



Actuator Type E - Technical Data, Summary



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

The E-type actuator is generally recommended to “large” Butterfly valves.

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

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

- 8, 12, 20, 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

- 90 to 1655 Nm
- 730 to 13425 in.lbs

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

- 32 to 586 Nm
- 257 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 TT 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

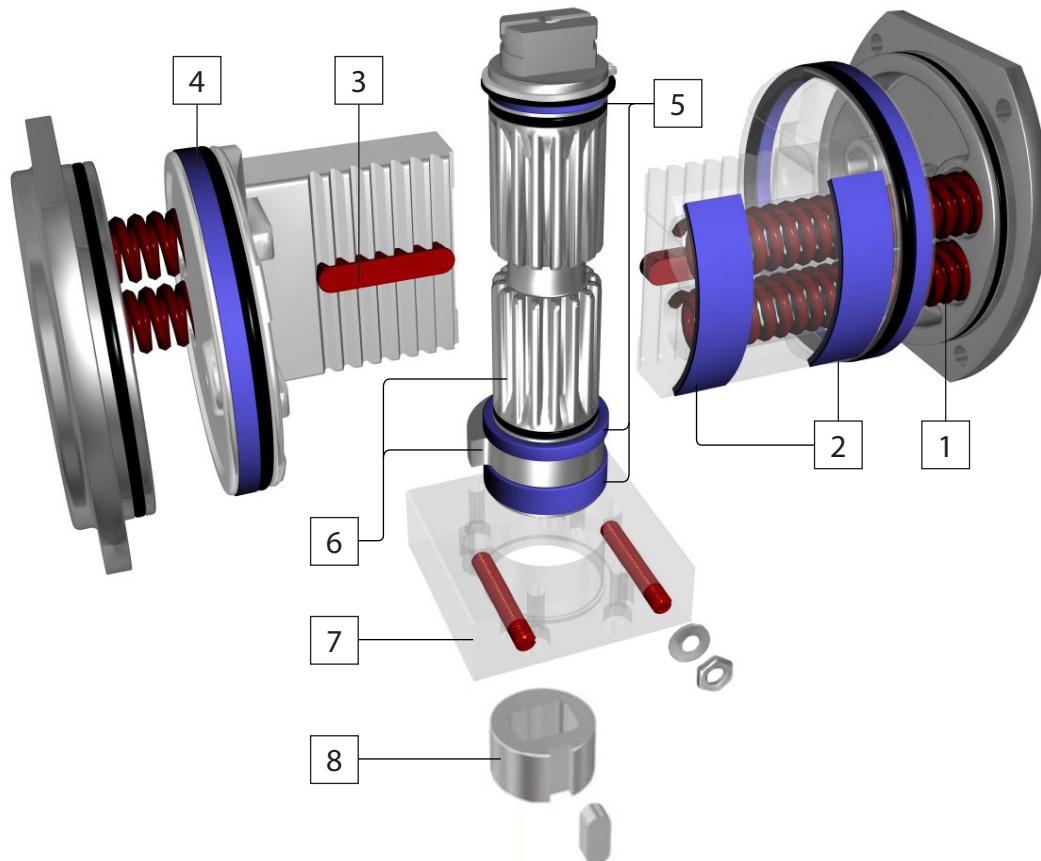
O-rings and plastic parts: Statoil Uniway LIX 42PA or similar

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.



E-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.

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.



