

# MOD SERIES

Single Phase Quarter Turn



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 67/68**

Weatherproof – IS / IEC 60529  
Flameproof or Ex-Proof – IS / IEC 60079 | Zone II, Gas Group IIB T4

**TORQUE RANGE**

15 Nm to 5000 Nm

**INTEGRAL STARTER UNIT**

Selector Switches	Open / Stop / Close Auto / Manual or Remote / Local
Indicator Lamps	Open / Close / Error

**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.

# Single Phase

## Quarter Turn Electrical Actuators



### 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

- ~ Ball Valves
- ~ Butterfly Valves / Damper Valves
- ~ Fire Safe Ball Valves
- ~ Jacketed Ball Valves
- ~ Wafer Ball Valves
- ~ UPVC / PP Ball 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 (Rotating Electrical Machines)  
IS-996 (Single Phase Induction Motor)
- **Actuator Mounting Standard**  
ISO 5211

### APPLICABLE DIRECTIVES

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

### TECHNICAL DATASHEET

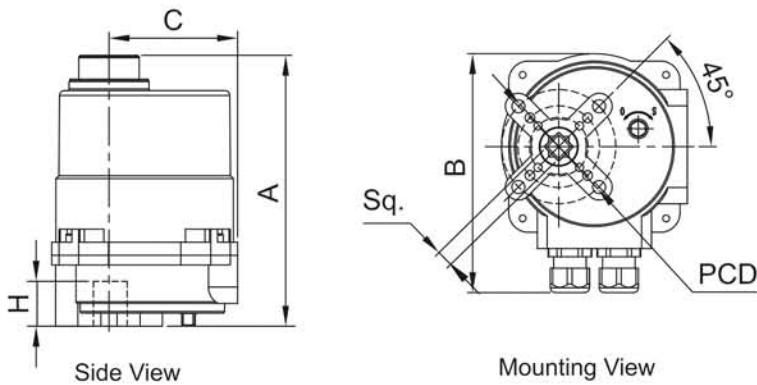
#### STANDARD SPECIFICATIONS

Model No.	Max Torque NM	Motor Watt	Rotation time Second / 90°	220 V AC Motor Current			Manual Over Ride	
				RUN (A)	START (A) at 30mS	LOCK Rotor (A)		
MOD 1	35	10	11	0.18	0.58	0.21	Key Wrench (to operate by 8mm Spanner)	
MOD 2	50	15	15	0.23	0.72	0.26		
MOD 2-1	50	15	15	0.23	0.72	0.26	Knob type Spring Loaded Wheel	
MOD 2-2	95	15	22	0.23	0.72	0.26		
MOD 3	200	40	29	0.41	1.31	0.66	Foldable Round Aluminium Alloy Wheel	
MOD 4	400	90	27	0.76	2.62	1.44		
MOD 6	600	90	39	0.79	2.71	1.44		
MOD 8	800	90	47	0.82	2.83	1.44		
MOD 10	1000	120	47	0.89	3.02	2.13		
MOD 12	1500	200	34	1.73	5.98	3.24		
MOD 13	2000	200	47	1.73	5.98	3.24		
MOD 14	3500	200	76	1.75	6.01	3.24		
MOD 15	5000	On Request						

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

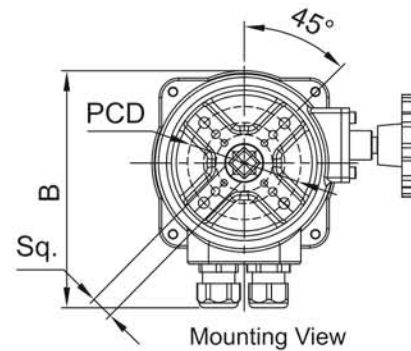
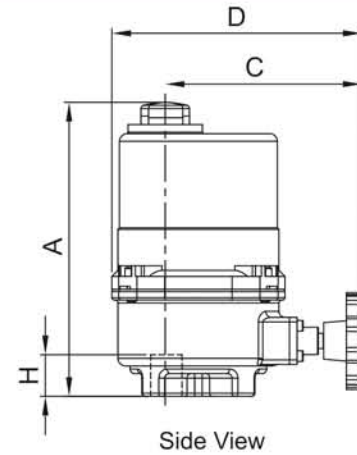


