



ZHEJIANG NEWTON FLUID CONTROL CO.,LTD.

Headquarters (Wenzhou)

Zhiyi road,Lingxia industrial zone,Wuniu,Wenzhou,
Zhejiang, China.
Tel: 86-577-67978269
Fax:86-577-67376711
E-mail: vmv@vmv-valve.com

Shanghai R&D Center

Jiading District, Shanghai
Building 12A, No. 1818 Chengbei Road
Tel: 86-18057752663
E-mail: vmv8@vmv-valve.com

CE ISO TS EAC CCS
www.vmvvalve.com



Scan More Wonderful

Number:ND/SM20210101



2025 © Version and technical interpretation rights belong to Newton,Counterfeiting must be investigated!

Thermodynamic (Disc) Steam trap

Operation Manual



ZHEJIANG NEWTON FLUID CONTROL CO.,LTD



Thermodynamic(Disc) Steam Trap

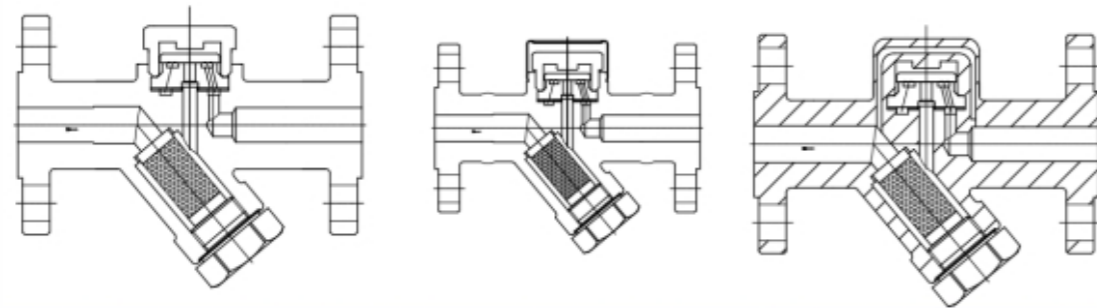
1. Product Overview

Thermodynamic (disc) steam trap is a typical representative of thermodynamic steam trap. It operates by utilizing the thermodynamic properties of steam and condensate water (That utilizing both the density difference and the viscosity coefficient difference of steam and condensate water).

2. Structure and Performance

Both valve body and bonnet are made of forged steel, and the sealing components are made of martensitic stainless steel and undergo heat treatment and aging treatment. High strength, no deformation, wear-resistant, long service life, simple structure, small volume and light weight, easy to install and repair. Strong resistance to water impact, not easy to freeze, and can be installed in any direction.

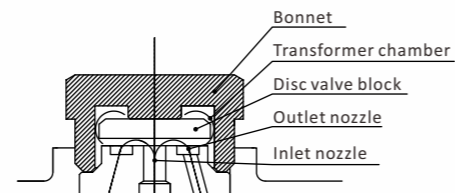
In order to reduce the impact of pressure fluctuations in the transformer room caused by environmental temperature on the frequency of operation, it is divided into atmospheric cooling type, air insulation type, and steam jacket insulation type. The three structures are shown in the following figure:



From left to right, they are respectively atmospheric cooling type, air insulation type, and steam jacket insulation type.

3. Working Principle

The working principle of the Thermodynamic (disc) steam trap is shown in the figure on the right. When starting steaming, air and condensate water flow into the steam trap, and the steam trap disc is pushed away from the valve seat through the inlet nozzle, and the air and condensate water are discharged from the outlet nozzle; Subsequently, the steam enters the steam trap. Due to the much higher velocity of steam flowing under the steam trap disc than the velocity of condensate water, according to Bernoulli's theorem, the pressure under the disc decreases, and under the closing force on the steam trap disc, make the steam trap closed.



4. Model Selection Precautions

- 4.1 This product is suitable for high pressure, but not for large capacity.
- 4.2 According to thermodynamic properties, the frequency of actions is easily affected by pressure changes in the pressure transformer chamber.
- 4.3 Sometimes there may be air blockage.
- 4.4 There is a certain amount of steam leakage during drainage.
- 4.5 The noise is loud when discharging condensate water.

5. Application

Mainly used in industrial steam heating systems such as petrochemicals, rubber, papermaking, printing and dyeing, pharmaceuticals, metallurgy, and power plants. The scope of use of the product should strictly follow the technical parameters on the product nameplate, and overpressure and over temperature use are strictly prohibited! Our company shall not be liable for any consequences caused by overpressure or overtemperature.

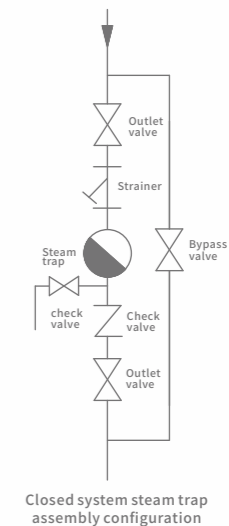
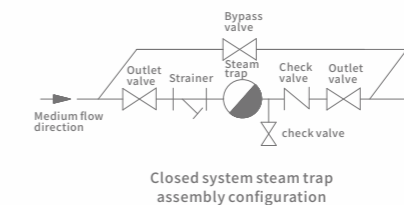
6. Product Standards

Our company's steam trap design, manufacture, inspection, implement GB/T 22654-2008 "Steam Trap Technical Conditions".

7. Installation and Piping

No matter it is a vertical or horizontal pipeline, thermodynamic (disc) steam trap all can be installed. The standard configuration of the steam trap refers to the figure on the right: it mainly includes filter, inlet valve, outlet valve, drainage valve, inspection valve, and bypass valve.

- 1) Before installing the steam trap, please check the nameplate carefully and refer to the user manual. Under the premise that the pressure, temperature, diameter, standard port, connection length, etc. are met, close the front and rear valves of the steam trap, check the flow direction of the medium and the installation direction of the product, and ensure that the arrow shown on the valve body is consistent with the flow direction of the medium.
- 2) During pipe welding, welding slag must be prevented from entering the steam trap channel and any impurities must be prevented from entering the steam trap.
- 3) The steam trap should be installed in the steam system or equipment outlet pipe at a lower position, so that condensed water can naturally flow into the valve body.



8. Care and Maintenance

- 8.1 When repairing or cleaning the internal filter of the product on-site, the bypass valve must be opened first, then the front and rear valves of the steam trap must be cut off, and the inspection valve must be opened for pressure relief. After there is no pressure inside the steam trap and the surface temperature of the steam trap body drops to room temperature, cleaning can be carried out to prevent personnel from getting burned.
- 8.2 If the product is used for new pipelines, the filter screen needs to be cleaned when running for one or two weeks. Afterwards, depending on the first cleaning situation and pipeline medium. In generally, it is necessary to clean again after a maximum of six months of operation.

9. Faults and Solutions

The faults of steam trap in use is summarized into three appearances:

- 9.1 Blockage: Steam trap cannot operate, steam and condensate cannot be drained at all.
- 9.2 Spray: The valve core cannot be closed, resulting in an accident state where steam and condensate are continuously discharged smoothly.
- 9.3 Leakage: Steam leaking from inside the steam trap to the outside.

No matter what kind of fault, it must be carefully analyzed, and the steam trap only can be repaired when it is determined to be the fault of the steam trap itself.

Thermodynamic(Disc) Steam Trap

The possible faults and solutions for thermodynamic(disc) steam trap are listed in the following table.

Faults	Analysis	Solutions
No discharge condensate water	Air blockage	Replace the bimetallic ring with a new one if you have, otherwise eliminate the air in the pipeline
	Valve disc stuck to the valve seat	Wipe or demagnetize the sealing surface of the valve disc and seat
	Steam lock occurring	Check the piping
Steam spraying	Impurity blockage	Clean (check the filter screen) the disc and seat sealing surface
	Wear of sealing surface	Grinding the disc and seat sealing surface
	Exceeding the allowable back pressure	Check the piping
	The steam trap disc is stuck on the top of the inner cover	Clean
Leakage	Oil film is formed between the disc and the seat	Clean
	Scratch on the disc and seat	Polish

10.Warranty

Warranty period:18 months after delivery;

During the warranty period, if the user uses, installs, operates, and maintains the product correctly, and the product does not work properly, our company will provide free repair or replacement of the product.

The following situations are not covered by the warranty:

- 1) Faults caused by exceeding the technical parameters specified on the product nameplate;
- 2) Faults caused by incorrect installation, operation, disassembly, and maintenance;
- 3) Faults caused by impurities or severe corrosion;
- 4) Faults caused by natural disasters;