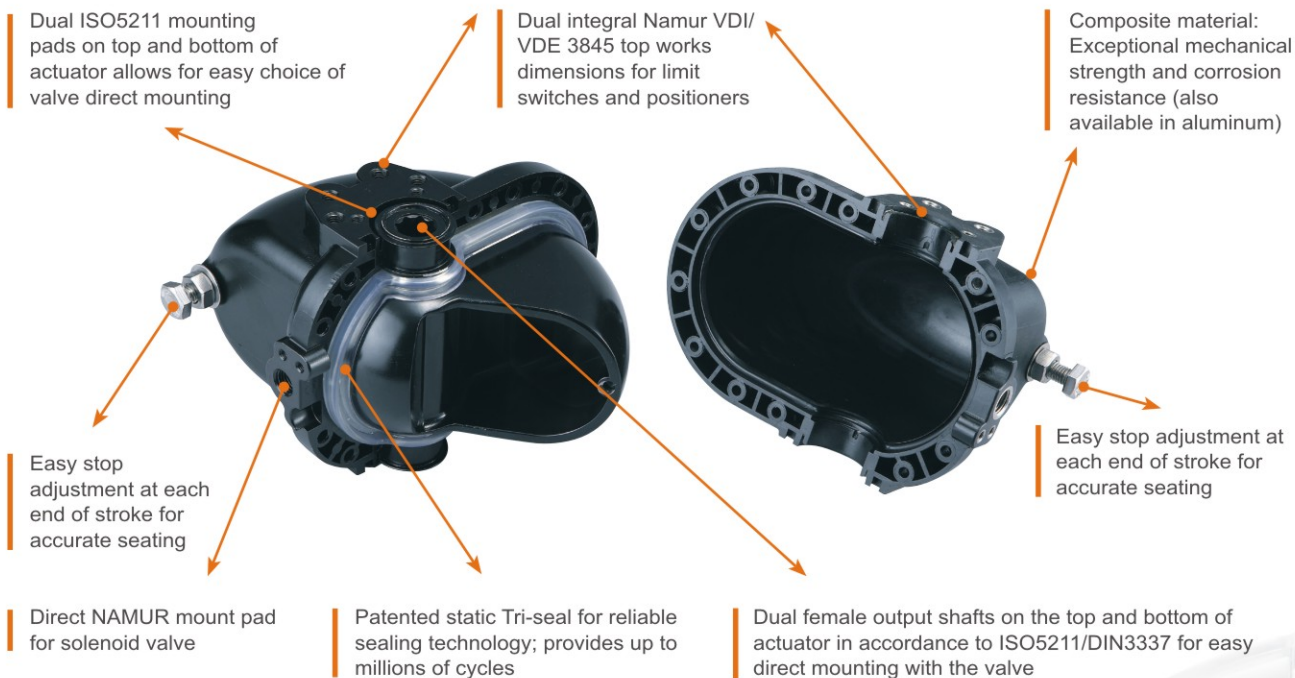


www.puretorq.com

Puretorq Vane Type Actuator

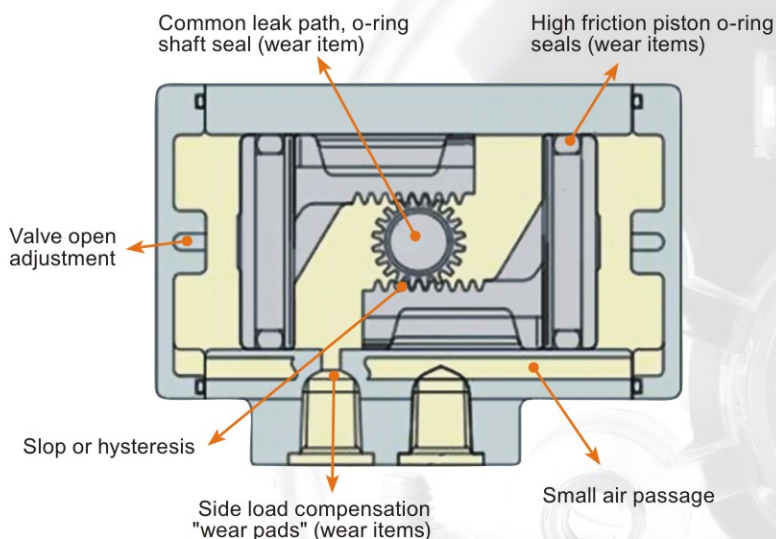
Puretorq, using the vane design, utilizes the rotary-to-rotary motion principle providing the reliability for modulating and simple on/off applications at costs more competitive to Rack & Pinion actuators