## DIMENSIONAL DETAILS



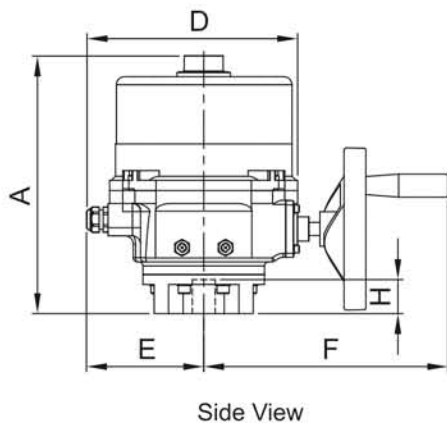
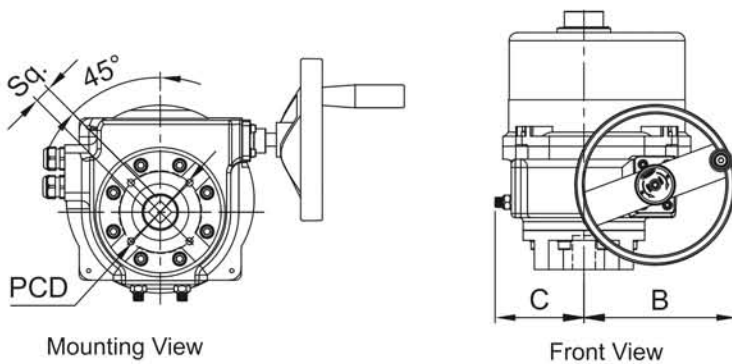
(ALL DIMENSIONS ARE IN MM)

Model No.	A	B	C	Sq.	H	PCD
MOD 1	162	145	79	11X11	20	F03 / F05
MOD 2	168	145	79	11X11, 14X14	20	F07



(ALL DIMENSIONS ARE IN MM)

Model No.	A	B	C	D	Sq.	H	PCD
MOD 2-1	188	145	108	165	11X11	20	F03 / F05
MOD 2-2	194	145	108	165	14X14	20	F07

