

Pneumatic Actuator

Series VT



Series VT Pneumatic actuator Improvement design for rack and pinion Bore Size 32-400



- High performance & reliability;
- Fully compliance with all the latest international standards;
- Extensive products range allows best versatility at lower price;
- Innovations and patented solutions for a universal drive shaft;
- Multifunction position indicator.

◆ How to Order

VT	032	S	12	F03	9x9	5015	P	
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Seals

Blank	NBR (blank)		
HT	FKM -15~+150!		
LT	MQ (silastic)-40~+80!		

Type Body (see chart 2)

P	S
H	F

Cap Color

7046	Grey	3020	Red
9004	Black	6002	Green
5021	Blue	5015	Sky blue

Squre
(see chart 1)

Flange
(see chart 1)

Spring Qty. (only for spring rest)
4,5,6,7,8,9,10,11,12

Acting Type

S	Single acting	D	Double acting
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Bore Size

032	050	065	075	085	095
110	125	140	160	190	210
240	270	300	350	400	

Model

VT	Series VT pneumatic actuator
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◆ Chart 1

Model	Squre	Flange type
VT032	9x9	F03
VT050	11x11	F03/05
VT065	14x14	F05/07
VT075		
VT085	17x17	F07/10
VT095		
VT110	22x22	F10/12
VT125		
VT140	27x27	F10/14
VT160		
VT190	36x36	F14
VT210		
VT240	46x46	F16
VT270		
VT300		
VT350		
VT400	55x55	F25

◆ Note:

- 1.The standard rotation of double acting and spring return is clockwise to close(for double acting when port 4 is pressurised).
- 2.The standard temperature of sealing part is -15°C to 80°C,if high temperature or low temperature required,relevant sealing parts can be used.
- 3.For technical parameters of products please refer to this catalog. Customization for special requirement is available. Please contact the sales.
- 4.Customization including but not limited to the items below:
 - Color combination.
 - Flange and Square custom made.
 - Higher protection level.

◆ Chart 2

P	Smooth surface+ hard anodized
S	Sandblasted surface+ hard anodized(color: Grey)
H	Sandblasted surface+hard anodized(Color:Dark Grey)
F	Sandblasted surface+hard anodized+PTFE Coated

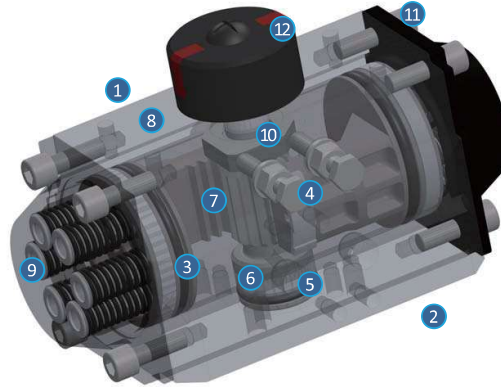
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◆ Design and Construction

VT series pneumatic actuators have introduced improvement design for rack and pinion. It is always AXM' s mission to offer initiative products initiative products by combining the long field experiences in products application and the latest production and materials technology available in the market today. The benefit of new design has long been verified in practice. With new technical features equipped.

1. A single compact design utilizing identical body and end caps for both double acting and spring return models. This feature reduces inventory and allows field conversion, by adding or removing modular spring cartridges.
2. Full conformance to following latest specifications: ISO 5211, DIN 3337 and VDI/VDE 3845 for product interchangeability and easy mounting of solenoids, limit switches and other accessories.
3. AXM piston rack and pinion design for compact construction, symmetric mounting position, high-cycle life and fast operation. Reverse rotation can be accomplished in the field by simply inverting the pistons.
4. Two independent external travel stop adjustments permit easy and precise adjustment of $\pm 5^\circ$ in both directions. This adjustment may be made in either the open or closed position and provides for accurate valve alignment.
5. Multiple bearings and guides on pistons and racks for precise operation, low friction, high cycle life and a blowout proof pinion shaft.
6. Electrolless nickel-plated blowout resistant, bearing guided, one-piece pinion shaft for improved safety and maximum cycle life.
7. High precision teeth on piston racks and pinion shaft for accurate positioning, low backlash, and maximum engagement resulting in overall efficient operation.
8. Extruded aluminum body with both internal and external corrosion protections having a honed cylinder surface for longer life and a lower coefficient of friction.
9. Modular preloaded spring cartridges designed with coated springs for simple range versatility, greater safety and corrosion resistance.
10. Selected high quality bearings and seals that provide a wide operating temperature range, low friction, and high cycle life.
11. Internal and external stainless steel fasteners for long term corrosion resistance.
12. Multifunctional position indicator with NAMUR mounting holes for visual position indication, and a direct, easy, economical way to mount popular sensors.



