

VO SERIES

Single Phase Linear



actuate with accuracy | KEY FEATURES

SUPPLY VOLTAGE

220 V AC – (+ 10%), 50 / 60 Hz
110 V AC, 24V DC, 12V DC (Available on request)

ENCLOSURE – IP 67

Weatherproof – IS / IEC 60529

TORQUE RANGE

150 Kg to 3500 Kg

MANUAL OVERRIDE

Advanced design with Auto Declutch Mechanism to prevent user from injury.

VARIOUS OPTIONS

ON/OFF Type
Modulating Control (Signal Input - 4 ~ 20mA / 1 ~ 5V DC / 2 ~ 10V DC).
Potentiometer Feedback (4 ~ 20mA).
Auxiliary Limit Switches (2 Units).
2 Wire for ON/OFF Operation.



Technical specifications

MODEL	VO 3	
S/R. No.		
TYPE	On-Off / Modulating	
POWER	0.10 kW	
VOLTAGE	220V AC	
OPEN / CLOSE TIME		
Manufactured by		
Cair Euromatic Automation (P) Ltd.		
www.cairindia.in		
"Actuate with Accuracy"		

IP 67 Enclosure

Multiple LN key bolts for achieving scaling efficiency

Aluminum die-cast manual override

Terminal box

Nickel plated mounting stud

Continuous position indicator

Single Phase Electrical Actuator-Linear



Design Approvals



Widely Used in Fields Such as

- Water Treatment
- Municipal Water Supply Board
- Petroleum
- Chemical Industry
- Power Plant
- Metallurgy
- Pharmacy
- Paper Industry
- Energy
- Textile
- Food Processing
- Automation etc...

Motorized Valves

- 2 Way Globe Control Valves
- 3 Way Globe Control Valves
- 2/3 Way Globe Control Valves for High Temp. (Thermic Fluid / Steam) Application
- Pinch Valves
- Diaphragm Valves



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MANUFACTURING STANDARDS

- Actuator Manufacturing Standard
IEC / EN 15714 – 2 (Electrical Actuator for Industrial Valves)
- Actuator Enclosure Standard – IP 67 / 68
IS / IEC 60529 – 2009
(Degree of Protection provided by Enclosure)
- Actuator Motor Standard
IEC- 60034 – 1
IS-996 (Single Phase Induction Motor)

APPLICABLE DIRECTIVES

- EC Machinery Directive – 2006 / 42 / EC
- Low Voltage Directive – 2006 / 95 / EC
- EMC Directive – 2004 / 105 / EEC

TECHNICAL DATASHEET

STANDARD SPECIFICATIONS

Model No.	Rated Thrust Kgf	Speed mm/second	Maximum Travel mm	Motor Watts	Max Thrust Kgf	220 VAC Motor Current		
						START (mA)	RUN (mA)	LOCK (mA)
VO 1	150	0.3	25	25	185	115	100	125
VO 2	300	0.3	35	25	325	130	125	145
VO 3	600	0.45	70	60	700	440	340	460
VO 4	900	0.45	70	60	1000	460	340	480
VO 5	1400	0.45	90	138	1500	640	600	670
VO 6	2000				On Request			
VO 7	2500				On Request			

(ALL DIMENSIONS ARE IN MM)

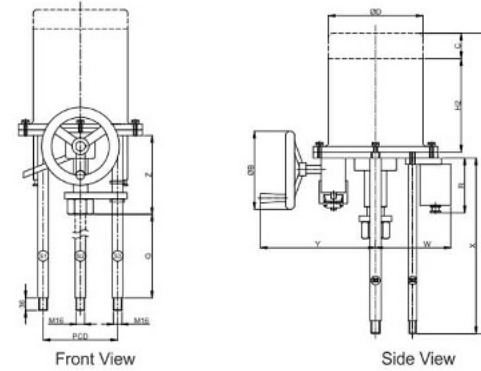
Model No.	ØD	H	H2	ØB	X	Y	Z	Q	R	W	PCD	C (Modulating)
VO-1	154	580	196	122	365	215	140	200	100	120	96	40
VO-2	154	580	196	122	365	215	140	200	100	120	96	40
VO-3	180	665	233	122	420	235	190	200	100	125	160	65
VO-4	180	665	233	122	420	235	190	200	100	125	160	65
VO-5												On Request

Note : Specifications mentioned here are subject to revision without notice due to continuous product improvements. (Rev.-1)

