 | 227 | 560 | 315 | 735 | 490 | 963 | 718 | |
| 11 | | 810 | 540 | - | - | - | - | - | - | - | - | 336 | 66 | 424 | 154 | 511 | 241 | 686 | 416 | 914 | 644 | |
| 12 | | 883 | 589 | - | - | - | - | - | - | - | - | - | - | 374 | 80 | 462 | 168 | 637 | 343 | 865 | 570 | |
| RPX140/ RPX141 | | 4 | 491 | 327 | 586 | 423 | 738 | 575 | 890 | 727 | 1043 | 879 | 1195 | 1031 | 1347 | 1184 | 1499 | 1336 | 1804 | 1640 | 2199 | 2036 |
| | | 5 | 613 | 409 | 504 | 300 | 656 | 452 | 809 | 604 | 961 | 756 | 1113 | 909 | 1265 | 1061 | 1417 | 1213 | 1722 | 1517 | 2118 | 1913 |
| | | 6 | 736 | 491 | 423 | 177 | 575 | 329 | 727 | 482 | 879 | 634 | 1031 | 786 | 1184 | 938 | 1336 | 1090 | 1640 | 1395 | 2036 | 1790 |
| | 7 | 859 | 572 | 341 | 55 | 493 | 207 | 645 | 359 | 797 | 511 | 950 | 663 | 1102 | 816 | 1254 | 968 | 1558 | 1272 | 1954 | 1668 | |
| | 8 | 981 | 654 | - | - | 411 | 84 | 563 | 236 | 716 | 388 | 868 | 541 | 1020 | 693 | 1172 | 845 | 1477 | 1149 | 1872 | 1545 | |
| | 9 | 1104 | 736 | - | - | - | - | 482 | 114 | 634 | 266 | 786 | 418 | 938 | 570 | 1090 | 722 | 1395 | 1027 | 1790 | 1422 | |
| | 10 | 1227 | 818 | - | - | - | - | - | - | 552 | 143 | 704 | 295 | 856 | 447 | 1009 | 600 | 1313 | 904 | 1709 | 1300 | |
| | 11 | 1349 | 900 | - | - | - | - | - | - | 470 | 20 | 622 | 173 | 775 | 325 | 927 | 477 | 1231 | 781 | 1627 | 1177 | |
| | 12 | 1472 | 981 | - | - | - | - | - | - | - | - | 541 | 50 | 693 | 202 | 845 | 354 | 1149 | 659 | 1545 | 1054 | |
| | RPX240 | 4 | 832 | 554 | 954 | 677 | 1206 | 928 | 1457 | 1180 | 1708 | 1431 | 1960 | 1683 | 2211 | 1934 | 2463 | 2185 | 2966 | 2688 | 3619 | 3342 |
| | | 5 | 1039 | 693 | 815 | 469 | 1067 | 720 | 1318 | 972 | 1570 | 1223 | 1821 | 1475 | 2073 | 1726 | 2324 | 1977 | 2827 | 2480 | 3481 | 3134 |
| | | 6 | 1247 | 832 | 677 | 261 | 928 | 512 | 1180 | 764 | 1431 | 1015 | 1683 | 1267 | 1934 | 1518 | 2185 | 1769 | 2688 | 2272 | 3342 | 2926 |
| 7 | | 1455 | 970 | 538 | 53 | 790 | 304 | 1041 | 556 | 1292 | 807 | 1544 | 1059 | 1795 | 1310 | 2047 | 1561 | 2550 | 2064 | 3203 | 2718 | |
| 8 | | 1663 | 1109 | - | - | 651 | 96 | 902 | 348 | 1154 | 599 | 1405 | 851 | 1657 | 1102 | 1908 | 1353 | 2411 | 1856 | 3065 | 2510 | |
| 9 | | 1871 | 1247 | - | - | - | - | 764 | 140 | 1015 | 391 | 1267 | 643 | 1518 | 894 | 1769 | 1145 | 2272 | 1648 | 2926 | 2302 | |
| 10 | | 2079 | 1386 | - | - | - | - | - | - | 876 | 183 | 1128 | 435 | 1379 | 686 | 1631 | 937 | 2134 | 1440 | 2787 | 2094 | |
| 11 | | 2287 | 1524 | - | - | - | - | - | - | - | - | 989 | 227 | 1241 | 478 | 1492 | 729 | 1995 | 1232 | 2649 | 1886 | |
| 12 | | 2495 | 1663 | - | - | - | - | - | - | - | - | 851 | 19 | 1102 | 270 | 1353 | 521 | 1856 | 1024 | 2510 | 1678 | |

Notes:

1. Emerson recommends that the valve manufacturer supply the maximum required torque values (including any adjustments or suggested safety factors for valve service conditions or application).
2. Additionally, the valve manufacturer must identify at which position(s) and direction(s) of rotation (Counterclockwise or Clockwise) these maximum requirements occur.
3. If in doubt, or you require any assistance with sizing actuators, do not hesitate to contact your nearest Emerson Automation Solutions - Actuation Technologies Center.

Figure 1. Spring-return torque diagram



Double-Acting Actuator Torque (Nm)

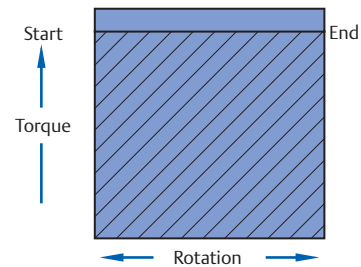
Table 8.

| Actuator size | Supply pressure in barg | | | | | | |
|---------------|-------------------------|------|------|------|------|------|------|
| | 3.0 | 4.0 | 5.0 | 5.5 | 6.0 | 7.0 | 8.3 |
| RPX003 | 17 | 23 | 28 | 31 | 34 | 39 | 47 |
| RPX004 | 25 | 33 | 42 | 46 | 50 | 59 | 69 |
| RPX006 | 36 | 48 | 60 | 66 | 72 | 84 | 100 |
| RPX009 | 58 | 77 | 96 | 106 | 116 | 135 | 160 |
| RPX014 | 91 | 121 | 151 | 166 | 181 | 211 | 251 |
| RPX020 | 133 | 177 | 221 | 243 | 265 | 309 | 367 |
| RPX032 | 208 | 277 | 346 | 381 | 416 | 485 | 575 |
| RPX052 | 315 | 420 | 525 | 577 | 629 | 734 | 871 |
| RPX085/084 | 525 | 700 | 875 | 963 | 1050 | 1226 | 1453 |
| RPX140/141 | 913 | 1218 | 1522 | 1674 | 1826 | 2131 | 2526 |
| RPX240 | 1508 | 2011 | 2514 | 2765 | 3016 | 3519 | 4173 |

Notes:

1. Emerson recommends that the valve manufacturer supply the maximum required torque values (Including any adjustments or suggested safety factors for valve service conditions or application).
2. Additionally, the valve manufacturer must identify at which position(s) and direction(s) of rotation (Counterclockwise or Clockwise) these maximum requirements occur.
3. If in doubt, or you require any assistance with sizing actuators, do not hesitate to contact your nearest Emerson Automation Solutions - Actuation Technologies Center.

