



ACTUATION

CompAct

C20 SR

COM
PNEUMAT

HABONIM ACTUATORS

General

Habonim's unique quarter-turn CompAct actuators have been proven for more than 30 years to have superior performance of double the torque per size, much longer cycling before any maintenance, high opening and closing speed and extraordinary durability in the most demanding industrial environments.

Our CompAct actuators are successfully used to supply control packages in diverse industries and applications that are superior in overall smaller size, with less weight, less compressed-air consumption, much more reliable especially in high cyclic applications and with a very short acting times.

Habonim quarter-turn actuation offering includes:

- Double acting actuators (Air-Air operated)
- Single acting actuators (Air-Spring operated) as normally open/close options
- Shutoff valve and actuation packages
- Control valve and actuation packages
- Emergency Shut Down (ESD) and Fire Block Valve (FBV) packages



Habonim actuators product line is subject to the company's regulation, methodologies and certification – for more information, see Habonim Introduction chapter.

Design and Engineering

Habonim designs its actuators with accordance to international standards and guidelines in full, partial or with reference to. For some an external certification is available:

- Designed and tested in accordance with EN 15714-3 - Industrial valves - Actuators - Part 3: Pneumatic part-turn actuators for industrial valves - Basic requirements
- ISO 5211:2017 - Industrial valves - part-turn actuator attachments
- VDI/VDE 3845:2010 (NAMUR) - Industrial process control - pneumatic control valves - Interfaces of valves and auxiliary equipment
- IEC 61508-2:2010 SIL2/3 - Safety integrity level - functional safety of electrical/ electronic/ programmable electronic safety-related systems (optional)

Testing

100% of actuators are tested

- External shell and internal leak test
- Functional testing

Packing

Habonim actuators are delivered as a standard:

- Air inlet and outlets are capped
- Each actuator is packed in a firm, clean package.



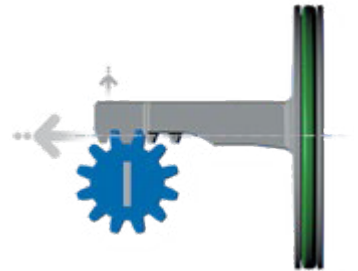
HABONIM ACTUATORS



CompAct Actuator Features

Balanced forces

The cube-shaped configuration positions the pistons in a way that allows each piston to develop thrust along its own axis with zero side load. This efficient design eliminates the use of guide rods and thrust bearings. The result is less stress on the seals than off-axis piston thrust, which is caused by the piston side loading that is inherent in the geometry of traditional actuator configurations.



Less wear

The CompAct's unique 4-piston design achieves a more uniform load distribution than standard single-or double-piston actuators, therefore greatly reducing the wear on gears at the points of contact between rack and pinion.

The force-balanced, shorter-stroke piston prevents uneven wear of O-rings, gears and pistons. This design eliminates the need for bearings and guiding rods and reduces the number of soft parts, thereby resulting in longer maintenance schedules and lower cost of repair kits.



The surface of the four cylinders is hardened by an anodizing treatment, which protects their high surface finish.

Superior corrosion resistance

The body and covers are anodized internally and externally to protect against corrosive atmospheres tested to more than 336 hours of life in a salt spray bath. An external epoxy base layer and a second layer of polyurethane paint provide additional protection against aggressive environments.



Less air consumption

Fast action is one of the most attractive features of the CompAct 4-piston actuator. The distinctive four-piston design allows for a smaller diameter actuator pinion that significantly shortens piston travel and response time.

Fast action






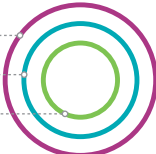
Fast action is one of the most attractive features offered by the CompAct 4-piston actuator. The unique four-piston design allows for a smaller diameter actuator pinion that significantly shortens piston travel, resulting in a shorter response time.