◆ Range of options, quality manufacturing, and accessories

Range of options

- A. Stainless steel 304 or 316 drive shafts are available on request for all sizes no matter the type of corrosion protection selected.
- B. For extremely high or low temperature applications, all models may be equipped with FPM or Silicon O rings along with an tested and certified suitable lubricant.
- C. Other than the standard double square bottom drive shaft connection, we can supply a keyed drive connection, a flat head connection or a special personalized drive connection.

Quality management

- Production conforms to ISO9001.
- Each individual actuator has been factory inspected and tested and given a serial number for full traceability.
- Each individual actuator is individually packed in a special cardboard carton for protection, with a product description label easy identification and includes installation, operation and maintenance instructions .

Accessories available

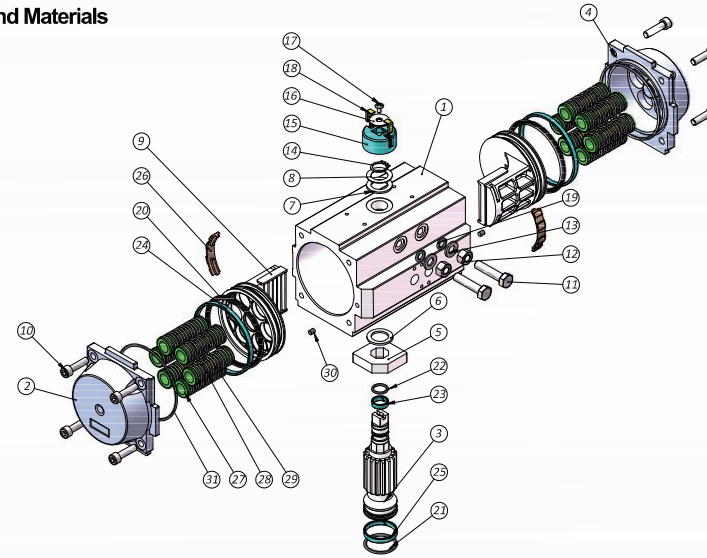
- Brackets
- Couplings
- Solenoid Valves
- Switch boxes
- Proximity switches
- Gear boxes
- Positioners
- Different Square reductions suitable for drive shaft

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◆ Parts and Materials



Item No.	Patr Description	Material	QTY.	Item No.	Patr Description	Material	QTY.	Item No.	Patr Description	Material	QTY.
1	Body	Aluminium alloy	1	12	Nut(stop screw)	Stainless steel	2	23	Bearing(pinion top)	POM+PTFE	1
2	Left end cap	Aluminium alloy	1	13	Washer(stop screw)	Stainless steel	2	24	Bearing(pinion head)	POM+PTFE	2
3	Drive shaft	Alloy steel	1	14	Spring clip	Spring steel	1	25	Bearing(pinion bottom)	POM+PTFE	1
4	Right end cap	Aluminium alloy	1	15	Position Indicator	Nylon	1	26	Wearband	Nylon	2
5	OCTI-CAM	Alloy steel	1	16	Indicator thrust bearing	Stainless steel	1	27	Spring seat	Nylon	24
6	Thrust bearing (pinion top)	POM+PTFE	1	17	Cap screw	Stainless steel	1	28	Spring	Stainless steel	12
7	Thrust bearing	POM+PTFE	1	18	Color code	Nylon	2	29	Staining beam	Copper pipe	12
8	Thrust washer	Stainless steel	1	19	"O"ring(stop screw)	NBR	2	30	Plug	NBR	2
9	Piston	Aluminium alloy	2	20	"O"ring(piston)	NBR	2	31	"O"ring(end cap)	NBR	2
10	Cap screw (end cap)	Stainless steel	8	21	"O"ring(pinion bottom)	NBR	1				
11	Stop top screw	Stainless steel	2	22	"O"ring(pinion top)	NBR	1				

◆ Technical data (Metric unit)

Model	VT032		VT050		VT085		VT075		VT085		VT095		VT110		VT125		VT140		VT160		VT190		VT210		VT240		VT270		VT300		VT350		VT400	
	D	S	D	S	D	S	D	S	D	S	D	S	D	S	D	S	D	S	D	S	D	S	D	S	D	S	D	S	D	S	D	S		
Bores size (mm)	32	50	65	75	85	95	110	125	140	160	190	210	240	270	300	350	400																	
Air Volume opening (L)	0.03	0.09	0.19	0.30	0.44	0.88	0.83	1.41	1.76	2.85	4.75	6.60	11.40	15.80	19.09	27.65	42.81																	
Air Volume Closing (L)	0.04	0.15	0.32	0.50	0.66	1.17	1.27	2.13	2.72	4.08	7.20	10.29	15.10	18.80	28.23	44.10	62.05																	
Opening time (s)	0.3	0.3	0.9	0.4	0.9	0.4	0.9	0.9	1.0	0.9	1.4	0.9	1.4	1.3	2.4	1.3	2.8	2.0	4.8	2.2	2.4	2.9	3.4	3.2	3.81	4.4	5.0	5.0	6.0	6.2	7.4	7.5	9.6	
Closing time (s)	0.4	0.4	0.7	0.4	0.8	0.4	0.9	0.9	1.2	1.0	1.4	1.0	1.6	1.4	2.4	1.4	3.0	2.4	4.9	2.6	3.0	3.8	4.1	3.7	4.0	4.9	5.5	6.0	6.8	7.2	8.4	8.5	10.6	
Weight (kg)	0.47	0.59	1.13	1.25	1.97	2.21	2.93	3.29	3.78	4.26	5.14	5.86	6.09	7.17	10.86	12.54	13.77	15.93	20	23.75	28.41	33.84	40.03	48.43	52.6	77.76	73.64	90.6	108	135.6	146.7	188	1220	5283.5