Figure 2. Double-acting torque diagram



Spring-Return Actuator Torque (lbf.in)

Table 9.

| Size | Spring set | Spring Stroke (lbf.in) | | Air Stroke (supply pressure in psig) | | | | | | | | | | | | | | | | | | |
|--------|------------|------------------------|------|--------------------------------------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|------|
| | | | | 40 | | 50 | | 60 | | 70 | | 80 | | 90 | | 100 | | 110 | | 120 | | |
| | | Start | End | Start | End | Start | End | Start | End | Start | End | Start | End | Start | End | Start | End | Start | End | Start | End | |
| RPX003 | 4 | 79 | 51 | 84 | 57 | 118 | 91 | 152 | 125 | 186 | 158 | 220 | 192 | 253 | 226 | 287 | 260 | 321 | 294 | 355 | 328 | |
| | 5 | 98 | 64 | 71 | 37 | 105 | 71 | 139 | 105 | 173 | 139 | 207 | 173 | 241 | 206 | 274 | 240 | 308 | 274 | 342 | 308 | |
| | 6 | 118 | 77 | 58 | 17 | 92 | 51 | 126 | 85 | 160 | 119 | 194 | 153 | 228 | 187 | 262 | 221 | 295 | 255 | 329 | 288 | |
| | 7 | 137 | 90 | - | - | 79 | 32 | 113 | 65 | 147 | 99 | 181 | 133 | 215 | 167 | 249 | 201 | 283 | 235 | 316 | 269 | |
| | 8 | 157 | 103 | - | - | 66 | 12 | 100 | 46 | 134 | 80 | 168 | 113 | 202 | 147 | 236 | 181 | 270 | 215 | 304 | 249 | |
| | 9 | 177 | 115 | - | - | - | - | 87 | 26 | 121 | 60 | 155 | 94 | 189 | 128 | 223 | 162 | 257 | 195 | 291 | 229 | |
| | 10 | 196 | 128 | - | - | - | - | 74 | 6 | 108 | 40 | 142 | 74 | 176 | 108 | 210 | 142 | 244 | 176 | 278 | 210 | |
| | 11 | 216 | 141 | - | - | - | - | - | - | 95 | 20 | 129 | 54 | 163 | 88 | 197 | 122 | 231 | 156 | 265 | 190 | |
| | 12 | 236 | 154 | - | - | - | - | - | - | 83 | 1 | 117 | 35 | 150 | 69 | 184 | 102 | 218 | 136 | 252 | 170 | |
| | RPX004 | 4 | 115 | 75 | 130 | 90 | 181 | 142 | 232 | 193 | 283 | 244 | 335 | 295 | 386 | 347 | 437 | 398 | 488 | 449 | 540 | 500 |
| | | 5 | 143 | 94 | 111 | 62 | 162 | 113 | 213 | 164 | 264 | 215 | 316 | 267 | 367 | 318 | 418 | 369 | 470 | 420 | 521 | 472 |
| | | 6 | 172 | 113 | 92 | 33 | 143 | 84 | 194 | 135 | 246 | 187 | 297 | 238 | 348 | 289 | 399 | 341 | 451 | 392 | 502 | 443 |
| 7 | | 201 | 132 | 73 | 4 | 124 | 55 | 175 | 107 | 227 | 158 | 278 | 209 | 329 | 261 | 381 | 312 | 432 | 363 | 483 | 414 | |
| 8 | | 229 | 151 | - | - | 105 | 27 | 157 | 78 | 208 | 129 | 259 | 181 | 310 | 232 | 362 | 283 | 413 | 334 | 464 | 386 | |
| 9 | | 258 | 170 | - | - | - | - | 138 | 49 | 189 | 101 | 240 | 152 | 292 | 203 | 343 | 254 | 394 | 306 | 445 | 357 | |
| 10 | | 287 | 189 | - | - | - | - | 119 | 21 | 170 | 72 | 221 | 123 | 273 | 174 | 324 | 226 | 375 | 277 | 426 | 328 | |
| 11 | | 316 | 208 | - | - | - | - | - | - | 151 | 43 | 202 | 94 | 254 | 146 | 305 | 197 | 356 | 248 | 408 | 300 | |
| 12 | | 344 | 226 | - | - | - | - | - | - | 132 | 15 | 184 | 66 | 235 | 117 | 286 | 168 | 337 | 220 | 389 | 271 | |
| RPX006 | | 4 | 213 | 109 | 180 | 76 | 254 | 150 | 329 | 225 | 404 | 300 | 478 | 374 | 553 | 449 | 628 | 524 | 702 | 598 | 777 | 673 |
| | | 5 | 266 | 136 | 152 | 22 | 227 | 97 | 302 | 172 | 376 | 246 | 451 | 321 | 526 | 396 | 600 | 470 | 675 | 545 | 750 | 620 |
| | | 6 | 320 | 163 | - | - | 200 | 44 | 275 | 119 | 349 | 193 | 424 | 268 | 499 | 343 | 573 | 417 | 648 | 492 | 723 | 567 |
| | 7 | 373 | 190 | - | - | - | - | 247 | 65 | 322 | 140 | 397 | 215 | 471 | 289 | 546 | 364 | 621 | 439 | 695 | 513 | |
| | 8 | 426 | 217 | - | - | - | - | 220 | 12 | 295 | 87 | 369 | 161 | 444 | 236 | 519 | 311 | 593 | 385 | 668 | 460 | |
| | 9 | 479 | 245 | - | - | - | - | - | - | 267 | 33 | 342 | 108 | 417 | 183 | 491 | 257 | 566 | 332 | 641 | 407 | |
| | 10 | 533 | 272 | - | - | - | - | - | - | - | - | 315 | 55 | 389 | 129 | 464 | 204 | 539 | 279 | 613 | 353 | |
| | 11 | 586 | 299 | - | - | - | - | - | - | - | - | 288 | 2 | 362 | 76 | 437 | 151 | 512 | 226 | 586 | 300 | |
| | 12 | 639 | 326 | - | - | - | - | - | - | - | - | - | - | 335 | 23 | 410 | 98 | 484 | 172 | 559 | 247 | |
| | RPX009 | 4 | 258 | 172 | 298 | 212 | 416 | 330 | 533 | 447 | 651 | 565 | 769 | 683 | 886 | 800 | 1004 | 918 | 1121 | 1035 | 1239 | 1153 |
| | | 5 | 323 | 215 | 255 | 148 | 373 | 265 | 490 | 383 | 608 | 500 | 726 | 618 | 843 | 736 | 961 | 853 | 1078 | 971 | 1196 | 1088 |
| | | 6 | 388 | 258 | 212 | 83 | 330 | 201 | 447 | 318 | 565 | 436 | 683 | 554 | 800 | 671 | 918 | 789 | 1035 | 906 | 1153 | 1024 |
| 7 | | 452 | 300 | 169 | 19 | 287 | 136 | 404 | 254 | 522 | 371 | 640 | 489 | 757 | 607 | 875 | 724 | 992 | 842 | 1110 | 959 | |
