



FLOWSERVE

VALTEK
*Rack & Pinion
and Scotch Yoke Actuators*



Flowserve is the World's Premier Provider of flow management services. Flowserve manufactures actuators and accessories to provide full service valve and damper automation to the worldwide oil and gas, pulp and paper, chemical, processing and energy related industries. We provide maximum value to the end user through a broad offering of products, services, application engineering and our systematic approach to automation.

Sales and service facilities are strategically located in industrial centers throughout the world.

Valtek® Control Products
Springville, Utah

Web Site: <http://www.flowserve.com>



Quality, Dependability, and Productivity.

Recognized as the leader in control systems, Valtek's pneumatic actuators can automate valves with torque values from 25 to 500,000 in-lb. Actuators are available in a wide range of materials suitable for use in the most demanding applications. Flowserve also offers a comprehensive range of NAMUR Controls and accessories such as lockout modules and gear overrides. To complete the package Flowserve can provide engineering design services for SureGrip™ valve couplings.

**SuperNova
VB-Series**

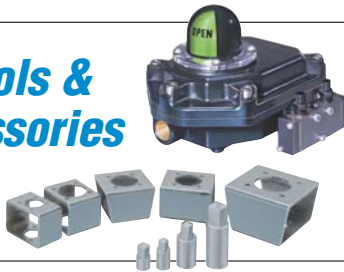
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SuperNova VB series Rack and Pinion actuators are designed for butterfly, plug or ball valves, and offer one compact design for double acting and spring return. Precision die-cast pistons with large cylinder bearings increase efficiency and cycle life. Available in torque ranges from 25 in-lb to 58,000 in-lb, for optimum actuator sizing.

**Controls &
Accessories**

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The actuator is the heart of an automation system, but control accessories are important in creating a complete system to meet increasingly sophisticated customer requirements. Solenoid valves and related accessories with NAMUR interfaces provide direct, modular mounting on actuator. Switches, Positioners, Gear Overrides and Lockout Modules can also be integrated into the assembly. SureGrip™ valve couplings are engineered to assure consistency and proper alignment.

**Stainless Steel
VSXL-Series**

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The VSXL® series utilizes a 316 series stainless steel housing and is ideal for use in corrosive environments. It is available in both double acting and spring return and can be supplied with internal components identical to the VSNA Series or with optional stainless steel internals. For sanitary applications the housing can be polished. Available in torque ranges from 78 in-lb to 7279 in-lb.

**Heavy Duty
VR2, VR3, VR4
& VR5 Series**

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A complete line of Scotch Yoke heavy-duty actuators provides torques from 3,000 to 500,000 in-lb. The combination of Scotch Yoke actuators plus Rack and Pinion actuators offers the opportunity to standardize on one source for your complete quarter-turn automation needs. Scotch Yoke Actuators can also be configured with high pressure hydraulic cylinders. Contact Flowserve for complete details.

SuperNova VB-Series

Rack & Pinion Actuators are designed for automating butterfly, eccentric rotary plug or ball valves and dampers. The actuators incorporate a precision-extruded hard anodized aluminum body and a one-piece nitride-coated pinion gear, factory lubricated for a long trouble-free life. Actuators are designed for 100-degree travel with clockwise and counterclockwise travel adjustment for open and closed positions. Actuators are convertible to a double acting or a spring return simply by removing or adding springs, while utilizing the same body and end caps. Available in torque ranges from 25 in-lbs. to 58,000 in-lbs., for optimum actuator sizing for each valve requirement.

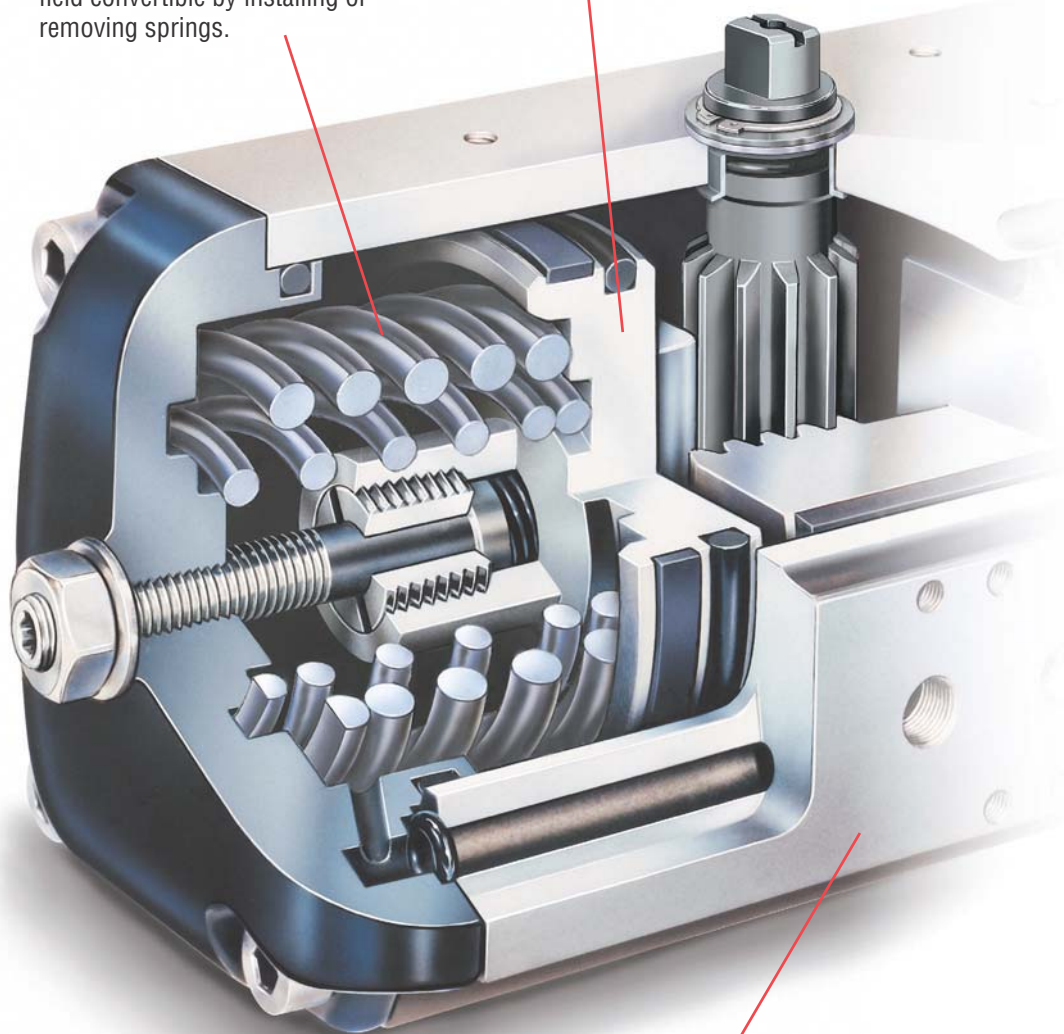


Spring Return

Broad size range offers optimum actuator sizing for each valve requirement.

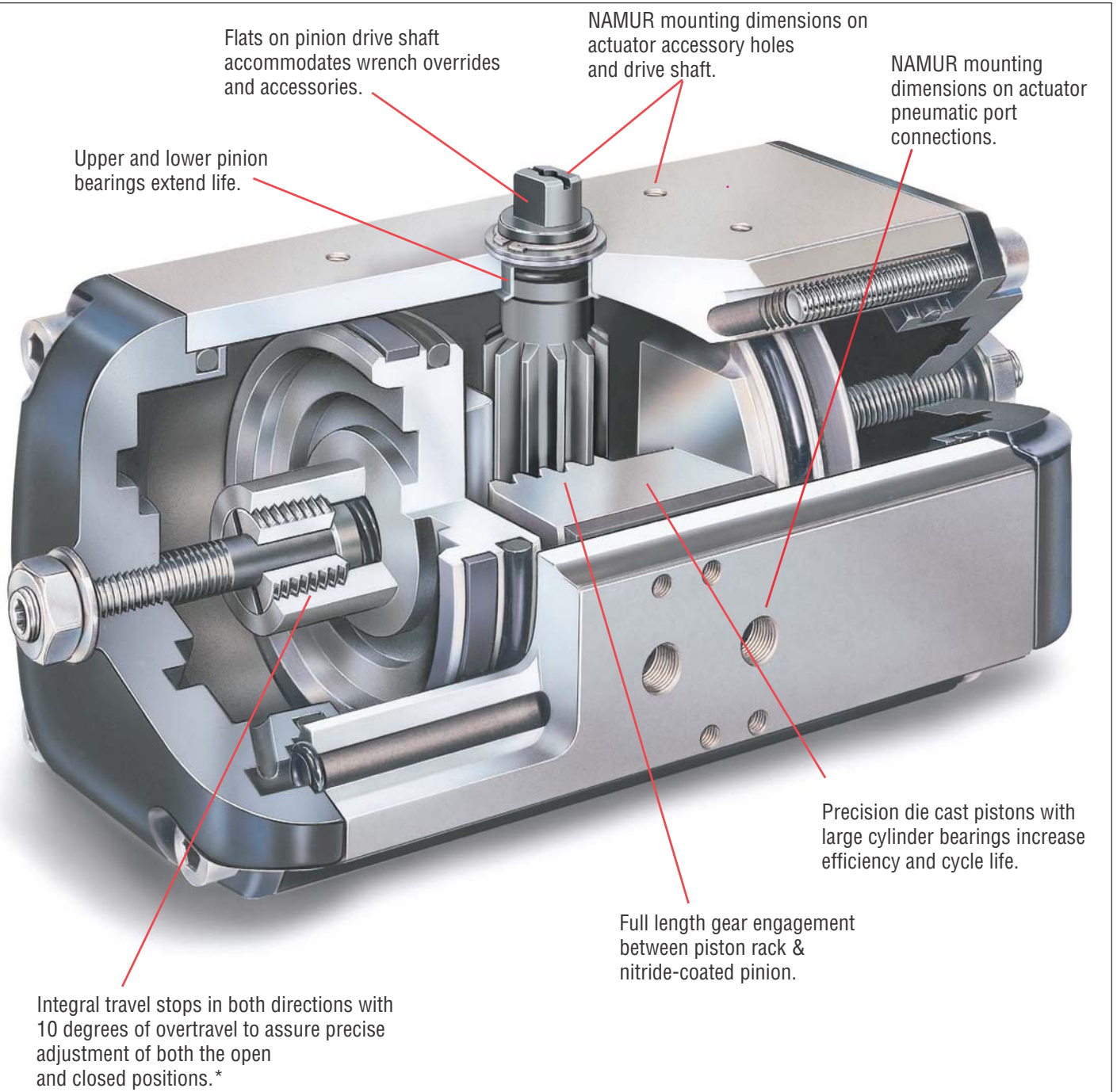
One compact design for double acting and spring return is easily field convertible by installing or removing springs.