C20 SR

| Type | Working temperature C° (F°) | Working Pressure Air, Nitrogen, CO2, Natural gas [sweet] Bar (psi) | Application | Ordering code |
|-------------------|-----------------------------|--|----------------------|---------------|
| Standard | -20 to 80 (-4 to 176) | 3.0 (44) to 8.0 (116) | General | Blank |
| Low Temperatures | -40 to 100 (-40 to 213) | | General | LT |
| High Temperatures | -20 to 120 (-4 to 250) | | General | HT |
| High Cycle | -20 to 80 (-4 to 176) | | Above 1 cycle/minute | HC |
| Nuclear | -40 to 80 (-40 to 176) | | Nuclear use | NU |

Spring combinations

C20

| Code | Spring combinations | Code | Spring combinations | Code | Spring combinations |
|------|---|------|---|------|---|
| 2A |  | 2B |  | 3 |  |
| 2A2B |  | 2C |  | | <div>Outer</div> <div>Middle</div> <div>Inner</div>  |

Sizing a spring return actuator requires that the torque output at the start and end of both the spring and air drive strokes is greater than the valve torque at that position.

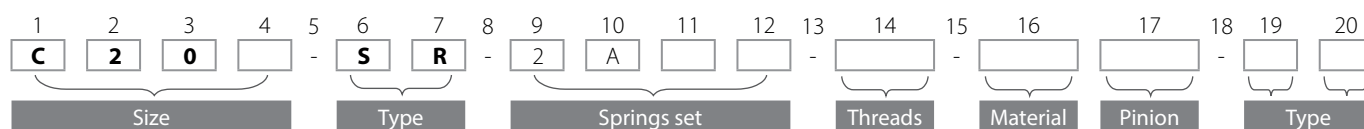
Technical Data

| Actuator size | Unit | C20 |
|------------------------|-----------|-------|
| Weight | kg | 1.90 |
| Spring return | lb | 4.20 |
| Weight | kg | 1.50 |
| Double acting | lb | 3.30 |
| Air consumption | CCW | 0.12 |
| per stroke | CW | 0.15 |
| actual volume | Total | 0.27 |
| Air consumption | CCW | 7.30 |
| per stroke | CW | 9.20 |
| actual volume | Total | 16.50 |
| Stroke time | D/A | 0.13 |
| with S.V. with | S/R Open | 0.15 |
| 0.9 Cv at 80 psi | S/R Close | 0.15 |



CompAct 4 Pistons Pneumatic Actuator - Ordering Code System

"Standard offer" options are marked with light green background



| Size (1-4) | |
|------------|---------------|
| C20 | Actuator size |

| Type (6-7) | |
|------------|---------------|
| SR | Spring return |

| Threads (14) | |
|--------------|----------|
| Blank | Metric |
| I | Imperial |

| Material / Coating (16) | |
|-------------------------|----------------------------|
| Blank | Aluminum |
| N | Electroless nickel plating |
| 6 | S.ST * |

| Pinion (17) | |
|-------------|------|
| Blank | C.st |
| 6 | S.ST |

| Springs set (9-12) | |
|--------------------|---------------------------------------|
| 2A | See spring set combinations in page 3 |
| 2A2B | |
| 2B | |
| 2C | |
| 3 | |

* For selected sizes only - consult factory

| Type (19-20) | |
|--------------|------------|
| Blank | Standard |
| LT | Low temp |
| HT | High Temp |
| HC | High cycle |
| NU | Nuclear |

C20 SR

Actuator Dimensions

| Size | A S/R | | B D/A | | B1 D/A | | C | | D | | E | | F | | G | | Øk | | L PCD | | T Thread | | M PCD (2) | | T2 | |
|------|-------|------|-------|------|--------|------|------|------|------|------|------|------|------|------|------|------|----|------|----------|------------|----------|------------|-----------|------------|-------|------------|
| | mm | inch | mm | inch | mm | inch | mm | inch | mm | inch | mm | inch | mm | inch | mm | inch | mm | inch | mm | inch | mm | inch | mm | inch | mm | inch |
| C20 | 131 | 5.17 | 102 | 4.03 | 117.0 | 4.6 | 80.5 | 3.17 | 61.5 | 2.42 | 77.2 | 3.04 | 16.5 | 0.65 | 15.0 | 0.59 | 11 | 0.43 | 50 (F05) | 1.97 (F05) | M6x8 | 1/4"X0.314 | 70 (F07) | 2.76 (F07) | M8x11 | 5/16"X0.43 |

Torque Chart (Nm)

