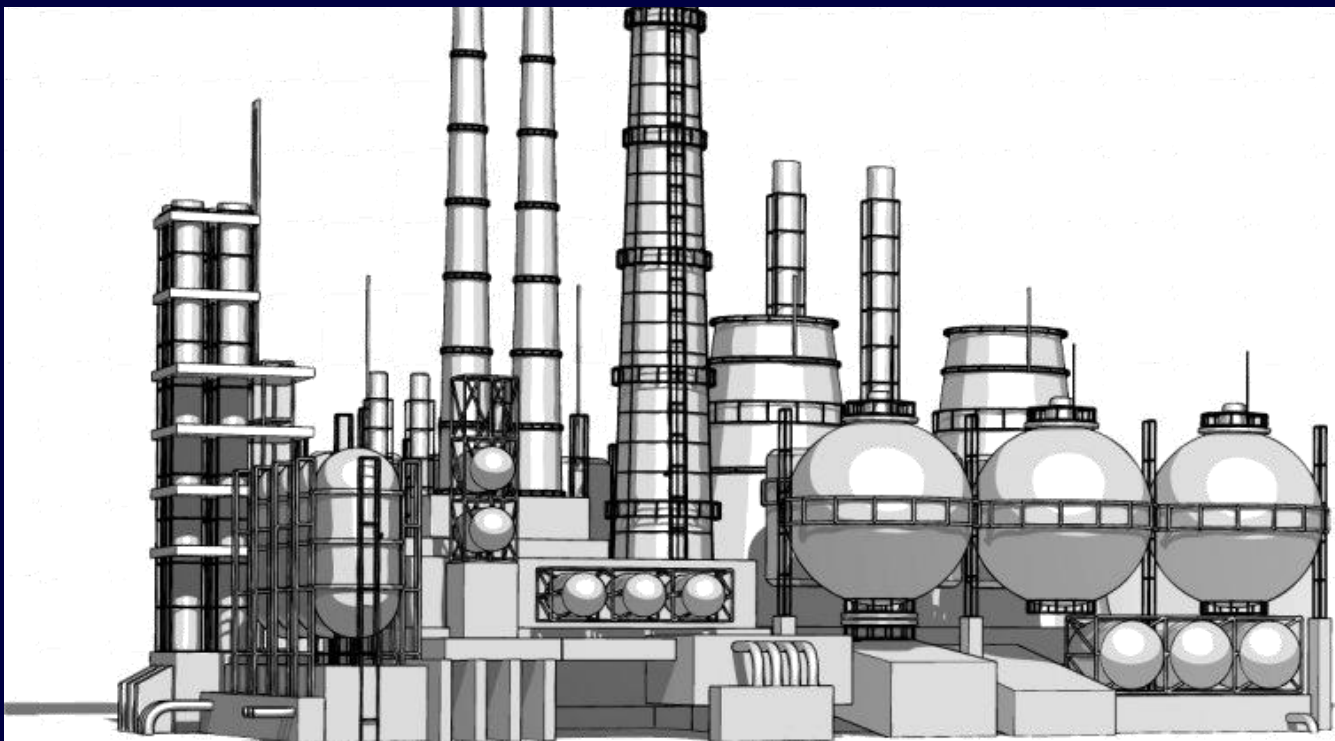


**Automate your valves with the
trusted VB series pneumatic actuators**



VB Series Rack and Pinion Pneumatic Actuators

Reliable and cost effective



VB ACTUATORS

'VB' SERIES RACK AND PINION PNEUMATIC ACTUATORS

Reliable and cost effective

Reliability is always the first requirement in any facility. Most of the time, you will have to go through difficult selection on wide offerings of pneumatic and electric products in the market to ensure your choice will match your precise requirements of each installation. At the same time, cost is always part of the criteria during the selection process. To maintain productivity and profitability, you need to ensure your equipments are able to function with years of trouble-free operation and easy installation throughout the lifecycle.