TruTorq Pneumatic Actuator Type E, Metric Size 8, 12, 20, 35, 55, 70, 100 and 150

TORQUE

Actuator Size	Air Supply	DA Torque Nm	SR Torque (Nm)				
	BAR		Air - Start	Air - End	Spring - Start	Spring - End	Spring Qty
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
TT 70	6	824	533	294	531	292	4+4
TT 100	6	1122	725	399	723	398	4+4
TT 150	6	1655	1069	589	1066	586	4+4

OPERATING DETAILS

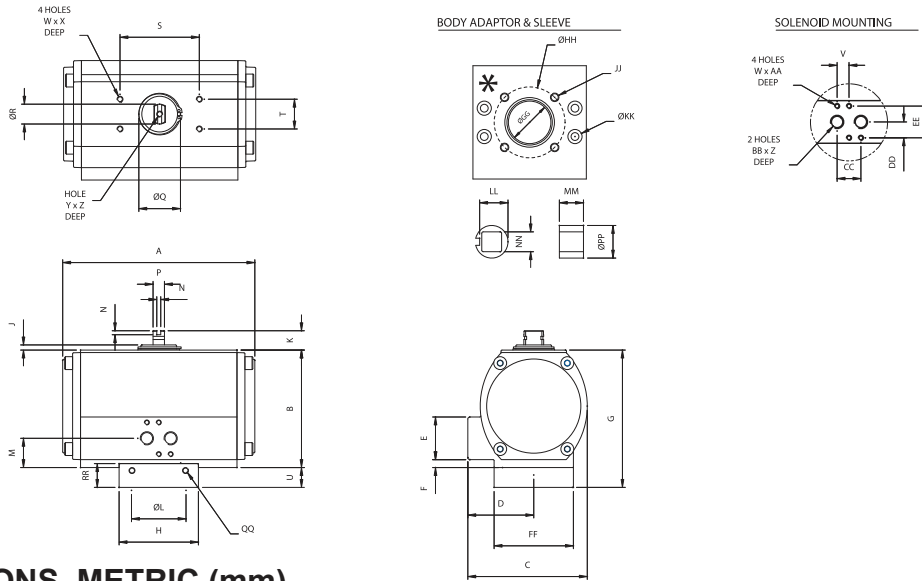
Actuator Size	Operating time (sec) *				Air consumption (litre)		Overall weight (kg)	
	DA Open	DA Close	SR Open	SR Close	Open	Close	DA	SR
TT 8	< 1	< 1	< 1	< 1	0,34	0,41	3,4	3,8
TT 12	1,5	1,5	1,5	1,0	0,49	0,64	5,0	5,5
TT 20	2,0	2,0	2,0	1,5	0,90	1,00	7,2	8,1
TT 35	2,5	2,5	2,5	2,0	1,69	1,90	12,9	14,6
TT 55	3,5	3,5	3,5	3,0	2,80	3,40	19,1	22,2
TT 70	4,0	4,0	4,0	3,0	3,05	3,70	24,4	28,0
TT 100	4,5	4,5	5,5	3,0	5,52	5,90	31,2	35,8
TT 150	5,0	5,0	7,0	4,0	7,60	9,60	44,5	53,0

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



TruTorq Pneumatic Actuator Type E, Metric Size 8, 12, 20, 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



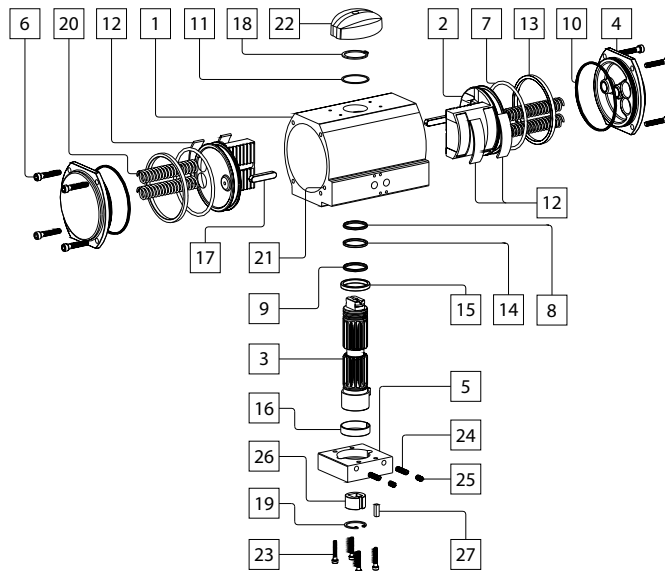
DIMENSIONS, METRIC (mm)

