



AOXIANG  
ELECTRIC INTELLIGENT ACTUATOR  
ELECTRIC VALVES

# AOXIANG ELECTRIC INTELLIGENT ACTUATOR ELECTRIC VALVES



**ZHEJIANG AOXIANG AUTO-CONTROL TECHNOLOGY CO.,LTD**

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## Company Introduction

AOX has been dedicated to the research, design and manufacturing of actuators for more than 20 years. Adhere to strict and reliable principle, rely on rich field application experience, we provide the optimum auto-control products and solution in fluid-control application area such as pressure, flow rate and liquid level.

We have a group of passionate, continuously innovative, high-quality R & D staff to forge ahead. From initial design to the selection of material, the determination of craft, exquisite manufacturing process and rigorous test procedure ensure each product from AOX meets the most severe hazard working condition.

Of course, it is an endless challenge to create more and better industrial process control products.

AOX is brave and strong enough to face this challenge.

We are sure to achieve this aim. OK! AOX



## Production Strength

The basis of market competition is inseparable from the production strength, solid financial strength and advanced, perfect hardware. Knowing the importance of hardware, AOX firstly introduced the advanced equipment from abroad in the same industry. We invested tens of millions to renew the hardware, manufacture international standard superior electric actuators and electric valves with international product facilities.



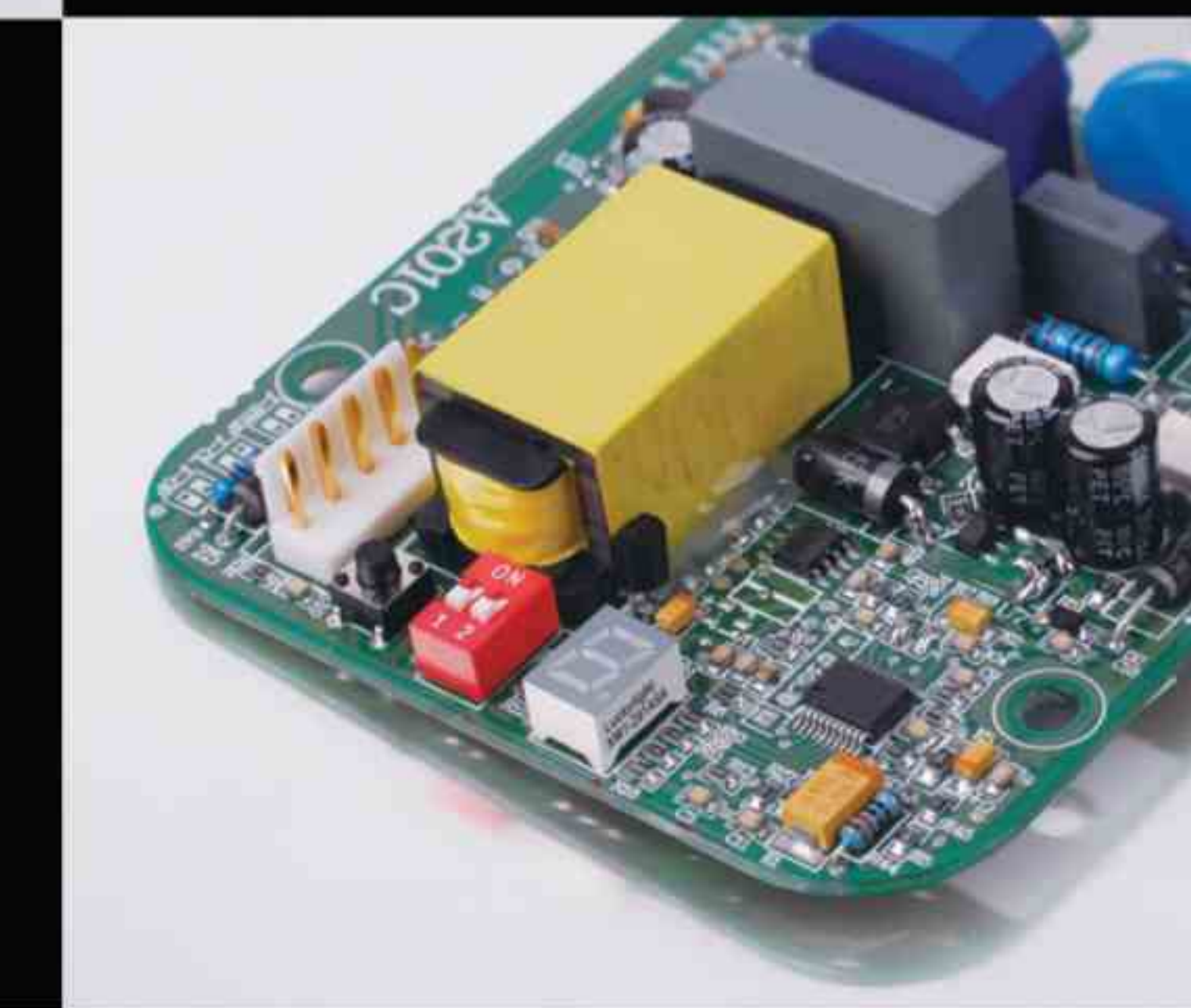
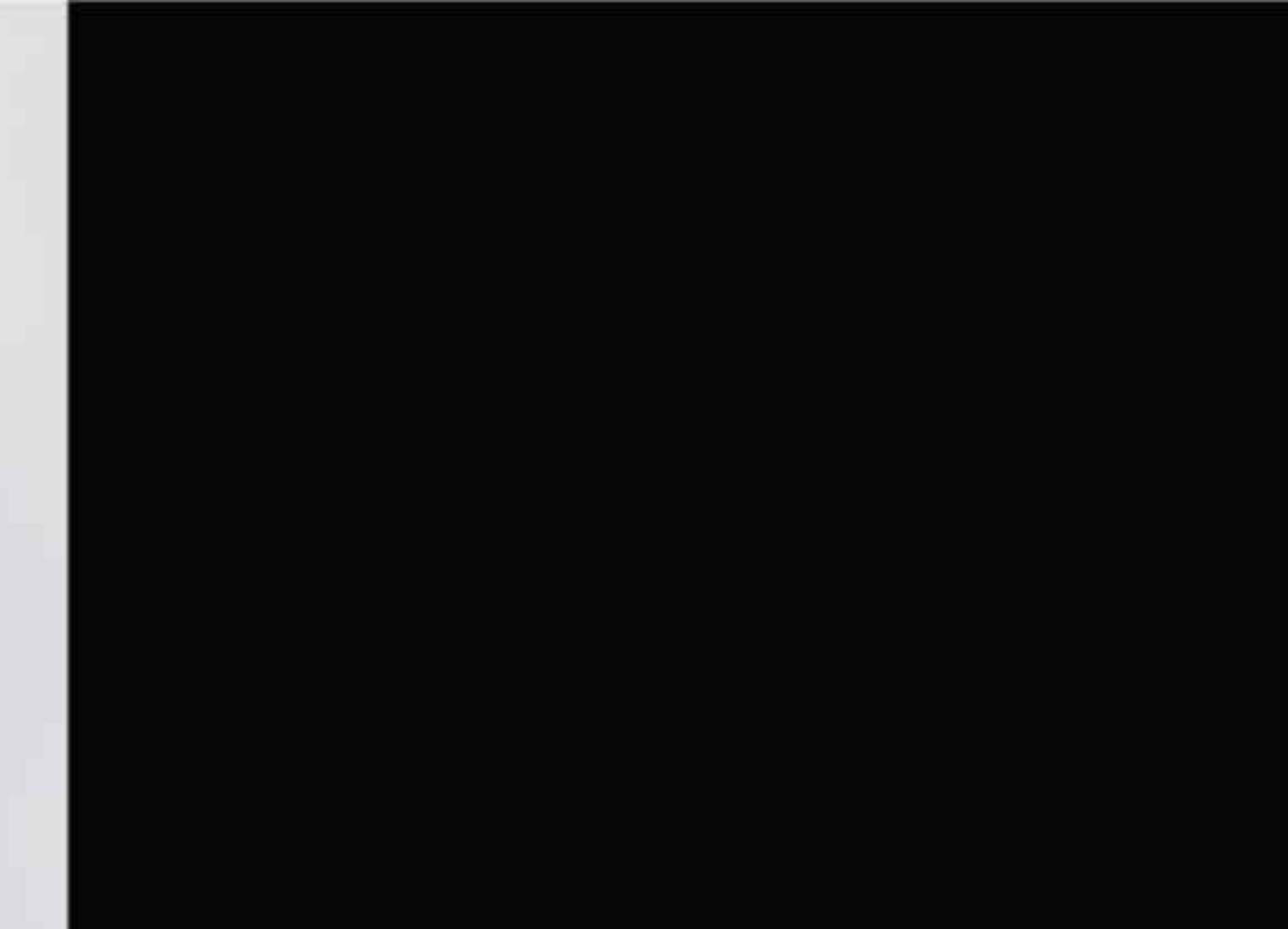


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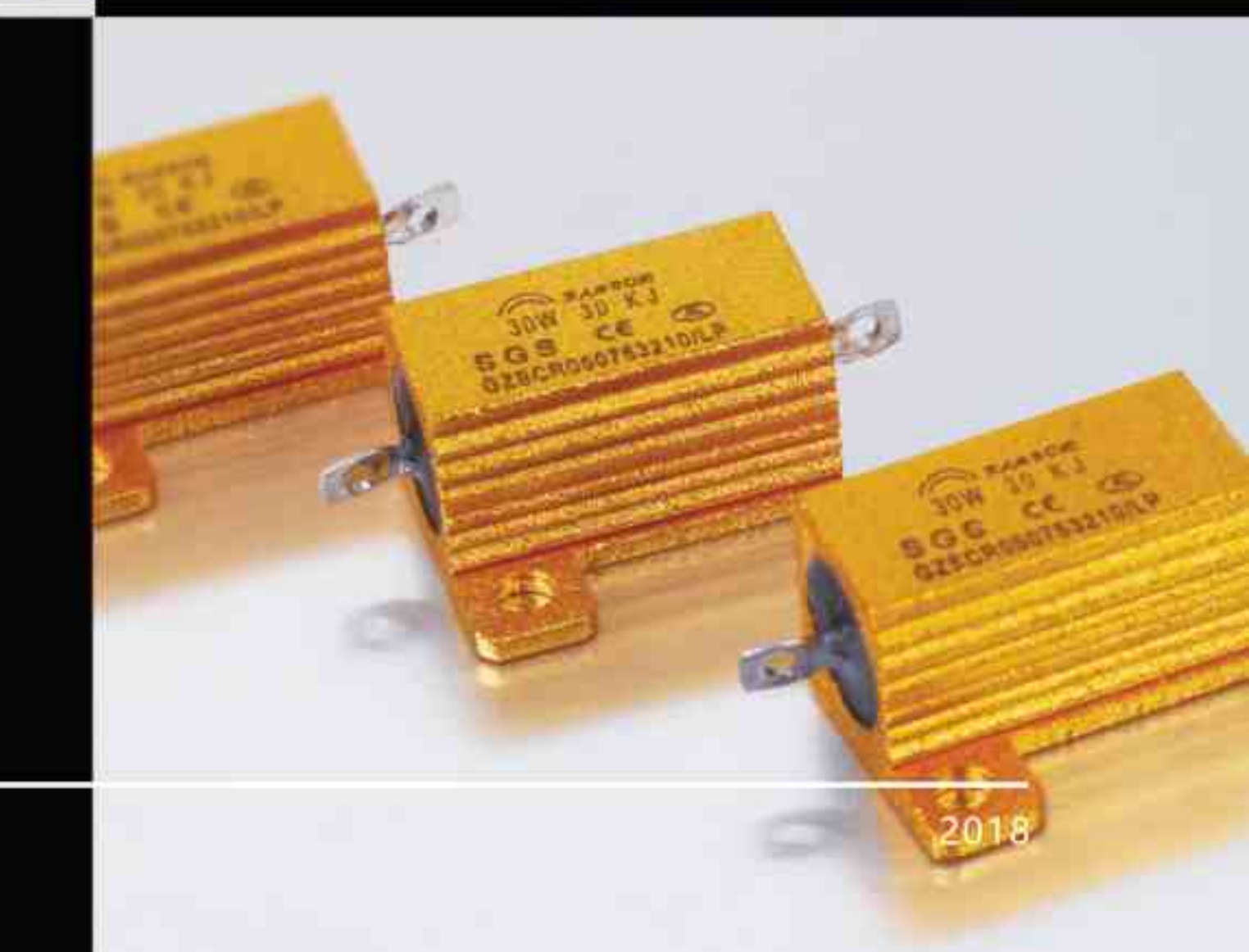
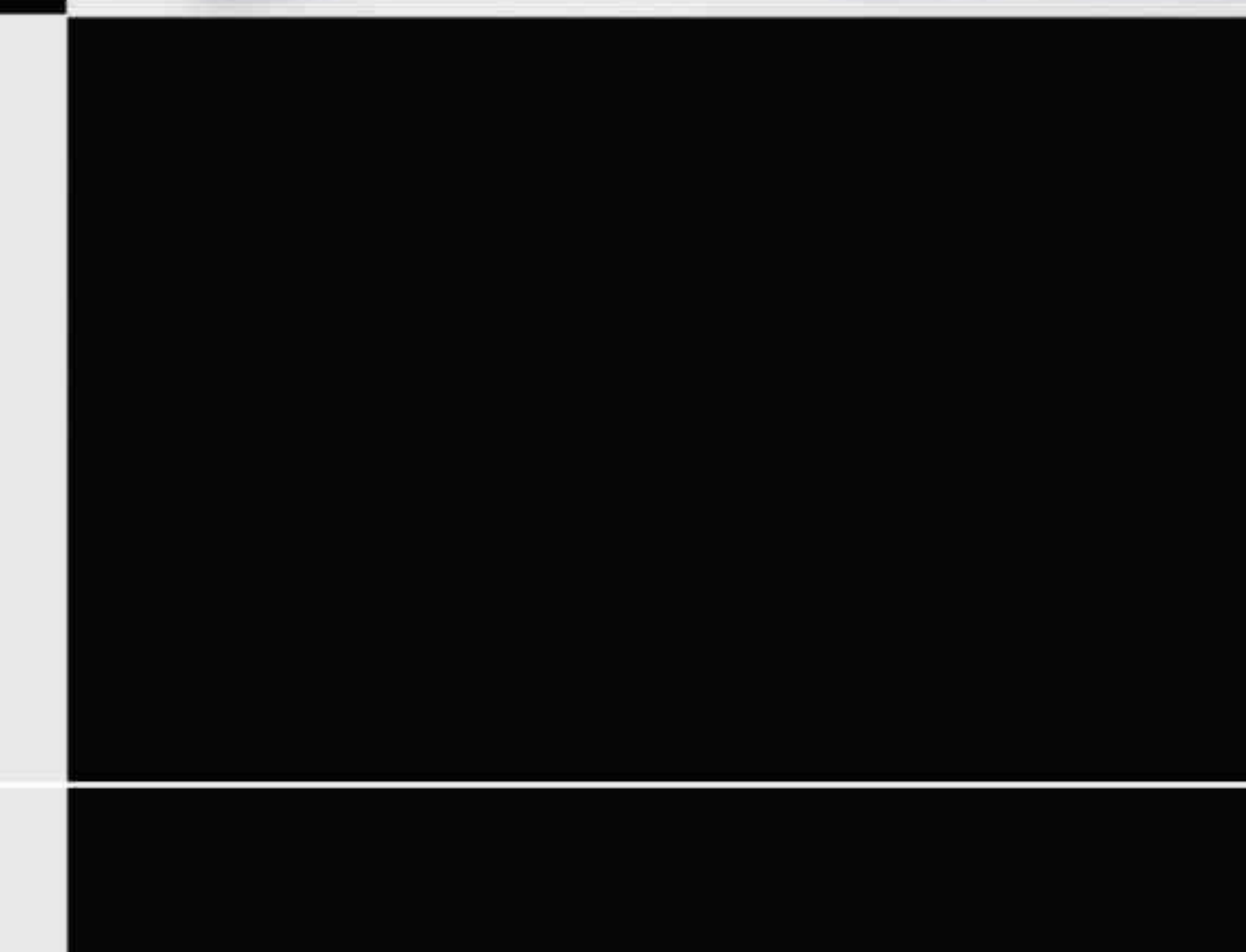
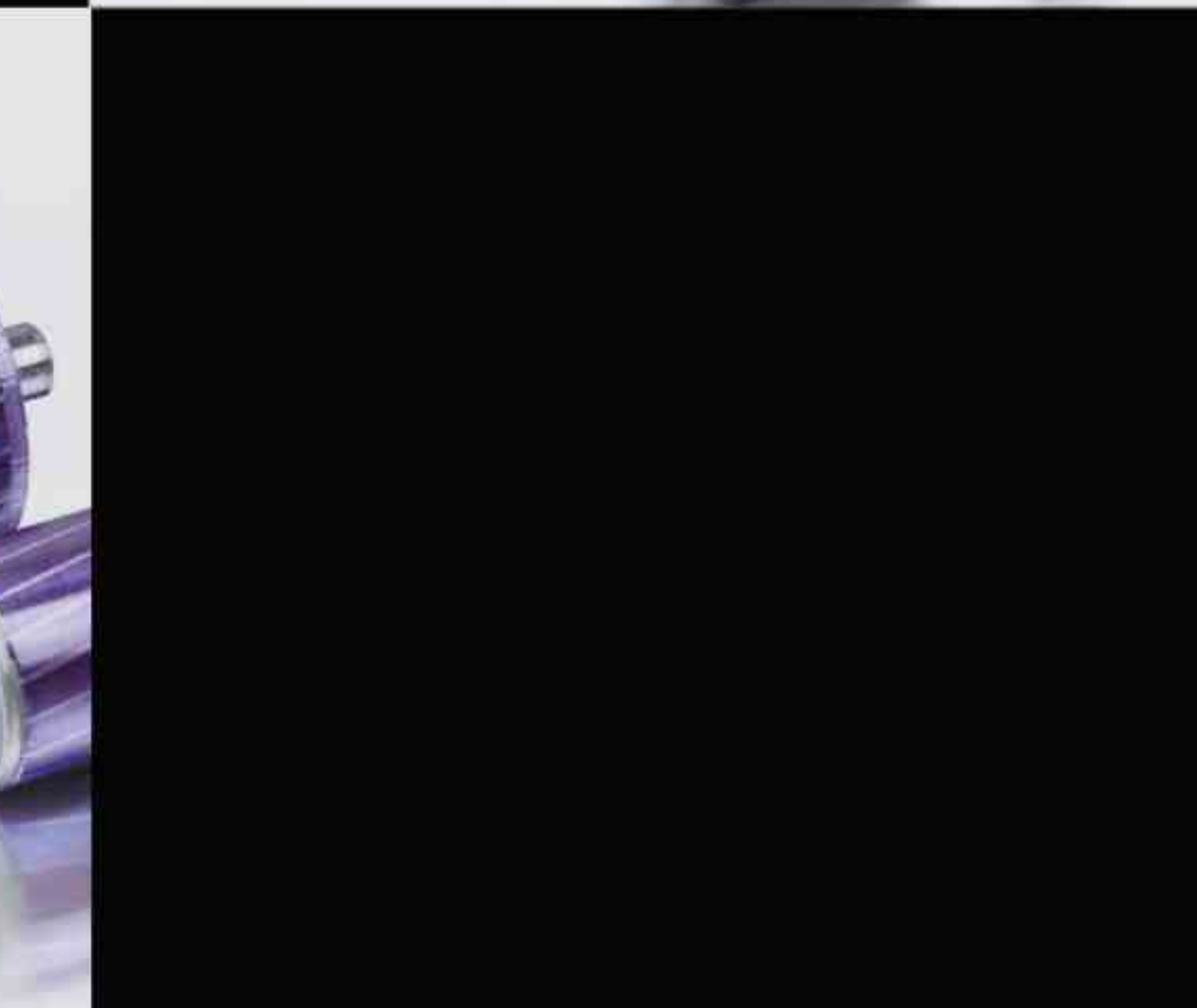
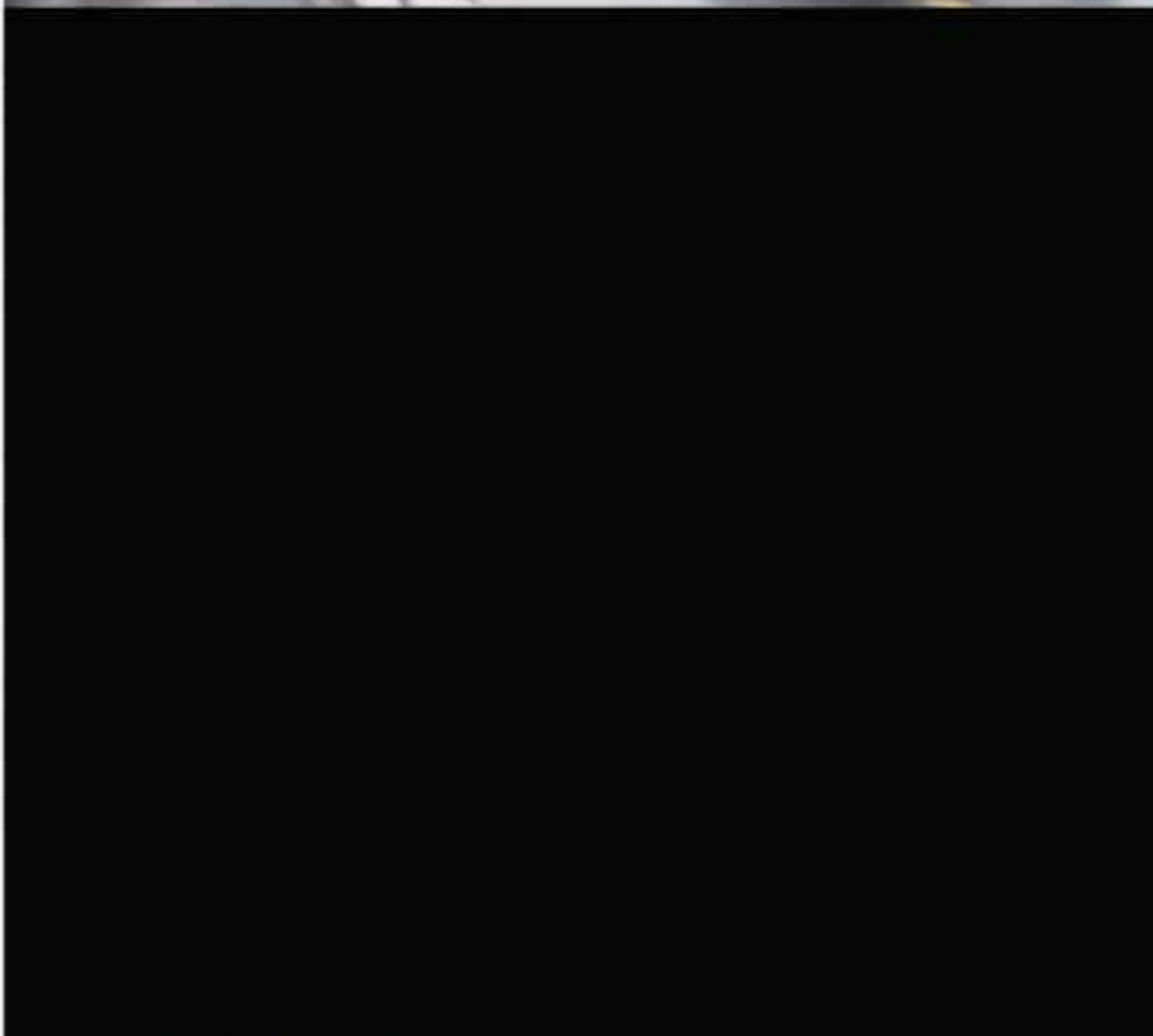


# Applications









Our products are used in many fields, petroleum, chemicals, machinery, metallurgy, water treatment, pharmaceutical, marine, HVAC, etc.



>>> the internationally first-class parts are used to ensure the highly efficient and reliable operation under the most severe working conditions

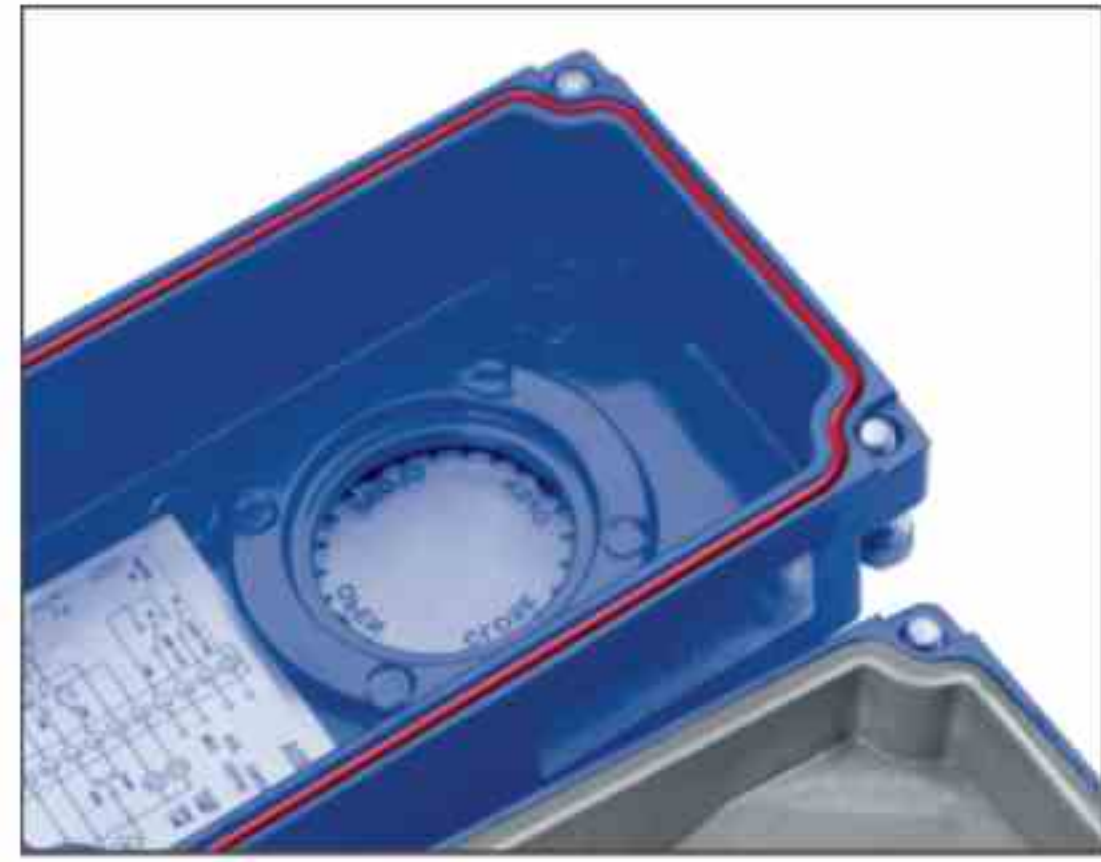


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Electric actuator Quarter-turn AOX-R Series	Electric actuator Quarter-turn AOX-Q Series	Electric actuator Mutli-turn AOX-M Series	Electric actuator Linear AOX-L Series	Electric actuator Linear AOX-QL Series	Pneumatic Actuator Quarter-turn AOX-P Series	Limit switch box APL Series	Limit switch box ASK Series
							

# Certification





**Protection level up to IP67**

By improving the concave and convex structure of the upper and lower cap binding surface of the product, the sealing is more reliable.



**Transmission part is more reasonable and reliable**

- 1.The gear box is made of aluminum alloy to avoid the cracking problem of gear box .
- 2.Gear with 40 chromium steel treated by finishing the two heat, It is more solid and reliable, wear resistance and fatigue resistance is stronger.



**Lower motor temperature**

By increasing the size of the motor, under the same power, reducing the capacitance and starting current, thereby reducing the degree of fever.



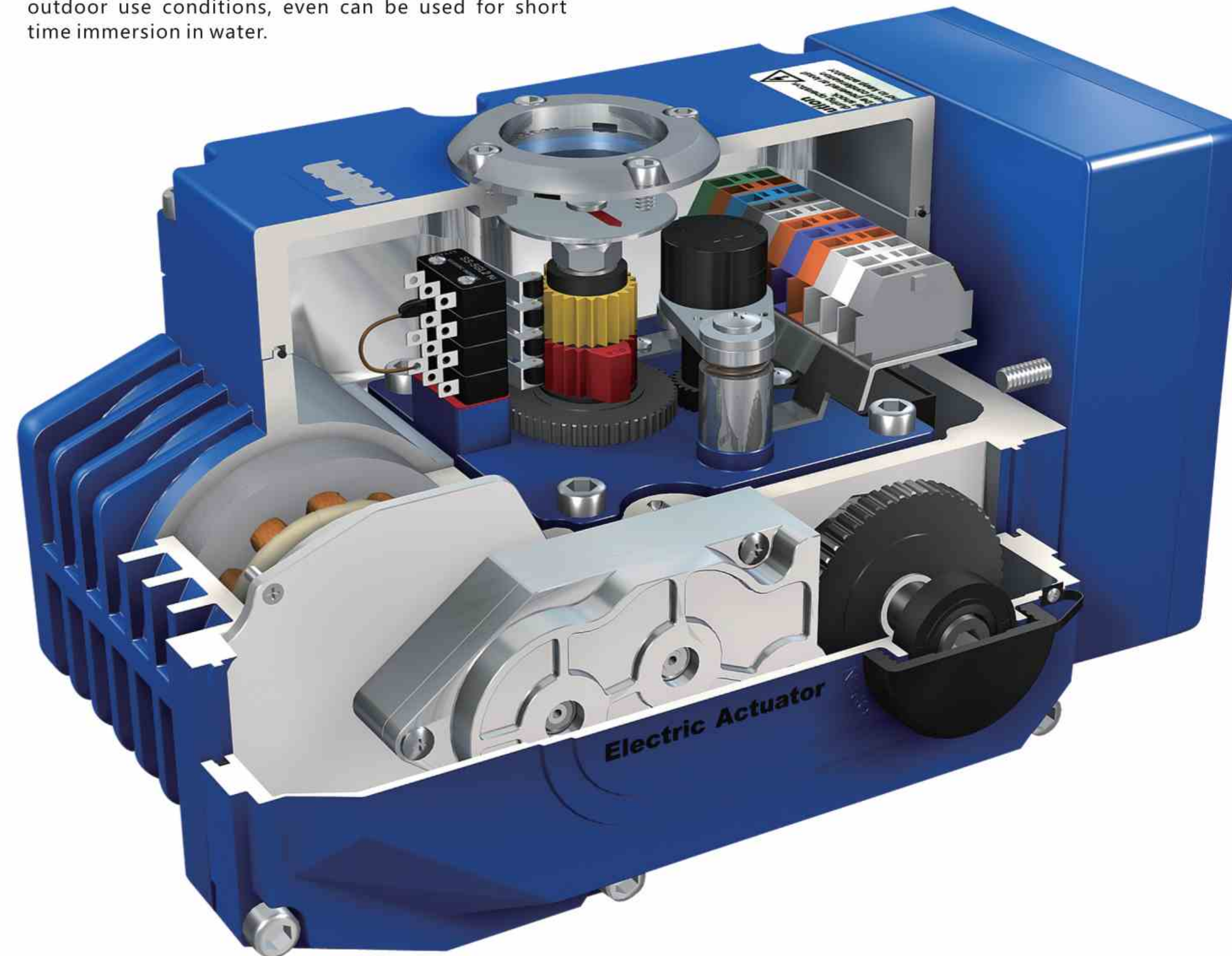
**Quicker and easier adjustment**

By improving the electrical cam structure, integrate the four cam into two, isolated with butterfly spring, pressed with locking nut above. Limit can remain stable at ultra high and low temperature.



**Lens structure**

The mechanical seal structure, avoid the use of chemical adhesives for site conditions due to the aging water.The improved products in full compliance outdoor use conditions, even can be used for short time immersion in water.



**The new appearance, more upscale**

Avoiding the monotony of appearance, more attractive.



**Modulating type is more stable and reliable**

- 1.Increase the size of the module,larger component selection,higher power.
- 2.Using of weak control power supply, field voltage instability will not affect the quality of the module;
- 3.Using the bare board for better heat dissipation;
- 4.Smart setting,one key location, avoiding debugging disorder because of too many keys ;
- 5.Using outboard installation of smart module to solve the contradiction of actuator maximum temperature is 120 °C, electronic components and modules use temperature is only 65 °C.



**Easy to keep manual handle**

Position the handle clamp above the mechanical limit screw, so that the wrench is not easy to be lost in the site.



**More reliable and easy to assemble with valve**

Easy mounting base standard to ISO5211.The stem is directly connected to the worm inside of the actuator, the arm of valve and output shaft is shorter, output is more stable.

**AOX-R  
Electric Actuator**

Patented products,Counterfeiting not allowed.



AOXIANG  
ELECTRIC INTELLIGENT ACTUATOR  
ELECTRIC VALVES



# AOX-R Series Electric Actuator



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## SUMMARY

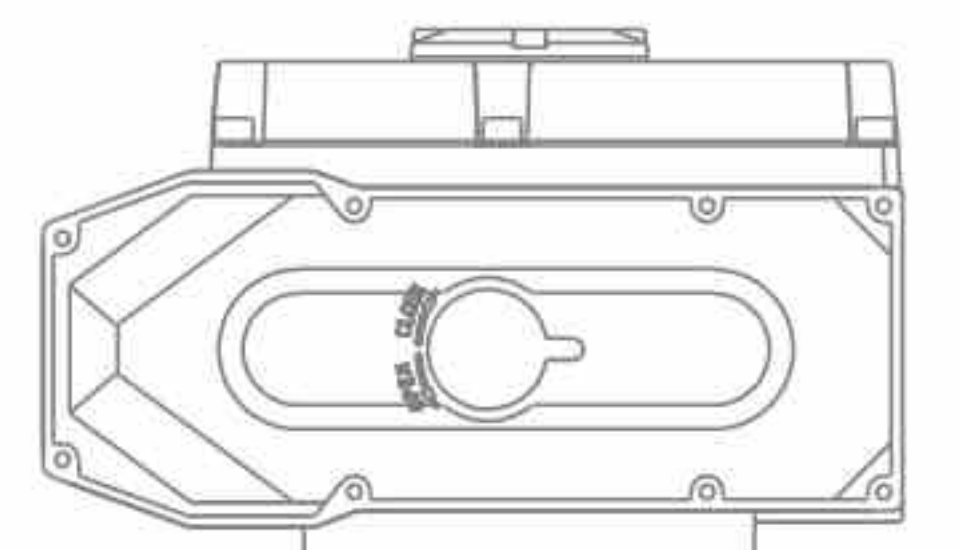
"AOX-R" series electric actuator is used for controlling 0~ 270° rotation valves and other similar products, such as butterfly valve, ball valve, damper, flapper valve, cock valve etc. It widely applies to petroleum, chemical, water treatment, shipping, paper making, power plant, heating, light industry and other industries. Driven by 380V/220V/110VAC or 24V/110VDC power, input 4- 20mA or 0-10VDC control signal, moves valve to the right position, and achieves automatic control, the maximum output torque is 5000N·M.

## PERFORMANCE FEATURES

1. Shell--The shell is made of aluminum alloy, with anodic oxidation treatment and polyester powder coating. It is strong corrosion-resistant and enclosure IP67, NEMA 4 and 6, IP68 is optional.
2. Motor--Fully enclosed squirrel-cage asynchronous motor, small, large torque, and small inertia force, F-class insulation rating, with thermal protection to avoid damaging.
3. Manual Structure--The design of handle is safe, reliable, labor-saving, small. If without power, operated by handle.
4. Indicator-- Installs indicator in the center shaft and adopts convex mirror design, no cumulate water, more convenient to observe.
5. Space heater--It is used for controlling temperature to avoid condensing internal of housing and keep dry.
6. Sealing--Well sealing performance and enclosure IP67, IP68 is optional.
7. Limit switch--Mechanical, electronic double limit. Mechanical limit stopper are adjustable, safe and reliable; electronic limit switch is controlled by cam. Set position accurately and conveniently, and not affected by excessive handle.
8. Self-locking—Accurate worm and worm gear transfer large torque efficiently, high efficiency, low noise (max. 50 dB), long life, with self-locking, prevent inversion, as stable and reliable transmission parts, no need to refuel.
9. Anti-off bolt—The bolt attaches to the shell and be not off when remove the shell.
10. Installation--The installation size meets international standard ISO5211 / DIN3337.
11. Circuit--Controlling circuit meets the single-phase or three-phase power supply standard, circuit layout is reasonable and compact, terminals meet various of additional functional requirements effectively.

# AOX-R Electric Actuator

Patented products, Counterfeiting not allowed.



# AOX-R Electric Actuator Series

## PERFORMANCE PARAMETER

Model	Max output torque(N·M)	Operating time 90°(S)	Drive shaft(mm)		Power (W)	Rated current(A) 220VAC/1ph	Weight (kg)
			Square	Deep			
AOX-R-003	30	20	9x9 11x11	13.5 15.5	8	0.15	2.1
AOX-R-005	50	30	11x11 14x14	15.5 18	10	0.25	3.6
AOX-R-008	80	30	11x11 14x14	15.5 18	10	0.25	3.6
AOX-R-010	100	30	14x14 17x17	18 22.5	15	0.35	4.6
AOX-R-015	150	40	14x14 17x17	18 22.5	15	0.37	4.6
AOX-R-020	200	30	22x22	26	45	0.30	13
AOX-R-030	300	30	22x22	26	45	0.31	13.4
AOX-R-040	400	30	22x22	32.5	60	0.33	13.8
AOX-R-060	600	40	27x27	32.5	60	0.33	14
AOX-R-080	800	40	27x27	32.5	90	0.47	14.3
AOX-R-100	1000	40	27x27	65	90	0.47	14.5
AOX-R-160	1600	60	MaxΦ40	65	90	0.85	68
AOX-R-200	2000	60	MaxΦ40	65	90	0.85	68
AOX-R-300	3000	120	MaxΦ40	65	90	0.85	68
AOX-R-400	4000	200	MaxΦ40	65	90	0.85	68
AOX-R-500	5000	200	MaxΦ40	65	90	0.85	68

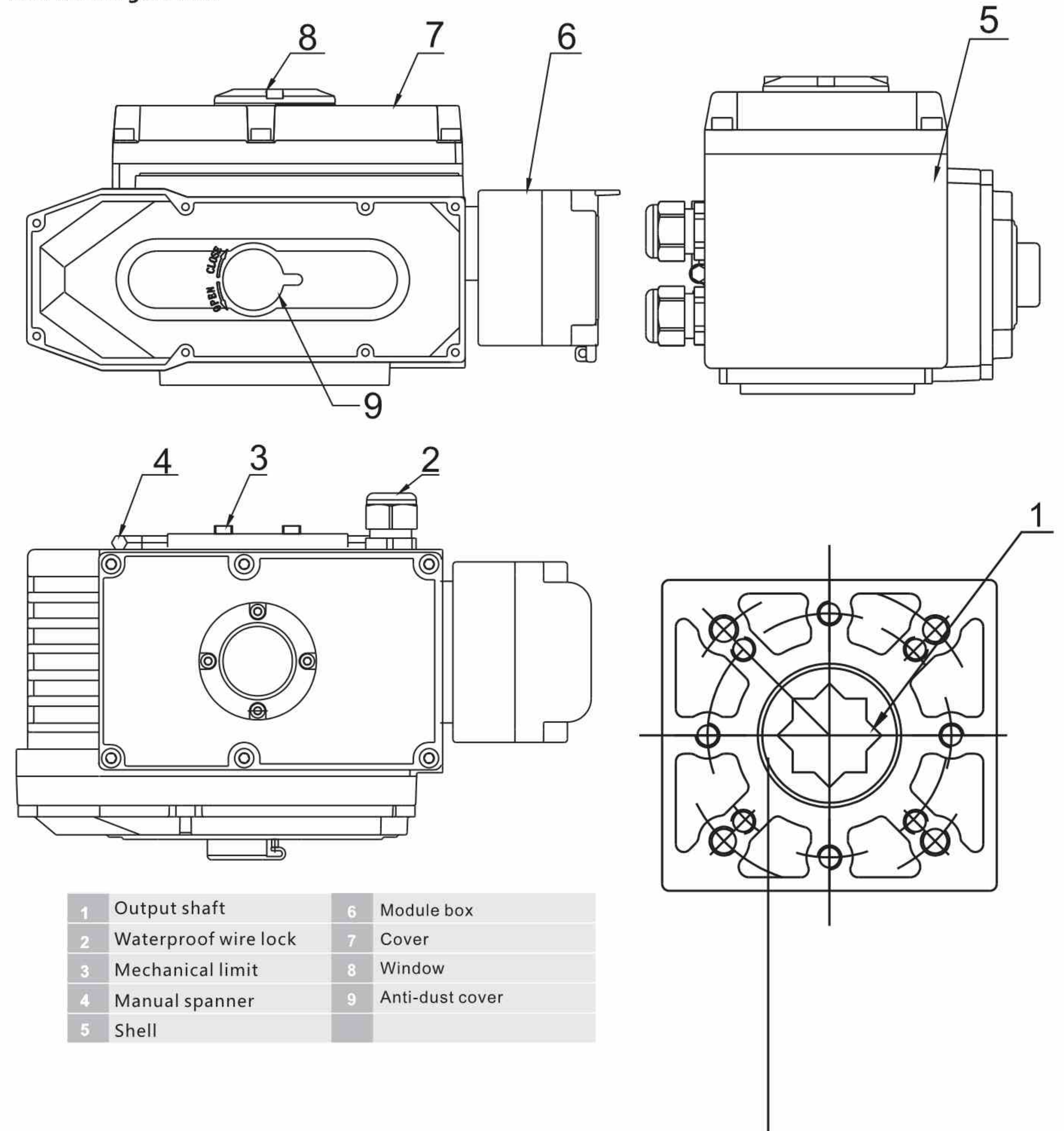
## STANDARD TECHNICAL PARAMETER

Shell	Enclosure :IP66,NEMA4 and 6	
Power	Standard:220VAC/1ph Optional:110VAC/1ph, 380V/440V/3ph,50/60HZ, ±10% 24VDC/110VDC/220VDC	
Controlling power	110/220V AC 1Phase,50/60 Hz, ±10%	
Motor	Squirrel-cage Asynchronous Motor	
Limit switch	2×Open/ Close,SPDT,250V AC 10A	
Auxiliary limit switch	2×Open/ Close,SPDT,250V AC 10A	
Travel	90° ~270°±10°(Please specify in advance if over 90°)	0°~270°
Fail safe/ Operating temperature	Internal-placed thermal protection, On 120°C ±5°C/Off 97°C ± 5°C	
Indicator	Continuous situation indication	
Manul operation	Mechanical handle (Handwheel is optional )	
Self-locking device	Self-locking by worm and worm gear	
Mechanical Limit	2 x external adjustable stopper	
Space heater	30 W (110/220V AC) Anti-condensation	
Conduit entries	2 Pieces M18x1.5	
Ambient temperature	-30°C~+70°C	
Lubrication	Grease moly(EP tyte)	
Material	Steel, Aluminium alloy, Aluminium bronze, Polycarbonate	
Ambient humidity	Max 90% RH	Non-Condensing
Anti-vibration	X Y Z 10g,0.2~34 Hz,30 minutes	
External coating	Dry powder, Epoxy polyester	

# AOX-R Electric Actuator Series

## OUTLINE DRAWING

AOX-R Configuration



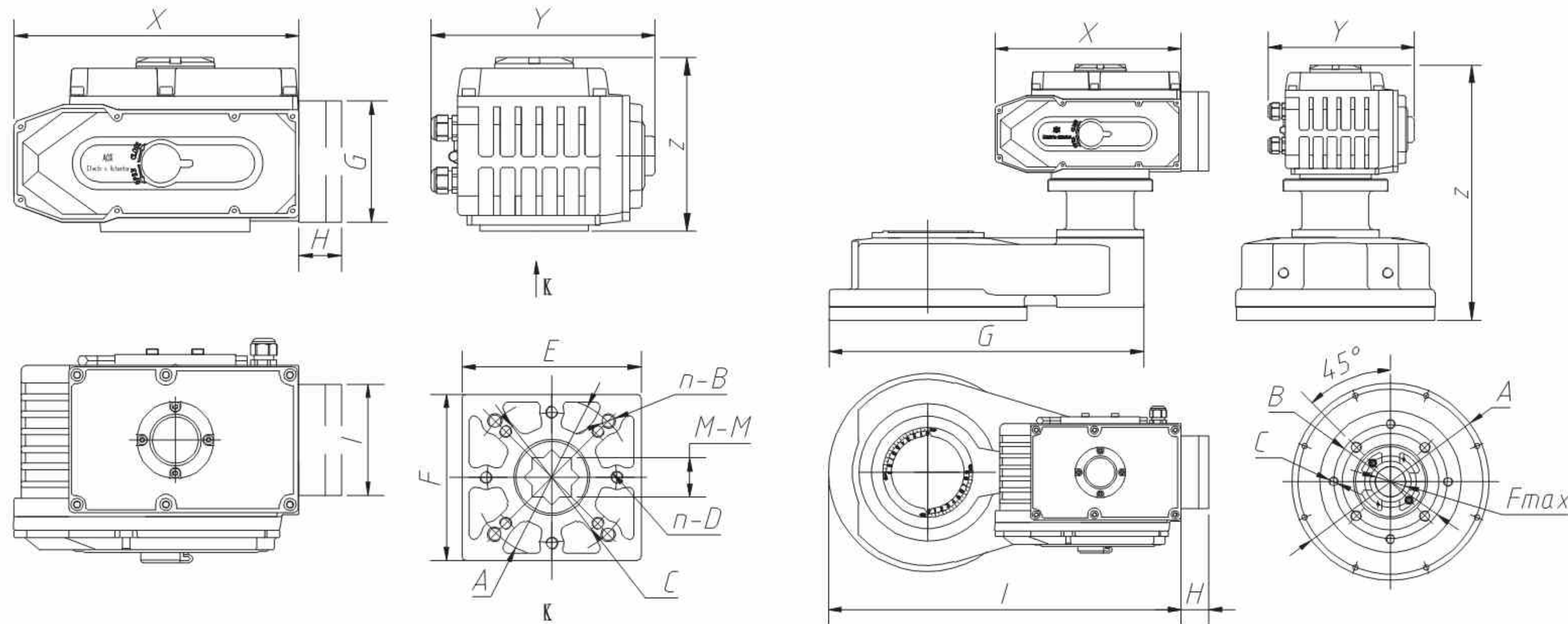
# AOX-R Electric Actuator Series

## GENERAL DRAWING

Unit:mm

AOX-R-003~100

AOX-R-160~500



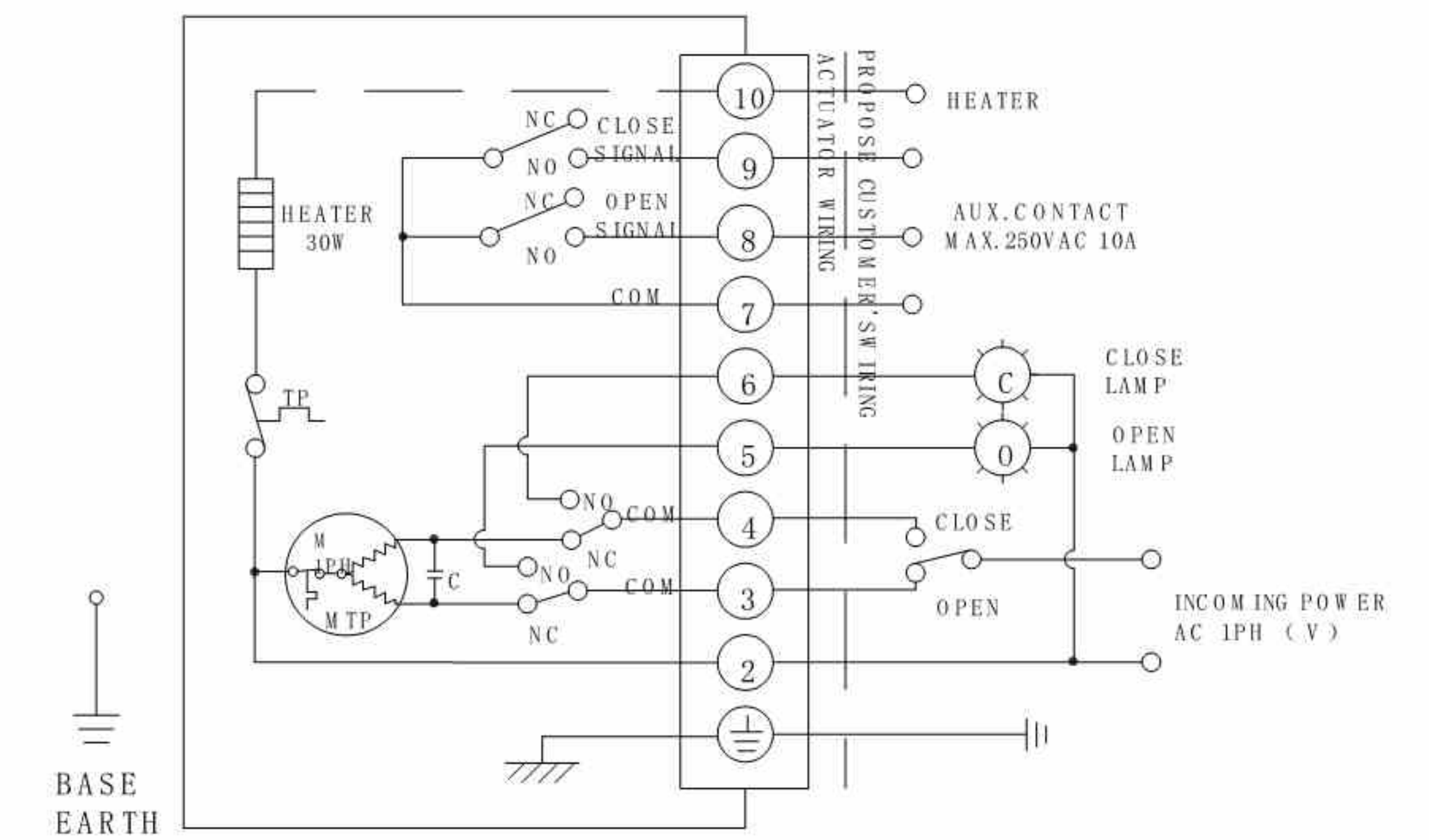
Model	X	Y	Z	A	B	C	N-D	E	F	G	H	I	M-M
AOX-R-003	123	123	113	Φ50	4-M6	Φ42/Φ36	8-M5	50	50	73	40	74	11x11
AOX-R-005	160	146	121	Φ70	4-M8	Φ50	4-M6	66	66	114	40	105	14x14
AOX-R-008	160	146	121	Φ70	4-M8	Φ50	4-M6	66	66	114	40	105	14x14
AOX-R-010	190	165	128	Φ70	4-M8	Φ50	4-M6	100	90	114	40	105	17x17
AOX-R-015	190	165	128	Φ70	4-M8	Φ50	4-M6	100	90	114	40	105	17x17
AOX-R-020	268	211	165	Φ125	4-M12	Φ102	8-M10	140	130	114	40	105	22x22
AOX-R-030	268	211	165	Φ125	4-M12	Φ102	8-M10	140	130	114	40	105	22x22
AOX-R-040	268	211	165	Φ125	4-M12	Φ102	8-M10	140	130	114	40	105	22x22
AOX-R-060	268	211	165	Φ125	4-M12	Φ102	8-M10	140	130	114	40	105	27x27
AOX-R-080	268	211	165	Φ125	4-M12	Φ102	8-M10	140	130	114	40	105	27x27
AOX-R-100	268	211	165	Φ125	4-M12	Φ102	8-M10	140	130	114	40	105	27x27
AOX-R-160	268	211	368	Φ285	Φ140/165	4-M16/M18	///	///	Φ40	454	40	508	///
AOX-R-200	268	211	368	Φ285	Φ140/165	4-M16/M18	///	///	Φ40	454	40	508	///
AOX-R-300	268	211	368	Φ285	Φ140/165	4-M16/M18	///	///	Φ40	454	40	508	///
AOX-R-400	268	211	368	Φ285	Φ140/165	4-M16/M18	///	///	Φ40	454	40	508	///
AOX-R-500	268	211	368	Φ285	Φ140/165	4-M16/M18	///	///	Φ40	454	40	508	///

