



VALVE AUTOMATION  
SINCE 1976

## TECHNICAL SUMMARY C-TYPE

### TWIN GUIDE BARS

Unique twin guide bar absorbs adverse side loading from rack at the start of each stroke and maintains even engagement between rack & pinion for smooth operation.

### BACK UP BEARING

Increases life span of the piston O seal and reduces friction.

### SHAFT BEARINGS

Eliminates metal to metal contact & absorbs the impact load of the shaft.

### PISTON WEAR PADS

The dual encapsulated "POM" wear pads absorb the adverse side loading at start of each stroke. The 4 off encapsulated "POM" wear pads also ensure no metal to metal contact thus providing low friction travel.

### SPRINGS

Unique patented spring design. Located inside piston rack, "SR" units utilise the same end covers as "DA".

Springs are manufactured from SiCr in compliance to EN10204 and available with 3.1b certificate. Long bolting is a standard feature in order to fully relax springs.

### Material standard

Anodized Aluminium, Black.  
CNI, Chemically Nickel Impregnated.  
Other treatments upon request.

### Movement

0-90 Degrees (Type 1 available in 180 )

### End Stop Adjustment

C-Type: Single end stop adjustment .  
Over travel, +3 degree Open or Closed

### Sizes

C-Type: 2,4,8,12,20,35,250 & 400.

### Torque Output at 80 PSI

Double Acting: 166 to 38971 in. lbs  
Spring Return: 64 to 16711 in. lbs

### Operating Pressure

•30-150 PSI

### Temperature Range

-40 to +212° F(Standard execution)  
-13 to +482° F(High temp)  
-58 to +140° F(Arctic temperature)

### Standard Connections

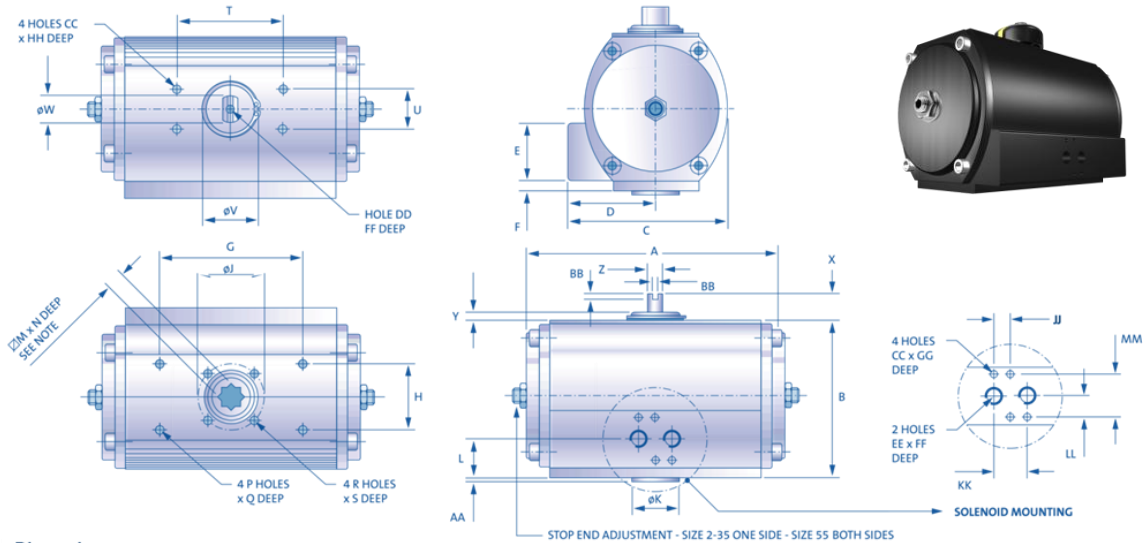
Solenoid Valves – Namur.  
Fitting Accessories – ISO 5211, DIN 3337,  
VDI/VDE 3845, Namur.  
Stardrive Shaft – ISO 5211 (90 ), DIN 79 (45), Namur.



VALVE AUTOMATION  
SINCE 1976

# PNEUMATIC ACTUATORS: C-TYPE

TRUTORQ ACTUATOR SIZE 2/4/8/12/20/35/55  
C-TYPE DOUBLE ACTING & SPRING RETURN



## •Dimensions

Imperial		A	B	C	D	E	F	G	H	ØJ	ØK	L	M	N	P(unc)	Q	R(unc)	S	T
TT 2 F03	F03	4,51	2,87	2,97	1,71	1,61	-	2,87	1,26	1,42	0,984	0,81	0,354	0,39	10-24	0,31	10-24	0,31	3,15
TT 4 F04	F04	5,24	3,56	3,44	1,87	1,61	-	2,87	1,26	1,65	1,181	0,81	0,433	0,47	10-24	0,31	10-24	0,31	3,15
TT 8 F05	F05	6,38	4,29	4,13	2,24	1,65	0,30	2,87	1,26	1,97	1,378	1,12	0,551	0,63	1/4-20	0,39	1/4-20	0,39	3,15
TT 12 F07	F07	7,64	4,67	4,76	2,64	1,69	0,31	4,21	1,93	2,76	2,165	1,16	0,669	0,75	1/4-20	0,39	5/16-18	0,47	3,15
TT 20 F07	F10	8,58	5,53	5,37	2,83	1,69	0,31	4,21	1,93	2,76	2,165	1,16	0,669	0,75	5/16-18	0,39	5/16-18	0,51	3,15
TT 35 F10	F07	10,47	6,56	6,14	3,07	1,69	0,33	6,34	2,87	4,02	2,756	1,18	0,866	0,94	5/16-18	0,47	3/8-16	0,63	3,15
TT 55 F12	F10	12,28	8,17	7,52	3,76	1,69	0,81	6,34	2,87	4,92	3,346	1,65	1,06	1,14	5/16-18	0,59	1/2-13	0,79	5,12