Spring return single acting

| Size | Spring set | Air pressure - bar (psi) | | | | | | | | | | | | | | Spring torque | |
|------|------------|--------------------------|-----|--------|-----|--------|-----|----------|-----|--------|-----|---------|-----|---------|-----|---------------|-----|
| | | 3.0 (44) | | 4 (58) | | 5 (73) | | 5.5 (80) | | 6 (87) | | 7 (102) | | 8 (116) | | | |
| | | Start | End | Start | End | Start | End | Start | End | Start | End | Start | End | Start | End | Start | End |
| C20 | 2A | | | 16 | 10 | 22 | 16 | 26 | 19 | 29 | 22 | 35 | 29 | 41 | 35 | 15 | 9 |
| | 2A2B | | | 14 | 7 | 20 | 13 | 24 | 16 | 27 | 19 | 33 | 26 | 39 | 32 | 18 | 11 |
| | 2B | | | | | 18 | 10 | 22 | 13 | 25 | 17 | 31 | 23 | 38 | 29 | 21 | 13 |
| | 2C | | | | | | | 19 | 10 | 22 | 13 | 28 | 19 | 35 | 25 | 25 | 16 |
| | 3 | | | | | | | | | 19 | 9 | 24 | 15 | 30 | 21 | 29 | 19 |

Torque Chart (in-lb)

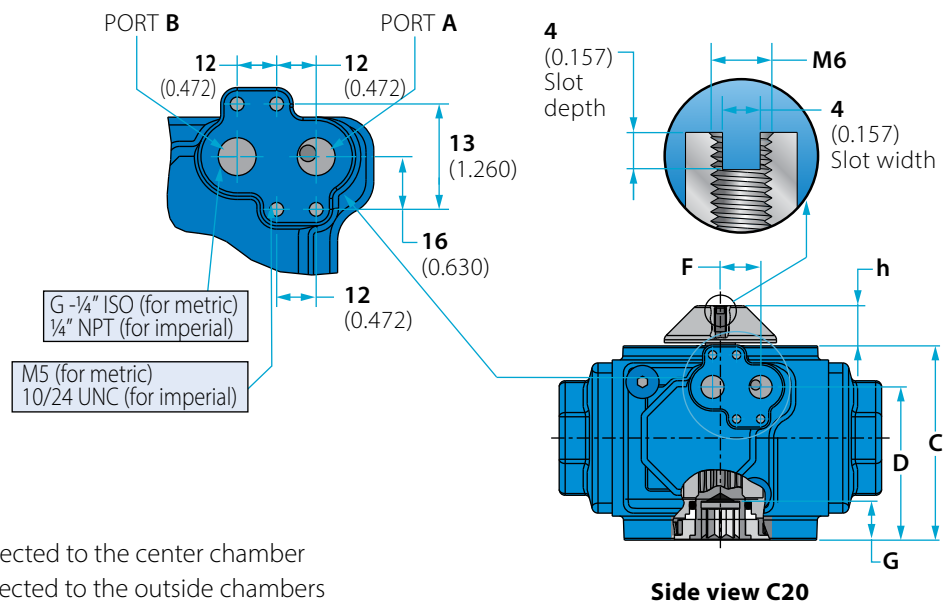
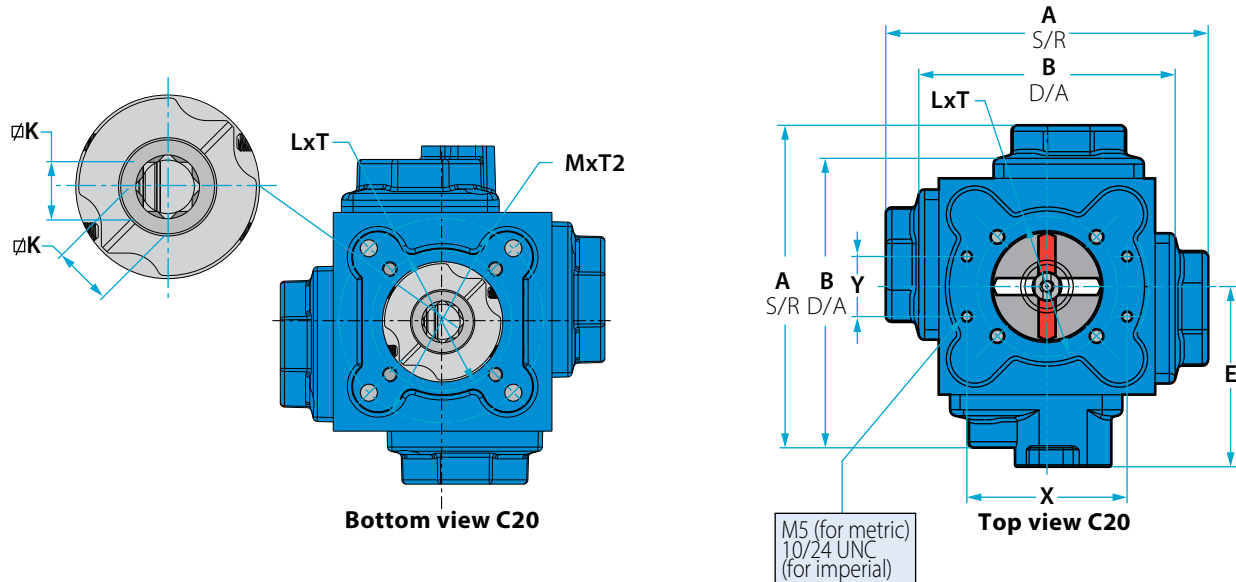
Spring return single acting

