GRAT®
Simple & Reliable

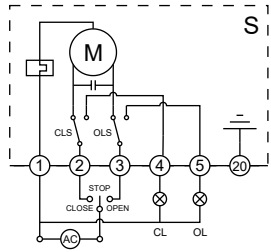
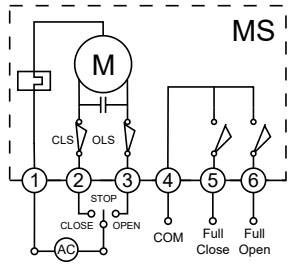
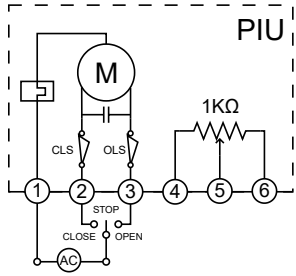
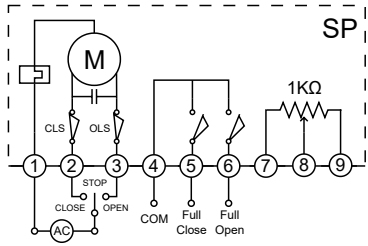
Electric Ball Valve

Operation Manual

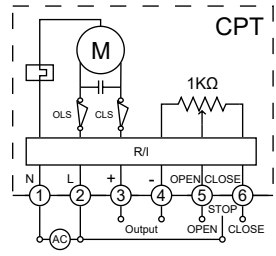
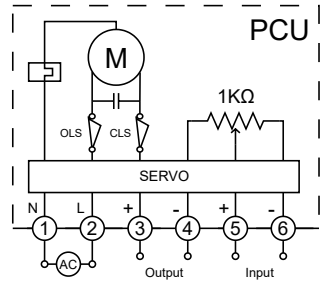
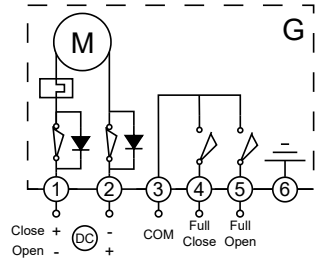
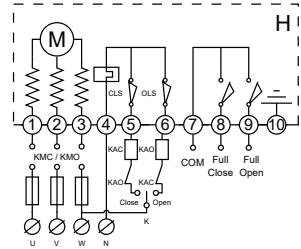
- Please read this instruction manual carefully before installation and use.
- Retain this manual for future reference.
- Ensure proper use of the product by thoroughly understanding the contents of this manual.