\*Additional drilling

Imperial	U	ØV	ØW	X	Y	Z	AA	BB	CC(unc)	DD	EE	FF	GG	HH	JJ	KK	LL	MM
TT 2 F03	1,18	0,98	0,63	0,79	0,18	0,45	0,08	0,16	10-32	M6	NPT1/8	0,5	0,31	0,2	0,47	0,94	0,63	1,26
TT 4 F04	1,18	1,22	0,79	0,79	0,18	0,45	0,08	0,16	10-32	M6	NPT1/8	0,5	0,31	0,2	0,47	0,94	0,63	1,26
TT 8 F05	1,18	1,38	0,79	0,79	0,22	0,45	0,12	0,16	10-32	M6	NPT1/8	0,5	0,31	0,2	0,47	0,94	0,63	1,26
TT 12 F07	1,18	1,81	0,79	0,79	0,22	0,45	0,12	0,16	10-32	M6	NPT1/4	0,50	0,31	0,20	0,47	0,94	0,63	1,26
TT 20 F07	1,18	1,97	1,26	0,79	0,26	0,75	0,12	0,16	10-32	M6	NPT1/4	0,50	0,31	0,20	0,47	0,94	0,63	1,26
TT 35 F10	1,18	2,40	1,26	0,79	0,28	0,75	0,12	0,16	10-32	M6	NPT1/4	0,50	0,31	0,20	0,47	0,94	0,63	1,26
TT 55 F12	1,18	2,40	1,57	1,18	0,30	1,00	0,12	0,16	10-32	M6	NPT1/4	0,50	0,31	0,20	0,47	0,94	0,63	1,26

## •Torque

Model	AIR SUPPLY PSI	DA TORQUE in.lbs	SR TORQUE - in.lbs				SPRING QTY	
			AIR-START	AIR-END	SPRING-START	SPRING-END		
TT 2	80,0	166	107	59	107	59	4x3	
TT 4	80,0	337	218	121	216	119	4x3	
TT 8	80,0	730	473	263	467	257	4x3	
TT 12	80,0	994	644	356	638	350	4x3	
TT 20	80,0	1638	1057	582	1056	581	4x3	
TT 35	80,0	3035	1959	1078	1957	1076	4x3	
TT 55	80,0	4742	3026	1622	3120	1716	4x3	

## •Basic Operating Detail

Drive Medium = Air (Dry or lubricated); Non corrosive Gas; Light Hydraulic Oil

Temperature = -40 to +212°F. High & Low temp versions available

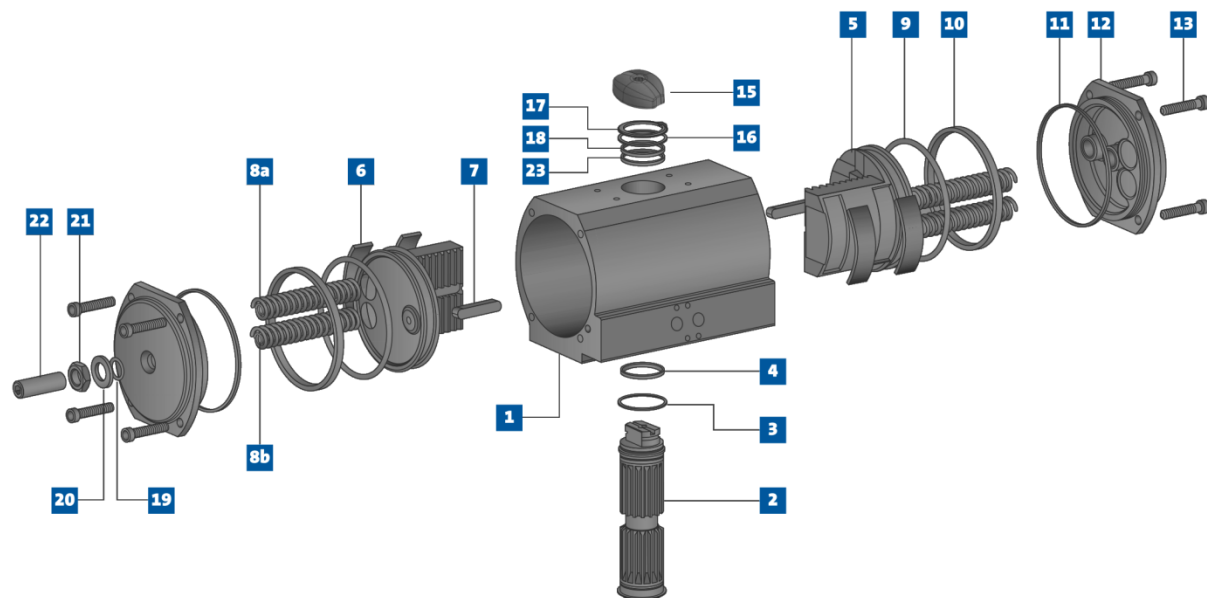
Model	Operating Time (5.5 barg/80 psig)				Air Consumption		Overall Weight		Sol. VV Min Cv
	DA Open	DA Close	SR Open	SR Close	Open (ci)	Close (ci)	DA lbs	SR lbs	
TT2	<1	<1	<1	<1	5,49	7,32	2,2	2,4	0,2
TT4	<1	<1	<1	<1	10,98	14,65	4,0	4,2	0,2
TT8	<1	<1	<1	<1	20,75	25,02	6,8	7,5	0,5
TT12	1,5	1,5	1,5	1,0	29,90	39,05	9,0	10,0	0,5
TT20	2,0	2,0	2,0	1,5	54,92	61,02	14,0	15,0	0,5
TT35	2,5	2,5	2,5	2,0	103,12	115,94	23,0	26,0	0,5
TT55	3,5	3,5	3,5	3,0	170,86	207,47	40,0	45,0	0,8



