



## Actuator Type C 90° - Technical Data, Summary



TruTorq actuators are pneumatic quarter turn actuators based on double rack and pinion design. The C-type actuator is also available in half turn execution (180°).

The C-type 90° actuator is generally recommended to “small” Butterfly valves, Ball valves and Plug valves.

### Data for C-Type actuators with movement 0 - 90°

#### Material, standard (outside)

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

#### Movement

- 0° to 90°

#### End Stop Adjustment

Single End Stop Adjustment, Open position, located in the End Cap

#### Over travel

- Open: 3°
- Closed: 0° to 0.5°
- Note! If the actuator is assembled Fail Open (FO), the over travel will be the opposite, ie.  
Open: 0° to 0.5°  
Closed: 3°

#### Sizes

- 2, 4, 8, 12, 20, 35, 55, 250 and 400

#### Torque

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

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

- 20 to 597 Nm and 2648 to 4803 Nm
- 166 to 4742 in.lbs and 21480 to 38971 in.lbs

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

- 7 to 211 Nm and 1212 to 1888 Nm
- 59 to 1716 in.lbs and 10728 to 16711 in.lbs



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### 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 TT distributor.

### 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, size 2 to 55

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.

### Max number of springs, size 250 & 400

The precompressed Spring Kits is located inside the piston racks and consists of 6 outer + 6 inner springs for size 250 and 8 outer + 8 inner springs for size 400. To adjust for different Air Pressure; reduce the number of springs.

### Drive shaft

Stardrive shaft tailored to international standard for square-section shafts

### Standard Connections

Solenoid valves – Namur

Fitting accessories – ISO 5211, DIN 3337, Namur

Stardrive shaft – ISO 5211 (90°), DIN 79 (45°), Namur

### 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

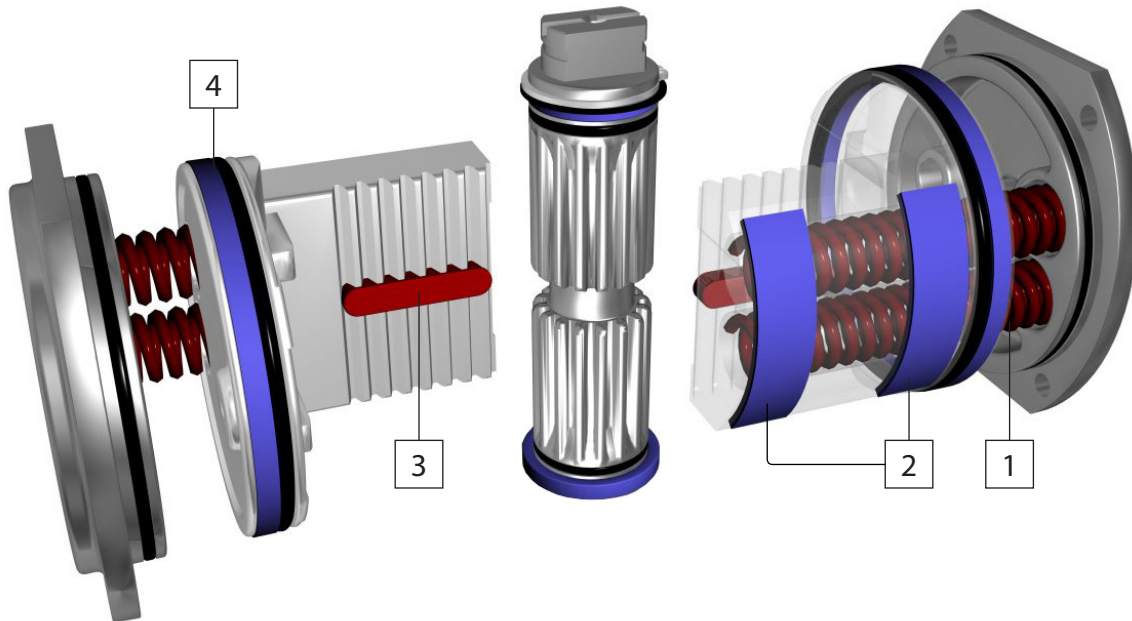
The Actuators are designed to and in compliance with several different standards. They also have different types of certificates, see separate information.