The VB Actuators Peerless 'VB' series double-opposed piston rack and pinion actuators combine the benefits of high cycle life, a rugged construction, and an extremely compact and symmetrical design with a unique range of features and options. They are specifically designed for fast efficient operation of ball, butterfly, and other rotary type valves.



Features

- ⊙ Modular designs with same body and end caps for double-acting and spring-return. Springs can be added in the field to convert double-acting to spring-return or for changes in supply pressure
- ⊙ Failure direction can be easily reversed from spring-to-open or spring-to-close orientation simply by inverting the pistons
- ⊙ Optimum corrosion resistance is achieved with anodized housing, zinc plated/chromated pinion, powder coated end caps, chromated pistons and stainless steel fasteners
- ⊙ Equipped with O-ring seals, low-friction piston and pinion bearing materials and grease for a low maintenance and trouble-free cycle life
- ⊙ Dual piston rack-and-pinion mechanism for simple construction, high cycle life, and constant torque
- ⊙ Mechanically multi-guided aluminum pistons for precise movement, low friction, and high cycle life
- ⊙ Machined teeth on piston racks and pinions for excellent rack and pinion engagement and maximum efficiency
- ⊙ Dual travel stops allow for fine adjustment of the open and closed positions
- ⊙ The nominal rotation (90 degrees) has an adjustable range of +5 and -5 degrees at each end of travel
- ⊙ Springs are specially designed for a long cycle life
- ⊙ Spring cartridges allow safe and quick conversion of spring sets to match your torque and pressure requirements
- ⊙ Bearings are designed for lower bearing forces and a longer cycle life
- ⊙ Flexible and cost effective valve mounting is achieved by fitting the valve flange with ISO drilling patterns and fits the pinion with a Star Drive for ISO 5211 installations
- ⊙ Actuator to valve attachments comply with ISO 5211
- ⊙ Standard NAMUR (VDI/VDE 3845) equipment can be mounted to the solenoid and top accessory flanges



Specifications

Power Source	Pneumatic
Product Type	Pneumatic Rack and Pinion Actuator
Actuation	Quarter Turn Spring Return or Double Acting
Supply Media	Air, Nitrogen
Operating Pressure	up to 8 bar-g
Design Pressure	10 bar-g (pressure retaining parts)
Control Type	On/Off, Positioning, Modulating, ESD
Valve Type	Ball, Butterfly, Plug and any other quarter turn application
Operating Temperature	Standard -20°C to +80°C (-4°F to +176°F).
Torque	

- **Spring Return Model**

Spring Nominal : 6.0 Nm - 335 Nm

Air Break @ 4.0 bar-g : 10.0 Nm - 329 Nm

- **Double Acting Model**

Air Break @ 4.0 bar-g : 16.0 Nm - 532 Nm



VB Series

Over 10 years of valve automation experience provides true wealth per torque value



VB Series rack and pinion actuators are designed to automate the most popular quarter turn valves like ball, butterfly and plug valves and are easily adaptable for almost any other quarter turn (90° rotation) application.

The VB-Series are constructed from high quality extruded aluminium and with end caps from cast aluminium. The internal and external surface of actuator body is hard anodized for longer life with advanced anti corrosion technology.

The VB series actuators can be operated with dry or lubricated air or non-corrosive gas and will operate continuously at pressures up to 8 bar / 120 psi. Capable of withstanding a wide range of temperatures between -20°C to +80°C/-4°F to 176°F. These actuators will provide years of service for indoor and outdoor applications.

Dual travel stops mounted near the top of the pinion allow for fine adjustment to the opening and closing strokes ensuring that valve operations are confirmed as fully open or closed. This feature also allows for re-configuration at site or in the workshop.

Quality materials of construction and manufactured with state-of-the-art techniques makes the VB a superior, long-lasting product.