Contents

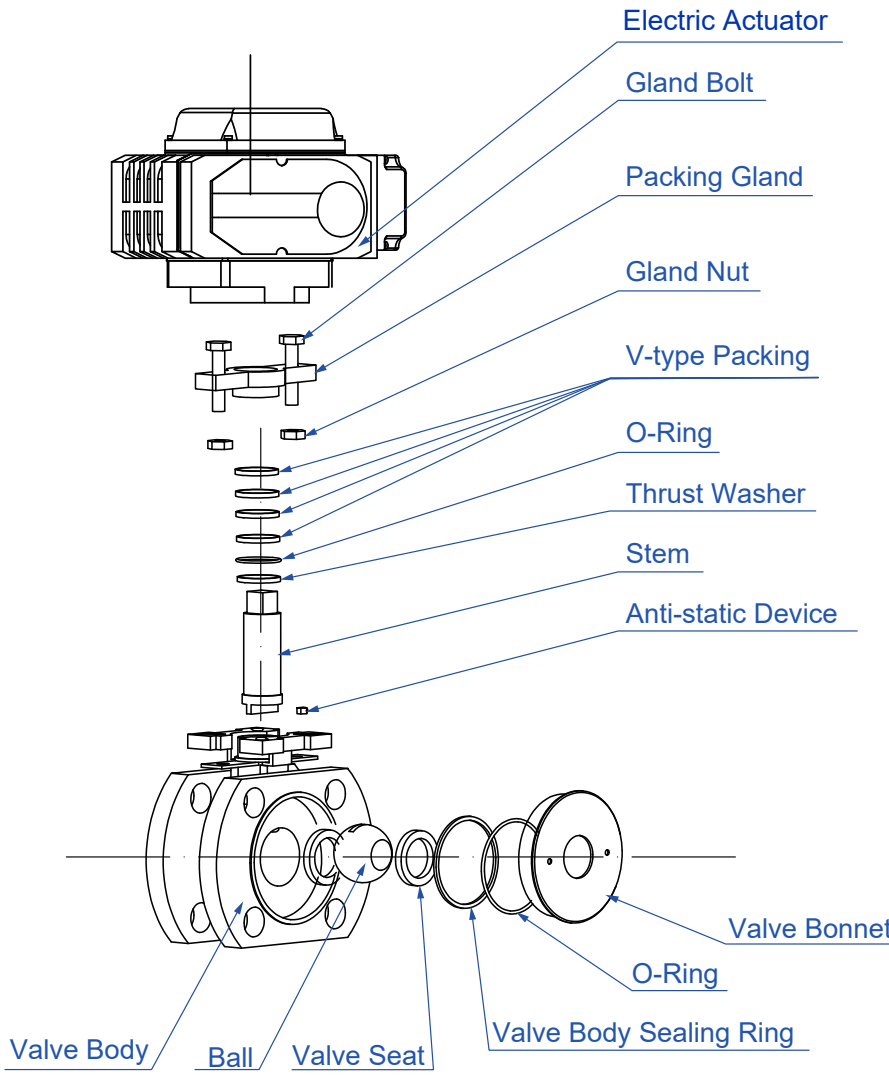
Electrical Wiring Diagram

Control Circuit	Model Code	Circuit Diagram
Switching Action Mode: Switching operations (open/close) are achieved via AC switching signals, and a set of active position signals indicating fully open/fully closed status are output.	S	
Switching Action Mode: Outputs passive contact signals. Structure: Equipped with two intermediate position switches.	MS	
Switching Action Mode: Outputs 0~1000Ω feedback signal. Structure: Equipped with 500Ω or 1kΩ potentiometer.	PIU	
Switching Action Mode: Controls valve opening angle via switching circuit, corresponding to potentiometer resistance value, while enabling intermediate position control function. Structure: Integrated with potentiometer and intermediate position switch.	SP	

