

Actuator Type 2 - Technical Data, Summary



WireMatic actuators are pneumatic quarter turn actuators based on double rack and pinion design.

The Type 2 actuator is generally recommended to “large” Butterfly valves.

Material, standard (outside)

- Anodized Aluminum, Blue
- CNI, Chemically Nickel/PTFE Impregnated for increased corrosion resistance
- Other treatments upon request

Movement

- 0° to 90°

End Stop Adjustment

Double End Stop Adjustments, Open and Closed position, located outside the pressurized zone at the BAK (Body Adaptor Kit)

Over travel

- Open: 3°
- Closed, size 8 and 12: 2°
- Closed, size 20 to 150: 3°

Sizes

- 35, 55, 70, 100 and 150

Torque

Linear torque, ie a Double Acting (DA) Actuator has the same torque over the entire movement

Torque Output, Double Acting (DA) at 6 bar/80 psi

- 374 to 1655 Nm
- 3055 to 13425 in.lbs

Torque Output, Spring Return (SR) at 6 bar/80 psi

- 133 to 586 Nm
- 1676 to 4758 in.lbs

Operating Pressure

- DA: 2-10 bar / 30-145 psi
- SR: 2-10 bar / 30-145 psi. When the Actuators will be used at Operating pressures below 5.5 bar / 79.8 psi, we recommend that you contact your WM distributor.

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Drive Medium

- Standard: Air (Dry or Lubricated) or inert gases (non-dangerous fluids)
- Options (require rebuilding): Oxygen, Hydraulic Oil or Water

Temperature Range, Standard execution (Buna Nitrile, NBR O-seals)

- - 30° to + 80°C
- - 22° to + 175°F

Temperature Range, High temperature (Viton O-seals)

- - 20° to + 140°C
- - 4° to + 284°F

Temperature Range, Low temperature

- -45° to +60°C
- -49° to +140°F

Temperature Range, Arctic temperature

- -50° to +60°C
- -58° to +140°F

Stroke, Double Acting (DA)

Looking at the front of the Actuator, Port A is on the left side and Port B is on the right

Port A: Air to Open (Anti-clockwise)

Port B: Air to Close (Clockwise)

Stroke, Spring Return (SR)

Port A: Air to Open (Anti-clockwise, compressing springs)

Port B: Exhaust Port

Setting from factory: Fail Close (FC), clockwise closing. To change to Fail Open (FO): see separate instructions

Max number of springs

A Spring Kit consists of 4 outer + 4 inner springs located inside the piston racks. To adjust for different Air Pressure; reduce the number of springs.

Drive shaft

Body Adaptor Kit (BAK): standard square drive – ISO 5211

Common Options: Double D (D-D) or Key drive.