Features

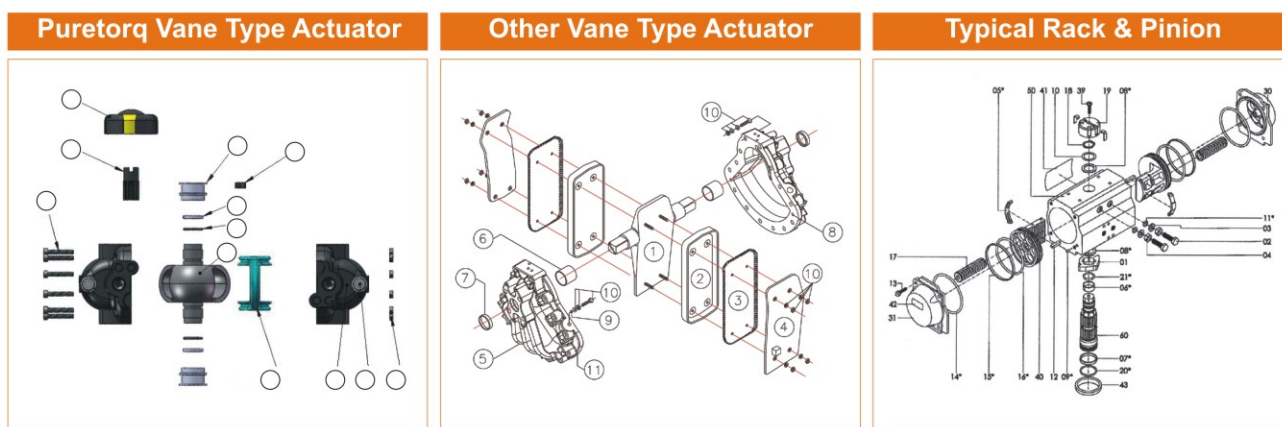
► Puretorq Actuators are the Ideal Design for Modulating

Conventional Rack & Pinion actuators can not avoid the hysteresis caused by the gap between the rack and the pinion, inducing motion errors when utilized in modulation application. Puretorq actuators do not have these issues and can provide the reliability for modulating and simple on/off application.



► Simple Design

Puretorq's simple design results in far fewer parts than conventional Rack & Pinion or other Vane type designs. This results in better reliability, longer life, significantly lower cost and lower maintenance cost compared to our competitor's actuator.



► Patented Fixed Tri-Seal



Puretorq's life cycle has already passed through CEN/TC69 Statements (European Standard) of cycles in Double Acting, Fail-Safe and Spring Return versions, lasting longer than the conventional Rack & Pinion actuator. Air pressure is used to create the sealing due to the V-shape of the Tri-seal. The air pressure produces a tight seal at the contact of "seal to vane" and "seal to housing".

Patent worldwide:

U.S.A. 6,511,040 ; 6,318,701

EPC UK 97942744

Italy 97942744

China 2007 1 0014807.0

Taiwan 155762 ; 143286

All other areas patent pending

Puretorq Vane Type Actuator

► Direct NAMUR Mount Pad for Solenoid Valve



- Provides compatibility with a broad range of solenoid suppliers and the option of direct piping

► Single Moving Vane

- The vane is the only moving part of the actuator and is comprehensively integrated with the shaft. Zero hysteresis occurs from the actuator to the valve stem
- Unlike a Rack & Pinion shaft, Puretorq's shaft is constructed symmetrically allowing for better balance thereby mitigating unwanted friction and improving actuator life



Rack & Pinion Shaft



► External Single Acting Spring Return Unit

- Sealed, non-breathing housing protects spring in corrosive environments



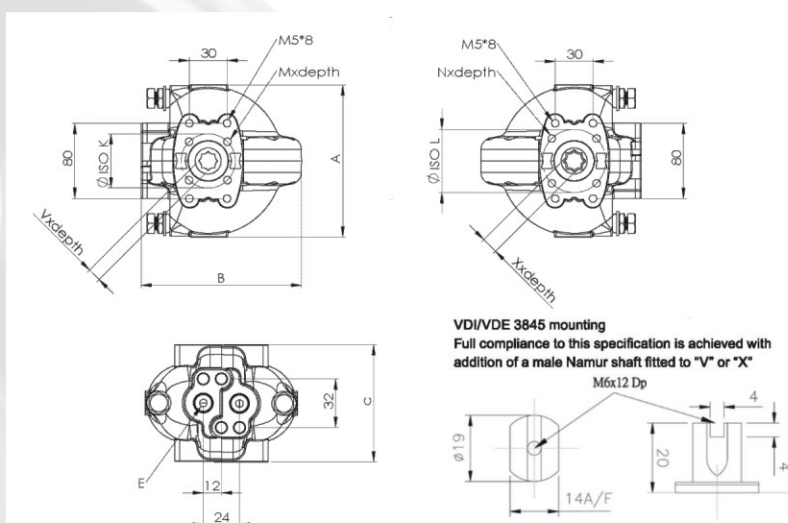
► Dual Female Drive

- As per ISO standards, Puretorq has incorporated a female drive in its design thereby allowing for direct mounting on both sides
- Most Vane type actuator do not allow direct mounting; its design only supports male drive, therefore a bracket and coupler is needed complicating the construction of a control valve system and increasing the chance for hysteresis