Field reversible action simply by rotating pistons 180°.



Corrosion resistant hard anodized aluminum housings with stainless steel fasteners.

Double Acting (No Spring)



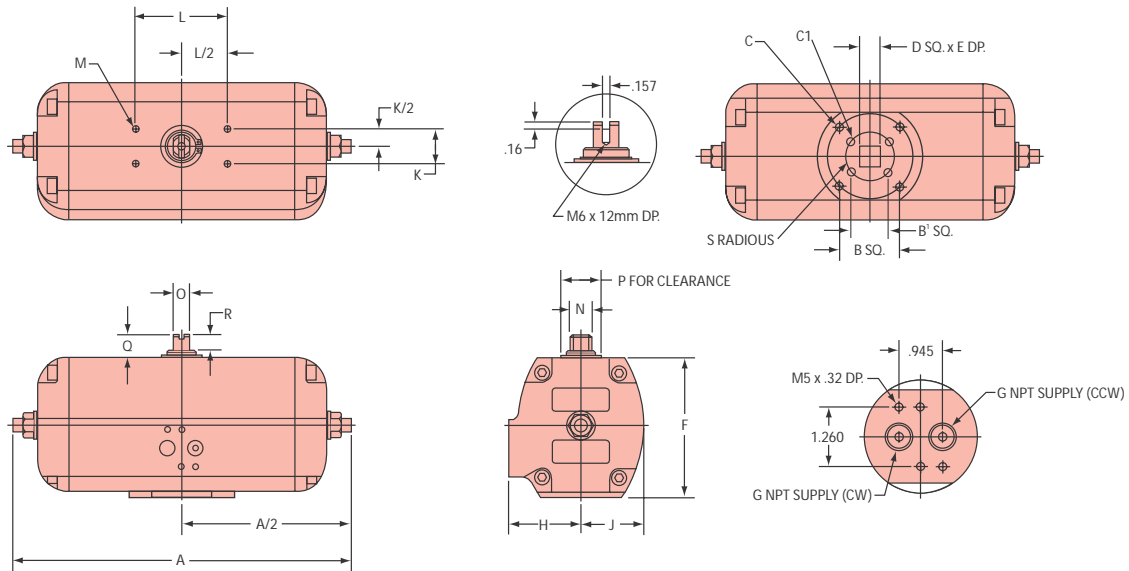
*Outward piston adjustment only on models VSNA250 & VSNA300

SuperNova VB-Series

Torque Outputs

Model	Spring			Air Supply					
	No	End	Break	60 psi (4.1 bar)		80 psi (5.5 bar)		100 psi (6.9 bar)	
				End	Break	End	Break	End	Break
VB050	5	36	55	56	76				
	6	43	64	46	69				
	7	49	73	35	63	74	102		
	8	61	92	15	49	54	88	93	127
	9	73	110			34	74	73	113
VB063	6	68	102	103	141				
	7	79	119	85	128				
	8	90	136	66	116				
	9	102	153			119	175		
	10	113	170			100	163		
VB085	6	141	211	215	293				
	7	164	246	177	267				
	8	188	282	138	241				
	9	211	317			248	365		
	10	235	352			209	339		
VB100	6	260	390	397	541				
	7	303	455	325	493				
	8	347	520	253	445				
	9	390	585			457	673		
	10	433	651			385	625		
VB115	6	430	645	656	894				
	7	502	753	537	814				
	8	573	860	418	735				
	9	645	968			756	1112		
	10	717	1075			637	1033		
VB125	6	610	915	930	1267				
	7	712	1067	761	1155				
	8	813	1220	593	1042				
	9	915	1372			1071	1577		
	10	1017	1525			903	1464		
VB150	6	1098	1648	1673	2280				
	7	1281	1922	1369	2078				
	8	1465	2197	1066	1875				
	9	1648	2471			1927	2837		
	10	1831	2746			1624	2635		
VB175	6	1606	2527	2438	3457				
	7	1899	2907	2079	3133				
	8	2153	3349	1530	2851				
	9	2427	3759			2820	4292		
	10	2701	4170			2366	3989		
VB200	6	2343	3516	3568	4864				
	7	2734	4107	2914	4432				
	8	3125	4691	2269	4000				
	9	3515	5277			4106	6053		
	10	3906	5865			3456	5622		
VSNA250	6	2854	6591	7421	12025				
	7	3393	7690	6448	11441				
	8	3945	8788	5428	10857				
	9	4519	9887	4373	10273	9780	15450		
	10	5106	10985	3274	9689	8566	14866		
VSNA300	6	4744	11096	9931	17473				
	7	5640	12945	8245	16501				
	8	6558	14795	6482	15530				
	9	7512	16644	4658	14559	12669	22326		
	10	8487	18493	2762	13588	10625	21355		
VSNA250S	6	2854	6591	7421	12025				
	7	3393	7690	6448	11441				
	8	3945	8788	5428	10857				
	9	4519	9887	4373	10273	9780	15450		
	10	5106	10985	3274	9689	8566	14866		
VSNA300S	6	4744	11096	9931	17473				
	7	5640	12945	8245	16501				
	8	6558	14795	6482	15530				
	9	7512	16644	4658	14559	12669	22326		
	10	8487	18493	2762	13588	10625	21355		
VSNA250SO	6	2854	6591	7421	12025				
	7	3393	7690	6448	11441				
	8	3945	8788	5428	10857				
	9	4519	9887	4373	10273	9780	15450		
	10	5106	10985	3274	9689	8566	14866		
VSNA300SO	6	4744	11096	9931	17473				
	7	5640	12945	8245	16501				
	8	6558	14795	6482	15530				
	9	7512	16644	4658	14559	12669	22326		
	10	8487	18493	2762	13588	10625	21355		
VSNA250SO9	6	2854	6591	7421	12025				
	7	3393	7690	6448	11441				
	8	3945	8788	5428	10857				
	9	4519	9887	4373	10273	9780	15450		
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	9	7512	16644	4658	14559	12669	22326		
	10	8487	18493	2762	13588	10625	21355		
VSNA250SO99	6	2854	6591	7421	12025				
	7	3393	7690	6448	11441				
	8	3945	8788	5428	10857				
	9	4519	9887	4373	10273	9780	15450		
	10	5106	10985	3274	9689	8566	14866		
VSNA300SO99	6	4744	11096	9931	17473				
	7	5640	12945	8245	16501				
	8	6558	14795	6482	15530				
	9	7512	16644	4658	14559	12669	22326		
	10	8487	18493	2762	13588	10625	21355		
VSNA250SO999	6	2854	6591	7421	12025				
	7	3393	7690	6448	11441				
	8	3945	8788	5428	10857				
	9	4519	9887	4373	10273	9780	15450		
	10	5106	10985	3274	9689	8566	14866		
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	7	5640	12945	8245	16501				
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	9	7512	16644	4658	14559	12669	22326		
	10	8487	18493	2762	13588	10625	21355		
VSNA250SO9999	6	2854	6591	7421	12025				
	7	3393	7690	6448	11441				
	8	3945	8788	5428	10857				
	9	4519	9887	4373	10273	9780	15450		
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	10	5106	10985	3274	9689	8566	14866	</	

Dimensions



- ① Actuator shown in the full clockwise (CW) position as viewed from top.
② Accessory mounting holes not for gear override or stop block.
- ③ Cycle times under no load conditions. Air line size, air capacity, and valve torque characteristics affect these cycle times. Faster or slower cycle times can be accomplished using special control components.