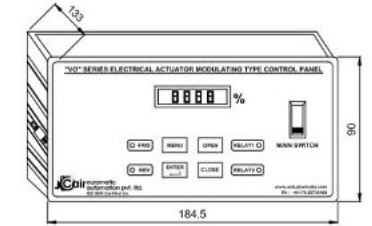
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Dimension Details



Interface Unit / Modulating Servo Controller



Front View

Motorized Valves



Control Valve (upto 220° C)
Electrical Actuator Operated

SIZE :
1/2" TO 12"
TYPE :
2 Way / 3 Way
MOC :
CI / WCB / SS 304 / SS 316
BONNET :
Standard & Extended
TEMP :
-20°C TO 220°C
(As per Requirement)
TRIM DESIGN :
Contoured Parabolic / Cage Guided /
Pressure Balanced
CHARACTERISTIC :
Linear / Equal Percentage / ON-OFF
END CONNECTION :
Flanged to ANSI B16.5
150# / 300# / 600#



Control Valve (upto 550° C) for
Thermic Fluid Electrical
Actuator Operated

SIZE :
1/2" TO 12"
TYPE :
2 Way / 3 Way
MOC :
CI / WCB / SS 304 / SS 316
BONNET :
Standard & Extended with
Finned Pattern
TEMP :
-20°C TO 550°C (As per Requirement)
TRIM DESIGN :
Contoured Parabolic / Cage Guided /
Pressure Balanced
CHARACTERISTIC :
Linear / Equal Percentage / ON-OFF
END CONNECTION :
Flanged to ANSI B16.5
150# / 300# / 600#



Short Pattern
Control Valve Electrical
Actuator Operated

SIZE :
1/2" TO 4" Screwed to BSP / NPT
TYPE :
2 Way / 3 Way
MOC :
CI / WCB / SS 304 / SS 316
BONNET :
Short pattern
TEMP :
-20°C TO 180°C
(As per Requirement)
TRIM DESIGN :
Contoured Parabolic / Cage Guided /
Pressure Balanced
CHARACTERISTIC :
Linear / Equal Percentage / ON-OFF
END CONNECTION :
Screwed to BSP / NPT