Standard Connections

Solenoid valves – Namur

Fitting accessories – ISO 5211, DIN 3337, Namur

Body Adaptor Kit (BAK) according to agreed execution

Lubricants, recommended

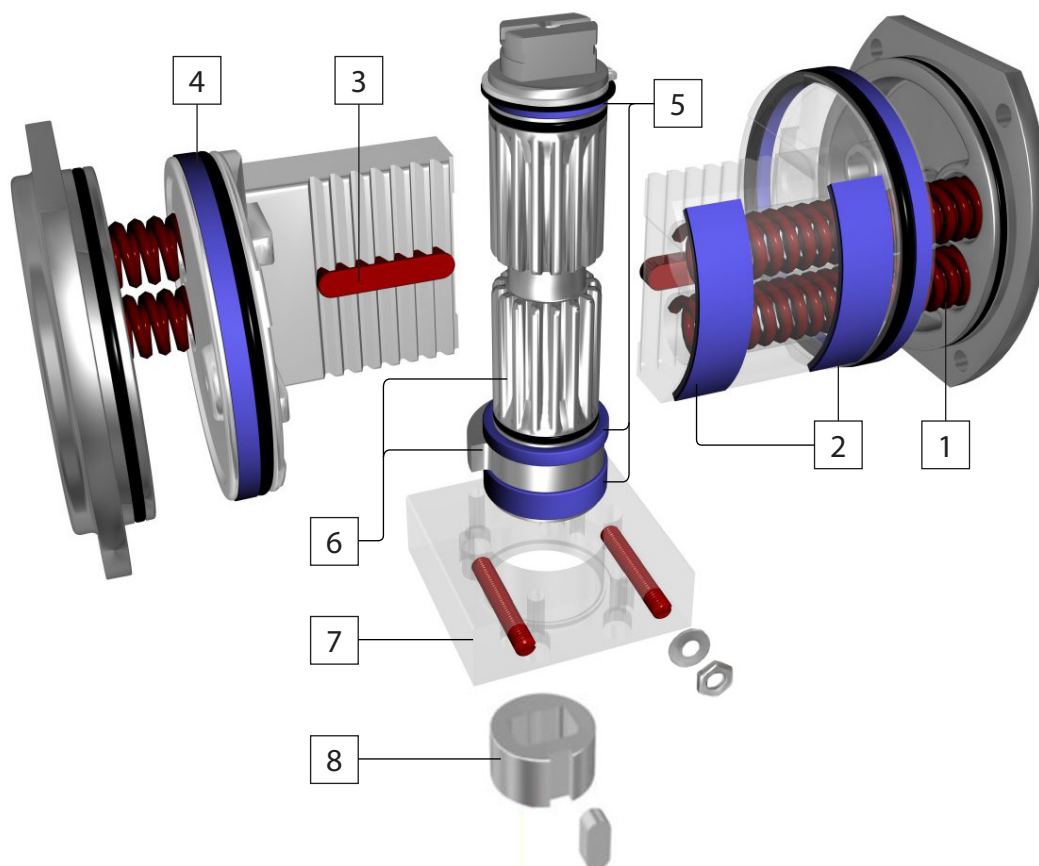
Springs and piston rack segments: Statoil Molyway LI 712 or similar

O-rings and plastic parts: Statoil Uniway LIX 42PA or similar

Standards and Certificates

The Actuators are designed to and in compliance with several different standards. They also have different types of certificates, see separate information.

Actuator Type 2, Features and Benefits



1. SPRINGS

- Springs are located inside the piston rack, same overall dimensions for DA and SR actuators.
- No special tools required to change from DA to SR or opposite.
- Long bolting is standard feature to fully relax springs.

2. PISTON WEAR PADS

- Dual encapsulated "POM" wear pads on the piston, prevent metal to metal contact between piston and cylinder, thus providing low friction travel.
- The dual encapsulated "POM" wear pads absorb the adverse side loading at start of each stroke.

3. TWIN GUIDE BARS

- Twin guide bars absorb any adverse side loading, from rack at the start of each stroke, which reduces pinion & rack wear.

4. BACK UP BEARING

- Piston back up bearings, which are situated behind the pistons "o" ring, ensure linear movement and prevent wear on the cylinder surface.

5. TRIPPLE SHAFT BEARING

- Triple shaft bearing to prevent any adverse loading on the driveshaft

6. DRIVESHAFT & CAM

- The shaft and adjustment cam are machined from solid bar material.
- The cam mechanism allows for 2.5° over travel in both directions.
- The inner depth of the driveshaft allows for total engagement of any valve shaft height for direct mounting.