### End Caps, size 250 & 400

If conversion from DA to SR, or opposite, the End Caps must be changed (different for DA vs. SR).



## C-Type Actuator, 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 absorbs 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.



## TruTorq Pneumatic Actuator Type C, Metric Size 2, 4, 8, 12, 20, 35 and 55

### TORQUE

Actuator Size	Air Supply	DA Torque	SR Torque (Nm)				
	BAR	Nm	Air - Start	Air - End	Spring - Start	Spring - End	Spring Qty
TT 2	6	20	13	7	13	7	4+4
TT 4	6	41	27	15	26	14	4+4
TT 8	6	90	58	32	57	31	4+4
TT 12	6	122	79	44	78	43	4+4
TT 20	6	202	130	71	130	71	4+4
TT 35	6	374	241	133	241	132	4+4
TT 55	6	597	385	212	384	211	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
TT 2	<1	<1	<1	<1	0.09	0.12	1.0	1.1
TT 4	<1	<1	<1	<1	0.18	0.24	1.8	1.9
TT 8	<1	<1	<1	<1	0.34	0.41	3.1	3.4
TT 12	1.5	1.5	1.5	1.0	0.49	0.64	4.2	4.7
TT 20	2.0	2.0	2.0	1.5	0.90	1.00	6.6	7.5
TT 35	2.5	2.5	2.5	2.0	1.69	1.90	11.1	12.8
TT 55	3.5	3.5	3.5	3.0	2.80	3.40	17.1	20.2

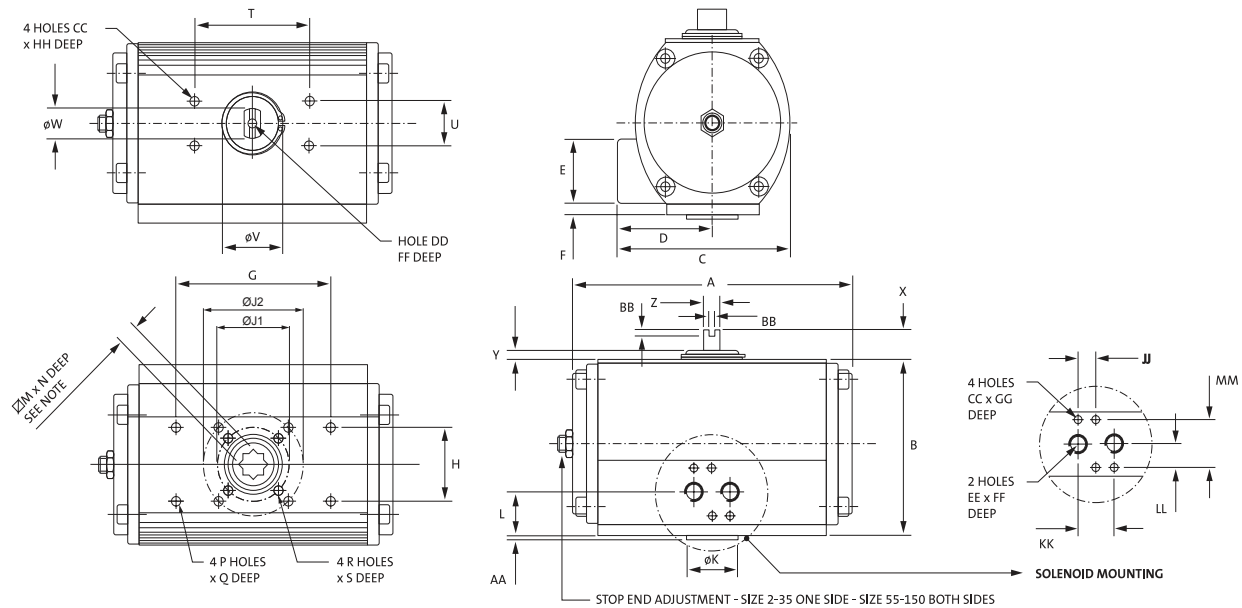
\* Note! May be affected by air pipe diameter and type of solenoid valve