Note: (A)The above operation time is measured under the following test conditions:

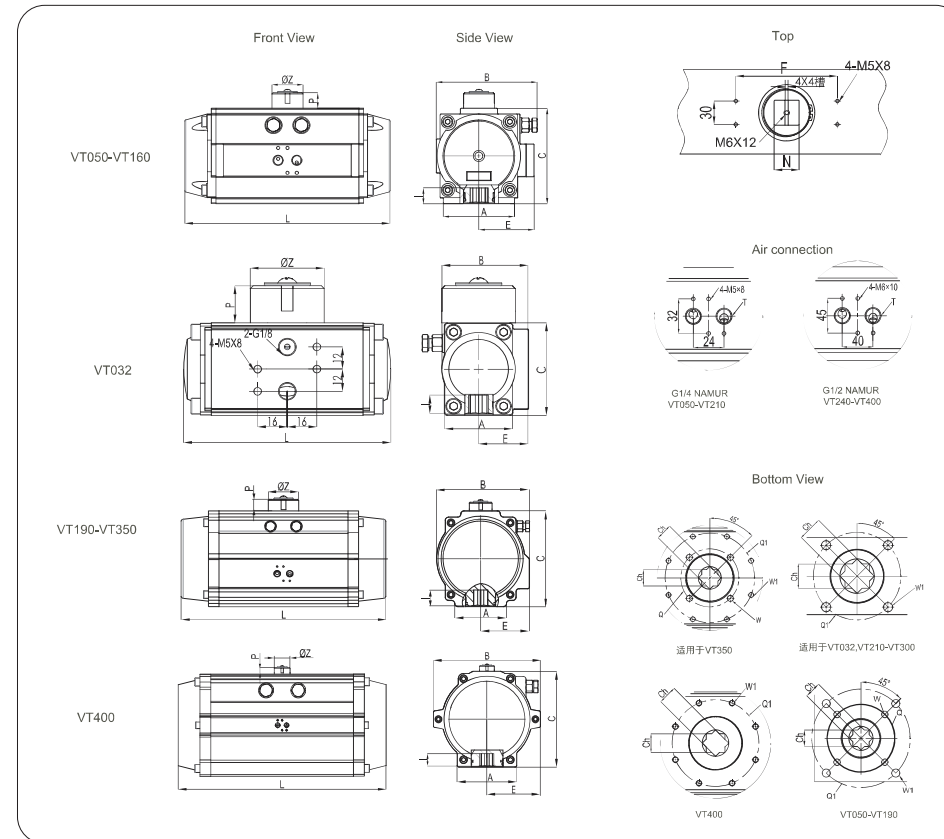
- 1.For model 32-160mm
 1) Room temperature 2) Actuator stroke 90° 3) Solenoid valve with orifice of 4mm and a flow capacity Qn400L/min 4) Inside pipe diameter 6 mm 5)Medium: clean air
 6)Air supply pressure 5.5 bar 7)Actuator without external resistance load
 2.For model 190-400mm
 1)Room temperature 2)Actuator stroke 90° 3)Solenoid valve with orifice of 12 mm and a flow capacity Qn5100L/min 4)Inside pipe diameter 8 mm 5)Medium: clean air
 6)Air supply pressure 5.5 bar 7)Actuator without external resistance load

Cautions: obviously on the field applications when one or more of the above parameter are different, the moving time will be different
 Air consumption rest with air supply, air volume and action cycle times. Expressions:

$$L/\text{min} = \text{Air volume}(\text{opening air volume} + \text{closing air volume}) \times \left[\frac{\text{Air Supply}(\text{Kpa}) + 101.3}{101.3} \right] \times \text{Action times}(\text{min})$$

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◆ Dimensions [mm]



