

spirax/sarco

Rotork CVL Electric Actuators For SPIRA-TROL Control Valves

Description

The Rotork CVL range of electric actuators offers a highly accurate and responsive method of automating our SPIRA-TROL and C Series control valves. They can interface with a number of control signals and communication protocols and are suitable for use in most industrial environments with available hazardous areas enclosures. They are full duty rated capable of continuous, un-restricted modulation. Super-capacitors provide power to drive the valve to a safe position in the event of a loss of the power supply. Set-up is achieved through an auto-calibration routine with further configuration completed via software through a Bluetooth® link.

Features

Fast travel speed – the actuator can open or close a valve between 3 seconds for ¾" travel valve and 20 seconds for a 2" travel valve.

Multiple control signal options - the standard actuator operates on a 4-20mA signal and provides 4-20mA position feedback (an auxiliary 24V d/c supply is required to drive this loop). Options are available to allow interfacing with HART®, Profibus or Foundation Fieldbus network control.

Status indication relay – a user configurable relay is available for status and availability indication. This can be configured to indicate a number of parameters.

Valve diagnostics – a data-logger is provided which helps detect potential valve problems before they occur. It stores operational data relating to the valve position and load which can be monitored over time.

Dual Sensor™ technology – two independent position sensors minimize backlash and positional errors.

Brushless DC motor – highly reliable, maintenance free and provides full, continuous, unrestricted modulation duty (S9).

Double sealing – provides ingress protection to IP68.

Power supply flexibility – Incorporated within each AC actuator is a switch mode power supply, which can accept a range of input voltages from 100-240 VAC 50/60 Hz. An optional 24 VDC supply can be catered for.

Reserve power - For fail-to-position action on loss of supply, the actuator can be fitted with an optional reserve power-pack, which consists of 'super capacitors'. The reserve power-pack will allow the actuator to move to a predetermined position on power failure.

Drive-train – simple yet durable spur gear drive, lubricated for life with proven durability.

Anti Back Drive Mechanism – the actuator is capable of resisting any back drive from the valve up to 125% of the rated force. For applications where loss of power requires increased "fail-in-position" capability, an optional solenoid locking mechanism is available.



Technical information

Linearity (4-20mA signal)	≥0.5% full scale	
Resolution (4-20mA signal)	≥0.1% of signal	
Signal voltage drop	7 V @ 20 mA	
Duty rating	S9 (continuous modulation)	
Ambient temperature	Standard	-22°F to 158°F
	Low temp. (option)	-40°F to 140°F
Enclosure	Standard	NEMA 4&6, IP68
	Haz. Area (option)	Class I, Div 1, Groups B,C,D Class II, Div 1, Groups E,F,G
Finish	Polyester powder coated	
Manual override	optional	
Status relay	Single pole, normally open, 8A/120VAC/30VDC	
Power consumption	Stationary	4.7W @ 110 VAC
	Full load	32.1W @ 110 VAC
	Peak	58.2W @ 110 VAC

Model	Min. thrust (lb.f)	Rated thrust (lb.f)	Max. stroke (inches)	Spindle speed (inches/sec)	Full stroke time* (sec)
CVL500	200	500	1.5	0.25	6
CVL1000	400	1000	2	0.1	20
CVL1500	600	1500	2	0.1	20

* Time shown is for the maximum actuator stroke. This time is reduced further for valves with a shorter stroke e.g. A ½" SPIRA-TROL has a stroke of ¾", when fitted with a CVL500 it will open or close in 3 seconds.

Local regulation may restrict the use of this product below the conditions quoted. Limiting conditions refer to standard connections only. In the interests of development and improvement of the product, we reserve the right to change the specification.