VALVE AUTOMATION  
SINCE 1976

# PNEUMATIC ACTUATORS: C-TYPE

## ■ Parts List



Ref No	Description	Quantity	Material Std Unit	Material CNI® Unit	Comments
1	Body	1	Alum. Anodized	Alum/CNI 530T	
2	Driveshaft	1	Steel Zinc Plated	Eniflon Coating	
3*	Washer	1	Polyethylene	Polyethylene	
4*	'O' ring	1	Buna Nitrile	Buna Nitrile	Option Viton or Silicone
5	Piston	2	Aluminium	Alum/CNI 425	
6*	Wear Pads	4	POM Delrin	POM Delrin	
7*	Guide Bar	2	Steel	Steel	
8a	Spring Outer/Large	4	SiCr	SiCr	
8b	Spring Inner/Small	4	SiCr	SiCr	
9*	'O' ring	2	Buna Nitrile	Buna Nitrile	Option Viton or Silicone
10*	Back-up Bearing	2	POM Delrin	POM Delrin	
11*	'O' ring	2	Buna Nitrile	Buna Nitrile	Option Viton or Silicone
12	Endcap	2	Alum. Painted	Alum/CNI 530T	
13	Endcap Bolt	8	Stainless Steel	Stainless Steel	
14*	Ball Seal	2	Composite	Composite	
15	Position Indicator	1	Polyethylene	Polyethylene	
16*	Washer	1	Polyethylene	Polyethylene	
17*	Circlip	2	Steel Zinc Plated	Stainless Steel	
18*	'O' ring	1	Buna Nitrile	Buna Nitrile	
19	Stop Adjustment 'O' ring	1	Buna Nitrile	Buna Nitrile	Option Viton or Silicone
20	Stop Adjustment Washer	1	Stainless Steel	Stainless Steel	
21	Stop Adjustment Nut	1	Stainless Steel	Stainless Steel	
22	Stop Adjustment Screw	1	Stainless Steel	Stainless Steel	
23*	Driveshaft Upper Bearing	1	POM Delrin	POM Delrin	

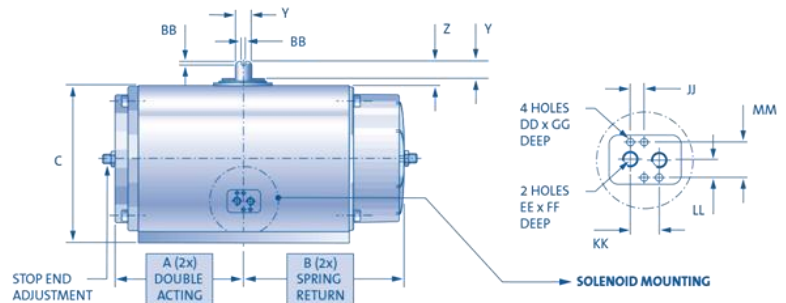
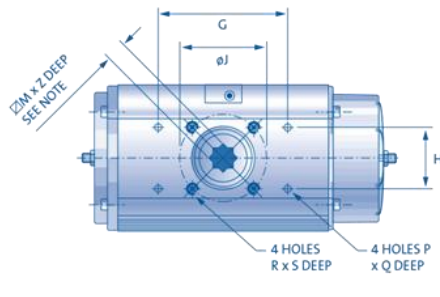
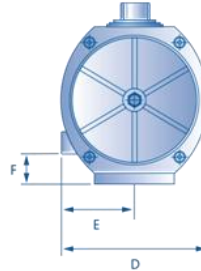
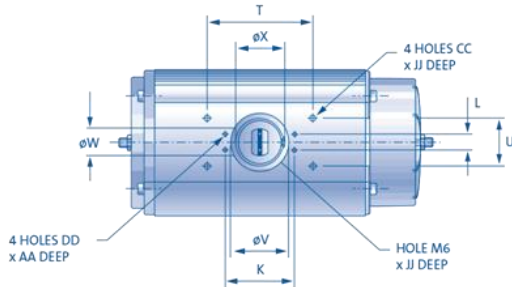
\* Items marked with and asterisk are included in repair kit.