| Size | Spring set | Air pressure - psi (bar) | | | | | | | | | | | | | | Spring torque | |
|------|------------|--------------------------|-----|----------|-----|----------|-----|----------|-----|----------|-----|-----------|-----|-----------|-----|---------------|-----|
| | | 40 (2.8) | | 60 (4.1) | | 70 (4.8) | | 80 (5.5) | | 90 (6.2) | | 100 (6.9) | | 120 (8.3) | | | |
| | | Start | End | Start | End | Start | End | Start | End | Start | End | Start | End | Start | End | Start | End |
| C20 | 2A | | | 146 | 92 | 187 | 136 | 230 | 168 | 266 | 201 | 304 | 252 | 375 | 320 | 133 | 80 |
| | 2A2B | | | 128 | 64 | 170 | 110 | 212 | 142 | 247 | 174 | 286 | 226 | 357 | 293 | 159 | 97 |
| | 2B | | | | | 153 | 85 | 195 | 115 | 229 | 156 | 269 | 200 | 348 | 266 | 186 | 115 |
| | 2C | | | | | | | 168 | 89 | 201 | 119 | 243 | 165 | 320 | 229 | 221 | 142 |
| | 3 | | | | | | | | | 174 | 82 | 208 | 130 | 275 | 192 | 257 | 168 |

C20 SR



COMPACT 4 Pistons Pneumatic Actuator



| VDI / VDE 3845 | |
|----------------|--------------|
| Sizes | X x Y x h |
| C20 | 80 x 30 x 20 |

Port **A** is connected to the center chamber
Port **B** is connected to the outside chambers



About Habonim

Ball Valves & Actuators for the most demanding, challenging and hazardous applications are our passion and profession for the last 70 years.

We believe in designing, manufacturing and supplying control and shutoff components and solutions that improves the overall safety, integrity and sustainability of the systems they are installed in.

Designed, manufactured and tested according to the highest standards, our products allow us to partner within systems that flow and control varied gases and liquids in diverse markets especially where extreme temperatures and pressures are involved, hazardous materials are used and system performances are critical.

We are leading in cryogenic ball valve-based control solutions, emergency shutoff and specially designed solutions.

Believing that supplying and developing the most effective, safe and reliable products for the global leaders in the LNG and Gas distribution market continually challenges us to improve our capabilities and products.

Best coping with our prestigious customers' most challenging requirements technically, operationally and commercially is our promise fulfilled for decades.

Performing in Demanding Applications



Habonim USA 1 866 261 8400 | Habonim EU +31 79 204 0780 | Habonim Singapore +65 8127 0221 | Habonim China +86 21 58056370
Habonim Israel +972 (0) 4 691 4911 | Habonim UK +44 1633 484554 | Habonim Australia +65 8127 0221 | www.habonim.com