# AOX-R Electric Actuator Series

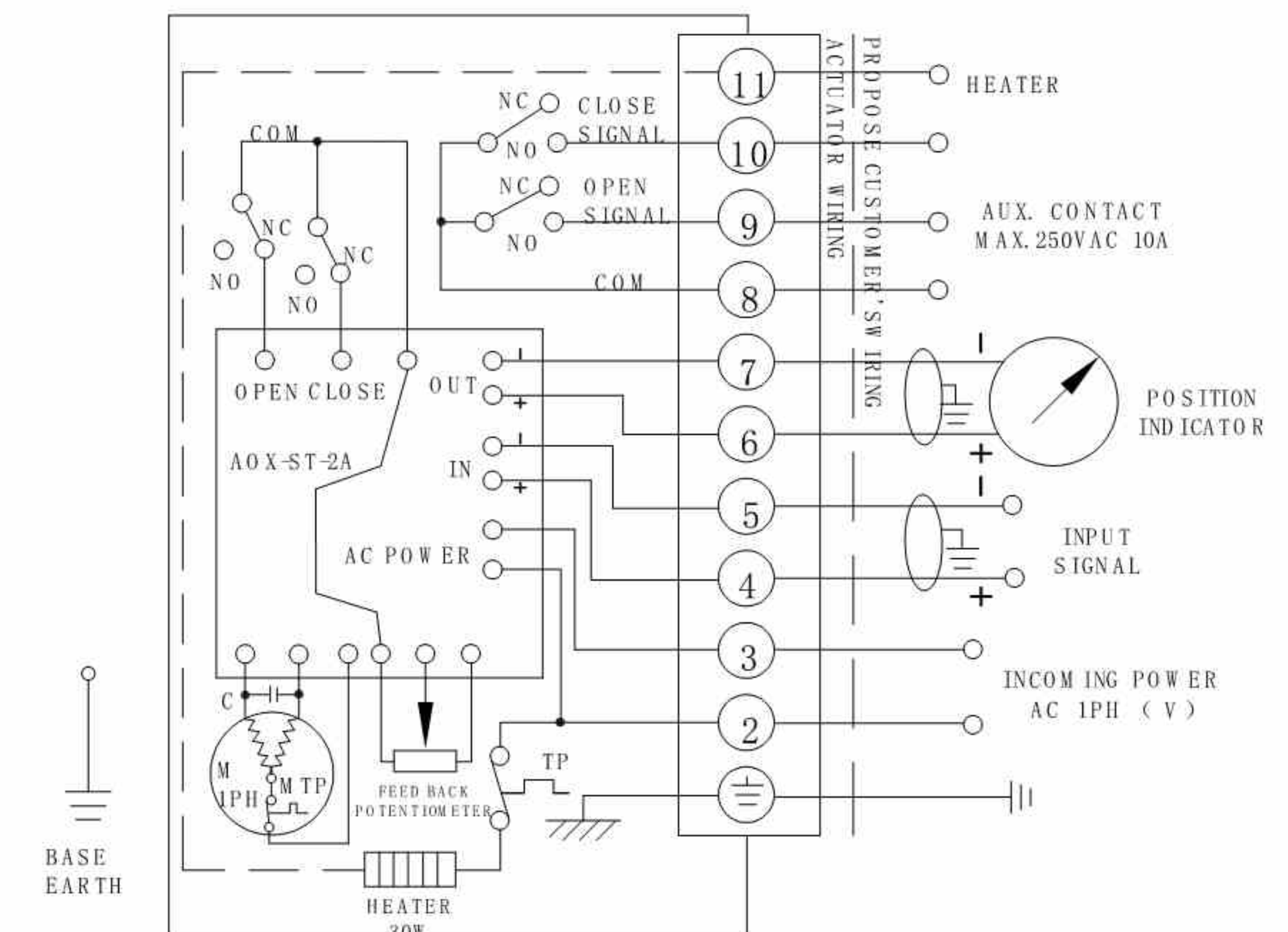
## Wiring Diagram



1. AOX-R-003~500 110/220VAC/50/60Hz, 1pH (On/off type) R-110



2. AOX-R-005~500 110/220VAC/50/60Hz, 1pH (Modulating type) R-120

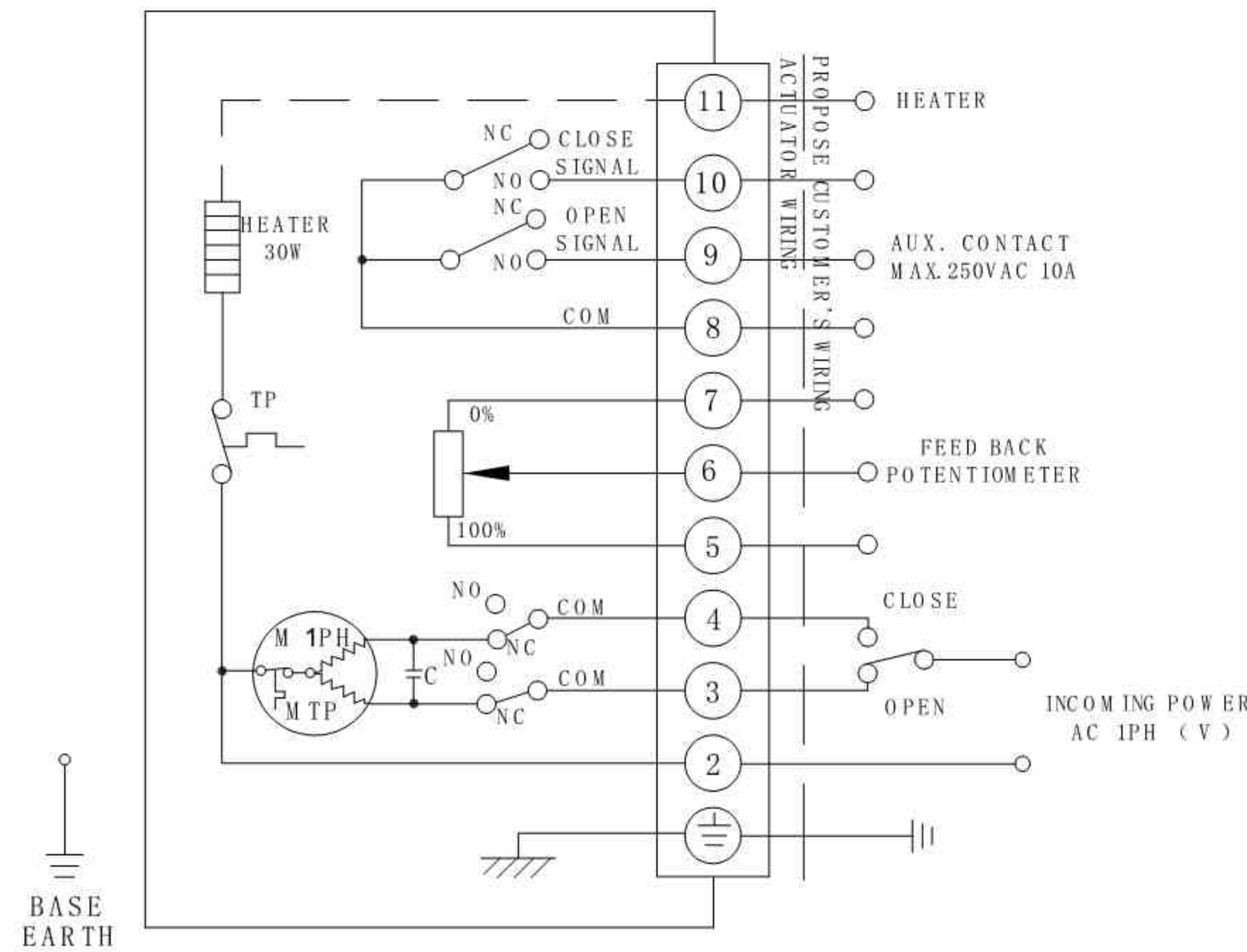




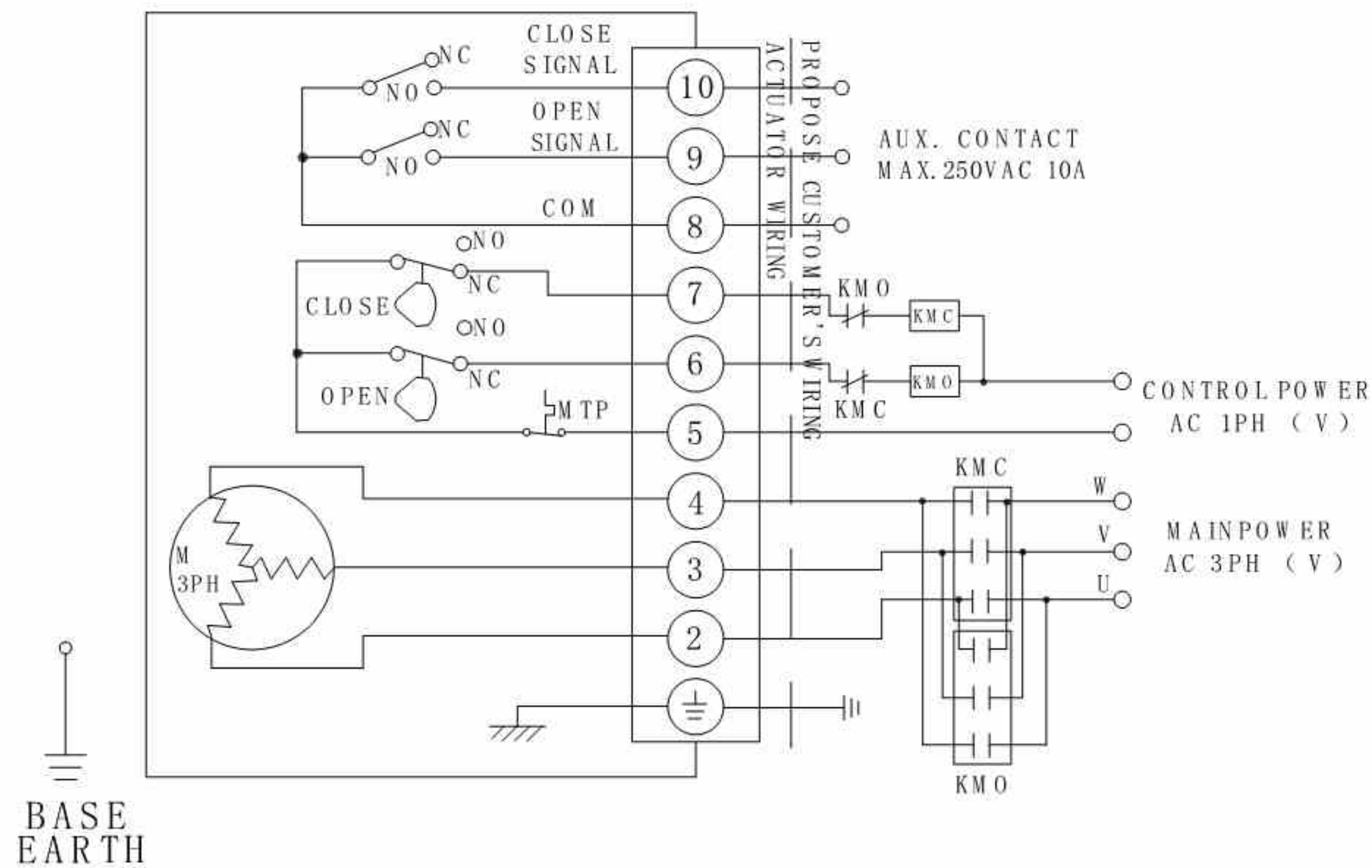
# AOX-R Electric Actuator Series

## Wiring Diagram

3.AOX-R-005~500 110/220VAC/50/60Hz, 1pH (Potentiometer output type) R-160



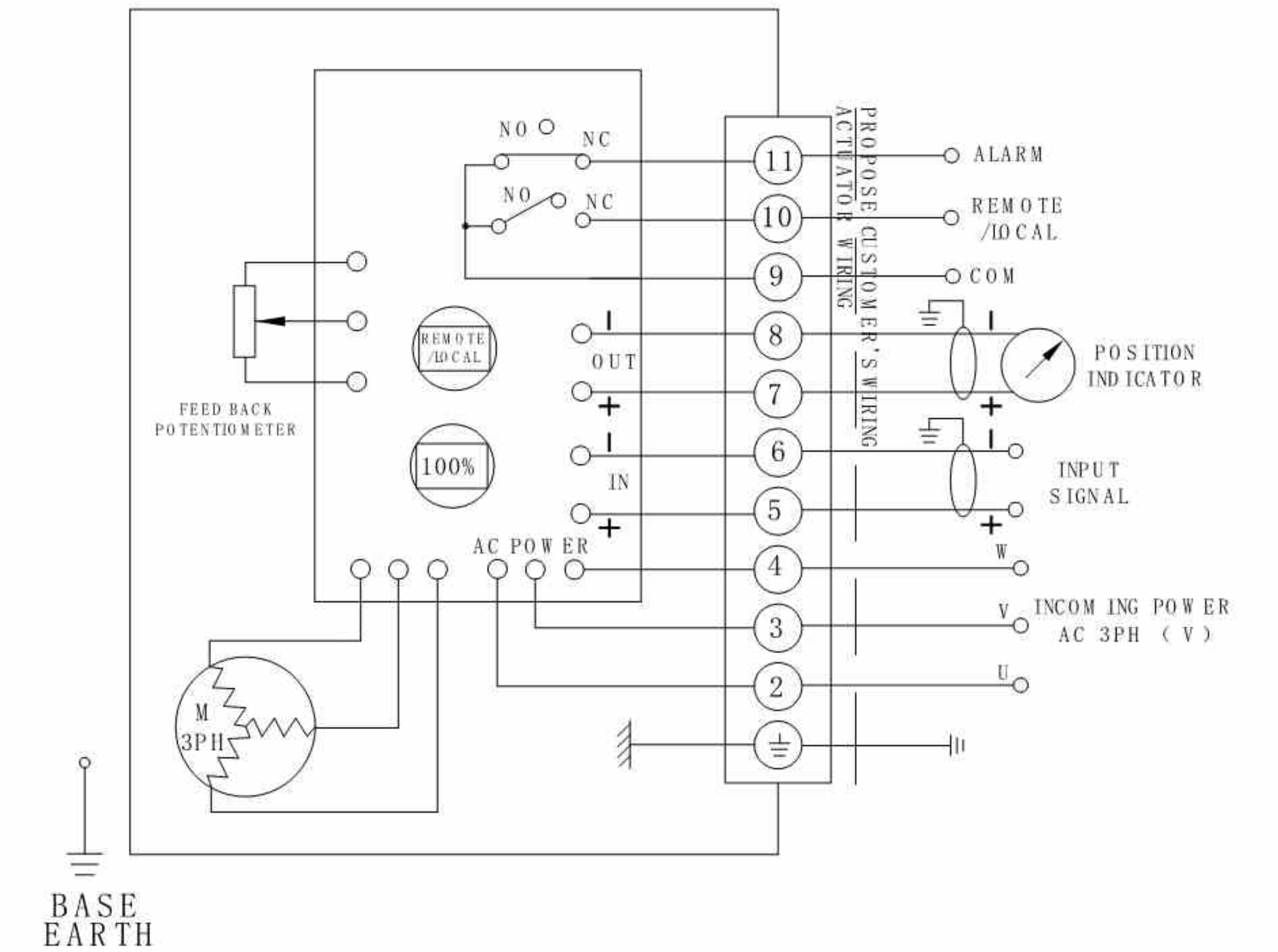
3.AOX-R-005~500 380/4440VAC/50/60Hz, 3pH (Outer control on/off type) R-210



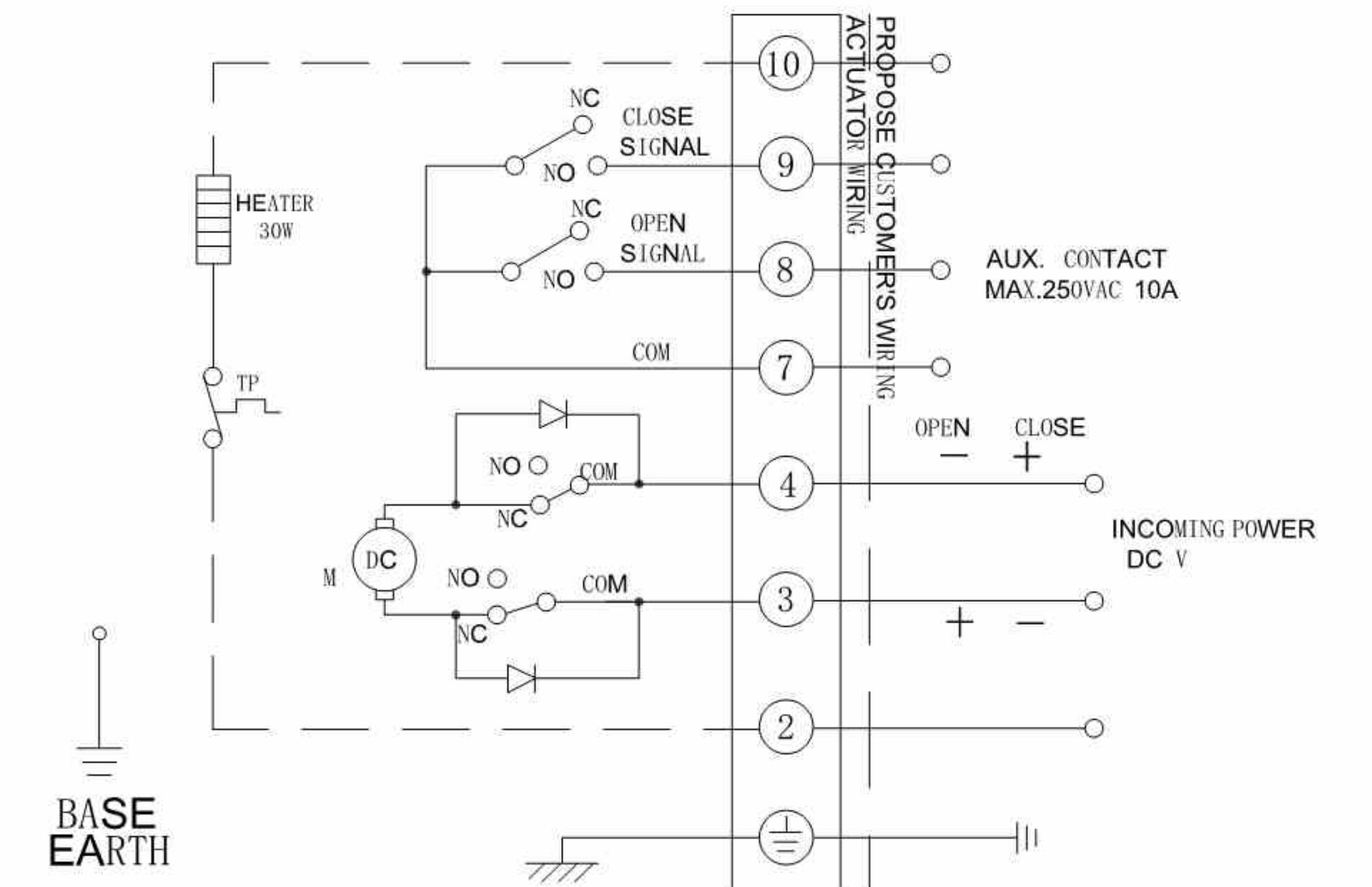
# AOX-R Electric Actuator Series

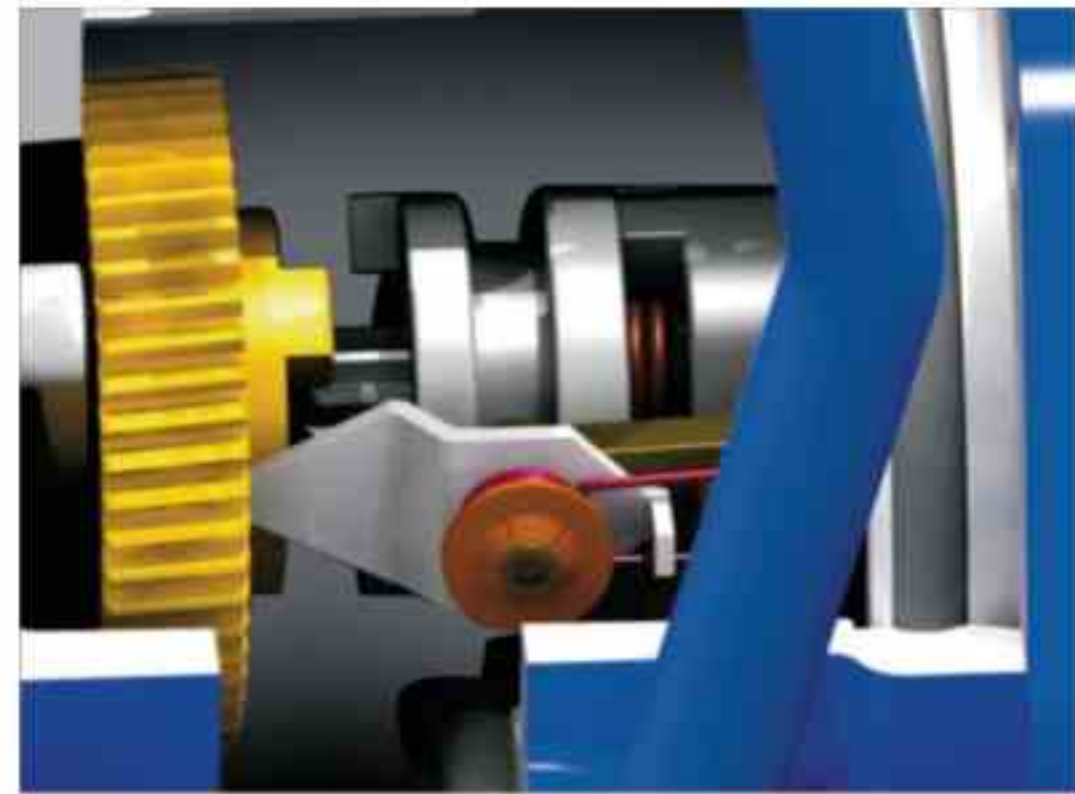
## Wiring Diagram

5.AOX-R-003~500 380/4440VAC/50/60Hz, 3pH (Intelligent modulating type) R-240



6.AOX-R-003~500 12/24VDC (On/off type) R-310





**Manual override**

- Auto / Manual switchable lever and handwheel engagement for emergency manual operation.
- Drive force automatically resorted by motor start, unless lever padlocked to prevent this occurring.



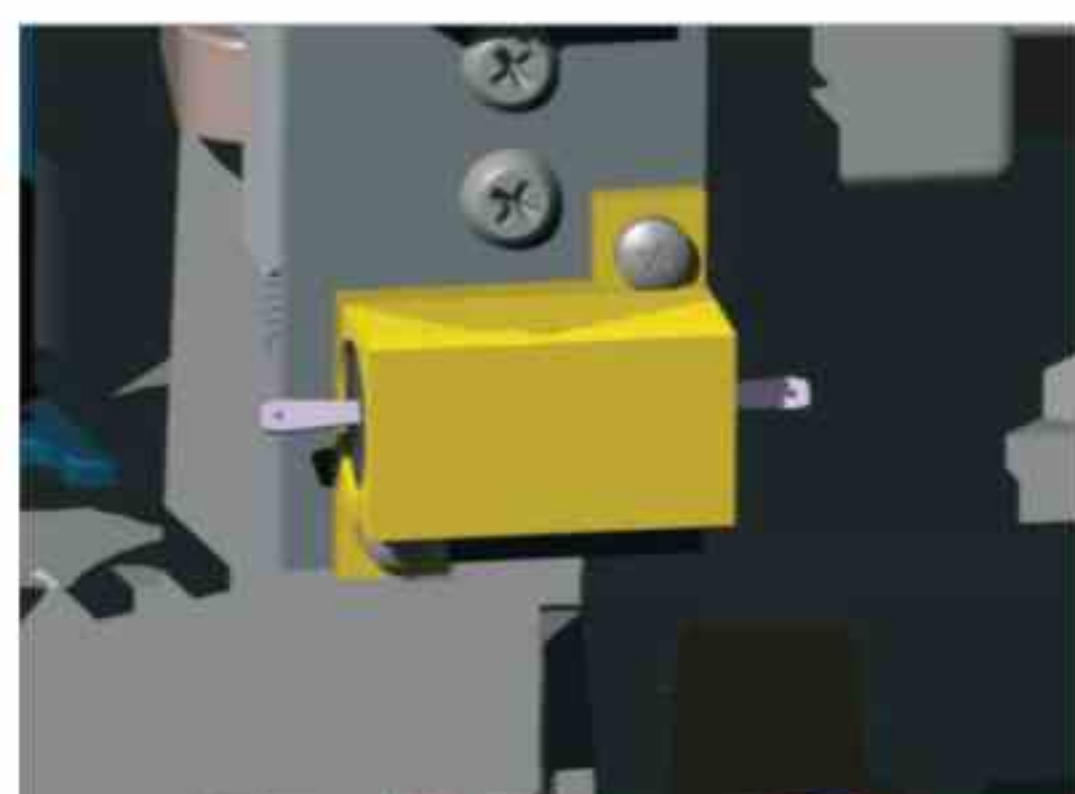
**Limit switches**

- It is fastened by the two screws above, the setting is simple, each cam can be set separately.
- Once the setup is complete, each cam will always remain in this position.



**Terminal**

- Spring loaded push type terminal for tight wiring connection under severe vibration.
- The number of terminals are 22 for users.
- Terminal length: 8-9mm
- Terminal size: 10×22×32



**Space heater**

- Metal casing, fast heat, long life, with the built-in temperature switch to prevent overheating.
- Core ceramic sealing member, there is no risk of leakage.

**1.Shell**

- Hard anodized Aluminum casting and external epoxy powder coated against severe industrial environment.

**2.Worm gear**

- Precisely machined double worm gear c/w minimum back-lash, low noise, high output torque.

**3.Self locking**

- Provided by double worm gearing to keep position of valve unchanged against reverse torque from valve.

**4.Sealing**

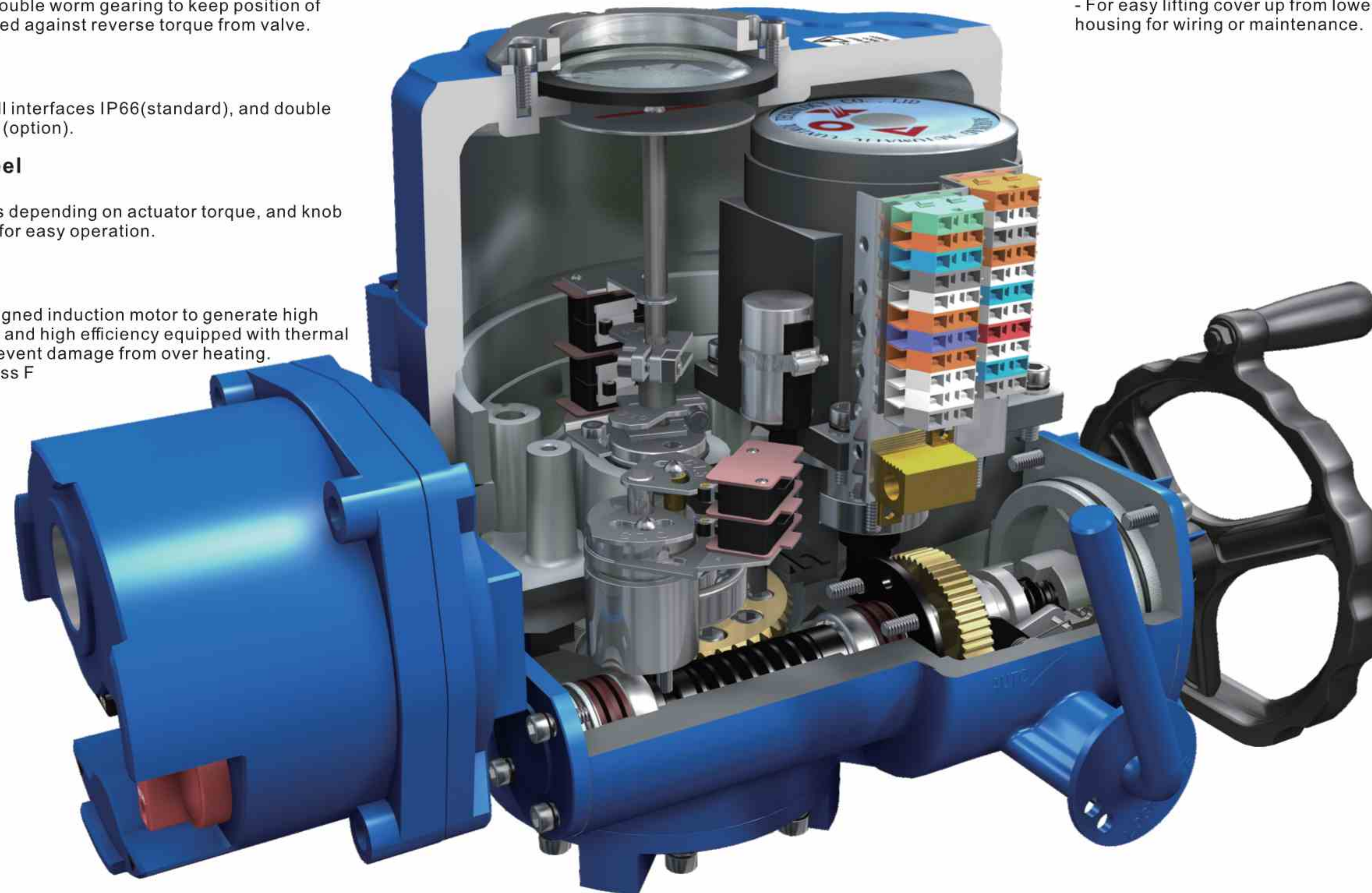
- By O-ring in all interfaces IP66(standard), and double o-ring for IP68 (option).

**5.Handwheel**

- Different sizes depending on actuator torque, and knob on handwheel for easy operation.

**6.Motor**

- Specially designed induction motor to generate high starting torque and high efficiency equipped with thermal protector to prevent damage from over heating.
- Insulation class F



**Tapered interface between cover and lower housing**  
- For easy lifting cover up from lower housing for wiring or maintenance.



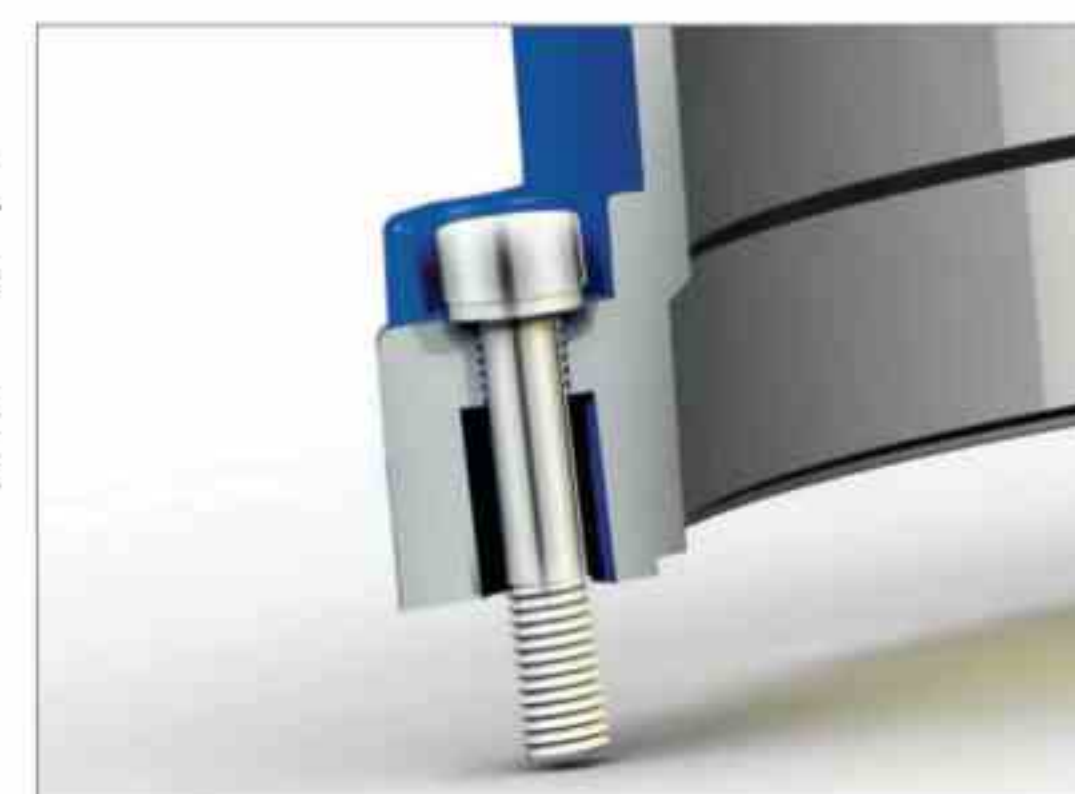
**Window**  
- Polycarbonate window, built-in O-rings, fixed metal gland, the gland comes with two drainage channels to prevent water, easy to observe.



**Torque switches**  
- Protect actuator from damage caused by overload from the driven valve over the whole travel.  
- Once the torque switching acts, the actuator will be stopped immediately.



**Removable drive bushing**  
- Easy mounting base standard to ISO5211.  
- Bushings can be processed according to different requirements, four hanging ears made a close fit with shaft and sleeve.



**Captive cover bolts**

- Designed to prevent losing it during maintenance or installation.
- All external bolts are stainless steel for rust prevention.

**Indicator sustained by spring**

- Direction of visual indicator is set by factory.
- In case of changing its direction, just grip the indicator plate and change the position.
- Spring beneath indicator plate sustains the set position unchanged.
- No need to loose screw and tight it again at all!



**AOX-Q**  
**Electric Actuator**

Patented products,Counterfeiting not allowed.



# AOX-Q Series Electric Actuator

**WARNING**  
 When installing actuators in the field, ensure that the actuators have their own independent control circuit, both as a single-phase and three-phase.  
 Actuators wired in parallel with a single switching device will not operate properly and will significantly degrade the life of the device.  
 The damage caused by water in the actuator can be repaired. The actuator can be repaired by the user or a qualified technician. To avoid damage to the actuator, do not use water in the control circuit. To avoid damage to the actuator, do not use water in the control circuit. To avoid damage to the actuator, do not use water in the control circuit. To avoid damage to the actuator, do not use water in the control circuit.



## SUMMARY

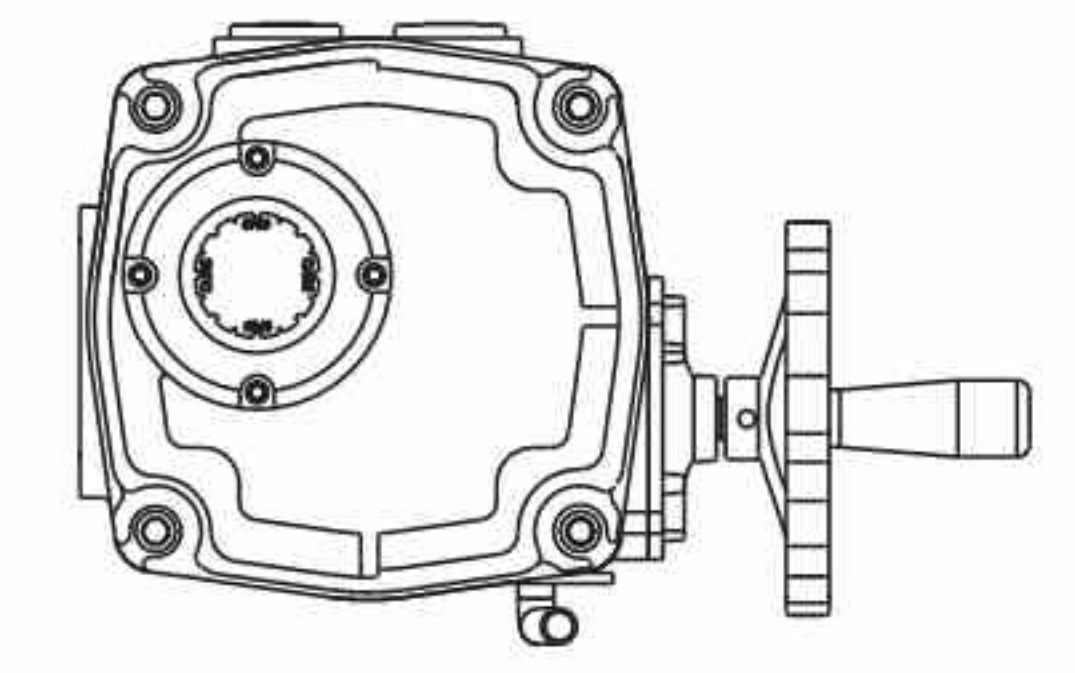
"AOX-Q" series electric actuator is used for controlling 0~270° rotation of the valves and other similar products, such as butterfly valve, ball valve, damper, flapper valve, cock valve etc. It widely applies to petroleum, chemical, water treatment, shipping, paper making, power plant, heating, light industry and other industries. Drived by 380V/220V/110VAC power or 24V/110VDC power, inputs 4-20mA or 0-10VDC control signal, moves valve to the right position, and achieves to automatic control, maximum output torque is 6000N·M.

## PERFORMANCE FEATURES

1. Shell--The shell is made of aluminum alloy, with anodic oxidation treatment and polyester powder coating. It is strong corrosion-resistant and enclosure IP66,NEMA 4 and 6, IP68 and explosion-proof is optional.
2. Motor--Asynchronous motor, small, large torque, and small inertia force, F-class insulation rating, with thermal protection to avoid damaging.
3. Manual Structure--The design of handwheel is safe, reliable, labor-saving, small. Declutch to operate by handwheel if without power, and reset automatically when power on.
4. Indicator-- Installs indicator in the center axis and adopts convex mirror design, no cumulate water, more convenient to observe.
5. Space heater-- It is used for controlling temperature to avoid condensing internal of housing and keep dry.
6. Limit switch-- Mechanical, electronic double limit. Mechanical limit stopper is adjustable, safe and reliable; electronic limit switch is controlled by cam. Set position accurately and conveniently, and not affected by excessive handle.
7. Torque Switch-- (Except AOX-Q-005/008/010) Providing overload protection to avoid the damage of valve and electric actuator when jammed by cutting power automatically.
8. Self-locking--Accurate worm and worm gear transfer large torque efficiently , high efficiency, low noise (max. 50 dB), long life, with self-locking, prevent inversion, as stable and reliable transmission parts, no need to refuel.
9. Anti-off bolt—The bolt attaches to the shell and be not off when remove the shell.
10. Installation-- The installation size meets international standard ISO5211 / DIN3337.
11. Circuit--Controlling circuit meets the single-phase or three-phase power supply standard, circuit layout is reasonable and compact, terminals meet various of additional functional requirements effectively.
- 12 The display of valve position—During the opening or closing movement of actuator, the change of valve position on LCD is displayed with large numbers.
- 13 Adjust the phase sequence automatically—Intelligent actuator check and test the phase sequence for 3 phase power supply automatically, users no need to consider about the phase sequence.

# AOX-Q Electric Actuator

Patented products, Counterfeiting not allowed.



# AOX-Q Electric Actuator Series

## PERFORMANCE PARAMETER

Model	Max Output Torque	Operating Time 60/50Hz	Max Drive Shaft Size	Power	Rated Current(A)				No of handle turn	Flange	Weight
					Single Phase		Three Phases				
	N·M	90°(S)	mm	W	110V	220V	380V	440V	N	ISO5211	(kg)
AOX-Q-005	50	18/22	Φ20	20	1.10/0.95	0.55/0.54	0.30/0.30	N/A	10	F07	7.5
AOX-Q-008	80	18/22	Φ20	20	1.10/0.95	0.55/0.54	0.30/0.30	N/A	10	F07	7.5
AOX-Q-010	100	18/22	Φ20	20	1.10/0.95	0.55/0.54	0.30/0.30	N/A	10	F07	7.5
AOX-Q-015	150	21/25	Φ20	40	1.65/1.67	0.88/0.84	0.31/0.31	0.30/0.31	11	F07/F10	17.3
AOX-Q-020	200	21/25	Φ20	40	1.67/1.67	0.89/0.85	0.31/0.31	0.30/0.31	11	F07/F10	17.3
AOX-Q-030	300	26/31	Φ32	90	1.85/1.86	0.92/0.95	0.35/0.35	0.34/0.34	13.5	F10/F12	22
AOX-Q-050	500	26/31	Φ32	90	3.60/3.62	1.55/1.58	0.59/0.59	0.58/0.58	13.5	F10/F12	23
AOX-Q-060	600	26/31	Φ32	120	3.65/3.62	1.60/2.20	0.60/0.59	0.59/0.58	13.5	F10/F12	23
AOX-Q-080	800	31/37	Φ40	180	4.10/4.10	2.15/2.20	0.85/0.85	0.79/0.79	16.5	F12/F14	29
AOX-Q-120	1200	31/37	Φ40	180	4.20/4.10	2.35/2.30	0.87/0.87	0.81/0.81	16.5	F12/F14	29
AOX-Q-150	1500	78/93	Φ40	120	3.65/3.62	1.60/2.20	0.60/0.59	0.59/0.58	40.5	F14/F16	77
AOX-Q-200	2000	93/112	Φ40	180	4.10/4.10	2.15/2.20	0.85/0.85	0.79/0.79	49.5	F14/F16	83
AOX-Q-300	3000	93/112	Φ40	180	4.20/4.10	2.35/2.30	0.87/0.87	0.81/0.81	49.5	F14/F16	83
AOX-Q-400	4000	155/185	Φ40	180	4.20/4.10	2.35/2.30	0.87/0.87	0.81/0.81	82.5	F14/F16	83
AOX-Q-500	5000	155/185	Φ40	180	4.20/4.10	2.35/2.30	0.87/0.87	0.81/0.81	82.5	F14/F16	83
AOX-Q-600	6000	155/185	Φ40	180	4.20/4.10	2.35/2.30	0.87/0.87	0.81/0.81	82.5	F14/F16	83

## TECHNICAL PARAMETER

Shell	Enclosure :IP66,NEMA4 and 6
Power	Standard:220VAC/1ph Optional:110VAC/1ph, 380V/440V/3ph,50/60HZ, ±10% 24VDC/110VDC/220VDC
Motor	Asynchronous motor
Limit switch	2×Open/ Close, SPDT,250VAC 10A
Auxiliary limit switch	2×Open/ Close, SPDT,250VAC 10A
Torque switch	Close/Open, each 1, SPDT,250VAC 10A
Travel	90°±10° 0°~270°
Fail safe / Operating temperature	Internal-placed thermal protection, Open 120°C±5°C/Close97°C±5°C
Indicator	Continuous position indicator
Manual operate	Declutching mechanism, operate by handwheel
Self-locking device	Self-locking by worm and worm gear
Mechanical limit	2 × external adjustable stopper
Space heater	30 W(110V/220VAC)
Conduit entry	2×PT3/4"
Ambient temperature	-30°C~+70°C
Lubrication	Grease moly(EP type)
Material	Steel, Aluminium alloy, Aluminium bronze,Polycarbonate
Ambient humidity	Max 90% RH Non-Condensing
Anti-vibration	X Y Z 10g,0.2~34 Hz,30 minutes
External coating	Dry powder, Epoxy polyester,high anti-corrosion

# AOX-Q Electric Actuator Series

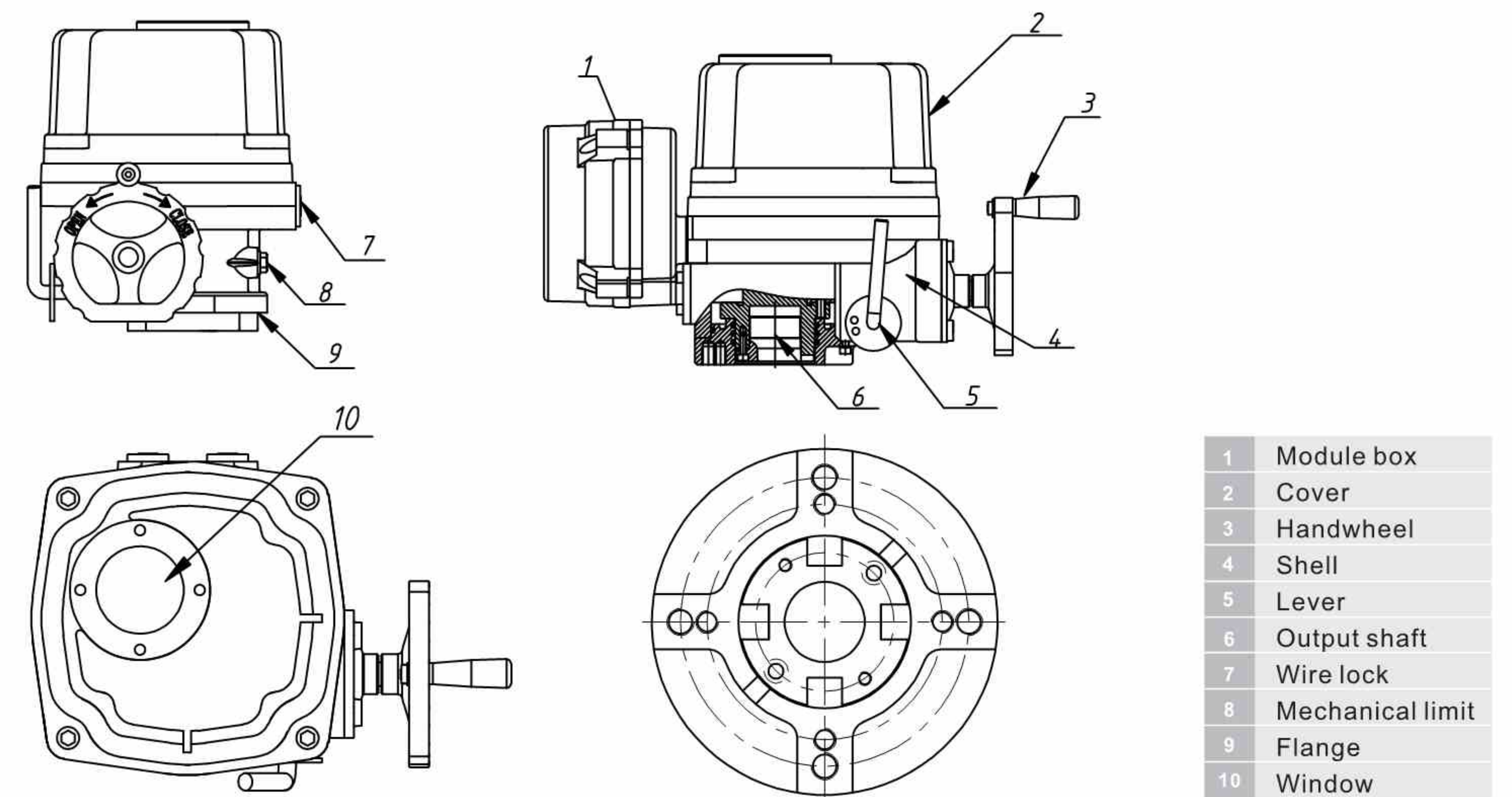
## EXPLOSION-PROOF SERIES

## OPTION SPECIFICATION

No.	Option scheme	Remark
1	Explosion-proof actuator ( Exd II CT5 )	AOX-Q series
2	Potentiometer unit ( 1K-10K )	AOX-Q series
3	Proportion control unit (control signal 4-20mA )	AOX-Q series
4	Local control units (local control open/stop/close optional switch)	AOX-Q series
5	Water-proof actuator (IP68,10M,250HR)	AOX-Q series
6	Direct current motor (24VDC)	AOX-Q series
7	Torque switch (SPDT×2 250VAC 10A)	Except AOX-Q-005/008/010
8	Electric current position sensor (output 4-20mA DC)	AOX-Q series
9	Reverse electromagnetic control and transmission integration electrical machinery starter	AOX-Q series
10	High temperature resistance actuator (-10°C ~ +100°C)	AOX-Q series
11	Low temperature resistance actuator (-40°C ~ +70°C)	AOX-Q series
12	Low speed actuator	AOX-Q series
13	Travel 120° ,180° ,270°	AOX-Q series

## OUTLINE DRAWING

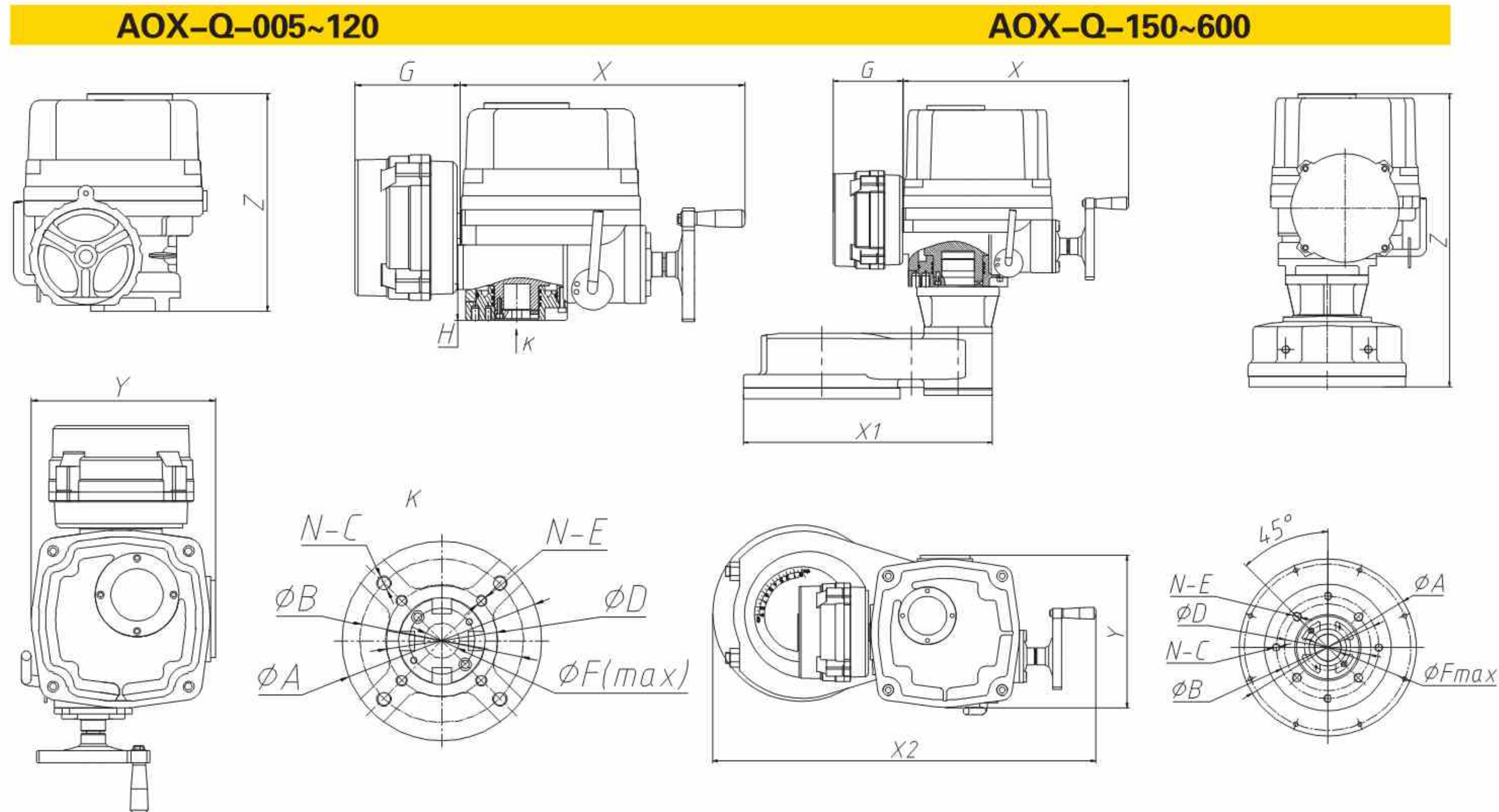
### AOX-Q Configuration



1	Module box
2	Cover
3	Handwheel
4	Shell
5	Lever
6	Output shaft
7	Wire lock
8	Mechanical limit
9	Flange
10	Window

# AOX-Q Electric Actuator Series

## GENERAL DRAWING



Unit: mm

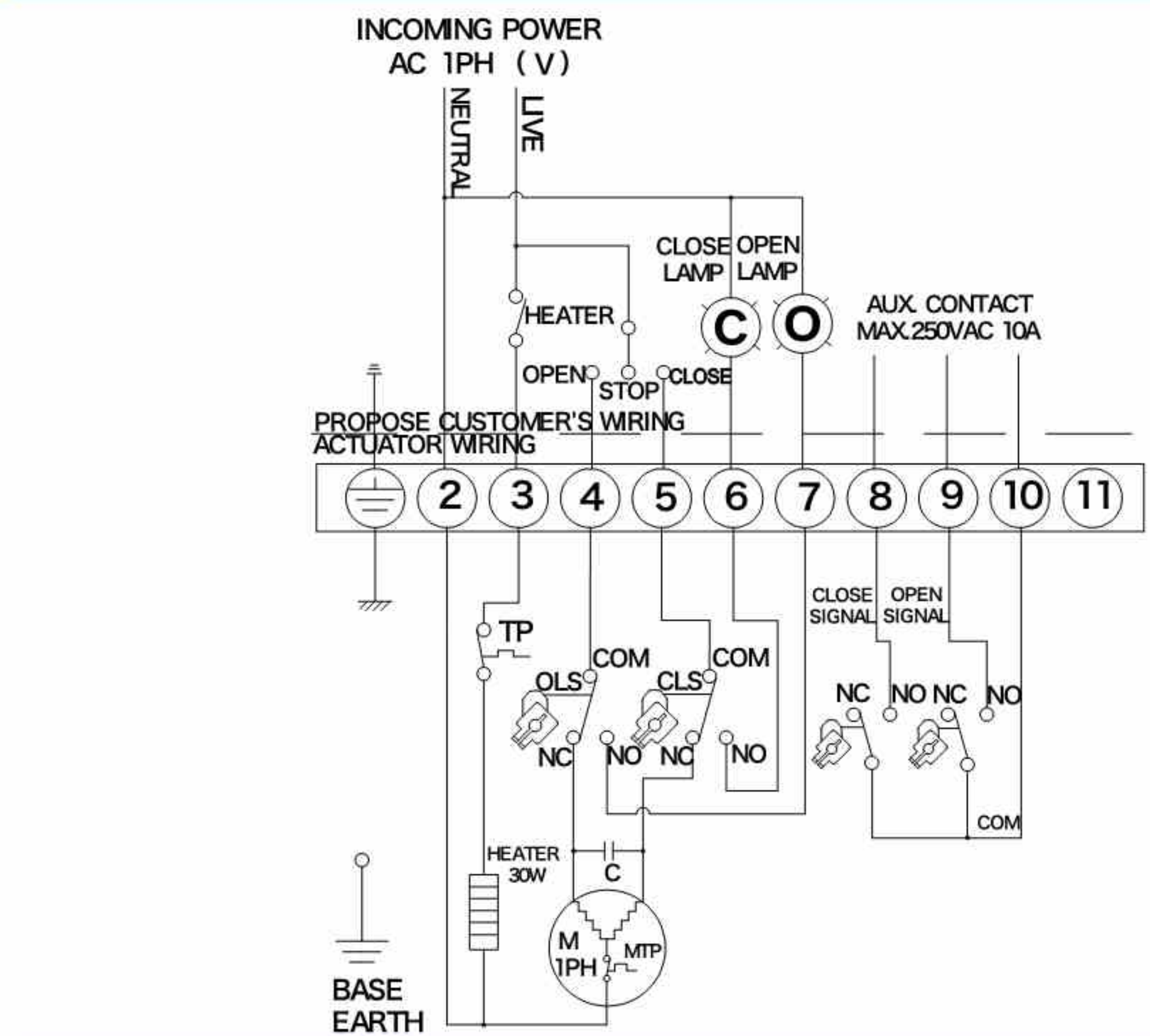
Model	X	Y	Z	ΦA	ΦB	N-C	ΦD	N-E	F	G	H	X1	X2
AOX-Q-005	260	175	235	Φ90	Φ70	4-M8	///	///	Φ20	140	55	///	///
AOX-Q-008	260	175	235	Φ90	Φ70	4-M8	///	///	Φ20	140	55	///	///
AOX-Q-010	260	175	235	Φ90	Φ70	4-M8	///	///	Φ20	140	55	///	///
AOX-Q-015	351	244	270	Φ125	Φ102	4-M10	Φ70	4-M8	Φ20	140	45	///	///
AOX-Q-020	351	244	270	Φ125	Φ102	4-M10	Φ70	4-M8	Φ20	140	45	///	///
AOX-Q-030	367	251	290	Φ150	Φ125	4-M12	Φ102	4-M10	Φ32	140	60	///	///
AOX-Q-050	367	251	290	Φ150	Φ125	4-M12	Φ102	4-M10	Φ32	140	60	///	///
AOX-Q-060	367	251	290	Φ150	Φ125	4-M16	Φ102	4-M10	Φ32	140	60	///	///
AOX-Q-080	410	277	330	Φ180	Φ140	4-M16	Φ125	4-M12	Φ40	140	65	///	///
AOX-Q-120	410	277	330	Φ180	Φ140	4-M16	Φ125	4-M12	Φ40	140	65	///	///
AOX-Q-150	367	251	494	Φ165	Φ140	4-M18	Φ125	4-M16	Φ40	140	65	454	614
AOX-Q-200	410	277	534	Φ165	Φ140	4-M18	Φ125	4-M16	Φ40	140	65	454	635
AOX-Q-300	410	277	534	Φ165	Φ140	4-M18	Φ125	4-M16	Φ40	140	65	454	635
AOX-Q-400	410	277	534	Φ165	Φ140	4-M18	Φ125	4-M16	Φ40	140	65	454	635
AOX-Q-500	410	277	534	Φ165	Φ140	4-M18	Φ125	4-M16	Φ40	140	65	454	635
AOX-Q-600	410	277	534	Φ165	Φ140	4-M18	Φ125	4-M16	Φ40	140	65	454	635

# AOX-Q Electric Actuator Series

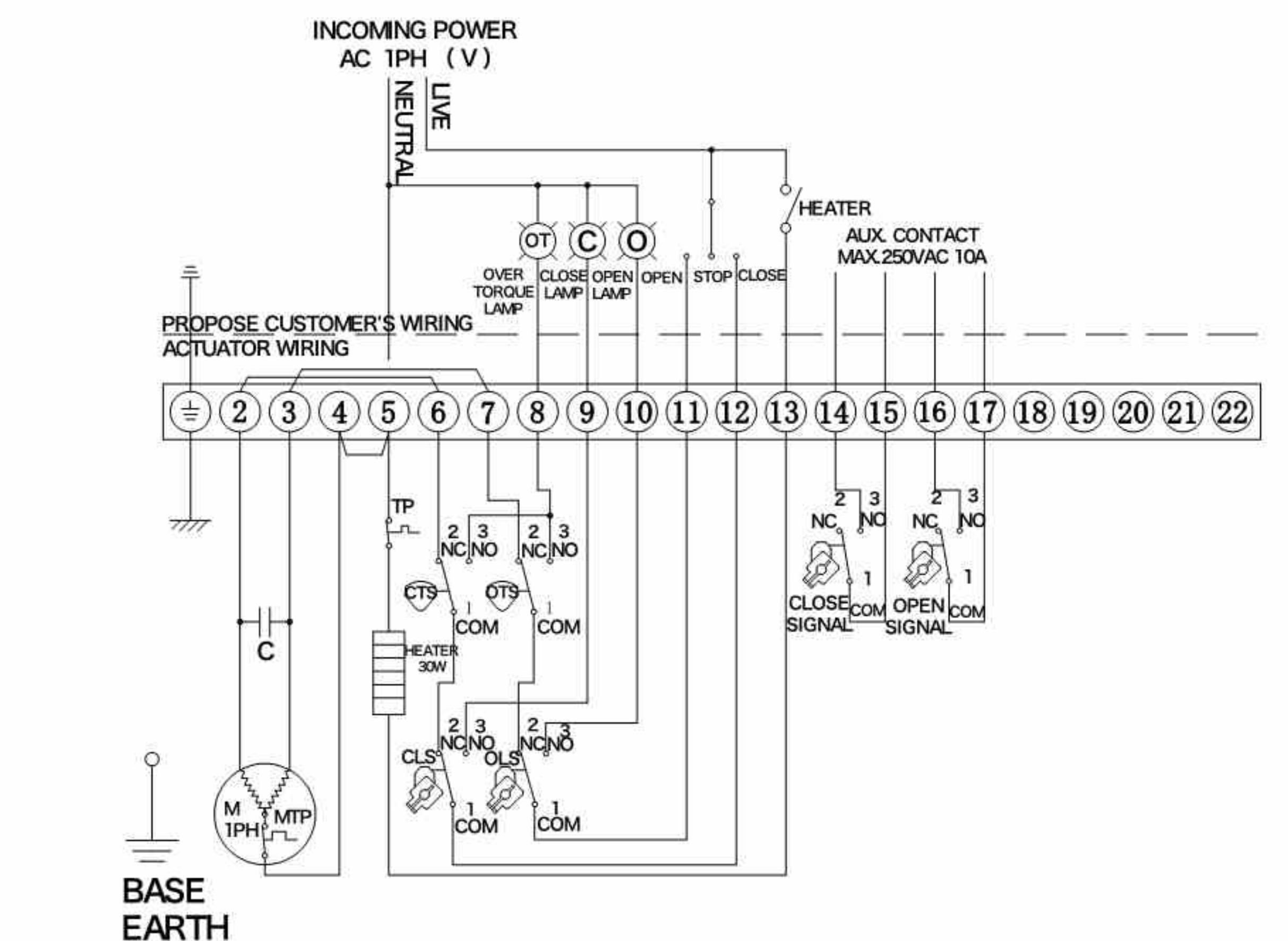
## Wiring Diagram



1. AOX-Q-005~010 110/220VAC/50/60Hz, 1Ph(On/off type) Q-110-10



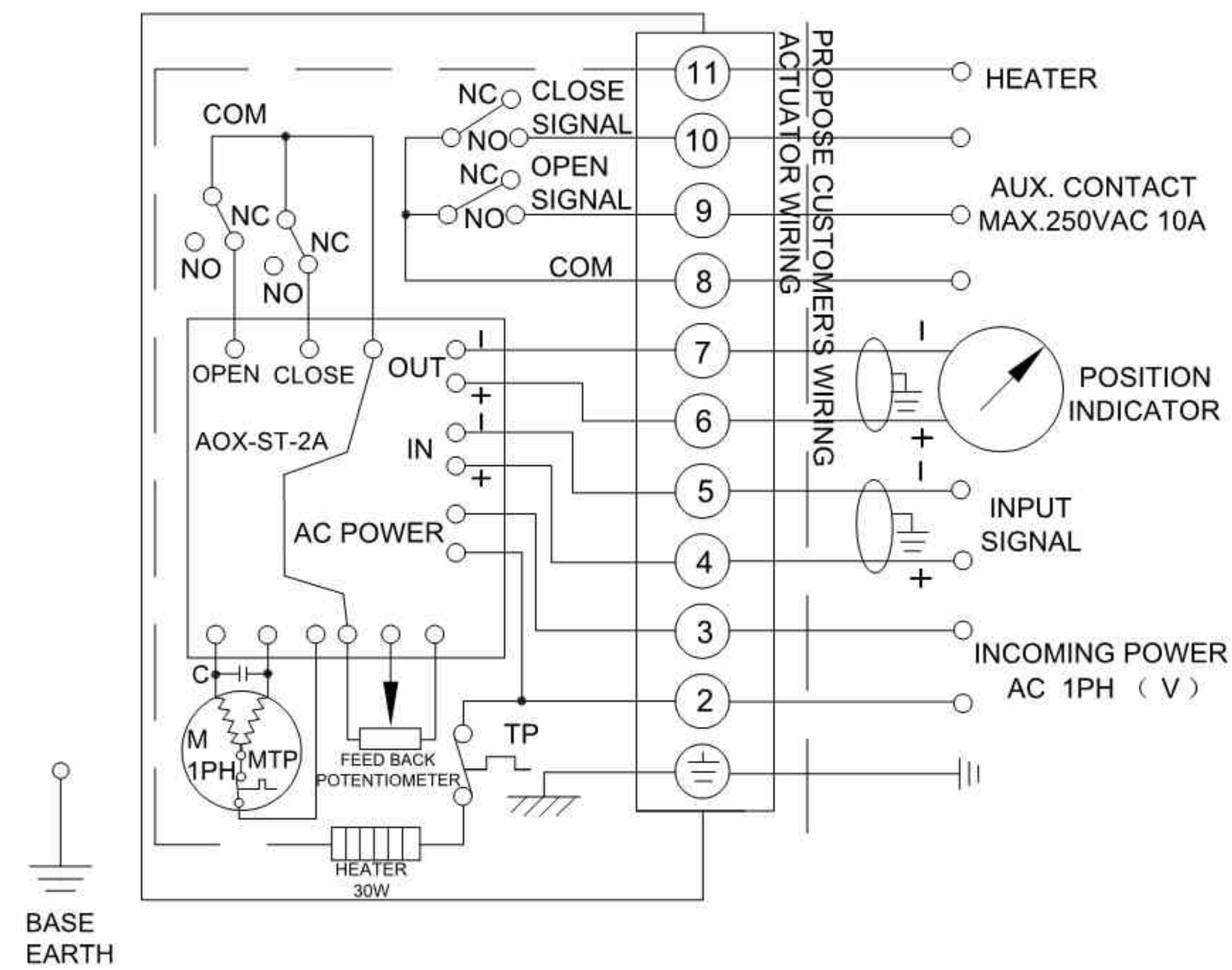
2. AOX-Q-015~600 110/220VAC/50/60Hz, 1Ph(On/off type) Q-110-20



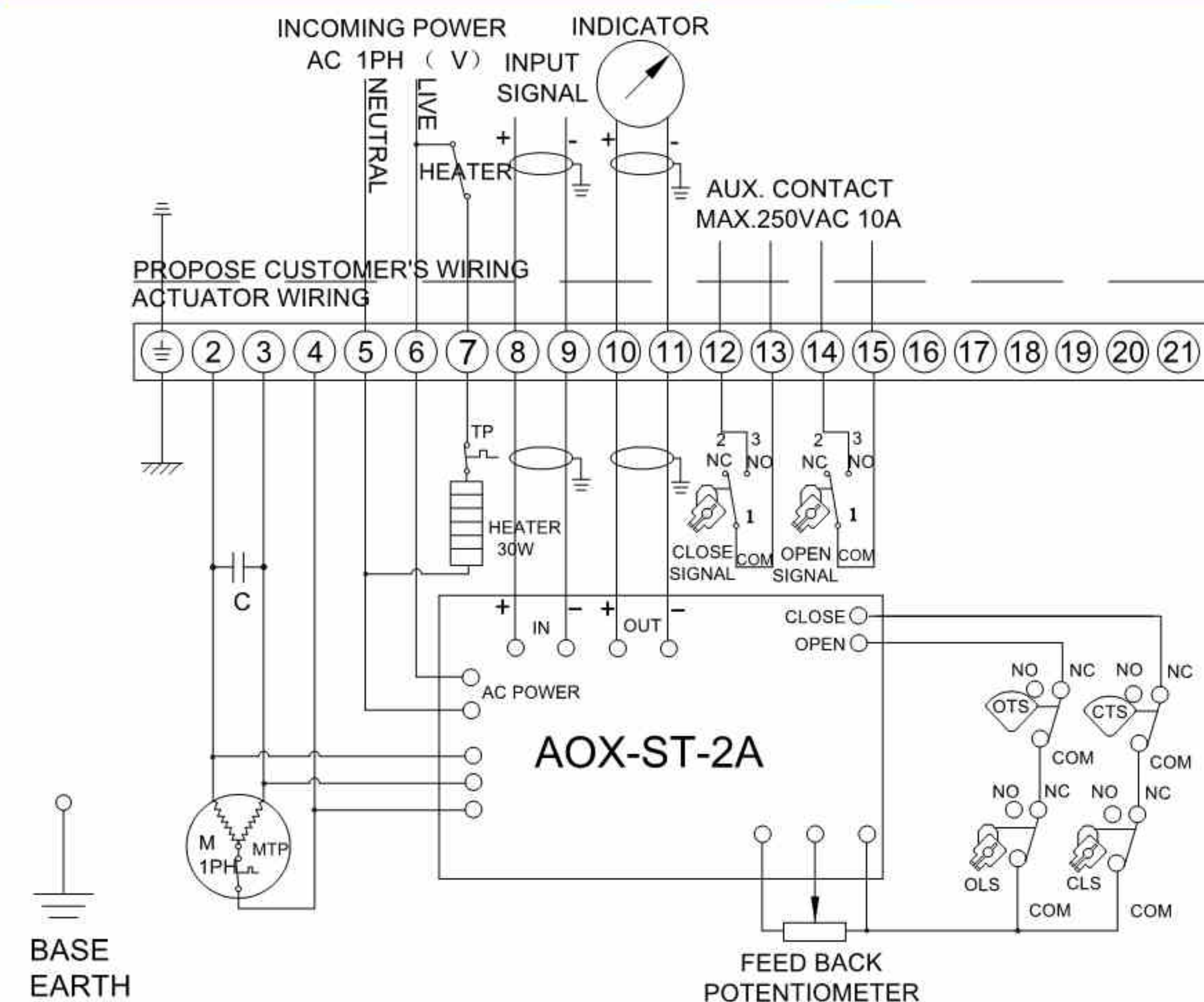
# AOX-Q Electric Actuator Series

## Wiring Diagram

3. AOX-Q-005-010 110/220VAC/50/60Hz, 1Ph (Modulating type) Q-120-10



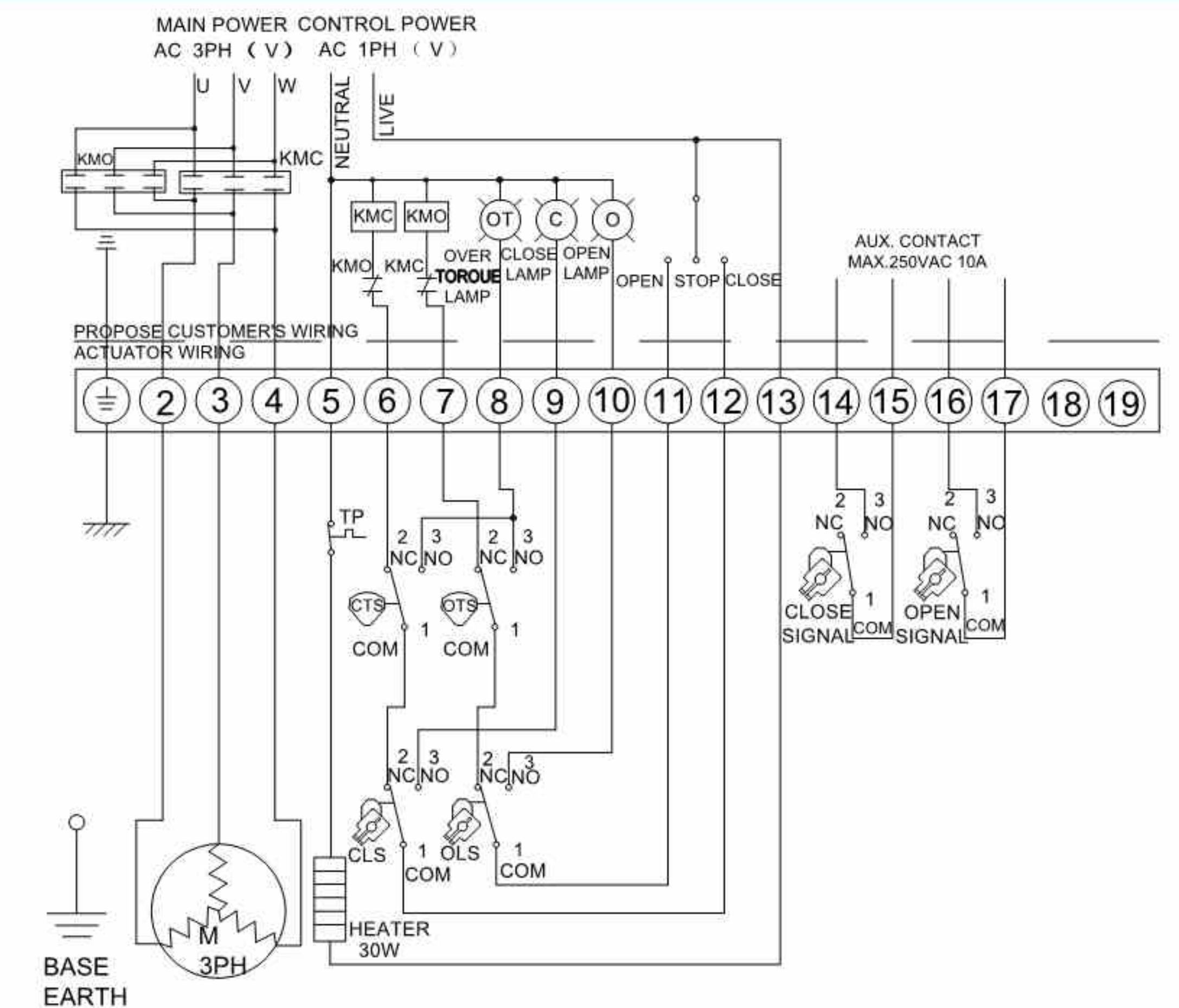
4. AOX-Q-015-600 110/220VAC/50/60Hz, 1Ph (Modulating type) Q-120-20



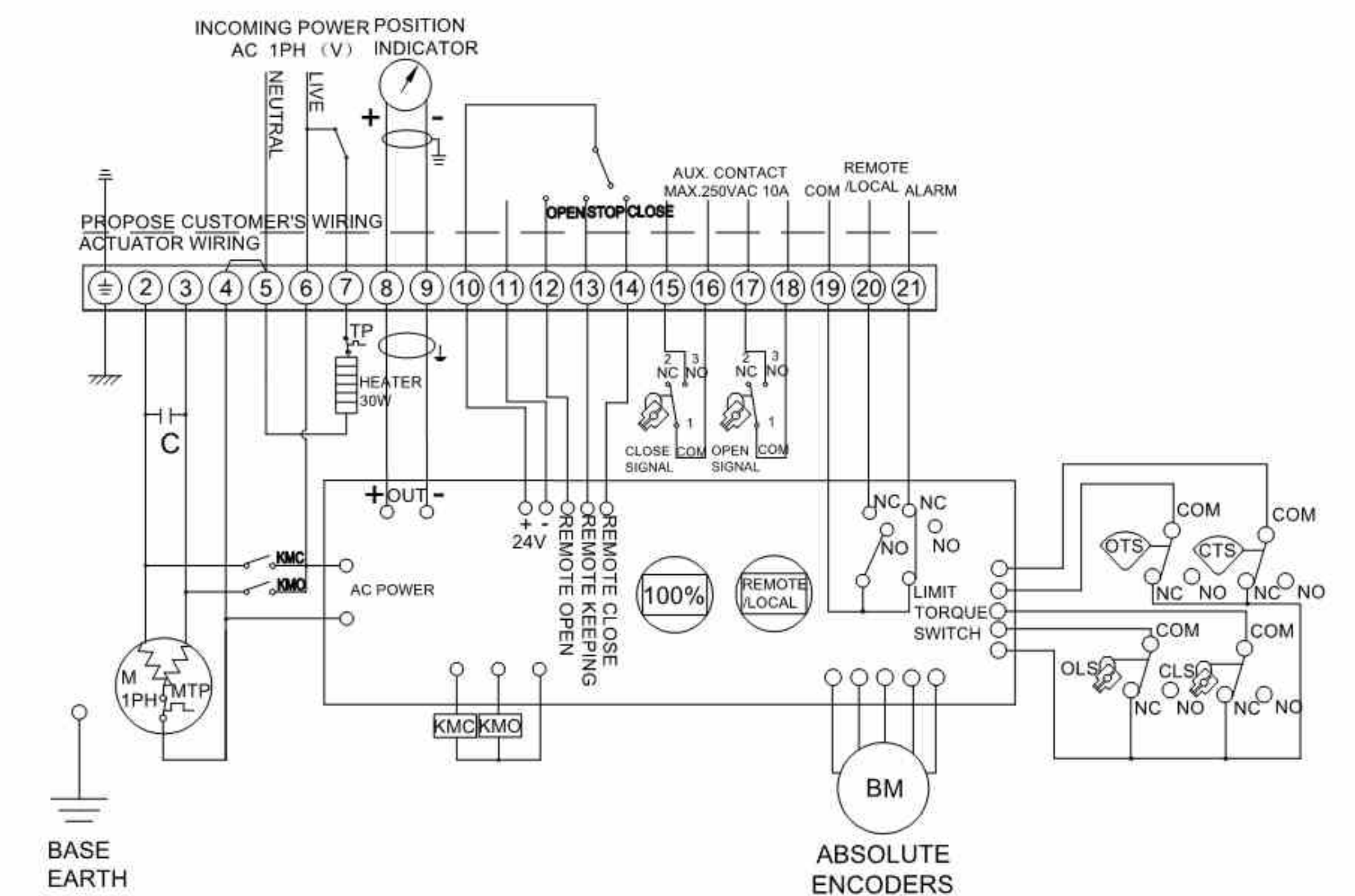
# AOX-Q Electric Actuator Series

## Wiring Diagram

5. AOX-Q-015-600 380/440VAC/50/60Hz, 3Ph (Outer control on/off type) Q-210-20



6. AOX-Q-015-600 110/220VAC/50/60Hz, 1Ph (Intelligent control type) Q-130-20



### Terminal box

Terminal box, which is double sealing and separate enclosure protection, assure the sealing integrity of the electronic component if open the box cover to make the on-site wiring.

- Double seal structure
- Latest non-invasive design
- Precise torque measurement
- Infrared setting technology
- Reliable electronic system
- Precise valve position measurement
- Phase sequence self-correction
- Instantaneous reversal protection
- Over torque protection
- Intelligent block protection
- Motor overheat protection

### Motor

Specially designed high starting torque motor, can frequent open the valve from fully closed position. In addition to the three-phase AC motors, single-phase AC and DC motors are also suitable for AOM series actuators.

### Valve control

Using magnetic induction absolute encoder, eliminating the traditional potentiometer, improved location accuracy and does not require battery can be accurately recorded valve position when the actuator power outage.

### Infrared setting

The setting and diagnostic of the actuator can be processed via sealing display screen, without opening the housing. The valid distance between the setting tools and display screen is about 1-1.5m.

### Local control

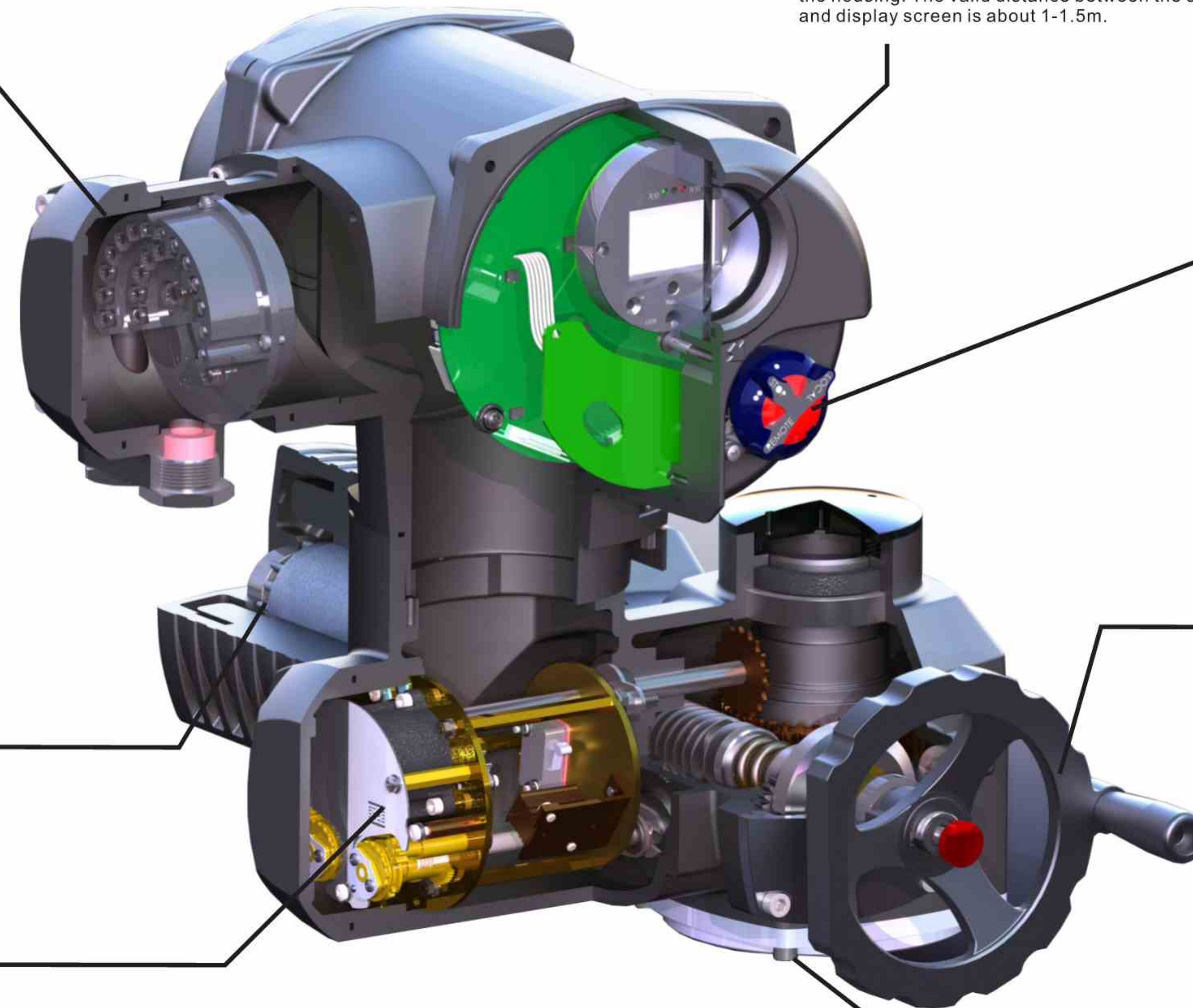
Local control switches and locking type selector switch local/stop/remote are magnetic switches, controlled by magnetic reed, thus assure the damp proof sealing inside of the actuator.

### Manual operation

-In the commissioning or in an emergency the actuator can be operated by handwheel.  
-By operating the red button to disconnected the actuator and motor and start manual operation. Because the self-locking worm gear between the motor and the operating shaft are separated, it's very easy to turn to manual operation even if the actuator is running at maximum torque.  
-After starting the motor, automatically breaks away from manual operation, when the motor is operating the hand wheel does not work.

### Valve mounting standard

Installation flange is according to EN ISO5210 or DIN 3210 standard. Various types of output drive types to choose, suitable for different types of valves.



# AOX-M Intelligent Electric Actuator SERIES

## Structural characteristics of electric actuator



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ELECTRIC VALVES



# AOX-M Series Electric Actuator



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ELECTRIC VALVES



## SUMMARY

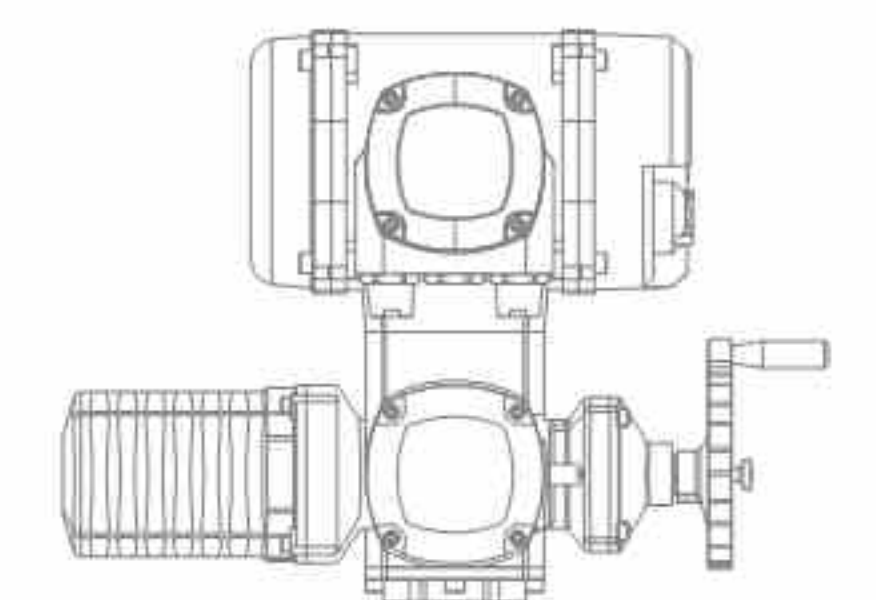
"AOX-M" series intelligent multi-turn actuator is applied in controlling various valves and other similar products, include butterfly valve, ball valve, gate valve, control valve and etc. It is widely applied in petroleum, chemical, water treatment, shipping, paper making, power plants, heating, building automation and other industries. AOX-M series multi-turn actuator combine the characteristic of intelligent and reliable, and expand richer application based on basic modular product, it can meet various kinds of working condition. There are different "AOX-M" valve gear boxes can be configured which greatly expanded the torque range or turn the multi-turn actuator into quarter-turn actuator, linear actuator to meet the different requirements. (AOX-M series products have got CE certificate)

## PERFORMANCE FEATURES

- 1.Shell-The main shell is made of cast iron, the output is more stable, and the rest is aluminum alloy, lighter weight. The surface coating of epoxy resin, and go through the 12 step of coating protective treatment, with high corrosion resistance, the protection grade is IP66, NEMA4 and 6,IP68 and explosion-proof is optional.
- 2.Motor-Fully enclosed squirrel-cage motor, small size, large torque, and small inertia force, insulation class F, built-in thermal protection switch to avoid damaging the motor.
- 3.Lubrication-Using oil-immersed type, it can provide excellent lubrication and cooling in case of high strength, large temperature difference and high torque, the oil is more stable.
- 4.Terminal box-Terminal box, which is double sealing and separate enclosure protection, assure the sealing integrity of the electronic component if open the box cover to make the on-site wiring. The motor and the controls are connected by 29 contacts.
- 5.Valve control-Traditional potentiometer is eliminated, and adopt magnetic induction absolute encoder to provide position accuracy. It can record the precise valve position without battery if actuator power off.
- 6.Infrared setting-The setting and diagnostic of the actuator can be processed via sealing display screen, without opening the housing. The valid distance between the setting tools and display screen is about 1-1.5m.
- 7.Local control-Local control switches and locking type selector switch local/stop/remote are magnetic switches, controlled by magnetic reed, thus assure the damp proof sealing inside of the actuator.
- 8.Manual structure-The handle is designed to ensures safe, reliable, labor-saving and small. When the power outage, press the red button in the middle of handwheel to make motor and actuator disconnected, and start manual operation. Because of the automatic clutch between the motor and the operating shaft, it is easy to turn to manual operation even if the actuator at the maximum torque. After starting the motor, automatically breaks away from manual operation. When performing motor operation handwheel does not work. (Note: In the situation of no electricity, the electric actuator will remain permanently manual mode).
- 9.Space heater-It is used to control temperature and remain the internal electrical components dry, it can avoid the moisture condensation inside the actuator because of the change of the temperature and weather.
- 10.Torque switch-Providing overload protection, it can shut down the power automatically when jamming to avoid damaging valves and actuators, torque is adjustable within a certain range.
- 11.Self-locking-Precision worm mechanism can efficiently transfer large torque, high efficiency, low noise (max 50 dB), long life, and have self-locking function to prevent the inversion, transmission part is stable and reliable.
- 12.Anti-off bolt-The bolts will attached to the case and not fall off when removing the shell, external screws are made of 304 stainless steel.
- 13.Installation-The bottom mounting dimensions conform to international standard ISO5210, the drive sleeve can be removed for processing as needed. It can be installed vertically and horizontally.
- 14.Circuit-The control circuit in line with single-phase or three-phase power supply standard, circuit layout is compact and reasonable. (It can be designed according to customer requirements).

# AOX-M Electric Actuator

Patented products, Counterfeiting not allowed.





# AOX-M Electric Actuator Series

## PERFORMANCE PARAMETER

Model	Outout Torque	Speed	Max Shaft Diameter	Power	Rated current(A)50Hz		Flange Model	Weight
					Three phases			
	N · M	RPM	mm	W	380V		ISO5210	Kg
AOX-M-007	70	45	φ28	400	2.42		F10	32
	70	90		2.95				
	120	35		2.25				
AOX-M-010	120	70	φ28	600	3.18		F10	38
	120	105		5.15				
	300	34		4.50				
AOX-M-020	300	67	φ40	1100	6.85		F14	68
	300	67		1100				
AOX-M-050	450	34	φ40	1100	9.58		F14	70
	450	67		1500				
AOX-M-060	600	34	φ55	3000	10.89		F16	103
	600	67		4000				
AOX-M-080	800	34	φ55	3000	12.43		F16	103
	800	67		4000				
AOX-M-100	1000	34	φ55	4000	30.20		F16	103

## TECHNICAL PARAMETER

Shell	Enclosure :IP66,NEMA4 , NEM A6	
Power	Standard: 380V AC/3ph Optional: 110/220V AC/1ph,440V AC/3ph, 50/60Hz, ± 10%	
Motor	Asynchronous motor	
Limit switch	1 × Open/ Close, SPDT,250V AC 10A ( on/off model )	
Auxiliary limit switch	1 × Open/ Close, SPDT,250V AC 10A ( on/off model )	
Torque switch	1 × Open/ Close, SPDT,250V AC 10A	
Operating temperature	Internal-placed thermal protection, Open 120°C ± 5°C/Close 97°C ± 5°C	
Manual operation	Declutching mechanism,with handwheel operation	
Self-locking device	Self-locking by worm and worm gear	
Space heater	30W (110/220V AC) Condensation preventing (according to conditions, can be adjusted)	
Conduit entry	Double seal 3 × PT3/4"	
Ambient temperature	-30°C--+70°C	
Lubrication	Special oil for actuators	
Material	Ductile iron, high-strength aluminum alloys, steel, aluminum bronze, polycarbonate	
Ambient humidity	Max 90% RH	Non-Condensing
Anti-vibration	X Y Z 10g,0.2 ~ 34 Hz,30 minutes	
External coating	Dry powder, epoxy polyester,high anti-corrosion	
Overload protection	Torque peak overload protection	
Display screen	LED display (smart regulation type)	
Setting mode	Non-intrusive setting (without opening the cover set type)	
Electrically	Integrated control unit with a non-invasive rotary switch	

# AOX-M Electric Actuator Series

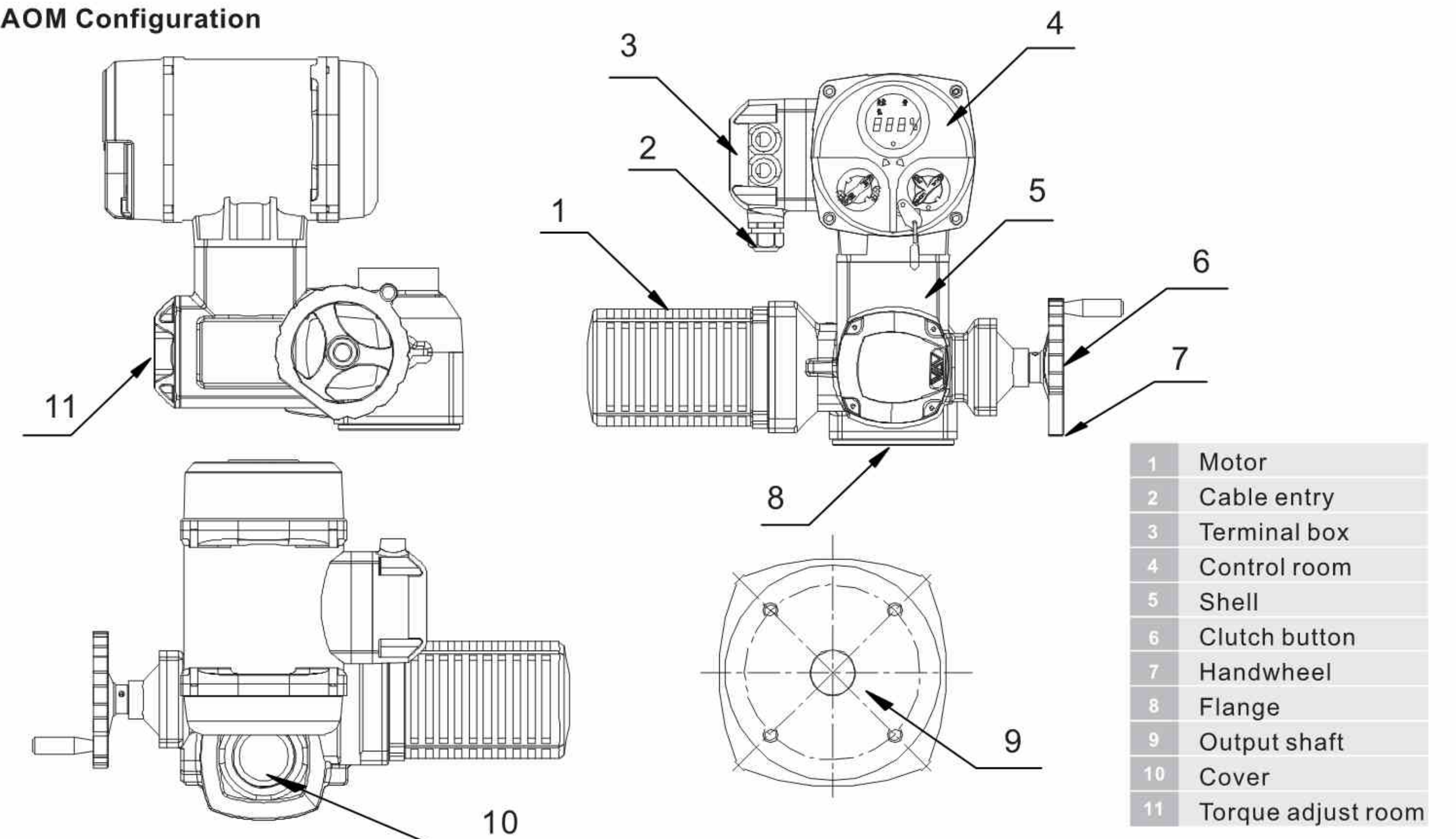
## Intelligent Electric Actuator

## OPTION SPECIFICATION

No.	Option scheme	Remark
1	Explosion-proof actuator ( Exd II CT4 )	AOX-M Series
2	Water-proof actuator (IP68,10M,250HR)	AOX-M Series
3	Local control units (local control open/stop/close optional switch, local/remote switch)	AOX-M Series
4	High temperature resistance actuator (-10°C~+100°C)	AOX-M Series
5	Low temperature resistance actuator (-40°C~+70°C)	AOX-M Series
6	Anticorrosion protection	AOX-M Series
7	Special output drive	AOX-M Series

## OUTLINE DRAWING

### AOM Configuration

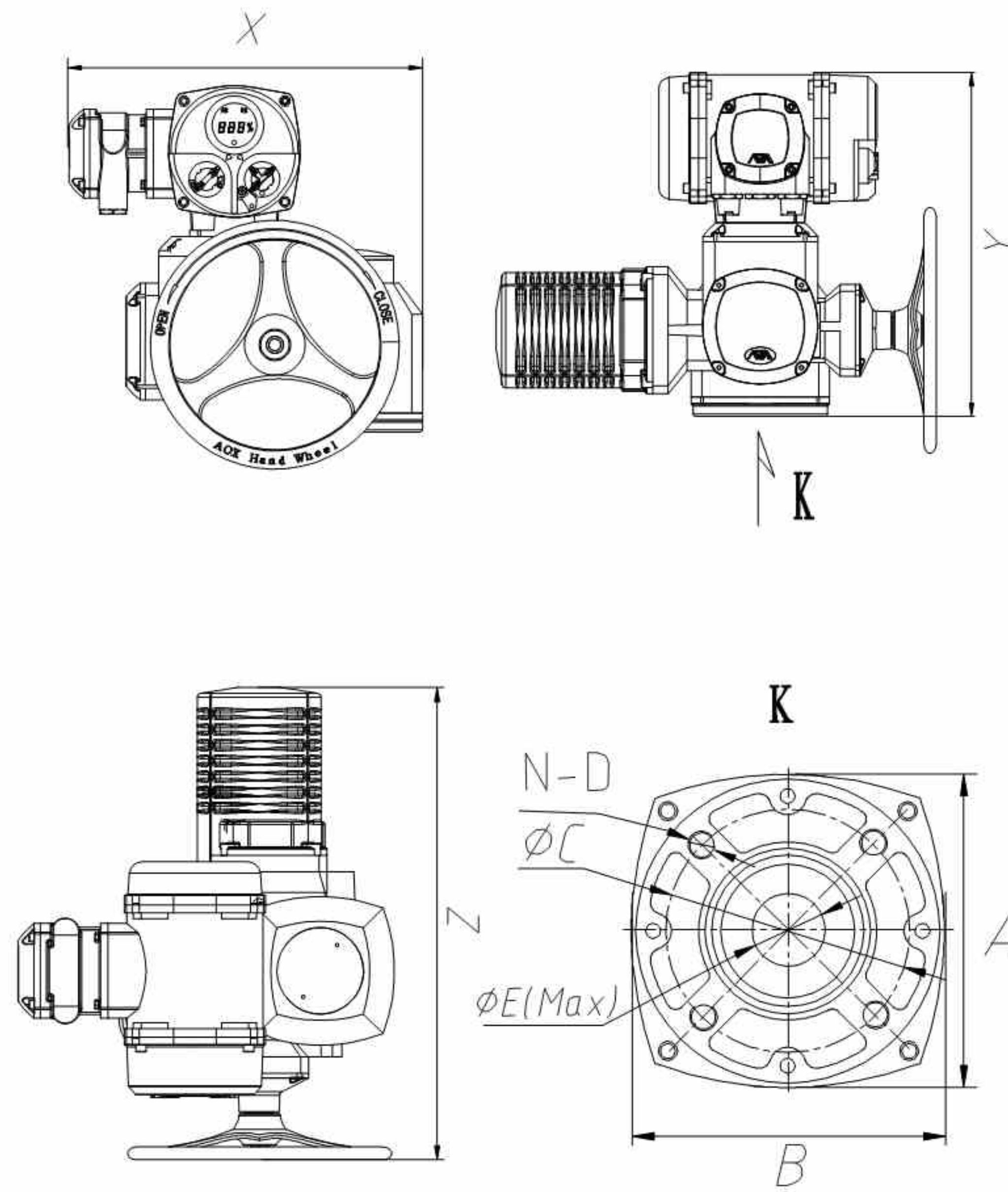


# AOX-M Electric Actuator Series

## Mutil-turn Electric Actuator

### GENERAL DRAWING

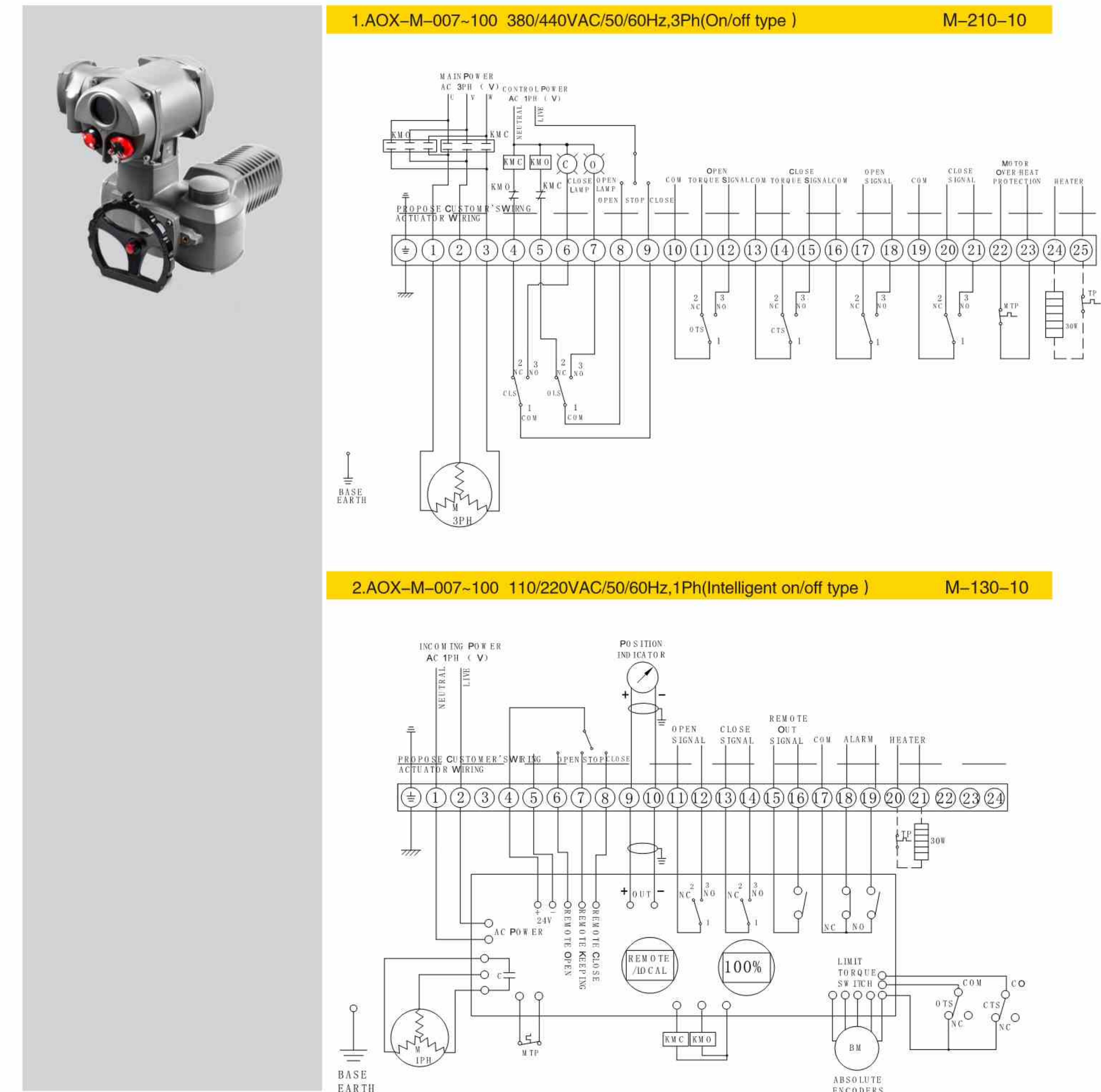
#### AOX-M



Model	X	Y	Z	A	B	ΦC	N-D	ΦE(Max)
AOX-M-007	395	375	440	115	115	Φ102	4-M10	Φ28
AOX-M-010	435	390	495	132	132	Φ102	4-M10	Φ28
AOX-M-020	510	495	575	180	180	Φ140	4-M16	Φ40
AOX-M-050	510	495	575	180	180	Φ140	4-M16	Φ40
AOX-M-060	605	630	718	220	220	Φ165	4-M20	Φ55
AOX-M-080	605	630	718	220	220	Φ165	4-M20	Φ55
AOX-M-100	605	630	718	220	220	Φ165	4-M20	Φ55

# AOX-M Electric Actuator Series

## Wiring Diagram

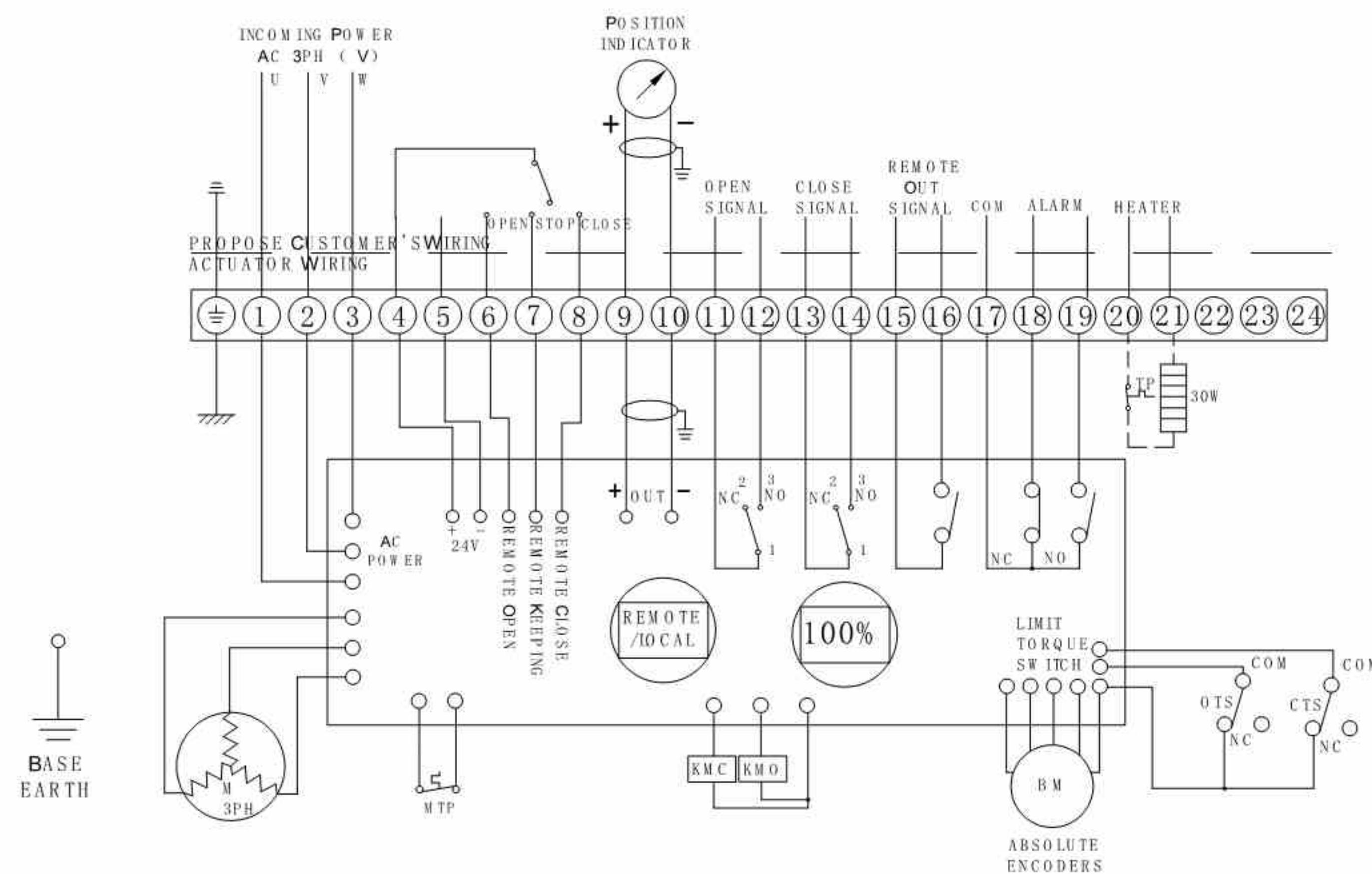


# AOX-M Electric Actuator Series

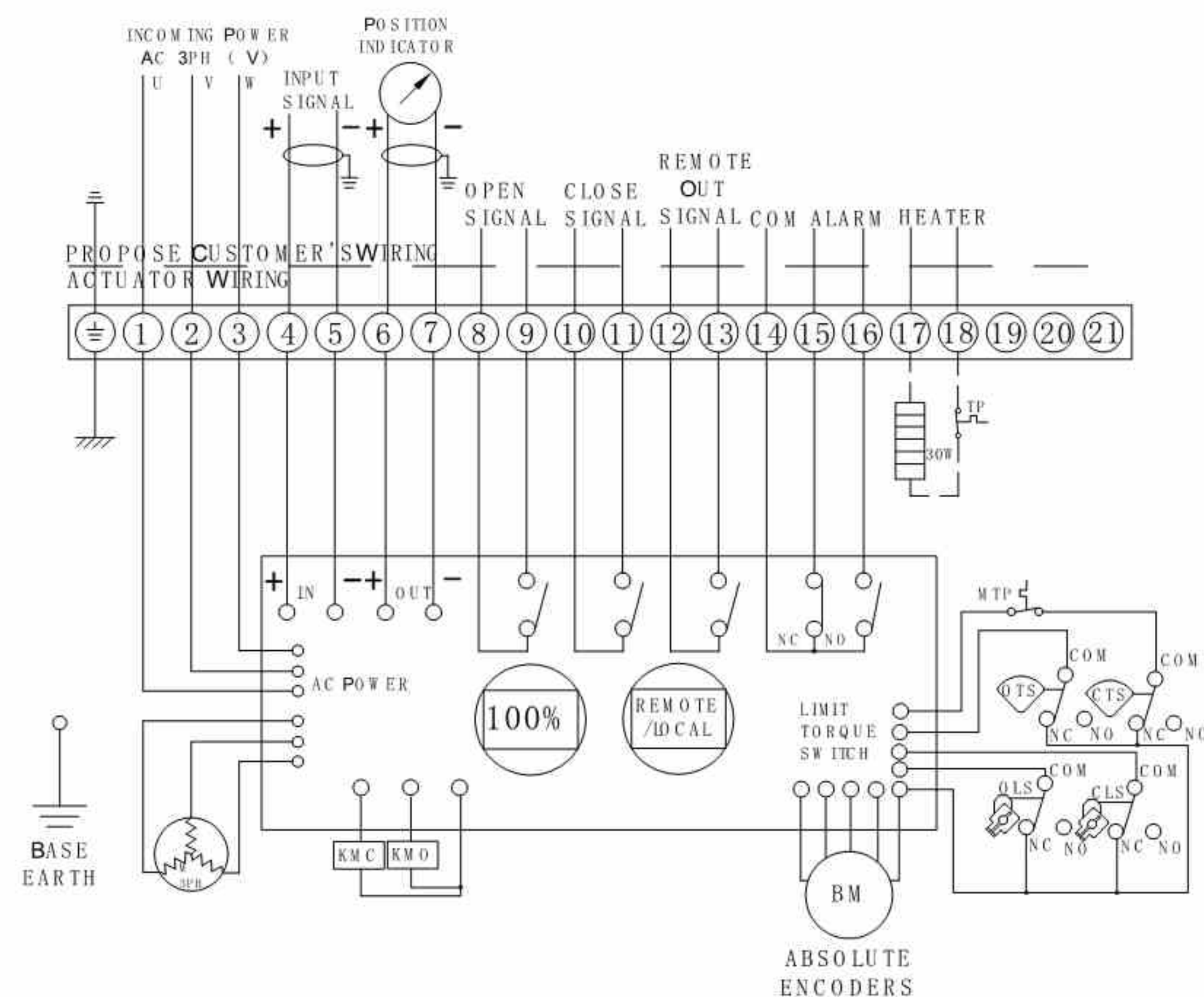
## Wiring Diagram



3. AOX-M-007-100 380/440VAC/50/60Hz, 3Ph (Intelligent on/off type) M-230-10



4. AOX-L-30-300 380/440VAC/50/60Hz, 3Ph (Intelligent modulating type) M-240-10



# AOX-M Electric Actuator Series

## Application

AOX-M series multi-turn actuators are suitable for valve automation of various size and pressure levels within any plant. The application is guaranteed by the following factors:

1. Large torque range.  
-The value of torque can be 15 — 12000NM, the speed can be 40 — 140 RPM.
2. Combination with different AOX-M gear box.
3. Many kinds of type selection: ON/OFF model、Modulating model、Explosion-proof model.



Combination with multi-turn gearbox

Automation of gate valve, globe valve, sluice valve.



Combination with linear thrust unit

Automation of 3-way control valve, single-seat control valve, double-seat control valve



Combination with quarter-turn gearbox

Automation of ball valve, butterfly valve



Combination with lever gearbox

Automation of butterfly valve with lever arrangement

### Valve position detecting mechanism

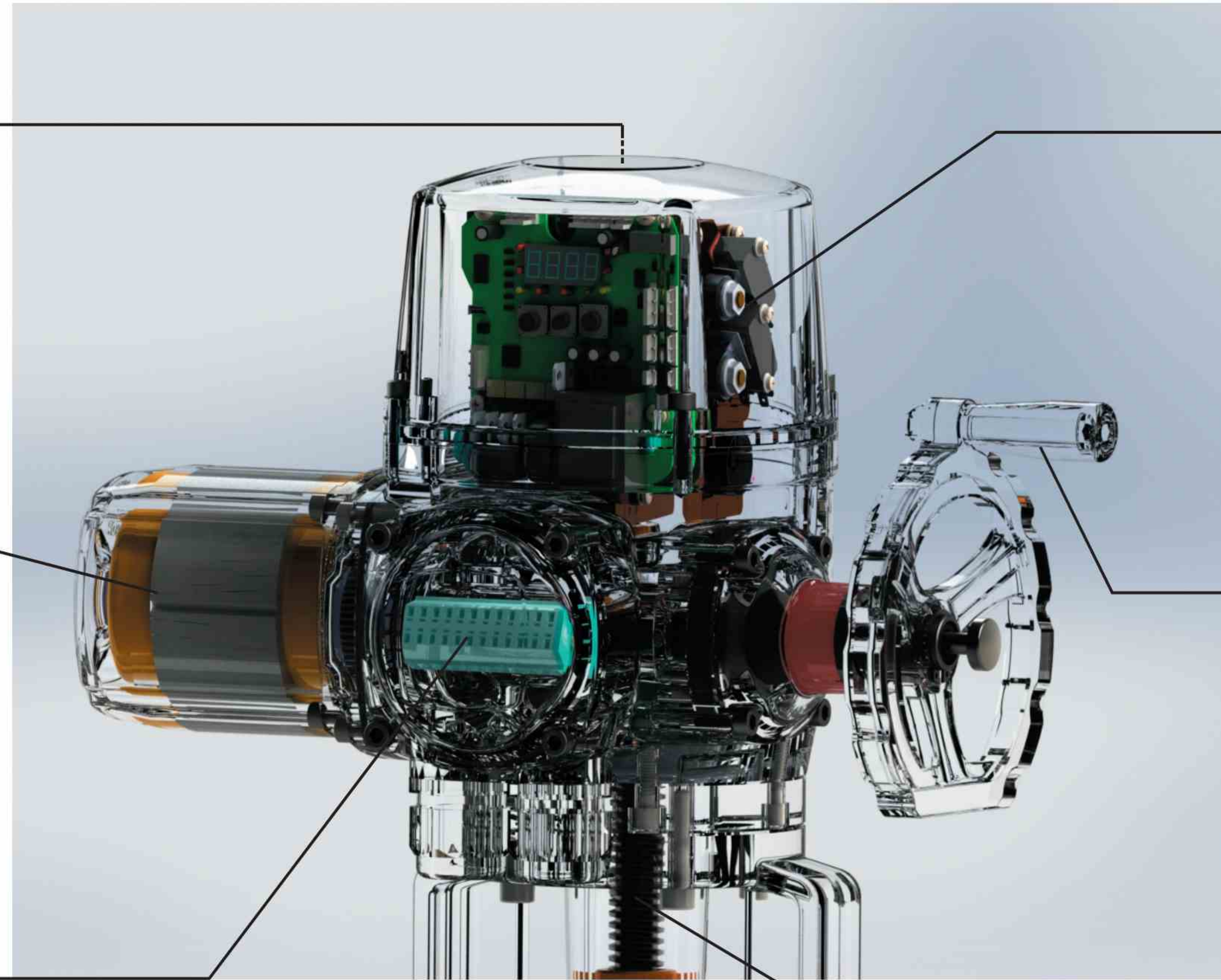
-Through direct connection of rack on the output shaft and two sets of gears control mechanism to detect real-time valve position and fully open fully closed position independently. It will maximum improve the accuracy and security.

### Motor

- Fully enclosed squirrel-cage motor, small size, large torque, small inertia force, insulation class F, built-in thermal protection switch to prevent damage to the motor, the power supply voltage and operating formats optional.

### Terminal block

- Installed in a separate wiring chamber, using the spring self - type terminal ensure robust and reliable.



### Cam and limit switch

- Tightened with two specific nuts above, each cam can be set separately, once the setup is complete, each cam will always remain in this position.

### Manual operation

- With hand, automatic clutch function. The valve can be operated manually in case of power failure. Automatic discharge hand wheel meshing capabilities to ensure the safety of personnel at the moment of motor rates.

### Valve connection

- Through different bracket connection, it can be suitable for different valves. Using stainless steel scale ruler and stainless steel slider.



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ELECTRIC VALVES



# AOX-L Series Electric Actuator



AOXIANG  
ELECTRIC INTELLIGENT ACTUATOR  
ELECTRIC VALVES



## SUMMARY

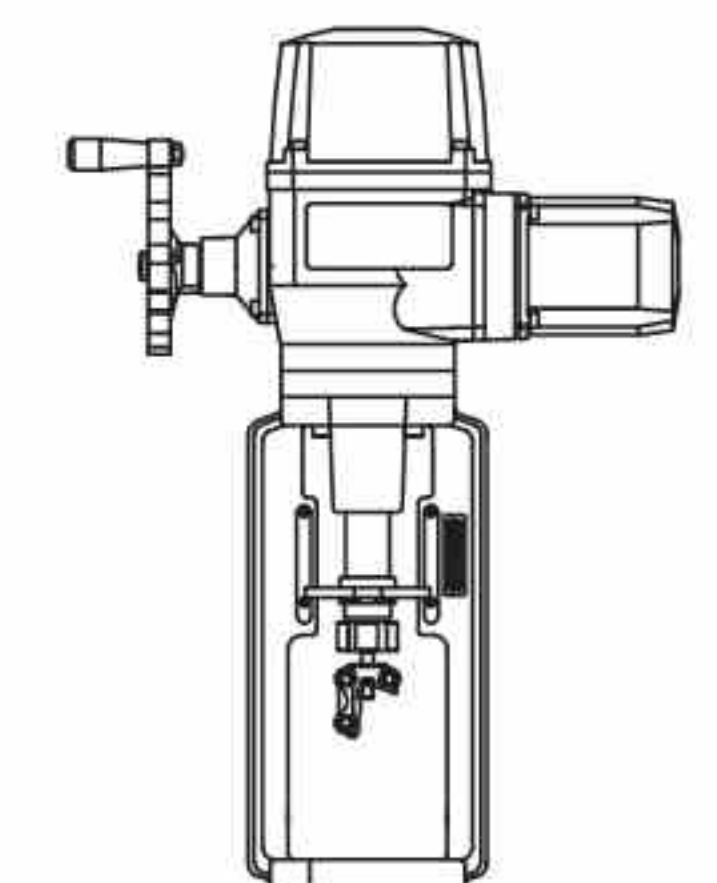
"AOX-L" series electric actuator is a new generation of linear actuator, we have done a lot of innovation, with three invention patents and a number of appearance and utility model patents. It uses modular design, with a wealth of expansion of the function, applicable to a variety of valves and similar products. It widely applies to petroleum, chemical, water treatment, shipping, paper making, power plant, heating, light industry and other industries. Driven by 380V/220V/110VAC power or 24V/110VDC power, inputs Switching capacity, analog quantity, or number control signal, moves valve to the right position, and achieves to automatic control. "AOX-L" series has thrust selection range, its thrust value from 2000-30000NM, also it can match the corresponding valve through different bracket .

## PERFORMANCE FEATURES

1. Shell--The shell is made of aluminum alloy, with anodized and polyester powder coating. It is strong corrosion-resistant and enclosure IP66,NEMA 4 and 6, IP68 is optional.
2. Motor--Fully enclosed squirrel-cage motor, small size, large torque, small inertia force, insulation class F, built-in thermal protection switch to prevent damage to the motor.
3. Manual Structure--The design of handwheel is safe, reliable, labor-saving, small. In case of power failure, by pressing the red button in the middle of the handwheel to disconnect actuator and motor,and turn to manual operation. Because the self-locking worm gear between the motor and the operating shaft are separated, even if the actuator at the maximum torque value is also very easy to turn to manual operation. After starting the motor, automatically out of manual operation. The hand wheel does not work when the motor is operated.
- 4 Scale table-- The scale table is installed on the guide rod, which is more intuitive and convenient to observe.
5. Space heater-- It is Used to control temperature to prevent moisture condensation in the actuator due to temperature and weather changes, and keep the internal electrical components dry.
6. Limit switch-- Electronic double limit.The stroke is adjustable, safe and reliable; electronic limit switch is controlled by the cam mechanism, the simple adjustment mechanism can accurately and easily set position.
- 7.Self-locking--Precision screw-and-nut mechanism can efficiently transfer large torque, high efficiency, low noise (maximum 50db), long life and self-locking function to prevent the inversion, transmission part is stable and reliable, no need to refuel.
8. Anti-off bolt—The bolt attaches to the shell and can not fall off when remove the shell.
- 9.Installation— Bottom mounting dimensions conform to ISO5211 international standards,if the installation does not match the size of the valve,it can be designed.
10. Circuit-- Control lines meet the standard of single-phase or three-phase power supply , reasonably compact line layout,wiring terminals can effectively satisfy a variety of additional functions requirements. (It can be processed according to customer requirements .).
11. Intelligent module-- Using highly integrated, low-power microcontroller and analog circuit mixed control panel, using all-metal plug-in installation, it can effectively isolate the actuator motor heat and control board, greatly improve the software and hardware anti-jamming performance and temperature resistance.
- 12 The display of valve position—During the opening or closing movement of actuator, the change of valve position is real-time display on the LCD screen with large numbers.

# AOX-L Electric Actuator

Patented products,Counterfeiting not allowed.



# AOX-L Electric Actuator Series

## PERFORMANCE PARAMETER

Model	Thrust	Speed	Max stroke	Power	Rated Current ( A )	Weight
	N	mm/s	mm	W	220V/50HZ/1PH	Wg
AOX-L-30	3000	1.5	25	30	0.31	17.5
AOX-L-50	5000	1.5	40	45	0.42	19
AOX-L-80	8000	1.5	60	60	0.62	19.5
AOX-L-100	10000	1.5	60	60	0.68	19.5
AOX-L-160	16000	1.5	100	90	0.85	33
AOX-L-200	20000	1.5	100	90	0.87	33
AOX-L-250	25000	1.5	100	120	1.22	33
AOX-L-300	30000	1.5	100	120	1.28	33

## STANDARD TECHNICAL PARAMETER

Shell	Enclosure :IP66,NEMA4, NEM A6	
Power	Standard:110/220V AC 1Phase Optional:80/440V AC 3 Phase	
Motor	Asynchronous motor	
Limit switch	2×Open/ Close, SPDT,250VAC 10A	
Auxiliary limit switch	2×Open/ Close, SPDT,250VAC 10A	
Fail safe/	Internal-placed thermal protection, Open 120°C ± 5°C/Close 97°C ± 5°C	
Operating temperature		
Indicator	Continuous position indicator	
Manual operate	Declutching mechanism, operate by handwheel	
Self-locking device	Self-locking by worm and worm gear	
Space heater	30W(110V/220VAC)	
Conduit entry	2 × M18*1.5	
Ambient temperature	-30°C ~ +70°C	
Lubrication	Grease moly ( EP type )	
Material	Steel, Aluminum alloy, Aluminum bronze, Polycarbonate	
Ambient humidity	Max 90% RH	Non-Condensing
Anti-vibration	X Y Z 10g,0.2 ~ 34 Hz,30 minutes	
External coating	Dry powder, Epoxy polyester,high anti-corrosion	

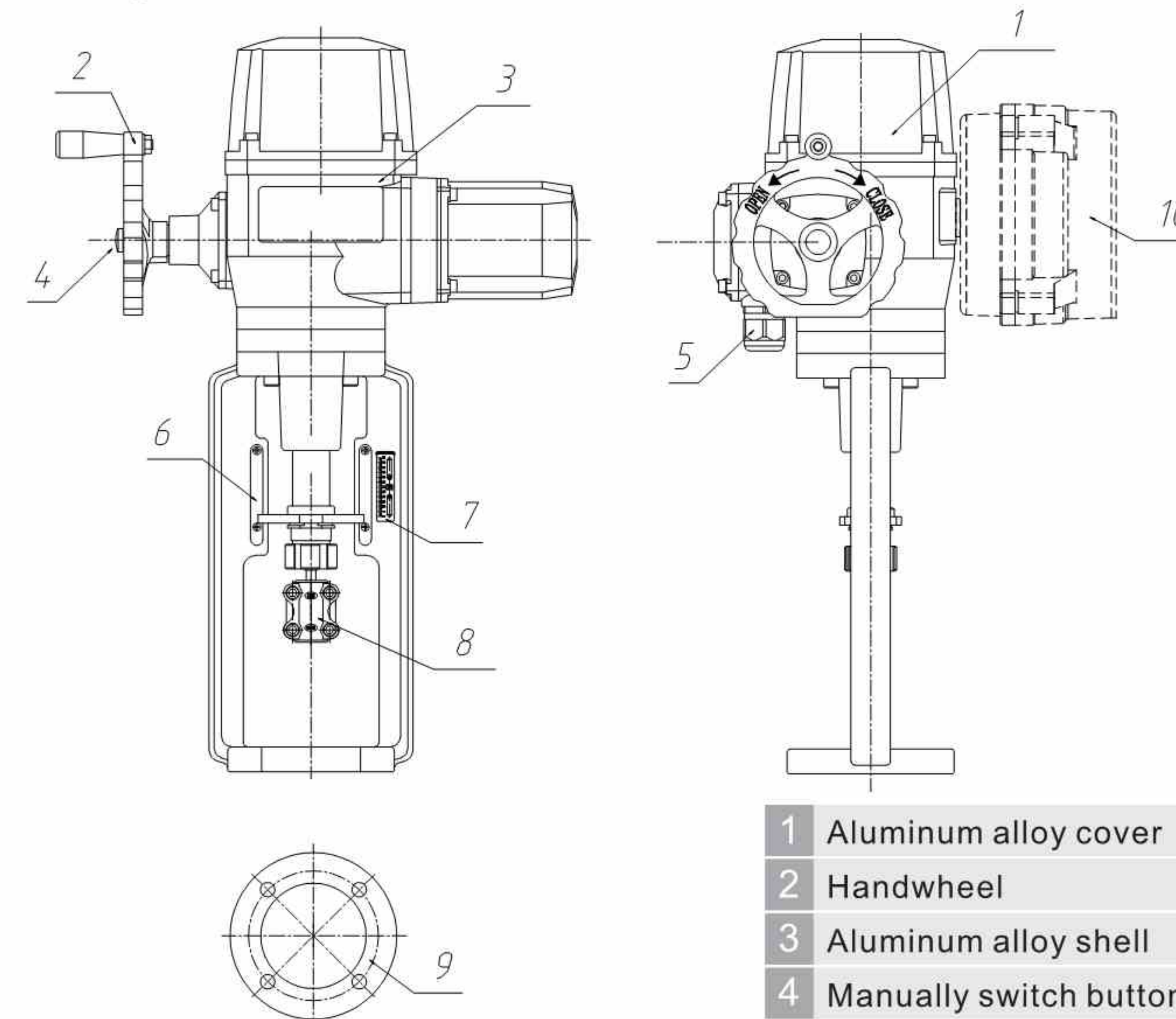
# AOX-L Electric Actuator Series

## OPTION SPECIFICATION

No.	Option scheme	Remark
1	Potentiometer unit ( 1K-10K )	AOX-L series
2	Proportion control unit (control signal 4-20mA DC/1-5V/1-10V)	AOX-L series
3	Local control units (local control open/stop/close optional switch, local/remote switch)	AOX-L series
4	Direct current motor (24VDC)	AOX-L series
5	Water-proof actuator (IP68,10M,250HR)	AOX-L series
6	Reverse electromagnetic control and transmission of integrated motor starter	AOX-L series
7	Electric current position sensor (output 4-20mA DC)	AOX-L series
8	High temperature resistance actuator (-10°C ~ +100°C)	AOX-L series
9	Low temperature resistance actuator (-40°C ~ +70°C)	AOX-L series
10	Low speed actuator	AOX-L series

## OUTLINE DRAWING

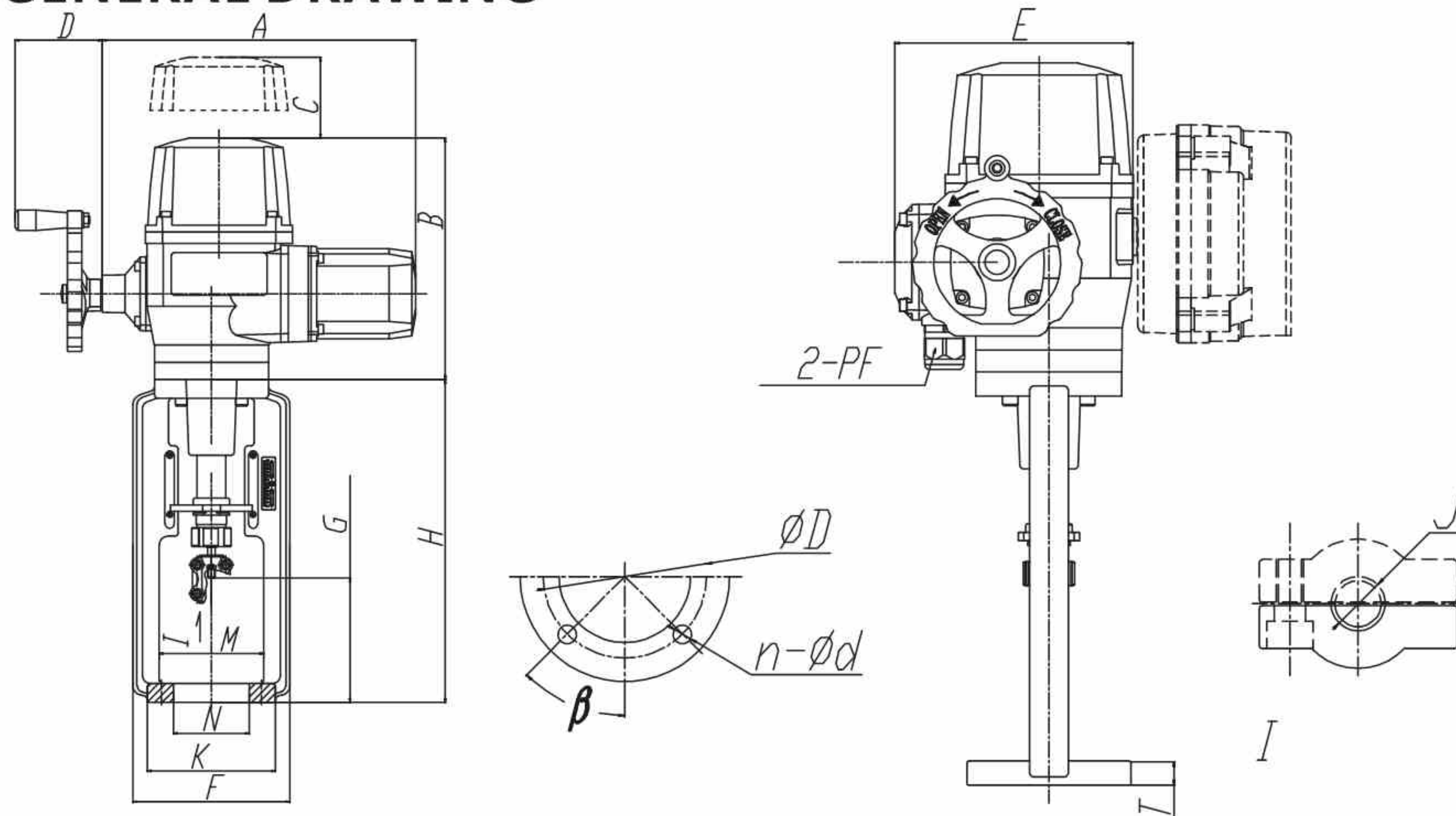
### AOX-L Configuration



1	Aluminum alloy cover	6	Stainless steel rails
2	Handwheel	7	Scale
3	Aluminum alloy shell	8	Connection case
4	Manually switch button	9	Connecting flange
5	Cable access interface	10	Intelligent control room

# AOX-L Electric Actuator Series

## GENERAL DRAWING



Unit: mm

Model	A	B	C	D	E	F	G	H	K	M	N	T	$\beta$	$\phi D$	$n-\phi d$	J
AOX-L-30	307	254	85	92	196	165	90	255	100/125	90	60	20	0°	$\phi 80$	2- $\phi 10$	M14MAX ro M24MAX
AOX-L-50	330	254	85	92	196	165	130	320	135/155	110	80	20	45°	$\phi 105$	4- $\phi 12$	M14MAX ro M24MAX
AOX-L-80	330	254	85	92	196	165	135	365	155	125	95	25	45°	$\phi 118$	4- $\phi 14$	M14MAX ro M24MAX
AOX-L-100	330	254	85	92	196	165	135	365	155	125	95	25	45°	$\phi 118$	4- $\phi 14$	M14MAX ro M24MAX
AOX-L-160	369	295	85	92	230	195	165	490	/	132	100	22	45°	$\phi 130$	4- $\phi 18$	M24MAX
AOX-L-200	369	295	85	92	230	195	165	490	/	132	100	22	45°	$\phi 130$	4- $\phi 18$	M24MAX
AOX-L-250	369	295	85	92	230	195	165	490	/	132	100	22	45°	$\phi 130$	4- $\phi 18$	M24MAX
AOX-L-300	369	295	85	92	230	195	165	490	/	132	100	22	45°	$\phi 130$	4- $\phi 18$	M24MAX

## PERFORMANCE PARAMETER

No.	Performance	Parameter
1	Motor power control	Thyristor commutate relay unit
2	Motor load type	S2-30min (on/off model), S4-25% (Modulating model)
3	Control signal	Input and output 4-20mADC, 1-5VDC, 0-10VDC
4	Sensitivity (dead zone)	0.3% ~ 2.5%
5	Input / output impedance	150 $\Omega$ 、750 $\Omega$
6	Set alarm signal	The phase error or loss, motor overheating protection tripping (overheat protection switch)
7	Field control	Select switch scene - stop - remote, knob: open - off, screen

# AOX-L Electric Actuator Series

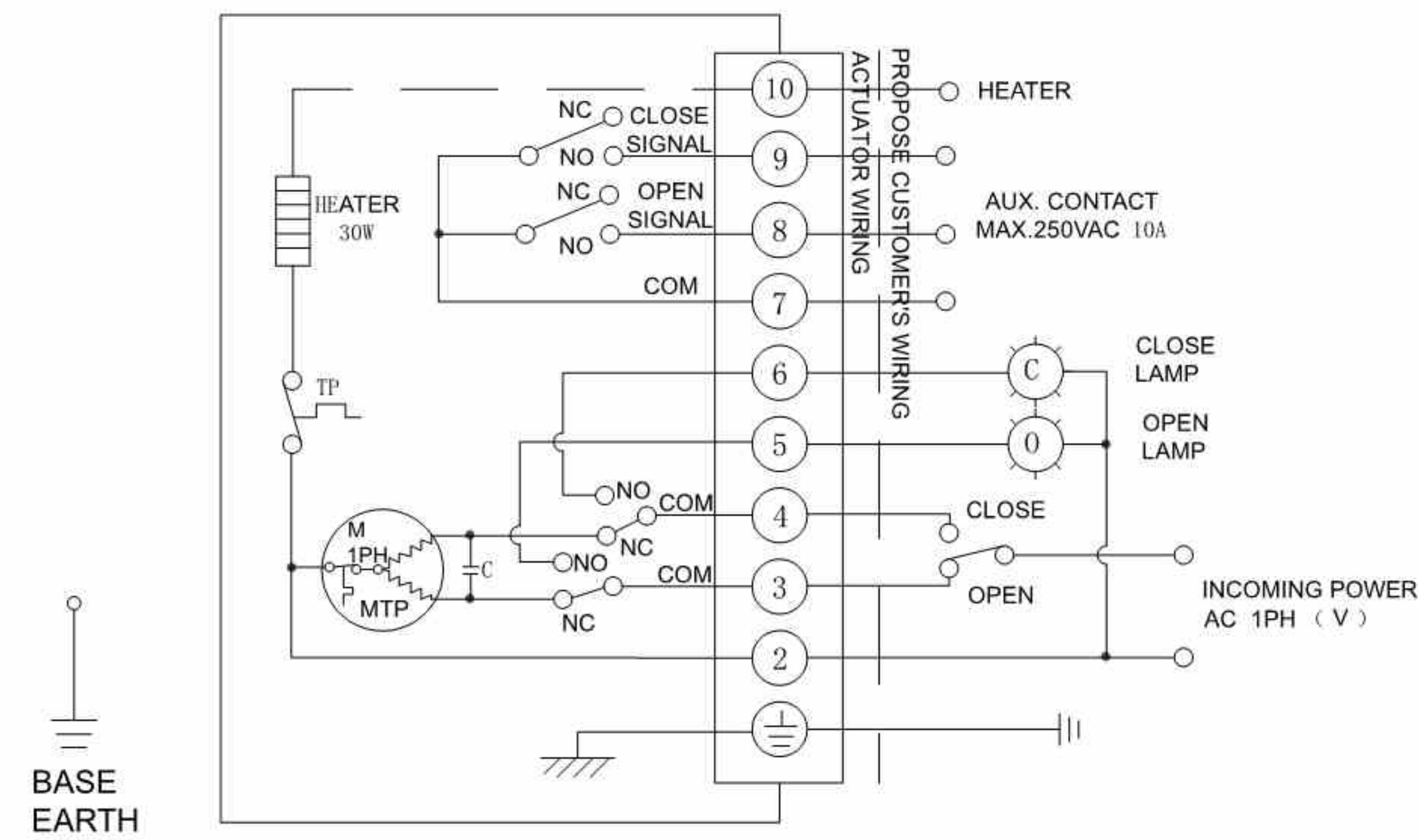


1. Remote control: used for parameter setting and browsing of actuators. It is also possible to select to open, stop and close the valve.
2. Mode knob: The "Operation Knob" on the left is used to control the valve opening and closing, and the "Mode Selection Knob" on the right is used to select the local/stop/remote mode. The control panel can be rotated to suit the mounting direction of the actuator.
3. LCD display: simple and intuitive Chinese (English) menu, human-machine exchange interface is more user-friendly, easy to debug. Several LEDs indicate the operating status, Different flashing combination modes are used to indicate faults and facilitate self-diagnosis

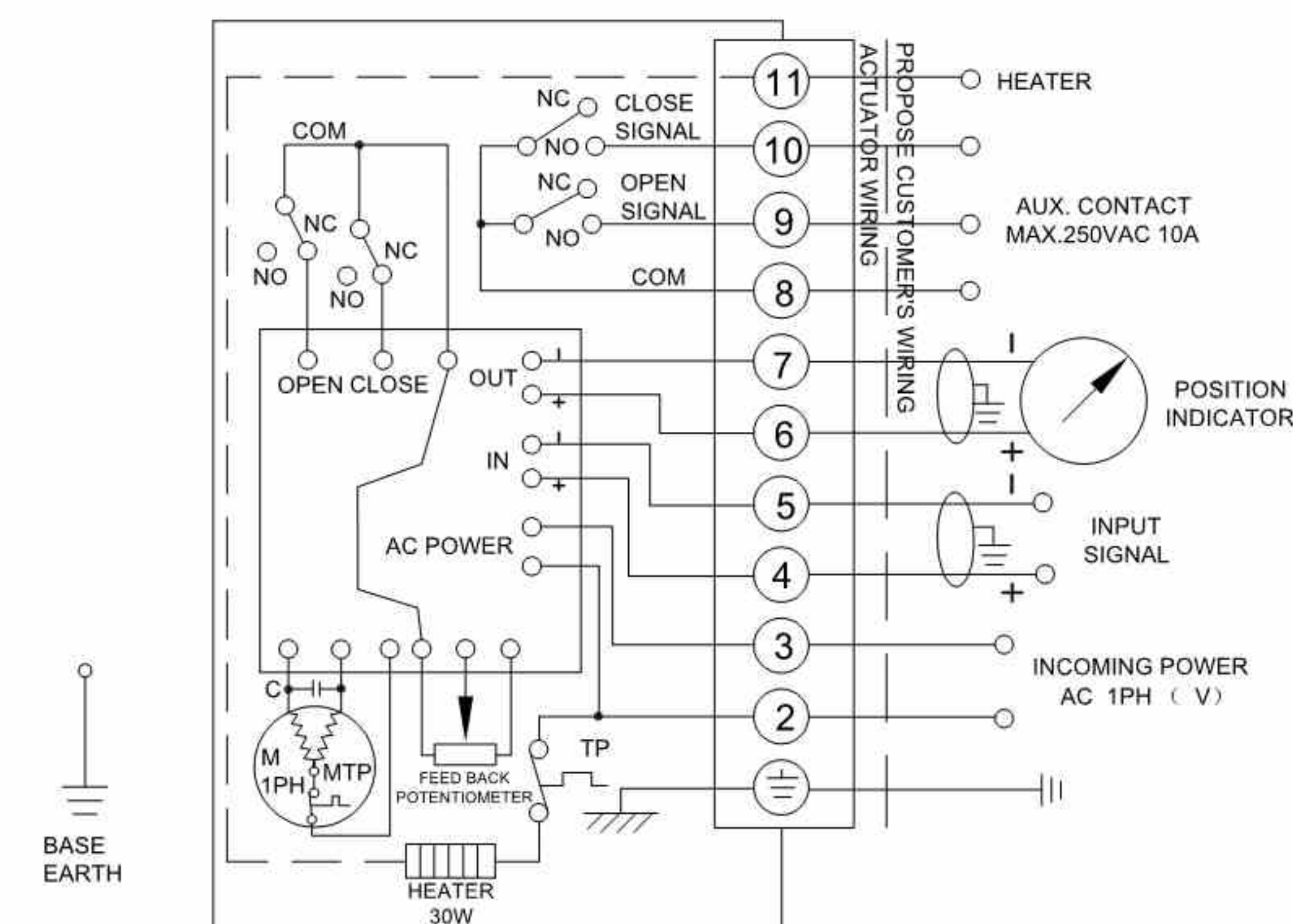
# AOX-L Electric Actuator Series

## Wiring Diagram

1. AOX-L-30~300 110/220VAC/50/60Hz, 1Ph(On/off type) L-110



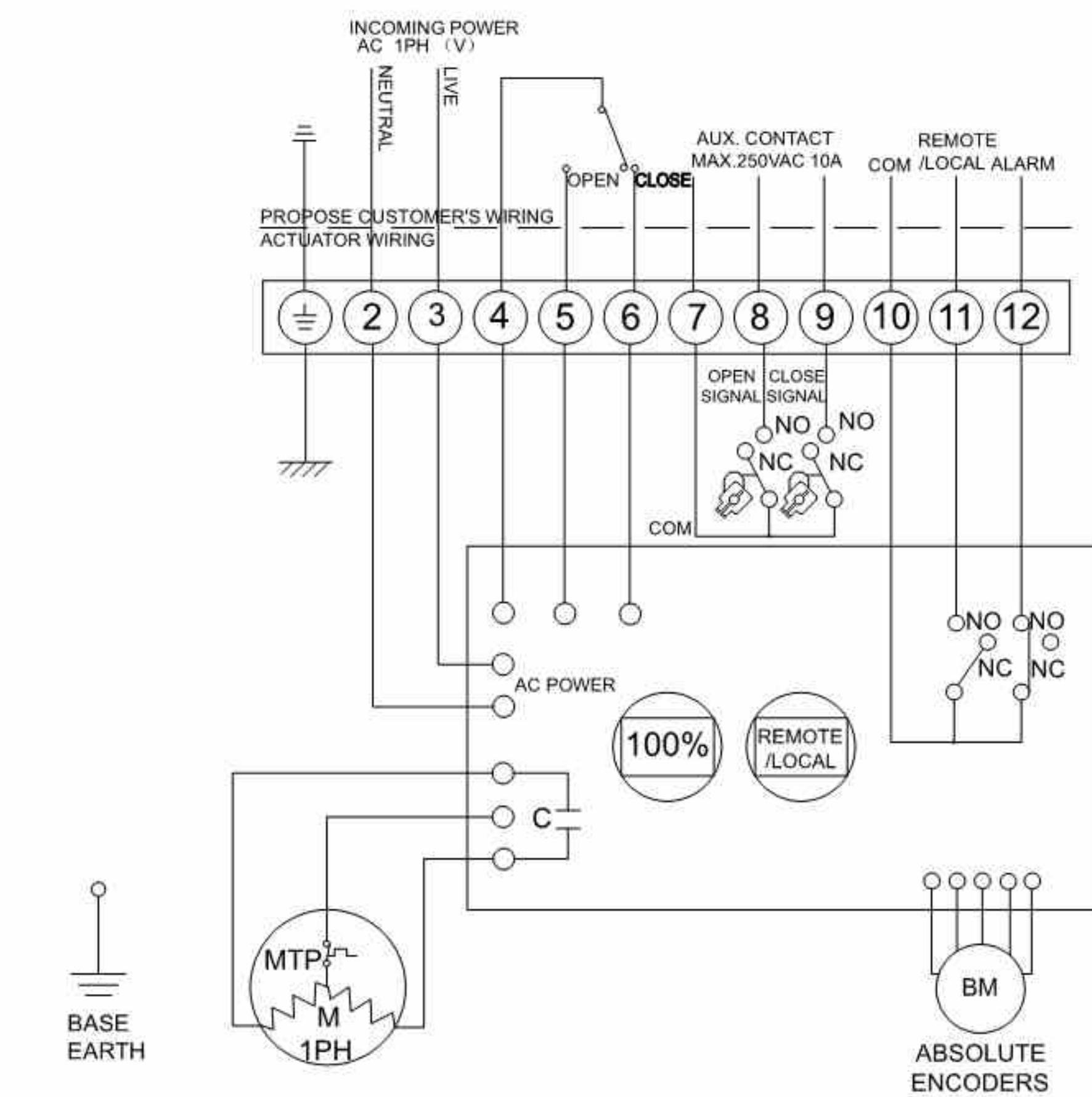
2. AOX-L-30~300 110/220VAC/50/60Hz, 1Ph(Modulating type) L-120



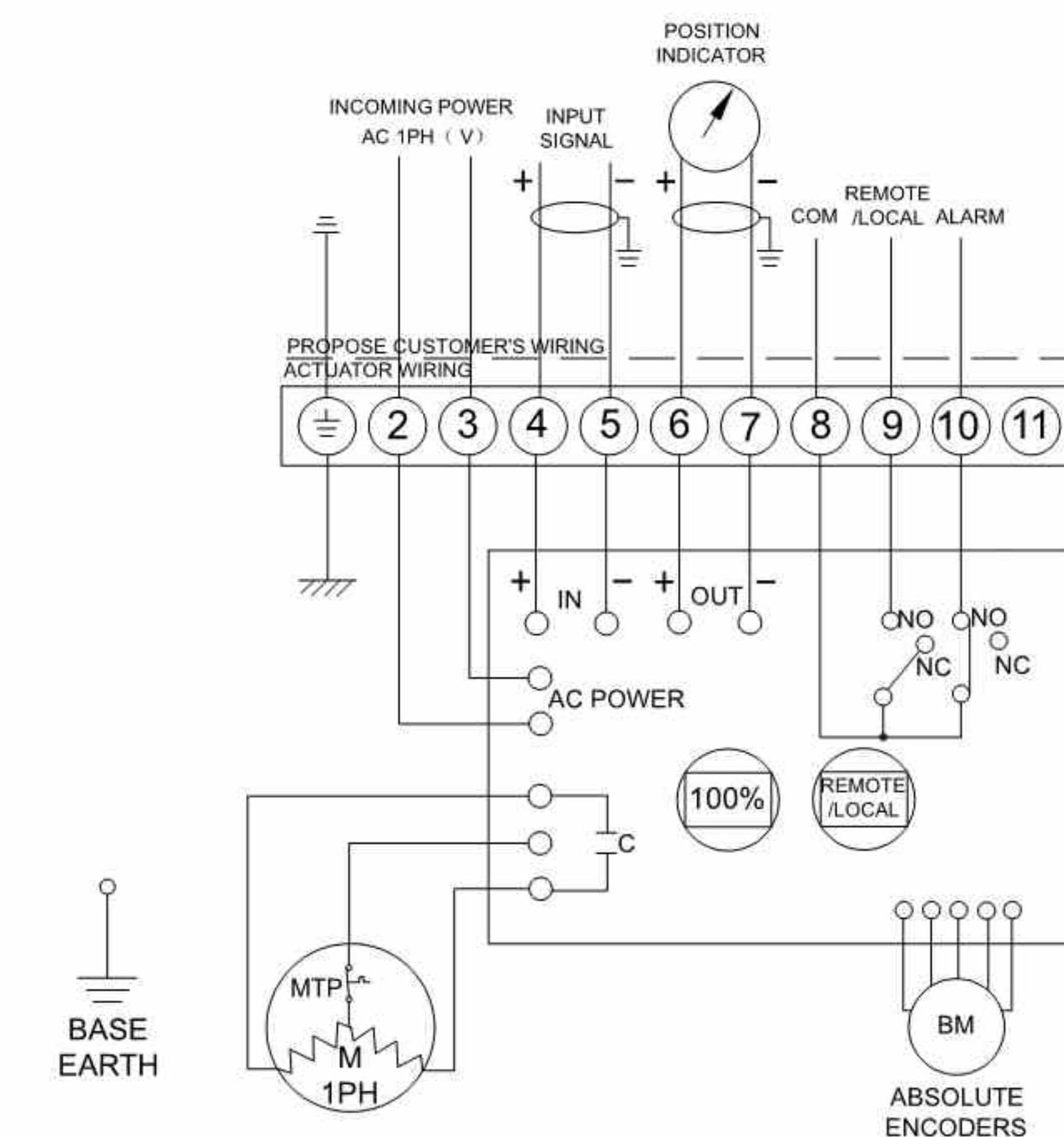
# AOX-L Electric Actuator Series

## Wiring Diagram

5. AOX-L-30~300 110/220VAC/50/60Hz, 1Ph(Intelligent on/off type) L-130



6. AOX-L-30~300 110/220VAC/50/60Hz, 1Ph(Intelligent control type) L-140



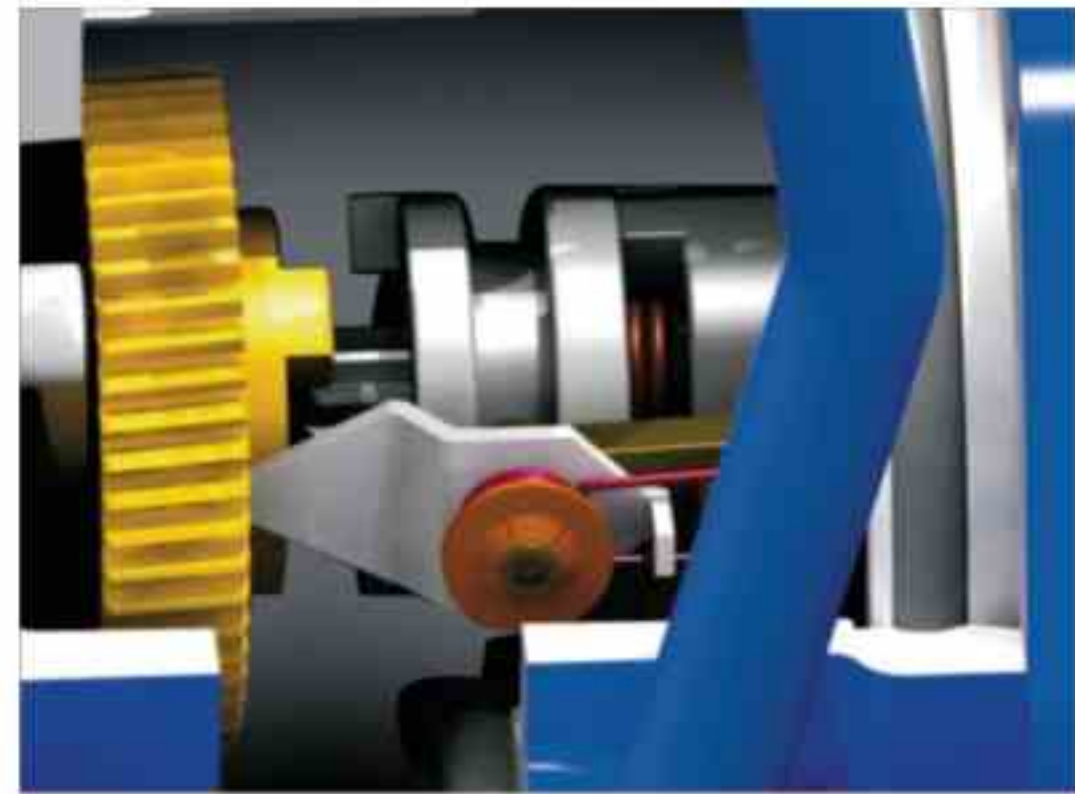




AOXIANG  
ELECTRIC INTELLIGENT ACTUATOR  
ELECTRIC VALVES



AOXIANG  
ELECTRIC INTELLIGENT ACTUATOR  
ELECTRIC VALVES



### Manual override

- Auto / Manual switchable lever and handwheel engagement for emergency manual operation.
- Drive force automatically resorted by motor start, unless lever padlocked to prevent this occurring.



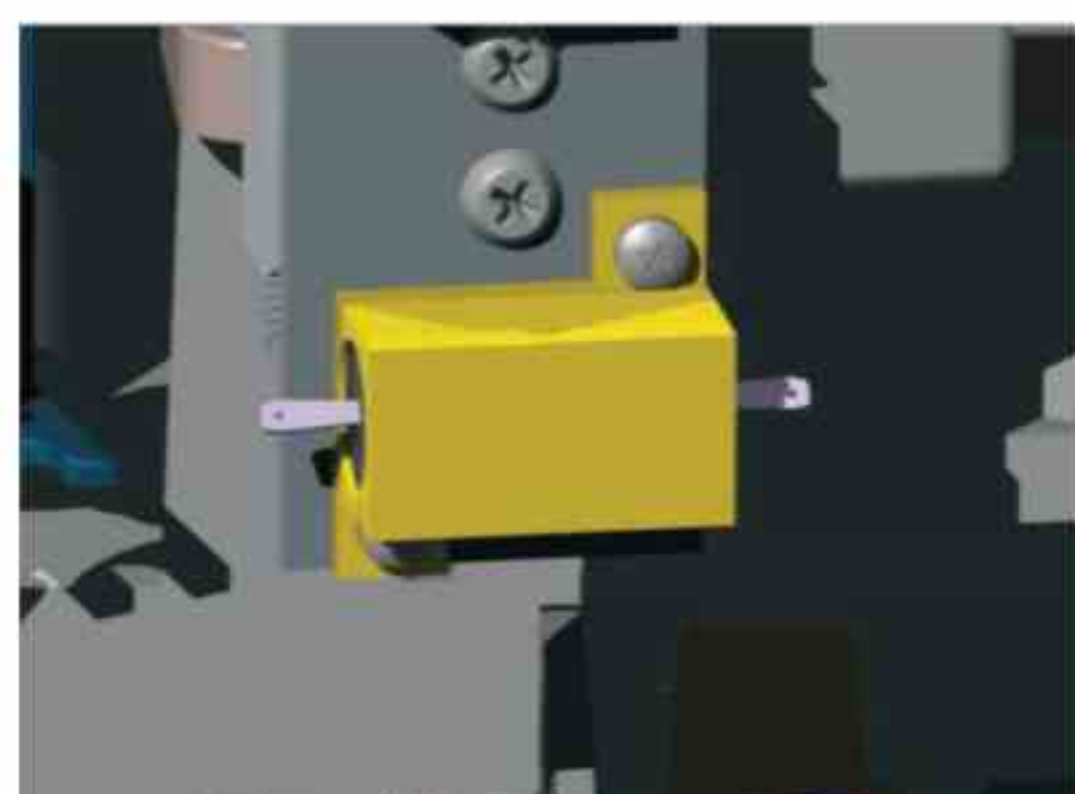
### Limit switches

- It is fastened by the two screws above, the setting is simple, each cam can be set separately.
- Once the setup is complete, each cam will always remain in this position.



### Terminal

- Spring loaded push type terminal for tight wiring connection under severe vibration.
- The number of terminals are 22 for users.
- Terminal length: 8-9mm
- Terminal size: 10×22×32



### Space heater

- Metal casing, fast heat, long life, with the built-in temperature switch to prevent overheating.
- Core ceramic sealing member, there is no risk of leakage.



### Captive cover bolts

- Designed to prevent losing it during maintenance or installation.
- All external bolts are stainless steel for rust prevention.

### 1.Shell

- Hard anodized Aluminum casting and external epoxy powder coated against severe industrial environment.

### 2.Worm gear

- Precisely machined double worm gear c/w minimum back-lash, low noise, high output torque.

### 3.Self locking

- Provided by double worm gearing to keep position of valve unchanged against reverse torque from valve.

### 4.Sealing

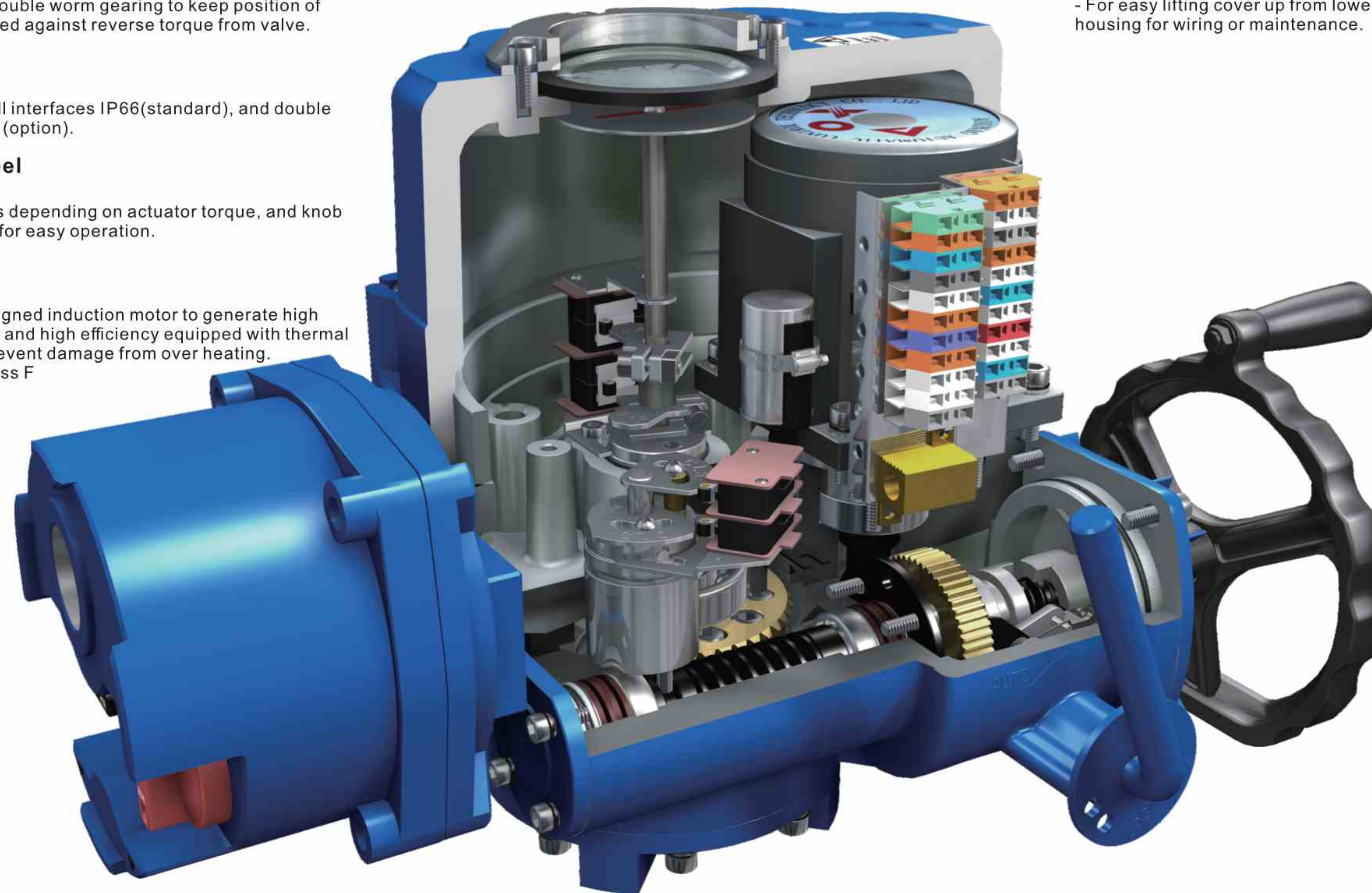
- By O-ring in all interfaces IP66(standard), and double o-ring for IP68 (option).

### 5.Handwheel

- Different sizes depending on actuator torque, and knob on handwheel for easy operation.

### 6.Motor

- Specially designed induction motor to generate high starting torque and high efficiency equipped with thermal protector to prevent damage from over heating.
- Insulation class F



- ### Tapered interface between cover and lower housing
- For easy lifting cover up from lower housing for wiring or maintenance.



### Window

- Polycarbonate window, built-in O-rings, fixed metal gland, the gland comes with two drainage channels to prevent water, easy to observe.



### Torque switches

- Protect actuator from damage caused by overload from the driven valve over the whole travel.
- Once the torque switching acts, the actuator will be stopped immediately.



### Removable drive bushing

- Easy mounting base standard to ISO5211.
- Bushings can be processed according to different requirements, four hanging ears made a close fit with shaft and sleeve.

### Indicator sustained by spring

- Direction of visual indicator is set by factory.
- In case of changing its direction, just grip the indicator plate and change the position.
- Spring beneath indicator plate sustains the set position unchanged.
- No need to loose screw and tight it again at all!



# AOX-QL Electric Actuator

Patented products, Counterfeiting not allowed.



AOXIANG  
ELECTRIC INTELLIGENT ACTUATOR  
ELECTRIC VALVES



# AOX-QL Series Electric Actuator



AOXIANG  
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ELECTRIC VALVES



## SUMMARY

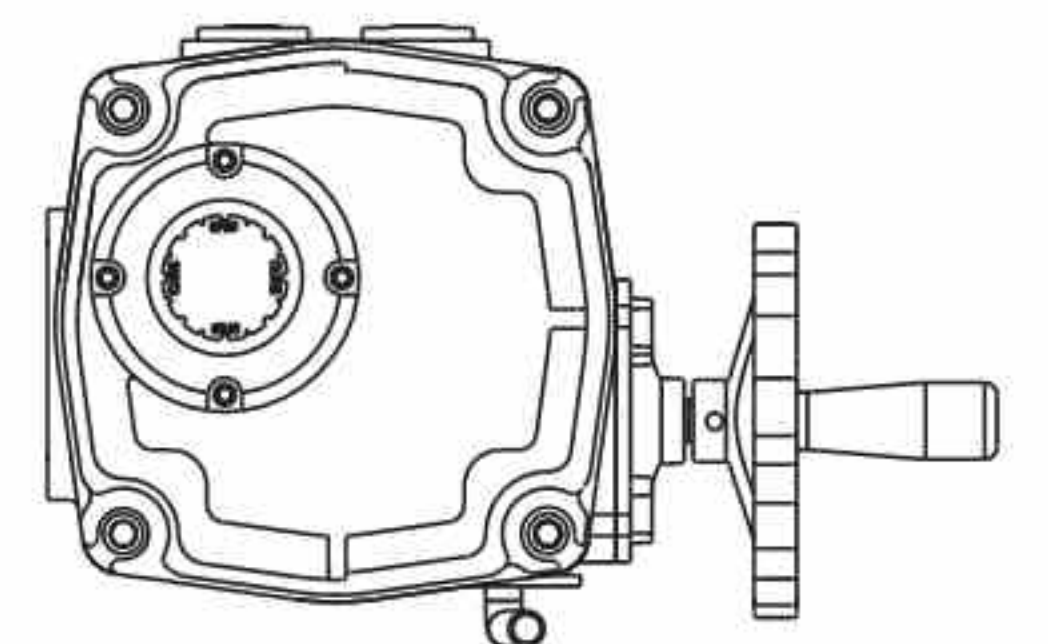
“AOX-QL” series linear electric actuator has the characteristics of small size, light weight, powerful function, intelligent setting and easy to operate. The max stroke length is 1m, the max thrust up to 30000N, it can be widely applied to linear movement of the valve switch and adjustment control. (AOX-QL series product have got CE and explosion-proof certificate)

## PERFORMANCE FEATURES

1. Shell--The shell is made of aluminum alloy, with anodic oxidation treatment and polyester powder coating. It is strong corrosion-resistant and enclosure IP66, NEMA 4 and 6, IP68 and explosion-proof is optional.
2. Motor--Asynchronous motor, small, large torque, and small inertia force, F-class insulation rating, with thermal protection to avoid damaging.
3. Manual Structure--The design of handwheel is safe, reliable, labor-saving, small. Declutch to operate by handwheel if without power, and reset automatically when power on.
4. Indicator-- Installs indicator in the center axis and adopts convex mirror design, no cumulate water, more convenient to observe.
5. Space heater-- It is used for controlling temperature to avoid condensing internal of housing and keep dry.
6. Limit switch-- Mechanical, electronic double limit. Mechanical limit stopper is adjustable, safe and reliable; electronic limit switch is controlled by cam. Set position accurately and conveniently, and not affected by excessive handle.
7. Torque Switch-- (Except AOX-QL-20/30/50/80) Providing overload protection to avoid the damage of valve and electric actuator when jammed by cutting power automatically.
8. Self-locking--Accurate worm and worm gear transfer large torque efficiently, high efficiency, low noise (max. 50 dB), long life, with self-locking, prevent inversion, as stable and reliable transmission parts, no need to refuel.
9. Anti-off bolt—The bolt attaches to the shell and be not off when remove the shell.
10. Circuit--Controlling circuit meets the single-phase or three-phase power supply standard, circuit layout is reasonable and compact, terminals meet various of additional functional requirements effectively.
11. The display of valve position—During the opening or closing movement of actuator, the change of valve position on LCD is displayed with large numbers.
12. Intelligent module-- Using highly integrated, low-power microcontroller and analog circuit mixed control panel, using allmetal plug-in installation, it can effectively isolate the actuator motor heat and control board, greatly improve the software and hardware anti-jamming performance and temperature resistance.

# AOX-QL Electric Actuator

Patented products, Counterfeiting not allowed.



# AOX-QL Electric Actuator Series

## PERFORMANCE PARAMETER

Model	Foece	Speed	Max Stroke Length	Power	Rated Current ( A )				Weight
					Single phase		Three phases		
					110v	220v	380v	440v	
AOX-QL-20	2000	0.66	60	20	1.10/0.95	0.55/0.54	0.30/0.30	N/A	18
AOX-QL-30	3000	0.66	60	20	1.10/0.95	0.55/0.54	0.30/0.30	N/A	18
AOX-QL-50	5000	0.66	60	20	1.10/0.95	0.55/0.54	0.30/0.30	N/A	18
AOX-QL-80	8000	0.33	60	20	1.10/0.95	0.55/0.54	0.30/0.30	N/A	18
AOX-QL-100	10000	0.50	60	40	1.65/1.67	0.88/0.84	0.31/0.31	0.30/0.31	30
AOX-QL-160	16000	0.50	60	40	1.67/1.67	0.89/0.85	0.31/0.31	0.30/0.31	30
AOX-QL-200	20000	0.44	100	90	1.85/1.86	0.92/0.92	0.35/0.35	0.34/0.34	33
AOX-QL-250	25000	0.44	100	90	3.60/3.62	1.55/1.58	0.59/0.59	0.58/0.58	34
AOX-QL-300	30000	0.44	100	90	3.65/3.62	1.60/2.20	0.60/0.59	0.59/0.59	35

## TECHNICAL PARAMETER

Shell	Enclosure :IP66,NEMA4 and 6	
Power	Standard:220VAC/110VAC/1ph Optional:380V/440VAC/3ph	
Control Power	220V AC 1Phase, 50/60 Hz, ±10%	
Control Signal	Input and output:4-20mA/1-5VDC/0-10VDC	
Motor	Asynchronous motor	
Limit switch	2×Open/ Close, SPDT,250VAC 10A	
Auxiliary limit switch	2×Open/ Close, SPDT,250VAC 10A	
Fail safe	Internal-placed thermal protection, Open 120°C ±5°C/Close 97°C ± 5°C	
Operating temperature		
Indicator	Continuous position indicator	
Manual operate	Declutching mechanism	
Self-locking device	Self-locking by worm and worm gear	
Space heater	30W(110V/220VAC)	
Conduit entry	2 × PT3/4"	
Ambient temperature	-30°C ~ +70°C	
Lubrication	Grease moly ( EP type )	
Material	Steel, Aluminium alloy, Aluminium bronze,Polycarbonate	
Ambient humidity	Max 90% RH	Non-Condensing
Anti-vibration	X Y Z 10g,0.2 ~ 34 Hz,30 minutes	

# AOX-QL Electric Actuator Series

## EXPLOSION-PROOF SERIES

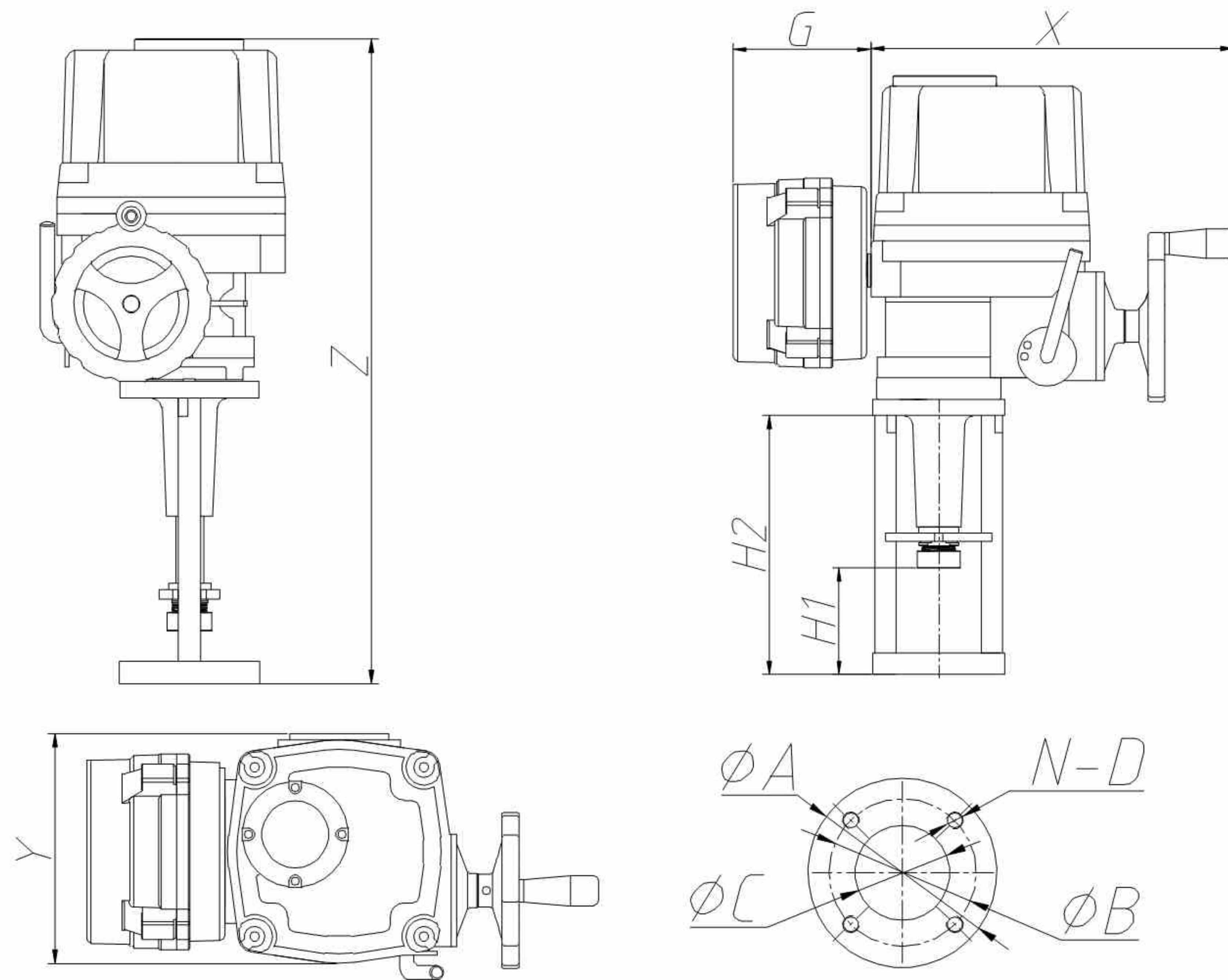
## OPTION SPECIFICATION

No.	Option scheme	Remark
1	Explosion-proof actuator ( Exd II CT5 )	AOX-QL series
2	Potentiometer unit ( 1K-10K )	AOX-QL series
3	Proportion control unit (control signal 4-20mA)	AOX-QL series
4	Local control units (local control open/stop/close optional switch)	AOX-QL series
5	Water-proof actuator (IP68,10M,250HR)	AOX-QL series
6	Direct current motor (24VDC)	AOX-QL series
7	Torque switch (SPDT× 2 250VAC 10A)	Except AOX-QL-20/30/50/80
8	Electric current position sensor (output 4-20mA DC)	AOX-QL series
9	Reverse electromagnetic control and transmission integration electrical machinery starter	AOX-QL series
10	High temperature resistance actuator (-10°C ~ +100°C)	AOX-QL series
11	Low temperature resistance actuator (-40°C ~ +70°C)	AOX-QL series
12	Low speed actuator	AOX-QL series



# AOX-QL Electric Actuator Series

## GENERAL DRAWING



Unit: mm

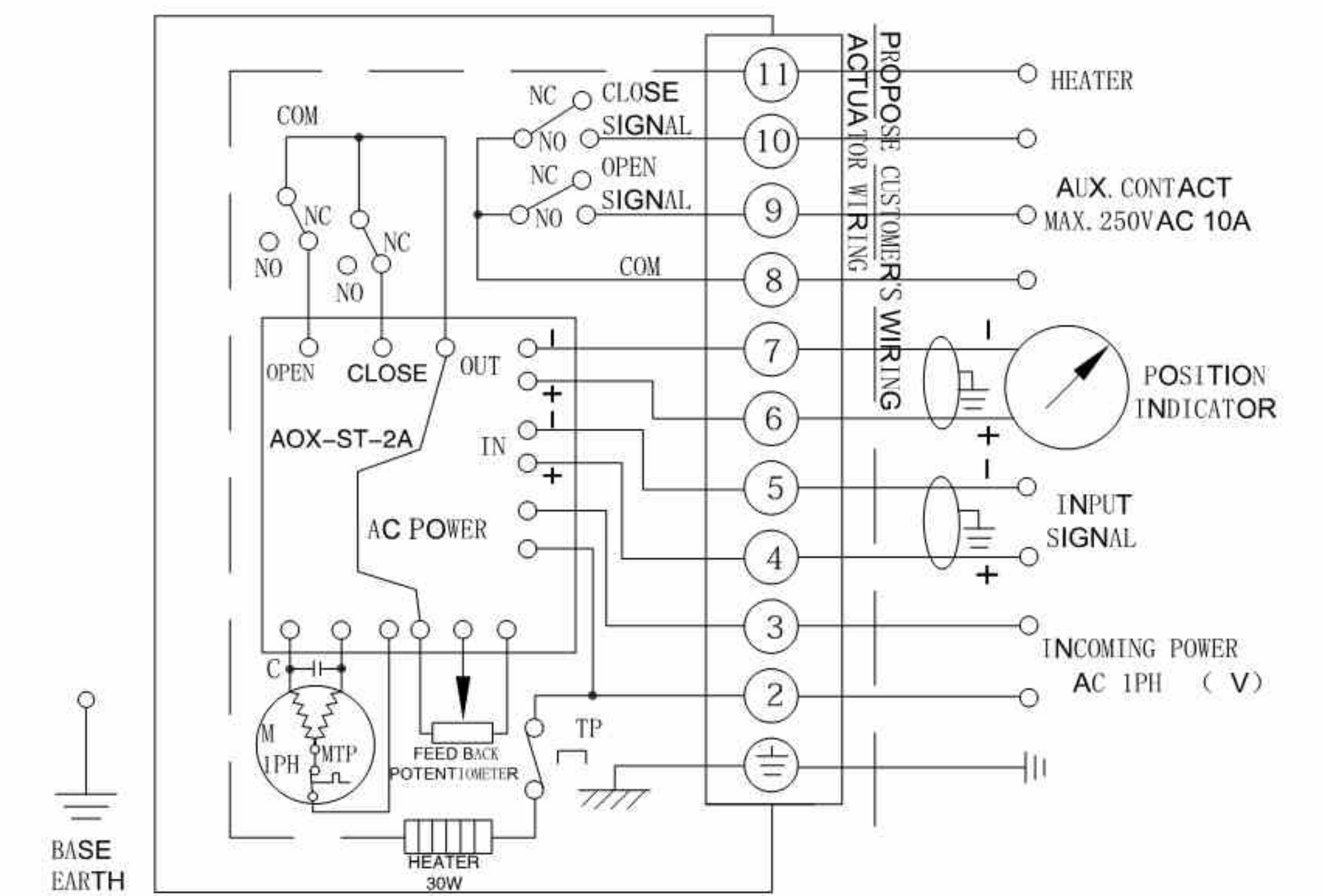
Model	X	Y	Z	G	H1	H2	ΦA	ΦB	ΦC	N-D
AOX-QL-20	260	175	505	140	120	255	Φ138	Φ102	Φ60	4-M12
AOX-QL-30	260	175	505	140	120	255	Φ138	Φ102	Φ60	4-M12
AOX-QL-50	260	175	505	140	120	255	Φ138	Φ102	Φ60	4-M12
AOX-QL-80	260	175	505	140	120	255	Φ138	Φ102	Φ60	4-M12
AOX-QL-100	351	244	608	140	155	320	Φ155	Φ118	Φ95	4-M14.5
AOX-QL-160	351	244	608	140	155	320	Φ155	Φ118	Φ95	4-M14.5
AOX-QL-200	367	251	680	140	170	372	Φ215	Φ118	Φ95	4-M14.5
AOX-QL-250	367	251	680	140	170	372	Φ215	Φ118	Φ95	4-M14.5
AOX-QL-300	367	251	680	140	170	372	Φ215	Φ118	Φ95	4-M14.5

# AOX-QL Electric Actuator Series

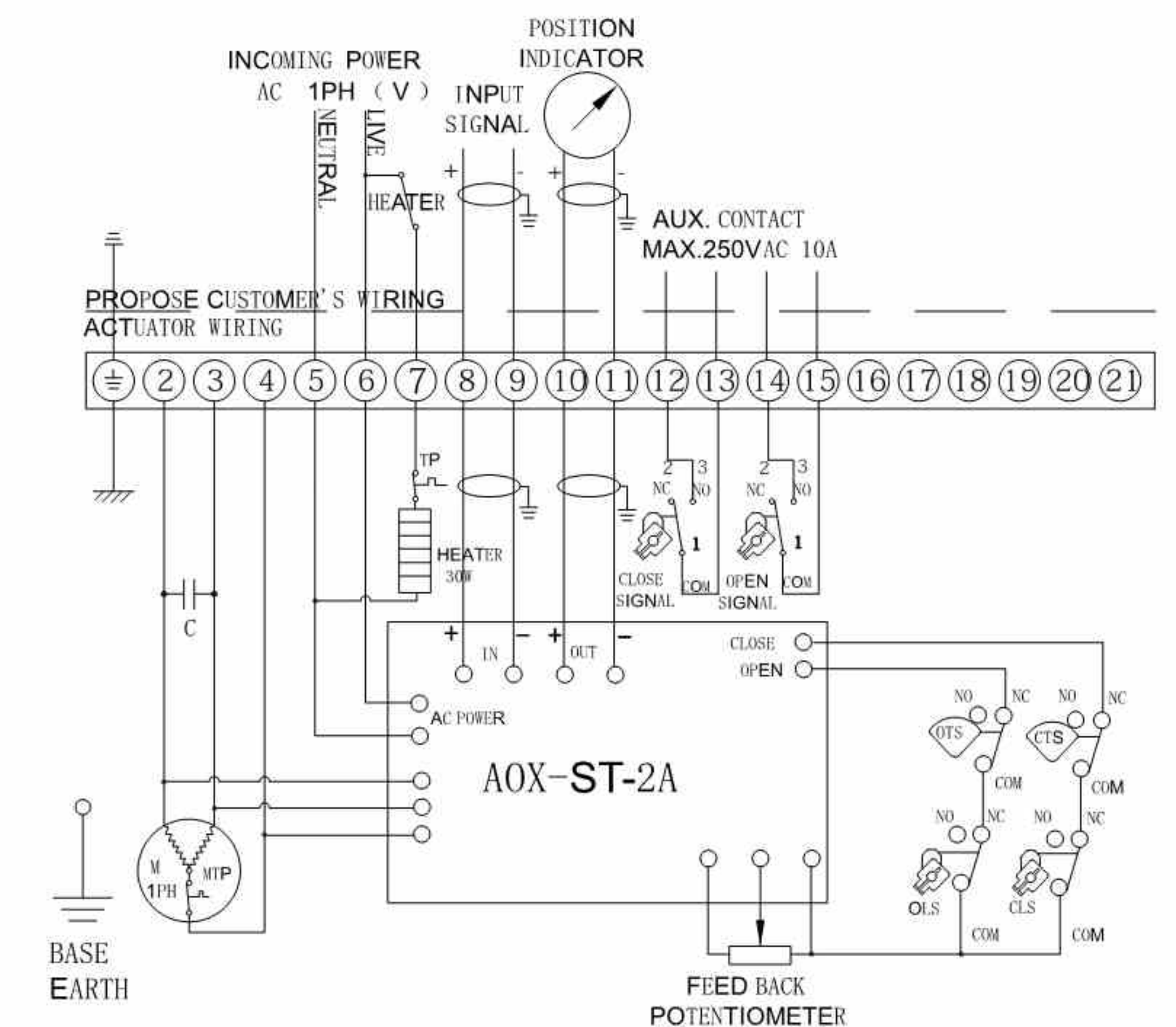
## Wiring Diagram



1、AOX-QL-20~ 80 110/220VAC/50/60HZ,1Ph ( Modulating type ) Q-120-10



2、AOX-Q-L100~ 300 110/220VAC/50/60HZ,1Ph ( Modulating type ) Q-120-20

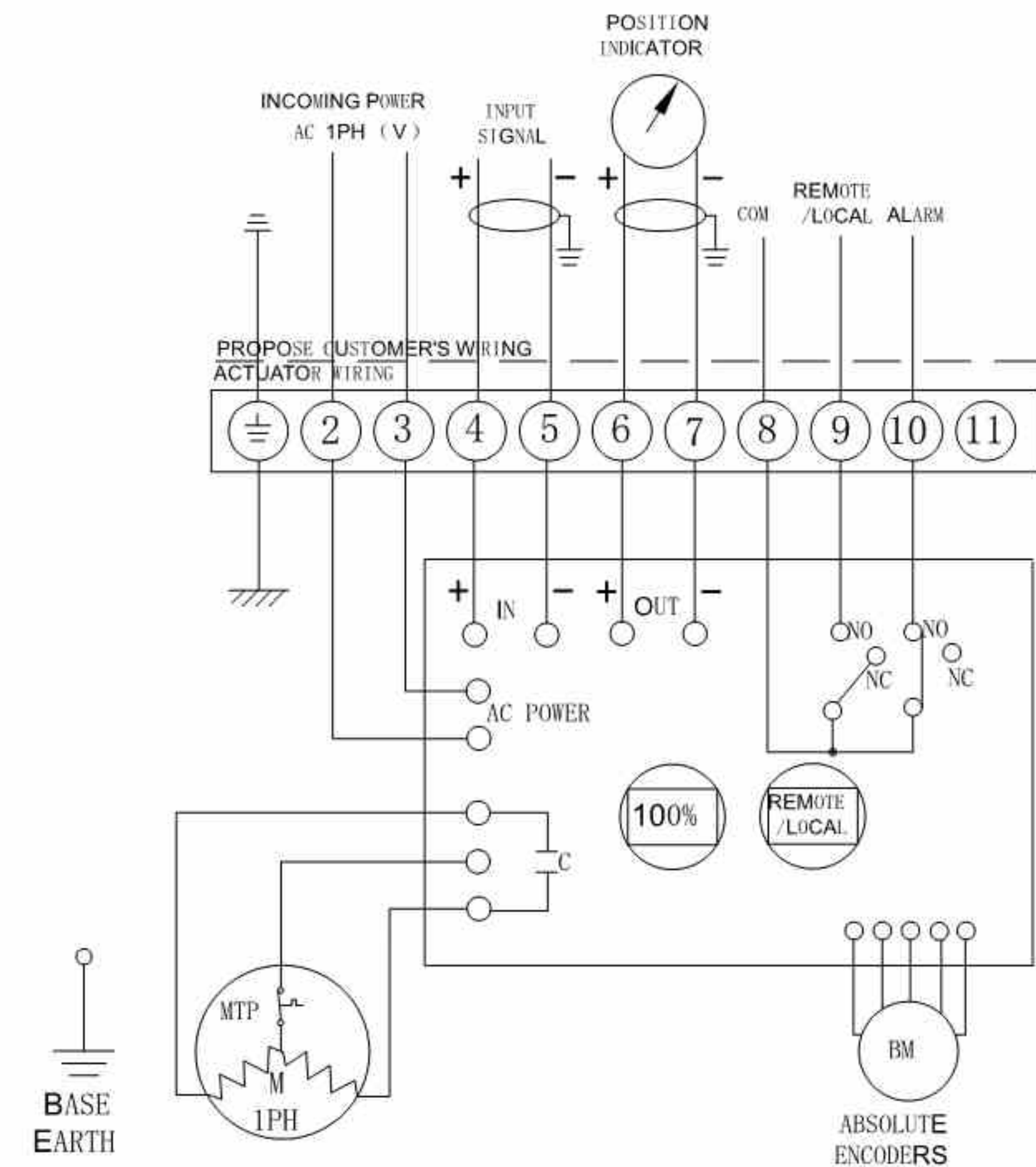


# AOX-QL Electric Actuator Series

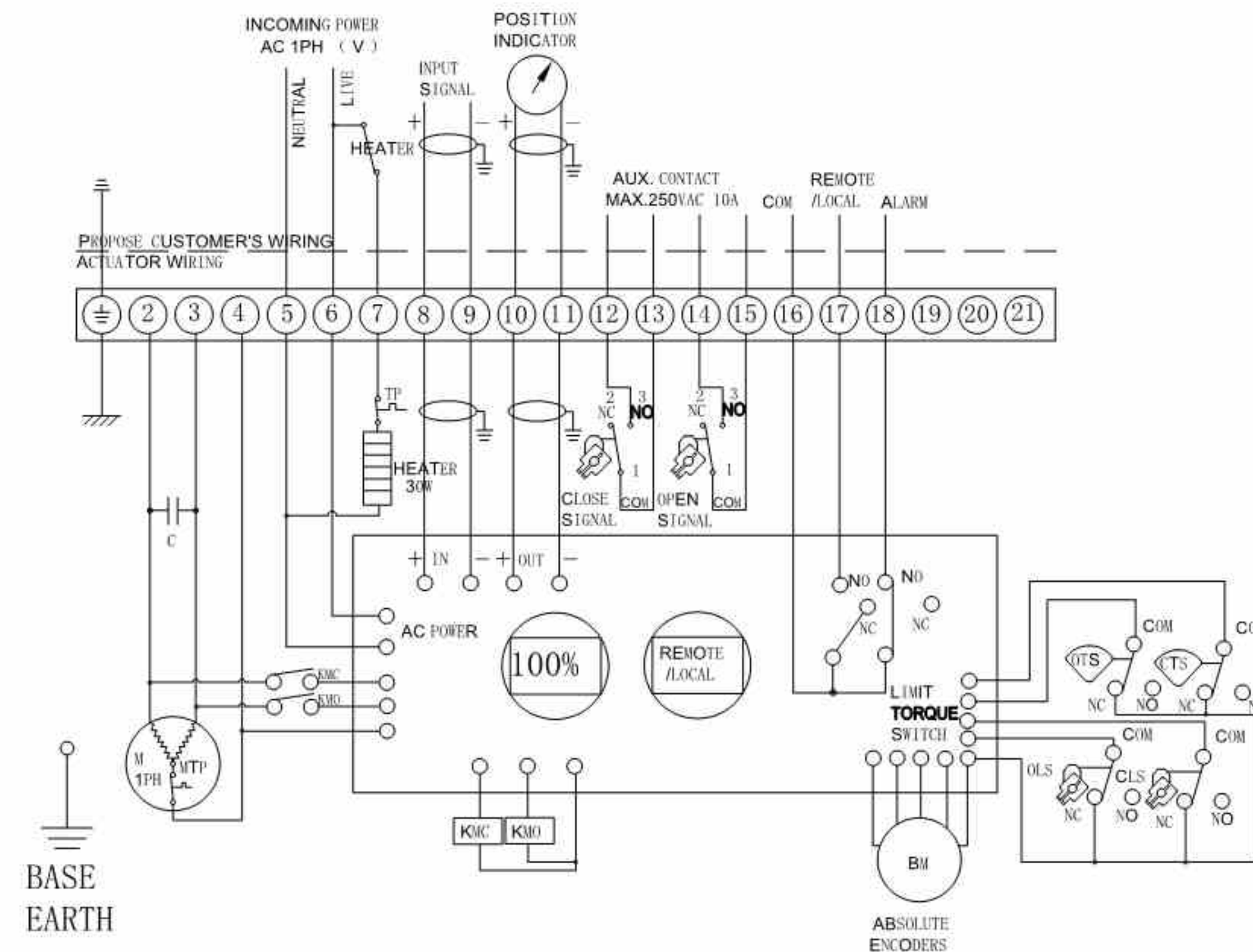
## Wiring Diagram



3、AOX-Q-L20~ 80 110/220VAC/50/60HZ,1Ph ( Intelligent modulating type ) Q-140-10



4、AOX-Q-L100~ 300 110/220VAC/50/60HZ,1Ph ( Intelligent modulating type ) Q-140-20

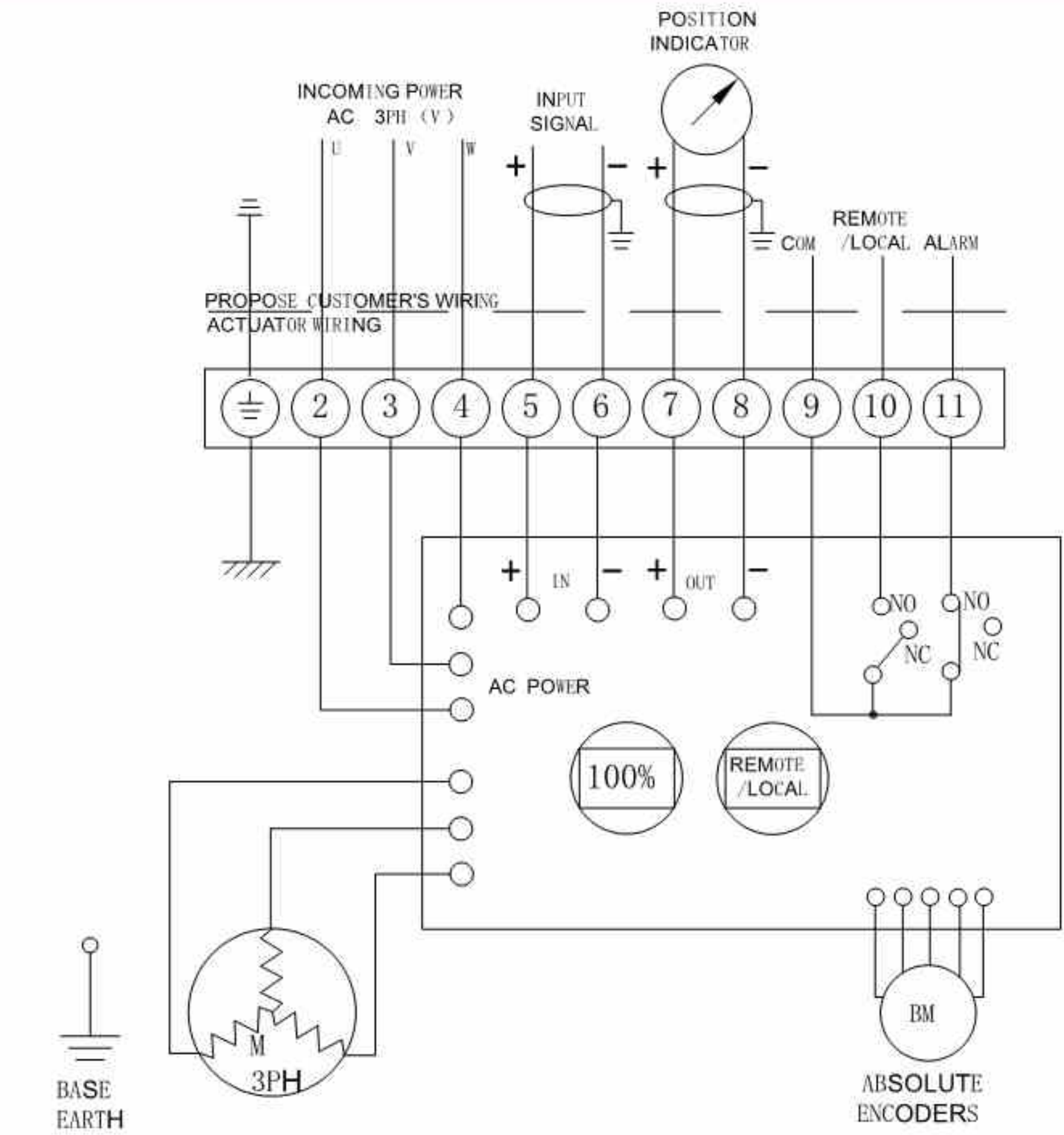


# AOX-QL Electric Actuator Series

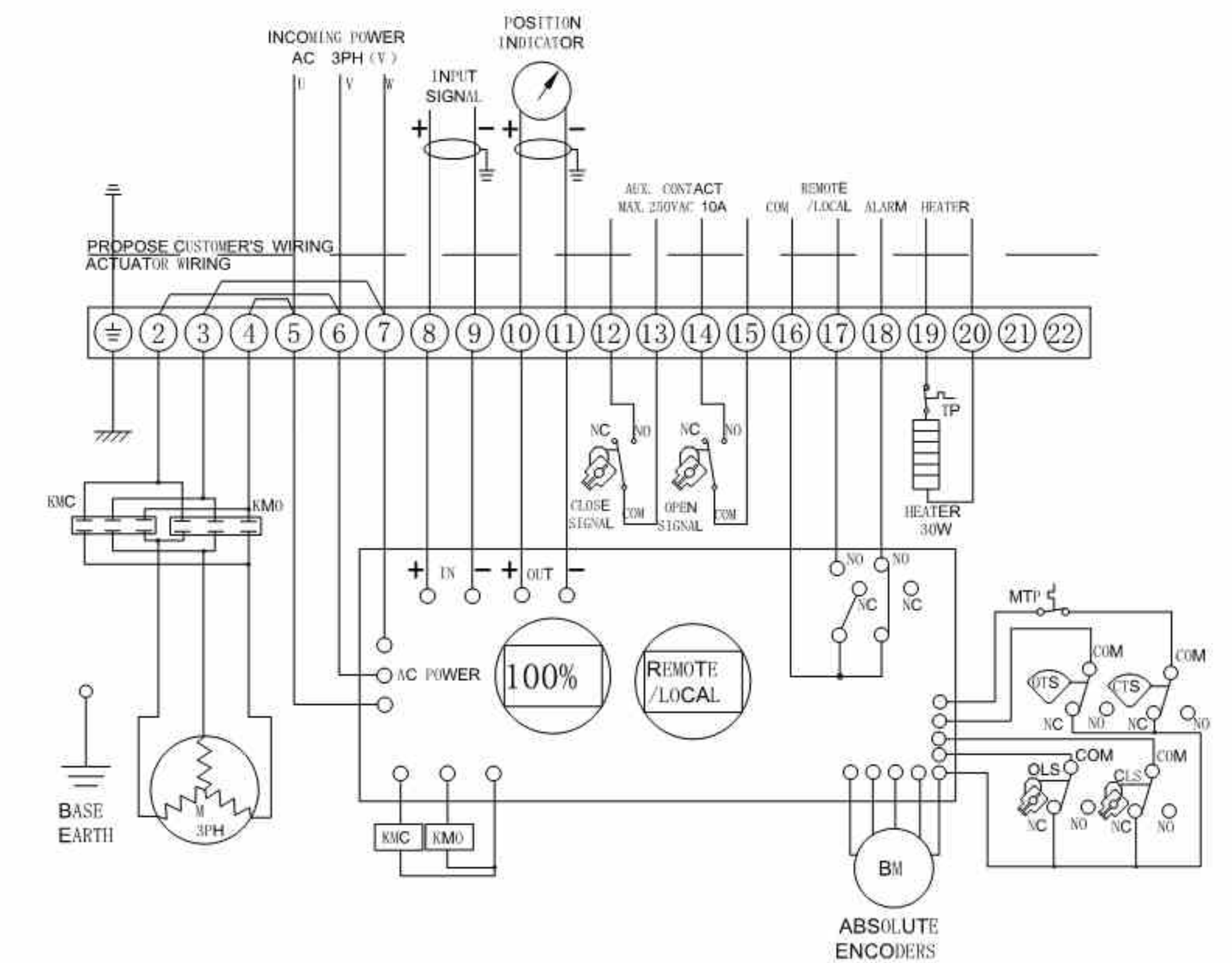
## Wiring Diagram



5、AOX-Q-L20~ 80 380/440VAC/50/60HZ,3Ph ( Intelligent modulating type ) Q-240-10



6、AOX-Q-L100~ 300 380/440VAC/50/60HZ,3Ph ( Intelligent modulating type ) Q-240-20



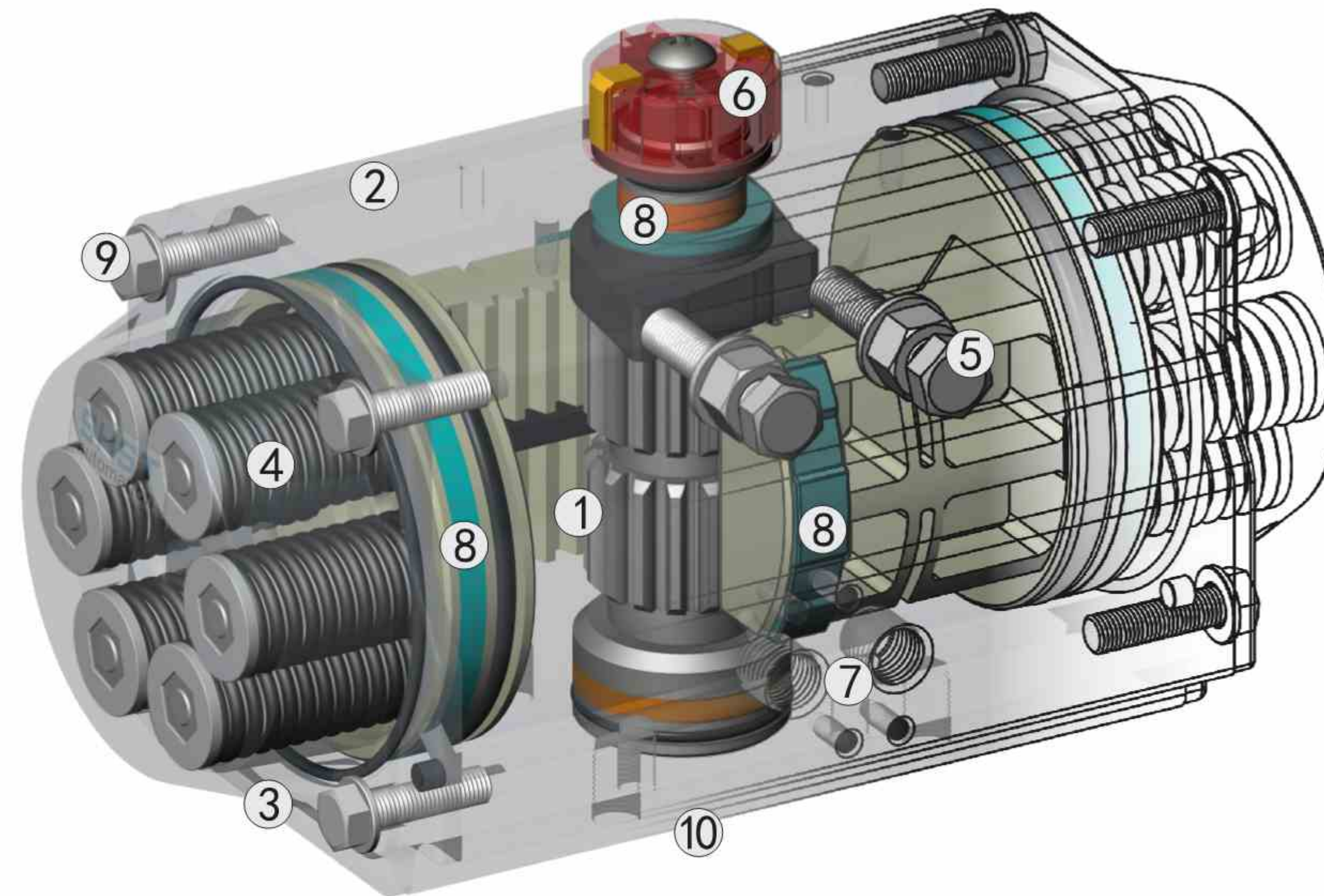
① The rack, gear wheel and the two pistons are designed in symmetric structure to perform stably and rapidly with high accuracy and high power output. the rotation in the inverse direction can be performed by simply changing the assembling location of the pistons.

② The extruded cylinder body is made of high quality stainless steel with fine machined socket and hard anodized outer surface(Teflon coat + anodisation would be provided at special occasion)to prolong the service life and lower the coefficient of friction.

③ One-piece design is adopted. All type of single acting actuators and double acting actuators are provided with same cylinder body and end cap. The acting module could be easily changed by installing or demounting springs.

④ Combined preload security group spring could be mounted or increased/decreased easily and safely during assembling or during in field usage

⑤ The two sole adjusting screws at the side surface of the actuator which has been already installed on the valve could make the adjustment of location of the valve opening and closing more convenient and accurate. The special adjusting screws which are much longer would be provided if full stroke adjustment is needed.



⑥ Multifunctional location indicator, in field visible indicator and standard socket in accordance to VDI/VDE3845. NAMUR could be installed and export all the accessories such as limit switch cabinet, electric localizer and position sensor(JEELON, P+F, Turck).

⑦ The air supply interface is built according to NUMAR criterion. To the interface the NUMAR solenoid valve can be installed directly.

⑨ All the fasteners are made of stainless steel to be resistant to corrosion for a long time.

⑩ The pontes are built in according to latest version of ISO5211,DIN3337(F03-F25) to guarantee the interchangeability and versatility of the products

⑧ The composite material made bearing shell at the back of the rack, the deflector ring of the pistons as well as the bearing shaft of the output shaft are provided with more lubrication to protect them against the metal-metal friction. Thus, a prolong service life and the low friction could be guaranteed.

# AOX-P

## Pneumatic Actuator SERIES

## Construction of Pneumatic actuator

## SUMMARY

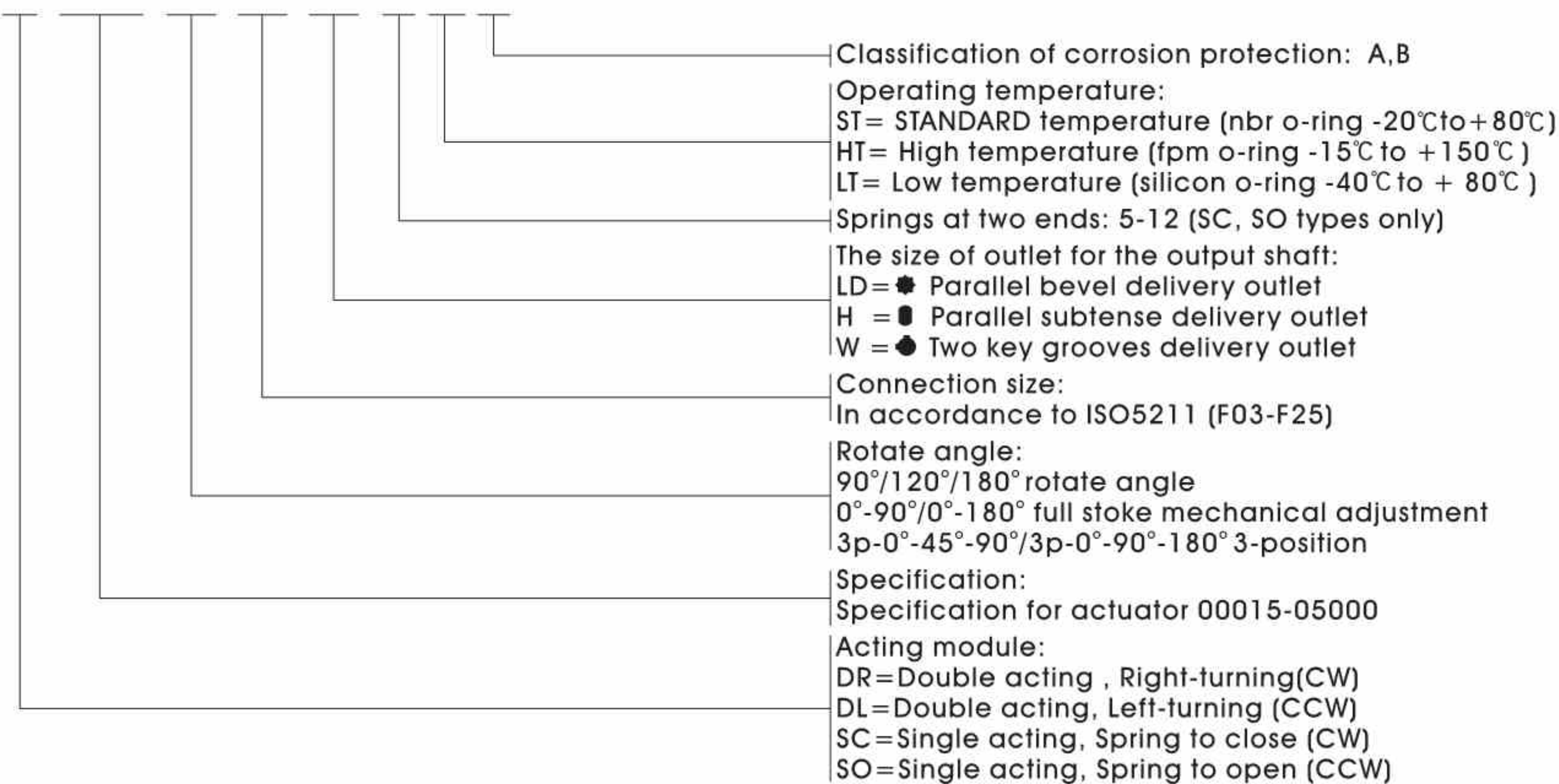
The new AOX-P pneumatic actuator of rack and gear wheel type is manufactured by ZHEJIANG AOXIANGAUTOCONTROL TECHNOLOGY CO.,LTD adopting the latest technique both home and abroad. CAD based 3D modeling is also applied to optimize the design of the products and to make innovation on the design as well. The aspect of the product is modern, compact and good looking. Built with new materials and new process, the quality of the products could be guaranteed as well as the performance. Moreover more types of products are available to benefit customers. All the products are completely designed and manufactured in accordance to the latest international standard Specification of technology to meet the requirement now and in future. The maximum output torque can be 5000Nm.

## PERFORMANCE FEATURES

- ① The rack, gear wheel and the two pistons are designed in symmetric structure to perform stably and rapidly with high accuracy and high power output. The rotation in the inverse direction can be performed by simply changing the assembling location of the pistons.
- ② The extruded cylinder body is made of high quality stainless steel with fine machined socket and hard anodized outer surface (Teflon coat + anodisation would be provided at special occasion) to prolong the service life and lower the coefficient of friction.
- ③ One-piece design is adopted. All type of single acting actuators and double acting actuators are provided with same cylinder body and end cap. The acting module could be easily changed by installing or demounting springs.
- ④ Combined preload security group spring could be mounted or increased/decreased easily and safely during assembling or during in field usage
- ⑤ The two sole adjusting screws at the side surface of the actuator which has been already installed on the valve could make the adjustment of location of the valve opening and closing more convenient and accurate. The special adjusting screws which are much longer would be provided if full stroke adjustment is needed.
- ⑥ Multifunctional location indicator, in field visible indicator and standard socket in accordance to VDI/VDE3845. NAMUR could be installed and export all the accessories such as limit switch cabinet, electric localizer and position sensor (JEELON, P+F, Turck).
- ⑦ The air supply interface is built according to NAMUR criterion. To the interface the NAMUR solenoid valve can be installed directly.
- ⑧ The composite material made bearing shell at the back of the rack, the deflector ring of the pistons as well as the bearing shaft of the output shaft are provided with more lubrication to protect them against the metal-metal friction. Thus, a prolong service life and the low friction could be guaranteed.
- ⑨ All the fasteners are made of stainless steel to be resistant to corrosion for a long time.
- ⑩ The pontes are built in accordance to latest version of ISO5211, DIN3337 (F03-F25) to guarantee the interchangeability and versatility of the products

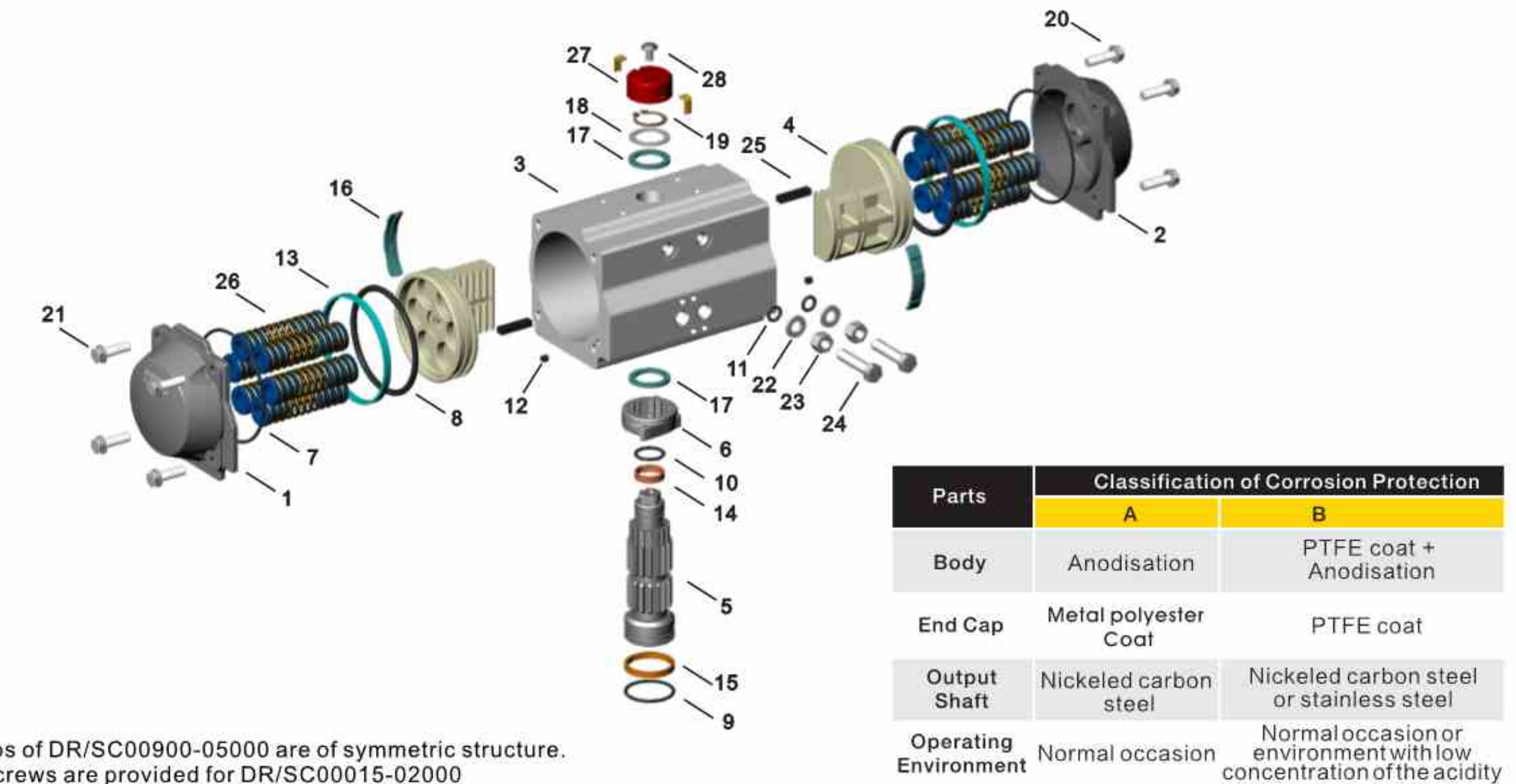
### Type catalogue

AOX-P DR 00150-090-F10-P22-10-HT-A



# AOX-P Series Pneumatic Actuator

## Components, Material and Corrosion Protection



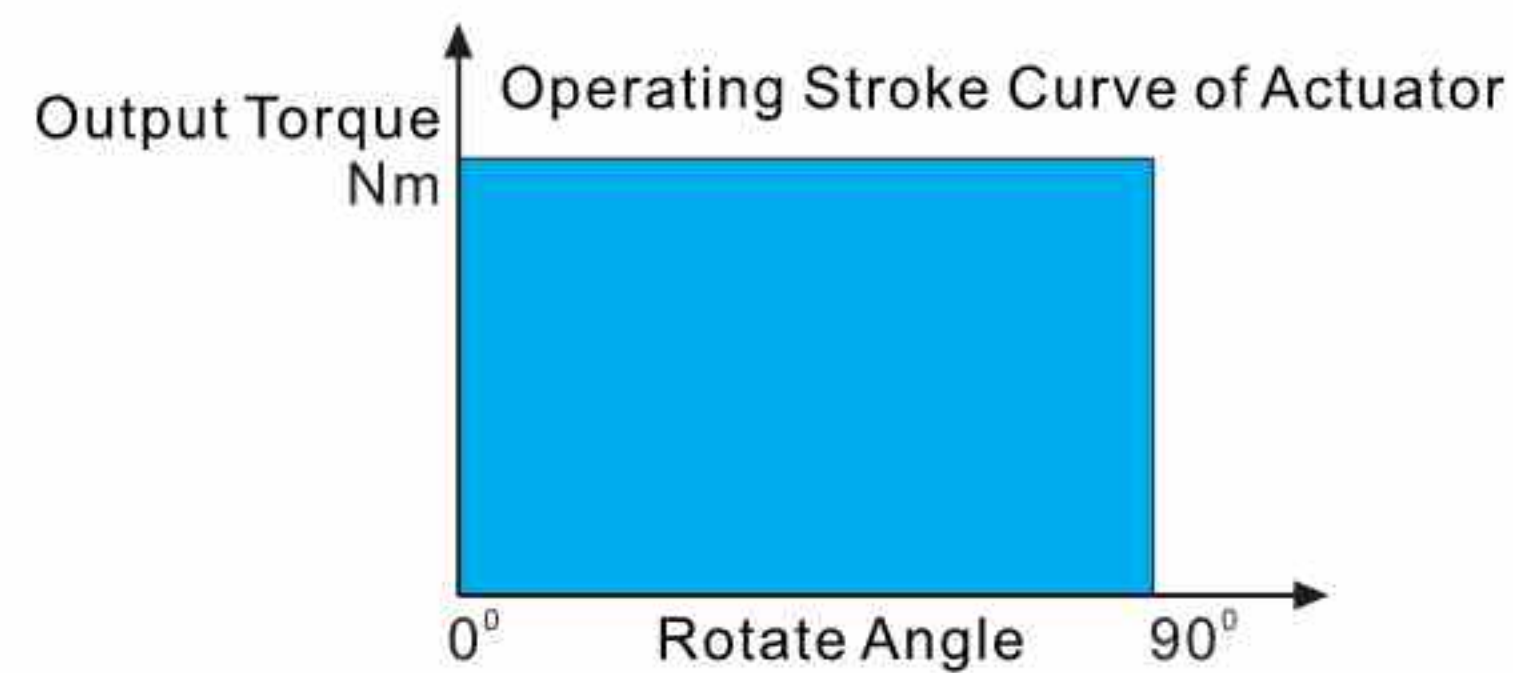
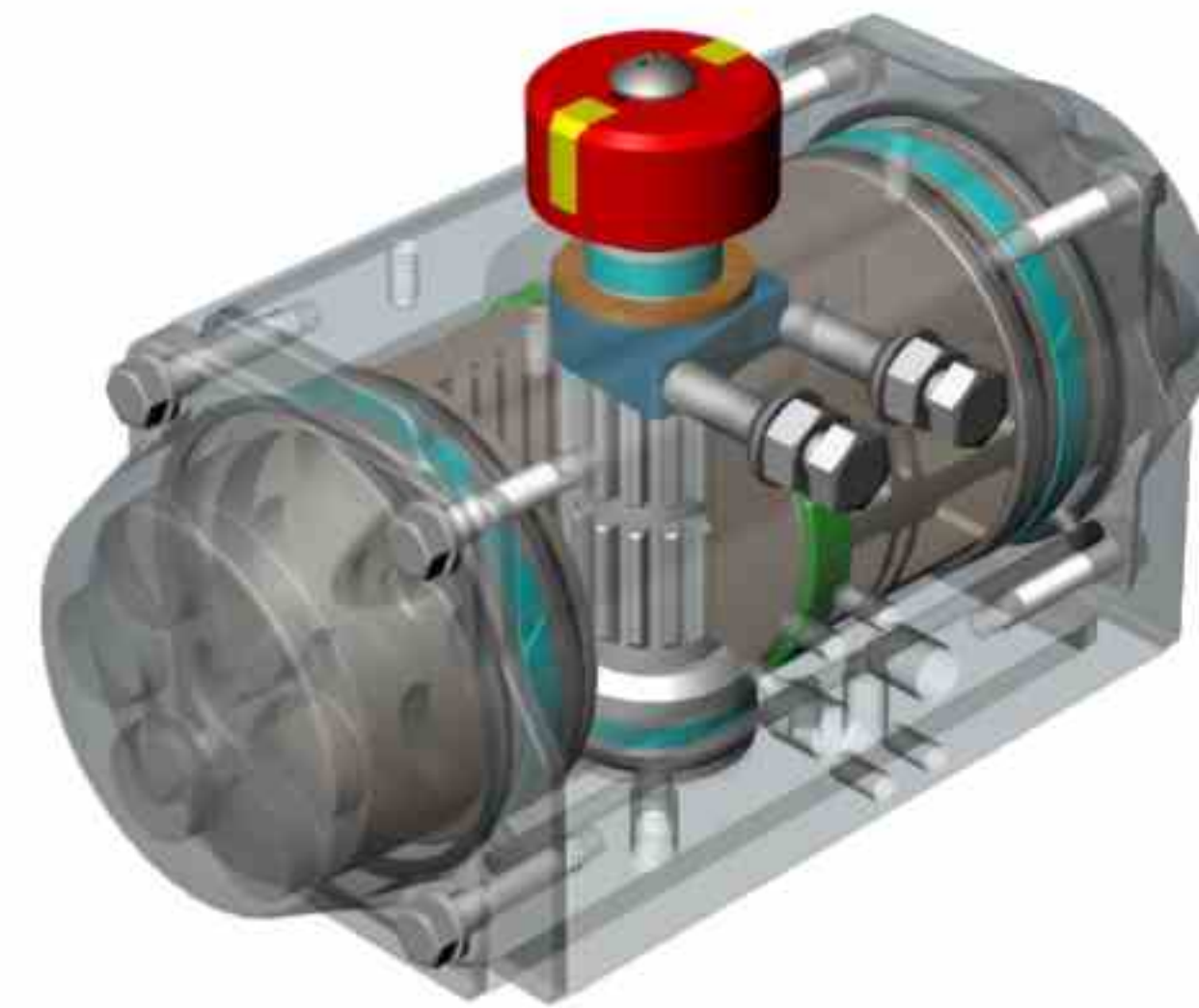
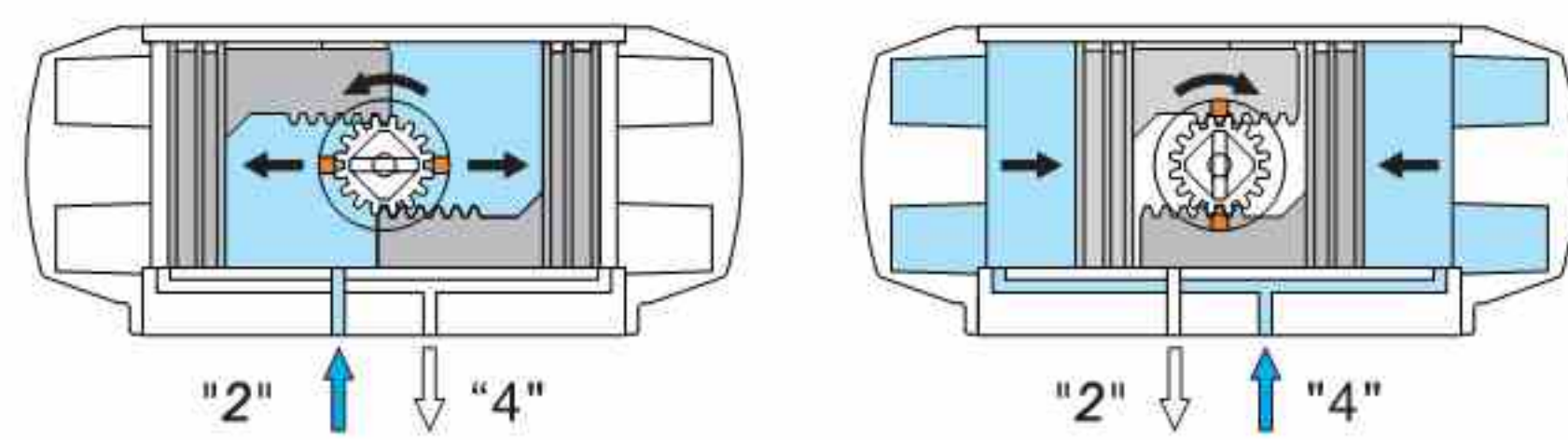
(1) The end caps of DR/SC00900-05000 are of symmetric structure.  
 (2) 8 end cap screws are provided for DR/SC00015-02000  
 While 12 for DR/SC03000-05000.

\* the recommended parts for repair including the parts in the box of spare parts

Code of The Parts	Number for Each type	Name of The Parts	Standard Material	Material Selection
01	1 <sup>(1)</sup>	Left end cap	Aluminium die-cast alloys	Stainless steel
02	1 <sup>(1)</sup>	Right end cap	Aluminium die-cast alloys	Stainless steel
03	1	Cylinder body	Extruded aluminum alloy	Stainless steel
04	2	Piston	Aluminium die-cast alloys	-----
05	1	Output shaft	Carbon-steel	Stainless steel
06	1	Adjusting cam	Stainless steel	-----
07*	2	O-ring (end cap)	Nitrile rubber	FPM or silicon rubber
08*	2	O-ring (piston)	Nitrile rubber	FPM or silicon rubber
09*	1	O-ring (bottom of output shaft)	Nitrile rubber	FPM or silicon rubber
10*	1	O-ring (top of output shaft)	Nitrile rubber	FPM or silicon rubber
11*	2	O-ring (adjusting screw)	Nitrile rubber	FPM or silicon rubber
12*	2	Stopper end (cylinder body)	Nitrile rubber	FPM or silicon rubber
13*	2	Bearing shaft (pistons)	Fluorocarbon	-----
14*	1	Bearing shaft (top of output shaft)	PA66	-----
15*	1	Bearing shaft (bottom of output shaft)	PA66	-----
16*	1	Pilot bearing (back of the piston)	PA66	-----
17*	2	Thrust bearing (output shaft)	PA66	-----
18	2	Filler piece (output shaft)	PA66	-----
19	1	Elastic collar	Stainless steel	-----
20	8/12/16 <sup>(2)</sup>	End cap screw	Stainless steel	-----
21	8/12/16 <sup>(2)</sup>	End cap filler piece	Stainless steel	-----
22	2	Filler piece	Stainless steel	-----
23	2	Screw cap	Stainless steel	-----
24	2	Adjusting screw	Stainless steel	-----
25	2	Guide pad	PA66+30%fg	-----
26	5-12	Spring subassembly	Alloy spring steel	-----
27	1	Location indicator	PP+30%gf	-----
28	1	Screw	Stainless steel	-----

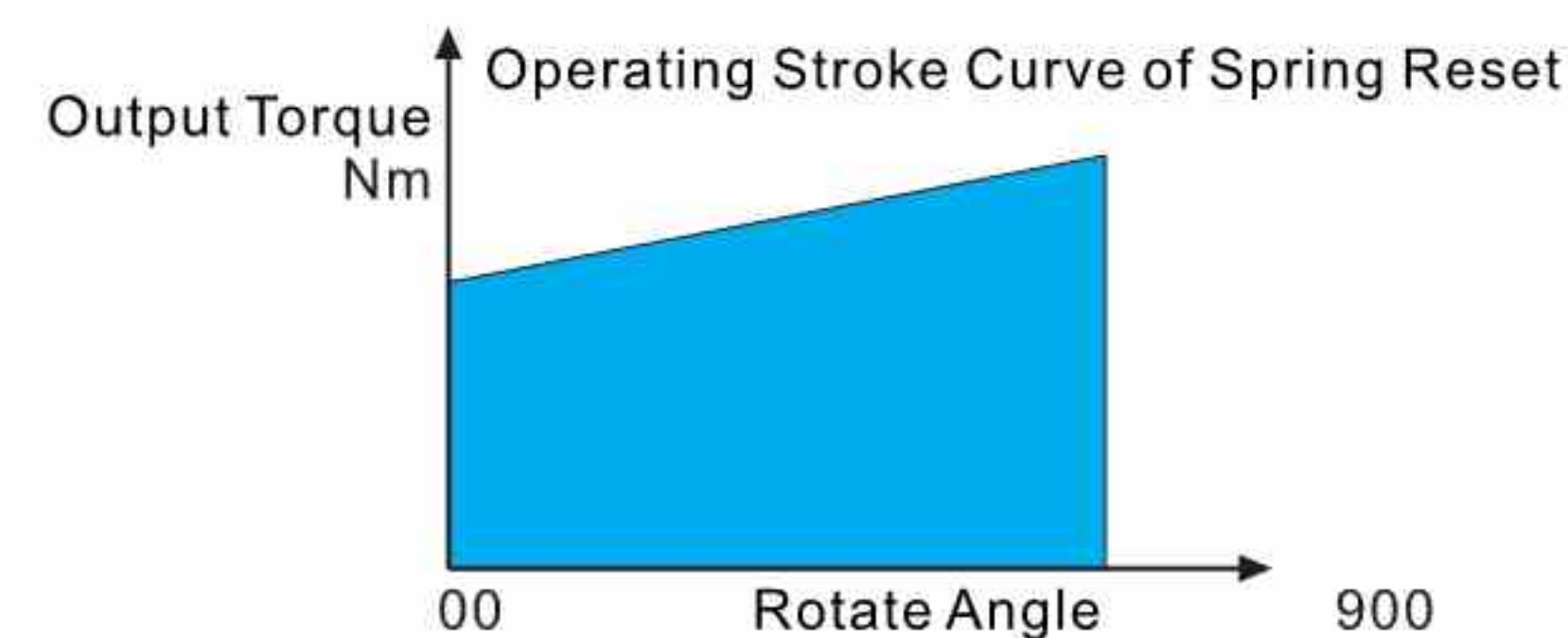
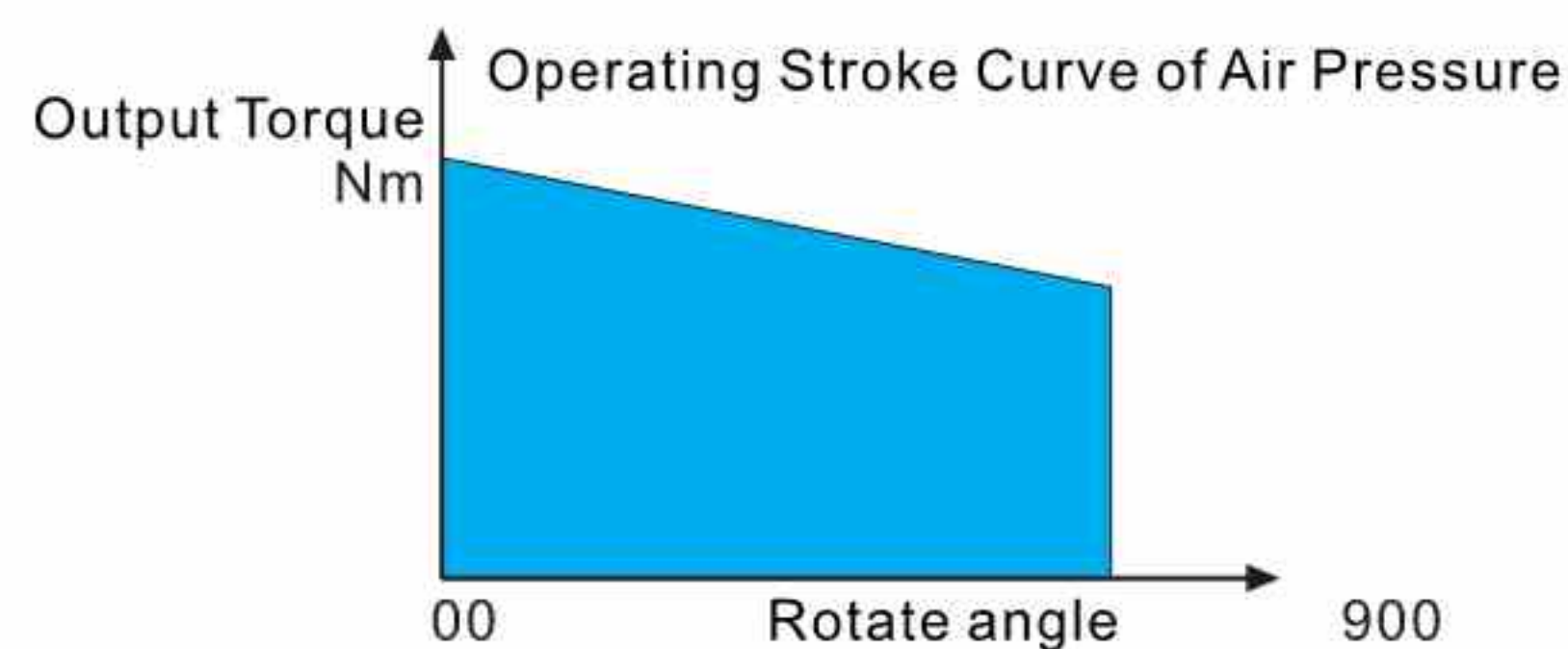
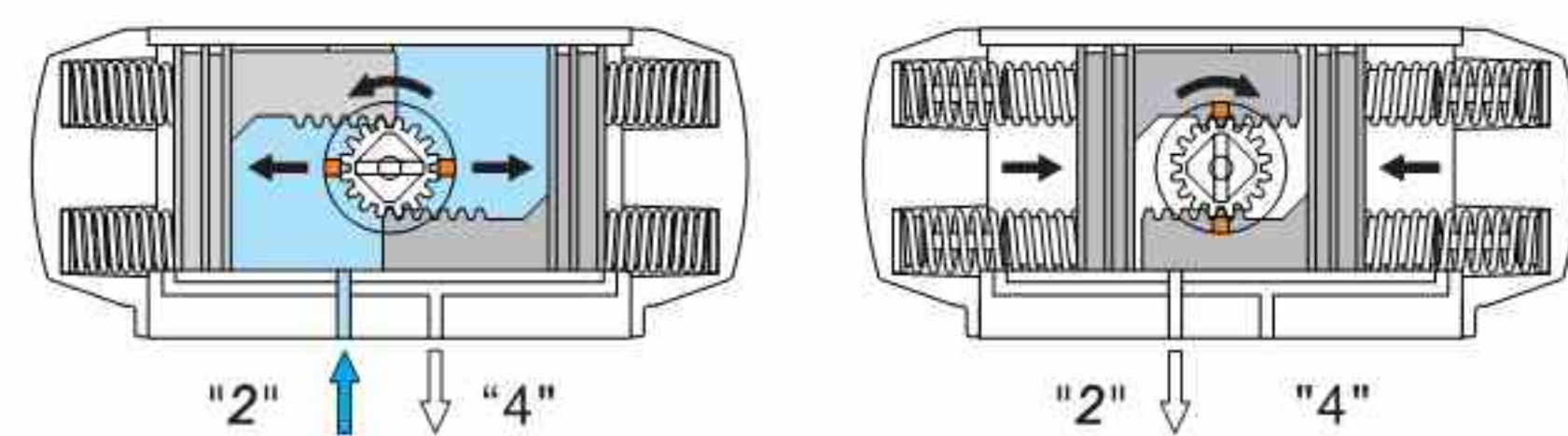
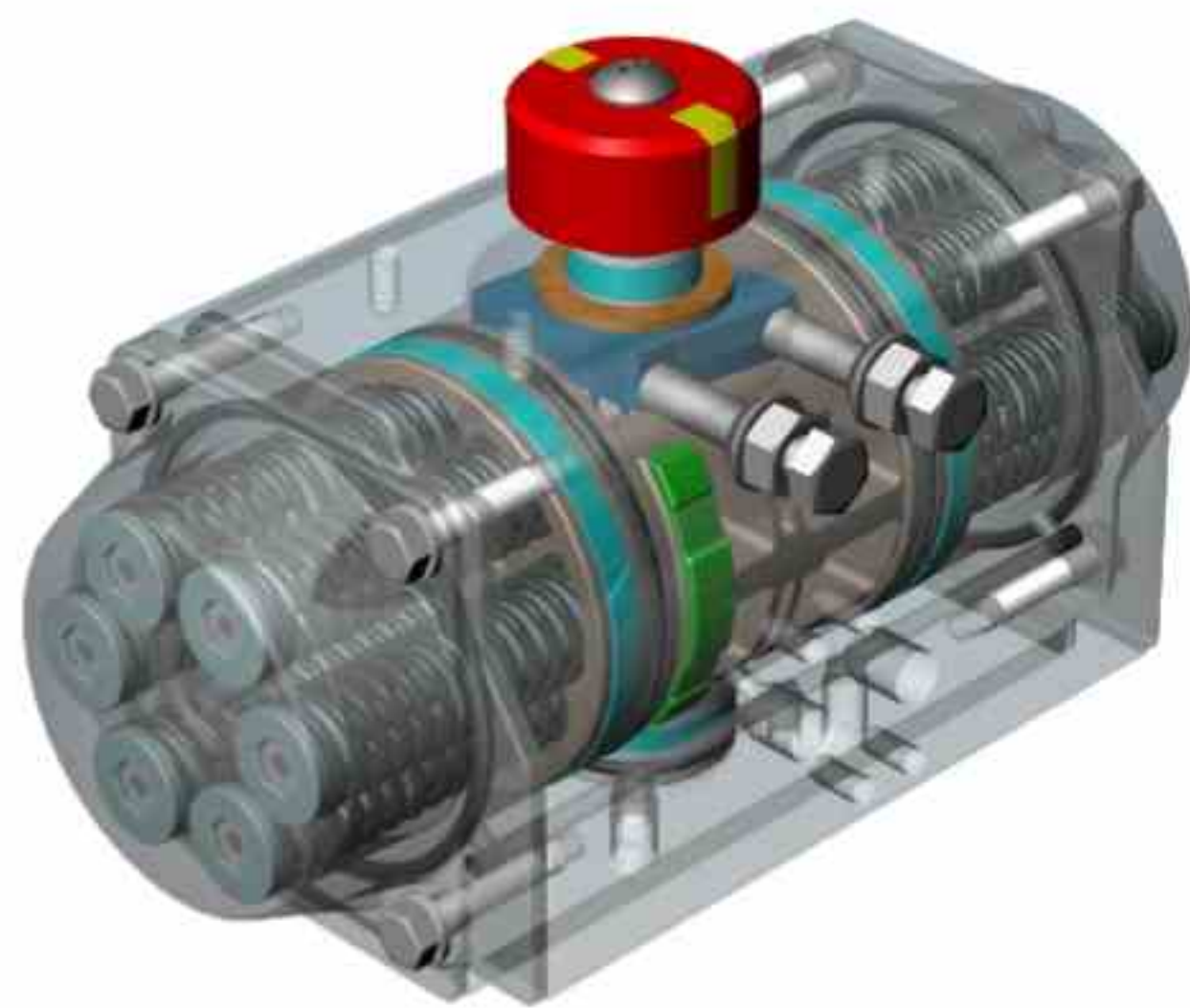
### Operating Principle of DR(DL) Double Acting Type

The air source pressure comes into the cylinder body between the two pistons from air entrance (2) and pushes the pistons toward the end of the cylinder body. The air between the pistons and the ends of the cylinder body is released from air entrance (4). Meanwhile the racks of pistons rotate the output shaft anticlockwise (gear wheel) simultaneously, whereas if the air source pressure comes into the ends of the cylinder body from air entrance (4) and pushes the pistons toward each other with the air between two pistons released from air entrance (2), the output shaft (gear wheel) would be driven by the racks of the pistons simultaneously to rotate clockwise. (if the pistons are assembled in different direction from each other, the output shaft would turn out to rotate in inverse direction, namely the double acting reverse DL type)



### Operating Principle of SC(SO) Single Acting Type

The air source pressure comes into the cylinder body between the two pistons from air entrance (2) and pushes the pistons toward the end of the cylinder body while the springs at each ends inside the cylinder body is forced to shrink with the air between the pistons and the ends of the cylinder body released from air entrance (4). in the meantime, the racks of pistons drive the output shaft (gear wheel) simultaneously to rotate anticlockwise. After the direction of the air source pressure is reversed by the solenoid valve, the springs at each end begin to reset and the pistons are forced toward each other by the elasticity with the air between two pistons released from air entrance (2). Meanwhile the output shaft (gear wheel) would be driven by the racks of the pistons simultaneously to rotate clockwise. (if the pistons are assembled in different direction from each other, the output shaft would turn out to rotate in inverse direction when the springs reset, namely the single acting reverse SO type)

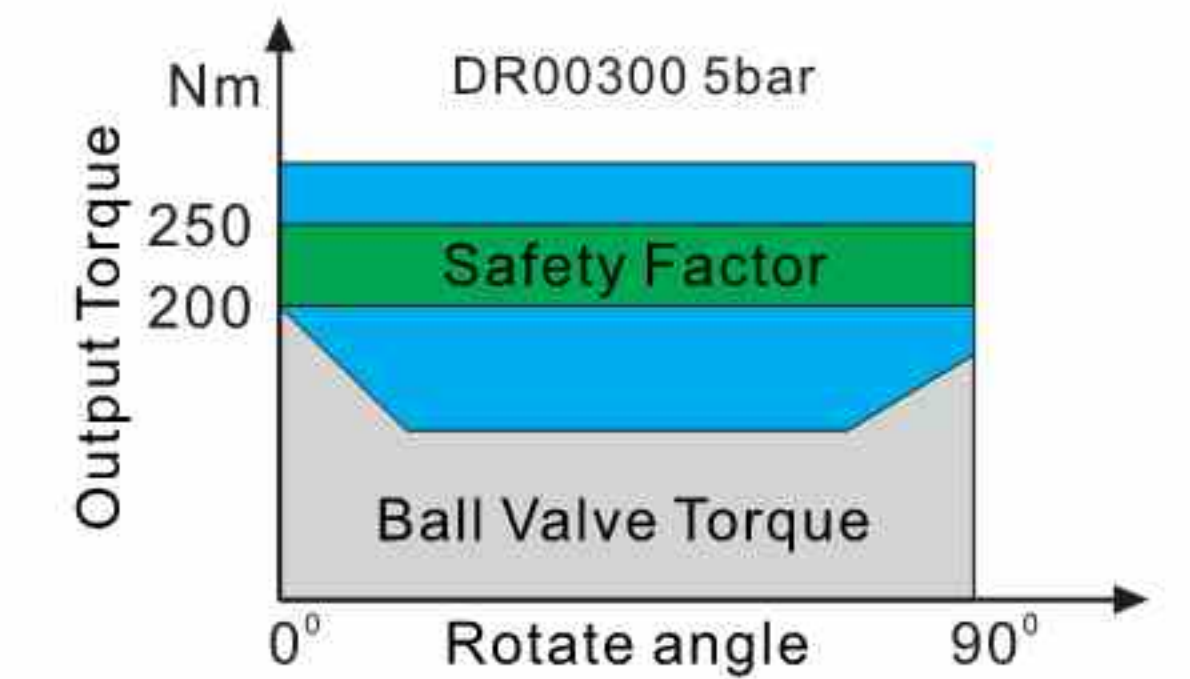


### Pattern Selection of the Actuator

An increment should be added to the identified valve torque for safe when select the pattern of the pneumatic actuator. For vapor or non-lubricant liquor medium, the increment should be up to 25% of the valve torque, 30% for non-lubricant pasting liquor medium, 40% for non-lubricant dry air medium, 60% for non-lubricant particle medium delivered be air and 20% for lubricating clean medium with low friction respectively.(the safe increment above is recommended in theory for reference)

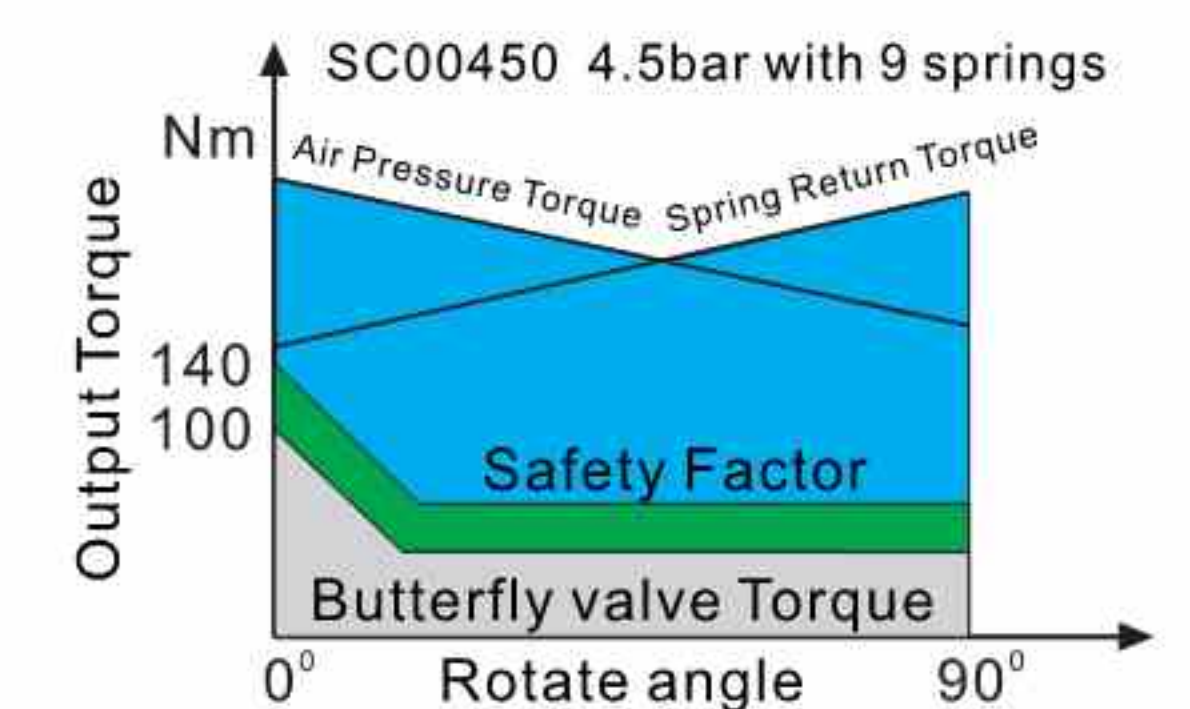
#### Sizing Example for Double-acting Actuator:

- \* Published ball valve torque =200 Nm
- \* Operating medium = non-lubricated steam
- \* Safety factor =200 Nm +25%=250 Nm
- \* Air supply pressure available =5 bar
- \* The double acting actuator that produces a minimum of 250 Nm at 5 bar is the DR00300 of 277 Nm according to the output torque table of the DR actuator.



#### Sizing of A Single-acting Actuator:

- \* Published butterfly valve torque =100Nm
- \* Operating medium = non-lubricated dry air
- \* Safety factor =100Nm +40%=140Nm
- \* Air supply pressure available =4.5 bar
- \* the spring return actuator selected is the SC00450 (9 springs) with a most similar ending torque of 148Nm at 4.5 bar according to the SC output torque table. (The relative balance of torques between air supply pressure and spring return should be noted)



(A) the acting time of the actuator be tested under following conditions:(1)normal temperature (2)90° stroke (3)caliber of the solenoid valve should be 4mm with the flow quantity of Qn400 L / min (4)inner diameter of the pipe should be 8mm (5) neutrally clean air (6)air source pressure at 5.5bar (7) actuator with no load  
PS: the acting time would change as one or more variables change in field test.  
(B) suppose every SC actuator weighs as 10 springs, the increase/decrease weight of the actuator could be calculated by calculating the increase/decrease number of springs.

### Relevant Data About The Actuator

TYPE	Max. Pressure	Rotate Angl	Operating Temperature	Stroke adjustment per 1° laps	Diameter Φ(mm)	Ayr Volume(l) Opening Closing	Moving time (sec)(A)		weight (kg)(B)	
							Opening	Closing	Single	Spring
DR/SC00015	Dry Or Lubricating Clean Compressed Air 8bar	90° ±4° or Full Stroke 0°-90°	ST (standard) NBR O-ring -20 to +80 HT (high Temperature) FPM O-ring -15 to +150 LT (low Temperature) Silicon O-ring -40 to +80	1/6	50	0.1 0.2	DR 0.2	DR 0.3	DR 1.1	----
SC 0.3							SC 0.3	SC 1.2	0.01	
DR/SC00030				1/6	63	0.2 0.3	DR 0.3	DR 0.3	DR 1.6	----
SC 0.3							SC 0.4	SC 1.8	0.02	
DR/SC00060				1/5	75	0.3 0.5	DR 0.3	DR 0.4	DR 2.8	----
SC 0.4							SC 0.5	SC 3.2	0.03	
DR/SC00100				1/5	88	0.5 0.8	DR 0.4	DR 0.5	DR 4.0	----
SC 0.5							SC 0.6	SC 4.7	0.06	
DR/SC00150				1/5	100	0.7 1.1	DR 0.5	DR 0.6	DR 5.9	----
SC 0.7							SC 0.9	SC 6.7	0.07	
DR/SC00220				1/5	115	1.2 1.8	DR 0.7	DR 0.8	DR 8.5	----
SC 0.9							SC 1.1	SC 10.0	0.13	
DR/SC00300				1/4	125	1.5 2.3	DR 0.9	DR 1.1	DR 10.7	----
SC 1.2							SC 1.4	SC 12.5	0.16	
DR/SC00450				1/4	145	2.4 3.8	DR 1.2	DR 1.4	DR 15.5	----
SC 1.5							SC 1.8	SC 18.3	0.25	
DR/SC00600	1/4	160	3.1 4.9	DR 1.5	DR 1.7	DR 19.5	----			
SC 1.8				SC 2.1	SC 23.3	0.36				
DR/SC00900	1/4	180	4.3 6.9	DR 2.0	DR 2.2	DR 26.7	----			
SC 2.4				SC 2.8	SC 32.8	0.50				
DR/SC01200	1/4	200	5.9 9.5	DR 2.7	DR 3.2	DR 35.6	----			
SC 3.5				SC 4.0	SC 43.6	0.62				
DR/SC02000	1/4	240	10.0 15.2	DR 3.5	DR 4.0	DR 58.2	----			
SC 4.1				SC 4.6	SC 71.0	1.12				
DR/SC03000	1/4	265	14.5 21.4	DR 4.0	DR 4.5	DR 78.8	----			
SC 4.5				SC 5.0	SC 96.5	1.56				
DR/SC05000	1/4	330	25.0 40.0	DR 6.0	DR 7.0	DR 130.	----			
SC 7.5				SC 8.5	SC 163.	2.95				





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### Output Torque of DR Double Acting Type(Nm)

TYPE	2.5bar	3.0bar	3.5bar	4.0bar	4.5bar	5.0bar	5.5bar	6.0bar	7.0bar	8.0bar
DR00006										
DR00015	8.3	10.0	11.6	13.3	15.0	16.6	18.3	19.9	23.3	26.6
DR00030	14.7	17.6	20.5	23.5	26.4	29.3	32.2	35.2	41.0	46.9
DR00060	29.1	34.9	40.7	46.5	52.3	58.2	64.0	69.8	81.4	93.0
DR00100	45.7	54.9	64.0	73.2	82.3	91.5	101	110	128	146
DR00150	66.5	79.7	93.0	106	120	133	146	160	186	213
DR00220	107	129	150	172	193	215	236	258	301	344
DR00300	138	166	194	221	249	277	304	332	387	443
DR00450	217	261	304	348	391	434	478	521	608	695
DR00600	283	340	397	453	510	567	623	680	793	907
DR00900	383	459	536	612	689	765	842	918	1071	1224
DR01200	531	638	744	850	956	1063	1169	1275	1488	1700
DR02000	935	1122	1309	1496	1683	1870	2057	2244	2618	2992
DR03000	1347	1617	1886	2156	2425	2695	2964	3234	3772	4311
DR05000	2350	2821	3291	3761	4231	4701	5171	5641	6581	7521
DR10000										

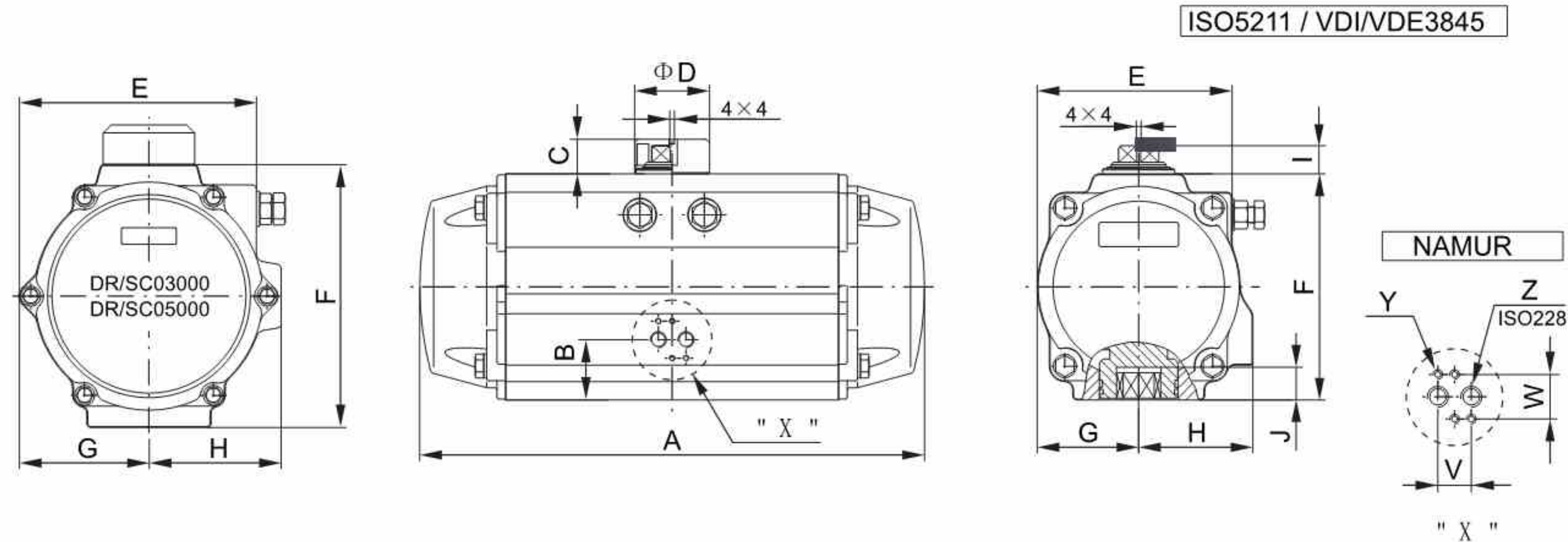
### Output Torque of SC Single Acting Type(Nm)

TYPE	Spring Quantity	Air Pressure Torque												Spring Torque											
		2.5bar		3.0bar		3.5bar		4.0bar		4.5bar		5.0bar		5.5bar		6.0bar		7.0bar		8.0bar		90°	0°		
		0° Start	90° End	0° Start	90° End	0° Start	90° End	0° Start	90° End	0° Start	90° End	0° Start	90° End	0° Start	90° End	0° Start	90° End	0° Start	90° End	0° Start	90° End	Start	End		
SC00015	05	4.9	3.4	6.6	5.1	8.2	6.8	9.9	8.4	11.6	10.1	13.2	11.7										4.9	3.4	
	06	4.2	2.5	5.9	4.1	7.6	5.8	9.2	7.4	10.9	9.1	12.5	10.8	14.2	12.4								5.8	4.1	
	07			5.2	3.2	6.9	4.8	8.5	6.5	10.2	8.1	11.9	9.8	13.5	11.5	15.2	13.1						6.8	4.7	
	08					6.2	3.8	7.9	5.5	9.5	7.2	11.2	8.8	12.8	10.5	14.5	12.1	17.8	15.5				7.8	5.4	
	09							7.2	4.5	8.9	6.2	10.5	7.8	12.2	9.5	13.8	11.2	17.2	14.5	20.5	17.8		8.8	6.1	
	10									8.2	5.2	9.8	6.9	11.5	8.5	13.2	10.2	16.5	13.5	19.8	16.8		9.7	6.8	
	11											8.9	6.2	10.5	7.8	12.2	9.5	13.8	11.2	17.2	14.5	20.5	17.8	8.8	6.1
	12											9.2	5.9	10.8	7.6	12.5	9.2	15.8	12.5	19.1	15.9	10.7	7.4		
	SC00030	05	9.1	6.2	12	9.1	15	12	17.9	15	20.8	17.9	23.7	20.8										8.5	5.5
		06	8	4.5	10.9	7.4	13.8	10.3	16.8	13.3	19.7	16.2	22.6	19.1	25.6	22.1								10.2	6.7
		07			9.8	5.7	12.7	8.7	15.7	11.6	18.6	14.5	21.5	17.4	24.5	20.4	27.4	23.3						11.8	7.8
		08					11.6	7	14.6	9.9	17.5	12.8	20.4	15.8	23.3	18.7	26.3	21.6	32.1	27.5				13.5	8.9
09								13.4	8.2	16.4	11.1	19.3	14.1	22.2	17	25.2	19.9	31	25.8	36.9	31.6		15.2	10	
10										15.3	9.4	18.2	12.4	21.1	15.3	24.1	18.2	29.9	24.1	35.8	29.9		16.9	11.1	
11												17.1	10.7	20	13.6	22.9	16.5	28.8	22.4	34.7	28.2	18.6	12.2		
12												18.9	11.9	21.8	14.8	27.7	20.7	33.5	26.6	20.3	13.3	20.3	13.3		
SC00060		05	18	11.7	23.8	17.6	29.6	23.4	35.4	29.2	41.2	35	47.1	40.8										17.3	11.1
		06	15.8	8.3	21.6	14.1	27.4	19.9	33.2	25.7	39	31.5	44.8	37.3	50.7	43.2								20.8	13.3
		07			19.4	10.6	25.2	16.4	31	22.3	36.8	28.1	42.6	33.9	48.4	39.7	54.3	45.5						24.2	15.5
		08					23	13	28.8	18.8	34.6	24.6	40.4	30.4	46.2	36.2	52	42	63.7	53.7				27.7	17.7
	09							26.6	15.3	32.4	21.1	38.2	27	44	32.8	49.8	38.6	61.5	50.2	73.1	61.8		31.1	19.9	
	10									30.2	17.7	36	23.5	41.8	29.3	47.6	35.1	59.2	46.7	70.9	58.4	34.6	22.1		
	11											33.8	20	39.6	25.8	45.4	31.7	57	43.3	68.7	54.9	38.1	24.3		
	12											37.4	22.4	43.2	28.2	54.8	39.8	66.4	51.4	41.5	26.5	41.5	26.5		
	SC00100	05	27.4	16.8	36.5	26	45.7	35.1	54.8	44.3	63.9	53.4	73.1	62.6										28.9	18.3
		06	23.7	11.1	32.8	20.2	42	29.3	51.1	38.5	60.3	47.6	69.4	56.8	78.6	65.9								34.7	22
		07			29.2	14.4	38.3	23.6	47.5	32.7	56.6	41.9	65.7	51	74.9	60.1	84	69.3						40.4	25.7
		08					34.6	17.8	43.8	26.9	52.9	36.1	62.1	45.2	71.2	54.4	80.4	63.5	98.6	81.8				46.2	29.4
09								40.1	21.2	49.3	30.3	58.4	39.5	67.5	48.6	76.7	57.7	95	76	113	94.3	52	33		
10										45.6	24.5	54.7	33.7	63.9	42.8	73	52	91.3	70.2	110	88.5	57.8	36.7		
11												51.1	27.9	60.2	37	69.3	46.2	87.6	64.5	106	82.8	63.5	40.4		
12												56.5	31.3	65.7	40.4	84	58.7	102	77	102	77	69.3	44		
SC00150		05	41.1	27	54.4	40.3	67.7	53.6	81	66.8	94.2	80.1	108	93.4										39.4	25.3
		06	36.1	19.1	49.3	32.4	62.6	45.7	75.9	58.9	89.2	72.2	103	85.5	116	98.8								47.3	30.4
		07			44.3	24.5	57.6	37.8	70.8	51.1	84.1	64.3	97.4	77.6	111	90.9	124	104						55.2	35.4
		08					52.5	29.9	65.8	43.2	79.1	56.5	92.3	69.7	106	83	119	96.3	146	123				63.1	40.5
	09							60.7	35.3	74	48.6	87.3	61.9	101	75.1	114	88.4	140	115	167	142	71	45.5		
	10									68.9	40.7	82.2	54	95.5	67.3	109	80.5	135	107	162	134	78.8	50.6		
	11											77.2	46.1	90.5	59.4	104	72.7	130	99	157	126	86.7	55.6		
	12											85.4	51.5	98.7	64.8	125	92	152	118	152	118	94.6	60.7		
	SC00220	05	63.3	41.8	87.8	63.3	109	84.7	131	106	152	128	174	149										65.6	41
		06	58.1	28.7	79.6	50.1	101	71.6	123	93.1	144	115	165	136	187	158								78.7	49.3
		07			71.3	37	92.8	58.5	114	80	136	101	157	123	179	144	200	166						91.8	57.5
		08					84.6	45.4	106	66.9	128	88.3	149	110	171	131	192	153	235	196				105	65.7
09								97.9	53.8	119	75.2	141	96.7	162	118	184	140	227	183	270	226	118	74		
10										111	62.1	133	83.6	154	105	176	127	219	170	261	212	131	82		
11												124	70.5	146	92	167	113	210	156	253	199	144	90.3		
12												138	78.8	159	100	202	143	245	186	157	118	157	98.5		

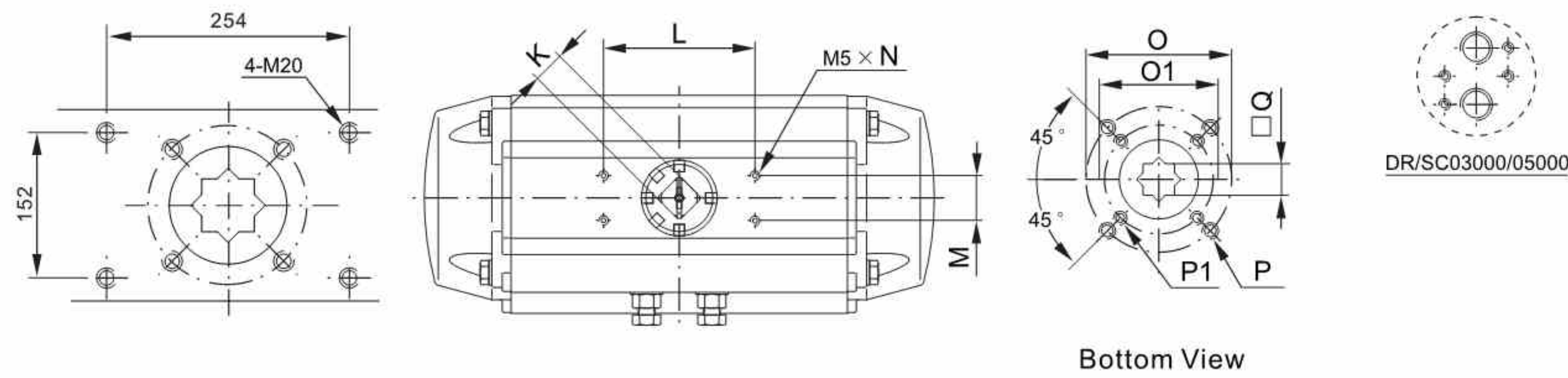
### Output Torque of SC Single Acting Type(Nm)

TYPE	Spring Quantity	Air Pressure Torque																Spring Torque							
		2.5bar		3.0bar		3.5bar		4.0bar		4.5bar		5.0bar		5.5bar		6.0bar		7.0bar		8.0bar		90°	0°		
		0° Start	90° End	0° Start	90° End	0° Start	90° End	0° Start	90° End	0° Start	90° End	0° Start	90° End	0° Start	90° End	0° Start	90° End	0° Start	90° End	0° Start	90° End	Start	End		
SC00300	05	85.9	55.9	114	84	141	111	169	139	197	167	224	194										82.5	52.5	
	06	75.4	39.4	103	67	131	95	158	122	186	150	214	178	241	205								98.9	62.9	
	07			92.6	50.6	120	78	148	106	176	134	203	161	231	189	259	217						115	73.4	
	08					110	62	137	89.4	165	117	193	145	221	173	248	200	304	256				132	83.9	
	09							127	72.9	155	101	182	128	210	156	238	184	293	239	348	294	148	94.4		
	10									144	84	172	112	200	140	227	167	283	223	338					

**Configuration and Connection Size(mm)**

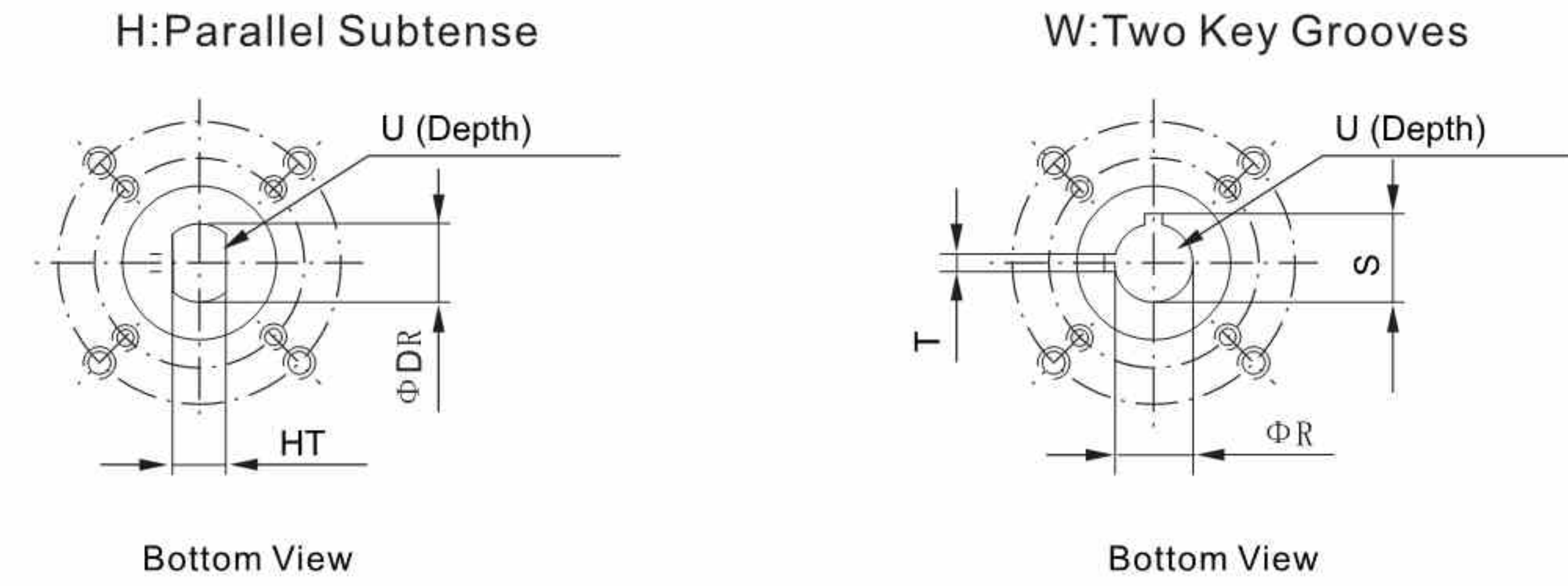


Connection Size of DR/SC05000



TYPE	00015	00030	00060	00100	00150	00220	00300	00450	00600	00900	01200	02000	03000	05000
DR/SC	DR/SC	DR/SC	DR/SC	DR/SC	DR/SC	DR/SC	DR/SC	DR/SC	DR/SC	DR/SC	DR/SC	DR/SC	DR/SC	DR/SC
ISOflange	F04	F05	F05-07	F05-07	F07-10	F07-10	F07-10	F10-12	F10-12	F12	F14	F16	F16	F16
A	140.5	158.5	210.5	247.5	268.5	315	345	408.5	437.5	487	543	633	728	876
B	26.5	30	30.5	32.5	37.5	42.5	45	47.5	52	58.5	62.5	78.5	165	187
C	20	20	20	20	20	30	30	30	30	50	50	50	50	50
ΦD	40	40	40	40	40	56	56	65	65	80	80	115	115	115
E	59	72	84.5	97.5	111	127	136	156.5	169	190.5	213	251	298.5	383
F	69	85	102	115	127	145	157	177	196	220.5	245	298.5	330	405
G	29	36	42.5	49.5	56	64	69.5	80	88	99	110	131	163.5	201
H	41.5	47	52	56.8	67	77	82	91.5	99	105	112	131	166	204.5
I	14.5	14.5	14.5	14.5	14.5	24.5	24.5	24.5	24.5	44.5	44.5	44.5	44.5	44.5
Jmim	12	16	16	19	19	24	24	29	29	38	38	38	48	57
K	11	11	17	17	17	27	27	27	27	36	36	36	36	36
L	80	80	80	80	80	80	80	80	80	130	130	130	130	130
M	30	30	30	30	30	30	30	30	30	30	30	30	30	30
N	4	8	8	8	8	8	8	8	8	8	8	8	8	8
ΦO1	42	50	50	50	70	70	70	102	102	125	140	165	165	165
ΦO	---	---	70	70	102	102	102	125	125	---	---	---	---	---
P1	4-M5	4-M6	4-M6	4-M6	4-M8	4-M8	4-M8	4-M10	4-M10	4-M12	4-M16	4-M20	4-M20	4-M20
P	---	---	4-M8	4-M8	4-M10	4-M10	4-M10	4-M12	4-M12	---	---	---	---	---
□Q	11	14	14	17	17	22	22	27	27	36	36	46	46	55
V	24	24	24	24	24	24	24	24	24	24	24	40	40	40
W	32	32	32	32	32	32	32	32	32	32	32	45	45	45
Y	M5x8	M5x8	M5x8	M5x8	M5x8	M5x8	M5x8	M5x8	M5x8	M5x8	M5x8	M6x10	M6x10	M6x10
Z	1/8"	1/8"	1/8"	1/8"	1/4"	1/4"	1/4"	1/4"	1/4"	1/4"	1/4"	3/8"	1/2"	1/2"

**Connection Size of Output Shaft(customized)**

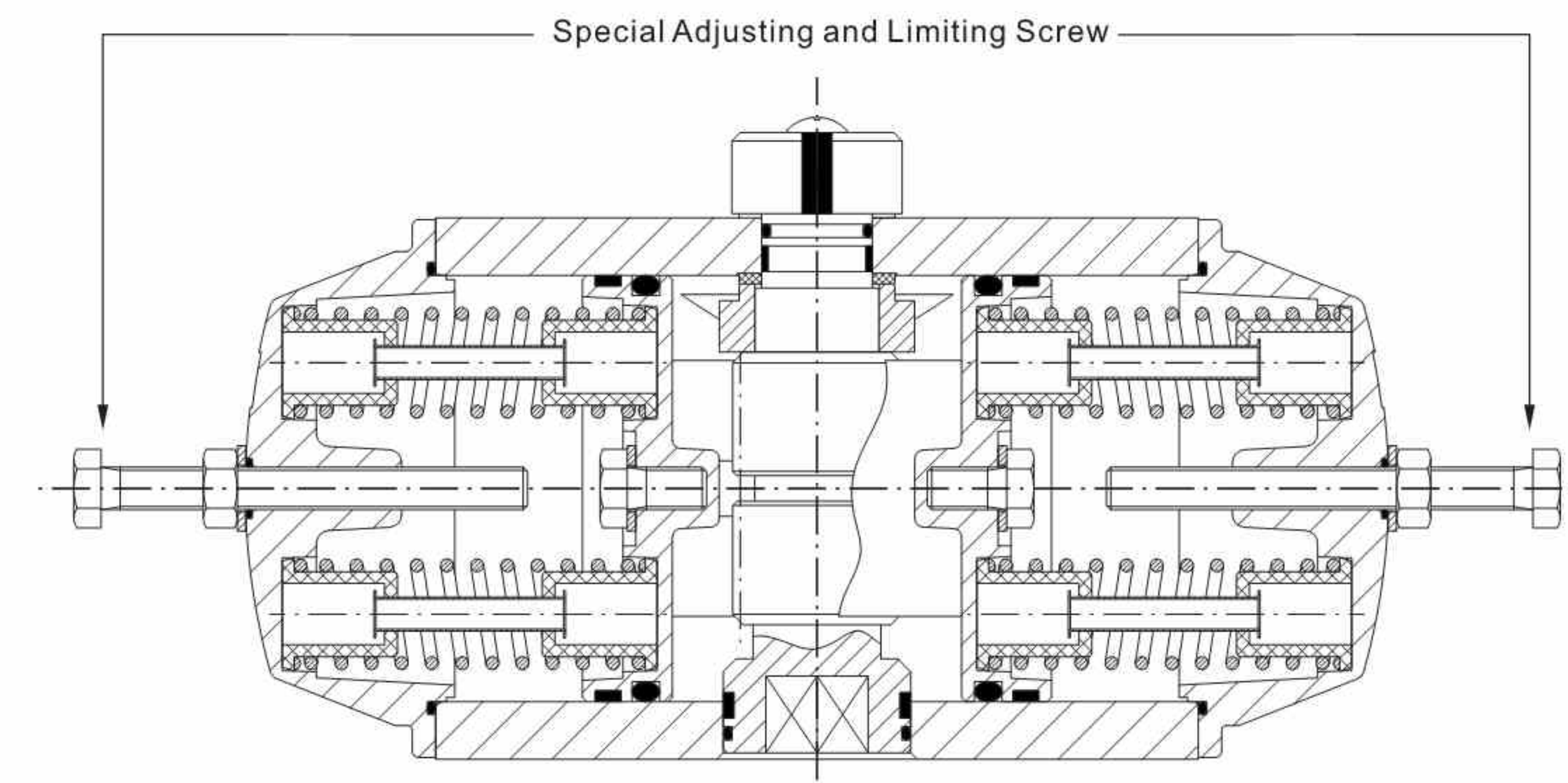


PS: Could be customized as require

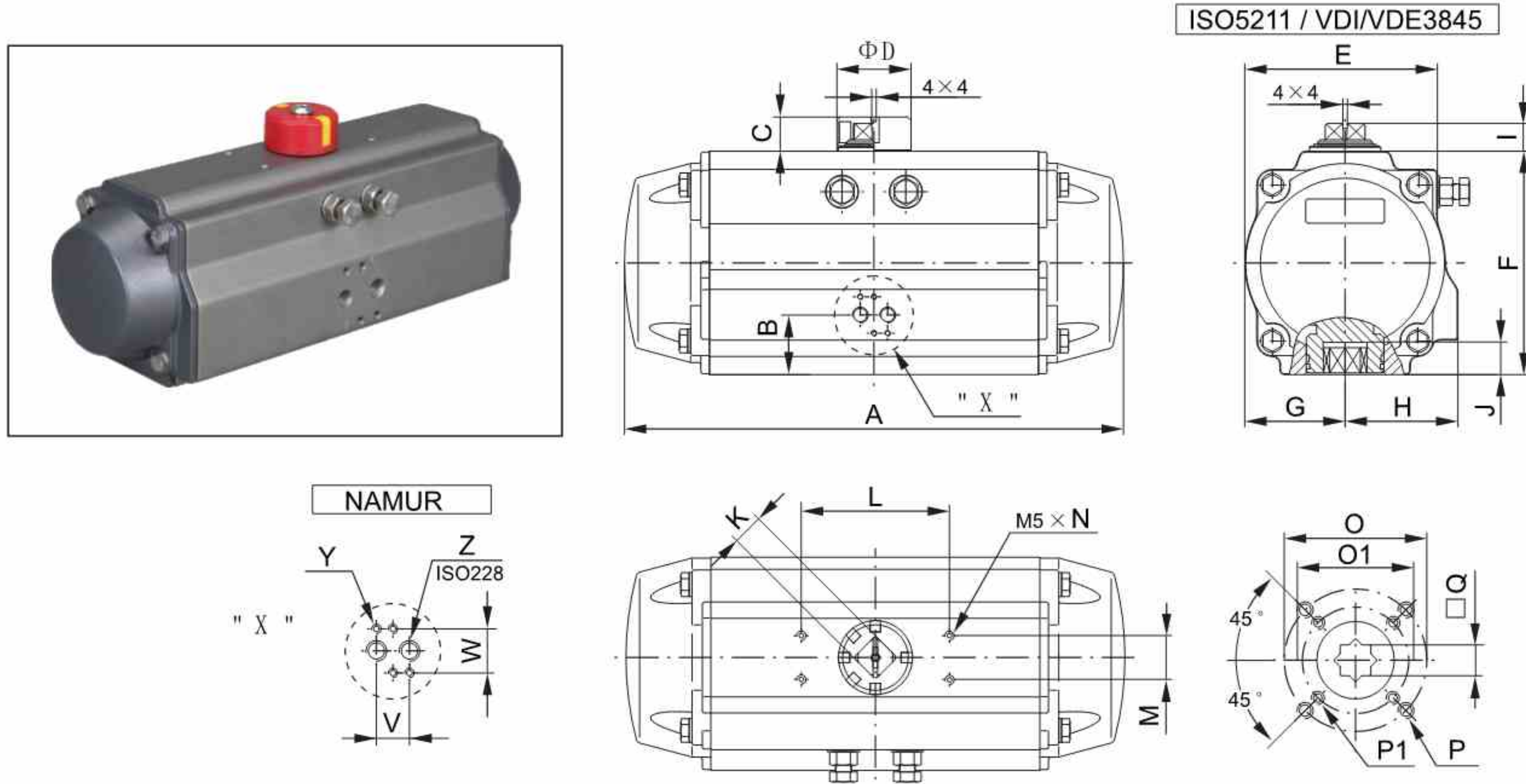
TYPE	00015	00030	00060	00100	00150	00220	00300	00450	00600	00900	01200	02000	03000	05000
DR/SC	DR/SC	DR/SC	DR/SC	DR/SC	DR/SC	DR/SC	DR/SC	DR/SC	DR/SC	DR/SC	DR/SC	DR/SC	DR/SC	DR/SC
ΦR	12.7	12.7	12.7	15.88	19.05	22.23	22.23	28.58	28.58	31.75	31.75	33.34	38.1	41.28
S	14.2	14.2	14.2	18.4	21.6	24.8	24.8	32.1	32.1	35.3	35.3	37.4	42.4	45.3
T	3	3	5	5	5	5	5	8	8	8	8	10	10	12
U	32	32	32	32	32	45	45	45	45	45	45	51	51	65
ΦDR	13	13	13	16.1	19.2	22.4	22.4	28.8	28.8	32	32	33.6	38.4	41.5
HT	10	10	10	12	14	17	17	22	22	24	24	27	27	32

**Full Stroke Modulating And Limiting Actuator**

Special adjusting banking screws are provided at the two ends of the new type pneumatic actuator. The actuator can be adjusted at the range between 0°~90°, 0°~120° or 0°~180°. Full stroke adjustment could be applied to all series of actuators.



### Configuration And Connection Size of 120°/180° Stroke Actuator( Double Acting)



1, Actuators of other types could be provided as customer requires  
2, Actuators with different stroke type could be provided, such as 140° or 160° stroke.

TYPE	00015	00030	00060	00100	00150	00220	00300	00450	00600	00900	01200	02000	03000	05000
	DR	DR	DR	DR	DR	DR	DR	DR	DR	DR	DR	DR	DR	DR
ISOflange	—	F05	F05-07	—	F07-10	—	F07-10	—	F10-12	—	F14	—	—	—
A(120°)	—	183	243	—	309	—	397	—	504	—	622	—	—	—
A(180°)	—	225	305	—	385	—	498	—	630	—	775	—	—	—
B	—	30	30.5	—	37.5	—	45	—	52	—	62.5	—	—	—
C	—	20	20	—	20	—	30	—	30	—	50	—	—	—
ΦD	—	40	40	—	40	—	56	—	65	—	80	—	—	—
E	—	72	84.5	—	111	—	136	—	169	—	213	—	—	—
F	—	85	102	—	127	—	157	—	196	—	245	—	—	—
G	—	36	42.5	—	56	—	69.5	—	88	—	110	—	—	—
H	—	47	52	—	67	—	82	—	99	—	112	—	—	—
I	—	14.5	14.5	—	14.5	—	24.5	—	24.5	—	44.5	—	—	—
Jmim	—	16	16	—	19	—	24	—	29	—	38	—	—	—
K	—	11	17	—	17	—	27	—	27	—	36	—	—	—
L	—	80	80	—	80	—	80	—	80	—	130	—	—	—
M	—	30	30	—	30	—	30	—	30	—	30	—	—	—
N	—	8	8	—	8	—	8	—	8	—	8	—	—	—
ΦO1	—	50	50	—	70	—	70	—	102	—	140	—	—	—
ΦO	—	---	70	—	102	—	102	—	125	—	---	—	—	—
P1	—	4-M6	4-M6	—	4-M8	—	4-M8	—	4-M10	—	4-M16	—	—	—
P	—	---	4-M8	—	4-M10	—	4-M10	—	4-M12	—	---	—	—	—
□Q	—	14	14	—	17	—	22	—	27	—	36	—	—	—
ΦR	—	—	—	—	—	—	—	—	—	—	—	—	—	—
S	—	—	—	—	—	—	—	—	—	—	—	—	—	—
T	—	—	—	—	—	—	—	—	—	—	—	—	—	—
U	—	—	—	—	—	—	—	—	—	—	—	—	—	—
V	—	24	24	—	24	—	24	—	24	—	24	—	—	—
W	—	32	32	—	32	—	32	—	32	—	32	—	—	—
Y	—	M5x8	M5x8	—	M5x8	—	M5x8	—	M5x8	—	M5x8	—	—	—
Z	—	1/8"	1/8"	—	1/4"	—	1/4"	—	1/4"	—	1/4"	—	—	—

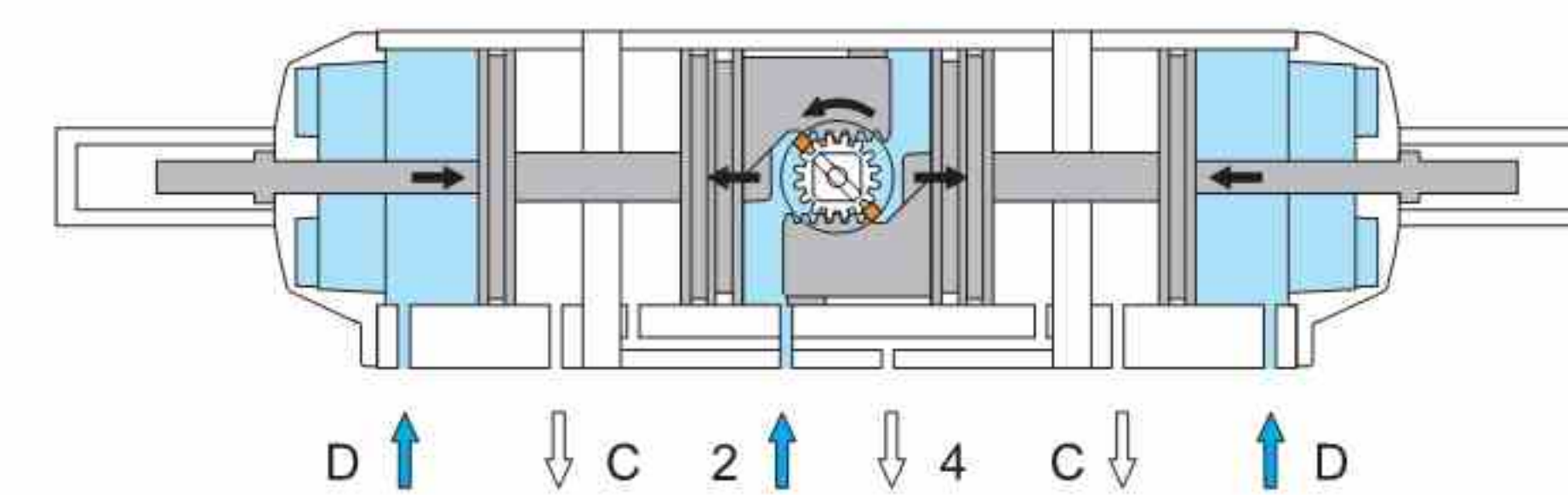
### 3-Position Pneumatic Actuator

Two types of 3-position pneumatic actuators can be provided, namely 0°-45°-90° type and 0°-90°-180° type respectively. After the air comes into the cylinder from the air entrance " 2 ", the pistons' movements toward the ends would be limited by the auxiliary pistons mechanism. Thus the pistons would stay in the middle position. The position of the mid position could be adjust to 20°,30°,50°,75° and 95°,120°,130°,150°,175° etc by using the adjusting screws at each end of the surface.



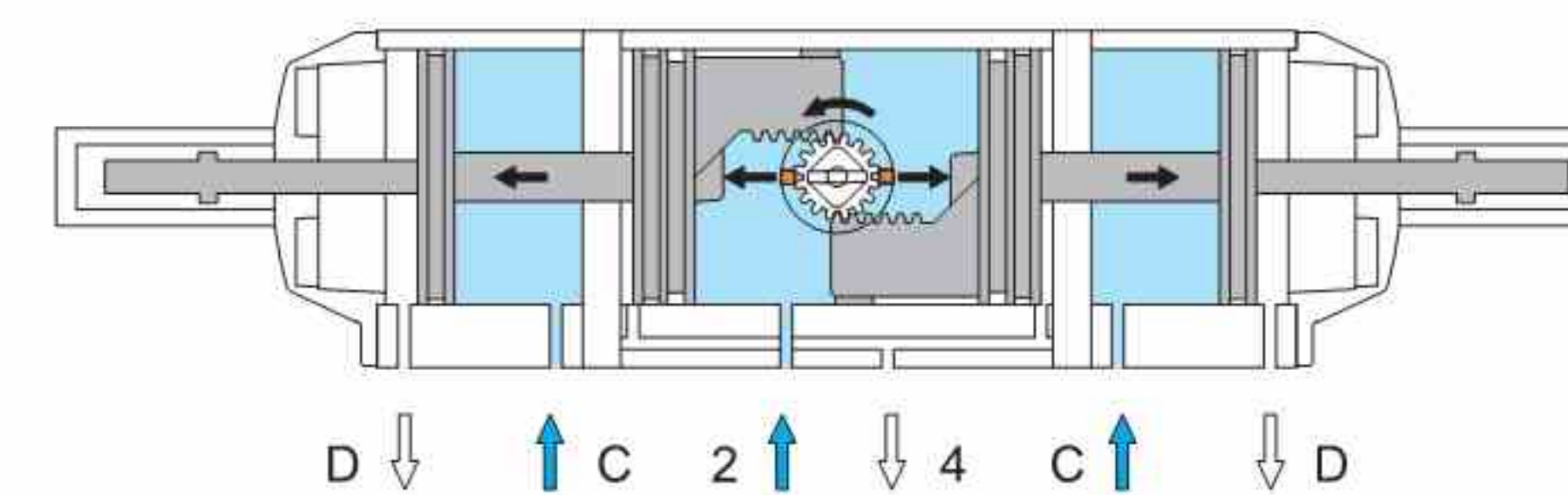
#### Operating Principles:

The control circuit with solenoid valve is designed to complete the operation of 3-position pneumatic actuator. The control principles are as followed.



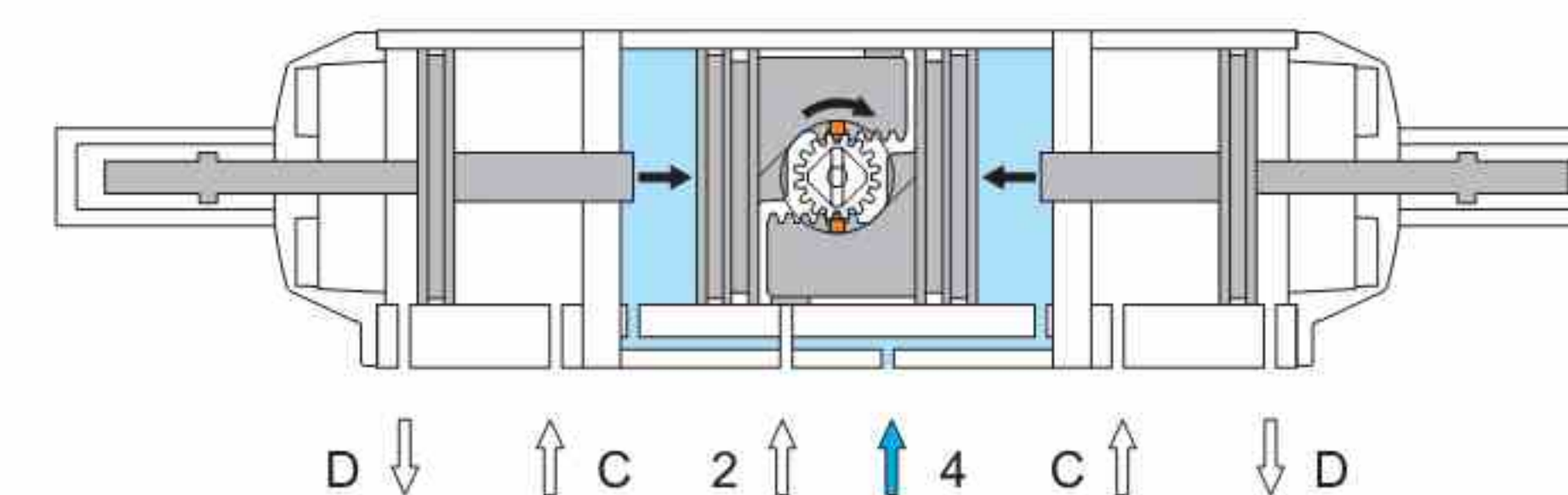
#### Position 1( mid position)

Air source pressure come into both entrance 2 and entrance D simultaneously and press out the air from entrance 4 and C. The inner pistons move along Entrance 2 while the inner pistons are limited in the mid position which is decided before by the auxiliary pistons mechanism through entrance D.



#### Position 2( complete open position)

Air source pressure come into both entrance 2 and entrance C simultaneously and press out the air from entrance 4 and D. The inner pistons in entrance 2 keeps moving while the lock of auxiliary pistons mechanism is released through entrance C and the inner pistons reach complete open position.



#### Position 3( complete close position)

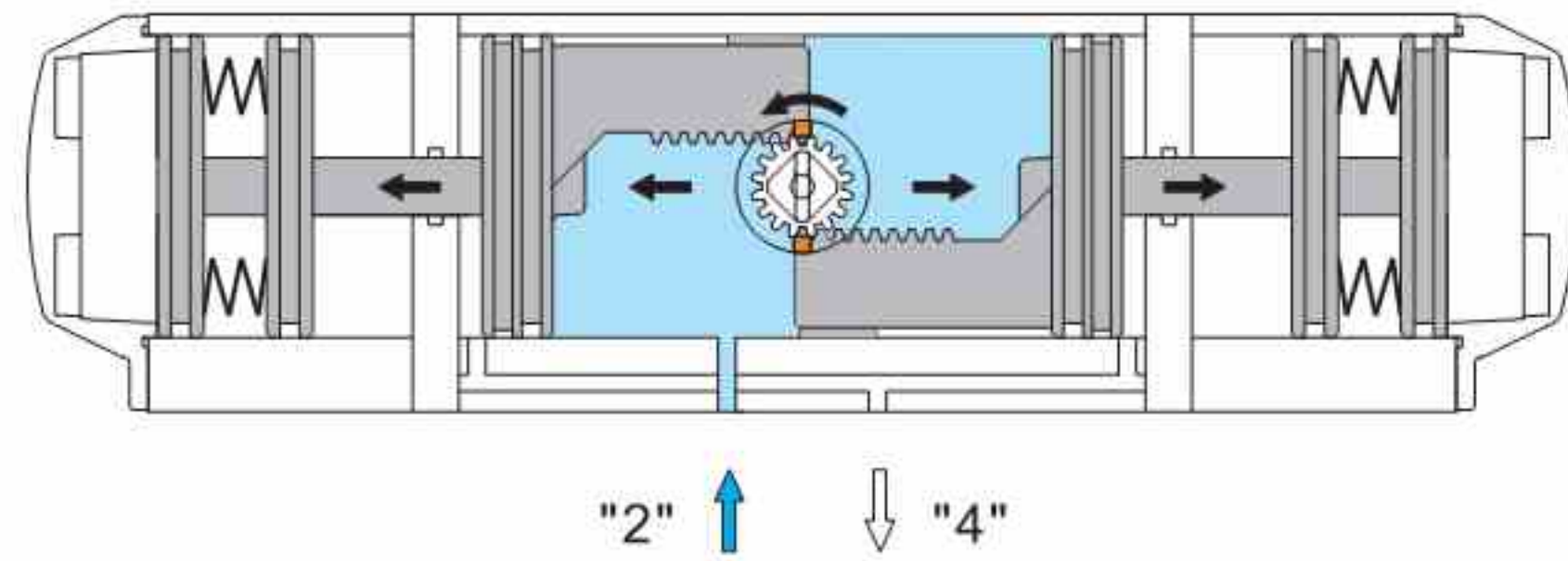
Air source pressure come into entrance 4 and press out the air from entrance 2. The inner pistons move toward midposition to reach complete close position. Springs with 3 different reset type, namely 0°-45°-90° are provided. When air supply or power supply are cut off (or when air source fails), the springs would force the inner pistons to move to the complete close position.

### 180° Stroke Single Acting Actuator (spring Reset)

Spring subassembly are provided at each end of 180° spring reset type pneumatic actuator which is suitable to act the back-and-forth movement among 0°-90°-180° and comes back to the position of 90° by spring resetting when air source pressure drops (or fails). The 180° full-open position and the 0° shut-up position can be made for precious external adjustment at ±4° via standard methods.

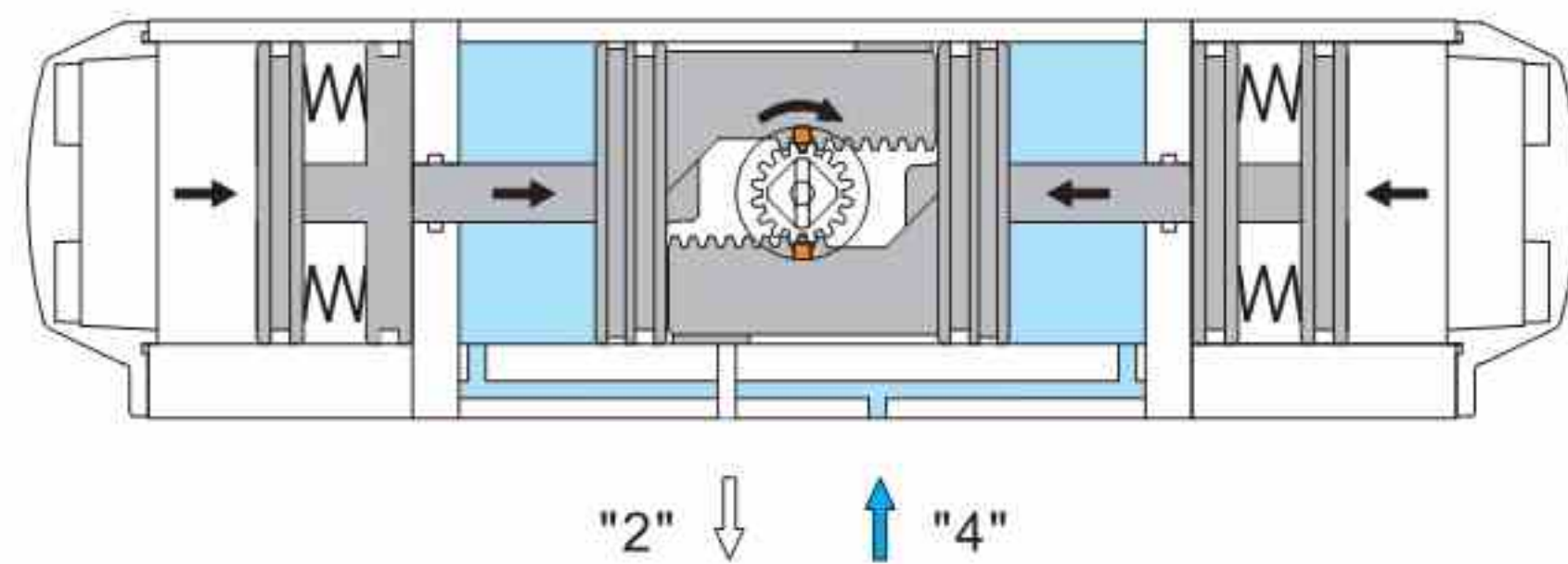


### Control Principle



**From 90° to 180°**

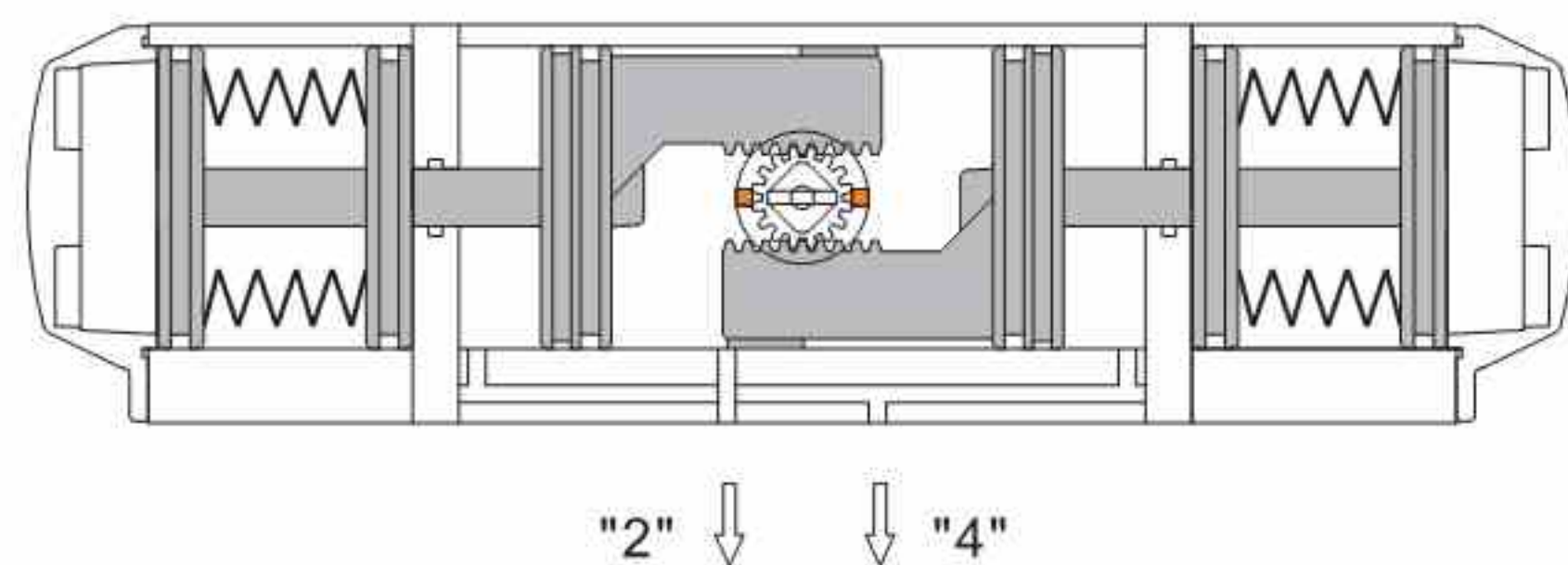
The air source pressure comes into the cylinder body between the two pistons from air entrance (2) and pushes the pistons toward the end of the cylinder body. The spring subassembly at each end is forced to shrink while the air between the pistons and the ends of the cylinder body is released from air entrance (4). Meanwhile the racks of pistons drive the output shaft (gear wheel) simultaneously to rotate anticlockwise to 180°.



**From 90° to 0°**

The air source pressure comes into the cylinder body between the two pistons from air entrance (4) and pushes the pistons toward each other. The spring subassembly at each end begins to reset while the air between the pistons is released from air entrance (2). Meanwhile the racks of pistons rotate the output shaft (gear wheel) clockwise simultaneously to 0°.

### Air fail Operation



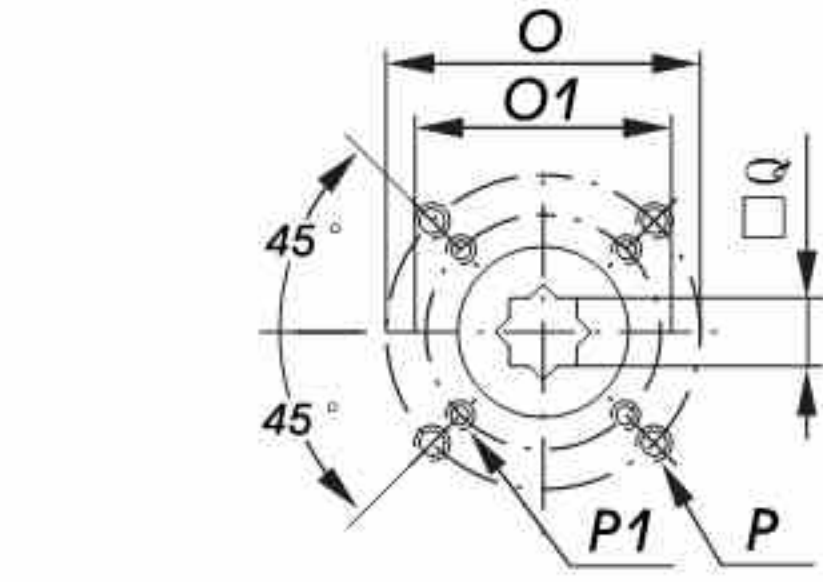
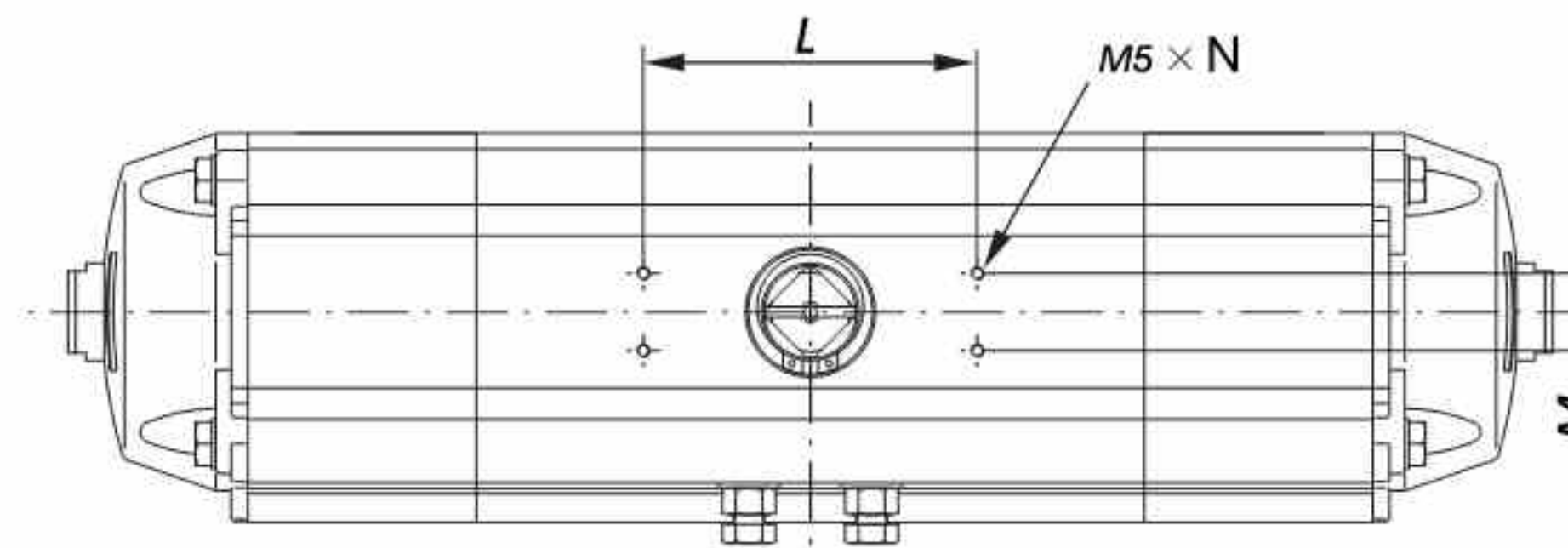
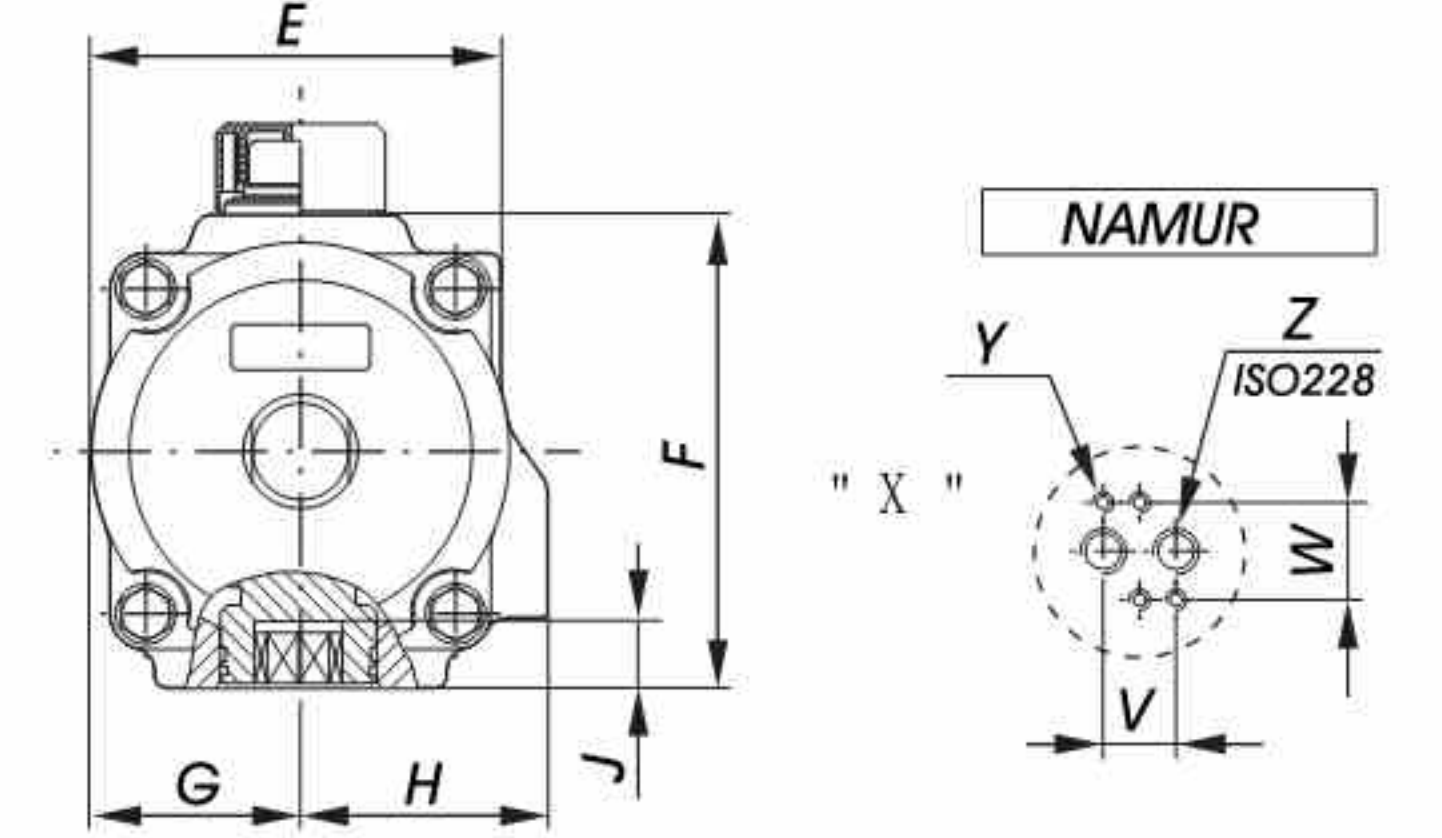
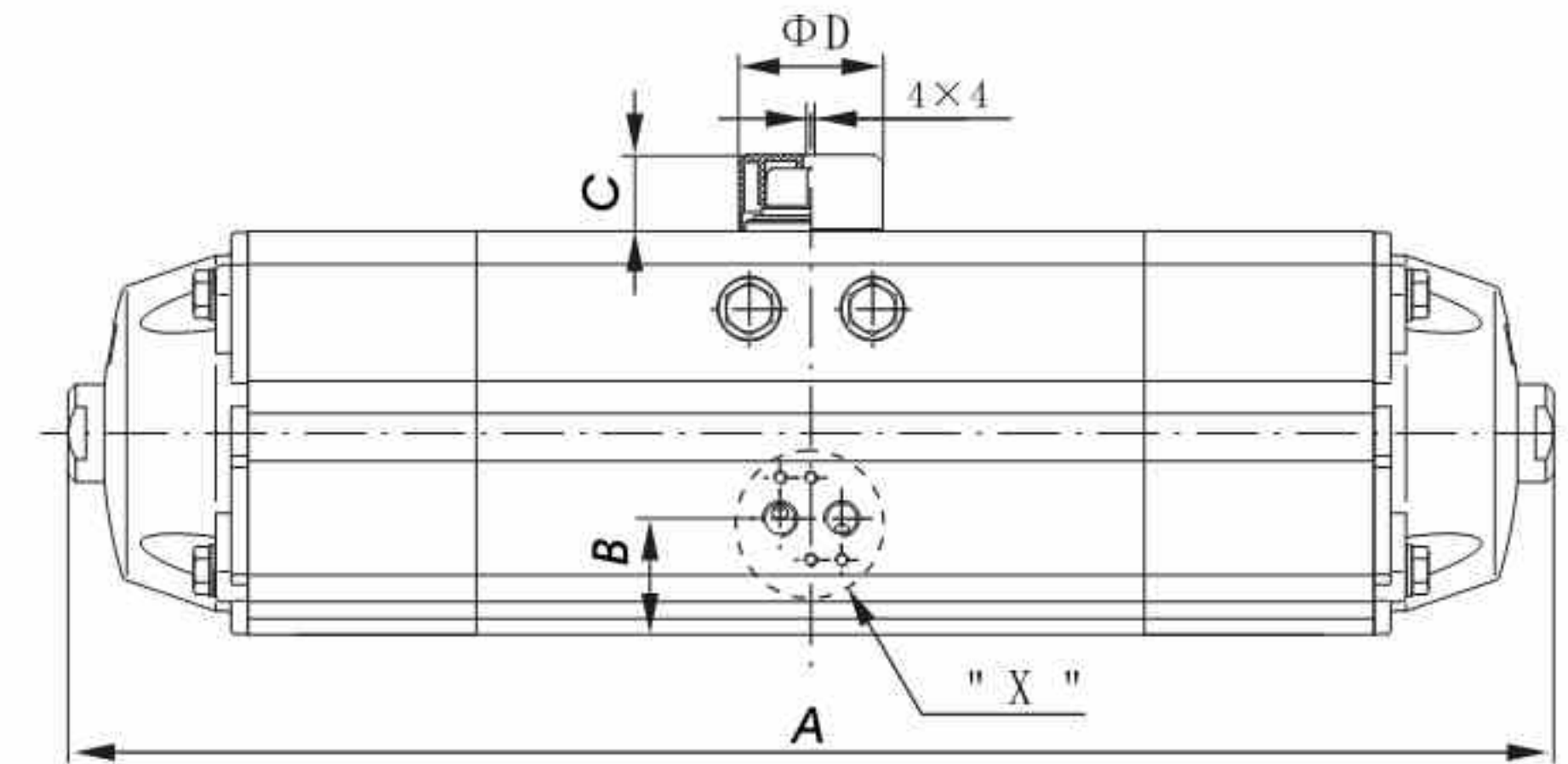
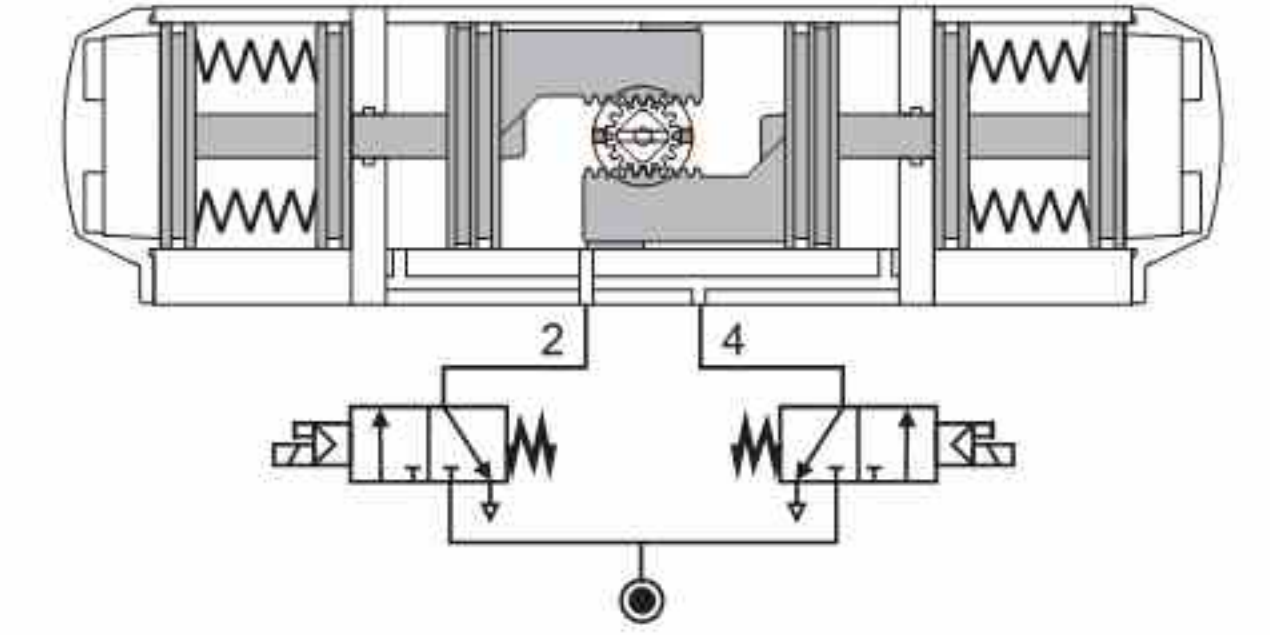
when the position is at 180°: when the air source pressure of entrance (2) is lost or the power supply of the solenoid valve is cut, the springs force the pistons to move toward the middle of the cylinder body which would rotate the output shaft clockwise to position of 90°

when the position is at 0°: when the air source pressure of entrance (4) is lost or the power supply of the solenoid valve is cut, the springs force the pistons to move toward the end of the cylinder body which would rotate the output shaft anticlockwise to position of 90°

### Control Principle

In order to control the operation of the actuators 180O with 90O fail safe position , a system of solenoid valves controlling a sequence of air supplies to the actuator is required as described besides.

The actuator may be controlled by two 3 /2 way solenoid valves or by one 5/3 way solenoid valve.



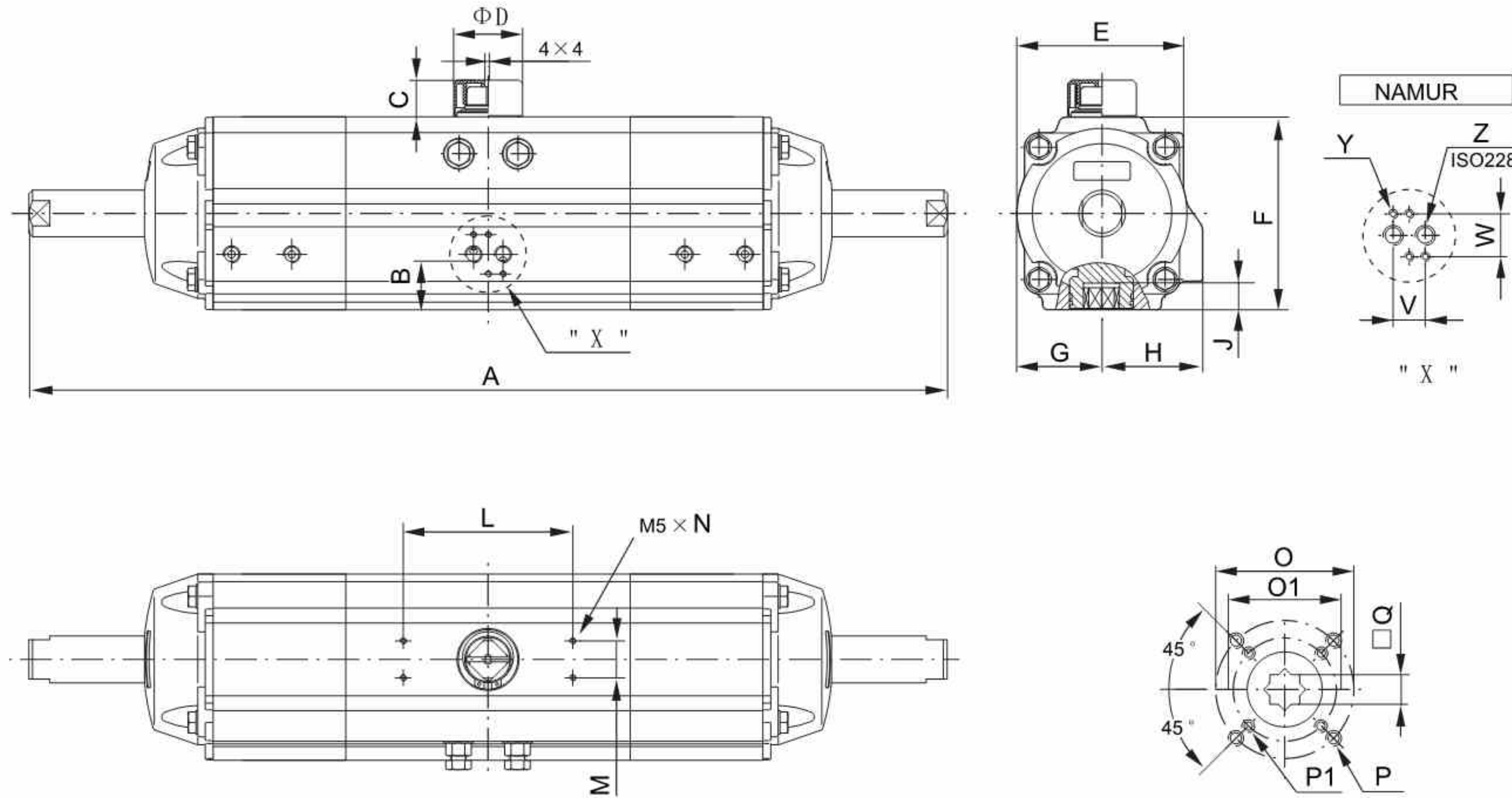
### Configuration And Connection Size(mm)

TYPE	A	B	C	ΦD	E	F	G	H	J	L	M	N	O1	O	P1	P	□Q	V	W	Y	Z
SC00150	630	37.5	20	40	111	127	56	67	19	80	30	8	70	102	4-M8	4-M10	17	24	32	M5×8	1/4"
SC00300	812	45	30	56	136	157	69.5	82	24	80	30	8	70	102	4-M8	4-M10	22	24	32	M5×8	1/4"
SC00600	1007	52	30	65	169	196	88	99	29	80	30	8	102	125	4-M10	4-M12	27	24	32	M5×8	1/4"
SC01200	1242	62.5	50	80	213	245	110	112	38	130	30	8	140	—	4-M16	—	36	24	32	M5×8	1/4"

### Output Torque

TYPE	Spring Quantity	Air Pressure Torque										Spring Torque													
		2.5bar		3.0bar		3.5bar		4.0bar		4.5bar		5.0bar		5.5bar		6.0bar		7.0bar		8.0bar		0° and 90°			
		90° and 180°	0° and 180°	90° and 180°	0° and 180°	90° and 180°	0° and 180°	90° and 180°	0° and 180°	90° and 180°	0° and 180°	90° and 180°	0° and 180°	90° and 180°	0° and 180°	90° and 180°	0° and 180°	90° and 180°	0° and 180°	90° and 180°	0° and 180°	90° and 180°			
SC00150	06	36.1	19.1	49.3	32.4	62.6	45.7	75.9	58.9	89.2	72.2	103	85.5	116	98.8									47.3	30.4
	08					52.5	29.9	65.8	43.2	79.1	56.5	92.3	69.7	106	83	119	96.3	146	123					63.1	40.5
	10									68.9	40.7	82.2	54	95.5	67.3	109	80.5	135	107	162	134			78.8	50.6
	12													85.4	51.5	98.7	64.8	125	92	152	118			94.6	60.7
SC00300	06	75.4	39.4	103	67	131	95	158	122	186	150	214	178	241	205									98.9	62.9
	08					110	62	137	89.4	166	117	193	145	221	173	248	200	304	256					132	83.9
	10									144	84	172	112	200	140	227	167	283	223	338	278			165	105
	12													179	107	206	134	262	190	317	245			198	126
SC00600	06					262	197	319	254	376	311	432	367	489	424									199	135
	08	149	84	206	141	217	131	274	188	331	244	387	301	444	358	510	414	614	528					266	179
	10									286	178	343	235	399	291	456	348	569	461	683	575			332	224
	12													354	225	411	281	524	395	638	508			399	269
SC01200	06					489	366	595	472	702	578	808	685	914	791									378	255
	08	277	153	383	260	404	240	510	346	617	452	723	559	829	665	935	771	1148	984					504	340
	10																							630	425
	12									532	326	638	433	744	539	850	645	1063	858	1275	1070			630	425
												659	413	766	519	978	732	1191	944	756	510				

Configuration And Connection Size of 3-Position Actuator (0°-45°-90°/0°-90°-180°)



Configuration And Connection Size(mm)

TYPE	A		B	C	ΦD	E	F	G	H	J	L	M	N	O1	O	P1	P	Q	V	W	Y	Z
	0°-45°-90°/0°-90°-180°																					
	Start	End																				
DRSC00030	390	440	30	20	40	72	85	36	47	16	80	30	8	50	—	4-M6	—	14	24	32	M5×8	1/8"
DRSC00060	480	570	30.5	20	40	84.5	102	42.5	52	16	80	30	8	50	70	4-M6	4-M8	14	24	32	M5×8	1/8"
DRSC00150	600	710	37.5	20	40	111	127	56	67	19	80	30	8	70	102	4-M8	4-M10	17	24	32	M5×8	1/4"
DRSC00300	720	910	45	30	56	136	157	69.5	82	24	80	30	8	70	102	4-M8	4-M10	22	24	32	M5×8	1/4"
DRSC00600	915	1130	52	30	65	169	196	88	99	29	80	30	8	102	125	4-M10	4-M12	27	24	32	M5×8	1/4"
DRSC01200	1155	1400	62.5	50	80	213	245	110	112	38	130	30	8	140	—	4-M16	—	36	24	32	M5×8	1/4"

Output Torque of DR Double Acting Type(Nm)

TYPE	2.5bar	3.0bar	3.5bar	4.0bar	4.5bar	5.0bar	5.5bar	6.0bar	7.0bar	8.0bar
DR00030	14.7	17.6	20.5	23.5	26.4	29.3	32.2	35.2	41.0	46.9
DR00060	29.1	34.9	40.7	46.5	52.3	58.2	64.0	69.8	81.4	93.0
DR00150	66.5	79.7	93.0	106	120	133	146	160	186	213
DR00300	138	166	194	221	249	277	304	332	387	443
DR00600	283	340	397	453	510	567	623	680	793	907
DR01200	531	638	744	850	956	1063	1169	1275	1488	1700

SC 0°-45°-90° Single Acting Output Torque (spring Resets) (Nm)

TYPE	Spring Quantity	Air Pressure Torque																Spring Torque							
		2.5bar		3.0bar		3.5bar		4.0bar		4.5bar		5.0bar		5.5bar		6.0bar		7.0bar		8.0bar		90°	0°		
		Start	End	Start	End	Start	End	Start	End	Start	End	Start	End	Start	End	Start	End	Start	End	Start	End	Start	End		
SC00030	05	9.1	6.2	12	9.1	15	12	17.9	15	20.8	17.9	23.7	20.8										8.5	5.5	
	06	8	4.5	10.9	7.4	13.8	10.3	16.8	13.3	19.7	16.2	22.6	19.1	25.6	22.1								10.2	6.7	
	07			9.8	5.7	12.7	8.7	15.7	11.6	18.6	14.5	21.5	17.4	24.5	20.4	27.4	23.3						11.8	7.8	
	08					11.6	7	14.6	9.9	17.5	12.8	20.4	15.8	23.3	18.7	26.3	21.6	32.1	27.5				13.5	8.9	
	09							13.4	8.2	16.4	11.1	19.3	14.1	22.2	17	25.2	19.9	31	25.8	36.9	31.6		15.2	10	
	10									15.3	9.4	18.2	12.4	21.1	15.3	24.1	18.2	29.9	24.1	35.8	29.9		16.9	11.1	
	11											17.1	10.7	20	13.6	22.9	16.5	28.8	22.4	34.7	28.2		18.6	12.2	
	12													18.9	11.9	21.8	14.8	27.7	20.7	33.5	26.6		20.3	13.3	
	SC00060	05	18	11.7	23.8	17.6	29.6	23.4	35.4	29.2	41.2	35	47.1	40.8										17.3	11.1
		06	15.8	8.3	21.6	14.1	27.4	19.9	33.2	25.7	39	31.5	44.8	37.3	50.7	43.2								20.8	13.3
		07			19.4	10.6	25.2	16.4	31	22.3	36.8	28.1	42.6	33.9	48.4	39.7	54.3	45.5						24.2	15.5
		08					23	13	28.8	18.8	34.6	24.6	40.4	30.4	46.2	36.2	52	42	63.7	53.7				27.7	17.7
09								26.6	15.3	32.4	21.1	38.2	27	44	32.8	49.8	38.6	61.5	50.2	73.1	61.8		31.1	19.9	
10										30.2	17.7	36	23.5	41.8	29.3	47.6	35.1	59.2	46.7	70.9	58.4		34.6	22.1	
11												33.8	20	39.6	25.8	45.4	31.7	57	43.3	68.7	54.9		38.1	24.3	
12														37.4	22.4	43.2	28.2	54.8	39.8	66.4	51.4		41.5	26.5	
SC00150		05	41.1	27	54.4	40.3	67.7	53.6	81	66.8	94.2	80.1	108	93.4										39.4	25.3
		06	36.1	19.1	49.3	32.4	62.6	45.7	75.9	58.9	89.2	72.2	103	85.5	116	98.8								47.3	30.4
		07			44.3	24.5	57.6	37.8	70.8	51.1	84.1	64.3	97.4	77.6	111	90.9	124	104						55.2	35.4
		08					52.5	29.9	65.8	43.2	79.1	56.5	92.3	69.7	106	83	119	96.3	146	123				63.1	40.5
	09							60.7	35.3	74	48.6	87.3	61.9	101	75.1	114	88.4	140	115	167	142		71	45.5	
	10									68.9	40.7	82.2	54	95.5	67.3	109	80.5	135	107	162	134		78.8	50.6	
	11											77.2	46.1	90.5	59.4	104	72.7	130	99	157	126		86.7	55.6	
	12													85.4	51.5	98.7	64.8	125	92	152	118		94.6	60.7	
	SC00300	05	85.9	55.9	114	84	141	111	169	139	197	167	224	194										82.5	52.5
		06	75.4	39.4	103	67	131	95	158	122	186	150	214	178	241	205								98.9	62.9
		07			92.6	50.6	120	78	148	106	176	134	203	161	231	189	259	217						115	73.4
		08					110	62	137	89.4	165	117	193	145	221	173	248	200	304	256					132
09								127	72.9	155	101	182	128	210	156	238	184	293	239	348	294		148	94.4	
10										144	84	172	112	200	140	227	167	283	223	338	278		165	105	
11												161	95.3	189	123	217	151	272	206	327	261		181	115	
12														179	107	206	134	262	190	317	245		198	126	
SC00600		05	171	117	228	174	285	231	341	287	398	344	455	401										166	112
		06	149	84	206	141	262	197	319	254	376	311	432	367	489	424								199	135
		07			183	108	240	164	296	221	353	278	410	334	466	391	523	448						233	157
		08					217	131	274	188	331	244	387	301	444	358	501	414	614	528				266	179
	09							252	154	308	211	365	268	422	324	478	381	592	494	705	608		299	202	
	10									286	178	343	235	399	291	456	348	569	461	683	575		332	224	
	11											320	201	377	258	433	315	547	428	660	541		365	247	
	12													354	225	411	281	524	395	638	508		399	269	
	SC01200	05	319	216	425	323	532	429	638	535	744	641	850	748										315	212
		06	277	153	383	260	489	366	595	472	702	578	808	685	914	791								378	255
		07			340	197	447	303	553	409	659	515	765	622	872	728	978	834						441	297
		08					404	240	510	346	617	452	723	559	829	665	935	771	1148	984				504	340
09								468	283	574	389	680	496	787	602	893	708	1105	921	1318	1133		567	382	
10										532	326	638	433	744	539	850	645	1063	858	1275	1070		630	425	
11																									



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ELECTRIC VALVES



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# APL-2N Limit Switch Box

## SUMMARY

APL-210N position limit switch is a signal device for the remote control of valve, show the working condition of valve by the switch, it contains mechanical switch and proximity switch, and widely applies to petroleum, chemical industry, pharmacy, food, electricity, coal gas, pro-environment, metallurgy and paper making etc.

## PERFORMANCE FEATURES

- The switch is installed separately, convenient maintenance and replacement
- Firm and compact design,  
Die-casting aluminum
- Quick cam machine,  
Fix springs on the cam without tools
- Convenient installation,  
NAMUR standard stainless steel and frame  
Reasonable design for frame connecting hole, convenient installation

## TECHNICAL PARAMETER

Parameter	Standard	Option		Material
Protection	IP67/NEMA4&4X	IP68	Shell	Die-casting aluminum
Ambient	-20℃ ~80℃			
Wiring	2×NPT1/2	PF1/2" ,P1/2" M20,PG13.5	Indicate cover	Polyester coating
Terminal	8 Points(0.08~2.6mm <sup>2</sup> )		Indicator	ABC/polyester coating
Position indicator	Close: red Open: yellow	Close: red Open: green	cam	Polyester coating
Switch	Mechanical switch: ×2 Proximity switch: ×2		Spring	Stainless steel
External painting	Polyester coating	Red, green, blue, yellow, Nylon painting	Screw	Stainless steel
Axis	Standard axis(17mm)	Lengthen axis	Oring	NBR
			Washer	Bronze
			E ring	Stainless steel
			Earth line	Stainless steel
			Frame	Stainless steel

# APL-2N Series Limit Switch Box

### Lead Joint



The inlet of thread is long and thick, firm connection

### Anti-off Bolt

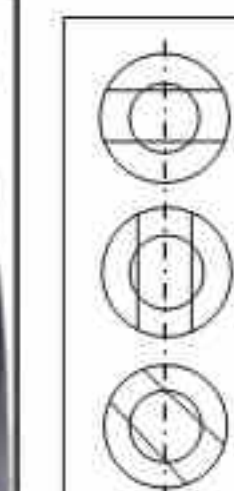


Special design, the bolt will be not off if maintains or installs

### Position Indicator



Adjust the direction as required, there is O ring between indicator and upper cover, well protective performance



90° Closed or Open for rotary application

90° Open or Closed for rotary application

45° Open or Closed for linear application

# APL-2N Limit Switch Box

## Mechanical switch (2SPDT) APL-210N

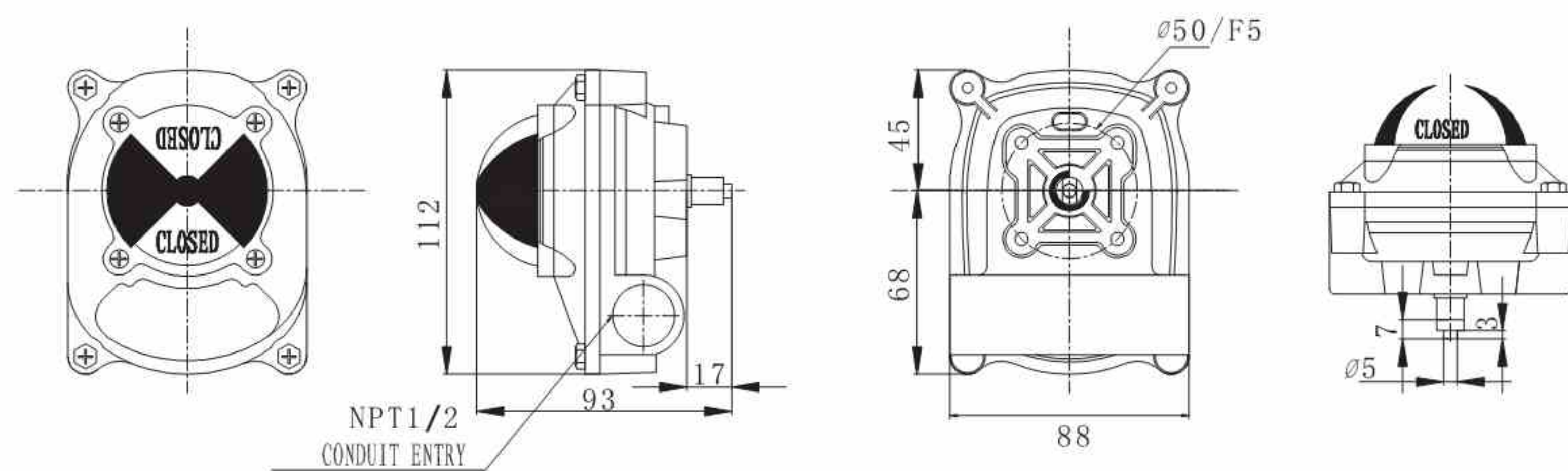
IP67, IP68 is optional  
Standard switch: SS5GL(Omron)  
2SPDT standard (option: SPST-NC, SPST-NO)  
Contactor: 250V AC/3A, 125V DC/5A  
250V AC/0.2A, 125V DC/0.4A, 30 DC/4A  
SS10GL (Omron)  
2SPDT switch: (option: SPST-NC, SPST-NO)  
Contactor: 250V AC/10.1A, 125V DC/10.1A  
250V AC/0.2A, 125V DC/0.4A, 30 DC/4A  
Certificate: UL, CSA, SEMKO, SEV EN61058-1

## Proximity switch APL-220NJ

Standard switch: NPN normally open  
Proximity switch: NAMUR  
Voltage: 6-36V DC  
Distance: 2mm  
Option: EMC to EN60947-5-2  
NBB2-V3-E2/E3(PNP): 10-30V DC distance: 2mm  
NBB2-V3-E0(NPN): 10-30V DC distance: 2mm  
NBB2-V3-Z4/Z5: 5-60V DC distance: 3mm



## INSTALLATION DIMENSION



## BRACKET



Model	Material	Dimension
MBP-200	Stainless steel	30×80 h30
MBP-300	Stainless steel	30×130 h30
MBP-400	Stainless steel	30×130 h50
MBP-500	WCB	30×80 height adjustable
MBP-600	WCB	30×130 height adjustable



# ASK Series Limit Switch Box



# ASK Limit Switch Box

## SUMMARY

ASK Series Limit Switch Box, transmit the actuator and valve position signal to the remote operation station on site. Mounted on the actuator directly, and the mounting bracket comply to NAMUR NORM standard.

Hard aluminum alloy shell material, and the compact design of the limit switch box ensure to normal operation under extremely hard condition.

## TECHNICAL PARAMETER

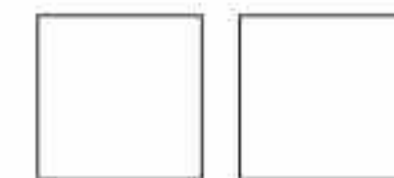
Item	Standard	Optional
Shell	Exd II CT6 Enclosure IP67 O ring sealing	IP 68
External coating	Epoxy polyester	Nylon coating
Ambient temperature	-20°C~80°C	-40°C~80°C
Electric connection	2×PT3/4"	PF3/4" M25*1.5
Wiring Terminal	8 terminals	
Position indicator	Hemisphere 0°~90°	3 way L-type, T-type
Bracket	Standard ASK-01,ASK-02	
Switch sensor	2-SPDT mechanical switch	DPDT switch Proximity sensor (P&F, AUTONICS) Magnetic sensor Valve position transmitter

## DEFINITION OF THE MODEL

**ASK**



- 2.Basic type(IP65)
- 3.Water-proof(IP68)
- 4.Explosion-proof(BT5)
- 5.Explosion-proof(CT6)



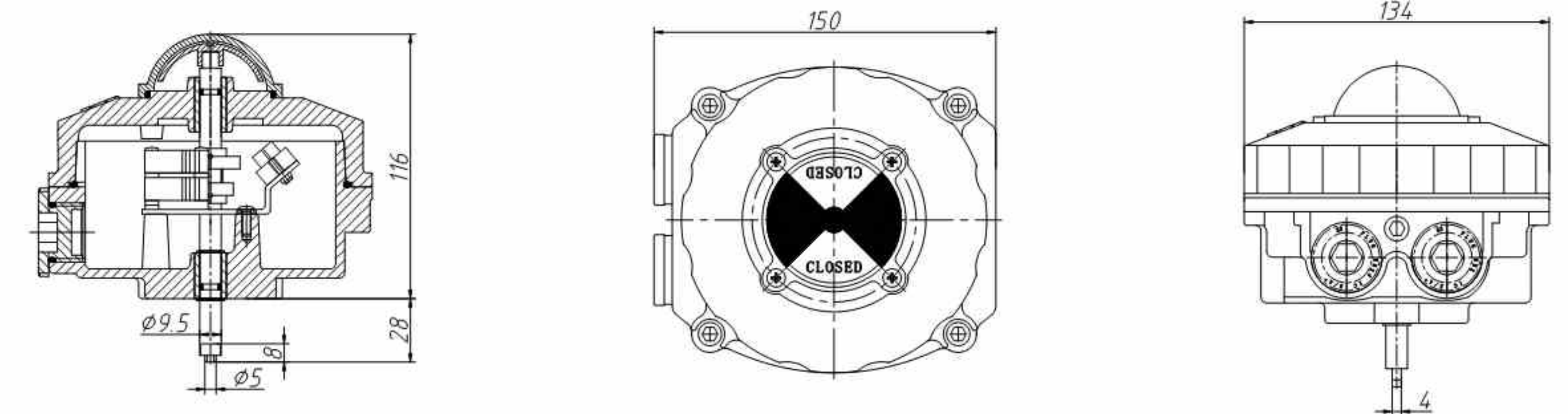
- 10. 2-SPDT
- 11. 4-SPDT
- 12. 2-SPDT+potentiometer
- 13. 2-SPST
- 14. 2-SPDT(low temperature)
- 20. Reed switch
- 30. Proximity Switch
- 31.NPN
- 32.PNP



Basic indicator

# ASK Limit Switch Box

## INSTALLATION DIMENSION



## FEATURES

### Cam setting

The cam can be easily and accurately set without tools. Yellow cam is for open ,red cam is for close .

### Wiring terminal

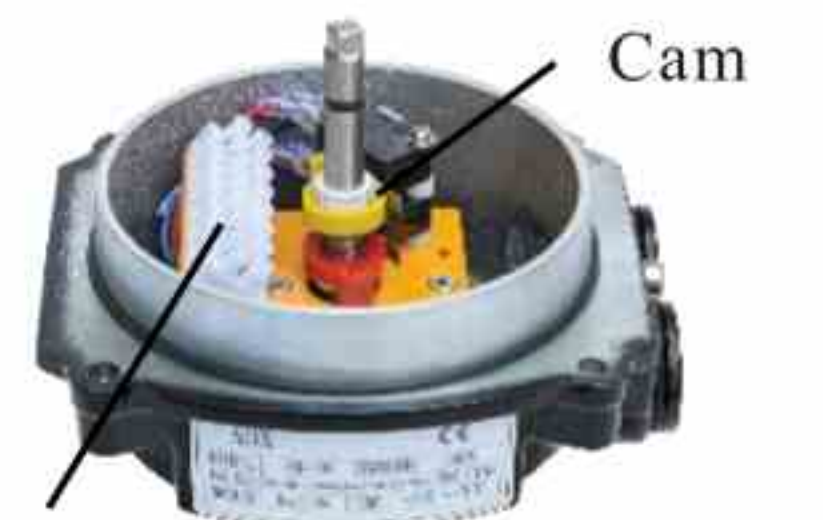
Enough terminals for alternation .

### Visual position indicator

The indicator panel is directly connected with the central axis, and make the continuous position indication.

Using high strength, corrosion-resistant transparent polycarbonate material, with high reliability.

Red is for close indication. Yellow is for open indication.



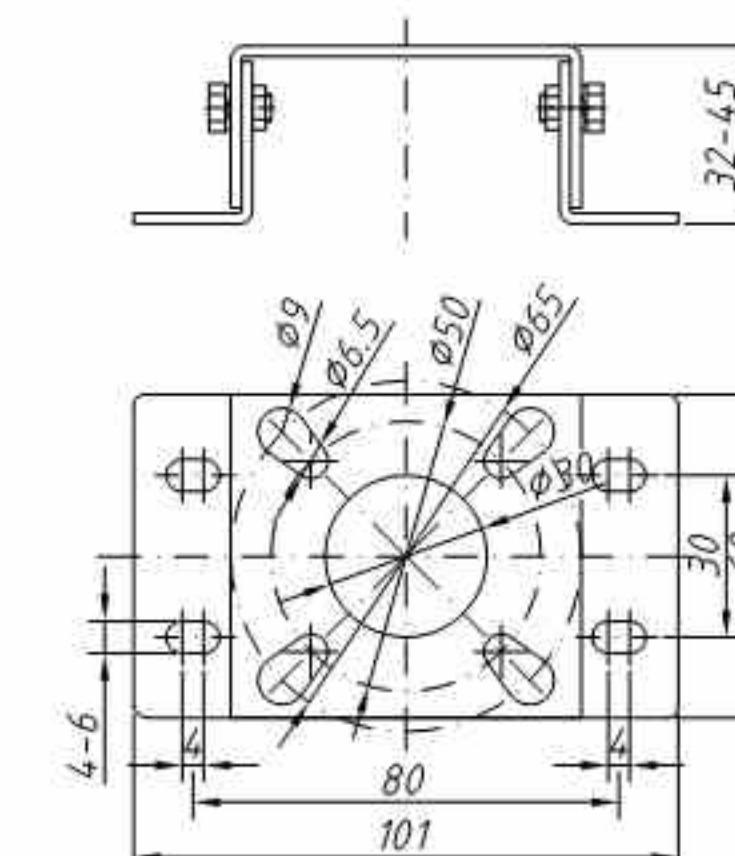
Wiring terminal

Indicator



## BRACKET

Standard ASK-01



Standard ASK-02