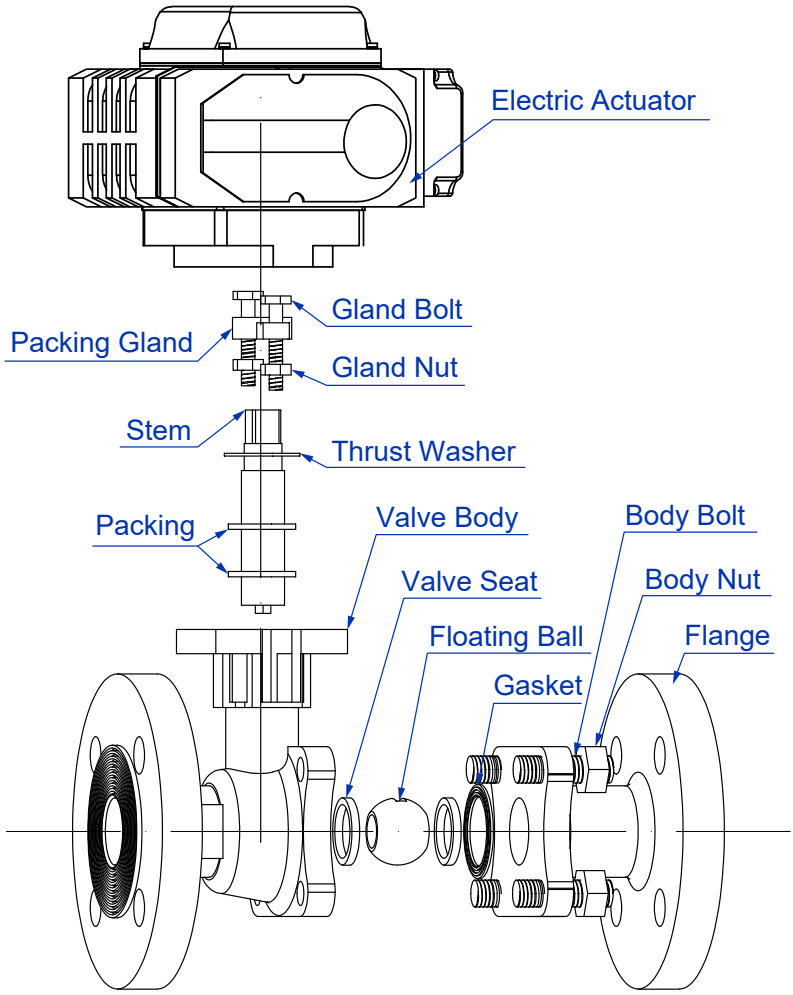
Electrical Wiring Diagram

Control Circuit	Model Code	Circuit Diagram
Switching Action Mode: Outputs 4~20mA valve position feedback signal. Structure: Equipped with 1kΩ potentiometer and R/I converter.	CPT	
Regulating Action Mode: Accepts 4~20mA control signal input and outputs 4~20mA valve position feedback signal. Structure: Integrated with 1kΩ potentiometer and control module (servo amplifier).	PCU	
DC switching signals are output from the circuit via an external DC power supply to control the opening/closing program, and a set of passive contact signals corresponding to fully open/fully closed positions are provided.	G	
Three-phase AC switching signals are output through an external three-phase power phase-reversing circuit to control opening/closing operations, accompanied by a set of passive contact signals for fully open/fully closed position indication.	H	

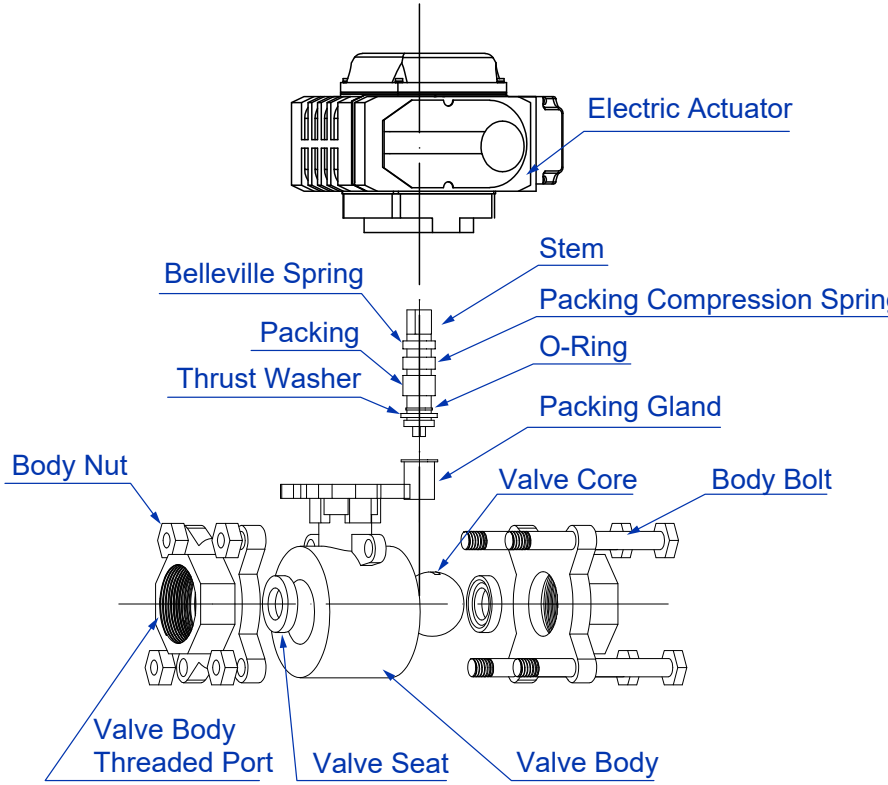
Short Flanged Ball Valve Assembly Drawing