| 8 | | 517 | 343 | - | - | 244 | 72 | 361 | 189 | 479 | 307 | 597 | 425 | 714 | 542 | 832 | 660 | 949 | 777 | 1067 | 895 | |
| 9 | | 581 | 386 | - | - | 201 | 7 | 318 | 125 | 436 | 242 | 554 | 360 | 671 | 478 | 789 | 595 | 906 | 713 | 1024 | 830 | |
| 10 | | 646 | 429 | - | - | - | - | 275 | 60 | 393 | 178 | 511 | 295 | 628 | 413 | 746 | 531 | 863 | 648 | 981 | 766 | |
| 11 | | 711 | 472 | - | - | - | - | - | - | 350 | 113 | 468 | 231 | 585 | 349 | 703 | 466 | 820 | 584 | 938 | 701 | |
| 12 | | 775 | 515 | - | - | - | - | - | - | 307 | 49 | 425 | 166 | 542 | 284 | 660 | 402 | 777 | 519 | 895 | 637 | |
| RPX014 | | 4 | 396 | 266 | 470 | 340 | 654 | 524 | 838 | 708 | 1022 | 892 | 1206 | 1076 | 1390 | 1260 | 1573 | 1444 | 1757 | 1628 | 1941 | 1811 |
| | | 5 | 494 | 332 | 404 | 241 | 587 | 425 | 771 | 609 | 955 | 793 | 1139 | 977 | 1323 | 1161 | 1507 | 1345 | 1691 | 1529 | 1875 | 1713 |
| | | 6 | 593 | 399 | 337 | 142 | 521 | 326 | 705 | 510 | 889 | 694 | 1073 | 878 | 1257 | 1062 | 1441 | 1246 | 1625 | 1430 | 1808 | 1614 |
| | 7 | 692 | 465 | 271 | 43 | 455 | 227 | 639 | 411 | 822 | 595 | 1006 | 779 | 1190 | 963 | 1374 | 1147 | 1558 | 1331 | 1742 | 1515 | |
| | 8 | 791 | 531 | - | - | 388 | 129 | 572 | 312 | 756 | 496 | 940 | 680 | 1124 | 864 | 1308 | 1048 | 1492 | 1232 | 1676 | 1416 | |
| | 9 | 890 | 598 | - | - | 322 | 30 | 506 | 214 | 690 | 397 | 874 | 581 | 1057 | 765 | 1241 | 949 | 1425 | 1133 | 1609 | 1317 | |
| | 10 | 989 | 664 | - | - | - | - | 439 | 115 | 623 | 299 | 807 | 482 | 991 | 666 | 1175 | 850 | 1359 | 1034 | 1543 | 1218 | |
| | 11 | 1088 | 731 | - | - | - | - | 373 | 16 | 557 | 200 | 741 | 384 | 925 | 568 | 1109 | 751 | 1292 | 935 | 1476 | 1119 | |
| | 12 | 1187 | 797 | - | - | - | - | - | - | 490 | 101 | 674 | 285 | 858 | 469 | 1042 | 653 | 1226 | 836 | 1410 | 1020 | |
| | RPX020 | 4 | 620 | 413 | 664 | 458 | 934 | 727 | 1203 | 997 | 1473 | 1266 | 1742 | 1535 | 2011 | 1805 | 2281 | 2074 | 2550 | 2344 | 2820 | 2613 |
| | | 5 | 775 | 516 | 561 | 303 | 831 | 572 | 1100 | 842 | 1369 | 1111 | 1639 | 1380 | 1908 | 1650 | 2177 | 1919 | 2447 | 2189 | 2716 | 2458 |
| | | 6 | 930 | 619 | 458 | 148 | 727 | 417 | 997 | 687 | 1266 | 956 | 1535 | 1226 | 1805 | 1495 | 2074 | 1764 | 2344 | 2034 | 2613 | 2303 |
| 7 | | 1085 | 722 | - | - | 624 | 262 | 893 | 532 | 1163 | 801 | 1432 | 1071 | 1702 | 1340 | 1971 | 1609 | 2240 | 1879 | 2510 | 2148 | |
| 8 | | 1240 | 826 | - | - | 521 | 108 | 790 | 377 | 1059 | 646 | 1329 | 916 | 1598 | 1185 | 1868 | 1454 | 2137 | 1724 | 2406 | 1993 | |
| 9 | | 1395 | 929 | - | - | - | - | 687 | 222 | 956 | 491 | 1226 | 761 | 1495 | 1030 | 1764 | 1300 | 2034 | 1569 | 2303 | 1838 | |
| 10 | | 1551 | 1032 | - | - | - | - | 584 | 67 | 853 | 336 | 1122 | 606 | 1392 | 875 | 1661 | 1145 | 1930 | 1414 | 2200 | 1683 | |
| 11 | | 1706 | 1135 | - | - | - | - | - | - | 750 | 182 | 1019 | 451 | 1288 | 720 | 1558 | 990 | 1827 | 1259 | 2097 | 1529 | |
| 12 | | 1861 | 1238 | - | - | - | - | - | - | 646 | 27 | 916 | 296 | 1185 | 565 | 1455 | 835 | 1724 | 1104 | 1993 | 1374 | |
| RPX032 | | 4 | 986 | 658 | 1034 | 705 | 1457 | 1128 | 1880 | 1551 | 2302 | 1974 | 2725 | 2397 | 3148 | 2819 | 3571 | 3242 | 3994 | 3665 | 4417 | 4088 |
| | | 5 | 1233 | 822 | 870 | 459 | 1292 | 881 | 1715 | 1304 | 2138 | 1727 | 2561 | 2150 | 2984 | 2573 | 3407 | 2996 | 3829 | 3419 | 4252 | 3841 |
| | | 6 | 1480 | 986 | 705 | 212 | 1128 | 635 | 1551 | 1058 | 1974 | 1481 | 2397 | 1903 | 2819 | 2326 | 3242 | 2749 | 3665 | 3172 | 4088 | 3595 |
| | 7 | 1726 | 1151 | - | - | 964 | 388 | 1386 | 811 | 1809 | 1234 | 2232 | 1657 | 2655 | 2080 | 3078 | 2503 | 3501 | 2925 | 3924 | 3348 | |
| | 8 | 1973 | 1315 | - | - | 799 | 142 | 1222 | 565 | 1645 | 988 | 2068 | 1410 | 2491 | 1833 | 2913 | 2256 | 3336 | 2679 | 3759 | 3102 | |
| | 9 | 2219 | 1480 | - | - | - | - | 1058 | 318 | 1481 | 741 | 1903 | 1164 | 2326 | 1587 | 2749 | 2009 | 3172 | 2432 | 3595 | 2855 | |
| | 10 | 2466 | 1644 | - | - | - | - | 893 | 72 | 1316 | 494 | 1739 | 917 | 2162 | 1340 | 2585 | 1763 | 3008 | 2186 | 3430 | 2609 | |
| | 11 | 2713 | 1808 | - | - | - | - | - | - | 1152 | 248 | 1575 | 671 | 1998 | 1094 | 2420 | 1516 | 2843 | 1939 | 3266 | 2362 | |
| | 12 | 2959 | 1973 | - | - | - | - | - | - | 988 | 1 | 1410 | 424 | 1833 | 847 | 2256 | 1270 | 2679 | 1693 | 3102 | 2116 | |