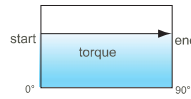
	A	B	C	L	E	F	P	Z	N	I	Flange	Q	Q1	W	W1	Ch	T
VT032	37	47	50	110	27	50	20	40	10	10	F03	-	36	-	M5x9	9x9	G1/8"
VT050	45	70.5	70	154	41.5	80	20	40	10	12	F03/05	36	50	M5x7.5	M6x9	11x11	G1/4"
VT065	62	89.5	89	189	51.5	80	20	40	10	16	F05/07	50	70	M6x9	M8x12	14x14	G1/4"
VT075	68	102.5	100	210	59	80	20	40	14	16	F05/07	50	70	M6x9	M8x12	14x14	G1/4"
VT085	68	112.5	113	229	63.5	80	20	40	14	19	F05/07	50	70	M6x9	M8x12	17x17	G1/4"
VT095	92	126	123	264	71	80	20	40	14	19	F05/07	50	70	M6x9	M8x12	17x17	G1/4"
VT110	93	138.5	136	266	76.5	80	20	40	14	19	F07/10	70	102	M8x12	M10x15	17x17	G1/4"
VT125	96	157	161	337	85	80	30	56	22	25	F07/10	70	102	M8x12	M10x15	22x22	G1/4"
VT140	110	178	178	377	97	80/130	30	56	22	31	F10/12	102	125	M10x15	M12x18	27x27	G1/4"
VT160	112	196	200	412	106	80/130	30	56	22	31	F10/12	102	125	M10x15	M12x18	27x27	G1/4"
VT190	136	216.5	232	488	112	130	30	56	22	41	F10/14	102	140	M10x15	M16x24	36x36	G1/4"
VT210	140	235.5	255	550	120	130	30	80	32	40	F14	-	140	-	M16x24	36x36	G1/4"
VT240	159	262	292	602	131	130	30	80	32	50	F16	-	165	-	M20x28	46x46	G1/2"
VT270	159	295	331	672	147.5	130	30	80	32	50	F16	-	165	-	M20x28	46x46	G1/2"
VT300	180	335	354	784	173	130	30	80	32	50	F16	-	165	-	M20x28	46x46	G1/2"
VT350	270	385	410	845	195	130	30	80	32	50	F16/25	165	254	M20X28	M16x30	46x46	G1/2"
VT400	290	520	466	956	260	130	30	80	32	60	F25	-	254	-	M16x30	55x55	G1/2"

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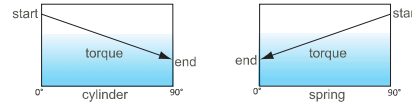
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◆ Metric torque ratings Torque diagram double acting actuators



Torque diagram single acting actuators



◆ Double acting torque ratings in Nm (Pressure:Bar)

Model	2.5	3.0	3.5	4.0	4.5	4.5	5.0	5	6.0	7.0	8.0
VT032	2.9	3.4	4.0	4.6	5.3	5.3	5.9	6.5	7.1	8.3	9.5
VT050	8.6	10.4	12.3	14.2	16.0	16.0	17.9	19.8	21.6	25.4	29.1
VT065	17.4	21.2	25.0	28.7	32.5	32.5	36.3	40.1	43.9	51.4	59.0
VT075	27.0	32.9	38.8	44.7	50.5	50.5	56.4	62.3	68.2	79.9	91.7
VT085	39.7	48.3	56.9	65.6	74.2	74.2	82.8	91.4	100.1	117.3	134.6
VT095	55.7	67.9	80.0	92.1	104.2	104.2	116.4	128.5	140.6	164.8	189.1
VT110	72.0	89.3	105.0	120.6	136.3	136.3	152.0	167.6	183.3	214.6	245.9
VT125	128.7	159.5	187.5	215.4	243.4	243.4	271.4	299.4	327.4	383.3	439.3
VT140	196.0	237.0	278.0	319.0	360.0	360.0	401.0	442.0	483.0	565.0	647.0
VT160	263.5	326.6	383.9	441.2	498.5	498.5	555.8	613.1	670.4	785.0	899.7
VT190	428.5	518.0	607.3	696.6	785.9	785.9	875.3	964.6	1053.9	1232.5	1411.1
VT210	598.2	723.2	847.9	972.6	1097.3	1097.3	1222.0	1346.6	1471.3	1720.7	1970.1
VT240	928.3	1122.0	1315.0	1508.0	1702.0	1702.0	1895.0	2089.0	2282.0	2669.0	3056.0
VT270	1305.0	1577.0	1849.0	2121.0	2393.0	2393.0	2665.0	2937.0	3209.0	3753.0	4297.0
VT300	1678.6	2029.4	2379.3	2729.2	3079.1	3079.1	3429.0	3778.9	4128.8	4828.5	5528.3
VT350	2492.5	3011.8	3531.1	4050.4	4569.6	4569.6	5088.9	5608.2	6127.5	7166.0	8204.6
VT400	3798.1	4589.4	5380.7	6172.0	6963.3	6963.3	7754.5	8545.8	9337.1	10919.7	12502.2

◆ Single acting torque ratings in Nm (Pressure:Bar)