► Supports Dual ISO

- With symmetric construction, all Puretorq actuators have two different (or equal) sets of standard ISO5211 bolting patterns and ISO double square female drive shafts, thereby allowing either side (or both sides) to be used to operate turn valves



Puretorq Vane Type Actuator

► Dual VDI/VDE 3845 Mounting Pads

- Puretorq vane type actuator fully complies with VDI/VDE 3845 standards, and provides the compatibility and direct mounting of limit switch, positioner and a broad range of auxiliary products



► Comparison Overview

Actuator Design Comparison		
	Vane Type Actuator	Rack & Pinion
Torque Efficiency	✓	✗
Rotary-to-Rotary Movement	✓	✗
No Hysteresis, Ideal for Modulating	✓	✗
Simple Maintenance	✓	✗
Easy Stroke Travel Adjustment	✓	✗

Vane Type Actuator Comparison		
	Puretorq	Other Vane Actuators
Parts	Few	Complicated
Price	<u>One of the most competitive in market</u>	<u>One of the most expensive in market</u>
Universal Standard	ISO & NAMUR	Non-Standard
Corrosion Resistance	Superior	Limited

Technical Details

	Aluminum Model	Composite Model
Design	Rotary-to-rotary motion vane type actuator	
	Type VDA = Double Acting	
	Type VSR = Single Acting (with spring return unit)	
Construction	Patented fixed Tri-seal with moving vane principle. The vane is the only moving part in the actuator and is comprehensively integrated to the shaft, resulting in zero hysteresis to the valve stem	
Features	Symmetric construction to allow dual ISO mounting pads and drive pinions	
Standards for Mounting Specifications	<ul style="list-style-type: none"> Interface Actuator / Valve: 4 or 8 female threads and 1 drive pinion on both top and bottom of actuator according to EN ISO5211 Interface Actuator / Control Units: According to NAMUR i.e. VDI/VDE 3845 Interface Actuator / Signal Units: According to NAMUR i.e. VDI/VDE 3845 	<ul style="list-style-type: none"> Interface Actuator / Valve: 4 or 8 female threads and 1 drive pinion on both top and bottom of actuator according to EN ISO5211 Interface Actuator / Control Units: According to NAMUR i.e. VDI/VDE 3845 Interface Actuator / Control Units: According to NAMUR i.e. VDI/VDE 3845 Stainless steel thread inserts
	Option 1. Alternative mounting and connection dimensions possible 2. Drive Pinion selectable with Double D or Key Way 3. Hollow drive pinion possible for direct mounting with longer stem	
Material	Body: Aluminum alloy Vane: Aluminum alloy Seal: Polyurethane Bushing: S45C Spring: Clock type spring steel (VSR1000A and higher) Musical wire (VSR100A to VSR500A)	Body: High corrosion resistance glass reinforced polyamide composite material Vane: Aluminum alloy Seal: Polyurethane Bushing: S45C Spring: Clock type spring steel (VSR1000C and higher) Musical wire (VSR100C to VSR500C)
	-20°C to +75°C (-4°F to +167°F) (Use very dry air with all moisture removed for sub-zero temperatures)	
Operating Temperature		
Operating Media	Air (dry or lubricated)	
Travel Adjustment	90° +/- 4°	90° +/- 4°
Supply Pressure	120 psi (8 BAR) max	120 psi (8 BAR) max

Puretorq Vane Type Actuator

Puretorq Vane Type Actuator Torque Output Table (Imperial)

Double Acting Torque Output										
Model	PSIG	40 psi	50 psi	60 psi	70 psi	80 psi	90 psi	100 psi	110 psi	120 psi
VDA200	in-lb	83	102	125	148	169	191	214	235	258
VDA300	in-lb	136	171	203	235	270	304	336	375	415
VDA500	in-lb	272	338	414	493	578	651	722	793	863
VDA1100	in-lb	575	752	920	1,090	1,255	1,412	1,587	1,779	1,938
VDA2000	in-lb	1,118	1,387	1,669	1,947	2,226	2,504	2,793	3,064	3,336
VDA3800	in-lb	1,662	2,111	2,588	3,074	3,554	4,053	4,540	5,046	5,526
VDA6800	in-lb	2,711	3,402	4,087	4,793	5,503	6,183	6,903	7,590	8,364

