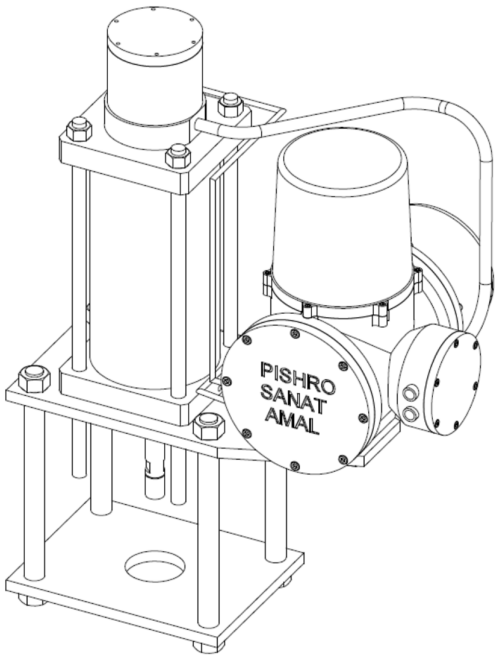
VA-40L Specification

Pishro Sanat Amal

Smart Electro-hydraulic Linear Valve Actuator



The VA-40L are compact and robust electrically operated failsafe spring-return, linear actuators for two-position, ESD or modulating applications. They feature the Pishro Sanat double-seal system with separate termination and cable gland compartments and are suitable for all type valves with a linear drive shaft. The linear range of VA-40L with thrust ranging from 11 to 61 kN and stroke length up to 110 mm .
Consisting of a self-contained electro-hydraulic control module and linear spring-return drive, the actuators combine the simplicity of electrical operation with the precision of hydraulic control and the reliability of spring-powered fail-safe action. The spring-return mechanism provides the most reliable means of positioning a valve to the safe condition and can be provided as failsafe close, open, or last position on loss of power or signal failure. They are available as either spring to extend or spring to retract.

For modulating control applications, the control module provides a pulsed hydraulic signal to accurately position the spring-opposed cylinder, resulting in accurate positioning with a resolution better than 0.25%.

The actuators can be configured to accept analogue, digital, or network card input and can be programmed with the Pishro Sanat infrared setting too. A wide range of functions can be set with the tool: zero and span limits, deadband, hysteresis, slow band, and partial stroke position are easily adjusted.

Lockable local controls are provided as standard and, for safety critical applications, the local selection can be overridden – proper actuator configuration required. Electro-mechanical end-of-stroke limit switches are also offered for safety critical applications.

A manual handpump is available on all sizes.

Features

- Self-contained electrically operated with internal low-pressure electro-hydraulic control module.
- Spring-return for failsafe open, close or lock-in-last position.
- Single-phase and three-phase power supply options.
- Non-intrusive commissioning and configuration via our hand-held infrared setting tool.
- Local LCD display provides position and internal pressure indication as well as and fault diagnostics.
- Local controls include a lockable Local / Stop / Remote selector and an Open / Close switch.
- Modulating control via 4-20 mA input/output with a resolution < 0.25%.
- Output relays for monitoring, fault alarms and open/close limits.
- Double-sealed control module with separate terminal and cable gland compartments.
- Spring-return , single, dual or ESD combination valve options.
- Watertight and explosionproof.

Table 1 – Actuator Size (*Spring to extend)*

MODEL	Stroke Max.	Thrust (KN)				Stroke Speed (mm per second)			
Spring to Extend	mm	Hydraulic Stroke (Open)		Spring-Return (Close)		Hydraulic	Spring-Return		
		Start	End	Start	End		A	B	C
VA-40L-200/110	110	15.42	8.52	17.82	11.88	4.2	4.2	5.8	14
VA-40L-250/110	"	23.88	13.14	27.71	18.48	2.6	2.6	3.6	8.8
VA-40L-280/110	"	30.17	16.62	34.98	23.32	2.0	2.0	3.0	7.0
VA-40L-320/110	"	39.47	21.57	46.2	30.8	1.6	1.6	2.2	5.4
VA-40L-350/110	"	47.9	26.68	54.78	36.52	1.3	1.3	1.8	4.4
VA-40L400/110	"	62.22	34.09	72.6	48.4	1.0	1.0	1.4	3.4
VA-40L-450/110	"	78.75	42.95	92.4	61.6	0.8	0.8	1.2	2.7

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Table 2 – Failure Mode

Code	Description
0	Fail safe on loss of power supply (in direction of spring).
1	Fail in position on loss of power supply.