VALVE AUTOMATION  
SINCE 1976

# PNEUMATIC ACTUATORS: C-TYPE TT250

## TRUTORQ ACTUATOR SIZE 250 C-TYPE DOUBLE ACTING & SPRING RETURN



### •Dimensions

Imperial	*	A	B	C	D	E	F	G	H	ØJ	ØK	L	□ M	P(unc)	Q	R(unc)	S	T
TT 250 F16	*	9,8	13,3	11,81	11,02	5,51	2,20	9,61	4,61	6,5	5,12	1,18	1,81	1/2-13	0,86	3/4-11	1,25	7,87

\*Additional drilling

Imperial	U	ØV	ØW	X	Y	Z	AA	BB	CC(unc)	DD	EE	FF	GG	JJ	KK	LL	MM
TT 250 F16	3,54	4,72	2,36	4,37	1,42	1,97	0,25	0,16	5/6-18	10,24	NPT1/4"	0,5	0,31	0,47	0,94	0,63	1,26

-Torque	DA Torque		40psi		50psi		60psi		70psi		80psi		90psi		100psi	
	in. lbs		10740		13425		16110		18795		21480		24165		26850	
Springs	Spring Stroke		Air Stroke													
Quantity	Start	End	Start	End	Start	End	Start	End	Start	End	Start	End	Start	End	Start	End
2	2764	1788	8952	7976	11637	10661	14322	13346	17007	16031	19692	18716	22377	21401	25062	24086
4	5528	3576	7164	5212	9849	7897	12534	10582	15219	13267	17904	15952	20589	18637	23274	21322
6	8292	5364			8061	5133	10746	7818	13431	10503	16116	13188	18801	15873	21486	18558
8	11056	7152					8958	5054	11643	7739	14328	10424	17013	13109	19698	15794
10	13820	8940							9855	4975	12540	7660	15225	10345	17910	13030
12	16584	10728									10752	4896	13437	7581	16122	10266

### •Basic Operating Detail

Drive Medium = Air (Dry or lubricated); Non corrosive Gas; Light Hydraulic Oil

Temperature = -40 to +212°F. High & Low temp versions available

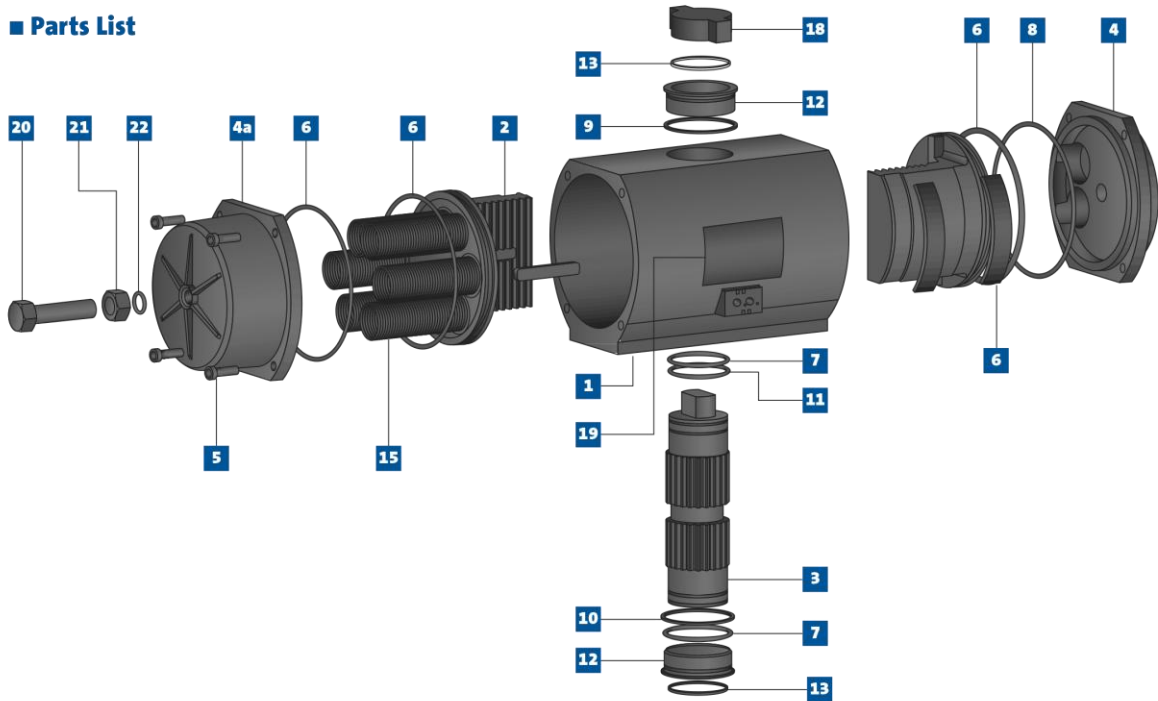
Model	Operating Time (5.5 barg/80 psig)				Air Consumption		Overall Weight		Sol. VV
	DA Open	DA Close	SR Open	SR Close	Open (ci)	Close (ci)	DA lbs	SR lbs	
TT250	7	7	8	5	518,7	598,03	129,8	184,8	1,4