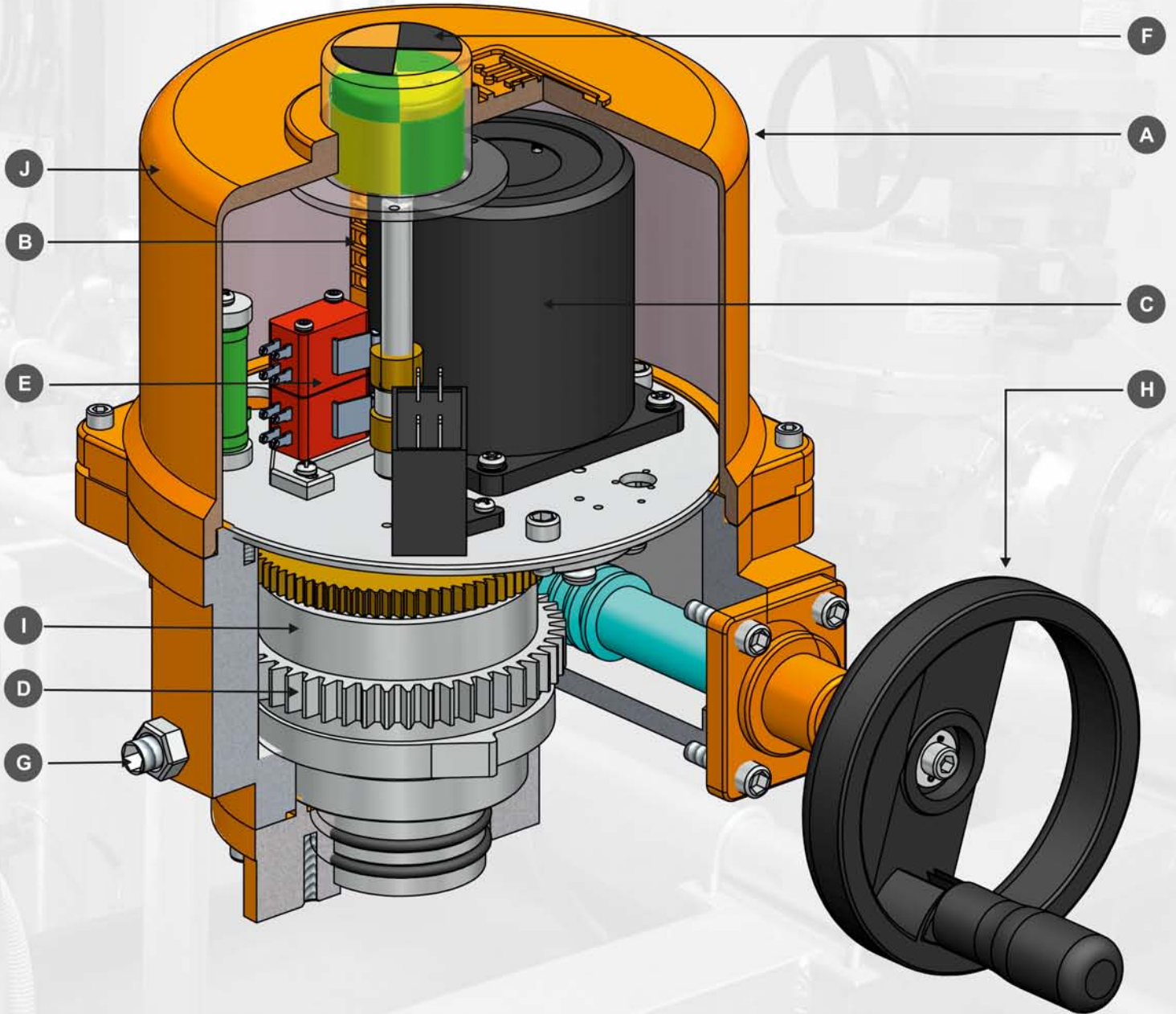


(ALL DIMENSIONS ARE IN MM)

Model No.	A	B	C	D	E	F	Sq.	H	PCD
MOD 3	265	123	79	216	120	240	17X17	35	F07 / F10
MOD 4	321	187	103	262	150	297	22X22	55	F10
MOD 6	321	187	103	262	150	297	22X22, 27X27	55	F10 / F12
MOD 8	321	187	103	262	150	297	27X27	55	F12
MOD 10	321	187	103	262	150	297	27X27	55	F12 / F14
MOD 12	378	241	119	293	161	346	27X27	65	F12 / F14
MOD 13 / 14	378	241	119	293	161	346	36X36	65	F12 / F14 / F16
MOD 15	On Request								

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## A ENCLOSURE

MOD series actuators are available in both Weather Proof and Flame Proof (Ex-Proof) enclosures. These enclosures are watertight to IP 67 / IP 68. The enclosures are hard anodized Aluminium Alloy which provides resistance from high temperatures, acids, alkali and remain water proof and dust proof. All the joints on the enclosure are armed with a waterproofing seal making it suitable for mounting in extreme outdoor environment. Enclosure types with ambient temperatures are indicated below :

### Weather Proof - (Standard)

Manufacturing Standard IEC 60529	Rating IP68	Ambient Temperature -30°C to +70°C
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### Flame Proof - (Ex-Proof)

Manufacturing Standard IS/IEC 60079	Enclosure Code Exd IIB T4 Exd IIC T4	Rating IP68	Ambient Temperature -20°C to +70°C
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## B POWER SUPPLY / TERMINALS

MOD 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

### TERMINALS

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

## C MOTOR

MOD series actuators are fitted with specially designed motors integral to the actuator. These motors can be broadly classified on the basis of their duty. On-Off Type | Modulating Type (proportionate control)

- Single phase capacitor / run start squirrel cage induction type synchronized motor.
- Continuous duty (S2-15 mins).
- Class F insulation with temperature rise restricted to Class B.
- Thermostat protection : Thermostats embedded in the motor end windings will directly sense motor temperature. Thermostats will open circuit when set temperature is reached, thereby de-energising the motor and auto reset to continue operation once the motor has cooled off.
- Low inertia design.
- Nominal 50 starts per hour, 15 minutes rated based on a nominal torque of 33% of rated torque.
- Micro-processor based modulating control card.

### DUTY RATING

ON-OFF / INCHING  
MODULATING

## D ADVANCED GEAR BOX

MOD series electric actuators are directly coupled with unique planetary gear box. The main sun gear maintains the balance technique of three points. Gearbox is designed eliminating the clutch system. Hardened steel alloy gears resist abrasion to ensure longer lifecycle.

## E POSITION SWITCH/SENSOR

Independent limit switches are provided, one for each direction of travel having 2NO + 2NC potential free contacts. 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.

## F 360° INDICATOR

Actuators are fitted with 360° plastic indicator, having high strength and sunlight resistance in outdoor environment. User can visualise position from any angle.