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Rotork CVL Electric Actuators For SPIRA-TROL Control Valves

Differential Pressures for SPIRA-TROL Control Valves with Rotork CVL Electric Actuators

Class IV Shut-off

PTFE and Graphite Stem Seals

Actuator	Maximum Differential Pressures (psi)																		
	1/2"		3/4"		1"		1 1/4"		1 1/2"		2"		2 1/2"		3"		4"		
	PTFE	Graph	PTFE	Graph	PTFE	Graph	PTFE	Graph	PTFE	Graph	PTFE	Graph	PTFE	Graph	PTFE	Graph	PTFE	Graph	
CVL500	740	740	740	740	652	538	511	423	195	157	129	102	58	32	29	13	12		
CVL1000					740	740	740	740	480	441	332	305	172	146	102	86	57	47	
CVL1500							740	740	740	726	535	507	286	260	175	159	103	92	

Class VI Shut-off

PTFE and Graphite Stem Seals

Actuator	Maximum Differential Pressure (psi)																		
	1/2"		3/4"		1"		1 1/4"		1 1/2"		2"		2 1/2"		3"		4"		
	PTFE	Graph	PTFE	Graph	PTFE	Graph	PTFE	Graph	PTFE	Graph	PTFE	Graph	PTFE	Graph	PTFE	Graph	PTFE	Graph	
CVL500	740	740	740	740	740	692	624	535	269	231	192	164	105	79	67	50	42	31	
CVL1000					740	740	740	740	554	515	394	367	219	193	140	123	87	77	
CVL1500							740	740	740	740	597	570	333	307	213	196	133	122	

Class IV Shut-off

Bellows Stem Seals with PTFE and Graphite Secondary Packing

Actuator	Maximum Differential Pressure (psi)																		
	1/2"		3/4"		1"		1 1/4"		1 1/2"		2"		2 1/2"		3"		4"		
	PTFE	Graph	PTFE	Graph	PTFE	Graph	PTFE	Graph	PTFE	Graph	PTFE	Graph	PTFE	Graph	PTFE	Graph	PTFE	Graph	
CVL500	233	16	162		80		45												
CVL1000	740	740	740	740	740	740	702	613	273	234	182	155	55	29	26				
CVL1500					740	740	740	740	557	519	385	358	169	143	99	82	54	43	

Class VI Shut-off

Bellows Stem Seals with PTFE and Graphite Secondary Packing

Actuator	Maximum Differential Pressure (psi)																		
	1/2"		3/4"		1"		1 1/4"		1 1/2"		2"		2 1/2"		3"		4"		
	PTFE	Graph	PTFE	Graph	PTFE	Graph	PTFE	Graph	PTFE	Graph	PTFE	Graph	PTFE	Graph	PTFE	Graph	PTFE	Graph	
CVL500	445	228	351	180	234	120	181	92	77	39	55	28							
CVL1000					740	740	740	740	362	323	258	230	111	85	71	54	44	34	
CVL1500					740	740	740	740	646	608	460	433	225	199	144	127	90	79	

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Options and nomenclature

Actuator model range	CV – Control valve actuator	CV
Transmission	L - Linear	L
Size	500 – 500 lb.f (2,224 N) 1000 – 1,000 lb.f (4,448 N) 1500 – 1,500 lb.f (6,672 N)	500
Power Supply	Blank – 110/230 VAC D – 24 VDC	
Control Signal	Blank – 4-20 mA H – 4-20 mA + HART F – Foundation Fieldbus P – Profibus-PA	H
Back-up power	Blank – Programmable fail-safe S – Stay-put	
Manual over-ride	Blank – None M – Manual Override (hand wheel)	M
Enclosure	Blank – NEMA 4&6/IP68 X – FM Explosion proof	X
Temperature rating	Blank: -22°F to 158°F L – -40°F to 140°F	

Commissioning

For actuators controlled by a 4-20mA analog signal, they will arrive from the factory fully set-up (according to our standard configuration) and ready to install. If a special configuration is required, we will set-up the actuator provided we are given the requirements at the time of the order.

Local configuration can be done using a Bluetooth enabled PDA/Smartphone running a windows O/S or a Bluetooth enabled PC. The Rotork Enlight software must be installed and is available for free download from the Rotork website at www.rotork.com.

Alternatively, if the HART option card is installed, a HART communicator or PC with HART interface and software can be used.

Dimensions and weights (in and lb)

Actuator	Valve Size	A	B	C	D	Weight
CVL500	½" to 4"	19.82	8.95	6.2	6.13	40
CVL1000	½" to 4"	21.4	10.14	6.3	7.51	53
CVL1500	½" to 4"	21.4	10.14	6.3	7.51	53

Example: CVL500HCM Electric actuator