Model	2.5		3.0		3.5		4.0		4.5		5.0		5.5		6.0		7.0		8.0		單位 (牛米)	
	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°
VT050 S05	6.1	3.4	6.9	5.3	8.8	7.2	10.7	9.0	12.5	10.9	14.4	12.8	16.3	14.6	18.1	16.5	21.9	20.2	25.6	23.9	5.2	3.5
VT050 S06	4.4	2.4	6.2	4.3	8.1	6.1	10.0	8.0	11.8	9.9	13.7	11.7	15.6	13.6	17.4	15.5	21.2	19.2	24.9	22.9	6.2	4.2
VT050 S07			5.5	3.2	7.4	5.1	9.3	7.0	11.1	8.8	13.0	10.7	14.9	12.6	16.7	14.4	20.5	18.2	24.2	21.9	7.2	4.9
VT050 S08					6.7	4.1	8.6	5.9	10.4	7.8	12.3	9.7	14.2	11.5	16.0	13.4	19.8	17.1	23.5	20.9	8.2	5.6
VT050 S09							7.9	4.9	9.7	6.8	11.6	8.6	13.5	10.5	15.3	12.4	19.1	16.1	22.8	19.8	9.3	6.3
VT050 S10									9.0	5.7	10.9	7.6	12.8	9.5	14.6	11.3	18.4	15.1	22.1	18.8	10.3	7.0
VT050 S11											10.2	6.6	12.1	8.4	13.9	10.3	17.7	14.0	21.4	17.8	11.3	7.7
VT050 S12													11.4	7.4	13.2	9.3	17.0	13.0	20.7	16.7	12.4	8.4
VT065 S05	8.7	4.3	12.5	8.1	16.3	11.9	20.0	15.6	23.8	19.4	27.6	23.2	31.4	27.0	35.2	30.8	42.7	38.3	50.3	45.9	13.1	8.7
VT065 S06	7.0	1.7	10.7	5.5	14.5	9.2	18.3	13.0	22.1	16.8	25.9	20.6	29.7	24.4	33.4	28.2	41.0	35.7	48.6	43.3	15.7	10.4
VT065 S07			9.0	2.8	12.8	6.6	16.6	10.4	20.4	14.2	24.1	18.0	27.9	21.8	31.7	25.5	39.3	33.1	46.8	40.7	18.3	12.2
VT065 S08					10.0	4.0	14.8	7.8	18.6	11.6	22.4	15.4	26.2	19.1	30.0	22.9	37.5	30.5	45.1	38.1	21.0	13.9
VT065 S09							13.1	5.2	16.9	9.0	20.7	12.7	24.4	16.5	28.2	20.3	35.8	27.9	43.4	35.5	23.5	15.7
VT065 S10									15.1	6.3	18.9	10.1	22.7	13.9	26.5	17.7	34.0	25.2	41.8	32.8	26.2	17.4
VT065 S11										17.2	7.5	21.0	11.3	24.7	15.1	32.3	22.6	39.9	30.2	28.8	19.1	
VT065 S12													19.2	8.7	23.0	12.4	30.6	20.0	38.1	27.6	31.4	20.9
VT075 S05	16.3	10.2	22.2	16.0	28.1	21.9	34.0	27.8	39.8	33.7	45.7	39.6	51.6	45.4	57.5	51.3	69.2	63.1	81.0	74.8	16.9	10.7
VT075 S06	14.2	6.8	20.1	12.7	25.9	18.6	31.8	24.4	37.7	30.3	43.6	36.2	49.4	42.1	55.3	47.9	67.1	59.7	78.8	71.4	20.2	12.8
VT075 S07			17.9	9.3	23.8	15.2	29.7	21.1	35.6	26.9	41.4	32.8	47.3	38.7	53.2	44.6	64.9	56.3	76.7	68.1	23.8	15.0
VT075 S08					21.7	11.8	27.5	17.7	33.4	23.6	39.3	29.4	45.2	35.3	51.0	41.2	62.8	53.0	74.5	64.7	27.0	17.1
VT075 S09							25.4	14.3	31.3	20.2	37.1	26.1	43.0	32.0	48.9	37.8	60.7	49.6	72.4	61.3	30.3	19.3
VT075 S10									29.1	18.8	35.0	22.7	40.9	28.6	46.8	34.5	58.5	46.2	70.3	58.0	33.7	21.4
VT075 S11											32.9	19.3	38.7	25.2	44.6	31.1	56.4	42.8	68.1	54.6	37.1	23.5
VT075 S12													36.6	21.8	42.5	27.7	54.2	39.5	66.0	51.2	40.4	25.7