VALVE AUTOMATION  
SINCE 1976

# PNEUMATIC ACTUATORS: C-TYPE TT250

## ■ Parts List



Ref No	Description	Quantity	Material Std Unit	Material CNI® Unit	Comments
1	Body	1	Alum. Anodized	Alum/CNI 530T	
2	Piston	2	Aluminium	Alum/CNI 425	
3	Driveshaft	1	Steel Zinc Plated	Eniflon Coating	
4	Endcap - DA	2	Powder Epoxy	Alum/CNI 530T	
4a	Endcap - SR	2	Powder Epoxy	Alum/CNI 530T	
5*	Bolt - 250	8	Stainless Steel	Stainless Steel	
6*	'O' Ring	2	Buna Nitrile	Buna Nitrile	Option Viton or Silicone
7*	'O' Ring	2	Buna Nitrile	Buna Nitrile	Option Viton or Silicone
8*	'O' Ring	2	Buna Nitrile	Buna Nitrile	Option Viton or Silicone
9*	Washer	1	Polyethylene	Polyethylene	
10*	Washer	1	Polyethylene	Polyethylene	
11*	'O' Ring	2	Buna Nitrile	Buna Nitrile	Option Viton or Silicone
12*	Bushing	1	Bronze	Bronze / CNI 530T	
13*	Circlip	2	Steel Zinc Plated	Stainless Steel	
14*	Wear Pad	4	POM Delrin	POM Delrin	
15	Spring	12 max	SiCr	SiCr	
16*	Guide Bar	2	Steel	Steel	
17*	Ball Bearing	2	Composite	Composite	
18	Position Indicator	1	Polyethylene	Polyethylene	
19	Product Label	1	3M	3M	
20	Stop Adjustment Screw	2	Stainless Steel	Stainless Steel	
21	Stop Adjustment Nut	2	Stainless Steel	Stainless Steel	
22	Stop Adjustment 'O' Ring	2	Buna Nitrile	Buna Nitrile	Option Viton or Silicone

\* Items marked with an asterisk are included in repair kit.

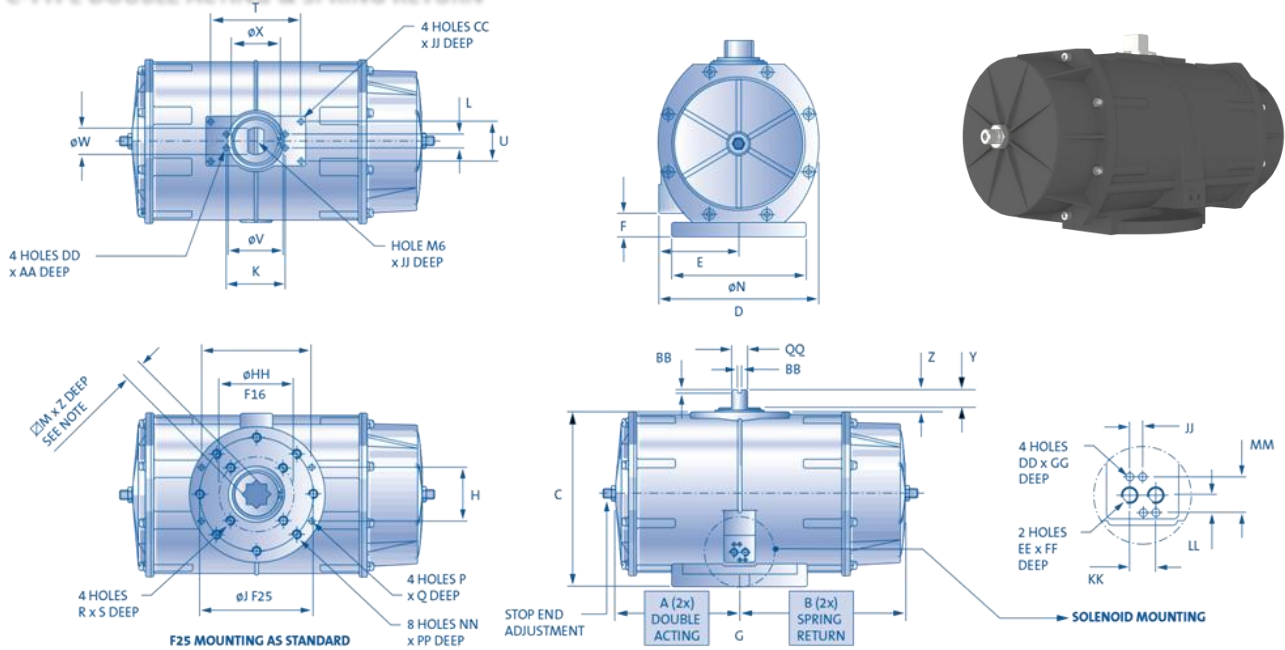




VALVE AUTOMATION  
SINCE 1976

# PNEUMATIC ACTUATORS: C-TYPE TT400

## TRUTORQ ACTUATOR SIZE 400 C-TYPE DOUBLE ACTING & SPRING RETURN



### •Dimensions

Imperial	*	A	B	C	D	E	F	G	H	ØJ	ØK	L	□ M	Ø N	P(unc)	Q	R(unc)	S	T
TT 400 F25	F16	11,8	14,6	15,16	14,2	7,1	2,1	9,61	4,61	10	5,12	1,18	2,165	11,81	1/2-13	0,86	3/4-11	1,38	7,87

\*Additional drilling

Imperial	U	ØV	ØW	X	Y	Z	AA	BB	CC(uncf)	DD	EE	FF	GG	Ø HH	JJ	KK	LL	MM	NN
TT 400 F25	3,54	4,72	2,36	4,37	1,57	2,36	0,35	0,16	5/6-18	24-okt	NPT1/4"	0,5	0,31	6,5	0,47	0,94	0,63	1,26	M16

### •Torque

•Torque	DA Torque		40psi		50psi		60psi		70psi		80psi		90psi		100psi	
	in. lbs		19486		24357		29228		34100		38971		43842		48714	
•Springs	Spring Stroke		Air Stroke													
Quantity	Start	End	Start	End	Start	End	Start	End	Start	End	Start	End	Start	End	Start	End
3	4833	3133	16353	14653	21224	19524	26095	24395	30967	29267	35838	34138	40709	39009	45581	43881
6	9665	6267	13219	9821	18090	14692	22961	19563	27833	24435	32704	29306	37575	34177	42447	39049
9	14498	9400			14957	9859	19828	14730	24700	19602	29571	24473	34442	29344	39314	34216
12	19331	12533					19965	9897	21567	14769	26438	19640	31309	24511	36181	29383
14	22552	14622							19478	11548	24349	16419	29220	21290	34092	26162
16	25774	16711									22260	13197	27131	18068	32003	22940