Model	A		B	B'	C	C'	D	E	F	G	H	J	K	L	M ^{2③}	N	O	P	Q	R	Weights ^(lb)		Volume ⁽ⁱⁿ⁾	
	DA&SR	180	SQ.	SQ.						NPT											DA	SR	CW	CCW
VB050	6.69	8.70	1.169	N/A	#10-24x.31	3/8-16x.39	.433	.47	2.56	1/8	1.58	1.14	1.181	3.150	#10-24	.47	.394	.75	.79	.39	2.7	3.1	8.2	5.4
VB063	7.95	9.92	1.392	1.002	1/4-20x.31	#10-24x.31	.551	.63	3.19	1/8	1.77	1.40	1.181	3.150	#10-24	.47	.394	.88	.79	.39	3.8	4.4	16	10
VB085	9.84	12.13	1.949	1.392	5/16-18x.31	1/4-20x.31	.669	.75	4.15	1/8	2.24	1.87	1.181	3.150	#10-24	.77	.551	1.00	.79	.55	7.5	9.3	34	20
VB100	11.65	14.80	1.949	1.392	5/16-18x.31	1/4-20x.31	.669	.75	4.80	1/4	2.48	2.17	1.181	3.150	#10-24	.77	.551	1.38	.79	.55	11.5	14.6	56	38
VB115	13.47	17.60	2.840	1.949	3/8-16x.39	5/16-18x.31	.866	.98	5.30	1/4	2.91	2.46	1.181	5.118	#10-24	1.10	.787	1.63	1.18	.79	17.7	22.5	94	65
VB125	15.83	20.35	2.840	1.949	3/8-16x.39	5/16-18x.31	.866	.98	5.79	1/4	3.07	2.68	1.181	5.118	#10-24	1.10	.787	2.00	1.18	.79	23.8	30.2	128	90
VB150	19.13	25.20	3.480	2.840	1/2-13x.45	3/8-16x.39	1.063	1.18	6.85	1/4	3.47	3.19	1.181	5.118	#10-24	1.87	1.417	2.38	1.18	.89	40.8	51.2	224	159
VB175	21.34	28.58	3.897	N/A	5/8-11x.63	3/8-16x.39	1.417	1.57	8.21	1/4	4.17	3.74	1.181	5.118	#10-24	1.87	1.417	2.75	1.18	.89	63.7	77.2	351	232
VB200	24.41	31.69	3.897	N/A	5/8-11x.63	3/8-16x.39	1.417	1.57	9.39	1/4	4.72	4.25	1.181	5.118	#10-24	1.97	1.417	2.94	1.18	.89	91.5	118	507	332

Note: Double Acting
Pressure at port "CW" will result in clockwise rotation. Pressure at port "CCW" will result in counter-clockwise rotation.
Note: Spring Return
Pressure at port "CCW" will result in counterclockwise rotation. Springs provide clockwise rotation upon loss of pressure.

How To Order (Select Bold Type Code from each column that applies)

MODEL	TYPE	Springs (Select One)①	Seals	Materials	Options
VB050	D Double Acting	04	Blank - Buna (Std.)	Blank - Std. Hard Anodized Aluminum	R Extra Long Travel Stop
VB063	S Spring Return (FCW)	05	L Low Temp.		C Stainless Steel Pinion/Snap Ring
VB085	C Spring Return (FCCW)	06	H Viton (High Temp.)	K K-Mass Coated	
VB100		07		W White Epoxy Coated	
VB115		08		G Gray Epoxy Coated	
VB125		09		X BlackMax Coating	
VB150		10			
VB175		11			
VB200		12			
VSNA250					
VSNA300					

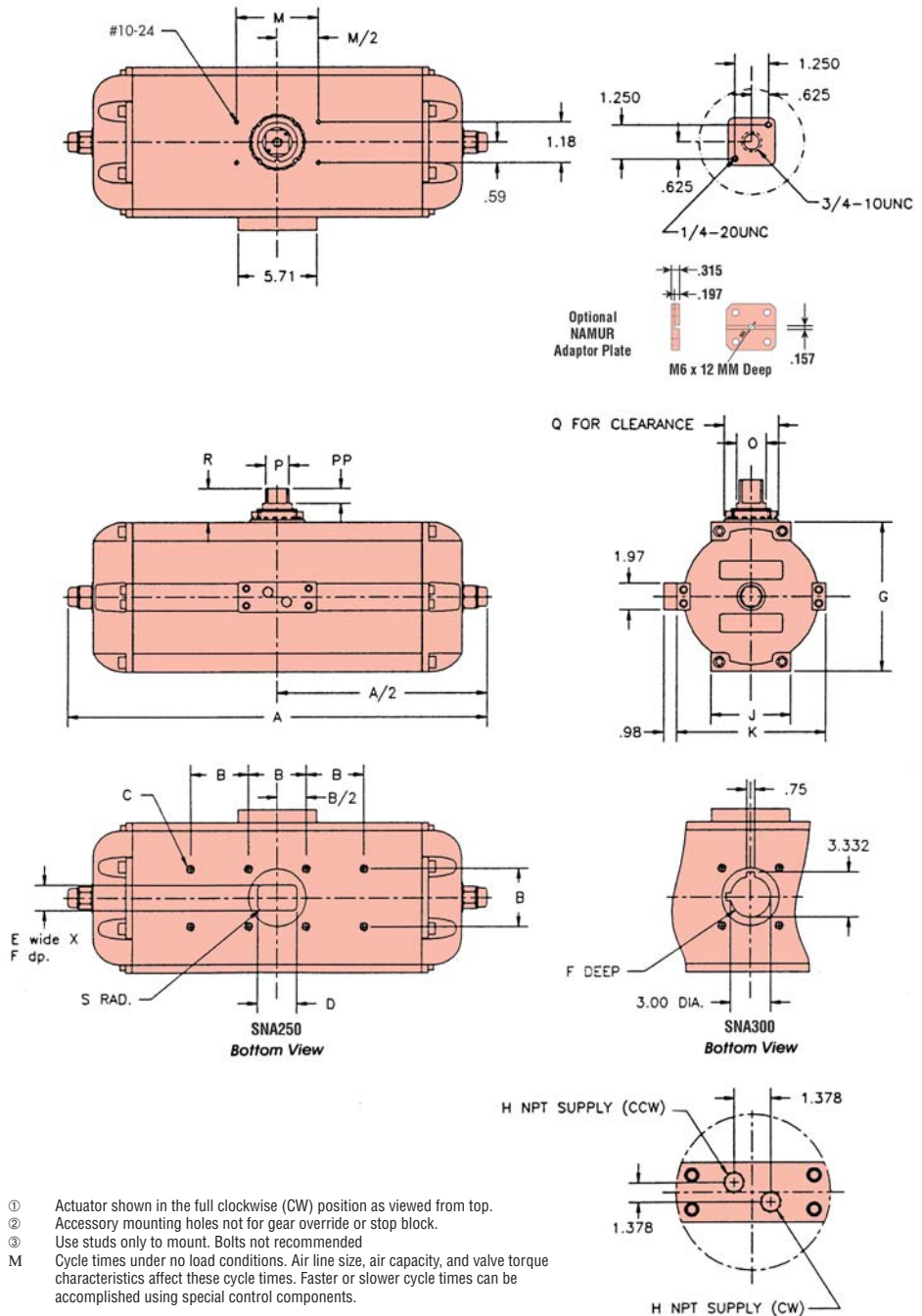
①Consult torque charts or AutoSize for applicable spring combinations.
Example: A model VB100 spring return (FCW) spring set 10, would be coded as **VB100S10**

SuperNova Models VSNA250 & VSNA300 90° Units

VSNA250



Dimensions



MODEL	A		B	C	D	E	F	G	H	J	K	M	O	P	PP	Q	R	S	WEIGHTS		VOLUME		CYCLE TIME	
	DA	SR																	DA	SR	CW	CCW	CW	CCW
VSNA250	27.32	39.14	4.250	5/8-11X.63	2.87	1.850	1.81	11.02	1/2	5.91	11.02	5.118	2.20	1.969	0.98	3.75	1.65	.24	137	172	757	720	5-7	5-7
VSNA300	32.60	44.00	5.000	5/8-11X.94	N/A	N/A	2.50	13.39	1/2	6.30	13.39	5.118	2.44	1.969	0.98	3.75	1.65	N/A	217	288	1403	1019	6-9	6-9

For "How To Order" see page 7

Controls



A25N Directional Valve*
The Valtek Directional Valve mounts directly to SuperNova series actuators which eliminates the cost of tubing and fittings. The valves are available for double acting and spring return actuators with NEMA 4X, 7 & 9, or intrinsically-safe and low power solenoid operators. These valves have been tested and proven reliable for over 1 million cycles.



APS1 Module*
The Valtek APS1 module works with the Valtek A25N solenoid valve and diverts exhaust air from between the pistons into the spring chamber. This prevents corrosive atmospheres from being pulled into the spring chamber.



APS2 Module*
The Valtek APS2 module works with remote/line mounted solenoid valves and diverts exhaust air from between the pistons into the spring chamber. This prevents corrosive atmospheres from being pulled into the spring chamber.