Dual travel stops for accurate valve position adjustments

- Dual travel stops allow for fine adjustment of the open and closed positions.
- The nominal stroke (90°) has an adjustable range of $\pm 5^\circ$ at each end of travel.

Designed for trouble-free cycle life

- Equipped with O-ring seals, low-friction piston and pinion bearing materials and grease for a low maintenance and trouble-free cycle life.
- Optimum corrosion resistance is achieved with anodized housing, zinc plated/chromated pinion, powder coated end caps, chromated pistons and stainless steel fasteners.

Reliability

- Springs are specially designed for a long cycle life.
- Equipped with individual spring cartridges allowing safe and quick conversion of spring sets to match your torque and pressure requirements.
- Double rack and pinion design nullifies side loads on the pinion shaft, minimizing bearing wear and extending life.
- Bearings are designed for lower bearing forces and a longer cycle life.

Global product safety requirements

- Flexible and cost effective valve mounting is achieved by fitting the valve flange with 2x ISO drilling patterns and fits the pinion with a Star Drive for both ISO5211 and DIN3337 installations.
- Standard NAMUR (VDI/VDE3845) equipment can be mounted to the solenoid and top accessory flanges.

ACTUATOR SELECTION

To select an actuator for a particular valve and service, first determine the maximum operating torque that will be required from the applicable valve. Then refer to the appropriate torque output table and select an actuator that will, at the available supply pressure, provide a torque output no less than the required operating torque for the valve. For

spring-return units, both the spring torque and the air torque must exceed the required operating torque for the valve. If you have any question that the actuator selected meets your intended service requirement, contact VB Valves. Contact information is located on last page of this technical bulletin.