PP	QQ
5/8-11	1,42

### •Basic Operating Detail

Drive Medium = Air (Dry or lubricated); Non corrosive Gas; Light Hydraulic Oil

Temperature = -40 to +212°F. High & Low temp versions available

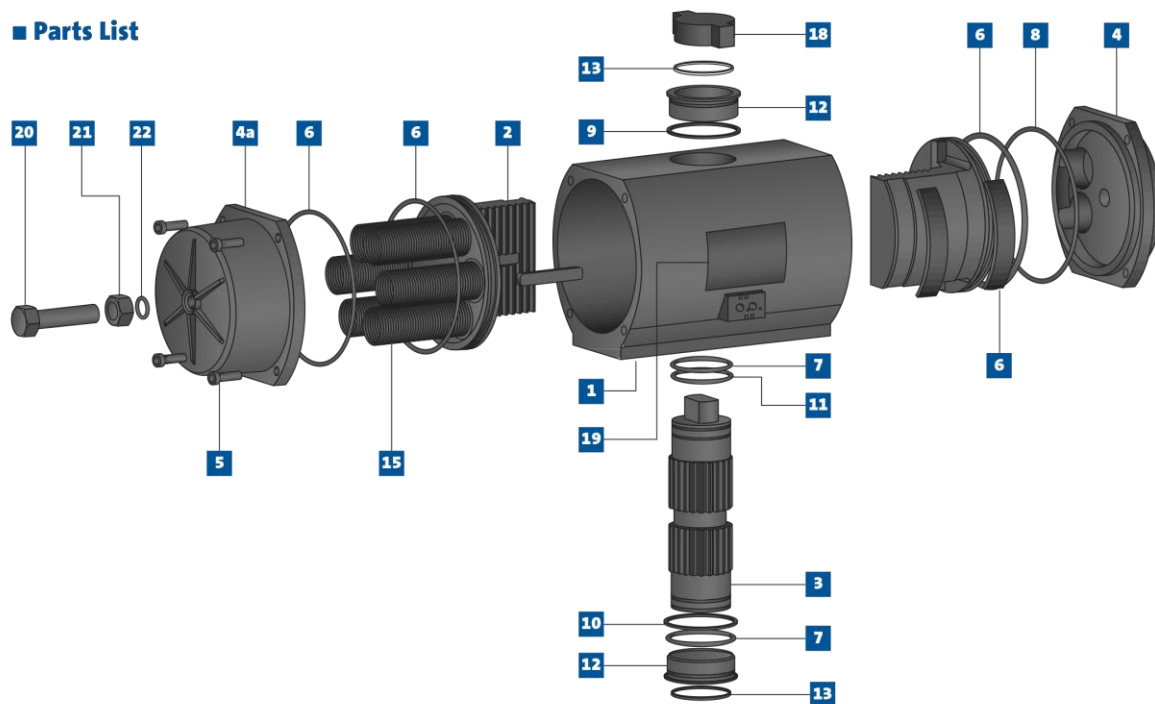
Model	Operating Time (5.5 barg/80 psig)				Air Consumption		Overall Weight		Sol. VV
	DA Open	DA Close	SR Open	SR Close	Open (ci)	Close (ci)	DA lbs	SR lbs	Min Cv
TT400	12	12	13	10	829,92	1067,92	235	297	1,4



VALVE AUTOMATION  
SINCE 1976

# PNEUMATIC ACTUATORS: C-TYPE TT400

## ■ Parts List



Ref No	Description	Quantity	Material Std Unit	Material CNI® Unit	Comments
1	Body	1	Alum. Anodized	Alum/CNI 530T	
2	Piston	2	Aluminium	Alum/CNI 425	
3	Driveshaft	1	Steel Zinc Plated	Eniflon Coating	
4	Endcap - DA	2	Powder Epoxy	Alum/CNI 530T	
4a	Endcap - SR	2	Powder Epoxy	Alum/CNI 530T	
5*	Bolt - 400	8	Stainless Steel	Stainless Steel	
6*	'O' Ring	2	Buna Nitrile	Buna Nitrile	Option Viton or Silicone
7*	'O' Ring	2	Buna Nitrile	Buna Nitrile	Option Viton or Silicone
8*	'O' Ring	2	Buna Nitrile	Buna Nitrile	Option Viton or Silicone
9*	Washer	1	Polyethylene	Polyethylene	
10*	Washer	1	Polyethylene	Polyethylene	
11*	'O' Ring	2	Buna Nitrile	Buna Nitrile	Option Viton or Silicone
12*	Bushing	1	Bronze	Bronze / CNI 530T	
13*	Circlip	2	Steel Zinc Plated	Stainless Steel	
14*	Wear Pad	4	POM Delrin	POM Delrin	
15	Spring	16 max	SiCr	SiCr	
16*	Guide Bar	2	Steel	Steel	
17*	Ball Bearing	2	Composite	Composite	
18	Position Indicator	1	Polyethylene	Polyethylene	
19	Product Label	1	3M	3M	
20	Stop Adjustment Screw	2	Stainless Steel	Stainless Steel	
21	Stop Adjustment Nut	2	Stainless Steel	Stainless Steel	
22	Stop Adjustment 'O' Ring	2	Buna Nitrile	Buna Nitrile	Option Viton or Silicone