Long Flanged Ball Valve Assembly Drawing

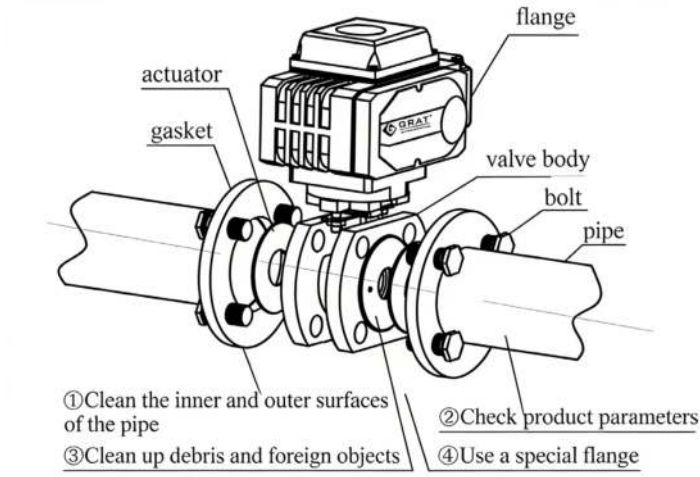


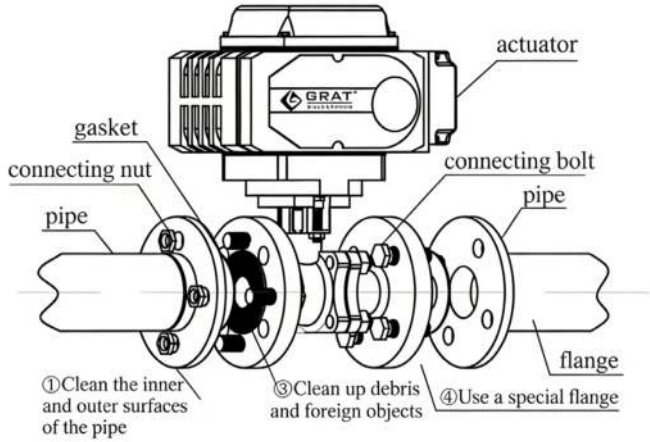
Female Threaded Ball Valve Assembly Drawing



Electric Ball Valve Installation Procedure

Pre-installation Notes





注：

The pipelines before and after the valve should be prepared, with coaxial alignment and parallel flange sealing surfaces.

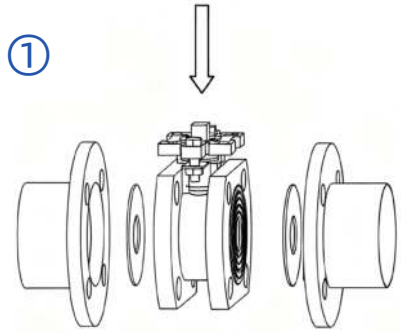
The pipeline must be able to bear the weight of the valve; otherwise, appropriate supports must be provided on the pipeline.

Electric ball valves can be installed on pipes at any angle, but inverted installation is not recommended for ease of maintenance.

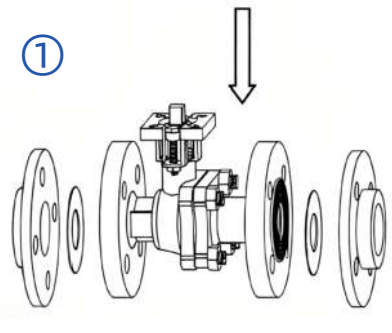
Electric Ball Valve Installation Steps

• Place the valve between the two mounting flanges;