Spring-Return Actuator Torque (lbf.in)

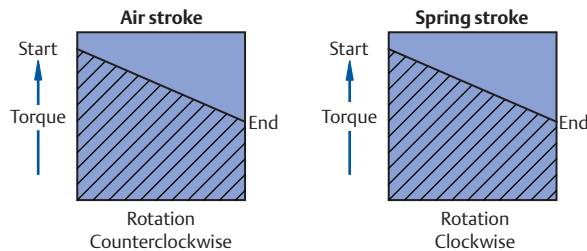
Table 10.

| Size | Spring set | Spring Stroke (lbf.in) | | Air Stroke (supply pressure in psig) | | | | | | | | | | | | | | | | | | |
|-------------------|-------------------|------------------------|-------|--------------------------------------|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| | | | | 40 | | 50 | | 60 | | 70 | | 80 | | 90 | | 100 | | 110 | | 120 | | |
| | | Start | End | Start | End | Start | End | Start | End | Start | End | Start | End | Start | End | Start | End | Start | End | Start | End | |
| RPX052 | 4 | 1590 | 1060 | 1503 | 973 | 2143 | 1613 | 2784 | 2254 | 3424 | 2895 | 4065 | 3535 | 4705 | 4176 | 5346 | 4816 | 5987 | 5457 | 6627 | 6097 | |
| | 5 | 1987 | 1325 | 1238 | 575 | 1878 | 1216 | 2519 | 1857 | 3159 | 2497 | 3800 | 3138 | 4441 | 3778 | 5081 | 4419 | 5722 | 5059 | 6362 | 5700 | |
| | 6 | 2385 | 1590 | 973 | 178 | 1613 | 819 | 2254 | 1459 | 2895 | 2100 | 3535 | 2740 | 4176 | 3381 | 4816 | 4021 | 5457 | 4662 | 6097 | 5303 | |
| | 7 | 2782 | 1855 | - | - | 1348 | 421 | 1989 | 1062 | 2630 | 1702 | 3270 | 2343 | 3911 | 2984 | 4551 | 3624 | 5192 | 4265 | 5832 | 4905 | |
| | 8 | 3179 | 2120 | - | - | 1084 | 24 | 1724 | 665 | 2365 | 1305 | 3005 | 1946 | 3646 | 2586 | 4286 | 3227 | 4927 | 3867 | 5568 | 4508 | |
| | 9 | 3577 | 2385 | - | - | - | - | 1459 | 267 | 2100 | 908 | 2740 | 1548 | 3381 | 2189 | 4021 | 2829 | 4662 | 3470 | 5303 | 4111 | |
| | 10 | 3974 | 2650 | - | - | - | - | - | - | 1835 | 510 | 2475 | 1151 | 3116 | 1792 | 3757 | 2432 | 4397 | 3073 | 5038 | 3713 | |
| | 11 | 4372 | 2914 | - | - | - | - | - | - | 1570 | 113 | 2211 | 754 | 2851 | 1394 | 3492 | 2035 | 4132 | 2675 | 4773 | 3316 | |
| | 12 | 4769 | 3179 | - | - | - | - | - | - | - | - | - | - | 1946 | 356 | 2586 | 997 | 3227 | 1637 | 3867 | 2278 | |
| | RPX084/ RPX085 | 4 | 2606 | 1737 | 2539 | 1670 | 3608 | 2739 | 4677 | 3808 | 5746 | 4877 | 6815 | 5946 | 7884 | 7015 | 8953 | 8084 | 10022 | 9153 | 11091 | 10223 |
| | | 5 | 3258 | 2172 | 2105 | 1019 | 3174 | 2088 | 4243 | 3157 | 5312 | 4226 | 6381 | 5295 | 7450 | 6364 | 8519 | 7433 | 9588 | 8502 | 10657 | 9571 |
| | | 6 | 3909 | 2606 | 1670 | 367 | 2739 | 1436 | 3808 | 2505 | 4877 | 3574 | 5946 | 4643 | 7015 | 5712 | 8084 | 6781 | 9153 | 7851 | 10223 | 8920 |
| 7 | | 4561 | 3040 | - | - | 2305 | 785 | 3374 | 1854 | 4443 | 2923 | 5512 | 3992 | 6581 | 5061 | 7650 | 6130 | 8719 | 7199 | 9788 | 8268 | |
| 8 | | 5212 | 3475 | - | - | 1871 | 133 | 2940 | 1202 | 4009 | 2271 | 5078 | 3340 | 6147 | 4409 | 7216 | 5479 | 8285 | 6548 | 9354 | 7617 | |
| 9 | | 5864 | 3909 | - | - | - | - | 2505 | 551 | 3574 | 1620 | 4643 | 2689 | 5712 | 3758 | 6781 | 4827 | 7851 | 5896 | 8920 | 6965 | |
| 10 | | 6515 | 4343 | - | - | - | - | - | - | 3140 | 968 | 4209 | 2037 | 5278 | 3107 | 6347 | 4176 | 7416 | 5245 | 8485 | 6314 | |
| 11 | | 7167 | 4778 | - | - | - | - | - | - | 2706 | 317 | 3775 | 1386 | 4844 | 2455 | 5913 | 3524 | 6982 | 4593 | 8051 | 5662 | |
| 12 | | 7818 | 5212 | - | - | - | - | - | - | - | - | - | - | 3340 | 735 | 4409 | 1804 | 5479 | 2873 | 6548 | 3942 | |
| RPX140/ RPX141 | | 4 | 4343 | 2895 | 4537 | 3089 | 6394 | 4947 | 8252 | 6805 | 10110 | 8663 | 11968 | 10521 | 13826 | 12378 | 15684 | 14236 | 17542 | 16094 | 19400 | 17952 |
| | | 5 | 5428 | 3619 | 3813 | 2003 | 5671 | 3861 | 7529 | 5719 | 9386 | 7577 | 11244 | 9435 | 13102 | 11293 | 14960 | 13151 | 16818 | 15009 | 18676 | 16866 |
| | | 6 | 6514 | 4343 | 3089 | 918 | 4947 | 2776 | 6805 | 4634 | 8663 | 6491 | 10521 | 8349 | 12378 | 10207 | 14236 | 12065 | 16094 | 13923 | 17952 | 15781 |
| | 7 | 7599 | 5066 | - | - | 4223 | 1690 | 6081 | 3548 | 7939 | 5406 | 9797 | 7264 | 11655 | 9122 | 13513 | 10979 | 15370 | 12837 | 17228 | 14695 | |
| | 8 | 8685 | 5790 | - | - | 3499 | 604 | 5357 | 2462 | 7215 | 4320 | 9073 | 6178 | 10931 | 8036 | 12789 | 9894 | 14647 | 11752 | 16505 | 13610 | |
| | 9 | 9771 | 6514 | - | - | - | - | 4634 | 1377 | 6491 | 3234 | 8349 | 5092 | 10207 | 6950 | 12065 | 8808 | 13923 | 10666 | 15781 | 12524 | |
| | 10 | 10856 | 7238 | - | - | - | - | 3910 | 291 | 5768 | 2149 | 7626 | 4007 | 9483 | 5865 | 11341 | 7723 | 13199 | 9580 | 15057 | 11438 | |
| | 11 | 11942 | 7961 | - | - | - | - | - | - | 5044 | 1063 | 6902 | 2921 | 8760 | 4779 | 10618 | 6637 | 12475 | 8495 | 14333 | 10353 | |
| | 12 | 13028 | 8685 | - | - | - | - | - | - | - | - | 6178 | 1835 | 8036 | 3693 | 9894 | 5551 | 11752 | 7409 | 13610 | 9267 | |
| | RPX240 | 4 | 7359 | 4906 | 7369 | 4915 | 10439 | 7984 | 13508 | 11054 | 16577 | 14123 | 19647 | 17193 | 22716 | 20262 | 25786 | 23331 | 28855 | 26401 | 31925 | 29470 |
| | | 5 | 9199 | 6132 | 6142 | 3074 | 9211 | 6143 | 12281 | 9213 | 15350 | 12282 | 18420 | 15352 | 21489 | 18421 | 24559 | 21491 | 27628 | 24560 | 30698 | 27630 |
| | | 6 | 11038 | 7359 | 4915 | 1233 | 7984 | 4303 | 11054 | 7372 | 14123 | 10441 | 17193 | 13511 | 20262 | 16580 | 23331 | 19650 | 26401 | 22719 | 29470 | 25789 |
| 7 | | 12878 | 8585 | - | - | 6757 | 2462 | 9826 | 5531 | 12896 | 8601 | 15965 | 11670 | 19035 | 14740 | 22104 | 17809 | 25174 | 20879 | 28243 | 23948 | |
| 8 | | 14718 | 9812 | - | - | 5530 | 621 | 8599 | 3690 | 11669 | 6760 | 14738 | 9829 | 17808 | 12899 | 20877 | 15968 | 23947 | 19038 | 27016 | 22107 | |
| 9 | | 16558 | 11038 | - | - | - | - | 7372 | 1850 | 10441 | 4919 | 13511 | 7989 | 16580 | 11058 | 19650 | 14127 | 22719 | 17197 | 25789 | 20266 | |
| 10 | | 18397 | 12265 | - | - | - | - | 6145 | 9 | 9214 | 3078 | 12284 | 6148 | 15353 | 9217 | 18423 | 12287 | 21492 | 15356 | 24562 | 18426 | |
| 11 | | 20237 | 13491 | - | - | - | - | - | - | 7987 | 1237 | 11057 | 4307 | 14126 | 7376 | 17195 | 10446 | 20265 | 13515 | 23334 | 16585 | |
| 12 | | 22077 | 14718 | - | - | - | - | - | - | - | - | - | - | 9829 | 2466 | 12899 | 5536 | 15968 | 8605 | 19038 | 11675 | |