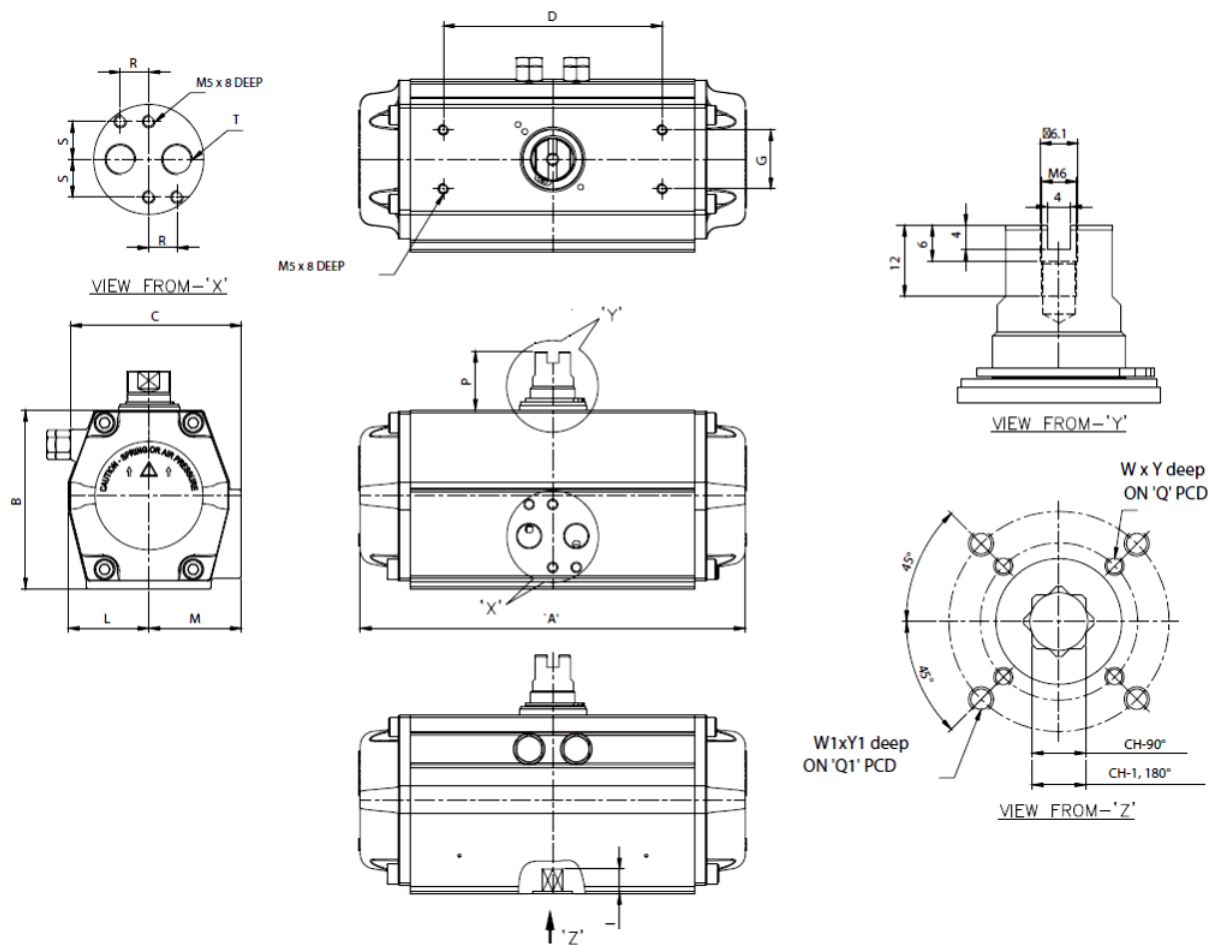
Actuator Model		Cylinder Volume (litres)		Stroke Speed (sec.)	Weight (kg)
VB Series	Type	Open	Close	Open / Close	kg
VB 040	DA	0.11	0.14	0.2 / 0.3	1.38
	SA		–	0.3 / 0.3	1.45
VB 050	DA	0.20	0.23	0.3 / 0.3	2.03
	SA		–	0.3 / 0.4	2.05
VB 060	DA	0.29	0.38	0.3 / 0.3	2.70
	SA		–	0.4 / 0.5	2.90
VB 075	DA	0.41	0.55	0.4 / 0.5	3.13
	SA		–	0.5 / 0.6	3.60
VB 085	DA	0.62	0.91	0.4 / 0.5	4.60
	SA		–	0.5 / 0.6	5.22
VB 095	DA	0.94	1.18	0.5 / 0.6	6.77
	SA		–	0.7 / 0.9	6.85
VB 110	DA	1.47	1.85	0.9 / 1.1	8.90
	SA		–	1.2 / 1.4	10.10
VB 135	DA	2.43	3.20	1.2 / 1.4	13.25
	SA		–	1.5 / 1.8	15.55
VB 160	DA	3.65	5.03	1.5 / 1.7	20.14
	SA		–	1.8 / 2.1	24.00

TORQUE VALUES

DOUBLE ACTING TORQUE (Nm)							
Model	Type	3 Bar	4 Bar	5 Bar	6 Bar	7 Bar	8 Bar
VB 040	DA	12	16	21	24	28	32
VB 050	DA	21	28	35	42	49	56
VB 060	DA	30	40	50	60	70	80
VB 075	DA	46	61	77	92	108	123
VB 085	DA	68	90	113	135	158	181
VB 095	DA	99	132	164	198	231	263
VB 110	DA	150	200	251	301	351	401
VB 135	DA	256	342	427	513	598	684
VB 160	DA	399	532	665	798	931	1064

SINGLE ACTING TORQUE (Nm)