Additional Accessories can be provided for complete application support



Interface Unit / Control Panel



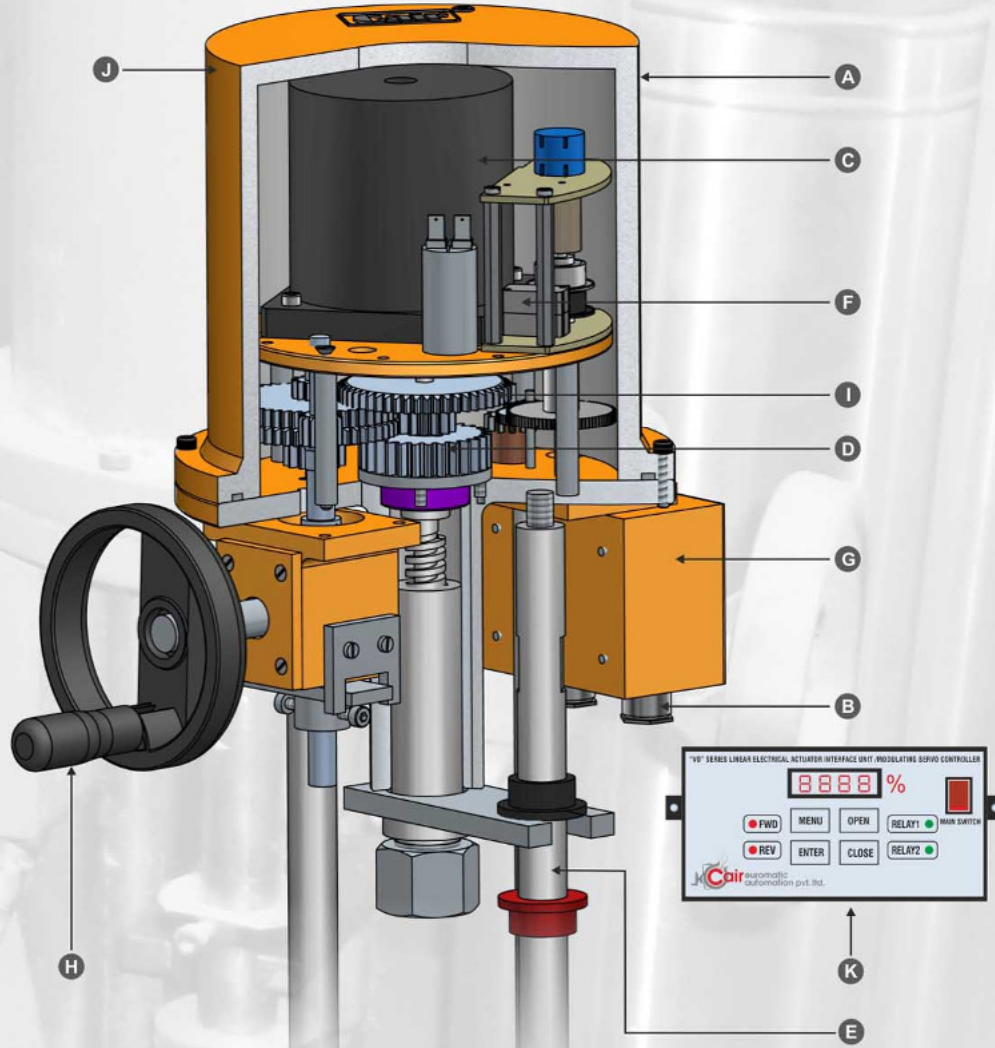
PID Controller



RTD Sensor

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A ENCLOSURE

VO series actuators are available with Weather Proof enclosures. These enclosures are watertight to IP 67 / IP 68. The enclosures are hard anodized Aluminium Alloy which provide resistance from high temperatures, acids, alkali and remain water proof and dust proof. The enclosure is tightly sealed by an O-ring making it suitable for mounting in extreme outdoor environment. Enclosure types with ambient temperatures are indicated below :

Weather Proof - (Standard)	Rating	Ambient Temperature
Manufacturing Standard IEC 60529	IP67	-30°C to +70°C

B POWER SUPPLY

VO series actuators are suitable for operation with the following Single Phase and DC power supplies.
Standard Supply Voltages
220 V AC (+ 10%), 50 / 60 Hz

Supply Voltages available on request
110 V AC (+ 10%), 50 / 60 Hz
24V DC (+ 10%), 50 / 60 Hz
12V DC (+ 10%), 50 / 60 Hz

Voltage Tolerance	- + 10% Applies for rated torque performance; duty cycle and speed not guaranteed
Frequency Tolerance	- + 5% Applies for rated torque performance; duty cycle and speed not guaranteed
Maximum Starting Voltage Drop	- 15% Actuator can start and run up to speed
Non Standard Tolerance	- Available on request

C MOTOR

VO series actuators are fitted with compact synchronous stall duty motors without over-run for precise positioning and class F insulation with temperature rise restricted to class B. Thermostats embedded in the motor end windings will directly sense motor temperature. Thermostats will open circuit when set temperature is reached. This will de-energise the motor and auto reset to continue operation once the motor has cooled off.

DUTY RATING
ON-OFF / INCHING
MODULATING

D GEARS

Spur gear with minimum backlash and low wear for precise positioning of the valve stem, high actuator output due to self-locking drive.

E MOUNTING

Three dimensional, equal balancing, valve mounting studs are provided. These three rigid steel rods connect the actuator with the control valve bonnet. These rods also serve as an indicator for the valve position. The rods also prevent the stem from bending.

F POSITION SWITCH/SENSOR

Independent limit switches are provided, one for each direction of travel having 1NO + 1NC (2NO + 2NC potential free contacts available on request). Limit switches are operated by gear driven cams, which are mechanically linked to the driving devices. Easy setting of limit switches (counter-wheel-mechanism). If the switching point of limit switch gear has been overturned inadvertently by manual operation, the switching point itself does not change. No resetting is therefore required. All actuators have a continuous local mechanical position indicator.

G TERMINALS

VO series actuators are provided with separately sealed terminal compartment. Terminal screws and washers are supplied with the actuators.

H HANDWHEEL

Comfortable hand operation is provided by means of hand-wheel with clutching/declutching mechanism. This allows manual operation of the valve in case of emergencies or at the time of power failure.

I LUBRICATION

VO series actuators come with premium quality lubricants and enable smooth functioning of rotating components at a wide temperature range.

J FINISH

The actuators are powder coated with corrosion proof epoxy coating.

K INTERFACE UNIT / MODULATING SERVO CONTROLLER

VO series actuators can be provided with a separate interface unit. LED lamp indication is available during open/close operation. Analogue position feedback can be provided through position transmitter in the range of 4-20mA output proportional to position.