LV1 Lockout & Vent Valve*
The LV1 Lockout and Vent Valve module provides two primary functions. The LV1 may be used with a manual override to shut off supply air and vent actuator ports. The LV1 may also be used as a pneumatic lockout valve which, when properly implemented, will satisfy OSHA Standard 1910.47. The LV1 may be sandwich mounted with other Valtek NAMUR accessories or may be used with the NPT1 adaptor.



FC1, FCDA & FCSR*
The 'FC' Series Flow Control modules provide compact flow controls for precise adjustment of SuperNova actuator speeds. The Flow Control Modules may be sandwich mounted with other Valtek accessories or may be used with the NPT1 adaptor.

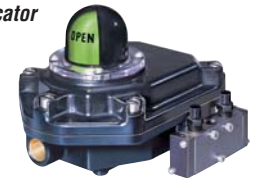
Accessories



"Pharos" NAMUR Indicator*
Provides an economical solution for positive visual indication of the actuator position. Constructed of tough industrial engineered resin, the UltraIndicator can be used on actuators that utilize a NAMUR mounting interface.



UltraSwitch GL/XL/PL Series Rotary Position Indicators*
The UltraSwitch series of position indicators provides a compact and economical package for both visual and remote electrical indication of valve position. Models are available in both die cast aluminum and non-metallic versions. Suitable for non-hazardous, hazardous and intrinsically-safe applications.



Aviator and BUSwitch Rotary Position Indicator with Internal Pilot Solenoid*
The Aviator rotary position indicator enclosure with internal pilot solenoid coil provides a truly integrated package. It can easily be converted to a BUSwitch by simply adding a Fieldbus communication printed circuit board.



APEX Modular Positioner*
Available in both aluminum and non-metallic versions, the Apex positioner combines precise valve positioning with advanced features. A modular manifold base allows 3-15 psi pneumatic control signals, or 4-20mA signals with the addition of the I/P module. Models are available for corrosion resistant applications and hazardous locations as defined by UL, C-UL, CENELEC, and SAA.



Lockouts*
The lockout option permits easy lockout of automated valves. Lockouts are designed to withstand the rated output torque of the actuator, with the intent to meet the requirements of OSHA Standard 1910.47 "The Control of Hazardous Energy" (Lockout/Tagout)



Gear Overrides*
Decutchable gear overrides are options which allow local manual control of actuated valves and dampers. The gear overrides are sized for easy operation and can be combined with other control accessories.

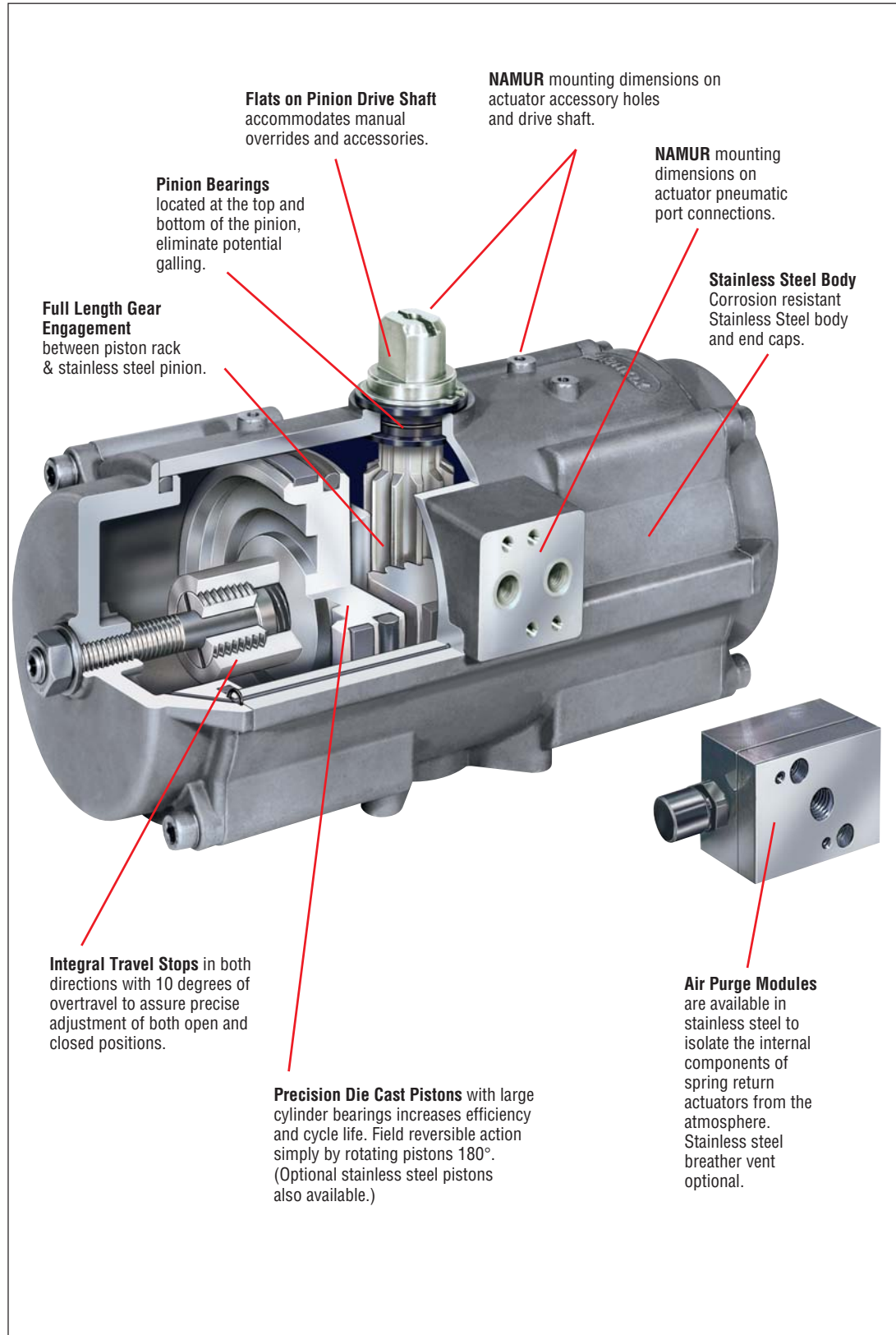


SureGrip™ Valve Couplings
Eliminates deadband between actuators and rotary valves to assure optimal performance on critical control applications. Especially suggested for use with V-ported plug and ball valves and for packages with Logix and XL90 positioners.

* Consult Individual Catalogs and IOM's For Additional Information

VSXL Series Stainless Steel

The VSXL Series utilizes a 316 series stainless steel body and is ideal for use in corrosive environments. It is available in both Double Acting and Spring Return versions with a maximum double acting torque output of 7,279 in-lbs. The VSXL Series can be supplied with stainless steel or aluminum pistons and springs per customer requirements and is also available with optional polished finishes for sanitary applications.



Flats on Pinion Drive Shaft
accommodates manual overrides and accessories.

NAMUR mounting dimensions on actuator accessory holes and drive shaft.

NAMUR mounting dimensions on actuator pneumatic port connections.

Pinion Bearings
located at the top and bottom of the pinion, eliminate potential galling.

Stainless Steel Body
Corrosion resistant Stainless Steel body and end caps.

Full Length Gear Engagement
between piston rack & stainless steel pinion.

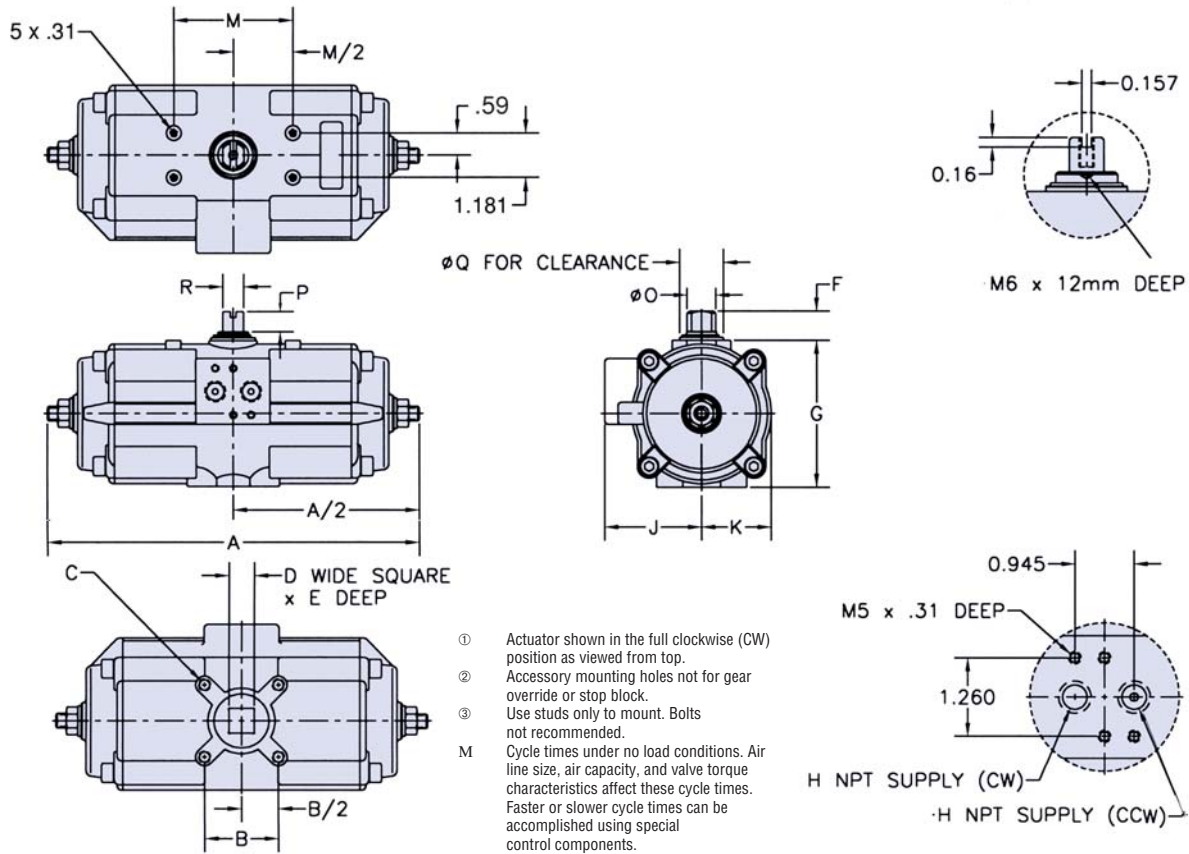
Integral Travel Stops in both directions with 10 degrees of overtravel to assure precise adjustment of both open and closed positions.