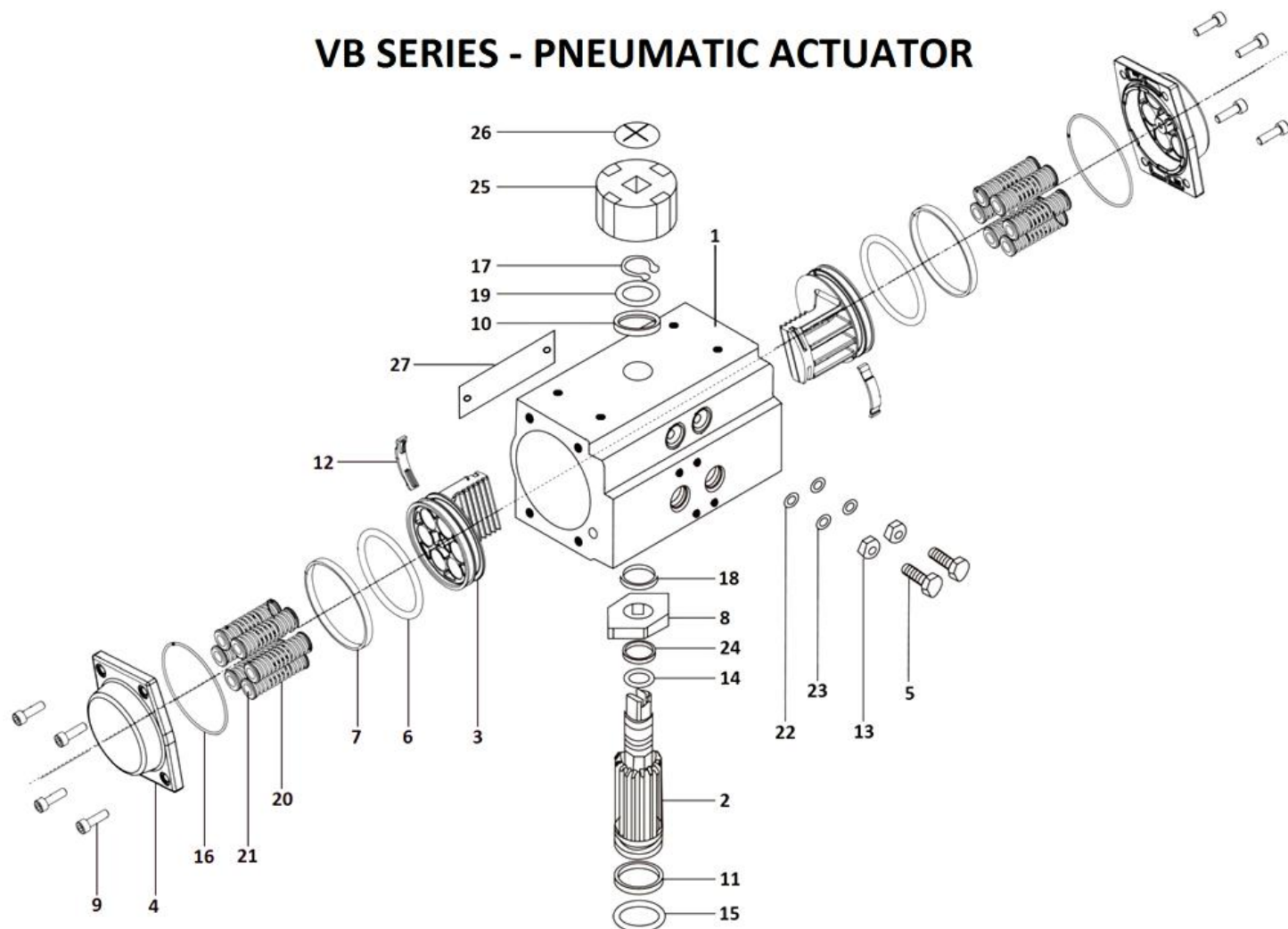
Actu'r Model	Actu'r Type	Spring Set	SPRING		3 bar (Air)		4 bar (Air)		5 bar (Air)		6 bar (Air)		7 bar (Air)		8 bar (Air)	
			Max	Min	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max
			Start	End	End	Start	End	Start	End	Start	End	Start	End	Start	End	Start
VB 040	SA	7	8	6	3	6	7	10	11	14	-	-	-	-	-	-
		8	9	6	2	5	5	9	10	13	12	16	-	-	-	-
		9	11	8	-	-	5	8	8	12	11	15	15	19	19	23
		10	12	8	-	-	4	7	7	11	10	14	14	18	18	22
VB 050	SA	7	14	10	6	11	13	18	22	27	-	-	-	-	-	-
		8	16	11	4	10	11	17	18	24	22	29	-	-	-	-
		9	18	12	-	-	8	15	15	22	20	28	27	35	35	42
		10	21	14	-	-	7	14	14	21	18	27	25	34	32	41
VB 060	SA	7	20	15	9	14	19	25	30	35	-	-	-	-	-	-
		8	23	17	6	12	16	22	26	32	33	40	-	-	-	-
		9	26	19	-	-	13	20	23	30	30	38	40	48	50	58
		10	29	21	-	-	10	18	20	28	27	36	37	46	47	56
VB 075	SA	7	32	22	7	19	23	35	38	50	-	-	-	-	-	-
		8	37	25	-	-	18	31	33	47	49	62	-	-	-	-
		9	41	28	-	-	13	28	28	44	44	60	59	74	75	90
		10	46	31	-	-	-	-	24	40	39	56	54	71	70	86
VB 085	SA	7	48	32	17	33	40	56	64	80	-	-	-	-	-	-
		8	55	37	10	28	33	51	55	74	-	-	-	-	-	-
		9	61	42	-	-	25	46	48	69	71	92	-	-	-	-
		10	68	46	-	-	18	41	41	64	63	87	86	110	109	132
VB 095	SA	7	68	44	26	52	59	85	96	121	-	-	-	-	-	-
		8	78	50	15	45	48	78	81	111	-	-	-	-	-	-
		9	88	56	-	-	38	71	71	104	104	137	-	-	-	-
		10	98	63	-	-	28	65	60	97	93	130	126	163	159	196
VB 110	SA	7	109	73	38	76	89	127	141	178	-	-	-	-	-	-
		8	125	83	22	65	73	116	124	167	159	208	-	-	-	-
		9	141	94	-	-	56	105	107	156	143	197	194	248	245	299
		10	156	104	-	-	40	94	91	145	126	186	177	237	228	288
VB 135	SA	7	180	120	73	136	161	224	247	308	-	-	-	-	-	-
		8	206	137	45	118	133	206	221	294	281	363	-	-	-	-
		9	232	154	-	-	106	188	194	276	254	345	342	433	430	521
		10	257	171	-	-	79	170	167	258	227	327	315	415	403	503
VB 160	SA	7	292	307	94	195	228	329	373	469	-	-	-	-	-	-
		8	333	335	50	165	184	299	317	432	-	-	-	-	-	-
		9	375	190	-	-	140	270	273	403	407	537	-	-	-	-
		10	417	227	-	-	96	241	229	374	363	508	496	641	630	775