Notes:

1. Emerson recommends that the valve manufacturer supply the maximum required torque values (including any adjustments or suggested safety factors for valve service conditions or application).
2. Additionally, the valve manufacturer must identify at which position(s) and direction(s) of rotation (Counterclockwise or Clockwise) these maximum requirements occur.
3. If in doubt, or you require any assistance with sizing actuators, do not hesitate to contact your nearest Emerson Automation Solutions - Actuation Technologies Center.

Figure 3. Spring-return torque diagram



Double-Acting Actuator Torque (lbf.in)

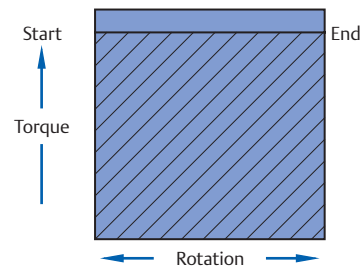
Table 11.

| Actuator size | Supply pressure in psig | | | | | | | | |
|---------------|-------------------------|-------|-------|-------|-------|-------|-------|-------|-------|
| | 40 | 50 | 60 | 70 | 80 | 90 | 100 | 110 | 120 |
| RPX003 | 138 | 172 | 206 | 241 | 275 | 310 | 344 | 378 | 413 |
| RPX004 | 204 | 255 | 306 | 357 | 408 | 459 | 510 | 562 | 613 |
| RPX006 | 293 | 366 | 439 | 513 | 586 | 659 | 732 | 806 | 879 |
| RPX009 | 470 | 588 | 706 | 823 | 941 | 1059 | 1176 | 1294 | 1411 |
| RPX014 | 737 | 921 | 1106 | 1290 | 1474 | 1658 | 1843 | 2027 | 2211 |
| RPX020 | 1079 | 1348 | 1618 | 1888 | 2157 | 2427 | 2697 | 2966 | 3236 |
| RPX032 | 1691 | 2114 | 2537 | 2960 | 3383 | 3805 | 4228 | 4651 | 5074 |
| RPX052 | 2561 | 3202 | 3842 | 4482 | 5123 | 5763 | 6403 | 7043 | 7684 |
| RPX085/084 | 4274 | 5343 | 6412 | 7480 | 8549 | 9617 | 10686 | 11755 | 12823 |
| RPX140/141 | 7431 | 9289 | 11147 | 13004 | 14862 | 16720 | 18578 | 20435 | 22293 |
| RPX240 | 12273 | 15342 | 18410 | 21478 | 24547 | 27615 | 30683 | 33752 | 36820 |

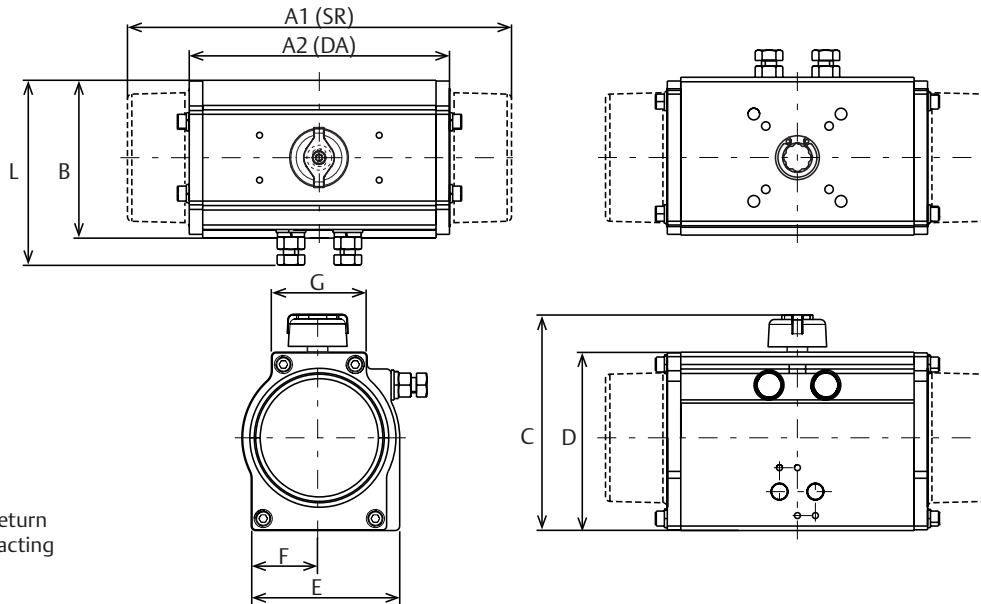
Notes:

1. Emerson recommends that the valve manufacturer supply the maximum required torque values (Including any adjustments or suggested safety factors for valve service conditions or application).
2. Additionally, the valve manufacturer must identify at which position(s) and direction(s) of rotation (Counterclockwise or Clockwise) these maximum requirements occur.
3. If in doubt, or you require any assistance with sizing actuators, do not hesitate to contact your nearest Emerson Automation Solutions - Actuation Technologies Center.