Precision Die Cast Pistons with large cylinder bearings increases efficiency and cycle life. Field reversible action simply by rotating pistons 180°. (Optional stainless steel pistons also available.)

Air Purge Modules are available in stainless steel to isolate the internal components of spring return actuators from the atmosphere. Stainless steel breather vent optional.



VSXL Series Dimensions



Model	A	B	C	D	E	F	G	H	J	K	M	O	P	Q	R	WEIGHTS		VOLUME		CYCLE TIME	
																DA	SR	CW	CCW	CW	CCW
VSXL050	6.69	1.169	M5 x .31	.433	.47	.79	2.56	1/8	1.85	1.18	3.150	.56	.39	.83	.39	.485	5.15	8.2	5.4	.5	.5
VSXL063	7.95	1.392	M6 x .31	.551	.63	.79	2.56	1/8	2.11	1.44	3.150	.56	.39	.91	.39	7.05	7.80	16	10	.5	.5
VSXL085	9.84	1.949	M8 x .31	.669	.79	.79	3.94	1/8	2.60	1.87	3.150	.77	.55	1.18	.55	11.24	13.18	34	20	.5	.5
VSXL100	11.65	1.949	M8 x .31	.669	.79	.79	4.57	1/4	2.95	2.	3.150	.77	.55	1.46	.55	16.09	19.02	56	38	1	.5
VSXL115	13.46	2.840	M10 x .31	.866	.98	1.18	5.16	1/4	3.23	2.46	5.118	1.38	.79	1.77	.79	23.14	27.55	94	65	1	1
VSXL125	15.83	2.840	M10 x .31	.866	.98	1.18	6.61	1/4	3.43	2.70	5.118	1.38	.79	2.17	.79	38.14	45.12	128	90	1	1
VSXL150	19.13	3.480	M12 x .47	1.063	1.14	1.18	6.61	1/4	3.94	3.19	5.118	1.97	.89	2.64	1.42	51.14	61.50	224	159	2	1.5

How To Order (Select Bold Type Code from each column that applies)

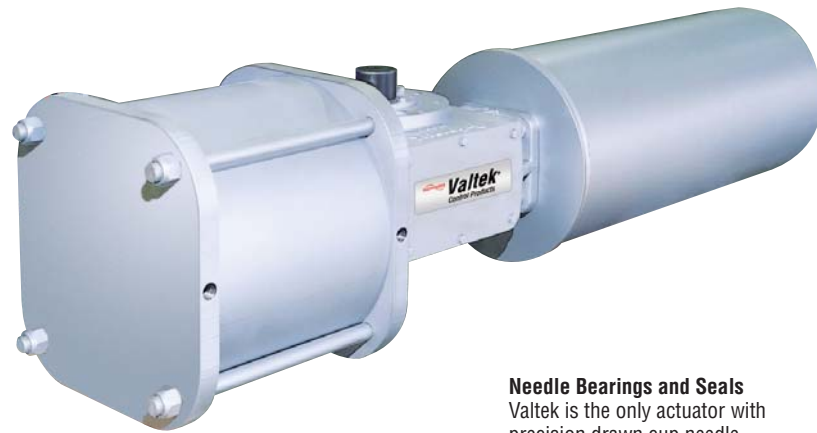
Model	Type	Springs (Select One)	Seals	Finish	Options
VSXL050	D Double Acting	04	Blank - Viton (Std.)	Blank	R Extra Long Travel Stop
VSXL063	S Spring Return (FCW)	05	L Low Temp.	K K-Mass Coated	M Stainless Steel Springs
VSXL085	C Spring Return (FCCW)	06		F Polished	P Stainless Steel Pistons
VSXL100		07			
VSXL115		08			
VSXL125		09			
VSXL150		10			
		11			
		12			

Example: A model VSXL100 spring return (FCW) spring set 10, would be coded as **VSXL100S10**

Heavy Duty VR-2, VR-3 and VR-4 Series

Valtek has a complete line of scotch yoke, heavy duty rotary actuators, which has a unique bearing design to provide higher efficiencies and longer life.

- Pneumatic, Gas and Hydraulic Models
- Double Acting, Spring Return and "Fail-Safe"
- On-Off, Multi-position and Throttling
- Pressure Ranges from 40 psi to 150 psi
- Torque Outputs: Standard Design from 1000 to 170,000 in-lbs
- Overrides, Special Controls, Line Break Controls, etc.

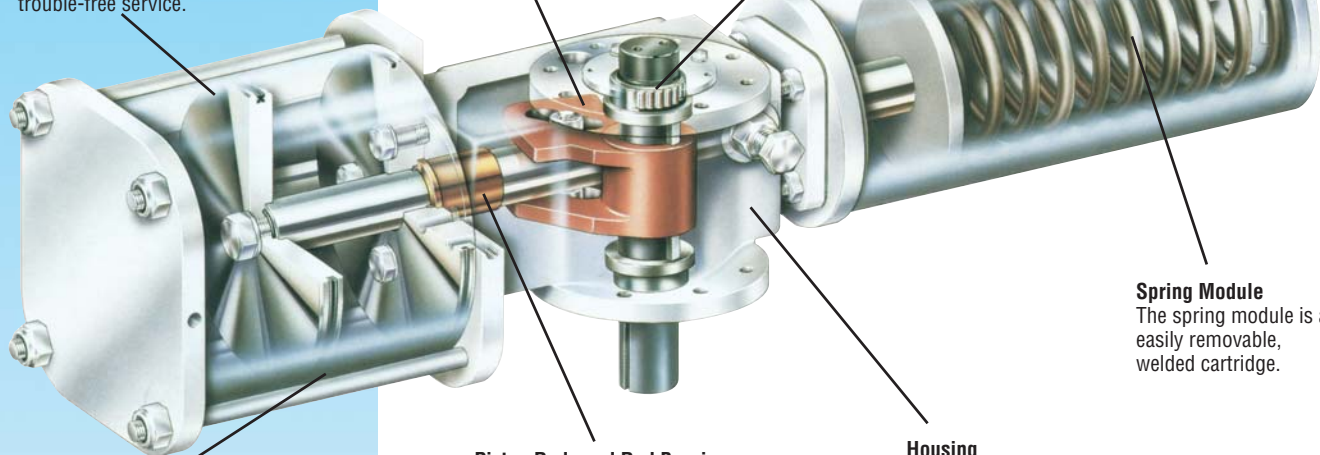


Needle Bearings and Seals
Valtek is the only actuator with precision drawn cup needle bearings at the torque shaft journals. The bearings significantly increase torque output and cycle life, while providing near frictionless rotary movement. The seals protect the needle bearings from external dirt and corrosion, while the bearing's rigid design prolongs seal life.

Scotch Yoke
The slot in the scotch yoke mechanism is precision machined. The yoke pin is induction hardened and chrome plated. The yoke pin rollers are hardened steel.

Piston Seals
The pneumatic series actuators utilize a quad seal. This seal has proven dependable in years of trouble-free service.

Spring Module
The spring module is an easily removable, welded cartridge.

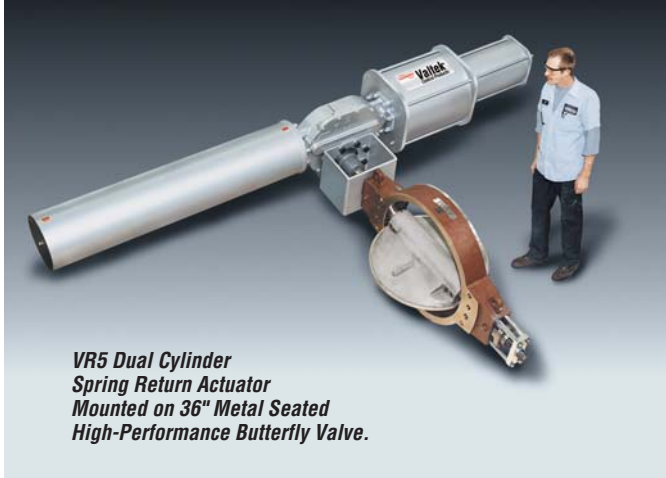


Cylinders
The cylinders are honed to a micro finish with a hard chrome plating.