Single Acting Torque Output(Imperial)																					
Model	Preload of Spring	Operating Pressure (PSI)																		Spring Stroke	
		40 psi		50 psi		60 psi		70 psi		80 psi		90 psi		100 psi		110 psi		120 psi			
		0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°
VSR100	0-1/4 Turn	83	58	102	77	125	100	148	123	169	144	191	166	214	189	235	210	258	233	0	25
	1/8-3/8 Turn			102	61	125	84	148	107	169	128	191	150	214	173	235	194	258	217	0	41
	1/4-1/2 Turn					100	72	123	95	144	116	166	138	189	161	210	182	233	205	25	53
	3/8-5/8 Turn					84	58	107	81	128	102	150	124	173	147	194	168	217	191	41	67
	1/2-3/4 Turn**							95	67	116	88	138	110	161	133	182	154	205	177	53	81
VSR150	0-1/4 Turn	136	81	171	116	203	148	235	180	270	215	304	249	336	281	375	320	415	360	0	55
	1/8-3/8 Turn			171	88	203	120	235	152	270	187	304	221	336	253	375	292	415	332	0	83
	1/4-1/2 Turn			116	59	148	91	180	123	215	158	249	192	281	224	320	263	360	303	55	112
	3/8-5/8 Turn**					120	67	152	99	187	134	221	168	253	200	292	239	332	279	83	136
	1/2-3/4 Turn							123	69	158	104	192	138	224	170	263	209	303	249	112	166
VSR200	0-1/4 Turn	166	76	232	142	308	218	387	297	472	382	545	455	616	526	687	597	757	667	0	90
	1/8-3/8 Turn	166	33	232	99	308	175	387	254	472	339	545	412	616	483	687	554	757	624	0	133
	1/4-1/2 Turn			142	58	218	134	297	213	382	298	455	371	526	442	597	513	667	583	90	173
	3/8-5/8 Turn			99	12	175	88	254	167	339	252	412	325	483	396	554	467	624	537	133	219
	1/2-3/4 Turn**					134	48	213	127	298	212	371	285	442	356	513	427	583	497	173	260
VSR500	1/4-1/2 Turn	299	143	476	320	644	488	814	658	979	823	1,136	980	1,311	1,155	1,503	1,347	1,662	1,506	170	326
	3/8-5/8 Turn	216	63	393	241	561	409	731	579	896	743	1,053	901	1,228	1,075	1,420	1,267	1,579	1,427	253	405
	1/2-3/4 Turn			320	161	488	329	658	499	823	664	980	821	1,155	996	1,347	1,188	1,506	1,347	326	485
	5/8-7/8 Turn**			241	115	409	283	579	453	743	618	901	775	1,075	947	1,267	1,142	1,427	1,301	405	531
	3/4-1 Turn			161	101	329	269	499	439	664	604	821	761	996	936	1,188	1,128	1,347	1,287	485	542
VSR1000	1/2-3/4 Turn	321	127	590	396	873	678	1,151	956	1,429	1,235	1,708	1,513	1,997	1,802	2,268	2,073	2,540	2,345	531	726
	5/8-7/8 Turn	224	29	493	298	775	581	1,053	859	1,332	1,137	1,611	1,416	1,899	1,705	2,170	1,975	2,443	2,248	628	823
	3/4-1 Turn			396	212	678	494	956	772	1,235	1,051	1,513	1,329	1,802	1,618	2,073	1,889	2,345	2,161	726	910
	1-1-1/4 Turn**			212	38	494	320	772	598	1,051	877	1,329	1,156	1,618	1,444	1,889	1,715	2,161	1,988	910	1,083
VSR1500	1-1/4-1-1/2 Turn	387	241	836	690	1,313	1,167	1,799	1,653	2,279	2,133	2,778	2,632	3,265	3,119	3,771	3,625	4,251	4,105	965	1,112
	1-1/2-1-3/4 Turn			690	548	1,167	1,025	1,653	1,511	2,133	1,991	2,632	2,490	3,119	2,977	3,625	3,483	4,105	3,963	1,112	1,253
	1-3/4-2 Turn			548	447	1,025	924	1,511	1,410	1,991	1,890	2,490	2,389	2,977	2,876	3,483	3,382	3,963	3,862	1,253	1,354
	2-2-1/4 Turn**			447	334	924	811	1,410	1,297	1,890	1,777	2,389	2,276	2,876	2,763	3,382	3,269	3,862	3,749	1,354	1,467

** Standard default of preload spring at 0°
 Note: The data is subject to change without notice.

Puretorq Vane Type Actuator Torque Output Table (Metric)