Actuator Model and Dimension

VB - SA/DA	VB 040	VB 050	VB 060	VB 075	VB 085	VB 095	VB 110	VB 135	VB 160
A	147	168	184	204	262	268	301	390	458
B	65.5	81	94	98.5	111	122.5	145.5	161	184
C	65	72	81	92	98	109.5	127.5	137.5	158
D	80	80	80	80	80	80	130	130	130
G	30	30	30	30	30	30	30	30	30
I	14	18	18	21	21	26	26	31	31
L	30	36	42	46	50	57.5	67.5	75	87
M	41.5	47	53	57	58.5	64	74.5	77	87
P	20	20	20	20	20	20	30	30	30
Q	36	50	50	50	50	70	70	102	102
Q1	50	70	70	70	70	102	102	125	125
FLANGE	F03	F05	F05	F05	F05	F07	F07	F10	F10
FLANGE	F05	F07	F07	F07	F07	F10	F10	F12	F12
R	12	12	12	12	12	12	12	12	12
S	16	16	16	16	16	16	16	16	16
T	1/4"	1/4"	1/4"	1/4"	1/4"	1/4"	1/4"	1/4"	1/4"
CH-90°	11	14	14	17	17	22	22	27	27
W	M5	M6	M6	M6	M6	M8	M8	M10	M10
Y	8	10	10	10	10	13	13	16	16
W1	M6	M8	M8	M8	M8	M10	M10	M12	M12
Y1	10	13	13	13	13	16	16	20	20