Piston Rods and Rod Bearings
Large diameter piston rods are guided and supported by extra long bronze bearings. The rods are ground, high strength steel with a hard chrome plating polished to a mirror finish of 4 to 8 microns.

Housing
This unique one-piece housing assures accurate alignment of both the torque shaft and the piston rod.

Heavy Duty VR-5 Series



**VR5 Dual Cylinder
Spring Return Actuator
Mounted on 36" Metal Seated
High-Performance Butterfly Valve.**

The VRS Series Heavy Duty Scotch Yoke Actuator provides torque output as high as 500,000 in-lb.

- Pneumatic, Gas and Hydraulic Models
- Double Acting, Spring Return and "Fail-Safe"
- On-Off, Multi-position and Throttling
- Pressure Ranges from 40 psi to 2500 psi

The VR5 series when combined with Valtek's extensive range of automation products offers the opportunity to standardize on a single source for your complete quarter-turn automation needs.

Piston Seal and Wearband

The pneumatic series actuators utilize a quad seal in conjunction with a piston wearband. The quad seal provides a low friction, long lasting seal, proven dependable for years of trouble free service. The wearband provides additional alignment and support for the piston seal.

Scotch Yoke

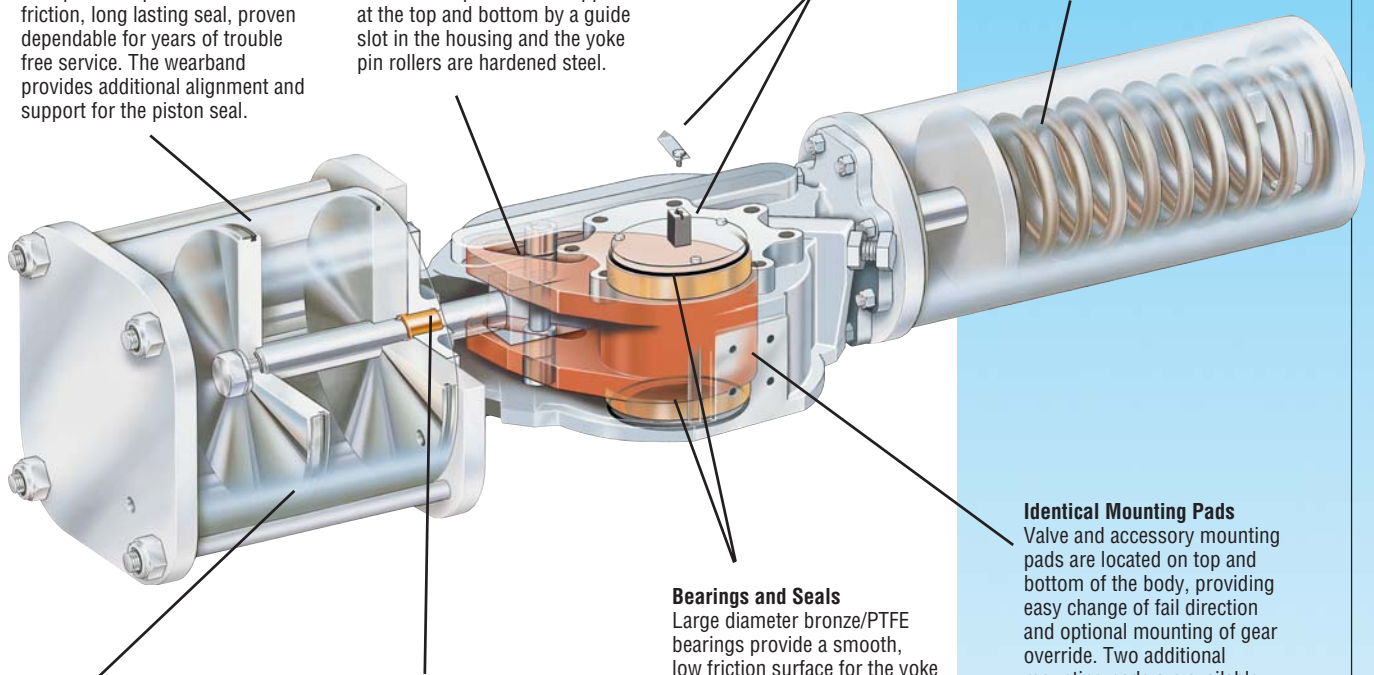
The slot in the scotch yoke mechanism is precision machined. The yoke pin is induction hardened and chrome plated. It is supported at the top and bottom by a guide slot in the housing and the yoke pin rollers are hardened steel.

Indicator/Output shaft

Top accessory shaft has NAMUR slot, and optional position indicator.

Spring Module

The spring module is an easily removable, welded cartridge.



Cylinder

The cylinders are honed to a micro finish with a hard chrome plating.

Piston Rods and Rod Bearings

Piston rods are guided and supported by self lubricating bronze bearings. The rods are ground, high strength steel with a hard chrome plating, polished to a mirror finish.

Bearings and Seals

Large diameter bronze/PTFE bearings provide a smooth, low friction surface for the yoke journal. The seals protect the bearings from external dirt and corrosion, while the bearing's rigid design prolongs seal life.

Identical Mounting Pads

Valve and accessory mounting pads are located on top and bottom of the body, providing easy change of fail direction and optional mounting of gear override. Two additional mounting pads are available on the side of the body for mounting accessories.

Heavy Duty Torque Charts

Double Acting						Spring Return					
Model	Torque	psi (bar)				Model	Torque	psi (bar)			
		40 (2.8)	60 (4.1)	80 (5.5)	100 (6.9)			40 (2.8)	60 (4.1)	80 (5.5)	100 (6.9)
VR205	Break	3302	4953	6604	8255	VR205SR	Pneumatic Break	2297	3447	4594	5668
	Run	1865	2798	3731	4663		Pneumatic End	1244	1922	2474	2954
VR206	Break	4899	7348	9797	12246		Spring Break	2291	3379	4595	5882
	Run	2767	4151	5535	6918		Spring End	1237	1854	2475	3168
VR207	Break	6785	10178	13571	16963	VR206SR	Pneumatic Break	3235	4961	6543	8268
	Run	3833	5750	7667	9583		Pneumatic End	1710	2842	3829	4197
VR208	Break	8962	13444	17925	NA		Spring Break	3379	4793	6349	8527
	Run	5063	7595	10126	NA		Spring End	1854	2673	3636	4455
VR310	Break	13607	20411	27214	34018	VR207SR	Pneumatic Break	4452	6755	9003	10987
	Run	7687	11531	15374	19218		Pneumatic End	2333	4041	4932	5560
VR312	Break	19993	29990	39990	49985		Spring Break	4595	6349	8923	11759
	Run	11295	16940	22590	28240		Spring End	2475	3636	4851	6331
VR314	Break	27541	41310	55080	NA	VR208SR	Pneumatic Break	5880	8721	11764	14704
	Run	15560	23340	31120	NA		Pneumatic End	3166	4649	6337	7927
VR316	Break	36250	54375	NA	NA		Spring Break	5882	8923	11759	14692
	Run	20480	30720	NA	NA		Spring End	3168	4851	6331	7915
VR414	Break	40005	60010	80010	100010	VR310SR	Pneumatic Break	9187	13785	18379	22824
	Run	22600	33900	45200	56500		Pneumatic End	4958	7683	9226	10350
VR416	Break	53070	79600	106135	132670		Spring Break	9189	13522	19049	24993
	Run	29980	44970	59960	74950		Spring End	4950	7420	9895	12519
VR418	Break	67870	101810	135745	169680	VR312SR	Pneumatic Break	12937	19849	26167	33083
	Run	38343	57515	76685	95860		Pneumatic End	6835	10696	13693	16451
VR420	Break	84420	126630	168835	NA		Spring Break	13522	19841	27022	34443
	Run	47690	71540	95380	NA		Spring End	7420	10687	14548	17811
VR422	Break	102706	154059	NA	NA	VR314SR	Pneumatic Break	17813	27015	36023	43937
	Run	58022	87033	NA	NA		Pneumatic End	8660	14541	19391	22229
VR316SR	Pneumatic Break	23672	34892	47047	NA		Spring Break	19049	27022	36027	47043
	Pneumatic End	11198	18260	25339	NA		Spring End	9895	14548	19395	25335
	Spring Break	24993	36027	47043	NA	VR414SR	Pneumatic Break	27017	40522	54034	65906
	Spring End	12519	19395	25335	NA		Pneumatic End	14563	21811	29613	34984
VR416SR	Pneumatic Break	35285	52338	70571	87623		Spring Break	27000	40534	53514	68924
	Pneumatic End	16574	27916	39649	46374		Spring End	14546	21823	29092	38002
Spring Break	37712	53514	68924	89343	VR418SR	Pneumatic Break	44656	65057	89320	111651	
Spring End	19001	29092	38002	48094		Pneumatic End	20235	34036	48070	60743	
VR420SR	Pneumatic Break	55731	82705	109531		137834	Spring Break	48472	68924	89343	111024
	Pneumatic End	31309	41456	58622		74229	Spring End	24050	38002	488094	60115
Spring Break	53514	85779	111024	137828	VR422SR	Pneumatic Break	64633	101472	131049	NA	
Spring End	29092	44530	60115	74223		Pneumatic End	33712	50564	67443	NA	
VR422SR	Pneumatic Break	64633	101472	131049		NA	Spring Break	68924	103390	137828	NA
	Pneumatic End	33712	50564	67443		NA	Spring End	38002	52481	74223	NA