Table 3 – Spring-Return Speed & ESD Options

Code	Description
0	Speed A – Single internal solenoid.
1	Speed B – Dual internal solenoid.
2	Speed C – Single internal & external solenoid (note 5).
3	Speed D – Slow acting internal solenoid, consult factory.
6	Speed A – Hardwired single internal solenoid (note 6).
7	Speed C – Hardwired single internal & external solenoid.
8	Speed B – Hardwired dual: internal solenoid, no partial stroking.

Table 4 – Supply Voltage

#	Description
S1	1-phase 115 VAC ± 10% 50/60 Hz.
S2	1-phase 230 VAC ± 10% 50/60 Hz.
S3	3-phase 380-480 VAC ± 10% 50/60 Hz.

Table 5 – Control

#	Description
1	Standard digital control (open/close/partial stroke).
2	Analogue control 4-20 mA or 0-10 VDC.

Ordering Information and Model Code

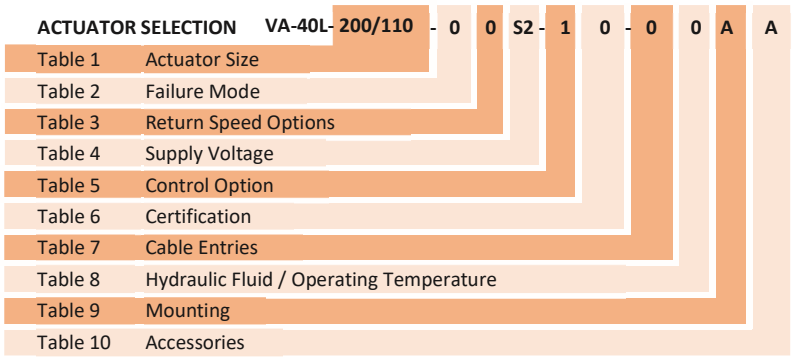

Table 6 – Certification

#	Description
0	WT: Watertight IP65.
1	Explosion Proof & IP65.

Table 7 – Cable Entries

#	Description
0	M25 x 1.5P
1	M20 x 1.5P adaptors
2	½" NPT
3	¾" NPT
4	1" NPT

Table 8 - Hydraulic Fluid/Operating Temperature

#	Description
0	Mineral fluid -15 to +60 °C.
3	Food grade fluid -10 to +60 °C.
4	Silicone fluid -30 to +60 °C (note 5 & 7).
5	Silicone fluid / low temperature seals -40 to +60 °C

Table 9 – Mounting

#	Description
A	Vertical stem above valve.
B	Vertical stem below valve.
C	Valve stem horizontal.
D	Vertical stem above valve with valve mounting kit.
E	Vertical stem below valve with valve mounting kit.
F	Valve stem horizontal with valve mounting kit.

Table 10 – Accessories

#	Description
A	None.
B	Manual override (Handpump).
D	Watertight IP68 (7m for 72 hours).
E	Hardware ESD configuration (failsafe actuators only).
G	All cable entries plugged.
H	Viton seals.

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Mechanical

Operating Temperature: See table 8.
Thrust / Speed: See table 1.
Stroke: Up to 110 mm. Consult factory for options.

Weight: See dimensional detail on last page.

Failure Mode: Fail safe in the direction of the spring or fail in last position.

Action: Actuator shaft extends on spring return or actuator shaft retracts on spring return.

Hydraulic Fluid: See table 8.
Max. Working Pressure: 30 barg.
Manual Override: Optional hydraulic hand pump.
Internal Pressure Transmitter: Displayed as a percentage of maximum working pressure.
Mounting: Valve stem vertical or horizontals (see table 9).

Electrical

Electrical Supply: 1-phase 115 or 230 VAC, 3-phase 380 to 480 VAC

Setting: Sealed control module with infrared setting
Display: LCD display for viewing of valve position, internal pressure and diagnostics screens. LED's are provided to indicate limits and intermediate state in the remote mode.

Control

Control Options:
Remote digital (open, close, maintain), emergency shutdown and partial stroke; or analogue modulating (input 4-20 mA or 0-10 VDC).

Output: 4-20 or 20-4 mA, powered internally by an isolated 24 VDC supply or external customer supply.

Function Settings: Deadband and hysteresis adjustable 0-99%, partial stroke adjustable 0-99%, interrupt timer and ESD action.

Interrupt Timer: To slow the rate of travel. Pulse ON and OFF duration selectable from 100 ms to 99 sec. Timer does not operate with loss of power.

Local Controls: Lockable Local/Stop/Remote selector switch and local Open/Closed switch.

Supply Tolerance: Supply voltage ± 10 %. Frequency 50/60 Hz ± 5 %.
Optional Limit Switches: Two electro-mechanical SPDT volt-free switches. Rating 5A minimum at 230 VAC (see table 10).
Resolution: <0.8% of full scale.