7. BODY ADAPTOR KIT

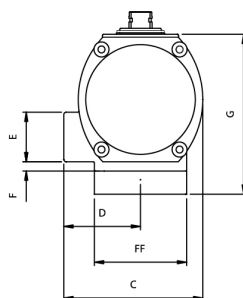
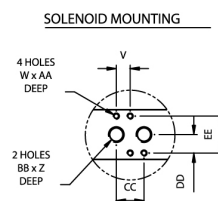
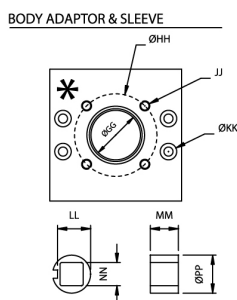
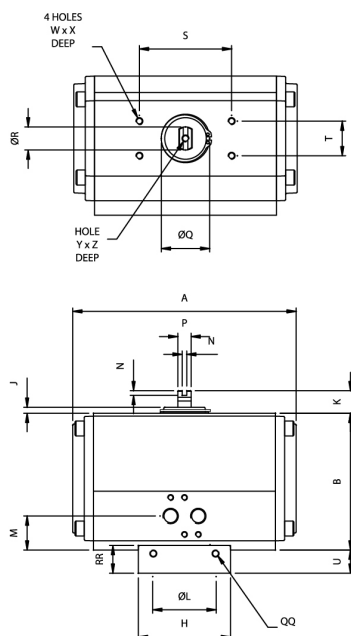
- Integral Body Adaptor Kit (BAK), interchangeable with a wide range of valves for direct mounting by using an interchangeable insert sleeve, is retained by a circlip.
- Dual end stop adjustments are integral to the body adaptor and operate in conjunction with the machined cam on a single piece driveshaft, remaining outside the pressurized cylinder.

8. INSERT SLEEVE

- Manufacture from stainless steel bar, can be rotated for cross and parallel mounting. The insert is held inside the driveshaft by means of a circlip.

Pneumatic Actuator Type 2, Metric Size 35, 55, 70, 100 and 150

- Double acting (DA) and Spring Return (SR)
- Double End Stop Adjustment, open and closed position
- Body Adaptor Kit with Square (Double D or Key) Insert



DIMENSIONS, METRIC (mm)

| Actuator size | ISO | A | B | C | D | E | F | G | H | J | K | ØL | M | N | P | ØQ | ØR | S | T | U | V |
|---------------|---------|-------|-------|-------|-------|------|------|-------|-------|-----|------|-------|------|-----|------|------|------|-------|------|------|------|
| WM 35 | F07/F10 | 266,0 | 166,5 | 156,0 | 78,0 | 43,0 | 8,5 | 196,7 | 120,0 | 7,0 | 30,0 | 55,0 | 30,0 | 4,0 | 19,0 | 61,0 | 32,0 | 80,0 | 30,0 | 30,2 | 12,0 |
| WM 35 | F10/F12 | 266,0 | 166,5 | 156,0 | 78,0 | 43,0 | 8,5 | 196,7 | 120,0 | 7,0 | 30,0 | 55,0 | 30,0 | 4,0 | 19,0 | 61,0 | 32,0 | 80,0 | 30,0 | 30,2 | 12,0 |
| WM 55 | F10/F12 | 312,0 | 207,5 | 191,0 | 95,5 | 43,0 | 20,5 | 242,5 | 140,0 | 7,5 | 30,0 | 85,0 | 42,0 | 4,0 | 25,4 | 61,0 | 40,0 | 130,0 | 30,0 | 35,0 | 12,0 |
| WM 70 | F10/F12 | 340,0 | 211,0 | 191,0 | 95,5 | 43,0 | 20,5 | 247,0 | 140,0 | 7,0 | 30,0 | 85,0 | 42,0 | 4,0 | 25,4 | 72,0 | 40,0 | 130,0 | 30,0 | 36,0 | 12,0 |
| WM 100 | F14 | 361,0 | 253,3 | 227,0 | 113,5 | 43,0 | 39,5 | 303,0 | 160,0 | 7,0 | 30,0 | 100,1 | 61,0 | 4,0 | 25,4 | 78,0 | 40,0 | 130,0 | 30,0 | 49,8 | 12,0 |
| WM 150 | F14 | 390,0 | 302,0 | 280,0 | 140,0 | 43,0 | 56,5 | 351,0 | 160,0 | 7,0 | 30,0 | 100,1 | 78,0 | 4,0 | 25,4 | 78,0 | 40,0 | 130,0 | 30,0 | 49,0 | 12,0 |