English

# TruTorq Pneumatic Actuator Type C, Metric Size 2, 4, 8, 12, 20, 35 and 55

- Double acting (DA) and Spring Return (SR)
- Single End Stop Adjustment, open position (DA and SR)
- Option: Single end stop adjustment, closed position (Only DA)



## DIMENSIONS, METRIC (mm)

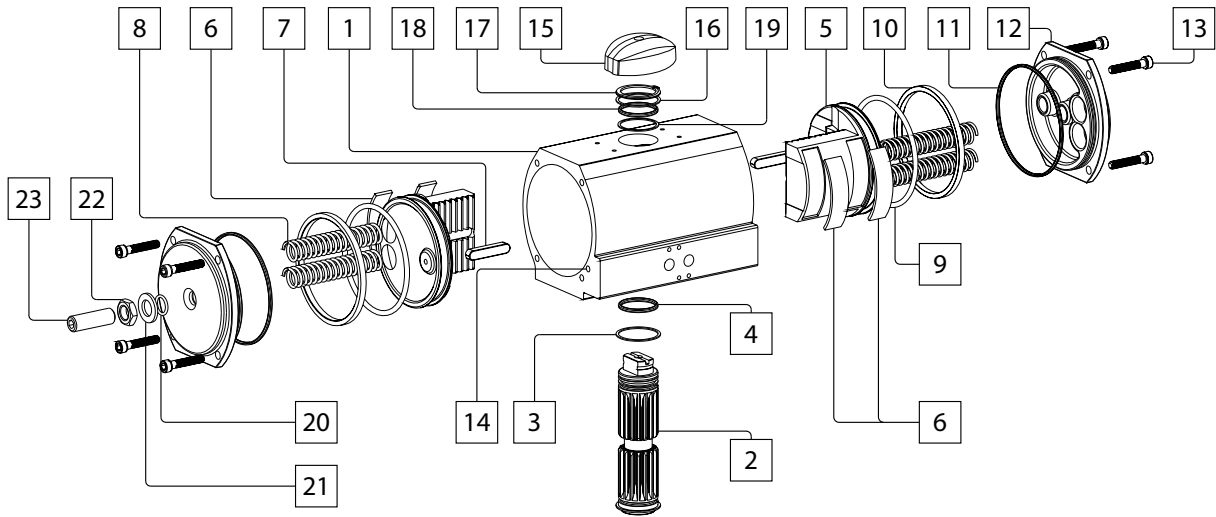
Actuator size	ISO 5211*		A	B	C	D	E	F	G	H	PCD		ØK	L	M	N	P	Q	R	S	T
	J1	J2									ØJ1	ØJ2									
TT 2	<b>F03</b>	—	114.5	73.0	75.5	43.5	41.0	—	73.0	32.0	<b>36.0</b>	—	25.0	20.5	<b>9.0</b>	10.0	M5	8.0	M5	8.0	80.0
TT 4	<b>F04</b>	—	133.0	90.5	87.5	47.5	41.0	—	73.0	32.0	<b>42.0</b>	—	30.0	20.5	<b>11.0</b>	12.0	M5	8.0	M5	8.0	80.0
TT 8	<b>F05</b>	F07	177.0	109.0	105.0	57.0	42.0	7.5	73.0	32.0	<b>50.0</b>	70.0	35.0	28.5	<b>14.0</b>	16.0	M6	10.0	M6	10.0	80.0
TT 12	F05	<b>F07</b>	194.0	118.5	121.0	67.0	43.0	8.0	107.0	49.0	<b>70.0</b>	102.0	35.0	29.5	<b>17.0</b>	16.0	M6	10.0	M6	10.0	80.0
TT 20	<b>F07</b>	F10	218.0	140.5	136.5	72.0	43.0	8.0	107.0	49.0	<b>70.0</b>	102.0	35.0	29.5	<b>17.0</b>	19.0	M6	10.0	M8	13.0	80.0
TT 35	F07	<b>F10</b>	266.0	166.5	156.0	78.0	43.0	8.5	161.0	73.0	<b>102.0</b>	102.0	35.0	30.0	<b>22.0</b>	24.0	M6	12.0	M10	16.0	80.0
TT 55	F10	<b>F12</b>	312.0	207.5	191.0	95.5	43.0	20.5	161.0	73.0	<b>125.0</b>	102.0	35.0	42.0	<b>27.0</b>	29.0	M8	15.0	M12	20.0	130.0