## G WRENCH SETTING

Actuators (above MOD3) are provided with wrench setting for assembling and adjusting valve and actuator at the same travel angle.

## H HANDWHEEL

Advanced design with auto declutch mechanism to prevent user from injury. Hand-wheel does not rotate during power operation. Manual drive is automatically disengaged when motor starts.

## I LUBRICATION

MOD 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.

## OPTIONAL

### CONTROL - LOCAL/REMOTE

Non-intrusive selectors are provided on the actuator. Blinking led lamp indication during open/close operation. Red - Fully Open | Green - Fully Closed. Analogue position feedback can be provided through position transmitter in the range of 4-20mA output proportional to position.

### FIELDBUS CONTROL OPTION

MOD series actuators are available with the 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 OPTION

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

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## Motorized Valves



2 Way Ball Valve  
Electrical Actuator Operated

**SIZE :**  
1/2" TO 4" Screwed to BSP / NPT  
**MOC :**  
WCB / SS 304 / SS 316 / SS 316L  
**REPLACEABLE SEAT :**  
PTFE / Glass Filled PTFE / CFT  
**TEMP :**  
220° C / 400° C (On Request)  
**DESIGN & MANUFACTURING STD.:**  
BS 5351 / BS 6755



2 Way Ball Valve  
Electrical Actuator Operated

**SIZE :**  
1/2" TO 12" Flanged End  
150# / 300# / 600# / 900# / 1500#  
**MOC :**  
WCB / SS 304 / SS 316 / SS 316L /  
Alloy Steel / Duplex  
**REPLACEABLE SEAT :**  
PTFE / Glass Filled PTFE / CFT  
**TEMP :**  
220° C / 400° C (On Request)  
**DESIGN & MANUFACTURING STD.:**  
BS 5351 / BS 6755



3 Way / 4 Way / 5 Way Ball  
Valve Electrical Actuator Operated

**SIZE :**  
1/2" TO 4" Screwed to BSP / NPT  
1/2" TO 8" Flanged End 150# / 300#  
**MOC :**  
WCB / SS 304 / SS 316 / SS 316L  
**REPLACEABLE SEAT :**  
PTFE / Glass Filled PTFE  
**TEMP :**  
220° C  
**PORT :**  
'L' Port / 'T' Port / 'X' Port  
**DESIGN & MANUFACTURING STD.:**  
BS 5351 / BS 6755



PP / UPVC Ball Valve  
Electrical Actuator Operated

**SIZE :**  
1/2" TO 4" Screwed to BSP / NPT  
1/2" TO 10" Flanged  
**MOC :**  
PP / UPVC / CPVC / PVDF LINED  
**REPLACEABLE SEAT :**  
PTFE / Glass Filled PTFE / CFT  
**TEMP :**  
180° C  
**DESIGN & MANUFACTURING STD.:**  
BS 5351 / BS 6755



Wafer Type Butterfly Valve  
Electrical Actuator Operated

**SIZE :**  
1.1/2" TO 72"  
**MOC :**  
Cl / DI / WCB / SS 304 / SS 316 /  
Alloy Steel / Duplex  
**MOULDED / REPLACEABLE SEAT :**  
Nitrile (NBR) / EPDM / VITON /  
Teflon Muffler  
**ENDS :**  
Wafer / Lug Type  
**RATING :**  
PN 6 / PN 10 / PN 16 / PN 20 / PN 25  
**DESIGN & MANUFACTURING STD.:**  
API 609 Category A / BS 5155 /  
MSS SP-67 / AWWA C-504



Double Flanged Butterfly Valve  
Electrical Actuator Operated

**SIZE :**  
1.1/2" TO 72"  
**MOC :**  
Cl / DI / WCB / SS 304 / SS 316 /  
SS 316L / Alloy Steel / Duplex  
**SEAT :**  
Nitrile (NBR) / EPDM / VITON  
**ENDS :**  
Double Flanged / Lug Type  
**RATING :**  
PN 6 / PN 10 / PN 16 / PN 20 / PN 25  
**DESIGN & MANUFACTURING STD.:**  
API 609 Category A / BS 5155 /  
MSS SP-67 / AWWA C-504