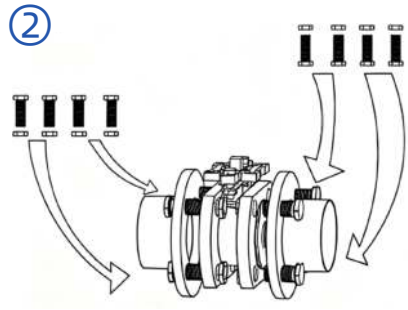
Short Flanged Electric Ball Valve

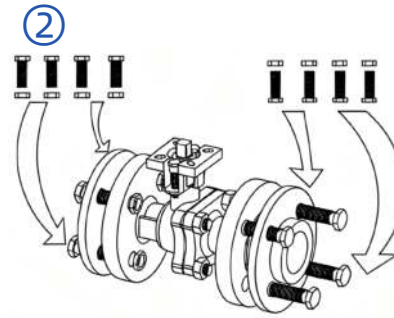


Long Flanged Electric Ball Valve

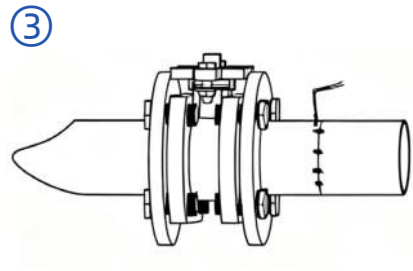


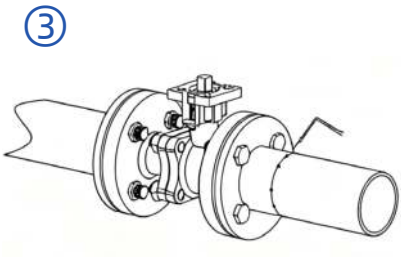
• Insert the bolts gently into the flange holes and slightly tighten the nuts to correct the flatness of the flange surfaces;





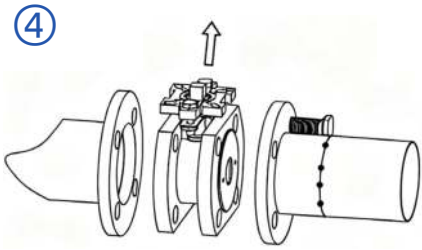
• Fix the flanges to the pipeline by spot welding;

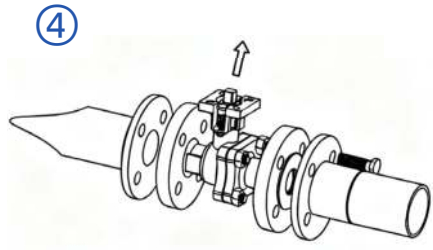




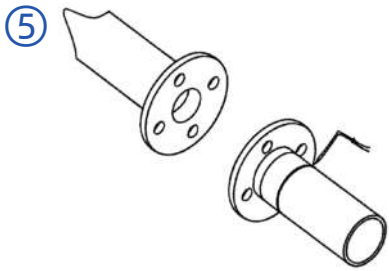
Short Flanged Electric Ball Valve **Long Flanged Electric Ball Valve**

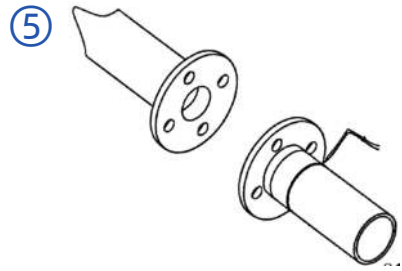
• Remove the valve;



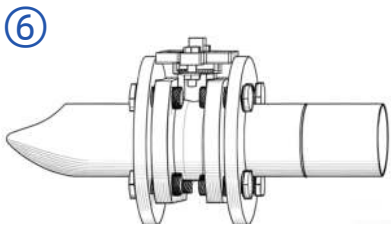


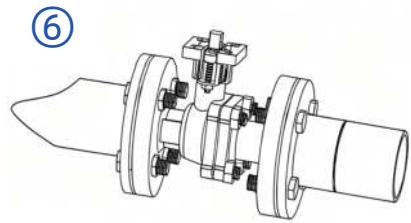
• Fully weld and fix the flanges to the pipeline;





• Reinstall the valve after the weld joints have cooled, ensuring sufficient clearance in the flanges to prevent valve damage; align the valve position and tighten the bolts; tighten all nuts in a crisscross and balanced manner.



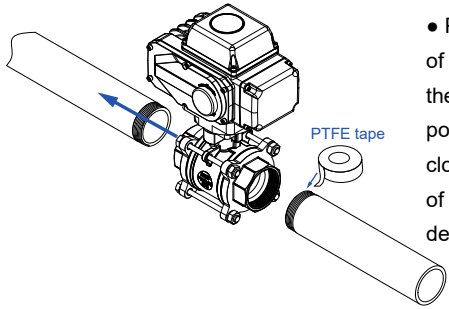


• Confirm that the valve can open and close freely.

The opening and closing strokes of the electric ball valve's control mechanism are pre-adjusted at the factory. To prevent incorrect direction when power is connected, users should first manually open the valve to the half-open (50%) position before connecting power for the first time, then press the electric switch and check that the direction indicated on the dial matches the actual valve opening direction.