VT085 S05	23.2	13.7	31.8	22.3	40.4	30.9	49.0	39.5	57.6	48.1	66.3	56.8	74.9	65.4	83.5	74.0	100.8	91.3	118.0	108.5	26.1	16.6
VT085 S06	19.8	8.4	28.4	17.0	37.1	25.7	45.7	34.3	54.3	42.9	62.9	51.5	71.6	60.2	80.2	68.8	97.4	86.0	114.7	103.3	31.3	19.9
VT085 S07			25.1	11.8	33.8	20.5	42.4	29.1	51.0	37.7	59.6	46.3	68.3	55.0	76.9	63.6	94.1	80.8	111.4	98.1	36.5	23.2
VT085 S08					30.4	15.2	39.1	23.9	47.7	32.5	56.3	41.1	64.9	49.7	73.6	58.4	90.8	75.8	108.1	92.9	41.7	26.5
VT085 S09							35.8	18.7	44.4	27.3	53.0	35.9	61.6	44.5	70.3	53.2	87.5	70.4	104.8	87.7	46.9	29.8
VT085 S10									41.1	22.1	49.7	30.7	58.3	39.3	67.0	48.0	94.2	65.2	101.5	82.5	52.1	33.1
VT085 S11											46.4	25.5	55.0	34.1	63.6	42.7	80.6	60.0	98.1	77.2	57.3	35.4
VT085 S12													51.7	28.9	60.3	37.5	77.6	54.8	94.8	72.0	62.5	37.9
VT095 S05	33.6	20.9	45.8	33.0	57.9	45.1	70.0	57.3	82.1	69.4	94.3	81.5	106.4	93.6	118.5	105.8	142.7	130.0	167.0	154.2	34.9	22.1
VT095 S06	29.2	13.9	41.4	26.1	53.5	38.2	65.6	50.3	77.7	62.4	89.8	74.5	102.0	86.7	114.1	98.8	138.3	123.0	162.6	147.3	41.8	26.5
VT095 S07			36.9	19.1	49.1	31.2	61.2	43.3	73.3	55.4	85.4	67.6	97.5	79.7	109.7	91.8	133.9	116.1	158.1	140.3	48.8	30.9
VT095 S08					44.6	24.2	56.8	36.4	68.9	48.5	81.0	60.6	93.1	72.7	105.2	84.8	129.5	109.1	153.7	133.3	55.8	35.4
VT095 S09							52.3	29.4	64.5	41.5	76.6	53.6	88.7	65.8	100.8	77.9	125.1	102.1	149.3	126.4	62.7	39.8
VT095 S10									60.0	34.5	72.2	46.7	84.3	58.8	96.4	70.9	120.6	95.1	144.9	119.4	69.7	44.2
VT095 S11											67.7	39.7	79.9	51.8	92.0	63.9	116.2	88.2	140.5	112.4	76.7	48.6
VT095 S12													75.4	44.8	87.6	57.0	111.8	81.2	136.0	105.4	83.6	53.0
VT110 S05	43.4	26.2	60.7	43.4	76.4	58.1	92.0		107.7	90.4	123.4	106.1	139.0	121.8	154.7	137.4	186.0	168.8	217.3	200.1	45.9	28.6
VT110 S06	37.7	17.0	55.0	34.3	70.6	49.9	86.3	65.6	102.0	81.3	117.6	96.9	133.3	112.6	149.0	128.3	180.3	159.6	211.6	190.9	55.0	34.3
VT110 S07			49.3	25.1	64.9	40.8	80.6	56.4	96.2	72.1	111.9	87.8	127.6	103.4	143.2	119.1	174.6	150.4	205.9	181.8	64.2	40.0
VT110 S08					59.2	31.6	74.9	47.3	90.5	62.9	106.2	78.6	121.9	94.3	137.5	109.9	168.9	141.3	200.2	172.8	73.4	45.8
VT110 S09							69.1	38.1	84.8	53.8	100.5	69.4	116.1	85.1	131.8	100.8	163.1	132.1	194.5	163.4	82.5	51.5
VT110 S10									79.1	44.6	94.8	60.3	110.4	75.9	126.1	91.6	157.4	122.9	188.7	154.2	91.7	57.2
VT110 S11											89.0	51.1	104.7	66.7	120.4	82.4	151.7	113.7	183.0	145.1	100.9	62.9
VT110 S12													93.0	57.6	114.6	73.2	146.0	104.6	177.3	135.9	110.0	68.6