High Performance Butterfly Valve  
Electrical Actuator Operated

**SIZE :**  
1.1/2" TO 72"  
**MOC :**  
Cl / WCB / SS 304 / SS 316 / SS 316L  
Alloy Steel / Duplex  
**REPLACEABLE SEAT :**  
PTFE / Glass Filled Teflon / VITON /  
Metal to Metal (Temp. 600° C)  
**ENDS :**  
Wafer / Double Flanged / Lug Type  
**RATING :**  
150# / 300#  
**DESIGN & MANUFACTURING STD.:**  
API 609 Category B / MSS SP-68 /  
AWWA C-504



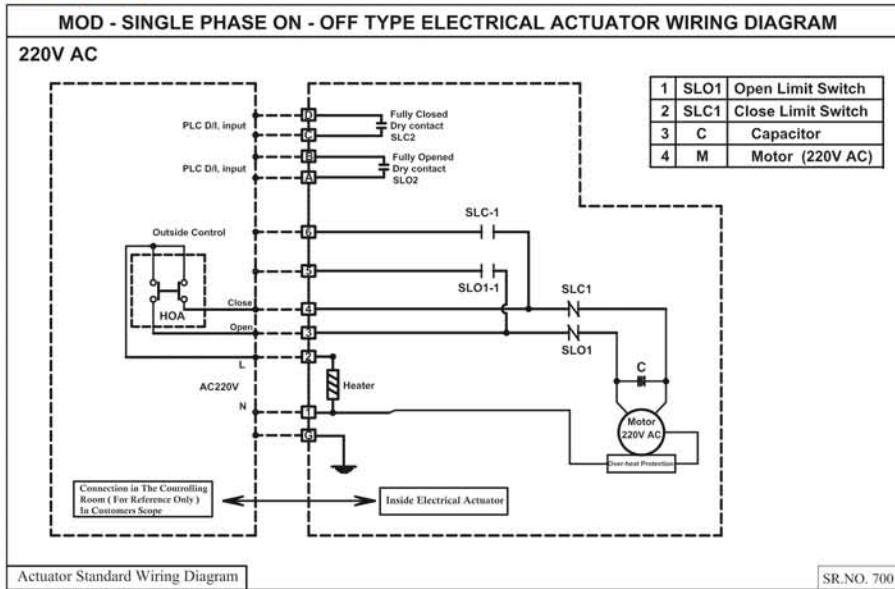
PP / UPVC Butterfly Valve  
Electrical Actuator Operated

**SIZE :**  
1.1/2" TO 24"  
**MOC :**  
PP / UPVC / CPVC / PVDF LINED  
**REPLACEABLE SEAT :**  
Nitrile (NBR) / EPDM / VITON  
**ENDS :**  
Wafer / Lug Type / Flanged  
**DESIGN & MANUFACTURING STD.:**  
ANSI / DIN

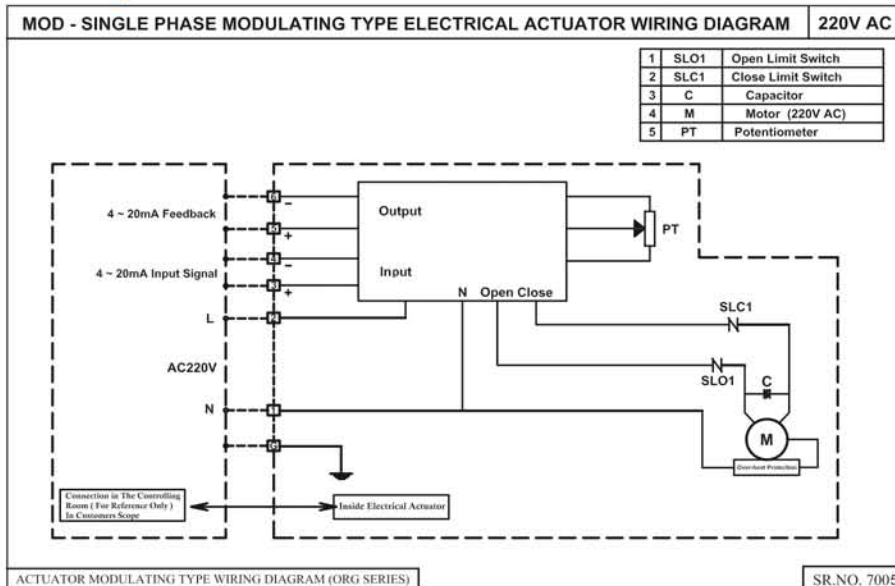


# Wiring Diagram

## 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](mailto:info@cairindia.in)