Heavy Duty Torque Charts

VR5 Pneumatic Double Acting Torques						VR5 Pneumatic Spring Return Torques						
Model	Torque	psi (bar)				Model	Torque	psi (bar)				
		40 (2.8)	60 (4.1)	80 (5.5)	100 (6.9)			40 (2.8)	60 (4.1)	80 (5.5)	100 (6.9)	
VR514DA	Break	73978	110967	147956	184945	VR516SR	Pneumatic Break	NA	NA	NA	156005	
	Run	44083	66124	88166	110207		Pneumatic End					85871
VR516DA	Break	97370	146056	194741	243426		Spring Break					148061
	Run	58022	87033	116044	145055		Spring End					88837
VR518DA	Break	123882	185822	247763	309704	VR518SR	Pneumatic Break	82154	119224	159124	200290	
	Run	73820	110730	147640	184550		Pneumatic End	39519	66535	88990	113660	
VR51414DA	Break	150393	225589	300786	375982		Spring Break	78533	111234	148061	182885	
	Run	89618	134426	179235	224044		Spring End	41956	66740	88837	109731	
VR520DA	Break	153512	230268	307024	383780	VR520SR	Pneumatic Break	98195	149578	196391	250315	
	Run	91476	137214	182952	228691		Pneumatic End	54881	79902	109761	145647	
VR51614DA	Break	173785	260678	347570	434463		Spring Break	91442	139352	182885	220965	
	Run	103557	155335	207114	258892		Spring End	54865	80127	109731	132579	
VR522DA	Break	186261	279392	372522	465653	VR522SR	Pneumatic Break	118445	189534	237839	304023	
	Run	110991	166487	221982	277478		Pneumatic End	65755	119400	133171	178232	
VR51616DA	Break	197177	295766	394355	492944		Spring Break	111234	148061	220965	265558	
	Run	117496	176244	234992	293740		Spring End	66740	88837	132579	159335	
VR524DA	Break	222129	333194	444258	NA	VR524SR	Pneumatic Break	140221	221343	281411	364896	
	Run	132365	198547	264729	NA		Pneumatic End	70545	134713	155620	217507	
VR51816DA	Break	223689	335533	447377	NA		Spring Break	139352	182885	265558	311154	
	Run	133294	199941	266588	NA		Spring End	80127	109731	159335	186693	
VR51818DA	Break	250200	375300	500400	NA	VR52214SR	Pneumatic Break	171600	258112	333706	438098	
	Run	149092	223638	298183	NA		Pneumatic End	101466	153445	186318	269586	
VR52020DA	Break	309460	464191	NA	NA		Spring Break	148061	220965	311154	355748	
	Run	184404	276607	NA	NA		Spring End	88837	132579	186693	213449	
VR52416SR	Pneumatic Break	208867	318838	424063	NA	VR52416SR	Pneumatic Break	208867	318838	424063	NA	
	Pneumatic End	122237	193047	255551			Pneumatic End	122237	193047	255551		
	Spring Break	182885	265558	355748			Spring Break	182885	265558	355748		
	Spring End	109731	159335	213449			Spring End	109731	159335	213449		

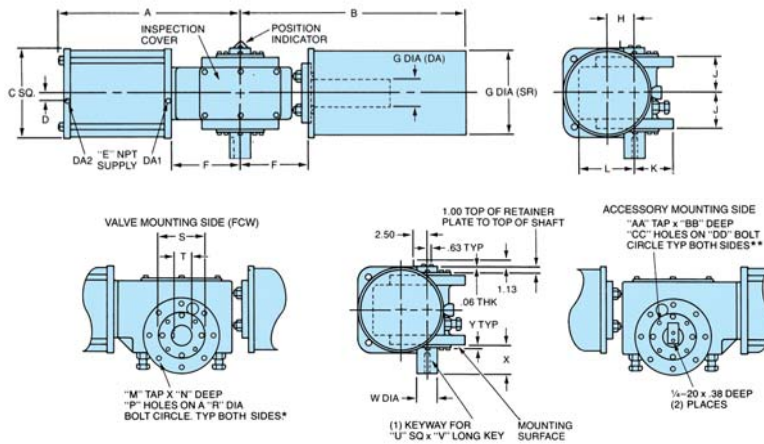
How To Order (Select Bold Type Code from each column that applies)

Model	Cylinder Size	Type	Spring Size	Override	Temperature	Material/Coating
VR2	05-5" dia.	DA -Double Acting	Blank - DA	Blank -None	Blank - Standard 20°-180° F (nitrile seals). V - High Temp. 0° to 300° F (viton seals). L - Low Temp. -55° to 180°F (nitrile seals, heat treated body)	Blank Standard; Epoxy undercoat with Polyurethane top coat F -AWWA, specifications intent E - Epoxy paint (white) M - Marine Trim
	06-6" dia.	SR -Spring Return FCW	40 -40 psi air supply	G -Declutch Gear		
	07-7" dia.	SO -Spring Return FCCW	60 -60 psi air supply	H - Hydraulic		
VR3	10-10" dia.	SO -Spring Return FCCW	80 -80 psi air supply	J - Jackscrew	Blank - Standard 20°-180° F (nitrile seals). V - High Temp. 0° to 300° F (viton seals). L - Low Temp. -55° to 180°F (nitrile seals, heat treated body)	Blank Standard; Epoxy undercoat with Polyurethane top coat F -AWWA, specifications intent E - Epoxy paint (white) M - Marine Trim
	12-12" dia.		100 -100 psi air supply	S - Hydraulic Snubber		
	14-14" dia.			B - Delutch Gear w/ Hydraulic Snubber		
VR4	16-16" dia.	SO -Spring Return FCCW			Blank - Standard 20°-180° F (nitrile seals). V - High Temp. 0° to 300° F (viton seals). L - Low Temp. -55° to 180°F (nitrile seals, heat treated body)	Blank Standard; Epoxy undercoat with Polyurethane top coat F -AWWA, specifications intent E - Epoxy paint (white) M - Marine Trim
	18-18" dia.					
	20-20" dia.					
VR5	22-22" dia.	SO -Spring Return FCCW			Blank - Standard 20°-180° F (nitrile seals). V - High Temp. 0° to 300° F (viton seals). L - Low Temp. -55° to 180°F (nitrile seals, heat treated body)	Blank Standard; Epoxy undercoat with Polyurethane top coat F -AWWA, specifications intent E - Epoxy paint (white) M - Marine Trim
	24-24" dia.					

Example: A model VR310 spring return (FCW) with 60 psi air supply and viton seals would be: **VR310SR60V**

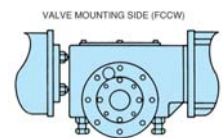
For hydraulic or electro-hydraulic actuators, consult factory.

Note: In some instances for the VR5 actuator, a second cylinder size is required to complete the model number. Consult torque charts.



- Notes:
- All dimensions are in inches.
 - Pressure at port side DA1 will result in clockwise rotation, pressure at port DA2 will result in counterclockwise rotation.
 - Orientation of accessory output may be indexed 90°.

* VR2 Has only 4 holes at 45°
 **VR4 8 each 3/8 - 16 x 3/4" deep holes on center line of "DD" diameter bolt circle are available for accessory mounting. The 3/8-16 x 1" long hex head cap screws must be replaced by a longer bolt equal to the thickness of the mounting bracket. The retainer plate is 1/2" thick.
 **VR2-VR3 A clearance hole for a 5/16" hex cap screw and lock-washer may be required to clear the retainer plate bolts on the center line of "DD" diameter bolt circle.