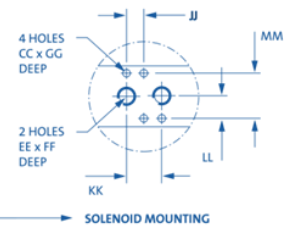
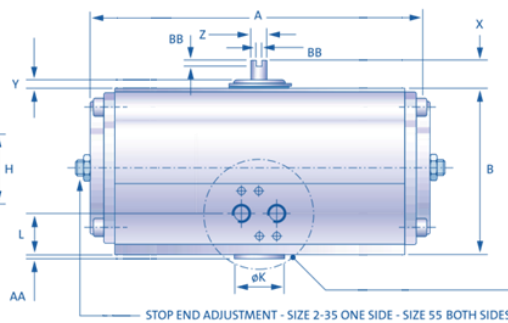
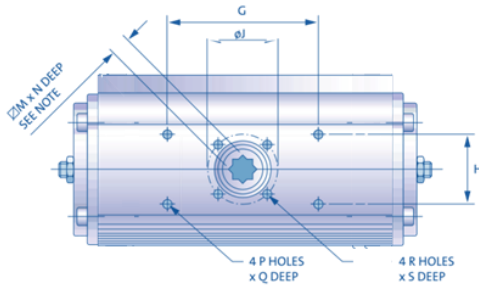
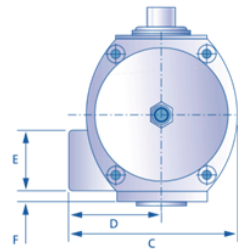
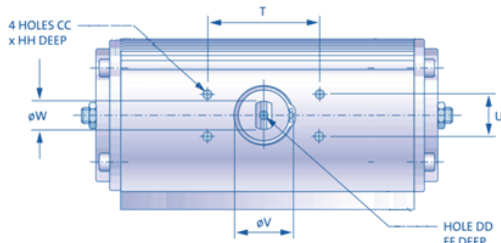
\* Items marked with an asterisk are included in repair kit.



VALVE AUTOMATION  
SINCE 1976

# PNEUMATIC ACTUATORS: C-TYPE 180°

## TRUTORQ ACTUATOR SIZE 2/4/8/12/20/35/ C-TYPE DOUBLE ACTING



### •Dimensions

Imperial	*	A	B	C	D	E	F	G	H	ØJ	ØK	L	□ M	N	P(unc)	Q	R(unc)	S	T
TT 2 F03	*	6,65	2,87	2,97	1,71	1,61	-	2,87	1,26	1,42	0,984	0,81	0,354	0,39	10-24	0,31	10-24	0,31	3,15
TT 4 F04	*	8,46	3,56	3,44	1,87	1,61	-	2,87	1,26	1,65	1,181	0,81	0,433	0,47	10-24	0,31	10-24	0,31	3,15
TT 8 F05	F07	9,65	4,29	4,13	2,24	1,65	0,30	2,87	1,26	1,97	1,378	1,12	0,551	0,63	1/4-20	0,39	1/4-20	0,39	3,15
TT 12 F07	F05	11,61	4,67	4,76	2,64	1,69	0,31	4,21	1,93	2,76	2,165	1,16	0,669	0,75	1/4-20	0,39	5/16-18	0,47	3,15
TT 20 F07	F10	13,27	5,53	5,37	2,83	1,69	0,31	4,21	1,93	2,76	2,165	1,16	0,669	0,75	5/16-18	0,39	5/16-18	0,51	3,15
TT 35 F10	F07	15,83	6,56	6,14	3,07	1,69	0,33	6,34	2,87	4,02	2,756	1,18	0,866	0,94	5/16-18	0,47	3/8-16	0,63	3,15

\*Additional drilling

Imperial	U	ØV	ØW	X	Y	Z	AA	BB	CC(unc)	DD	EE	FF	GG	HH	JJ	KK	LL	MM
TT 2 F03	1,18	0,98	0,63	0,79	0,18	0,45	0,08	0,16	10-32	M6	NPT1/8	0,5	0,31	0,2	0,47	0,94	0,63	1,26
TT 4 F04	1,18	1,22	0,79	0,79	0,18	0,45	0,08	0,16	10-32	M6	NPT1/8	0,5	0,31	0,2	0,47	0,94	0,63	1,26
TT 8 F05	1,18	1,38	0,79	0,79	0,2	0,45	0,12	0,16	10-32	M6	NPT1/8	0,5	0,31	0,2	0,47	0,94	0,63	1,26
TT 12 F07	1,18	1,81	0,79	0,79	0,22	0,45	0,12	0,16	10-32	M6	NPT1/4	0,50	0,31	0,20	0,47	0,94	0,63	1,26
TT 20 F07	1,18	1,97	1,26	0,79	0,26	0,75	0,12	0,16	10-32	M6	NPT1/4	0,50	0,31	0,20	0,47	0,94	0,63	1,26
TT 35 F10	1,18	2,40	1,26	0,79	0,28	0,75	0,12	0,16	10-32	M6	NPT1/4	0,50	0,31	0,20	0,47	0,94	0,63	1,26