Pneumatic Actuator Series VT

◆ Single acting torque ratings in Nm (Pressure:Bar)

Model	2.5		3.0		3.5		4.0		4.5		5.0		5.5		6.0		7.0		8.0		Spring stroke		
	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	
VT125 S05	77.7	48.2	108.5	78.9	136.5	106.9	166.4	134.9	192.4	162.9	220.4	190.9	248.4	218.8	276.4	246.8	332.3	302.8	388.3	358.7	80.6	51.0	
VT125 S06	67.5	32.0	98.3	62.8	126.3	90.8	164.2	118.8	182.2	146.8	210.2	174.7	238.2	202.7	266.2	230.7	322.1	286.7	378.1	342.6	96.7	61.2	
VT125 S07			88.1	46.7	116.1	74.7	144.0	102.7	172.0	130.7	200.0	158.6	228.0	186.6	256.0	214.6	311.9	270.6	367.9	326.5	112.8	71.4	
VT125 S08					105.9	58.6	133.8	86.6	161.8	114.5	189.8	142.5	217.8	170.5	245.8	198.5	301.7	254.4	357.7	310.4	128.9	81.6	
VT125 S09							123.6	70.5	151.6	98.4	176.9	126.4	207.6	154.4	235.6	182.4	291.5	238.3	347.5	294.3	145.0	91.8	
VT125 S10									141.4	82.3	169.4	110.3	197.4	138.3	225.4	166.3	281.3	222.2	337.3	278.2	161.1	102.0	
VT125 S11												159.2	94.2	187.2	122.2	215.2	150.2	271.1	206.1	327.1	262.1	177.2	112.2
VT125 S12													177.0	106.1	205.0	134.0	260.9	190.0	316.9	246.0	193.3	122.4	
VT140 S05	114.2	74.1	155.1	115.0	196.1	156.0	237.0	196.9	277.9	237.8	318.8	278.7									122.4	82.3	
VT140 S06	97.7	49.6	138.7	90.6	179.6	131.5	220.5	172.4	261.5	213.3	302.4	254.3	343.3	295.2							146.8	98.7	
VT140 S07			122.2	66.1	163.2	107.0	204.1	147.9	245.0	188.9	285.9	229.8	326.9	270.7	367.8	311.6					171.3	115.2	
VT140 S08					146.7	82.5	187.6	123.5	228.6	164.4	269.5	205.3	310.4	246.2	351.3	287.2	433.2	369.0			195.8	131.6	
VT140 S09							171.2	99.0	212.1	139.9	253.0	180.9	294.0	221.8	334.9	262.7	416.7	344.6	498.6	426.4	220.2	149.1	
VT140 S10									195.7	115.5	236.6	156.4	277.5	197.3	318.4	238.2	400.3	320.1	482.1	401.9	244.7	164.5	
VT140 S11											220.1	131.9		261.1	172.8	302.0	213.8	393.8	295.6	465.7	377.5	269.2	181.0
VT140 S12													244.6	148.4	285.5	189.3	367.4	271.1	449.2	355.0	293.6	197.4	
VT160 S05	153.5	101.3	216.6	164.4	273.9	221.7	331.2	279.0	388.5	336.3	445.8	393.6	503.1	450.9	560.4	508.2	675.0	622.8	789.7	737.4	162.3	110.0	
VT160 S06	131.5	68.8	194.6	131.9	251.9	189.2	302.9	246.5	366.5	303.8	423.8	361.1	481.1	418.4	538.4	475.7	653.0	590.3	767.7	705.0	194.7	132.0	
VT160 S07			172.6	99.5	229.9	156.8	287.2	214.1	344.5	271.4	401.8	328.7	459.1	386.0	516.4	443.3	631.0	557.9	745.7	672.5	227.2	154.0	
VT160 S08					207.9	124.3	265.2	181.6	322.5	238.9	379.8	296.2	437.1	353.5	494.4	410.8	609.0	525.4	723.7	640.1	259.6	176.0	
VT160 S09							243.2	149.2	300.5	206.5	357.8	263.8	415.1	321.1	472.4	378.4	587.0	493.0	701.7	607.6	292.1	198.0	
VT160 S10									278.5	174.0	335.8	231.3	393.1	288.6	450.4	345.9	565.0	460.5	679.7	575.2	324.5	220.0	
VT160 S11											313.8	198.9	371.1	256.2	428.4	313.5	543.0	428.1	657.7	542.7	357.0	242.0	
VT160 S12													349.1	223.7	406.4	281.0	521.0	395.6	635.7	510.3	389.4	264.0	
VT190 S05	248.8	167.4	336.3	256.9	425.6	346.2	514.9	435.5	604.2	524.8	693.5	614.1									261.2	181.8	
VT190 S06	210.4	115.1	299.9	204.6	389.2	293.9	478.5	383.3	567.8	472.6	657.2	561.9	746.5	651.2							313.4	218.1	
VT190 S07			263.6	152.4	352.9	241.7	442.2	331.0	531.5	420.3	620.8	509.6	710.1	599.0	799.4	688.3					365.6	254.5	
VT190 S08					316.5	189.5	405.8	278.8	495.1	368.1	584.5	457.4	673.8	546.7	763.1	636.0	941.7	814.7			417.8	290.8	
VT190 S09							389.5	226.6	458.8	315.9	548.1	405.2	637.4	494.5	726.7	583.8	905.3	762.4	1084.0	941.1	470.1	327.2	