VB SERIES - PNEUMATIC ACTUATOR



BILL OF MATERIALS AND PART LIST

ITEM NO.	UNIT QTY.	PART DESCRIPTION	MATERIAL
1	1	BODY	ALUMINIUM
2	1	PINION	STEEL
3	2	PISTON WITH RACK	ALUMINIUM
4	2	END COVER (END CAP)	ALUMINIUM
5	2	STOPPER BOLT	STAINLESS STEEL
6	2	O-RING (PISTON)	NITRILE RUBBER
7	2	PISTON STRIP	ENGINEERING PLASTIC
8	1	CAM	STEEL
9	8	COVER BOLT	STAINLESS STEEL
10	1	WASHER (PINION)	ENGINEERING PLASTIC
11	1	O-RING (BOTTOM PINION)	NITRILE RUBBER
12	2	RACK BEARING	ENGINEERING PLASTIC
13	2	NUT (STOPPER BOLT)	STAINLESS STEEL
14	1	O-RING (TOP PINION)	NITRILE RUBBER

ITEM NO.	UNIT QTY.	PART DESCRIPTION	MATERIAL
15	1	PINION STRIP	ENGINEERING PLASTIC
16	2	COVER SEAL	NITRILE RUBBER
17	1	CIRCLIP (PINION)	SPRING STEEL
18	1	BEARING BUSH (CAM)	ENGINEERING PLASTIC
19	1	WASHER (PINION)	STAINLESS STEEL
20	7 - 10	SPRING	STAINLESS STEEL
21	7 - 10	SPRING CARTRIDGE	NYLON
22	2	O-RING (STOPPER BOLT)	NITRILE RUBBER
23	2	WASHER (STOP. BOLT)	STAINLESS STEEL
24	1	PINION BEARING	ENGINEERING PLASTIC
25	1	INDICATOR	PLASTIC
26	4	INDICATOR SCREW	STAINLESS STEEL
27	1	NAME PLATE	ALUMINIUM

LIMIT SWITCH BOX

Series : KV



FEATURES

- Solid and flexible design
- Aluminium die-casting housing and powder coating
- Easily settable colour coded cam
- Switch position can be clearly identified by indicator
- Quick-set cam, adjustable cam is installed by spline and spring
- Switch cam position can be quickly adjusted without tools
- Dual cable entries
- Easy installation
- Steel shaft and mounting brackets are in accordance with NAMUR standard

STANDARD SPECIFICATION

Model	: KVLW-1A2-4R
Housing	: Weather Proof IP67
Cable Entry	: 1/2" NPT x 2 Nos
Ambient Temperature	: -20 Deg C to +80 Deg C
Terminal Strip	: 8 Points
Valve Position Indicator	: 0 to 90 Deg Rotation
Indicator Colour	: Close – Red , Open – Yellow
Switch Type	: Mechanical
Number of Switch	: 2 SPDT (1NO+1NC)
Housing Colour	: Chromated Polyester Powder Coating (Black)
Voltage (AC)	: 250V 3A, 125V 5A
Voltage (DC)	: 250V 0.2A, 125V 0.4A, 30V 4A, 14V 5A, 8V 5A

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DISTRIBUTOR

<http://www.vbvalvesautomation.com/actuator>

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