Double Acting Torque Output										
Model	BAR	2.8 BAR	3.4 BAR	4.1 BAR	4.8 BAR	5.5 BAR	6.2 BAR	6.9 BAR	7.6 BAR	8.3 BAR
VDA200	Nm	9.4	11.5	14.1	16.7	19.1	21.6	24.2	26.6	29.2
VDA300	Nm	15.4	19.3	22.9	26.6	30.5	34.4	38.0	42.4	46.9
VDA500	Nm	30.7	38.2	46.8	55.7	65.3	73.6	81.6	89.6	97.5
VDA1100	Nm	65.0	85.0	104.0	123.2	141.8	159.6	179.3	201.0	219.0
VDA2000	Nm	126.3	156.7	188.6	220.0	251.5	283.0	315.6	346.2	377.0
VDA3800	Nm	187.8	238.5	292.4	347.4	401.6	458.0	513.0	570.2	624.4
VDA6800	Nm	306.3	384.4	461.8	541.6	621.8	698.7	780.0	857.7	945.1

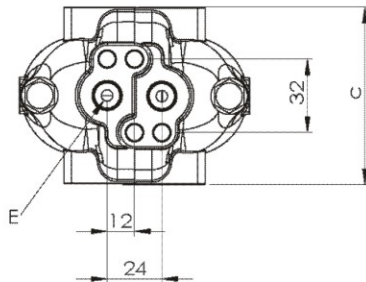
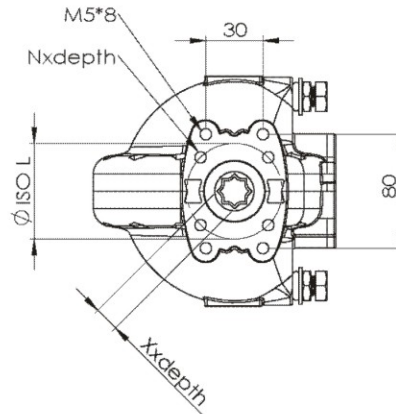
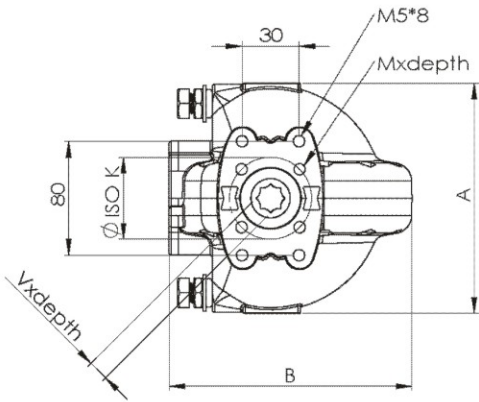
Single Acting Torque Output																					
Model	Preload of Spring	Operating Pressure (BAR)																Spring Stroke			
		2.8 BAR		3.4 BAR		4.1 BAR		4.8 BAR		5.5 BAR		6.2 BAR		6.9 BAR		7.6 BAR				8.3 BAR	
		0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°
VSR100	0-1/4 Turn	9.4	6.6	11.5	8.7	14.1	11.3	16.7	13.9	19.1	16.3	21.6	18.8	24.2	21.4	26.6	23.8	29.2	26.4	0.0	2.8
	1/8-3/8 Turn			11.5	6.9	14.1	9.5	16.7	12.1	19.1	14.5	21.6	17.0	24.2	19.6	26.6	22.0	29.2	24.6	0.0	4.6
	1/4-1/2 Turn					11.3	8.1	13.9	10.7	16.3	13.1	18.8	15.6	21.4	18.2	23.8	20.6	26.4	23.2	2.8	6.0
	3/8-5/8 Turn					9.5	6.5	12.1	9.1	14.5	11.5	17.0	14.0	19.6	16.6	22.0	19.0	24.6	21.6	4.6	7.6
	1/2-3/4 Turn**							10.7	7.5	13.1	9.9	15.6	12.4	18.2	15.0	20.6	17.4	23.2	20.0	6.0	9.2
VSR150	0-1/4 Turn	15.4	9.2	19.3	13.1	22.9	16.7	26.6	20.4	30.5	24.3	34.4	28.2	38.0	31.8	42.4	36.2	46.9	40.7	0.0	6.2
	1/8-3/8 Turn			19.3	9.9	22.9	13.5	26.6	17.2	30.5	21.1	34.4	25.0	38.0	28.6	42.4	33.0	46.9	37.5	0.0	9.4
	1/4-1/2 Turn			13.1	6.7	16.7	10.3	20.4	14.0	24.3	17.9	28.2	21.8	31.8	25.4	36.2	29.8	40.7	34.3	6.2	12.6
	3/8-5/8 Turn**					13.5	7.5	17.2	11.2	21.1	15.1	25.0	19.0	28.6	22.6	33.0	27.0	37.5	31.5	9.4	15.4
	1/2-3/4 Turn							14.0	7.8	17.9	11.7	21.8	15.6	25.4	19.2	29.8	23.6	34.3	28.1	12.6	18.8
VSR200	0-1/4 Turn	18.7	8.5	26.2	16.0	34.8	24.6	43.7	33.5	53.3	43.1	61.6	51.4	69.6	59.4	77.6	67.4	85.5	75.3	0.0	10.2