Figure 4. Double-acting torque diagram



Envelope Dimensions



Notes

1. A1 - spring-return
A2 - double-acting

Table 12.

| Model | Dimensions in mm | | | | | | | |
|-------------|------------------|---------|-------|-------|-------|-------|-------|-------|
| | A1 (SR) | A2 (DA) | B | C | D | E | F | L |
| RPX-003 | 186 | 125 | 78.5 | 114.2 | 86.0 | 78.5 | 36.0 | 80.9 |
| RPX-004 | 217 | 143 | 83.5 | 123.2 | 95.0 | 80.0 | 36.0 | 96.4 |
| RPX-006 | 259 | 169 | 89.3 | 128.9 | 100.8 | 86.8 | 40.0 | 108.2 |
| RPX-009 | 257 | 174 | 105.5 | 147.4 | 119.3 | 99.3 | 45.5 | 123.6 |
| RPX-014 | 307 | 193 | 120.0 | 165.8 | 137.7 | 112.0 | 52.0 | 140.6 |
| RPX-020 | 378 | 236 | 131.0 | 183.2 | 155.0 | 122.5 | 57.0 | 157.5 |
| RPX-032 | 462 | 283 | 147.0 | 199.2 | 171.0 | 136.0 | 68.0 | 182.3 |
| RPX-052 | 476 | 298 | 177.0 | 240.7 | 212.5 | 159.0 | 79.5 | 210.3 |
| RPX-084/085 | 627 | 384 | 199.0 | 271.2 | 226.5 | 189.5 | 90.0 | 130.0 |
| RPX-140/141 | 726 | 431 | 246.0 | 318.7 | 274.0 | 246.0 | 110.0 | 154.0 |
| RPX-240 | 845 | 507 | 290.0 | 375.3 | 324.5 | 290.0 | 145.0 | 186.0 |

| Model | Dimensions in inches | | | | | | | |
|-------------|----------------------|---------|-------|-------|-------|-------|------|------|
| | A1 (SR) | A2 (DA) | B | C | D | E | F | L |
| RPX-003 | 7.30 | 4.90 | 3.09 | 4.50 | 3.39 | 3.09 | 1.42 | 3.19 |
| RPX-004 | 8.53 | 5.63 | 3.29 | 4.85 | 3.74 | 3.15 | 1.42 | 3.80 |
| RPX-006 | 10.20 | 6.65 | 3.52 | 5.07 | 3.97 | 3.42 | 1.57 | 4.26 |
| RPX-009 | 10.10 | 6.85 | 4.15 | 5.80 | 4.70 | 3.91 | 1.79 | 4.87 |
| RPX-014 | 12.07 | 7.60 | 4.72 | 6.53 | 5.42 | 4.41 | 2.05 | 5.54 |
| RPX-020 | 14.89 | 9.29 | 5.16 | 7.21 | 6.10 | 4.82 | 2.24 | 6.20 |
| RPX-032 | 18.20 | 11.14 | 5.79 | 7.84 | 6.73 | 5.35 | 2.68 | 7.18 |
| RPX-052 | 18.72 | 11.73 | 6.97 | 9.48 | 8.37 | 6.26 | 3.13 | 8.28 |
| RPX-084/085 | 24.69 | 15.12 | 7.83 | 10.68 | 8.92 | 7.46 | 3.54 | 5.12 |
| RPX-140/141 | 28.58 | 16.97 | 9.69 | 12.55 | 10.79 | 9.69 | 4.33 | 6.06 |
| RPX-240 | 33.27 | 19.96 | 11.42 | 14.78 | 12.78 | 11.42 | 5.71 | 7.32 |

Valve Flange Dimensions

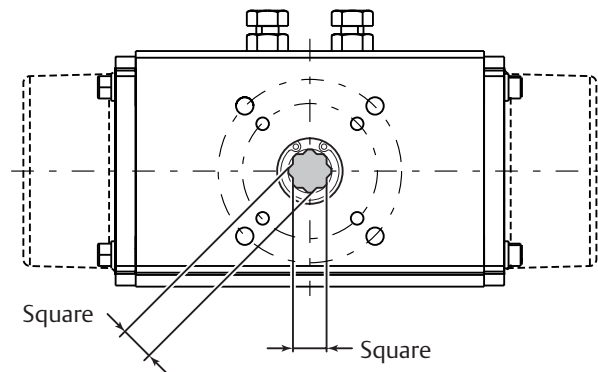
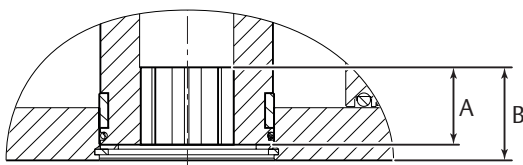
Table 13.

