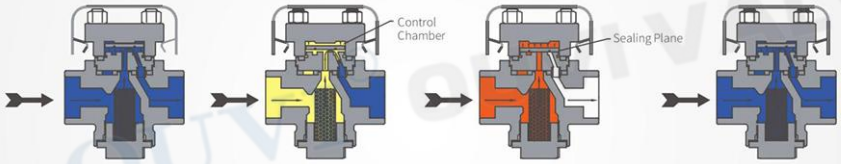
Thermodynamic Steam Trap

Thermodynamic type

According to Bernoulli's principle and the physical properties of steam and condensate, the trap discharges condensate by altering the dynamic and static pressure acting on the disc, enabling the valve to open and close.
When the device starts, the condensate in the pipeline is pushed by the working pressure to lift the disc, allowing for rapid discharge. Once the condensate has been discharged, steam enters the trap. The volume of the steam expands rapidly, and since the flow rate of the steam is greater than that of the condensate, a pressure difference is generated that quickly closes the disc under the suction force of the steam flow. When the disc closes, it is subjected to pressure from both sides, with the effective area below the disc being smaller than that above. Since the pressure inside the trap's pressure chamber comes from the steam pressure, the pressure on top of the disc is greater than that below, ensuring that the disc remains tightly closed. As the steam in the pressure chamber cools and condenses, the pressure inside the chamber disappears. The condensate is again pushed open by the working pressure, allowing it to continue discharging, creating a cyclic operation with intermittent drainage.

Operating Principle

Air | Low temperature condensate | Hot condensate | Steam



1. At startup, the inlet pressure lifts the disc, quickly discharging the cooler condensate and air for a rapid start.
2. After the pressure rises, hot condensate flowing through the trap seat generates secondary steam. The high-speed secondary steam creates a low-pressure zone below the disc, drawing it toward the valve seat.
3. Simultaneously, secondary steam accumulates in the chamber above the disc, generating sufficient pressure to pull the disc closer to the seat. The disc then presses against the inner ring of the valve seat to close the inlet while also pressing against the outer ring, maintaining the pressure above the disc.
4. Due to the condensation of the secondary steam above the disc, the pressure drops, lifting the disc again and reopening the valve. The condensate can then discharge freely, and the cycle repeats.

Operating Principle

This steam trap uses the difference in flow speed between steam and condensate, along with thermodynamic properties, to discharge condensate.

Features

- It relies on a single moving part-the disk-to open and close the condensate outlet.
- Strong resistance to freezing and water hammer.
- Built-in stainless steel filter screen allows for online repair or replacement of internal components.
- High resistance to contamination, in addition to the built-in filter screen to block impurities, smaller particles are discharged with the condensate during operation.

Automatic Operation

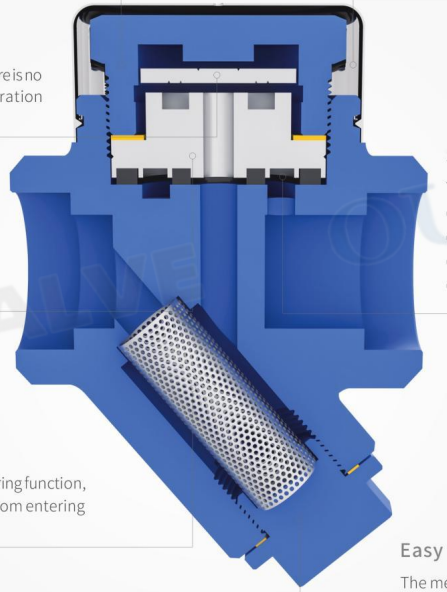
The change in pressure within the pressure chamber drives the opening and closing of valve, without the need for external force.

Unaffected by Environmental Conditions

The insulation sleeve isolates the pressure chamber from the external environment, ensuring that switching operations are unaffected by external interference.

Reliable operation

With only one moving part, there is no sticking, ensuring reliable operation and easy maintenance.



No Air Blockages

Split-Type Valve Seat, made from high-carbon stainless steel, it operates reliably even in superheated steam environments.

Stable Operation

The valve seat features three discharge ports, ensuring the disk settles smoothly when closed, which extends the life of the trap.

Filtering Function

Built-in filter with powerful filtering function, effectively preventing debris from entering the valve.

Easy to Clean

The metric threaded plug allows for quick disassembly, installation, and easy cleaning and maintenance.

Serviceable Valve Seat

The split-type design allows for online maintenance.

Durable

The entire thermodynamic series is freeze-resistant and water hammer-resistant.

Application Scenarios

Draining steam from high, medium, and low-pressure main lines and steam tracer lines.

OUVI® OUVI VALVE Thermodynamic Steam Trap