| Actuator size | ISO | W | X | Y | Z | AA | BB | CC | DD | EE | FF | ØGG | ØHH | JJ | ØKK | LL | MM | NN | ØPP | QQ | RR |
|---------------|---------|----|-----|----|------|-----|-------|------|------|------|-------|------|-------|-----|------|------|------|------|------|-----|------|
| WM 35 | F07/F10 | M5 | 5,0 | M6 | 12,0 | 8,0 | G1/4" | 24,0 | 16,0 | 32,0 | 119,9 | 46,0 | 70,0 | M8 | 9,0 | 29,5 | 20,0 | 22,0 | 33,0 | M10 | 34,0 |
| WM 35 | F10/F12 | M5 | 5,0 | M6 | 12,0 | 8,0 | G1/4" | 24,0 | 16,0 | 32,0 | 119,9 | 61,0 | 102,0 | M10 | 9,0 | 39,0 | 25,0 | 22,0 | 44,0 | M10 | 34,0 |
| WM 55 | F10/F12 | M5 | 5,0 | M6 | 12,0 | 8,0 | G1/4" | 24,0 | 16,0 | 32,0 | 139,9 | 75,0 | 125,0 | M12 | 11,0 | 50,0 | 25,0 | 27,0 | 55,0 | M10 | 40,0 |
| WM 70 | F10/F12 | M5 | 5,0 | M6 | 12,0 | 8,0 | G1/4" | 24,0 | 16,0 | 32,0 | 139,9 | 75,0 | 125,0 | M12 | 11,0 | 50,0 | 25,0 | 27,0 | 55,0 | M10 | 40,0 |
| WM 100 | F14 | M5 | 5,0 | M6 | 12,0 | 8,0 | G1/4" | 24,0 | 16,0 | 32,0 | 159,9 | 88,0 | 140,0 | M16 | 14,0 | 62,5 | 35,0 | 36,0 | 68,0 | M14 | 57,0 |
| WM 150 | F14 | M5 | 5,0 | M6 | 12,0 | 8,0 | G1/4" | 24,0 | 16,0 | 32,0 | 159,9 | 88,0 | 140,0 | M16 | 14,0 | 62,5 | 35,0 | 36,0 | 68,0 | M14 | 57,0 |



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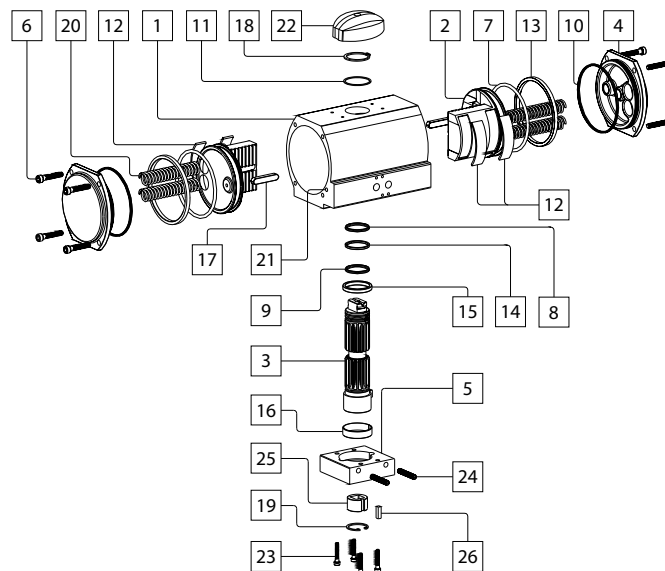
TORQUE