	1/8-3/8 Turn	18.7	3.7	26.2	11.2	34.8	19.8	43.7	28.7	53.3	38.3	61.6	46.6	69.6	54.6	77.6	62.6	85.5	70.5	0.0	15.0
	1/4-1/2 Turn			16.0	6.6	24.6	15.2	33.5	24.1	43.1	33.7	51.4	42.0	59.4	50.0	67.4	58.0	75.3	65.9	10.2	19.6
	3/8-5/8 Turn			11.2	1.4	19.8	10.0	28.7	18.9	38.3	28.5	46.6	36.8	54.6	44.8	62.6	52.8	70.5	60.7	15.0	24.8
	1/2-3/4 Turn**					15.2	5.4	24.1	14.3	33.7	23.9	42.0	32.2	50.0	40.2	58.0	48.2	65.9	56.1	19.6	29.4
VSR500	1/4-1/2 Turn	33.8	16.2	53.8	36.2	72.8	55.2	92.0	74.4	110.6	93.0	128.4	110.8	148.1	130.5	169.8	152.2	187.8	170.2	19.2	36.8
	3/8-5/8 Turn	24.4	7.2	44.4	27.2	63.4	46.2	82.6	65.4	101.2	84.0	119.0	101.8	138.7	121.5	160.4	143.2	178.4	161.2	28.6	45.8
	1/2-3/4 Turn			36.2	18.2	55.2	37.2	74.4	56.4	93.0	75.0	110.8	92.8	130.5	112.5	152.2	134.2	170.2	152.2	36.8	54.8
	5/8-7/8 Turn**			27.7	13.0	46.2	32.0	65.4	51.2	84.0	69.8	101.8	87.6	121.5	107.3	143.2	129.0	161.2	147.0	45.8	60.0
	3/4-1 Turn			18.2	11.4	37.2	30.4	56.4	49.6	75.0	68.2	92.8	86.0	112.5	105.7	134.2	127.4	152.2	145.4	54.8	61.6
VSR1000	1/2-3/4 Turn	36.3	14.3	66.7	44.7	98.6	76.6	130.0	108.0	161.5	139.5	193.0	171.0	225.6	203.6	256.2	234.2	287.0	265.0	60.0	82.0
	5/8-7/8 Turn	25.3	3.3	55.7	33.7	87.6	65.6	119.0	97.0	150.5	128.5	182.0	160.0	214.6	192.6	245.2	223.2	276.0	254.0	71.0	93.0
	3/4-1 Turn			44.7	23.9	76.6	55.8	108.0	87.2	139.5	118.7	171.0	150.2	203.6	182.8	234.2	213.4	265.0	244.2	82.0	102.8
	1-1-1/4 Turn**			23.9	4.3	55.8	36.2	87.2	67.6	118.7	99.1	150.2	130.6	182.8	163.2	213.4	193.8	244.2	224.6	102.8	122.4
VSR1500	1-1/4-1-1/2 Turn	43.8	27.2	94.5	77.9	148.4	131.8	203.4	186.8	257.6	241.0	314.0	297.4	369.0	352.4	426.2	409.6	480.4	463.8	109.0	125.6
	1-1/2-1-3/4 Turn			77.9	61.9	131.8	115.8	186.8	170.8	241.0	225.0	297.4	281.4	352.4	336.4	409.6	393.6	463.8	447.8	125.6	141.6
	1-3/4-2 Turn			61.9	50.5	115.8	104.4	170.8	159.4	225.0	213.6	281.4	270.0	336.4	325.0	393.6	382.2	447.8	436.4	141.6	153.0
	2-2-1/4 Turn**			50.5	37.7	104.4	91.6	159.4	146.6	213.6	200.8	270.0	257.2	325.0	312.2	382.2	369.4	436.4	423.6	153.0	165.8

** Standard default of preload spring at 0°

Note: The data is subject to change without notice.