Actuator size	ISO 5211*		A	B	C	D	E	F	G	H	J	K	ØL	M	N	P	ØQ	ØR	S	T	U	V
	A ₁	A ₂																				
TT 8	F05	F07	162,0	109,0	105,0	57,0	42,0	7,5	127,0	80,0	5,0	20,0	35,0	27,0	4,0	11,5	35,0	20,0	80,0	30,0	18,0	12,0
TT 8	F07	-	162,0	109,0	105,0	57,0	42,0	7,5	127,0	80,0	5,0	20,0	35,0	27,0	4,0	11,5	35,0	20,0	80,0	30,0	18,0	12,0
TT 12	F05/F07	-	194,0	118,5	121,0	67,0	43,0	8,0	138,5	80,0	5,5	20,0	35,0	29,5	4,0	11,5	46,0	20,0	80,0	30,0	20,0	12,0
TT 12	F07	-	194,0	118,5	121,0	67,0	43,0	8,0	138,5	80,0	5,5	20,0	35,0	29,5	4,0	11,5	46,0	20,0	80,0	30,0	20,0	12,0
TT 20	F07	-	218,0	140,5	136,5	72,0	43,0	8,0	164,5	90,0	6,5	20,0	55,0	29,5	4,0	19,0	50,0	32,0	80,0	30,0	24,0	12,0
TT 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
TT 35	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
TT 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
TT 55	F12/F10	-	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
TT 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
TT 70	F12/F10	-	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
TT 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
TT 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	49,8	12,0

Actuator size	ISO 5211*		W	X	Y	Z	AA	BB	CC	DD	EE	FF	ØGG	ØHH	JJ	ØKK	LL	MM	NN	ØPP	QQ	RR
	A ₁	A ₂																				
TT 8	F05	F07	M5	5,0	M6	12,0	8,0	G1/8"	24,0	16,0	32,0	79,0	30,0	50,0	M6	5,5	20,0	17,0	14,0	23,0	M5	22,0
TT 8	F07	-	M5	5,0	M6	12,0	8,0	G1/8"	24,0	16,0	32,0	79,0	47,0	70,0	M8	5,5	29,5	17,0	17,0	33,0	M6	24,0
TT 12	F05/F07	-	M5	5,0	M6	12,0	8,0	G1/4"	24,0	16,0	32,0	79,0	30,0	50,0	M6	5,5	20,0	17,0	14,0	23,0	M5	22,0
TT 12	F07	-	M5	5,0	M6	12,0	8,0	G1/4"	24,0	16,0	32,0	79,0	47,0	70,0	M8	5,5	29,5	17,0	17,0	33,0	M6	24,0
TT 20	F07	-	M5	5,0	M6	12,0	8,0	G1/4"	24,0	16,0	32,0	89,9	46,0	70,0	M8	6,6	29,5	20,0	17,0	33,0	M8	28,0
TT 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	17,0	33,0	M10	34,0
TT 35	F10	-	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
TT 55	F10/F12	-	M5	5,0	M6	12,0	8,0	G1/4"	24,0	16,0	32,0	139,9	61,0	102,0	M10	11,0	50,0	25,0	22,0	55,0	M10	40,0
TT 55	F12/F10	-	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
TT 70	F10/F12	-	M5	5,0	M6	12,0	8,0	G1/4"	24,0	16,0	32,0	139,9	61,0	102,0	M10	11,0	50,0	25,0	22,0	55,0	M10	40,0
TT 70	F12/F10	-	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
TT 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
TT 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



Part List for Pneumatic Actuator Type E



Ref.no.	Description	Quantity	Material	
			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	Lock Screws	2	Stainless Steel	Stainless Steel
26	Insert	1	Stainless Steel	Stainless Steel
27	Insert Sleeve Key	1	Stainless Steel	Stainless Steel