| Actuator Size | Air Supply | DA Torque | SR Torque (Nm) | | | | |
|---------------|------------|-----------|----------------|-----------|----------------|--------------|------------|
| | BAR | Nm | Air - Start | Air - End | Spring - Start | Spring - End | Spring Qty |
| WM 35 | 6 | 374 | 241 | 133 | 241 | 132 | 4+4 |
| WM 55 | 6 | 597 | 385 | 212 | 384 | 211 | 4+4 |
| WM 70 | 6 | 824 | 533 | 294 | 531 | 292 | 4+4 |
| WM 100 | 6 | 1122 | 725 | 399 | 723 | 398 | 4+4 |
| WM 150 | 6 | 1655 | 1069 | 589 | 1066 | 586 | 4+4 |

OPERATING DETAILS

| Actuator Size | Operating time (sec) | | | | Air consumption (litre) | | Overall weight (kg) | |
|---------------|----------------------|----------|---------|----------|-------------------------|-------|---------------------|------|
| | DA Open | DA Close | SR Open | SR Close | Open | Close | DA | SR |
| WM 35 | 2,5 | 2,5 | 2,5 | 2,0 | 1,69 | 1,90 | 12,9 | 14,6 |
| WM 55 | 3,5 | 3,5 | 3,5 | 3,0 | 2,80 | 3,40 | 19,1 | 22,2 |
| WM 70 | 4 | 4 | 4 | 3 | 3,05 | 3,7 | 24,4 | 28,0 |
| WM 100 | 4,5 | 4,5 | 5,5 | 3,0 | 5,52 | 5,90 | 31,2 | 35,8 |
| WM 150 | 5 | 5 | 7 | 4 | 7,60 | 9,60 | 44,5 | 53,0 |

Part List for Pneumatic Actuator Type 2



| Type 2 Actuator | | | Material | |
|-----------------|--------------------------|----------|--------------------------|--------------------------|
| Ref.no. | Description | Quantity | Standard | CNI |
| 1 | Body | 1 | Alum. Anodized | Alum. CNI treated |
| 2 | Piston | 2 | Alum. | Alum. Anodized |
| 3 | Driveshaft | 1 | Ni Plated Steel + Teflon | Ni Plated Steel + Teflon |
| 4 | End Cap | 2 | Alum. Polyester Coated | Alum. CNI treated |
| 5 | Body Adaptor | 1 | Alum. Anodized | CNI treated |
| 6 | End Cap Bolt | 8 | Stainless Steel | Stainless Steel |
| 7 | Piston O-ring | 2 | Buna Nitril | Buna Nitril |
| 8 | Driveshaft upper O-ring | 1 | Buna Nitril | Buna Nitril |
| 9 | Driveshaft lower O-ring | 1 | Buna Nitril | Buna Nitril |
| 10 | End Cap O-ring | 2 | Buna Nitril | Buna Nitril |
| 11 | Washer | 1 | POM | POM |
| 12 | Wear Pads | 4 | POM | POM |
| 13 | Backup Bearing | 2 | POM | POM |
| 14 | Driveshaft upper Bearing | 1 | POM | POM |
| 15 | Driveshaft lower Bearing | 1 | POM | POM |
| 16 | Body Adaptor Bearing | 1 | POM | POM |
| 17 | Guide Bar | 2 | Steel | Steel |
| 18 | Circlip upper | 1 | Ni plated Steel | Ni plated Steel |
| 19 | Body Adaptor Circlip | 1 | Ni plated Steel | Ni plated Steel |
| 20 | Spring | 4 | SiCr | SiCr |
| 21 | Ball Bearing | 2 | NBR | NBR |
| 22 | Position Indicator | 1 | POM | POM |
| 23 | Body Adaptor Bolts | 4 | Stainless Steel | Stainless Steel |
| 24 | Stop Adjustment Screws | 2 | Stainless Steel | Stainless Steel |
| 25 | Insert | 1 | Stainless Steel | Stainless Steel |
| 26 | Insert Sleeve Key | 1 | Stainless Steel | Stainless Steel |