\* When two different standards are given, e.g. F05/F07; dual drilled.  
 Figures in bold according to ISO 5211, correspond vs. size of square drive.

Actuator size	ISO 5211*	U	ØV	ØW	X	Y	Z	AA	BB	CC	DD	EE	FF	GG	HH	JJ	KK	LL	MM
	J1 J2																		
TT 2	<b>F03</b> —	30.0	25.0	16.0	20.0	4.5	11.5	2.0	4.0	M5	M6	G1/8"	12.0	8.0	5.0	12.0	24.0	16.0	32.0
TT 4	<b>F04</b> —	30.0	31.0	20.0	20.0	4.5	11.5	2.0	4.0	M5	M6	G1/8"	12.0	8.0	5.0	12.0	24.0	16.0	32.0
TT 8	<b>F05</b> F07	30.0	35.0	20.0	20.0	5.0	11.5	3.0	4.0	M5	M6	G1/8"	12.0	8.0	5.0	12.0	24.0	16.0	32.0
TT 12	F05 <b>F07</b>	30.0	45.0	20.0	20.0	5.5	11.5	3.0	4.0	M5	M6	G1/4"	12.0	8.0	5.0	12.0	24.0	16.0	32.0
TT 20	<b>F07</b> F10	30.0	50.0	32.0	20.0	6.5	19.0	3.0	4.0	M5	M6	G1/4"	12.0	8.0	5.0	12.0	24.0	16.0	32.0
TT 35	F07 <b>F10</b>	30.0	61.0	32.0	20.0	7.0	19.0	3.0	4.0	M5	M6	G1/4"	12.0	8.0	5.0	12.0	24.0	16.0	32.0
TT 55	F10 <b>F12</b>	30.0	61.0	40.0	30.0	7.5	25.4	3.0	4.0	M5	M6	G1/4"	12.0	8.0	5.0	12.0	24.0	16.0	32.0



## Part List for Trutorq Pneumatic Actuator Type C, Metric Size 2, 4, 8, 12, 20, 35 and 55



Type 1 Actuator 90°, size 2-35			Material	
Ref.no.	Description	Quantity	Standard	CNI
1	Body	1	Alum. Anodized	Alum. CNI treated
2	Driveshaft	1	Ni Plated Steel + Teflon	Ni Plated Steel + Teflon
3	Washer	1	POM	POM
4	O-ring	1	Buna Nitril	Buna Nitril
5	Pistons	2	Alum.	Alum. Anodized
6	Wear Pads	4	POM	POM
7	Guide Bar	2	Steel	Steel
8	Spring	4	SiCr	SiCr
9	O-ring	2	Buna Nitril	Buna Nitril
10	Back-up Bearing	2	POM	POM
11	O-ring	2	Buna Nitril	Buna Nitril
12	End Cap	2	Alum. Polyester Coated	Alum. CNI treated
13	End Cap Bolt	8	Stainless Steel	Stainless Steel
14	Ball Seal	2	Buna Nitril	Buna Nitril
15	Position Indicator	1	POM	POM
16	Washer	1	POM	POM
17	Circlip	1	Ni plated Steel	Ni plated Steel
18	Bearing	1	POM	POM
19	O-ring	1	Buna Nitril	Buna Nitril
20	Stop Adjustment O-ring	1	Buna Nitril	Buna Nitril
21	Stop Adjustment Washer	1	Stainless Steel	Stainless Steel
22	Stop Adjustment Nut	1	Stainless Steel	Stainless Steel
23	Stop Adjustment Screw	1	Stainless Steel	Stainless Steel