### •Basic Operating Detail

Drive Medium = Air (Dry or lubricated); Non corrosive Gas; Light Hydraulic Oil

Temperature = -40 to +212°F. High & Low temp versions available

•Torque Model	AIR SUPPLY PSI	DA TORQUE in.lbs	Operating Time		Air Consumption		Overall Weight DA lbs	Sol. VV Min Cv
			DA Open	DA Close	Open (ci)	Close (ci)		
TT 2	80,0	166	<1	<1	10,98	14,65	4,0	0,2
TT 4	80,0	337	<1	<1	20,75	25,02	6,8	0,2
TT 8	80,0	730	<1	<1	29,90	39,05	9,0	0,5
TT 12	80,0	994	1,5	1,5	54,92	61,02	14,0	0,5
TT 20	80,0	1638	2,0	2,0	103,12	115,94	23,0	0,5
TT 35	80,0	3035	2,5	2,5	170,86	207,47	40,0	0,5

\* at 5.5 barg/80 psig

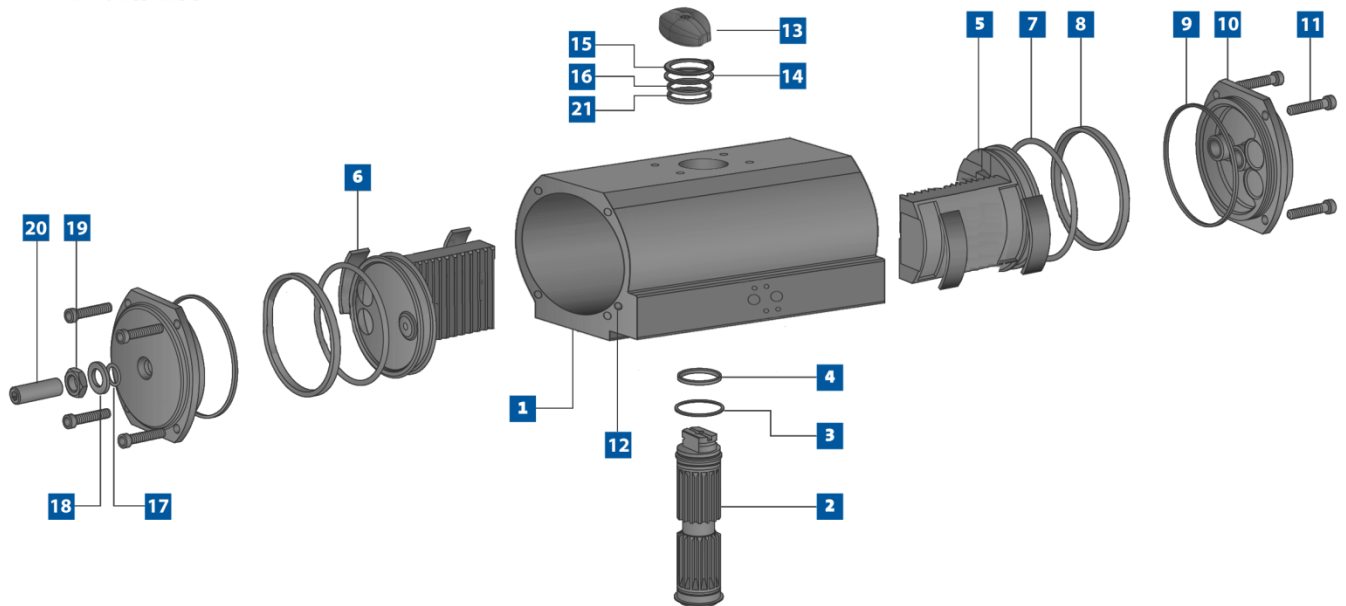




VALVE AUTOMATION  
SINCE 1976

# PNEUMATIC ACTUATORS: C-TYPE 180°

## ■ Parts List



Ref No	Description	Quantity	Material Std Unit	Material CNI® Unit	Comments
1	Body	1	Alum. Anodized	Alum/CNI 530T	
2	Driveshaft	1	Steel Zinc Plated	Eniflon Coating	Option Stainless Steel
3*	Washer	1	Polyethylene	Polyethylene	
4*	'O' ring	1	Buna Nitrile	Buna Nitrile	Option Viton or Silicone
5	Piston	2	Alum. Anodized	Alum/CNI 425	
6*	Wear Pads	4	POM Delrin	POM Delrin	
7*	'O' ring	2	Buna Nitrile	Buna Nitrile	Option Viton or Silicone
8*	Back-up Bearing	2	POM Delrin	POM Delrin	
9*	'O' ring	2	Buna Nitrile	Buna Nitrile	Option Viton or Silicone
10	Endcap	2	Alum. Painted	Alum/CNI 530T	
11	Endcap Bolt	8	Stainless Steel	Stainless Steel	
12*	Ball Seal	2	Composite	Composite	
13	Position Indicator	1	Polyethylene	Polyethylene	
14*	Washer	1	Polyethylene	Polyethylene	
15*	Circlip	2	Steel Zinc Plated	Stainless Steel	
16*	'O' ring	1	Polyethylene	Polyethylene	
17	Stop Adjustment 'O' ring	1	Buna Nitrile	Buna Nitrile	Option Viton or Silicone
18	Stop Adjustment Washer	1	Stainless Steel	Stainless Steel	
19	Stop Adjustment Nut	1	Stainless Steel	Stainless Steel	
20	Stop Adjustment Screw	1	Stainless Steel	Stainless Steel	
21*	Driveshaft Upper Bearing	1	POM Delrin	POM Delrin	

\* Items marked with and asterisk are included in repair kit.