Repeatability: <0.8%.

Alarm and Limit Relays: Volt-free normally open or normally closed contacts rated 5 mA to 5 A 30 VDC.

Alarm Fault Relay: Energised on position, pressure sensor fault, over pressure mid-travel (torque) under pressure, stalled, incorrect direction, loss of control signal and hydraulic control module fault. Also on unsuccessful partial stroke and alarm monitor faults described above.

Limit Relays: Two latching relays to indicate when the actuator is at the open or closed limit set within the software.

Pishro Sanat reserves the right to change specifications without notice.

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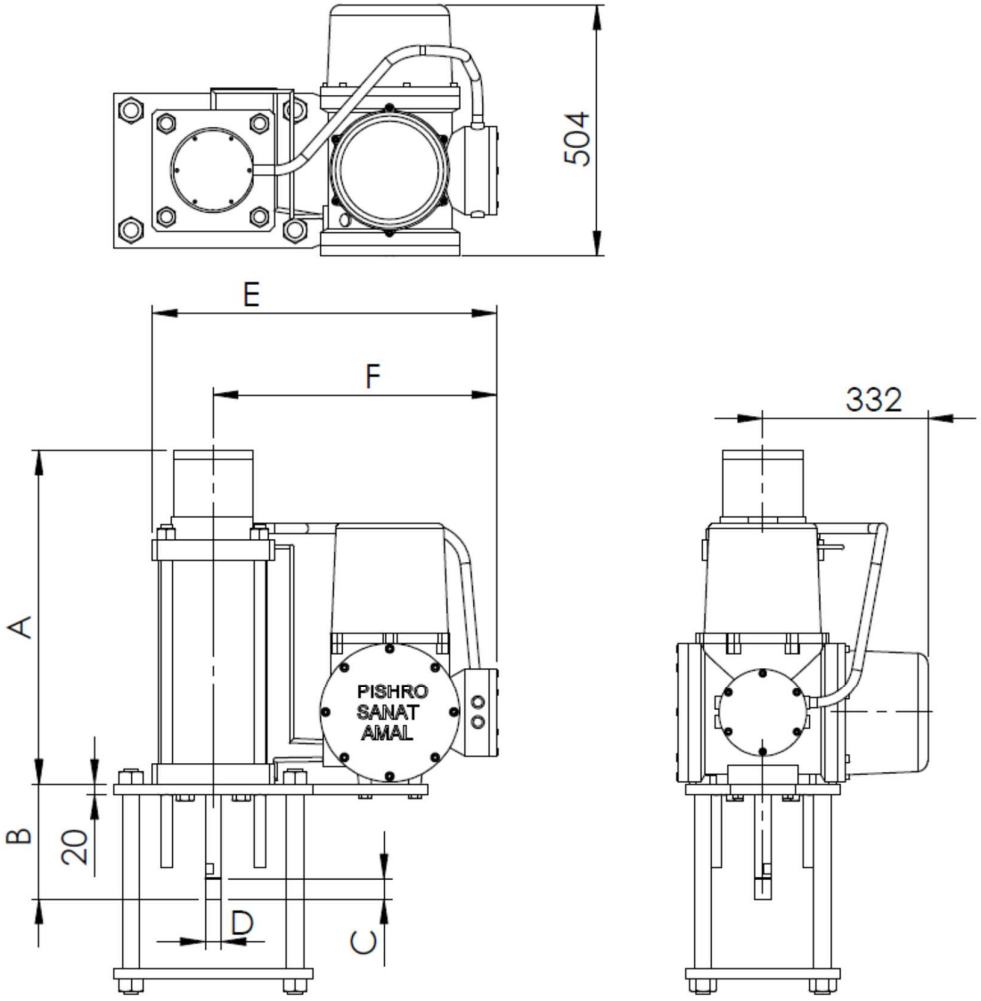
VA-40L Dimension Details



Dimensions (mm)	ACTUATOR Model						
dimensions (mm)	VA-40 L200/110	VA-40 L250/110	VA-40 L280/110	VA-40 L320/110	VA-40 L350/110	VA-40 L400/110	VA-40 L450/110
A	591	577	633	639	OR*	OR	OR
B	200	200	200	200	OR	OR	OR
C	30	30	30	30	OR	OR	OR
D	M22x1.5P	M22x1.5P	M22x1.5P	M22x1.5P	OR	OR	OR
E	683	743	783	823	OR	OR	OR
F	500	535	565	573	OR	OR	OR
Weight (kg)	220	250	270	290	OR	OR	OR

*** OR: On Request**

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