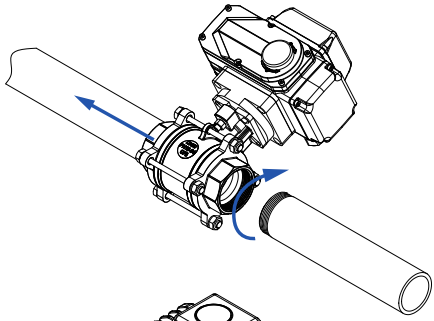
Internal Thread Electric Ball Valve

①



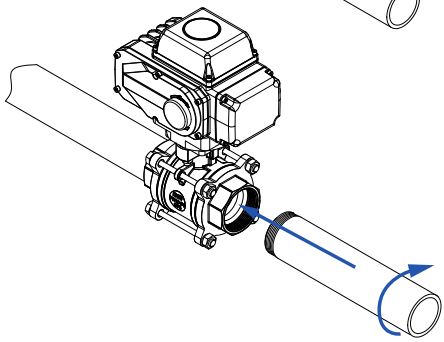
● Pre-treatment: Clean the threads of the pipeline and valve, and set the valve to the half-open position.Wrap PTFE tape: Wind clockwise along the external threads of the pipeline. The number of turns depends on the pipe diameter.

②



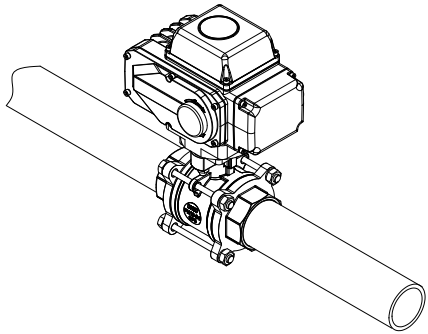
● Gently butt the valve with one side of the pipeline, rotate the valve by hand to engage the threads naturally for 2–3 turns, ensuring alignment without deflection.(Do not force the valve in, to avoid thread damage.)

③



● Connect the other side of the pipeline to the opposite end of the valve, and also screw in by hand for 2–3 turns to ensure both ends are pre-tightened.At this point, the valve and pipeline form an integral unit, and the position can be fine-tuned.

④

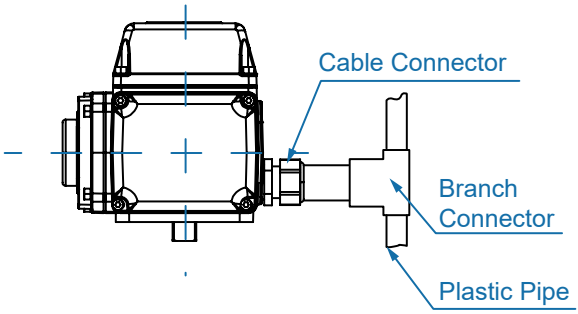


● Tighten the joints at both ends evenly to avoid excessive stress on one side, which may cause valve body deformation or thread cracking.(Maintain pressure for a period of time. The valve can be put into service only after no leakage is confirmed.)

Product Installation

Cable Installation

● Please install the electrical conduit as shown in the left diagram. During installation, note the following:

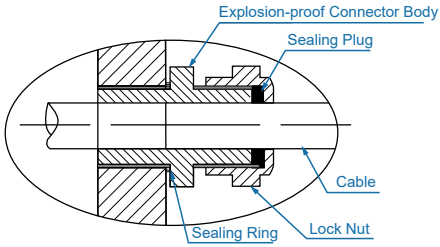


① Take adequate waterproof measures.

② The machine shall be installed higher than the electrical conduit.

● Use an electrical conduit with an outer diameter of φ9-φ11.

As shown in the diagram below: Do not use a cable conduit that does not match the diameter of the cable gland when installing the cable. It is essential to ensure the cable interface is tightly sealed; otherwise, rainwater may seep into the machine through the cable gland and damage internal components.



● Use shielded cables for signal wires, and do not route them in parallel with power cables.

Common Faults and Countermeasures

Common Faults	Solutions
Media blockage in the ball valve, valve clogging	Remove impurities and clean the valve inner cavity
Leakage at the flange sealing surface	Replace the sealing gasket and tighten the flange bolts (apply uniform force)
Leakage at the packing	Replace the packing correctly
Leakage from the valve core when the valve is closed	Inspect and replace the valve seat seal
Valve does not operate while the electric actuator is functioning	Inspect and replace the coupling

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