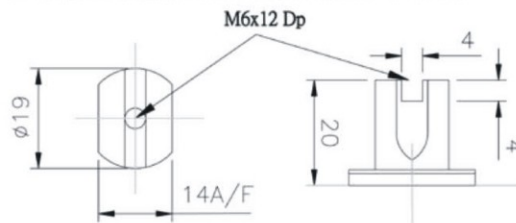
Puretorq Vane Type Actuator

► Assembly Dimension - Double Acting



VDI/VDE 3845 mounting

Full compliance to this specification is achieved with addition of a male Namur shaft fitted to "V" or "X"



Double Acting											Imperial		
Model	A	B	C	E	Ø ISO K	M xdepth	V xdepth	Ø ISO L	N xdepth	X xdepth	A	B	C
VDA200	127.50	126.50	79.50	1/4"	Ø 36/F03	M5x8	9x38.5	Ø 42/F04	M5x8	11x38.5	5.02	4.98	3.13
VDA300	144.60	144.20	110.00	1/4"	Ø 42/F04	M5x8	11x54.2	Ø 50/F05	M6x9	14x54.2	5.69	5.68	4.33
VDA500	169.60	167.00	132.70	1/4"	Ø 50/F05	M6x9	14x65.25	Ø 70/F07	M8x12	17x65.25	6.68	6.57	5.22
VDA1100	219.90	191.60	132.70	1/4"	Ø 50/F05	M6x9	14x65.25	Ø 70/F07	M8x12	17x65.25	8.66	7.54	5.22
VDA2000	280.00	247.50	141.00	1/4"	Ø 70/F07	M8x12	17x69.75	Ø 102/F10	M10x15	22x69.75	11.02	9.74	5.55
VDA3800	313.00	281.00	230.80	1/4"	Ø 102/F10	M10x20	22x36	Ø 125/F12	M10x20	27x36	12.32	11.06	9.09
VDA6800	364.00	306.00	234.80	1/4"	Ø 125/F12	M10x20	22x36	Ø 140/F14	M16x24	27x36	14.33	12.05	9.24

All dimensions in mm, except column E. Column E in inch.

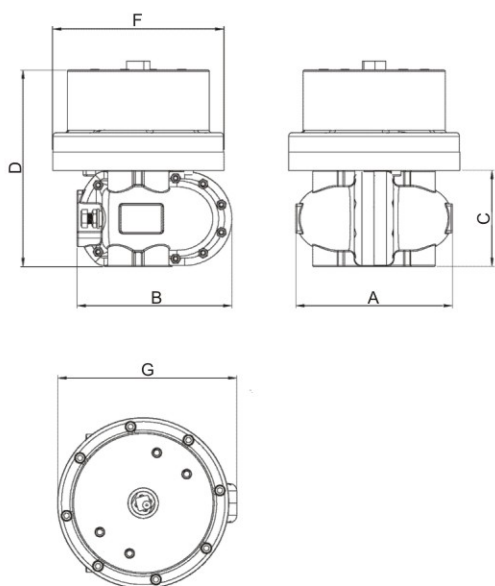
Outside dimensions in inch

Weight Double Acting				
Model	Standard		Chemical	
	lbs	kg	lbs	kg
VDA200	2.47	1.12	2.16	0.98
VDA300	3.87	1.76	3.25	1.47
VDA500	6.69	3.03	5.72	2.59
VDA1100	7.92	3.59	6.87	3.12
VDA2000	14.44	6.55	10.79	4.89
VDA3800	26.96	12.23	23.13	10.49
VDA6800	33.32	15.11	26.43	11.99

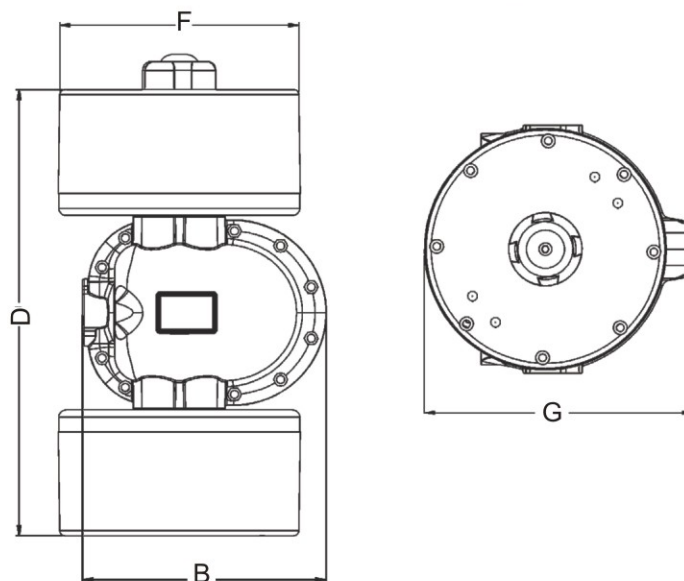


► Assembly Dimension - *Single Acting*

VSR100 through VSR 500



VSR1000 through VSR 1500



Single Acting (Spring Return)

