Here is the detailed information about the metal - sealed eccentric semi - ball valve, including its product introduction, typical installation schematic diagram, maintenance and troubleshooting, as well as performance characteristics:

## **Product Introduction**

The metal - sealed eccentric semi - ball valve is a high - performance valve designed for various industrial applications. It mainly consists of the following components:

- Valve Body: Usually made of high quality cast steel or stainless steel, the valve body has excellent strength and corrosion resistance. It can withstand high pressure and high temperature working conditions, ensuring the long term stable operation of the valve in harsh environments.
- Eccentric Semi ball: The key component of the valve is the eccentric semi ball, which is made of wear resistant and high strength metal materials. Through precision machining and surface treatment, the semi ball has good hardness and smoothness. The eccentric design enables the semi ball to have a unique movement trajectory during the opening and closing process, which helps to improve the sealing performance and service life of the valve.
- Sealing Ring: The metal sealed ring is an important part of ensuring the sealing performance of the valve. It is made of special alloy materials with high hardness and good elasticity. The sealing ring is closely matched with the surface of the semi ball to achieve a reliable sealing effect.
- Valve Stem: The valve stem is made of corrosion resistant stainless steel. It transmits the torque from the actuator to the semi ball to drive the opening and closing movement of the valve. The valve stem has good strength and rigidity to ensure the accurate operation of the valve.

## Typical Installation Schematic Diagram





<-- Bolt connection of flanges -->

Installation Key Points:

- The valve should be installed in a position that is convenient for operation and maintenance. It is generally recommended to install it on a horizontal pipeline. If it is installed on a vertical pipeline, make sure that the medium flow direction is consistent with the direction indicated on the valve.
- Before installation, the inside of the pipeline should be thoroughly cleaned to remove any debris, welding slag, or other impurities to prevent them from entering the valve and affecting its normal operation.
- Align the flanges of the valve with those of the pipeline accurately and tighten the bolts evenly to ensure a leak free connection. Check that the valve is not subject to any external forces during installation to avoid deformation.
- If the valve is equipped with an actuator, such as an electric or pneumatic actuator, install and debug it according to the relevant installation instructions to ensure a reliable connection and coordinated operation between the actuator and the valve.

## Maintenance and Troubleshooting

- Maintenance
  - Regularly check the sealing performance of the valve. Conduct pressure tests to detect any leakage. If leakage is found, identify the cause in a timely manner. It may be due to damage to the sealing surface or loose flange connections.
  - Lubricate the moving parts of the valve, such as the valve stem and bearings, regularly to reduce friction and ensure the smooth operation of the valve. Check for wear and corrosion of these parts and replace them if necessary.
  - Clean the surface of the valve to remove dust, oil, and other impurities. For valves installed outdoors or in harsh environments, take appropriate protective measures, such as painting or wrapping, to prevent rust and corrosion.
  - Inspect the operation of the actuator, including the electrical system and pneumatic system (if applicable), to ensure its normal operation. Regularly clean, calibrate, and maintain the actuator to ensure its control accuracy and reliability.
- Troubleshooting
  - **Sealing Leakage**: Examine the sealing surface for scratches, wear, deformation, or contamination. Repair or replace the sealing components as needed. Also, check if the flange connection bolts are loose and tighten them if necessary. If the problem persists, there may be cracks or other defects in the valve body, requiring further inspection and repair.
  - **Difficulty in Valve Operation**: This may be caused by rust or jamming of the valve stem, or a malfunction of the actuator. Try removing rust and lubricating the valve stem. If the problem cannot be solved, replace the valve stem. For the actuator, check the power supply, air source, control signal, and internal

components for damage, and repair or replace them according to the specific problem.

• **The Valve Does Not Open or Close Completely**: Check if the limit switch is adjusted correctly and if the stroke of the actuator is set accurately. Also, check if the semi - ball is blocked by foreign objects or if the transmission parts are loose or damaged. Make corresponding adjustments, cleanings, or repairs based on the identified causes.

## **Performance Characteristics**

- Excellent Sealing Performance: The metal to metal sealing structure, combined with the eccentric design of the semi ball, ensures a tight seal when the valve is closed. It has a low leakage rate, meeting the high sealing requirement applications in various industries.
- High Temperature and High Pressure Resistance: The use of high quality metal materials and advanced manufacturing processes enables the valve to withstand high - temperature and high - pressure working conditions. It is suitable for transporting high - temperature and high - pressure media such as steam, hot water, and high - pressure gases.
- Long Service Life: The wear resistant materials and the unique eccentric structure of the valve reduce the friction and wear between the components during operation, thus prolonging the service life of the valve. This reduces the frequency of maintenance and replacement, resulting in lower operating costs.
- **Good Flow Characteristics**: The semi ball design of the valve provides a smooth flow path for the medium, with a small flow resistance and a large flow coefficient. This ensures the efficient operation of the pipeline system and reduces energy consumption.
- **Bidirectional Flow Capability**: The valve can be used for bidirectional flow, allowing the medium to flow in either direction without affecting the sealing performance. This provides flexibility in pipeline system design and operation.