| Model | Metric (mm) | | | | | Imperial (inch) | | | | |
|--------|---------------|----------------------------------|--------------------------------|-------|-------|-----------------|----------------------------------|--------------------------------|-------|-------|
| | ISO 5211 PCD: | Mounting holes No x Size x Depth | Bottom of shaft Drive, Star no | Depth | | ISO 5211 PCD: | Mounting holes No x Size x Depth | Bottom of shaft Drive, Star no | Depth | |
| | | | | A | B | | | | A | B |
| RPX003 | F05 | 4x M6x 10.0 | 14 | 16.8 | 22.2 | F05 | 4x 1/4-20 UNC x 0.39 | 0.551 | 0.661 | 0.874 |
| | F07 | 4x M8x 12.0 | | | | F07 | 4x 5/16-18 UNC x 0.47 | | | |
| RPX004 | F05 | 4x M6x 10.0 | 14 | 16.8 | 22.1 | F05 | 4x 1/4-20 UNC x 0.39 | 0.551 | 0.661 | 0.870 |
| | F07 | 4x M8x 12.0 | | | | F07 | 4x 5/16-18 UNC x 0.47 | | | |
| RPX006 | F05 | 4x M6x 10.0 | 17 | 19.8 | 27.1 | F05 | 4x 1/4-20 UNC x 0.39 | 0.669 | 0.780 | 1.067 |
| | F07 | 4x M8x 12.0 | | | | F07 | 4x 5/16-18 UNC x 0.47 | | | |
| RPX009 | F05 | 4x M6x 10.0 | 17 | 19.8 | 27.1 | F05 | 4x 1/4-20 UNC x 0.39 | 0.669 | 0.780 | 1.067 |
| | F07 | 4x M8x 12.0 | | | | F07 | 4x 5/16-18 UNC x 0.47 | | | |
| RPX014 | F07 | 4x M8x 12.0 | 17 | 19.8 | 26.9 | F07 | 4x 5/16-18 UNC x 0.47 | 0.669 | 0.780 | 1.059 |
| RPX020 | F07 | 4x M8x 12.0 | 22 | 27.75 | 36.25 | F07 | 4x 5/16-18 UNC x 0.47 | 0.866 | 1.093 | 1.427 |
| | F10 | 4x M10 x 15.0 | | | | F10 | 4x 3/8-16 UNC x 0.59 | | | |
| | F12 | 4x M12 x 18.0 | | | | F12 | 4x 1/2-13 UNC x 0.71 | | | |
| RPX032 | F10 | 4x M10 x 15.0 | 27 | 29.3 | 38.3 | F10 | 4x 3/8-16 UNC x 0.59 | 1.063 | 1.154 | 1.508 |
| | F12 | 4x M12 x 18.0 | | | | F12 | 4x 1/2-13 UNC x 0.71 | | | |
| RPX052 | F10 | 4x M10 x 15.0 | 27 | 29.3 | 38.3 | F10 | 4x 3/8-16 UNC x 0.59 | 1.063 | 1.154 | 1.508 |
| | F12 | 4x M12 x 18.0 | | | | F12 | 4x 1/2-13 UNC x 0.71 | | | |
| RPX084 | F14 | 4x M16x 25.0 | 36 | 40.5 | 48.5 | F14 | 4x 5/8-11 UNC x 0.98 | 1.417 | 1.594 | 1.909 |
| RPX085 | F12 | 4x M12x 19.0 | | | | F12 | 4x 1/2-13 UNC x 0.75 | | | |
| | F16 | 4x M20x 30.0 | | | | F16 | 4x 3/4-10 UNC x 1.18 | | | |
| RPX140 | F14 | 4x M16x 25.0 | 46 | 53.5 | 62.5 | F14 | 4x 5/8-11 UNC x 0.98 | 1.811 | 2.106 | 2.461 |
| RPX141 | F12 | 4x M12x 19.0 | | | | F12 | 4x 1/2-13 UNC x 0.75 | | | |
| | F16 | 4x M20x 30.0 | | | | F16 | 4x 3/4-10 UNC x 1.18 | | | |
| RPX240 | F16 | 4x M20x 30.0 | 46 | 53.5 | 63.5 | F16 | 4x 3/4-10 UNC x 1.18 | 1.811 | 2.106 | 2.500 |
| | F25 | 8x M16x 24.0 | | | | F25 | 8x 5/8-11 UNC x 0.94 | | | |

Notes:

A = Depth in shaft

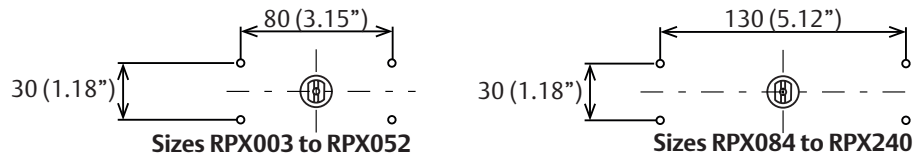
B = Star Connection Depth from bottom of body



VDI/VDE (NAMUR) Interface Dimensions

Top mount drilling

The top mount drilling is available with metric or imperial threading. The dimensions of the hole pattern are identical.



Notes:

- Metric threaded versions have a bolt threading of M5x0.8x8.0 mm deep.
- Imperial threaded versions have a bolt threading of 10-24 UNC x 0.28 inch deep.

VDI/VDE3845 (NAMUR) Control accessory mounting

The pinion top of the Bettis RPX actuator comply to the VDI/VDE 3845 standard for control accessory mounting.

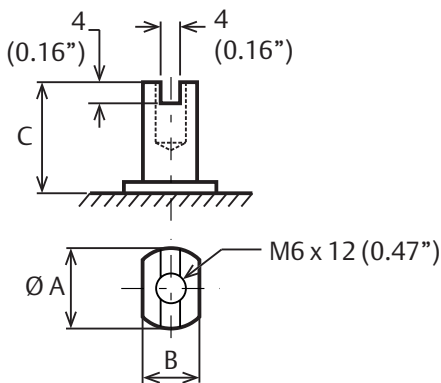


Table 14.

| Model | Metric (mm) | | | Imperial (inch) | | |
|-------------|-------------|----|------|-----------------|------|------|
| | A | B | C | A | B | D |
| RPX 003 | 21.6 | 14 | 20.0 | 0.85 | 0.55 | 0.79 |
| RPX 004 | 20.0 | 14 | 20.0 | 0.79 | 0.55 | 0.79 |
| RPX 006 | 22.0 | 14 | 20.0 | 0.87 | 0.55 | 0.79 |
| RPX 009 | 22.0 | 14 | 20.0 | 0.87 | 0.55 | 0.79 |
| RPX 014 | 26.0 | 14 | 20.0 | 1.02 | 0.55 | 0.79 |
| RPX 020 | 27.6 | 14 | 20.0 | 1.09 | 0.55 | 0.79 |
| RPX 032 | 35.0 | 14 | 20.0 | 1.38 | 0.55 | 0.79 |
| RPX 052 | 35.0 | 19 | 20.0 | 1.38 | 0.75 | 0.79 |
| RPX 084/085 | 50.6 | 36 | 30.0 | 1.99 | 1.42 | 1.18 |
| RPX 140/141 | 60.6 | 36 | 30.0 | 2.39 | 1.42 | 1.18 |
| RPX 240 | 63 | 36 | 30.0 | 2.62 | 1.42 | 1.18 |

Air connection

The actuator is controlled by applying compressed air to the 1/4" BSP/NPT ports (1/2" BSP/NPT for Model RPX240) or with a Namur solenoid valve.

