The following is the relevant information about the AX742X safety pressure maintaining and relief valve:

Product Introduction

- **Structural Composition**: It is composed of a main valve, a needle-type regulating valve, a pilot valve, a ball valve, and a connecting pipe system. The main valve body adopts a full-channel, direct-flow, and streamlined design, and there are two types of structures: diaphragm type and piston type.
- **Working Principle**: When the pipeline supplies water from the inlet end, the water flows through the needle valve into the main valve control chamber, and the outlet pressure acts on the pilot valve through the conduit. When the outlet pressure is higher than the set value of the pilot valve, the pilot valve closes, and the control chamber stops draining. The pressure in the main valve control chamber increases and closes the main valve, and the outlet pressure no longer rises. When the outlet pressure drops to the set pressure of the pilot valve, the pilot valve opens, and the control chamber drains water to the downstream. Since the drainage volume of the pilot valve is greater than the water inflow of the needle valve, the pressure in the main valve control chamber decreases, and the inlet pressure makes the main valve open. In a stable state, the water inflow and drainage in the control chamber are the same, the opening degree remains unchanged, and the outlet pressure remains unchanged. The outlet pressure can be set by adjusting the spring of the pilot valve.
- **Function and Purpose**: Generally installed upstream of the water supply pipeline system, it is widely used for the water pressure control of high-rise buildings, living areas, or other water supply pipeline systems to achieve the function of reducing and stabilizing the pressure of the downstream pipeline network or devices. It can also be installed on the pipelines of the fire protection water supply system and other water supply systems. When the pressure in the water supply pipeline exceeds the set pressure of the relief valve, the relief valve automatically opens to release pressure quickly to protect the pipeline safety. It can also be used as a pressure maintaining valve to ensure the water supply pressure upstream of the main valve.

Typical Installation Schematic Diagram

It is usually installed on a horizontal pipeline. Gate valves or butterfly valves should be installed at both the inlet and outlet ends of the valve to cut off the water flow during maintenance. A filter should be installed at the inlet end of the valve to prevent impurities from entering the valve and affecting its normal operation. The pilot valve should be installed in a position that is convenient for operation and observation, and the connecting pipeline between the pilot valve and the main valve should be as short and straight as possible to reduce the resistance loss. At the same time, according to actual needs, instruments such as pressure gauges can be installed on the pipeline to monitor the pipeline pressure.

Maintenance

- **Storage Requirements**: The valve should be stored in a dry and ventilated room, and both ends of the passage must be sealed.
- **Regular Inspection**: Valves that have been stored for a long time should be inspected regularly, the dirt should be removed, and anti-rust oil should be applied to the machined surfaces. After installation, regular inspections should also be carried out.

The main inspection items include the wear condition of the sealing surface, the wear condition of the trapezoidal thread of the valve stem and the valve stem nut, and whether the packing is outdated and ineffective. If there is any damage, it should be replaced in time. After the valve is overhauled and assembled, a sealing performance test should be carried out.

- **Daily Maintenance**: Keep the valve clean to avoid the accumulation of impurities; check whether all connection parts are loose, and tighten them in time if they are loose; check whether the operating mechanism of the valve is flexible, and eliminate any jamming phenomenon in time.

Troubleshooting

- **Inaccurate pressure control**: It may be that the spring of the pilot valve is damaged or the opening degree of the needle valve is set improperly. It is necessary to replace the spring of the pilot valve or readjust the opening degree of the needle valve; it may also be that the main valve is not tightly sealed and there is a leakage phenomenon. It is necessary to check the sealing surface of the main valve and repair or replace it if it is damaged.
- **The valve cannot be opened or closed**: It may be that the control pipeline is blocked, and it is necessary to clean the control pipeline; it may also be a fault of the pilot valve, such as the pilot valve core being stuck or the electromagnetic coil of the pilot valve being damaged, and it is necessary to repair or replace the pilot valve; it may also be that the main valve core is stuck, and it is necessary to disassemble the main valve for inspection and cleaning.
- **Valve leakage**: It may be that the sealing surface is damaged, and it is necessary to repair or replace the sealing surface; it may also be that there is leakage at the stuffing box, and it is necessary to replace the packing; it may also be that the connection parts of the valve are loose, and it is necessary to tighten the connection bolts.

Performance Characteristics

- **Stable and reliable pressure control**: The pilot valve and the main valve work continuously, and the downstream pressure changes continuously and smoothly, with little influence from the inlet pressure.
- **Convenient operation**: After the working pressure is set, when the upstream pressure or flow rate changes, the main valve automatically adjusts to stabilize the downstream pressure.
- **Small hydraulic loss**: The valve body adopts a full-channel, direct-flow, and streamlined design, with good energy-saving effect.
- **Smooth and reliable closing**: It can eliminate the residual pressure wave.
- **Simple maintenance**: Maintenance and inspection can be carried out without changing the pressure setting value or removing the valve from the pipeline.
- **Good sealing performance**: The valve plate adopts a specially-made rubber seal fixed by bolts in an inlaid manner. There is no relative movement between the sealing ring and the valve seat, with little wear and long service life.


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