OPTIONAL

POTENTIOMETER FOR POSITION FEEDBACK

In cases where a steady feedback of the valve stroke is required, the actuator can be provided with a potentiometer fitted to an external constant voltage source.

TRANSMITTER FOR POSITION FEEDBACK

VO series actuators can be provided with a combination of a precision potentiometer and a small electronic chip acting as a transmitter providing a standardized output signal of 4-20 mA. This not only enables direct connection of the transmitter output to other control equipments like distributed control systems but also eliminates the need of a constant voltage source.

FIELDBUS CONTROL

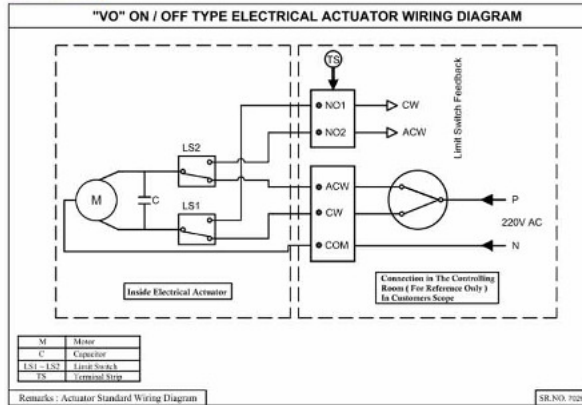
VO series actuators are available with network interface cards to enable remote control and indication using digital 'bus' network systems communication to the control systems. Network interface cards such as Modbus, Profibus and Foundation Fieldbus are compatible.

FAIL POSITION

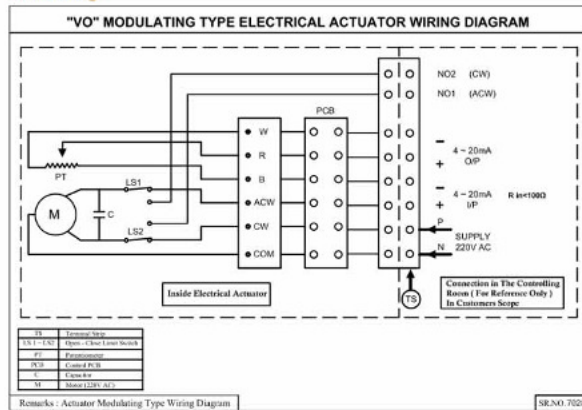
In the event of loss of power supply a battery provides power to the control module/motor to update the valve position.

Wiring Diagram

On - Off Duty



Modulating



General Instructions

Important Notices and Maintenance Guidelines

- Check for correct voltage prior to wiring.
- Turn off power before service or for maintenance purposes.
- Use sealant to seal conduit connections after power distribution to prevent from dust or water.
- The electric actuator must not be installed below the horizon or upside down.
- Avoid installing near explosive atmospheres.*

- Not intended for vacuum spaces.
- Actuators should be stored at a clean and dry place, and protected with outer carton from being affected by great temperature difference or serious vibration.
- When more than one electric actuator is needed to operate simultaneously, please connect with individual cables to avoid parallel connection.
- Please connect the ground wire to PE inside the electric actuator.
- The warranty period is one year.

For any queries please contact : Cair Euromatic Automation Pvt. Ltd. - info@cairindia.in

Requisition Form for Motorized Valve

Actuator Details:

- Power Supply : 24V DC ($\pm 10\%$) Single Phase
 110V AC ($\pm 10\%$) Single Phase
 220V AC ($\pm 10\%$) Single Phase
 415V AC ($\pm 10\%$) Three Phase
- Application : On - Off Type
 On - Off Type with 4 ~ 20 mA Feedback
 Modulating Type / Proportionate Control
- Mounting Details : Indoor Outdoor
 Horizontal Vertical
- Starter Unit Controller : Inbuilt Integral Starter Unit (IP 67 Protection)
 (For 3 Phase Actuator) Panel Mounted Starter Unit (IP 54 Protection)
- Enclosure : IP 67 Weather Proof
 IP 67 Flame Proof

Valve Details:

- Valve Type
 Ball Valve
 Butterfly Valve
 Damper Butterfly Valve
 Gate Valve
 Globe (Control) Valve
 Other.....
- Body Material.....
- Internal Parts.....
- Seating.....
- Fluid / Media.....
- Working Pressure
- Working Temperature.....
- End Connection.....

Notes :

Client Details:

Company Name:

Address:

Contact Person:

Mobile: Email:

Phone: Fax:

Cair Euromatic Automation Pvt. Ltd.

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Online form available on our website www.cairindia.in.