

Energy-saving Free Float Steam Trap

Features

The TLV Free Float SS1 Steam Trap Series is the world's #1 energy saving steam trap, reducing steam use and CO₂ emissions.

- **Precision-ground Spherical Float and Three-point Seating**

Unique three-point seating and precision-ground float free float type steam trap continuously discharges condensate without accumulation. The spherical float provides infinite sealing surfaces for high durability and long product life. The float and three-point seating provide tight sealing.

- **Stainless Steel Components Ensure High Durability**

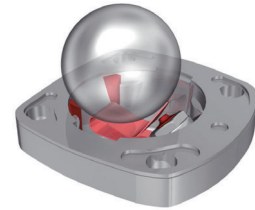
The body and the valve seat use corrosion and rust-resistant stainless steel, thus maintaining the initial performance for a long time.

- **Built-in Bimetal Automatic Air Vent**

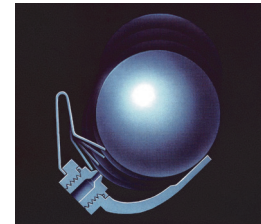
The built-in air vent responds to temperature and promptly exhausts initial air in the piping, thus making it possible to start operating the trap immediately after the supply of steam.

- **Specially Designed Insulating Cover**

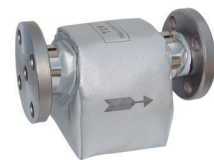
No insulation work is required because the SS1 Series can be equipped with specially designed optional insulating covers, providing effective insulation.



3-point seating and precision ground float



Automatic bimetal air vent

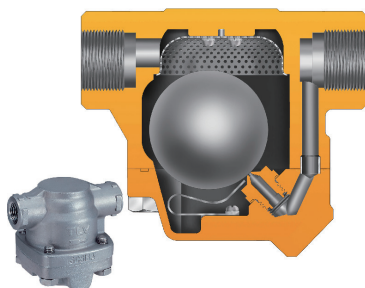


Specially designed insulating cover (Optional)

Basic Concept or Summary

◆ Overview

Steam is often used in cleaning, hospitals, food/rubber factories and other industries, and the boiler fuel cost to generate this steam has a lot to do with production costs. Discharging condensate is essential when using steam, and steam traps are the devices for that job. Boiler fuel use is influenced in a large part by steam trap selection. The SS1 Series has realized tight sealing, long service life and the features shown above to become the world's #1 energy-saving steam trap.

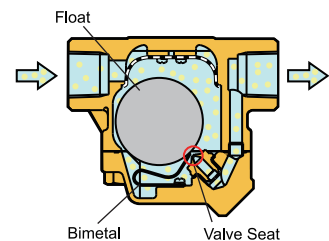


SS1 Series

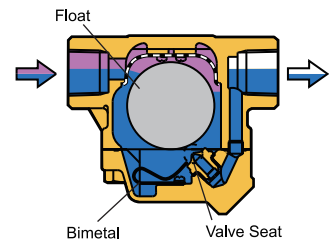
◆ Operation

1. At start-up the system is cold, causing the bimetal air vent strip to hold the float off of the valve seat. This allows rapid discharge of air and cold condensate when steam is first supplied to the system.
2. If the temperature of the condensate rises above 90 °C (194 °F), the bimetal air vent strip allows the valve to close. The float lifts off the valve seat as condensate levels rise, discharging hot condensate.
3. When the condensate flow rate decreases, the lowering level of condensate causes the float to fall, resting on the valve seat. A water seal over the valve seat prevents steam loss. The bimetal is still curved, not affecting the float movement. As the condensate flow rate changes, steps 2 and 3 will repeat in cycles.

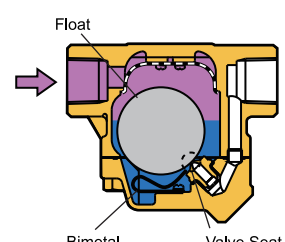
■ Cold Water
 ■ Condensate
 ■ Air
 ■ Steam



1. Start-up Air and Cold Condensate Discharge



2. Condensate Discharge

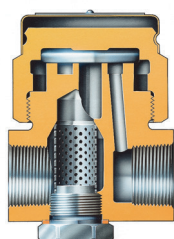


3. Closed Position

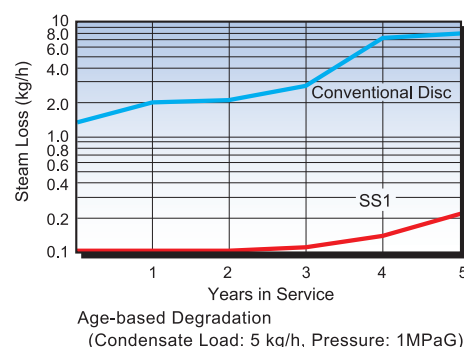
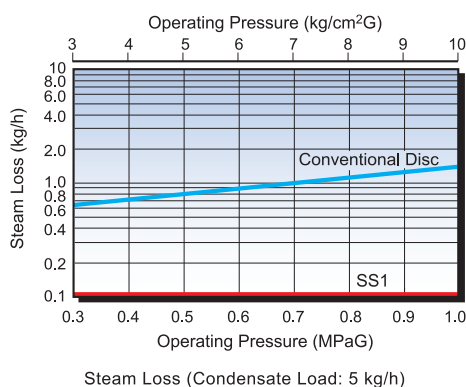
Up until now, the most commonly used steam traps are disc type, but as the graph below shows, even a new disc trap loses approximately 1 kg/h of steam. Additionally, while in use, each year the amount of steam loss increases. In comparison, the SS1 Series loses less than 0.1 kg/h, and keeps the loss at that level over an extended period.

Therefore, the steam loss from 100 properly operating steam traps is 360 tons per year, or approximately 1.44 million yen. The equivalent amount of CO₂ emissions saved is approximately 70 t-CO₂/year (operating 4,000 hours/year, with steam at 4,000 yen/ton). In reality there is also steam leakage from failed traps that makes the effectiveness even greater.

As part of the Environmental Technology Verification (ETV) program, Japan's Ministry of the Environment has verified that the SS1 series minimizes steam loss associated with condensate discharge.



Disc Type Steam Trap



Model	SS1NL	SS1NH	SS1VL	SS1VH
Installation	Horizontal		Vertical	
Body Material	Cast Stainless Steel (CF8)			
Connection	Screwed, Socket Welded, Flanged			
Size (mm)	15, 20, 25			
Orifice No.	5 10 21			
Maximum Operating Pressure (PMO) (MPaG)	0.5 1.0 2.1			
Maximum Differential Pressure (PMX) (MPa)	0.5 1.0 2.1			
Maximum Operating Temperature (°C)	220	350	220	350
Maximum Discharge Capacity* (kg/h)	205*			

* Maximum value for this series. Figure differs depending on operating conditions. See TLV product specification data sheet (SDS) for details.

Installation in Practice or Schedule

Domestic • Introduced to large steam-using plants worldwide such as oil refineries, chemical, steel, and food

Overseas • Introduced to large steam-using plants worldwide such as oil refineries, chemical, steel, and food

Overseas subsidiaries in 12 countries and more than 100 international distributors in over 50 countries

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