Imperial

Model	A	B	C	D	E	F	G	V xdepth	X xdepth	D	F	G
VSR100	127.50	126.50	79.50	161.50	1/4"	140.00	146.50	9x38.5	11x38.5	6.36	5.51	5.77
VSR150	144.60	144.20	110.00	192.20	1/4"	140.00	154.00	11x54.2	14x54.2	7.57	5.51	6.06
VSR200	169.60	167.00	132.70	219.72	1/4"	165.00	182.50	14x65.25	17x65.25	8.65	6.50	7.19
VSR500	219.90	191.60	132.70	219.72	1/4"	165.00	207.90	14x65.25	17x65.25	8.65	6.50	8.19
VSR1000	280.00	247.50	141.00	256.00	1/4"	244.20	259.00	17x69.75	22x69.75	10.08	8.43	10.20
VSR1500	313.00	281.00	230.80	342.80	1/4"	244.20	308.00	22x36	27x36	13.50	10.28	12.13

All dimensions in mm, except column E. Column E in inch.

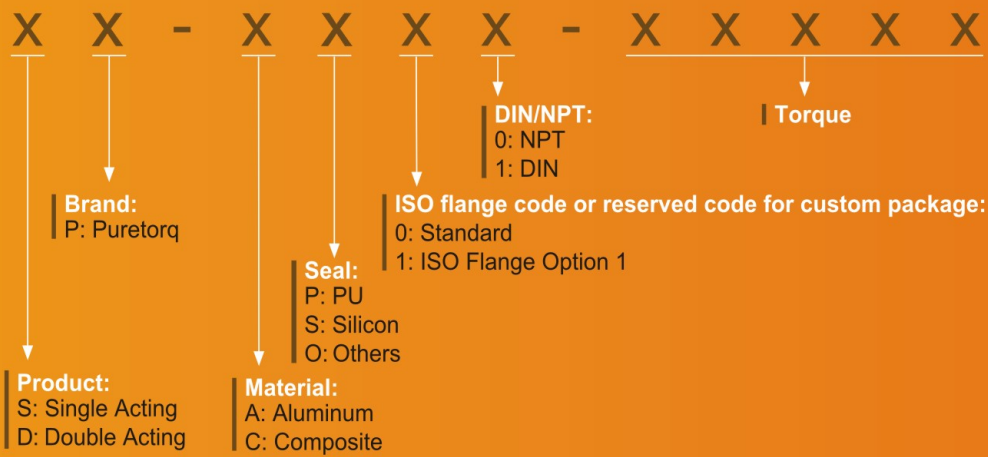
Outside dimensions in inch

Weight Single Acting

Model	Aluminum		Composite	
	lbs	kg	lbs	kg
VSR100	5.07	2.30	4.80	2.18
VSR150	6.61	3.00	6.04	2.74
VSR200	13.04	5.91	10.04	4.55
VSR500	14.63	6.64	12.07	5.47
VSR1000	46.30	21.02	38.37	17.42
VSR1500	58.60	26.58	50.22	22.78



Actuator & Fail-Safe P/N Coding Rule



Double Acting Actuator: Standard Series

Model no.	New P/N
VDA200A	DP-AP00-00200
VDA300A	DP-AP00-00300
VDA500A	DP-AP00-00500
VDA1100A	DP-AP00-01100
VDA2000A	DP-AP00-02000
VDA3800A	DP-AP00-03800
VDA6800A	DP-AP00-06800

Double Acting Actuator: Corrosion Resistant

Model no.	New P/N
VDA200C	DP-CP00-00200
VDA300C	DP-CP00-00300
VDA500C	DP-CP00-00500
VDA1100C	DP-CP00-01100
VDA2000C	DP-CP00-02000
VDA3800C	DP-CP00-03800
VDA6800C	DP-CP00-06800

Single Acting Actuator: Standard Series

Model no.	New P/N
VSR100A	SP-AP00-00100
VSR150A	SP-AP00-00150
VSR200A	SP-AP00-00200
VSR500A	SP-AP00-00500
VSR1000A	SP-AP00-01000
VSR1500A	SP-AP00-01500
VSR3000A	SP-AP00-03000

Single Acting Actuator: Corrosion Resistant

Model no.	New P/N
VSR100C	SP-CP00-00100
VSR150C	SP-CP00-00150
VSR200C	SP-CP00-00200
VSR500C	SP-CP00-00500
VSR1000C	SP-CP00-01000
VSR1500C	SP-CP00-01500
VSR3000C	SP-CP00-03000

Taiwan

Puretorq Industrial Co., Ltd.

Phone : 886-37-861-202

Fax: 886-37-855-962

www.puretorq.com

E-mail: Sales@puretorq.com

Distributed by: