

# TUOERPU

Operation manual of electric actuator 《《



Tuoerpu Technology Co.,Ltd.

# About Tuoerpu Tech

TUOERPU TECHNOLOGY CO., Ltd. is located in Oubei Town, Wenzhou City, the hometown of valves and pumps in China. The company is mainly engaged in the production, sales and technical services of electric actuators, electric valves, pneumatic actuators, pneumatic valves, regulating valves, and complete control valve solutions. Our purpose in creating value with integrity and providing quality service valve dealers across the country.

TUOERPU is based on the market, looking into the future, taking the basic principle of doing business with integrity, creating maximum benefits for customers as the main purpose, and establishing long-term friendly cooperative relations with the valve industry colleagues as the goal. We sincerely look forward to being your eternal friend and best one's business partner.

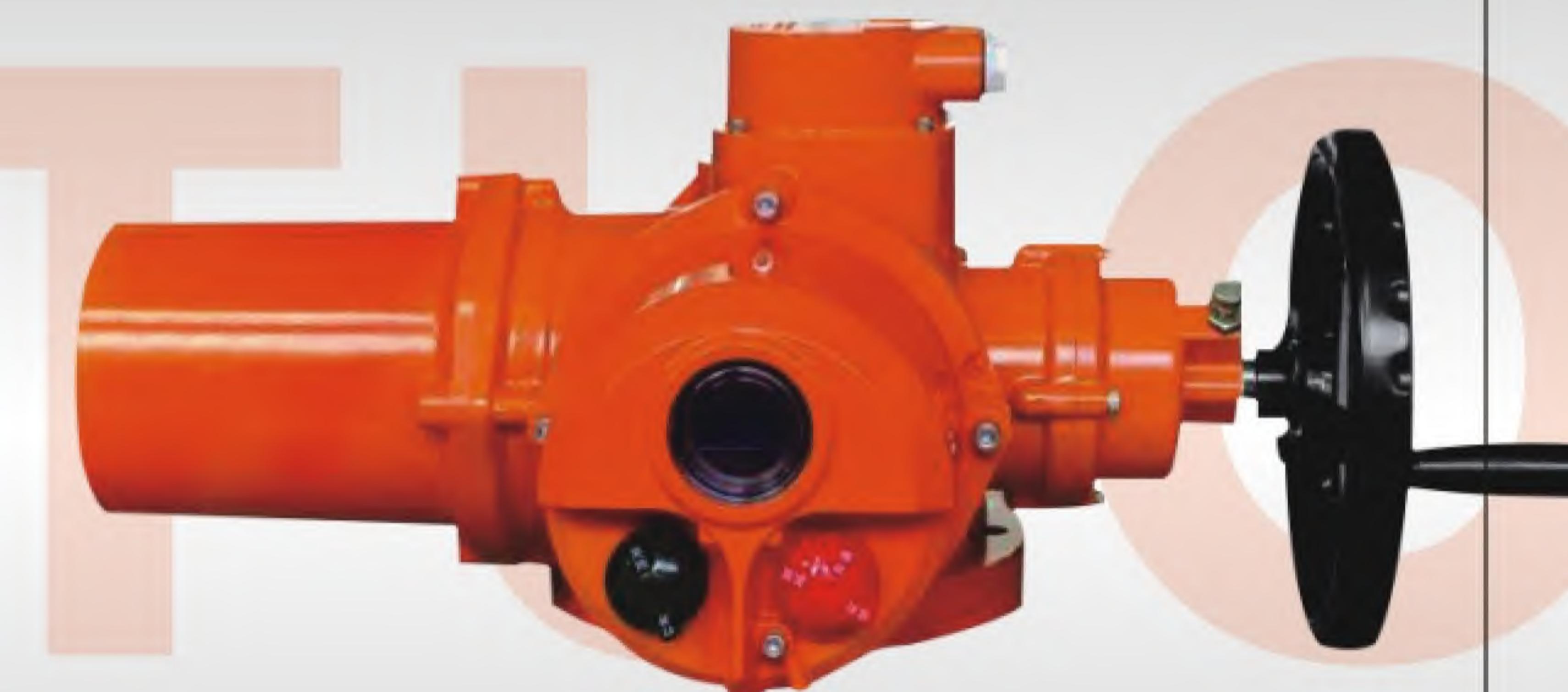
TOP series electric actuators are widely used in petroleum, chemical, shop, metallurgy, energy, pharmaceuticals, water treatment, food, brewing, ship and building automation and other fields. With the birth of TOP explosion-proof series products, it is made compact Electric actuators over more flammable and explosive occasions. For this reason, they are favored and trusted by customers. In practice, TOP series products have excellent reliability, durability and service-oriented performance, and have been unanimously recognized by users.

CHINA TUOERPU TECHNOLOGY CO., Ltd. has modern innovative management concepts, strict management systems, strong research and development capabilities, and advanced processing technology to ensure product quality and service quality. The company adheres to the business philosophy of "people-oriented, honest and trustworthy, quality first, customer first", and provides high-quality intelligent industrial solutions for domestic and foreign customers.

In the future, Our team will eagerly look forward to working with you to develop together and further promote the automation of the pipeline industry. Your satisfaction is the goal pursued by the TUOERPU team. With your attention, We will surely win more and more praises. It is also welcoming you with vigor and enthusiasm. We sincerely look forward to your arrival.



Pioneering and innovative power, Universal wisdom industry



## Production Strength

The basis of market competition, can not be separated from the strong production strength, can not be separated from the advanced equipment and scientific management system. CHINA · TUOERPU TECHNOLOGY CO.,LTD. in the industry take the lead in the introduction of advanced production equipment, relying on sound management mechanism and scientific process, the use of high precision machining, to ensure product quality and excellent quality.



## Company Culture

### TUOERPU Mission:

Create a fair entrepreneurial platform

Continuously improve employee happiness index

Continue to create value for customers

### TUOERPU Vision

Top Ten Global Control Valves

TUOERPU core values

Customer first Innovation Dedicated Efficient Sharing.

## Application Field



Professional spirit, innovative ideas, pragmatic style, scientific research strength, and sophisticated equipment have created a new image of the company. TOP series of products are widely used in water supply and drainage, fire protection, high-rise buildings, HVAC, electric power, petrochemical, chemical, metallurgical and other industries. The products are ingenious and have beautiful reputation and are trusted by customers.

# Contents

Overview	1
Product Structure And Transmission Principle	2-3
Z10/15/20/30 Series Products Dimensions and performance parameters	4
Z45/60/90/120 Series Products Dimensions and performance parameters	5
Control Circuit	6-7
Installation Method And Precautions For Use	8
Adjustment	8
Troubleshooting Method	9
Selection Of Control Valve Terminal Position By Stroke And Torque	9
Repair Spare Parts	9
Debugging Instructions For Intelligent Electric Actuators	10-12
Solutions To Common Problems Of Smart Products	12-13

## Overview

TOP series valve electric actuators are a new generation of products independently developed by our company. They have the advantages of compact structure, small size, beautiful appearance, stable and reliable performance. Good protection level can meet the needs of various designs: explosion-proof type, intelligent switch, intelligent adjustment type. This product is used to control the opening and closing of the valve. It is suitable for gate valves, globe valves, throttle valves, diaphragm valves, and its derivative products can be applied to ball valves, butterfly valves and dampers, etc. It can act accurately according to control instructions, which is necessary for remote control of valves and centralized automatic control. Fewer drives.

The performance of this product meets the requirements of JB/T8219-2016 (Ordinary and Intelligent Electric Actuators for Industrial Process Control Systems). The performance of the flameproof type complies with GB3836. 1-2000 (Electrical Equipment for Explosive Gas Environment Part 1: General Requirements) GB3836. 2-2000 (Part 2 of Electrical Equipment for Explosive Gas Environments: Flameproof "d") and JB/T8529-1997 (Technical Conditions for Flameproof Electric Devices). Before installing or using TOP series products, please read this manual carefully.

### 1. Model Representation Method

TOP- 1 2 3 - 4 5 / 6

1 Indicate whether the product structure is explosion-proof: the conventional type is empty, and the explosion-proof is represented by EX  
 2 Indicates the product type, and the multi-turn is indicated by the capital English letter "Z" code  
 3 Means that the product torque is expressed by 2 or more Arabic numerals. When expressing torque, the Arabic number multiplied by 10 is the product torque. When expressing thrust, the Arabic number multiplied by 100 means thrust: for torque: 100NM:10 1200NM:120 10000NM:1000  
 4 Indicates the speed of the product, that is, the number of revolutions per minute (the symbol 24 represents 24 revolutions/min: the label 48 represents 24 revolutions/min)  
 5 Indicates the control form of the product: common type code B, intelligent switch type code MK, intelligent adjustment type code MT, bus type BUS  
 6 Means power supply, AC380V, AC220V, AC660V, etc.  
 For example: The actuator model TOP-EXZ90-24MK/AC380V means: an explosion-proof multi-turn 900NM, a speed of 24 revolutions / minute intelligent integrated switch type electric actuator-the voltage is AC380V.

### 2. Safety Tips

This equipment is used under industrial high current conditions. During operation, some exposed parts on the equipment are electrified, and some parts can move and rotate, which is very dangerous. Therefore, removing the required cover without permission, unreasonable use, incorrect operation or improper maintenance can cause serious personal injury or damage the performance of the equipment. In order to ensure the safety of the equipment:

- Only qualified personnel are allowed to use these machinery and equipment.
- Whenever the above-mentioned qualified personnel work on the machinery and equipment, they should have the operating instructions or other product documents for these machinery and equipment in order to implement them in accordance with the instructions.
- Make sure that the input power, frequency, and external wiring contacts are accurate. The manufacturer does not undertake repairs and replacements if the motor is damaged due to wiring sequence or voltage.
- The wiring entrance must be waterproofed, otherwise the actuator will be damaged, and the manufacturer will not be responsible for any improper alteration or maintenance of the actuator.
- The borrowing of products or parts provided by other manufacturers, incorrect installation, corrosion, and unauthorized alterations or repairs are not covered by the manufacturer's warranty service.
- When the valve does not work frequently, it should be checked and maintained regularly and operated. It is recommended that the valve should be checked once per month and the time should not exceed 10 minutes.

## Product Structure And Transmission Principle

Electric actuator consists of six parts, the motor, the reducer, the control mechanism, the hand-electric switching mechanism, the handwheel components and the electric part. The transmission principle is shown in Figure 1.

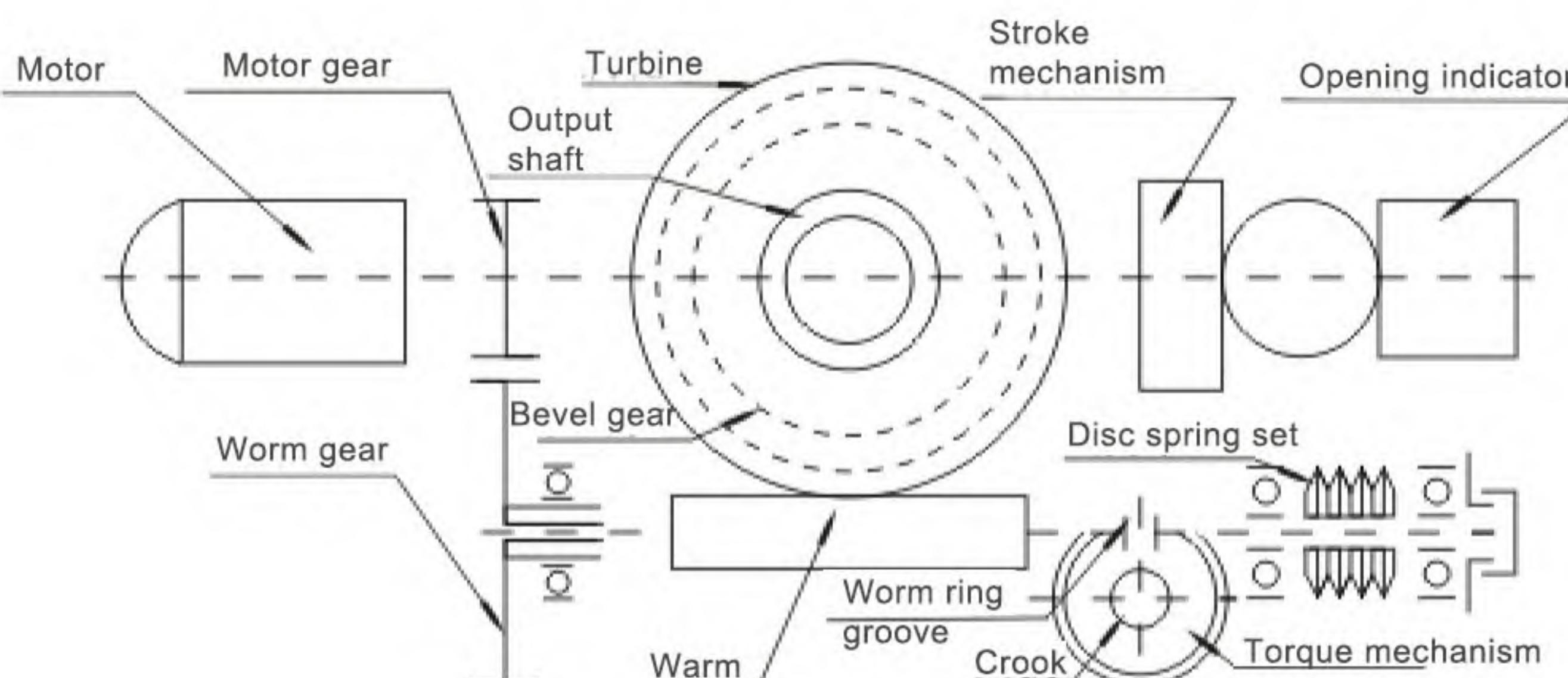


Figure 1 Transmission Schematic Diagram

- Motor: It adopts YDF2W body-shaped three-phase asynchronous motor, and the rated continuous working time is 10 minutes (R time working system can be customized).
- Reducer: It is composed of a pair of spur gears and worm gears. The power of the motor is transmitted to the output shaft through the reducer.
- Control mechanism: It is composed of a reversing control mechanism, a stroke control mechanism and an adjustable opening indicator to control the opening and closing of the valve and the valve position indication.
- Torque control mechanism (Figure 2.1): Composed of crank, stopper, cam index plate-support plate and micro switch. When the output shaft receives a certain resistance torque, the worm will not only rotate, but also produce axial displacement, drives the crank to rotate, and at the same time causes the stopper to produce an angular displacement, thereby approaching the cam and lifting the support plate. When the torque on the output shaft increases to a predetermined value, the support plate is lifted until the switch is completely activated, the power supply is cut off, and the motor stops to realize the control of the output torque of the electric device.
- Stroke control mechanism (Figure 2.2): It is composed of carry gear set, ejector rod, cam and micro switch. • Counter for short. The working principle is that an active pinion (Z=8) in the reduction box drives the counter to work. If the counter has been adjusted according to the valve opening or closing position, when the counter rotates with the output shaft to the pre-adjusted position (number of turns), the cam will be rotated 90°, pressing the micro switch to act, cut off the power supply, and the motor Stop, realize the control of the stroke (number of turns) of the electric device. In order to control a valve with more turns, the cam can be adjusted to 180°. Or 270° and then press the micro switch to move.

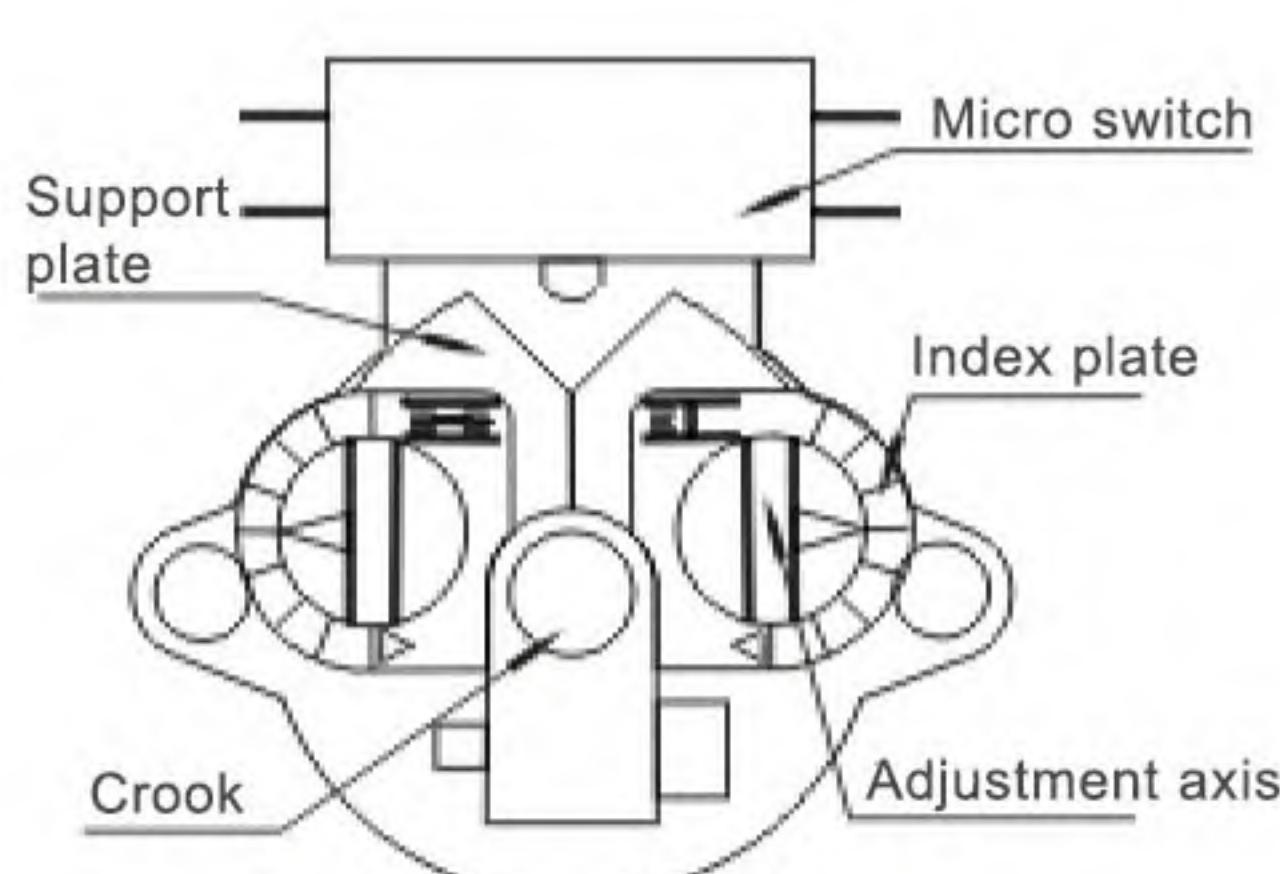


Figure 2.1 Torque Control Mechanism

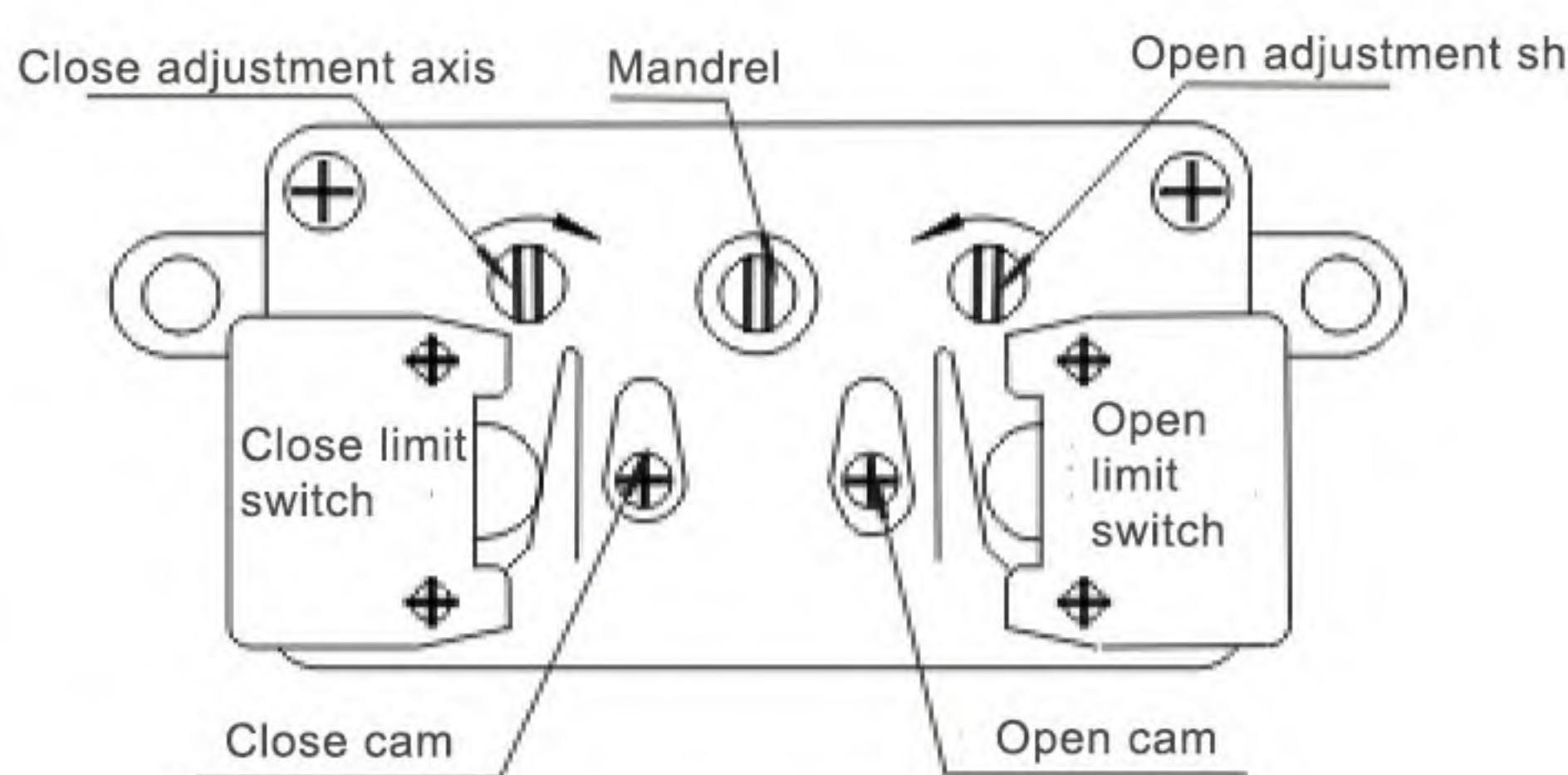


Figure 2.2 Stroke Control Mechanism

• Adjustable opening indicator (Figure 3): It consists of a reduction gear set, an adjusting gear, a valve opening dial, a cam, a micro switch, and a potentiometer. During on-site debugging, adjust the adjusting gear to the required position according to the number of turns of the valve switch, and mesh with the reduction gear set (there is the number of the required number of turns on the column). When the valve is in the process of opening or closing, the opening dial rotates after decelerating, indicating the opening and closing amount of the valve, and the indicating angle is synchronized with the opening and closing amount of the valve. , For remote transmission to indicate the valve position.

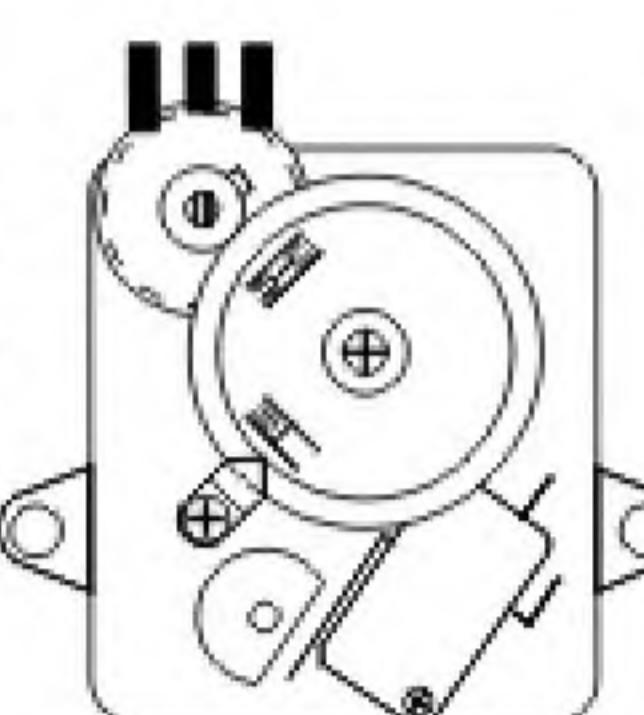


Figure 3 Opening Indicator

## Product Structure And Transmission Principle

- Hand-Electric switching mechanism (Figure 4): It is semi-automatic switching, the switch handle needs to be pulled to switch from electric to manual operation, and the switch handle is automatically changed from manual to automatic (no need to pull the switch handle) o Change from electric to manual At the time, manually pull the switch handle to move the middle clutch on the output shaft upward and compress the spring. When the handle is pushed to a certain position, the clutch disengages from the worm gear and engages with the manual shaft pawl, so that the force on the handwheel can be transmitted to the output shaft through the intermediate clutch, which becomes the manual state. When the manual is changed to electric, it will switch automatically. When the motor rotates to drive the worm gear to rotate, the upright rod will immediately fall down. Under the action of the compression spring, the intermediate clutch quickly moves in the direction of the worm gear.

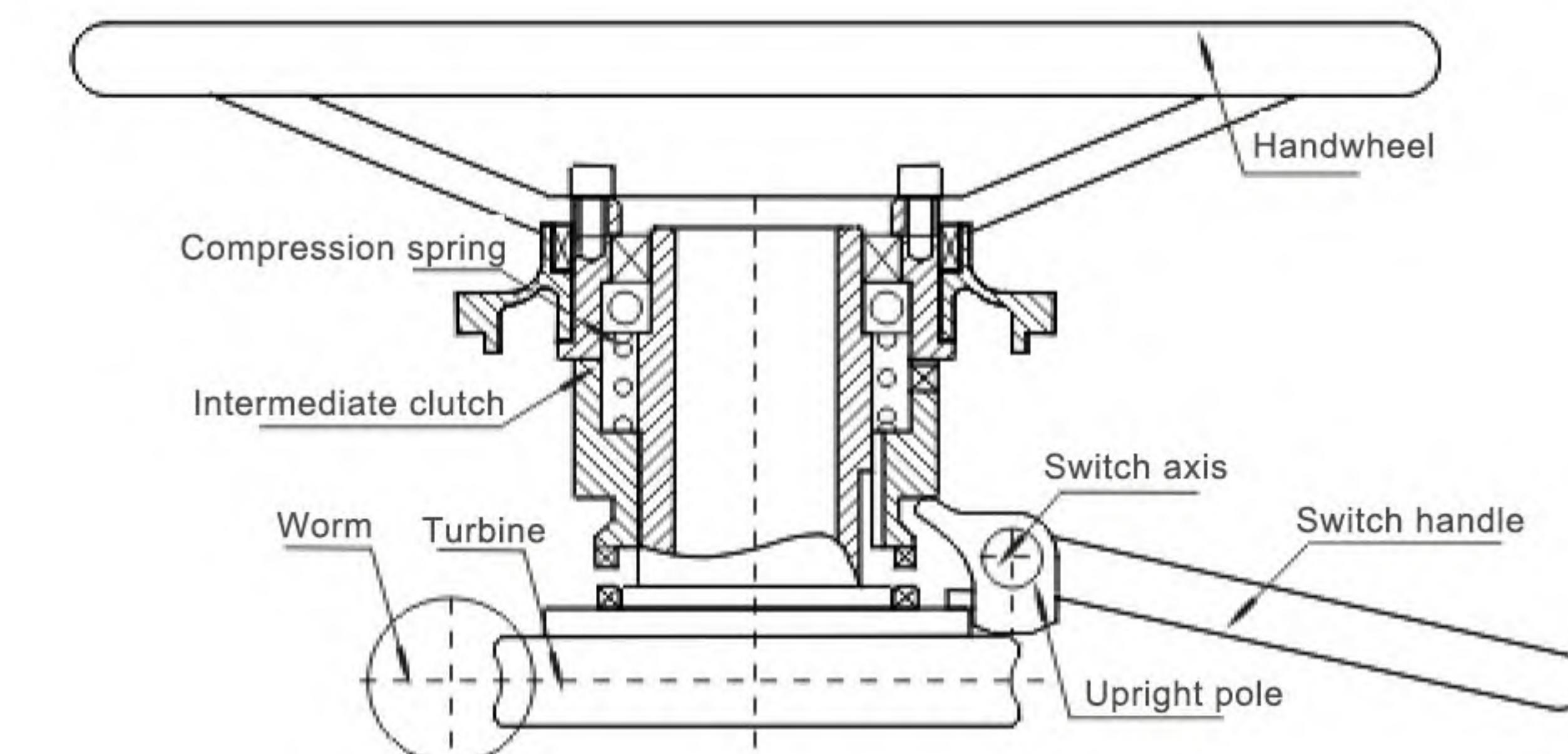


Figure 4 TOP-Z10-Z30 Manual-Electric Switching Mechanism

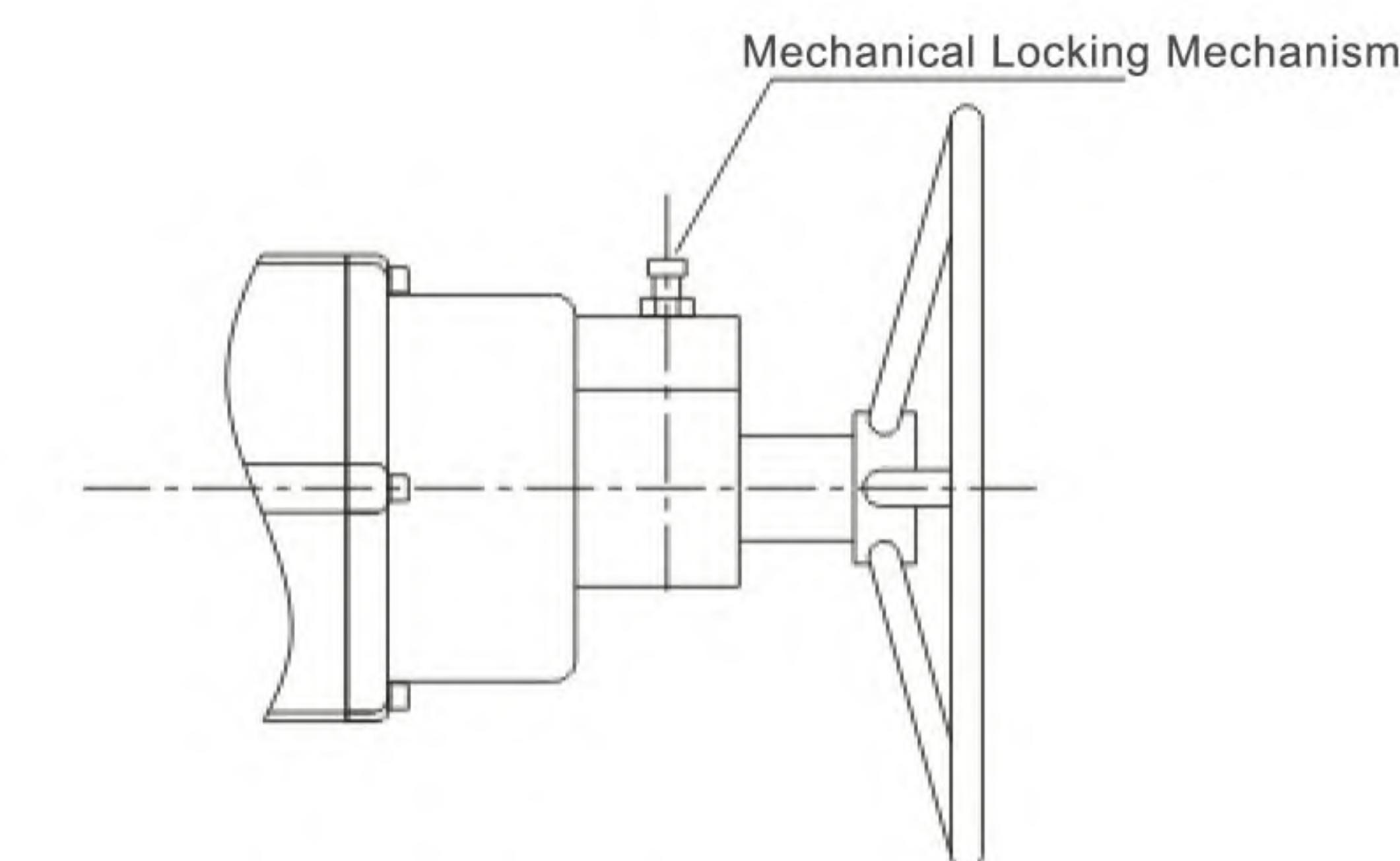
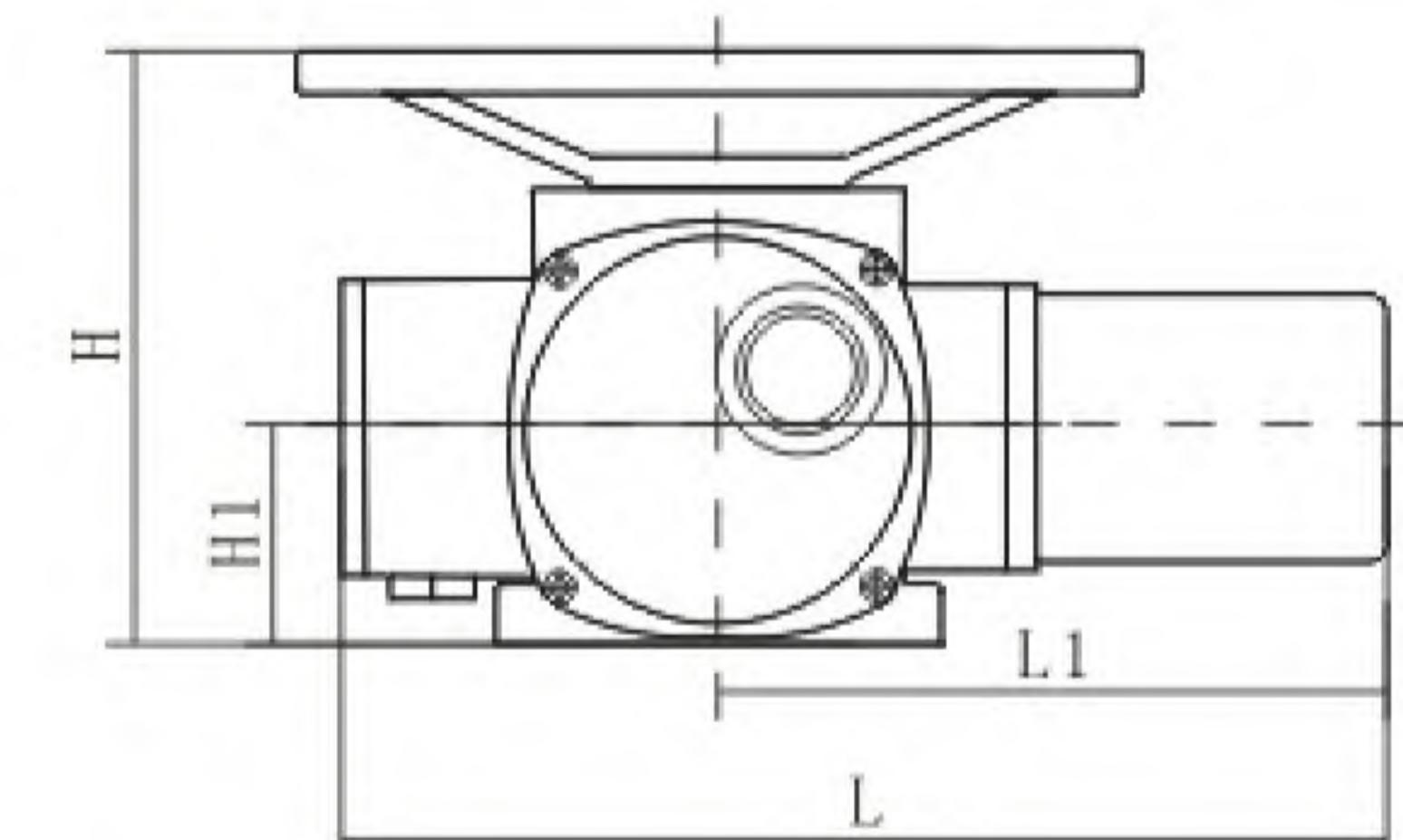
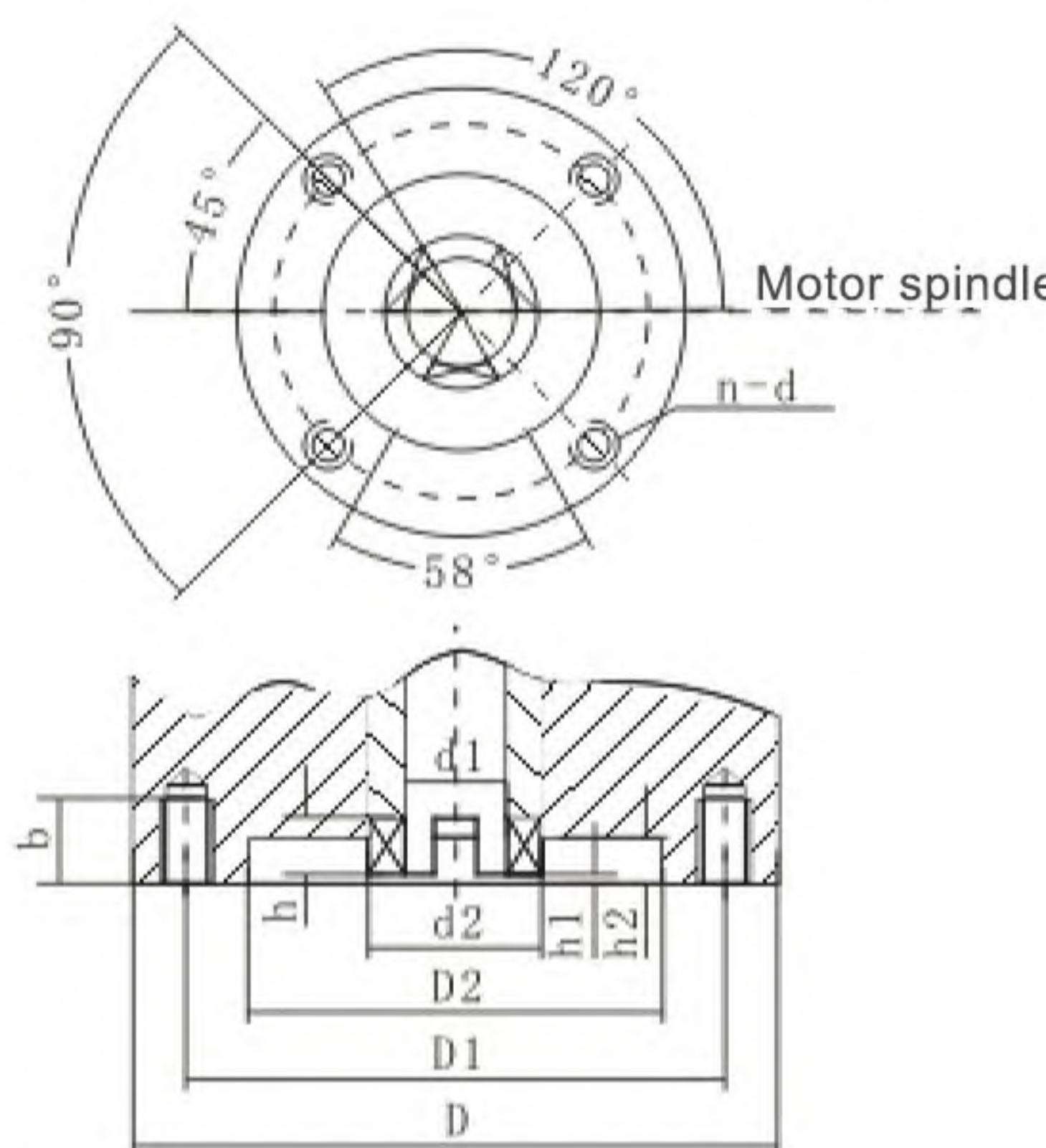


Figure 5 TOP-Z45-Z120 Electric Actuator

- TOP-Z45-Z120 electric actuator adopts electric priority structural design and is equipped with a mechanical locking mechanism to prevent misoperation. When manual operation is required, pull out the mechanical locking mechanism, push the handwheel in, and release the mechanical locking mechanism. Automatically lock, you can perform manual operation to ensure that the control circuit of the electric actuator is automatically cut off in the manual operation state to ensure the safety of manual operation. After the manual operation is completed, the mechanical locking mechanism is pulled out again, and the hand wheel is automatically sprung by the internal spring. Return to electric state.

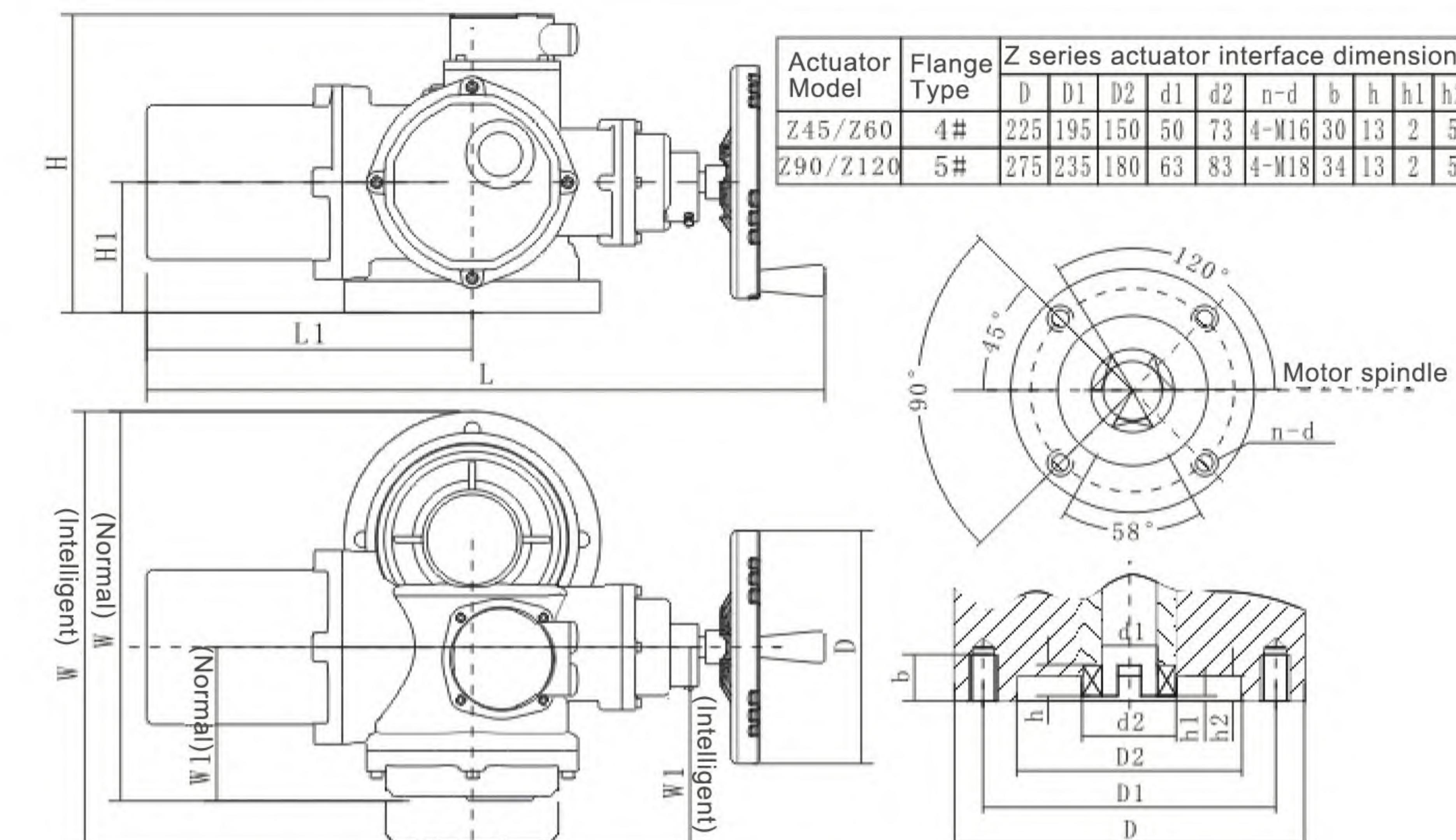
**Z10/15/20/30 Series Product Dimensions And Performance Parameters**


Actuator Model	Flange Type	Z series actuator interface dimensions									
		D	D1	D2	d1	d2	n-d	b	h	h1	h2
Z10/Z15	2#	145	120	90	30	45	4-M10	20	8	2	5
Z20/Z30	3#	185	160	125	42	58	4-M12	20	10	2	5



Z series actuators external dimensions									
Size Model	H	H1	W		W1		D	L	L1
			Normal	Intelligent	Normal	Intelligent			
Z10/Z15	235	87	330	375	155	200	0280	410	225
Z20/Z30	255	105	382	427	165	210	0350	510	320

Performance Parameter				
Model	Z10	Z15	Z20	Z30
Power Supply	AC380V Conventional three-phase -50Hz	AC660V, AC440V, AC415V Special three-phase -50Hz, 60Hz		
Performance	AC220V Conventional single-phase -50Hz	AC110V Special single-phase -50Hz, 60Hz		
Motor Power	0.25Kw	0.37Kw	0.55Kw	0.75Kw
Rated Current	0.9A	1.05A	1.3A	1.8A
Output Torque	100N. m	150N. m	200N. m	300N. m
Output Speed (r/min)	18/24/36	18/24/36	18/24/36	18/24/36
Weight	16Kg	18Kg	24Kg	28Kg
Intrinsic Error	≤1%			
Protection Grade	IP65、IP67、IP68			
Explosion-Proof Type Grade	Exd11 BT4、CT4			
Environment Temperature	-30°C ~ +70°C (Other temperatures can be customized)			
Environment Humidity	≤95% (At 25°)			
Motor Working System	Rated operation 10 minutes, F grade insulation (special time to be customized)			

**Z45/60/90/120 Series Product Dimensions And Performance Parameters**


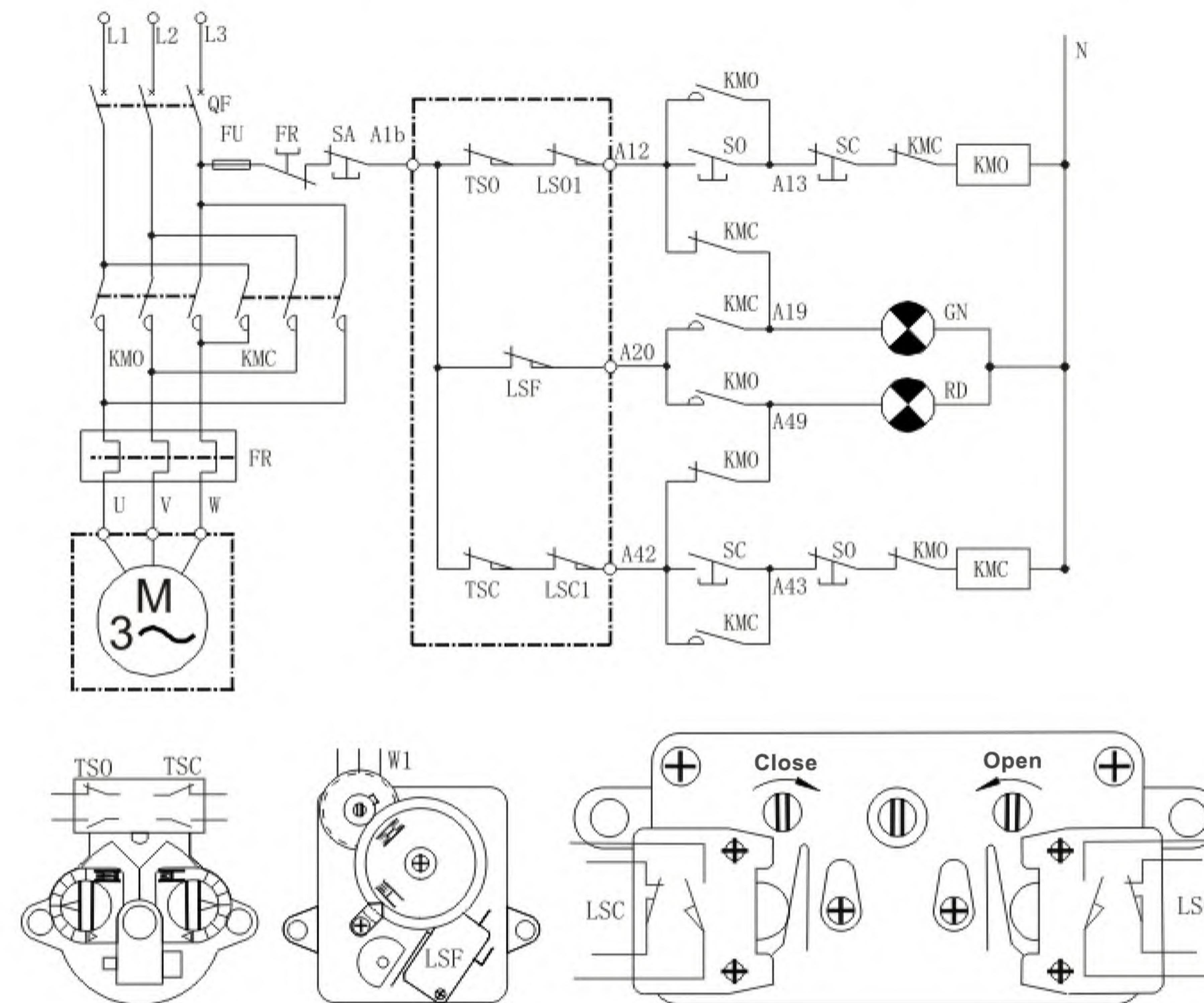
Z series actuators external dimensions									
Size Model	H	H1	W		W1		D	L	L1
			Normal	Intelligent	Normal	Intelligent			
Z45/Z60	310	130	371	487	169	279	0250	725	357
Z90/Z120	320	140	424	534	172	282	0250	740	362

Performance Parameter				
Model	Z45	Z60	Z90	Z120
Power Supply	AC380V Conventional three-phase -50Hz	AC660V, AC440V, AC415V Special three-phase -50Hz, 60Hz		
Performance				
Motor Power	1.1Kw	1.5Kw	2.2Kw	3Kw
Rated Current	2.5A	3.2A	4.5A	6.3A
Output Torque	450N. m	600N. m	900N. m	1200N. m
Output Speed (r/min)	18/24/36	18/24/36	18/24/36	18/24/36
Weight	50Kg	53Kg	68Kg	70Kg
Intrinsic Error	≤1%			
Protection Grade	IP65、IP67、IP68			
Explosion-Proof Type Grade	Exd11 BT4、CT4			
Environment Temperature	-30°C ~ +70°C (Other temperatures can be customized)			
Environment Humidity	≤95% (At 25°)			
Motor Working System	Rated operation 10 minutes, F grade insulation (special time to be customized)			

## Control Circuit

Normal electric control part

(For intelligent electric control part, see Debugging instructions for Intelligent electric actuators)

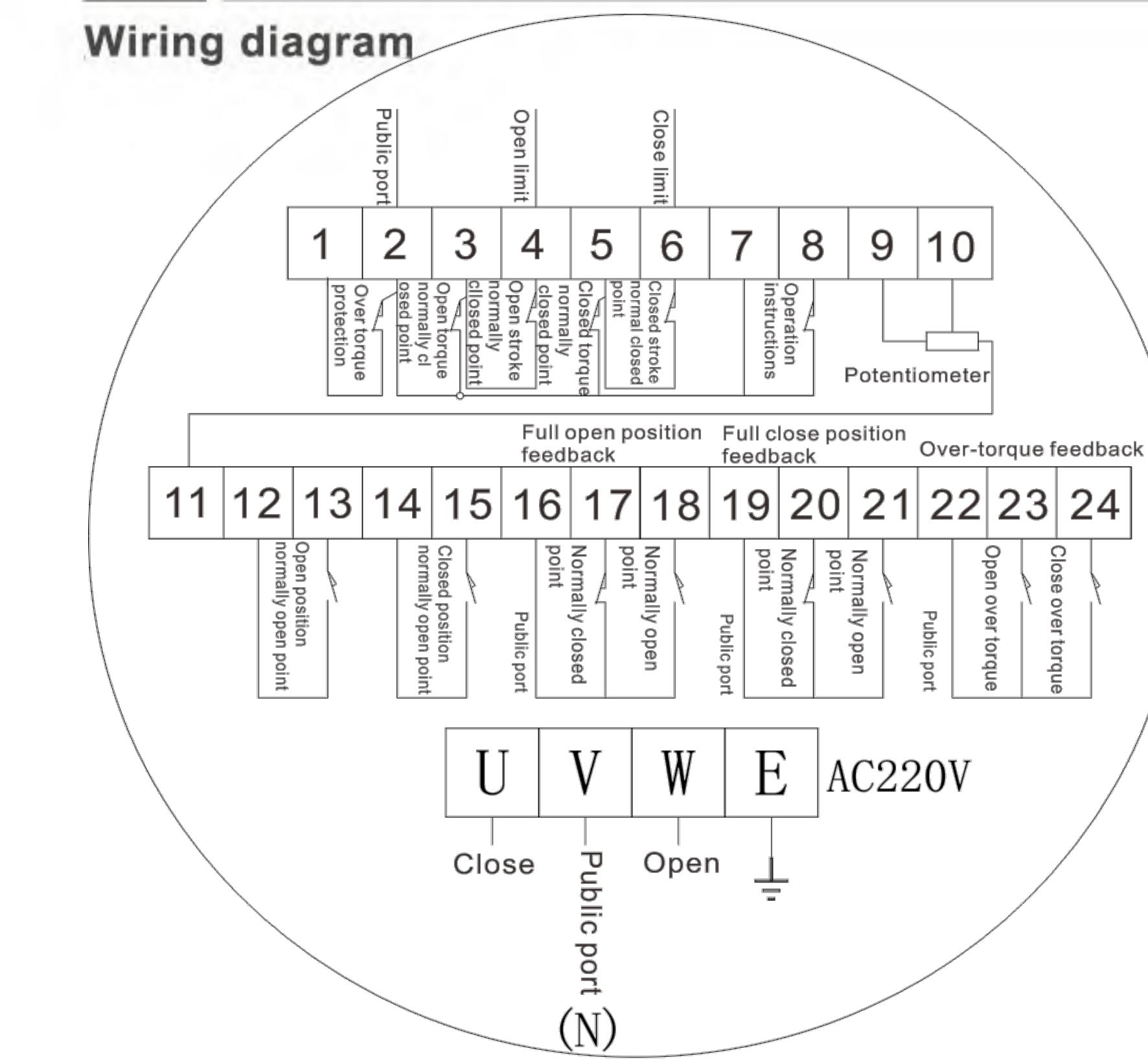


## List Of Main Components

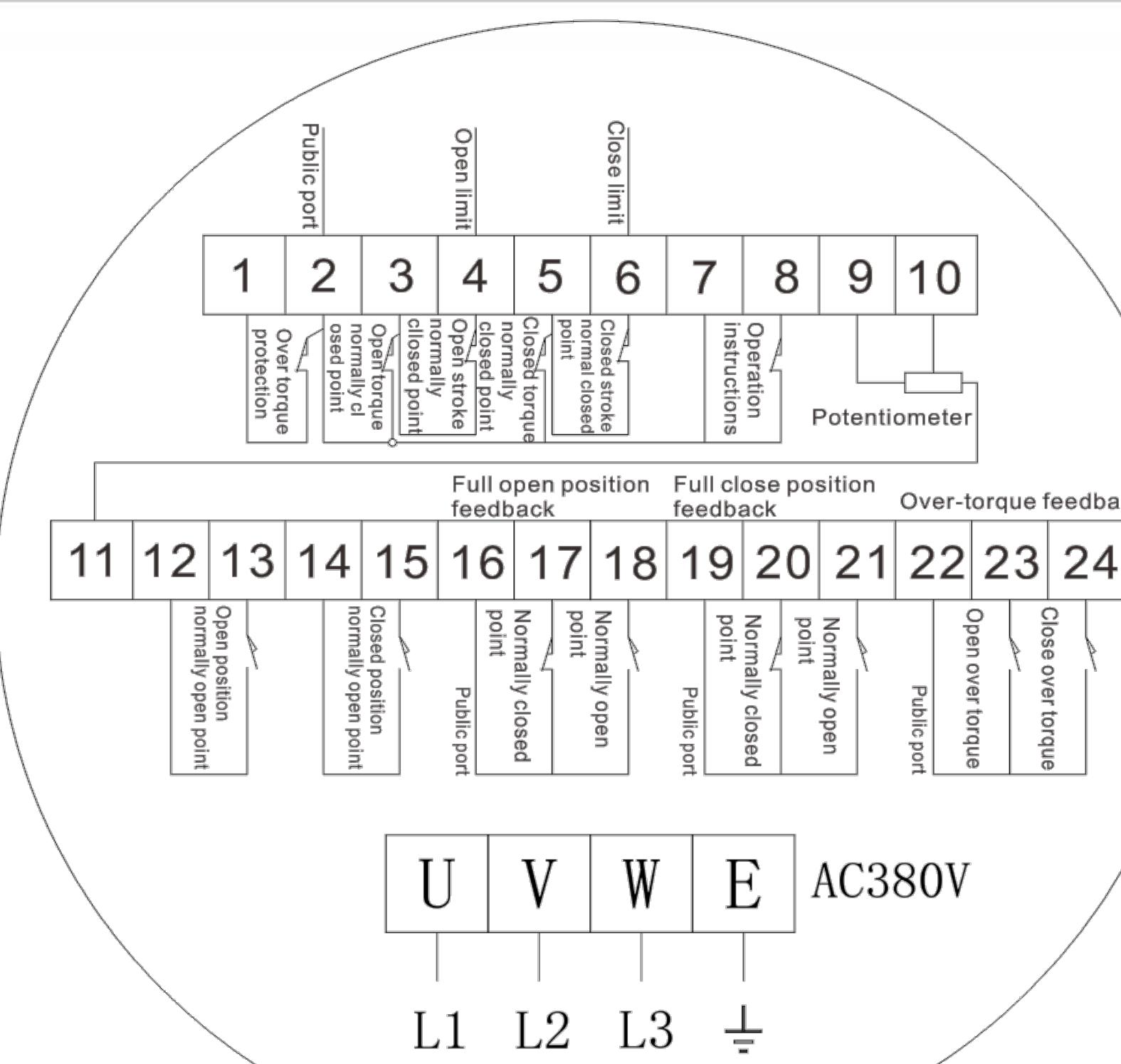
Code	Name	Model	Quantity	Remarks
FR	Thermal relay		1	User-supplied
KMO KMC	Ac contactor	GJ10	1	User-supplied
SA SC SO	Button	LA11-11D	3	User-supplied
TSO TSC	Torque switch	DK3-2A	1	
LSO LSC	Limit switch	HVK-22A	2	
LSF	Flash switch	V-157	1	
W1	Potentiometer	WX14-12	1	
M	Motor	YDF2-W	1	
TH	Thermal switch		1	Special order
RT	Space heater		1	Special order

## Control Circuit

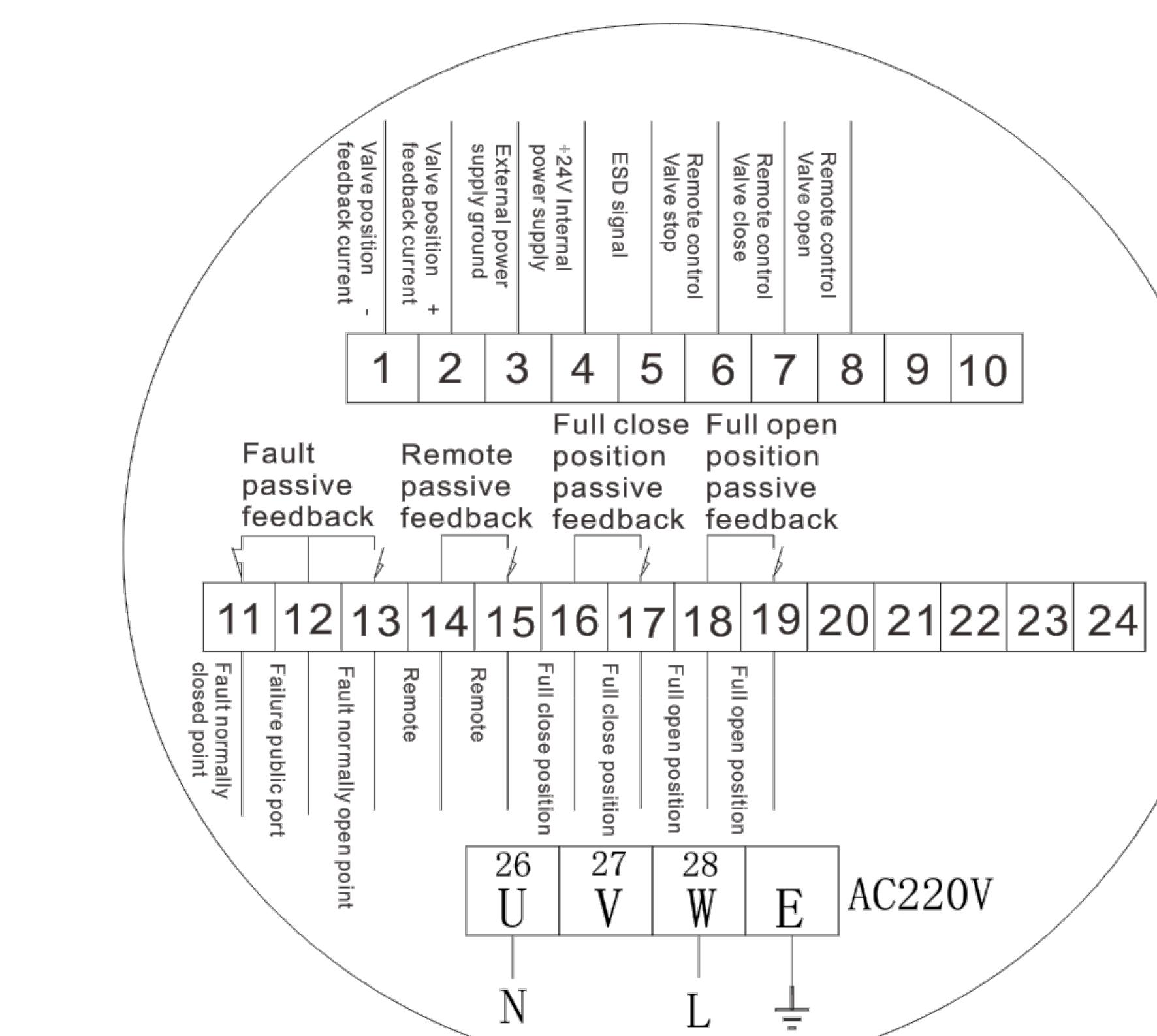
### Wiring diagram



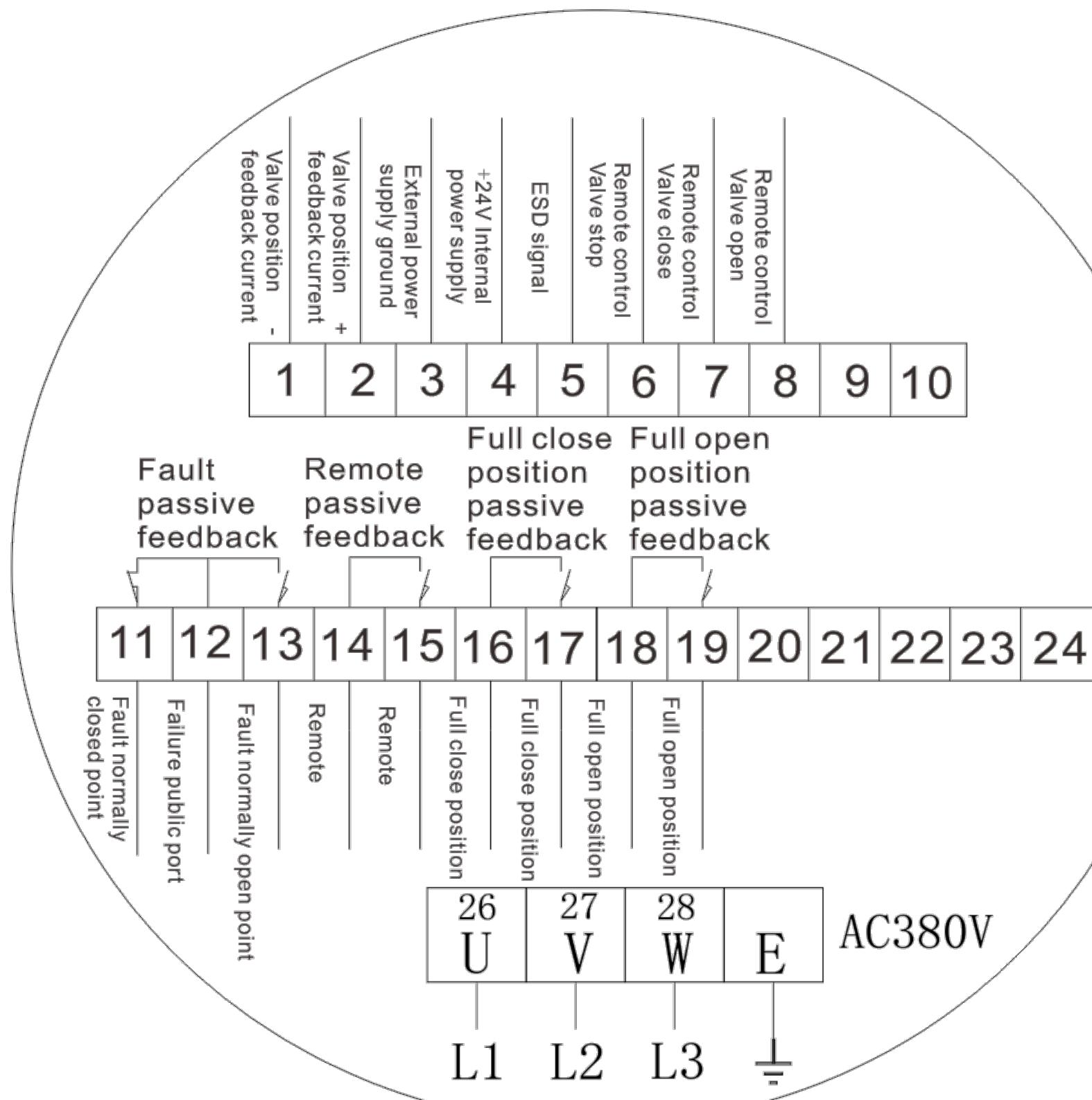
220V Normal Terminal Wiring Diagram



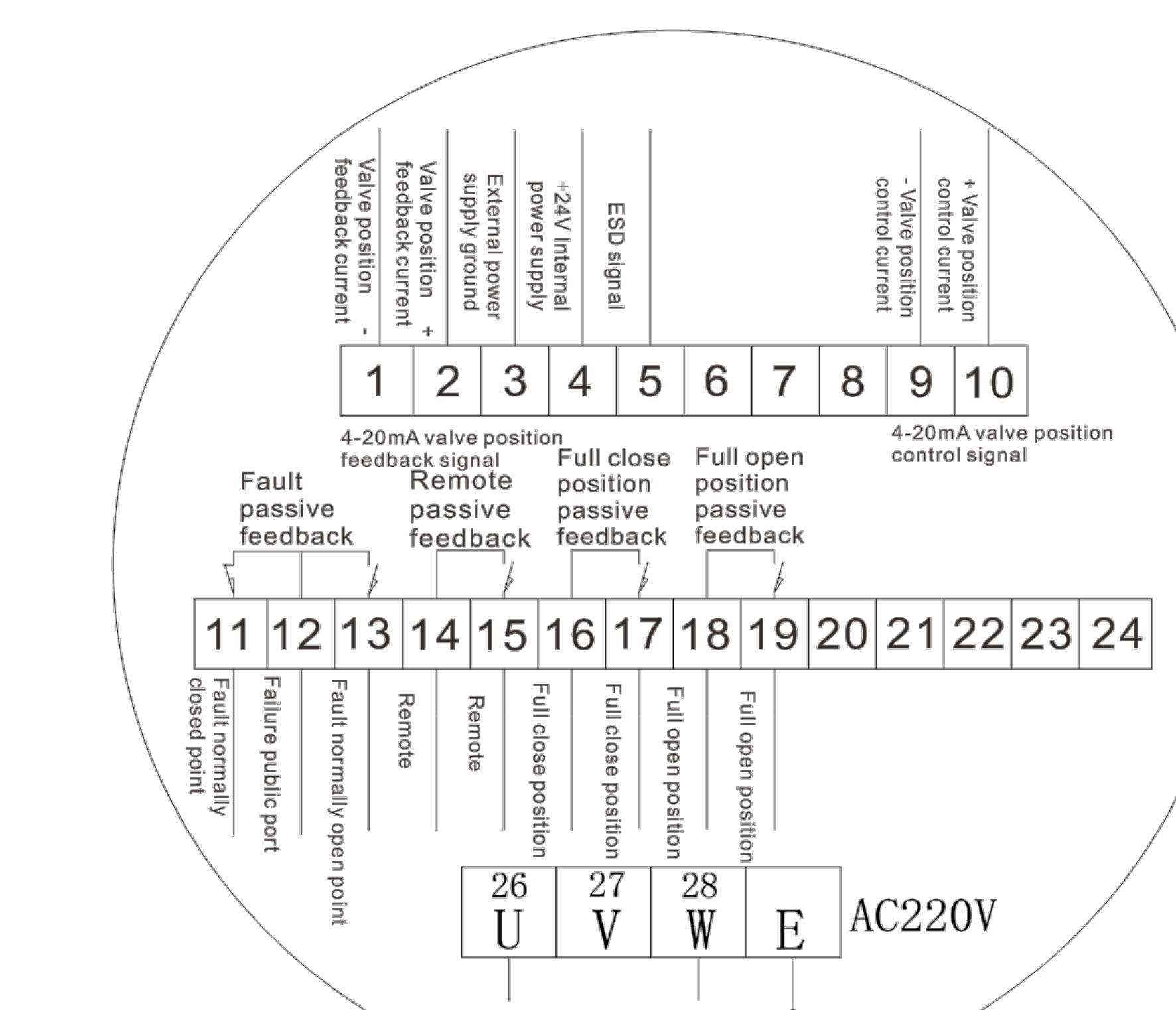
380V Normal Terminal Wiring Diagram



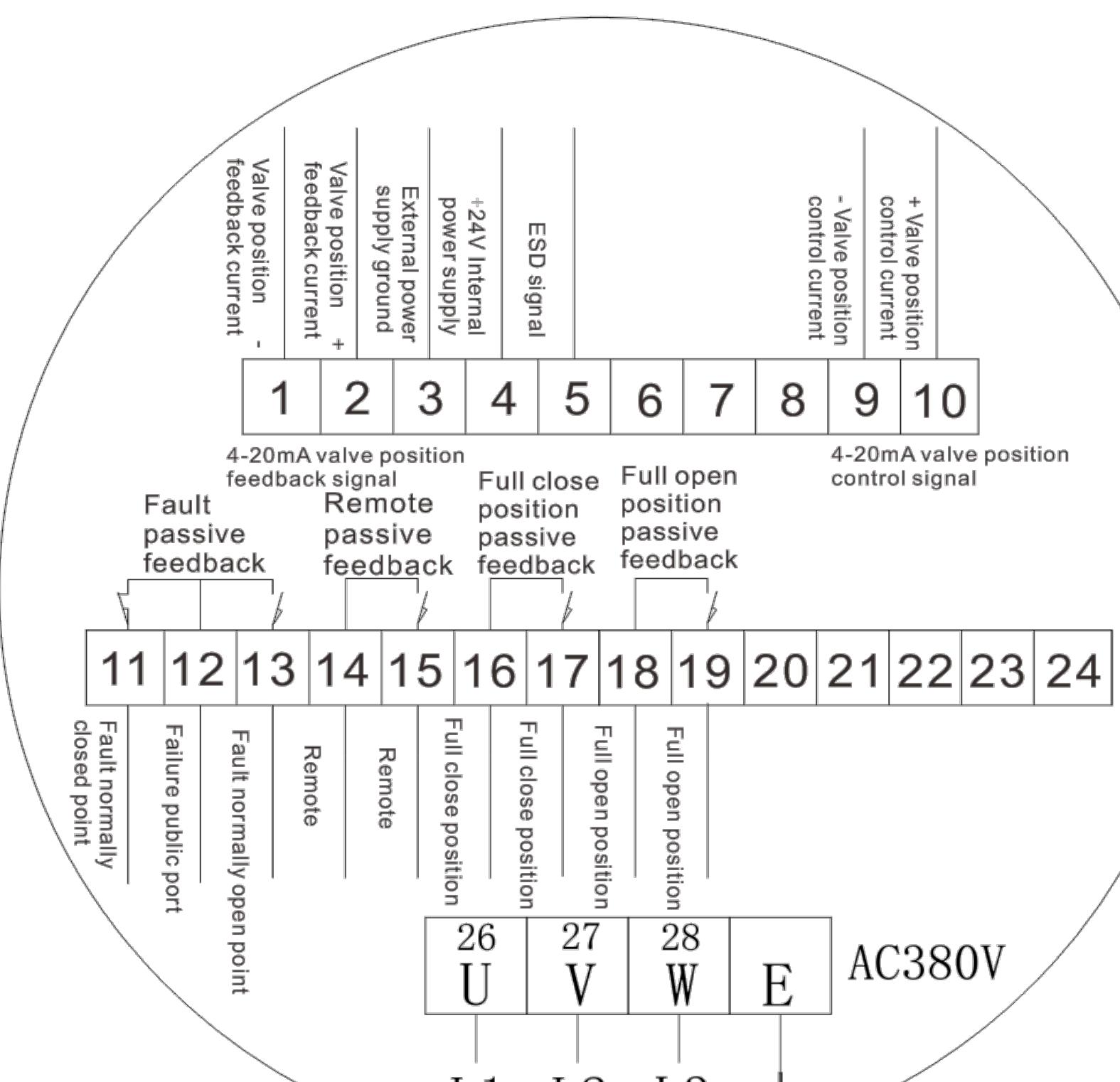
220V Intelligent On Off Type Terminal Wiring Diagram



380V Intelligent On Off Type Terminal Wiring Diagram



220V Intelligent Regulating Terminal Wiring Diagram



380V Intelligent Regulating Terminal Wiring Diagram

## Installation Method And Precautions For Use

This device can be re-installed straight. Install horizontally, when the motor cannot be downward. It should be convenient for wiring, debugging and manual operation.

The axial clearance between the installation and the valve block is not less than 1-2 mm.

The first use after installation must be commissioned item by item according to the commissioning requirements, and often the components can be put into use only after normal.

This device adopts a three-phase asynchronous motor for electric device, and you should pay attention to it when debugging if the continuous working time is 10 minutes

Be careful when transporting. Keep it dry to prevent the building from touching corrosive substances, so as to avoid damage to electrical components and mechanical parts.

## Adjustment

When adjusting the torque and stroke, you must check whether the potentiometer on the position indicator has been disengaged (set the purple setting of the gear on the potentiometer shaft)

The screw can be taken off if you loosen it) to prevent damage to the trace, special note: the motor must be checked for the first time when the electric device of the ordinary switch type is newly installed

The phase sequence and the control line are correct to prevent the motor from losing control.

### Torque control mechanism adjustment:

- First adjust the off torque.
- Starting from a small torque value, gradually increase the torque value until the valve is closed
- Adjust the torque in the switching direction according to the valve working characteristics. Generally, the torque in the opening direction is larger than the torque in the closing direction.
- The above adjustments are adjusted under no-load and medium pressure and other factors. When there is pressure and temperature, you should pay attention to whether it can be closed tightly.
- For strict attachment, the torque value should be increased appropriately, whichever is the case when it is closed and opened.

### Adjustment of stroke control mechanism:

- Close the valve manually
- Disengage the stroke control mechanism, that is, use the screw loosening knife to push the ejector rod in the stroke control mechanism into the well and turn 90° to disconnect the driving pinion from the counter gear set
- Use a screwdriver to rotate the adjustment shaft in the "off" direction, and rotate in the direction of the arrow until the cam presses the spring pressure plate to make the micro switch act. If it does not meet the requirements, you can readjust according to the above procedure
- Loosen the ejector rod to make the driving gear mesh with the unit gears on both sides correctly. In order to ensure the correct engagement, after loosening the ejector rod, you must use a screwdriver to slightly turn the adjustment shaft left and right. At this time, you can open it for a few turns, and then close it. Whether it is required to the itinerary, if it does not meet the requirements, you can block the above procedures to readjust
- Opening direction adjustment: After adjusting the closing direction. Open the valve to the desired position by hand (note that the stroke control mechanism cannot be disengaged at this time, otherwise the adjustment of the closing direction will be disrupted), then disengage the stroke control mechanism, rotate the adjustment shaft in the "open" direction, and rotate in the direction of the arrow until The cam presses the spring pressure plate to make the micro switch actuate. Then make the stroke mechanism mesh with the driving gear, then the opening stroke. Finished. After the stroke control mechanism is adjusted, it can be repeated several times. Generally, the valve opening is controlled at about 90%.

### Adjustment of adjustable opening indicator:

- Adjust the adjustable opening indication and remote potentiometer on the basis of adjusting the torque and stroke.

- Close the valve (manual to electric)

- First, adjust the adjustment gear on the gear set to the corresponding position according to the maximum number of turns of the valve, then push the off symbol of the dial to the pointer, turn the potentiometer, make the potentiometer at the zero position, and make the potentiometer shaft The upper gear meshes with the gear on the opening shaft, tighten the set screw of the gear on the potentiometer shaft

## Troubleshooting Method

Out of control, torque and stroke control mechanisms are not working	1. Line sequence wrong	1. Adjust the line sequence
	2. Wrong connection of contactor coil	2. Exchange wiring
	3. The contactor does not release iron suction	3. Clean or exchange the contactor
Stroke control mechanism malfunction	1. Micro switch is damaged	1. Replace
	2. Move the micro switch position	2. Check the tightening
Torque control mechanism malfunction	1. Micro switch is damaged	1. Replace
	2. Disk-spring characteristic damage	2. Replace
Opening indication control mechanism failure	1. Potentiometer is damaged	1. Replace
	2. Loose meshing gear	2. Tighten the set screw
	3. Poor wire contact	3. Replace the line
Motor operation is not normal, there is a continuous hum	Two-phase operation	Check that the power circuit is connected to three phases

## Selection Of Valve Terminal Position By Stroke And Torque Control (For Reference)

Valve Type	Control Method	
	Full close	Full open
Self-sealing (Gate valve)	Stroke	Stroke
Forced sealing (Gate valve)	Torque	Stroke
Globe valve	Torque	Stroke
Sealed butterfly valve	Torque	Stroke
Non-sealed butterfly valve	Stroke	Stroke
Ball valve	Stroke	Stroke

## Maintenance Spare Parts

This device is generally allowed to work 10,000 times under normal conditions. If the parts are damaged due to improper operation and maintenance, our company can provide the following spare parts.

- Micro switch
- Various "O" type oil-resistant rubber sealing rings
- Various skeleton oil seals
- Spring
- Butterfly spring
- Stroke control structure (Counter)
- Adjustable opening indicator

## Debugging Instructions Of Intelligent Electric Actuators

Intelligent type is developed by our company on the basis of digital products. It can accept the switch signal (passive contact, active 24V, active 220V, jog switch) or analog signal (DC4-20mA, 0-10V, etc.) from the PLC and other controllers in the DCS system. It can be driven directly, or the actuator can be driven by a contactor or solid state relay. Output DC4-20mA feedback current and four relay contacts (open position, close position, remote, fault alarm). The modified component integrates servo control unit, liquid crystal display unit, knob operation and other units. This product is easy to operate and has complete protection functions.

### 1. Infrared Remote Control

	Remote control icon	Function definition	Remarks
		Set (Confirm)	Confirm the parameters or enter the sub-menu
		Switch	Clear fault information or enter specific menus
		Minus key	Decrease/adjust current parameters
		Plus key	Increase/adjust current parameters
		Valve close	Send valve closing command to actuator
		Valve open	Send valve opening command to actuator

### 2. Instructions

- The red knob is the mode button: switch between on-site/stop/remote, or save or confirm parameters in the setting state (turn from the stop position to the scene) and exit (turn from the stop position to the remote).
- The black knob is the operating button; open or close the valve in any on-site mode, or perform addition and subtraction settings in the setting state. Site knob  
During operation, the short-term action is in the on-site jog mode. When the effective action time of the operating button exceeds 3 seconds, it enters the on-site hold mode. Operate the black knob again or turn the red knob to stop to stop the action.

### 3. Parameter Setting And Debugging

#### 1. General settings (no special requirements, just general settings)

##### 1.1 Stroke setting (first make sure the steering and torque wiring of the electric actuator is correct)

###### 1.1.1 Close position calibration

Rotate the operating button at the stop position and turn it off for about 3 seconds, and wait until the LCD displays "Full Close Stroke Setting" and release the operating button to display the last closed position value. Turn the mode button to the scene. When "Full Close" flashes to indicate Enter the off position calibration (Figure 4). Execute the switch valve by operating the button, adjust the way to the off positionTurn the button to stop and then return to the scene to confirm the closing position. The mode button will exit directly from stop to distant Itinerary calibration.

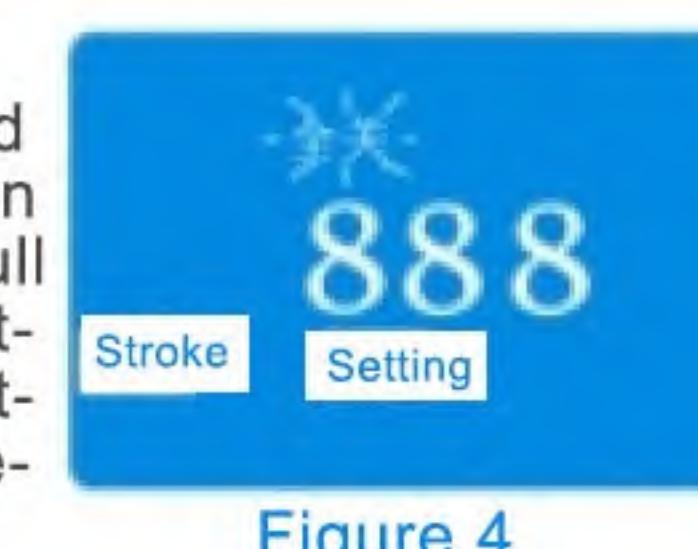


Figure 4

## Debugging Instructions Of Intelligent Electric Actuators

### 1.1.2 Open calibration

Turn the operating button at the stop position until it is turned on for about 3 seconds. When the LCD displays "full open stroke setting", release the operating button to display the last open position value, and turn the mode button to the scene. Position calibration (Figure 5). Execute the switch valve by operating the button. After adjusting to the open position, turn the mode button to stop and then turn it back to the scene to confirm the open position. Turn the mode button from the stop to the far side to exit the stroke calibration directly.



Figure 5

### 1.2 Fine adjustment of output current

Rotate the operation button in the stop position until it is off for about 8 seconds. When the LCD displays "4mA output current calibration", release the operation button and turn the mode button to the scene. At this time, the "current calibration" no longer flashes to indicate the 4mA output current fine-tuning state (Figure 11) After the output current reaches 4mA, turn the mode button to stop and then turn it back to the scene to confirm the 4mA calibration, and enter the 20mA output current fine-tuning (Figure 12). The adjustment method is the same as above. Turning the mode button from stop to remote will directly exit the output current fine-tuning.



Figure 11



Figure 12

### 1.2 Control mode selection

Rotate the operation button at the stop position until it is turned on for about 8 seconds. When the LCD displays "parameter setting", release the operation button, turn the mode button, turn the mode button to stop and then turn it back to the scene. At this time, it displays "adjustable" or "Switch type" means to enter the control mode selection. After selection, turn the mode button to stop and then back to the scene, complete the control mode selection and enter the advanced menu setting password input screen (Figure 6). Turn the mode button from stop to remote to exit the mode selection directly.

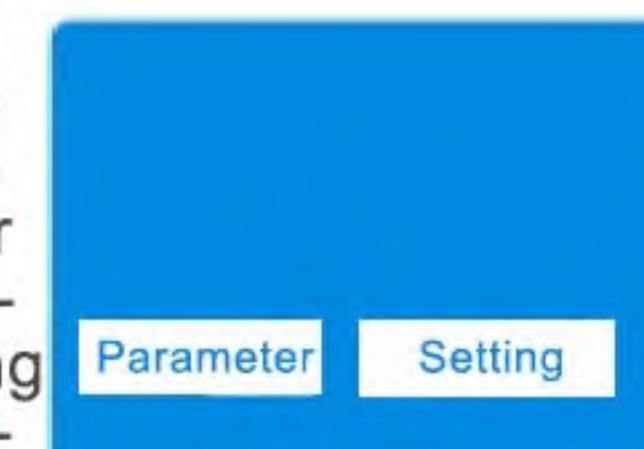


Figure 3



Figure 6

### 2. Switch type advanced settings (re-set after special requirements)

#### 2.1 ESD settings

Enter the password 111 in Figure 6, and enter the ESD setting after confirming. Can be set to: home position, fully open, fully closed. The value in screen 8 is the number of actuator actions, and the actual number is 10 times the displayed number. After confirming, the system automatically enters the "Screen 7 Relay Configuration". The default control mode is the original position.



Figure 8

#### 2.2 Output configuration

Set the functions of the 4 relays by turning the black knob: local/remote, fault, valve fully closed, valve fully open, open overload, close overload, the numbers in the figure represent the corresponding K1-K4 relays on the drive board, and the left represents the relay Corresponding function, enter the next relay configuration after confirmation, the system enters the main running screen after all 4 relays are set. The default settings are: 1—remote/site, 2—fault, 3—open over me, 4—close overload.



Figure 7

#### 2.3 Remote control signal

Choose to enter the password 211 in the screen 6, and enter the remote control signal selection after confirming (as shown in Figure 16), which can be set as: F0-jog, F1—hold, F2—signal on without signal off, F3—with signal off and no signal on. After selecting and confirming, save the parameters and return to the main running screen. If you press the exit key, you will exit the setting directly.



Figure 16

### 3. Advanced settings of adjustable electric equipment(re-set after special requirements)

#### 3.1 Sensitivity setting

In the adjustable control mode, enter the password 211 on the screen 6 and enter the sensitivity setting after confirming (Figure 13). After setting and confirming, save the parameters and enter the inertia display screen, and then press the confirm key to enter the current input calibration screen. If you press the exit key, you will exit the setting directly.

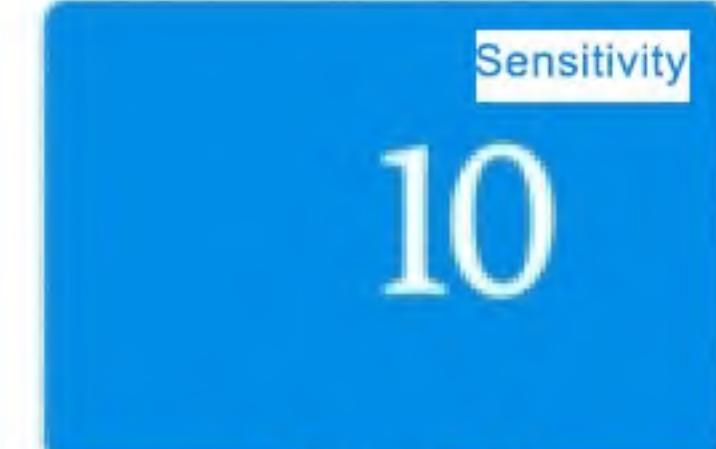


Figure 13



## Debugging Instructions Of Intelligent Electric Actuators

### 3.2 Input current calibration

After entering the current input calibration screen, the "current calibration" flashes, press and hold the valve open or close button for three seconds, the "current calibration" no longer flashes, you can perform 4mA current calibration (Figure 19), add the standard 4mA input current signal, And then press the confirm key to save the parameters and enter the 20mA current calibration screen (Figure 20). The 20mA calibration method is the same as above.

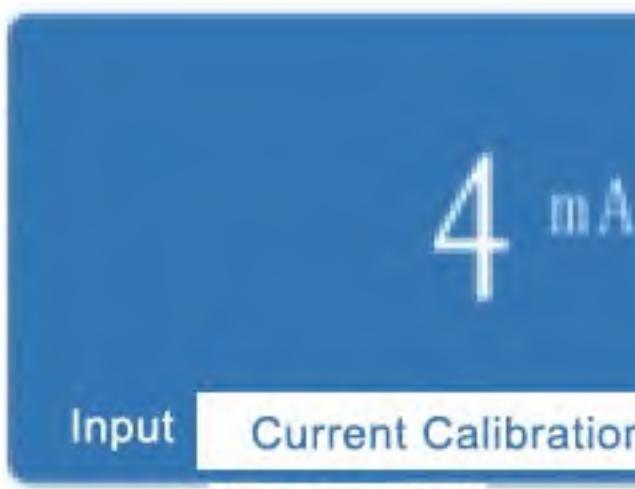


Figure 19



Figure 20

Note: mA flashing means that the input signal is not within the standard range. At this time, press the enter key to enter the next screen but the data will not be saved. When the current calibration is flashing, press the OK key to enter the next screen. There is no need to input the standard signal, and the mixing number will not be saved.

### 3.3 ESD setting (operation method is the same as 2.1)

### 3.4 Zombie setting

In the regulated mode, after the ESD is set, it will enter the letter loss setting (as shown in Figure 9), which can be set to: original position, fully open, and closed. Adjust by plus and minus keys, save the parameters after confirmation and enter "input signal setting". The default loss processing is to keep in place

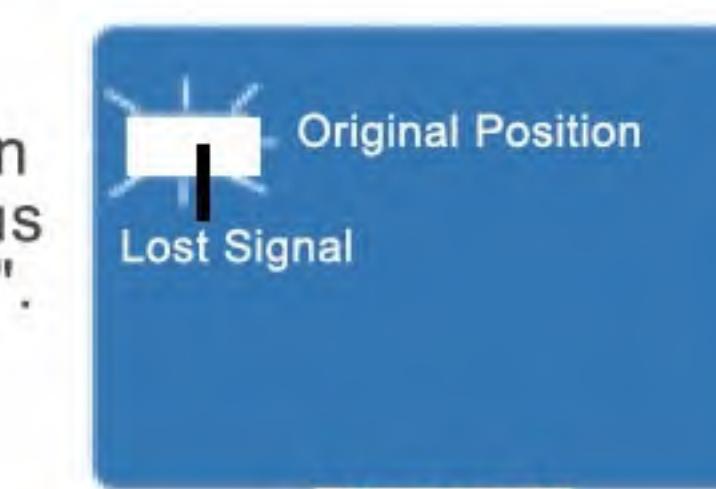


Figure 9



Figure 10

### 3.6 Output maggot state (operation method is the same as 2.2)

### 4 Bus-type electric device advanced settings (re-set after special requirements)

#### 4.1 Station number setting

Under the bus operation, enter the password 211 on the screen 6, enter the station number setting after confirming, or adjust the plus and minus buttons, and save the setting after confirming. The colleague enters the sensitivity setting screen and presses the exit key to exit the setting

#### 4.2 Sensitivity setting (operation method is the same as 3.1)

#### 4.3 ESD setting (operation method is the same as 2.1)

#### 4.4 Output configuration (operation method is the same as 2.2)

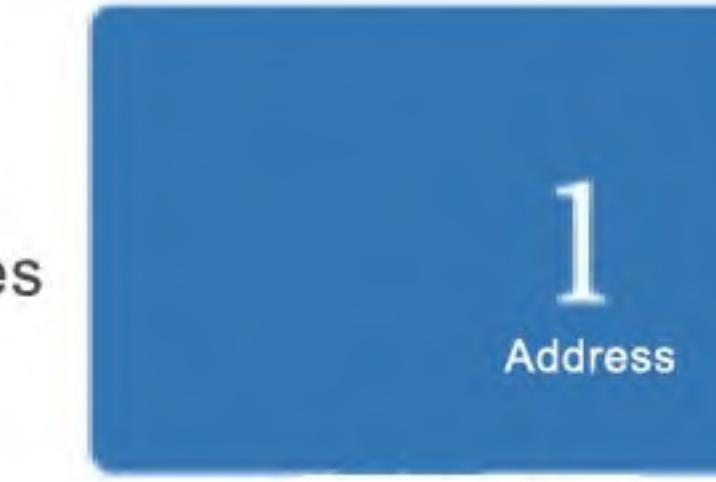


Figure 18

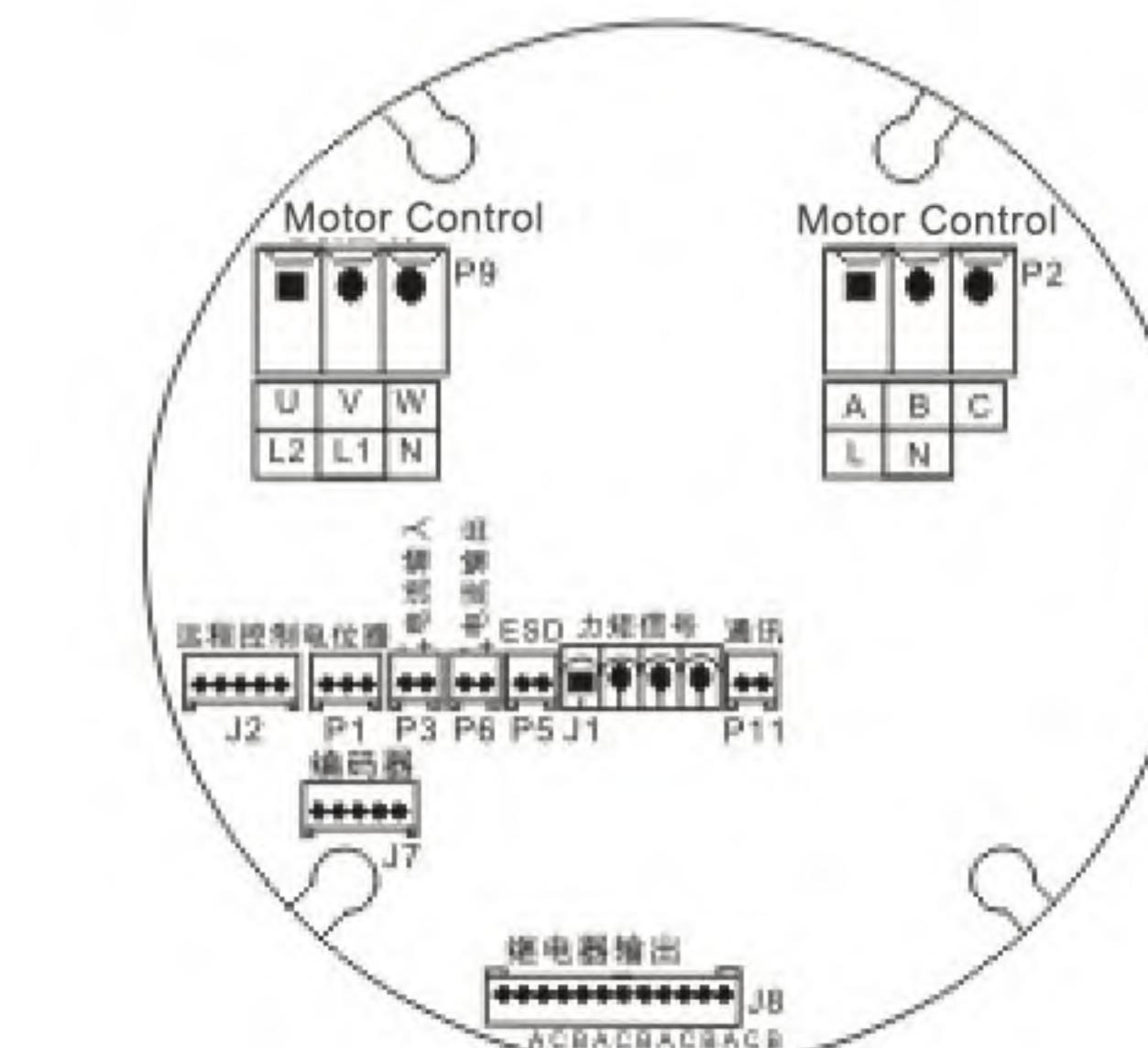
## Intelligent Product Faults And Solutions

Faults Status	Solution
The screen and the indicator light do not show when connected to the power supply	1. The power supply is not connected or the voltage is too low 2. The connection wire of the module is loose 3. The circuit is broken
Neither on scene or remote can work after connection the power supply	1. Fault protection 2. The motor is broken or stuck 3 .The circuit is broken
Can work on scene, but remote operation does not work	1. The remote control signal is abnormal 2. The knob board is broken or the distance is too close 3. The circuit is broken
Can work on site but not working remotely	1. The knob board is broken or not in the live mode 2. The operation button is not rotated to the specified position 3. The circuit is broken
Can open this but can't close or can close this but can't open	1.Wrong connection of torque line 2.The motor is broken. The motor is blocked. Connect to the wrong wire 3.The circuit is broken
No control signal, but it starts to operate when connected to power supply	1.Control signal actually has or lost signal action 2.Set to two-wire control 3.The circuit is broken
The intermediate position can move to the limit	1.Torque switch wire connection is opposite 2.The motor is broken or the wiring is open 3.The circuit is broken
The working direction is opposite to the operating direction	1.Torque switch wiring is reversed 2.Reverse valve position calibration 3.Positive and negative effects was setting opposite 4.Signal reversal
No output current. Off and on current	1.Wiring error or poor contact 2.Potentiometer or encoder failure 3.The circuit is broken
The feedback current is too large or small or remains unchanged	1.Encoder failure or bad mesh with transmission gear 2.Calibration error 3.The circuit is broken
The remote control does not respond	1.Battery voltage is low or incorrectly installed 2.The remote is not aimed at the display window 3.The remote control is broken

## Intelligent Electric Actuator Faults And Solutions

Faults Status	Solution
Display fault and input loss phase	1.Input power phase loss terminal is not tightened 2.The circuit board is broken
Display fault and missing phase	1.Output phase loss 2.Motor is broken 3.The motor wire is not connected 4.The circuit board is broken
Display failure or overheat	1.Motor temperature is too high or blocking rotation 2.The motor temperature sensor is broken 3.The circuit is broken
Display fault The torque load is too large when opening or closing	1.Wrong type of actuator selected 2.The torque line is not connected properly 3.Incorrect stroke setting 4.Stalled or broken motor 5.The circuit is broken
The actuator is operating, but the valve position display remains unchanged	1.The potentiometer or encoder is broken 2.Potentiometer or encoder is abnormal 3.The circuit is broken
The valve is fully open or fully closed but the motor does not stop operating	1.Wrong stroke setting 2.Potentiometer or encoder is abnormal 3.The circuit is broken
Display show missing signal	1.4-20mA signal source is abnormal 2.Wiring is wrong or loose 3.The circuit is broken

Module position number	Harness limit number	Signal definition	Signal types	Module position number	Harness limit number	Signal definition	Signal types	
P2 Power Input	A/L	Three-phase power A phase Single-phase power supply L		P9 Motor Control	U/L2	Three-phase power U phase Single-phase power supply L2		
	B/N	Three-phase power B phase Single-phase power supply N			V/L1	Three-phase power V phase Single-phase power supply L1		
	C	Three-phase power C phase			W/N	Three-phase power W phase Single phase motor N		
P3 Power Input	1	Control current+	4-20mA	J8 Relay Output	24	Full open position	Normally open point	
	2	Control current-			25	Full open COM position	Public port	
P6 Power Output	3	Feedback current+	4-20mA		26	Full open position	Normally closed point	
	4	Feedback current-			27	Full close position	Normally open point	
P5 ESD	5	ESD Signal	Normally open point		28	Full close position COM	Public port	
	6				29	Full close position	Normally closed point	
J2 Remote Switch	13	Module GND			30	Remote	Normally closed point	
	14	Remote stop	Normally open point		31	Remote COM	Public port	
	15	Remote open	Normally open point		32	Remote	Normally open point	
	16	Remote close	Normally open point		33	Fault	Normally closed point	
P11 RS485 Bus	17	Module 24V			34	Fault COM	Public port	
	36	RS485 A Line			35	Fault	Normally open point	
	37	Rs485 B Line						



Note: The contents of this manual are subject to change without notice.  
 1. Turn the handwheel clockwise to close, if there are special requirements, please specify.  
 2. The environment with explosive gas must be stated, and it must meet the requirements of the explosion-proof mark in this manual  
 3. If the connection size does not conform to this manual, you can negotiate with our company to solve it.