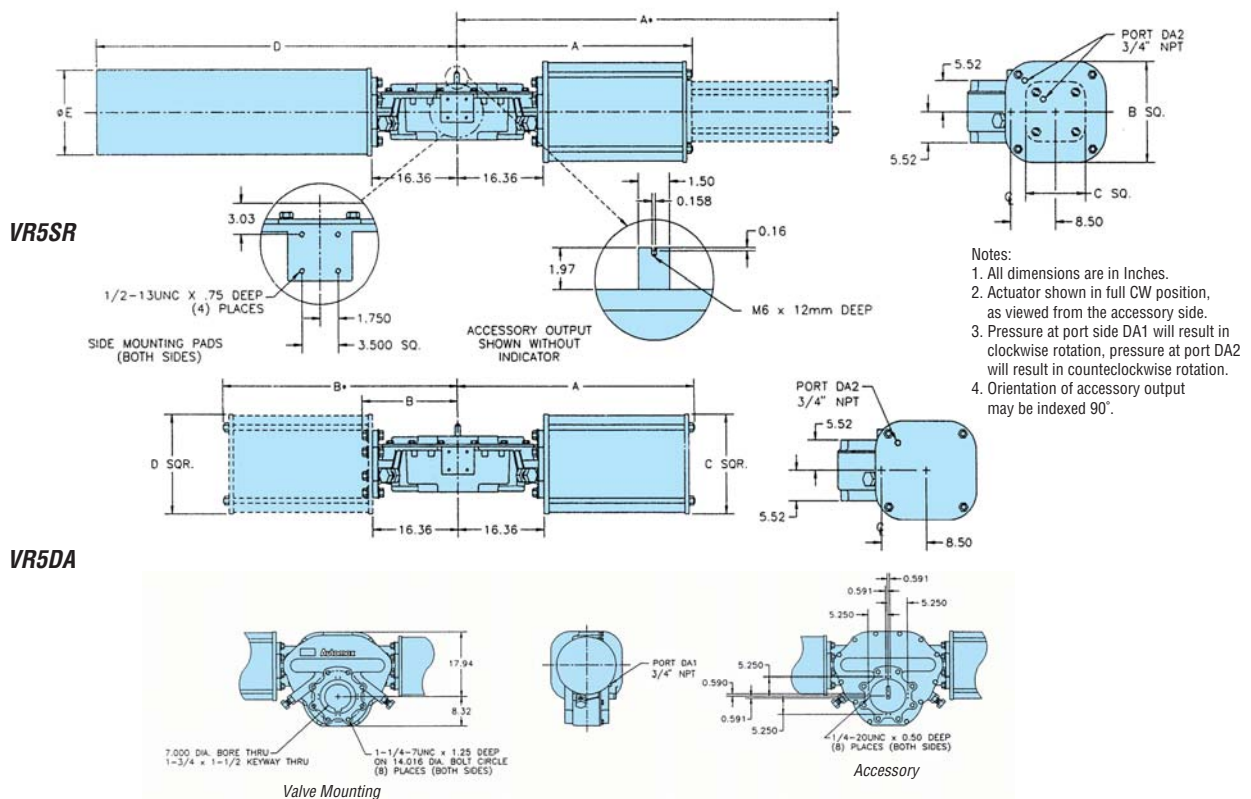


Model	A	B					C	D	E	F	G					H	J	K	L
		DA	SR40	SR60	SR80	SR100					DA	SR40	SR60	SR80	SR100				
VR205	19.82	17.01	29.00	30.00	32.00	33.00	5.75	1.19	1/4	7.19	2.00	9.13	9.13	9.13	9.13	3.00	3.25	2.78	5.75
VR206	19.82	17.01	30.00	30.00	32.00	38.00	6.75	1.19	1/4	7.19	2.00	9.13	9.13	9.13	9.13	3.00	3.25	2.78	5.75
VR207	19.82	17.01	30.00	32.00	38.00	40.00	7.75	1.19	1/4	7.19	2.00	9.13	9.13	9.13	9.13	3.00	3.25	2.78	5.75
VR208	19.82	17.01	33.00	38.00	40.00	41.00	8.75	1.19	1/4	7.19	2.00	9.13	9.13	9.13	9.13	3.00	3.25	2.78	5.75
VR310	23.00	18.13	34.00	36.00	39.00	42.00	10.75	0.00	3/8	8.19	3.50	13.25	13.25	13.25	13.25	3.00	4.13	4.44	6.81
VR312	23.00	18.13	36.00	38.00	41.00	43.00	12.75	0.00	3/8	8.19	3.50	13.25	13.25	13.25	13.25	3.00	4.13	4.44	6.81
VR314	23.50	18.13	39.00	41.00	44.00	45.00	14.75	0.00	1/2	8.19	3.50	13.25	13.25	13.25	14.63	3.00	4.13	4.44	6.81
VR316	23.75	18.13	42.00	44.00	45.00	NA	16.88	0.00	1/2	8.19	3.50	13.25	13.25	14.63	NA	3.00	4.13	4.44	6.81
VR414	30.87	25.37	50.00	56.00	59.00	55.00	14.75	0.00	1/2	11.56	4.50	14.63	14.63	14.63	16.63	4.50	5.82	6.50	9.75
VR416	31.12	25.37	57.00	59.00	55.00	56.00	16.88	0.00	1/2	11.56	4.50	14.63	14.63	16.63	16.63	4.50	5.82	6.50	9.75
VR418	31.69	25.37	59.00	56.00	57.00	59.00	20.88	0.00	3/4	11.56	4.50	16.63	16.63	16.63	16.63	4.50	5.82	6.50	9.75
VR420	31.94	25.37	59.00	56.00	57.00	59.00	20.88	0.00	3/4	11.56	4.50	16.63	16.63	16.63	16.63	4.50	5.82	6.50	9.75
VR422	32.12	25.37	55.00	58.00	59.00	NA	23.75	0.00	3/4	11.56	4.50	16.63	16.63	16.63	NA	4.50	5.82	6.50	9.75

Model	M	N	P	R	S	T	U	V	W	X	Y	AA	BB	CC	DD
VR2	5/8-11	1.00	4	5.750	4.25	1.718	.500	1.59	2.000	2.25	.31	1/4-20	.31	4	3.562
VR3	5/8-11	1.13	8	7.500	5.00	2.148	.625	3.50	2.500	4.25	.31	1/4-20	.31	4	4.375
VR4	7/8-9	1.13	8	11.000	8.00	3.261	.875	4.06	3.750	5.00	.50	3/8-16	**	8	7.187

VOLUMES & WEIGHTS Double Acting & Spring Returns

Model Number	Volumes In³	Estimated Weights (lbs.)				
		DA	SR40	SR60	SR80	SR100
VR205	137	124	186	189	193	198
VR206	198	133	198	202	205	222
VR207	269	144	213	218	233	238
VR208	352	155	227	244	248	256
VR310	550	290	423	435	448	465
VR312	792	339	484	496	514	531
VR314	1078	401	560	576	593	665
VR316	1407	486	661	678	749	NA
VR414	1539	665	904	941	968	1127
VR416	2010	765	1039	1067	1226	1169
VR418	2544	901	1203	1362	1305	1423
VR420	3141	1038	1507	1443	1559	1578
VR422	3801	1347	1816	1869	1887	NA



- Notes:
1. All dimensions are in Inches.
 2. Actuator shown in full CW position, as viewed from the accessory side.
 3. Pressure at port side DA1 will result in clockwise rotation, pressure at port DA2 will result in counterclockwise rotation.
 4. Orientation of accessory output may be indexed 90°.

Actuator	A	B	B*	C	D
VR514DA	44.17	17.46	NA	14.75	NA
VR51414DA	44.17	NA	44.17	14.75	14.75
VR516DA	44.67	17.46	NA	16.88	NA
VR51614DA	44.67	NA	44.17	16.88	14.75
VR51616DA	44.67	NA	44.67	16.88	16.88
VR518DA	45.00	17.46	NA	18.88	NA
VR51816DA	45.00	NA	44.67	18.88	16.88
VR51818DA	45.00	NA	40.00	18.88	18.88
VR520DA	45.13	17.46	NA	20.88	NA
VR52020DA	45.13	NA	45.13	20.88	20.88
VR522DA	45.50	17.46	NA	23.13	NA
VR524DA	46.00	17.46	NA	25.50	NA

Actuator Model	Volume (in ³)	Weights (lb.)				
		DA	SR40	SR60	SR80	SR100
VR514	3233	932	NA	NA	NA	NA
VR51414	6466	1199	NA	NA	NA	NA
VR516	4222	1066	NA	NA	NA	2040
VR51614	7455	1333	NA	NA	NA	NA
VR51616	8444	1467	NA	NA	NA	/A
VR518	5344	1180	1938	1992	2153	2260
VR51816	9566	1581	NA	NA	NA	NA
VR51818	10688	1695	NA	NA	NA	NA
VR520	6597	1297	2035	2253	2378	2559
VR52020	13194	1929	NA	NA	NA	NA
VR522	7983	1463	2276	2437	2725	2888
VR52214	11216	NA	2704	2992	3274	3437
VR524	9500	1730	2686	2811	3155	3274
VR52416	13722	NA	3212	3556	3838	NA

Actuator	A	A*	B	C	D							E	
					40	60	80	100	125	150	175		200
VR516SR	44.75	NA	16.88	NA	NA	NA	NA	79.00	84.00	96.49	96.49	96.49	16.00
VR518SR	45.00	NA	18.88	NA	76.00	71.50	79.00	84.00	96.49	96.49	96.49	96.49	16.00
VR520SR	45.13	NA	20.88	NA	70.00	81.50	84.00	96.49	96.49	96.49	96.49	NA	16.00
VR522SR	45.50	NA	23.13	NA	71.50	79.00	96.49	96.49	96.49	96.49	NA	NA	16.00
VR524SR	46.00	NA	25.50	NA	81.50	84.00	96.49	96.49	96.49	NA	NA	NA	16.00
VR52214SR	45.50	71.88	23.13	14.75	79.00	96.49	96.49	96.9	NA	NA	NA	NA	16.00
VR52416SR	46.00	72.88	25.50	16.88	84.00	96.49	96.49	NA	NA	NA	NA	NA	16.00

Valtek Rack & Pinion and Scotch Yoke Actuators

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