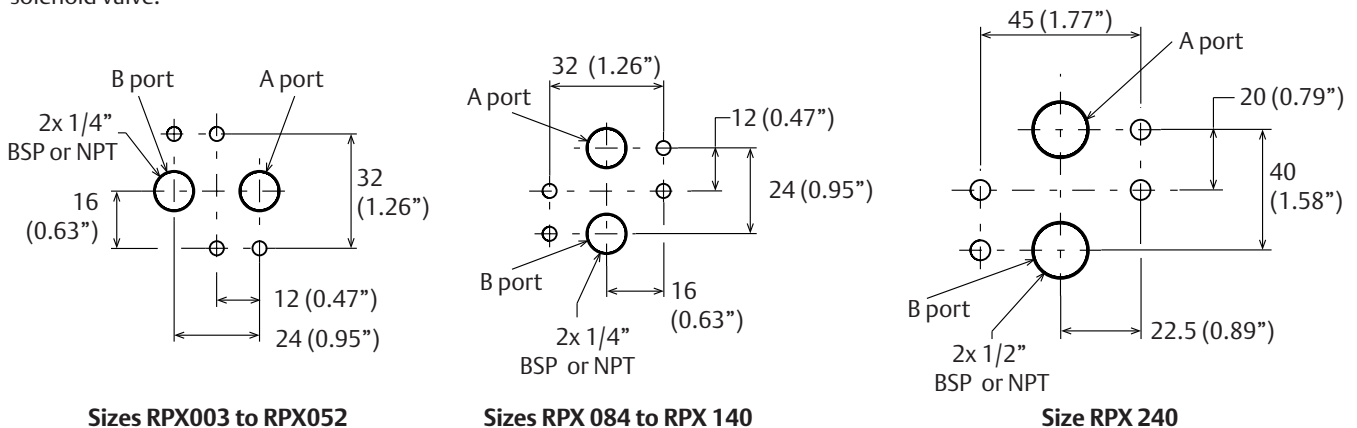


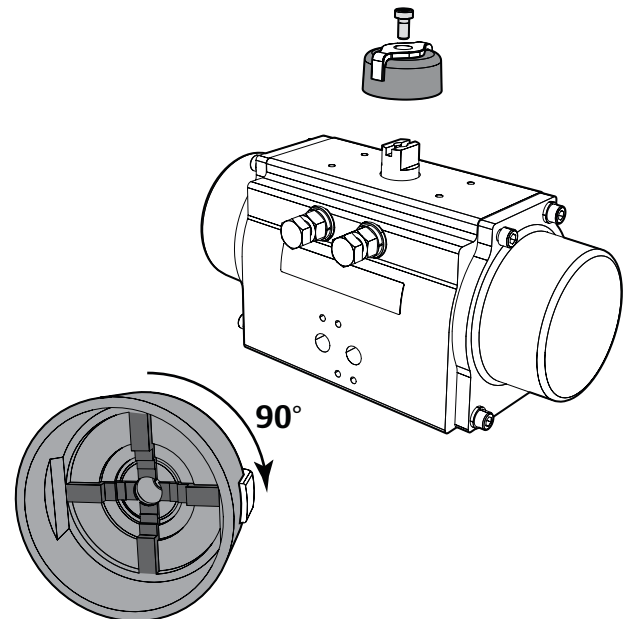
Table 15. Bolt Threading Air Connection Interface

| Actuator sizes | Metric sizes | Imperial sizes |
|------------------|-----------------------|-----------------------------|
| RPX003 to RPX140 | M5x0.8x8.0 mm deep | 10-24 UNC x 0.28 inch deep |
| RPX240 | M6x1.0 x 10.0 mm deep | 1/4-20 UNC x 0.39 inch deep |

Visual Indicator Bettis RPX-Series Actuators

Key Features

- Large, high visibility position indicator.
- Easy mounting for "In-line" or "Across-Line" applications by rotating the indicator 90°.
- Suitable for pinion top according to VDI/VDE 3845 (NAMUR).



Description

Bettis RPX-Series actuators have a large visual position indicator which allows clear indication of the valve's position at almost any position.

The Bettis RPX-Series indicator is designed for position indication of actuators mounted "in line" with the pipe line and mounted "across line" with the pipe line.

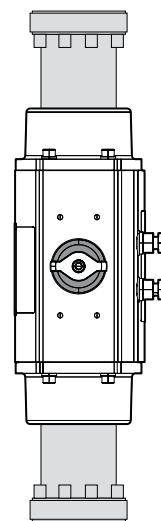
The cross shaped protrusion on the inside of the indicator fits in the NAMUR slot on the actuators pinion top. This makes conversion from "in line" (with the pipe line) and "across line" indication easy by simply turning the indicator 90° and reassemble back in place.

By default, the position indicator will be mounted "in line".

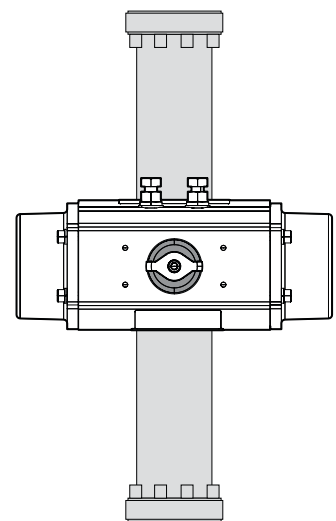
Material Specifications:

- Indicator knob: ABS, Black
- Indicator arrow: ABS, White
- Indicator screw: SS Head cap screw M6x12

"In line" Mounting



"Across line" Mounting



In both situations the valve is in the closed position

Bettis RPX Low Temperature Execution (-40 °C/-40 °F)

Key Features

- Suitable for freezing temperatures down to -40 °C/-40 °F.
- Fitted with low temperature Nitrile Rubber O-ring seals and low temperature, typical needed for application down to -40 °C / -40 °F.
- Available as complete actuator or as low temperature service kit.



Description

The Bettis RPX Low Temperature Execution is a standard aluminum actuator, but incorporating dedicated grease and O-ring seal materials, suitable for low temperature operation down to -40 °F (-40 °C).

Spare parts

Dedicated low temperature spare part kits are available for maintenance or to convert a standard actuator in to a version suitable for low temperature operation.

Notes:

When operating actuators in sub-zero temperatures (< 0 °C or < 32 °F) care should be taken to counter the effects of freezing condensate inside the actuator.

Specification

| | |
|----------------|-------------------------------|
| Max. pressure: | 120 psig (8.3 barg) |
| Torque: | Standard |
| Media: | Air or noncorrosive gas |
| Temperature: | -40 °C/+65 °C, -40 °C/+149 °F |

Materials

| | |
|--------------------------|-------------------------------------------------------------|
| O-ring Seals: | NBR 70 Duro black Low Temperature |
| End Cap Gasket Material: | NBR 70 |
| Greases: | Cassida Grease LTS 1 or Castrol Opti temp TT 1 + TT 1 EP |
| Finish: | Electrostatic powder coating (ESPC) |
| Cycle life: | Replace the seals after 250.000 cycles |

Bettis RPX Extreme Low Temperature Execution (-52 °C/-62 °F)

Key Features

- Suitable for extreme freezing - arctic - temperatures down to -52 °C/-62 °F.
- Fitted with special Nitrile Rubber compound O-ring seals and MolyKote® 33 grease typical needed for application down to -52 °C/-62 °F.
- Available as complete actuator or as low temperature service kit.



Description

The Bettis RPX Extreme Low Temperature Execution is a standard aluminum actuator, but incorporating dedicated grease and O-ring seal materials, suitable for extreme arctic temperatures operation down to -52 °C/-62 °F.

Spare parts

Dedicated low temperature spare part kits are available for maintenance or to convert a standard actuator in to a version suitable for low temperature operation.

Notes:

When operating actuators in sub-zero temperatures (< 0 °C or < 32 °F) care should be taken to counter the effects of freezing condensate inside the actuator.

Specification

| | |
|----------------|-------------------------------|
| Max. pressure: | 120 psig (8.3 barg) |
| Torque: | Standard |
| Media: | Air or noncorrosive gas |
| Temperature: | -52 °C/+65 °C, -62 °F/+149 °F |

Materials

| | |
|--------------------------|---------------------------------------------|
| O-ring Seals: | NBR 70 Duro black Low Temperature |
| End Cap Gasket Material: | NBR 70 |
| Greases: | MolyKote® 33 Extreme Low temperature grease |
| Finish: | Electrostatic powder coating (ESPC) |
| Cycle life: | Replace the seals after 250.000 cycles |

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