VT190 S10									422.4	263.6	511.8	353.0	601.1	442.3	690.4	531.6	869.0	710.2	1047.6	888.8	522.3	363.5	
VT190 S11											475.4	300.7	564.7	390.0	654.0	479.3	832.6	658.0	1011.3	836.6	574.5	399.9	
VT190 S12													528.4	337.8	617.7	427.1	796.3	605.7	974.9	784.4	626.8	436.8	
VT210 S05	352.8	239.1	477.8	364.1	602.5	489.8	727.2	613.5	851.9	738.2	976.6	862.9	1101.2	977.5	1235.9	1112.2	1476.3	1361.6	1724.7	1611.0	359.1	245.2	
VT210 S06	303.7	167.3	428.7	292.3	553.4	417.0	678.1	541.7	802.8	666.4	927.5	791.0	1052.2	915.7	1178.9	1040.4	1428.2	1289.8	1657.6	1539.2	430.9	294.6	
VT210 S07			379.6	220.5	504.3	345.2	629.0	469.8	753.7	594.5	878.4	719.2	1003.1	843.9	1127.8	968.8	1377.2	1218.0	1626.5	1467.4	502.7	343.6	
VT210 S08					455.3	273.3	579.9	398.0	704.6	522.7	829.3	647.4	954.0	772.1	1078.7	896.8	1328.1	1146.2	1577.5	1395.5	574.6	392.6	
VT210 S09							530.9	362.6	656.6	450.9	780.2	575.6	904.9	700.3	1029.6	825.0	1279.0	1074.3	1528.4	1323.7	646.4	441.7	
VT210 S10									606.5	379.1	731.2	503.8	855.8	628.4	980.5	753.1	1229.9	1002.5	1479.3	1251.9	718.2	490.8	
VT210 S11											682.1	431.9	806.8	556.6	931.5	681.3	1180.8	930.7	1430.2	1180.1	790.0	539.9	
VT210 S12													757.7	484.8	882.4	609.5	1131.8	858.9	1381.1	1108.3	861.8	589.0	
VT240 S05	517.8	374.3	711.2	567.7	904.6	761.1	1098.0	954.5	1291.4	1147.9	1484.8	1341.3									554.0	410.5	
VT240 S06	435.7	263.5	629.1	456.9	822.5	650.3	1015.9	843.7	1209.3	1037.1	1402.7	1230.5	1596.1	1423.9							664.8	492.6	
VT240 S07			647.0	346.1	740.4	539.5	933.8	732.9	1127.2	926.3	1320.6	1119.7	1514.0	1313.1	1707.4	1056.5					775.6	574.7	
VT240 S08					658.3	428.7	851.7	622.1	1045.1	815.5	1238.5	1008.9	1431.9	1202.3	1625.3	1395.7	2012.1	1782.5			886.4	656.8	
VT240 S09							769.6	511.3	963.0	704.7	1156.4	898.1	1349.8	1091.5	1543.2	1284.9	1930.0	1671.7	2316.8	2058.5	997.2	738.9	
VT240 S10									880.9	593.9	1074.3	787.3	1267.7	980.7	1461.1	1174.1	1847.9	1650.9	2234.7	1947.7	1108.0	821.0	
VT240 S11											992.2	676.5	1185.6	869.9	1379.0	1063.3	1765.8	1450.1	2152.6	1836.9	1218.8	903.1	
VT240 S12													1103.5	759.1	1296.9	952.5	1683.7	1339.3	2070.5	1726.1	1329.6	985.2	
VT270 S05	745.9	519.4	1017.9	791.4	1289.9	1063.4	1561.8	1335.3	1833.8	1607.3	2105.7	1879.2									786.0	559.5	
VT270 S06	634.0	362.2	906.0	634.2	1178.0	906.2	1449.9	1178.1	1721.9	1450.1	1993.8	1722.0	2265.8	1994.0							943.2	671.4	
VT270 S07			794.1	477.0	1166.1	749.0	1338.0	1029.9	1610.0	1292.3	1891.9	1564.8	2153.9	1836.8	2425.9	2108.8					1100.4	783.3	
VT270 S08					954.2	591.8	1226.1	863.7	1498.1	1135.7	1770.0	1407.6	2042.0	1679.6	2314.0	1951.6	2857.9	2495.5			1287.8	895.2	
VT270 S09							1114.2	706.5	1386.2	978.5	1658.1	1250.4	1930.1	1522.4	2202.1	1794.4	2746.0	2338.3	3289.9	2882.2	1414.8	1007.1	
VT270 S10									1274.3	821.3	1548.2	1093.2	1818.2	1365.2	2090.2	1637.2	2634.1	2181.1	3178.0	2726.0	1572.0	1119.0	
VT270 S11											1434.3	936.0	1706.3	1208.0	1978.3	1480.0	2522.2	2023.9	3096.1	2567.8	1729.2	1230.9	
VT270 S12													1594.4	1050.8	1866.4	1322.8	2410.3	1866.7	2954.2	2410.6	1886.4	1342.8	
VT300 S05	987.5	646.7	1338.1	997.5	1688.2	1347.4	2038.1	1697.3	2388.0	2047.2	2737.9	2397.1	3087.8	2747.0	3437.7	3096.9	4137.4	3796.6	4837.2	4496.4	1031.9	691.1	
VT300 S06	849.3	440.3	1200.1	791.1	1550.0	1141.0	1899.9	1490.9	2249.8	1840.8	2599.6	2190.7	2949.5	2540.6	3299.4	2890.5	3999.2	3590.3	4699.0	4290.1	1238.3	829.3	
VT300 S07			1061.9	584.7	1411.7	934.6	1761.6	1284.5	2111.5	1634.4	2461.4	1984.3	2811.3	2334.2	3161.2	2684.1	3861.0	3383					