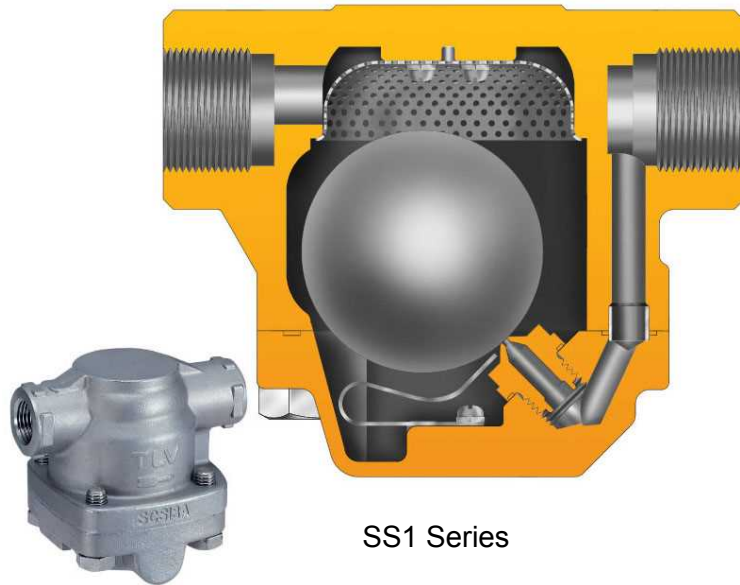




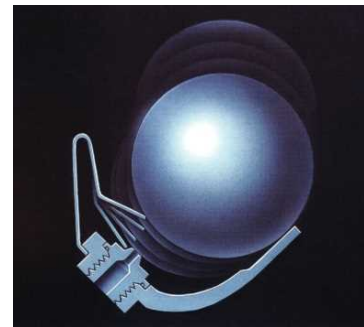
# Energy-Saving Free Float Steam Trap SS1 Series

TLV Co., Ltd.

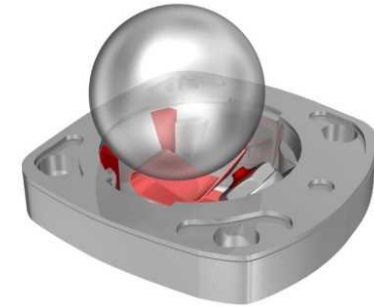
Free Float Steam Trap with the Lowest Energy Costs in the World



SS1 Series



Automatic bimetal air vent



3-point seating and precision ground float



Specially designed insulating cover (Optional)

## Features

The TLV Free Float SS1 Steam Trap Series is the world's #1 energy saving steam trap, reducing steam use and CO<sub>2</sub> emissions.

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

High sealing performance with no steam leakage.

- **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.

TLV International, Inc.

881 Nagasuna, Noguchi, Kakogawa, Hyogo 675-8511, JAPAN

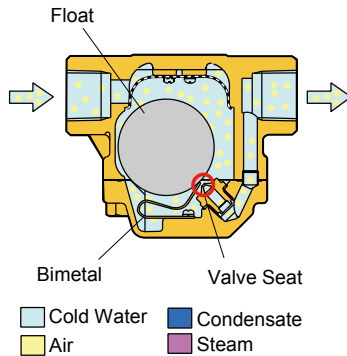
URL <http://www.tlv.com>



## Overview (Operation)

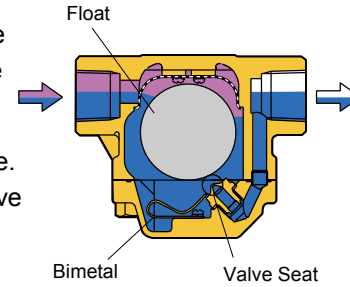
### 1. Start-up Air and Cold Condensate Discharge

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.



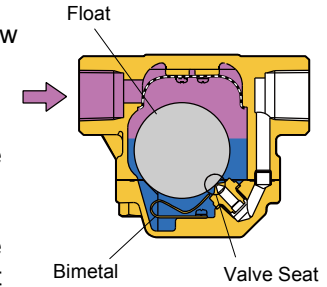
### 2. Condensate Discharge

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. Closed Position

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.

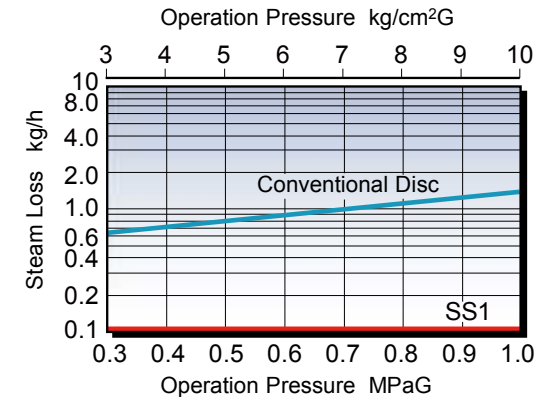


## Effects

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 CO<sub>2</sub> emissions saved is approximately 70 t-CO<sub>2</sub>/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.



Steam Loss (Condensate Load: 5 kg/h)

## Introductory Track Record

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

Joint-recipient, with Nippon Petroleum Refining Co. Ltd. (currently JX Nippon Oil & Energy Corporation), of the Ministry of Economy, Trade and Industry's 2009 Energy Conservation Grand Prize for Excellent Energy Conservation "Director General Prize of Agency for Natural Resources and Energy" for reduction of leaks from approximately 100 thousand steam traps spread across seven plants, resulting in an estimated savings of 18 ML (113,000 US barrels) of crude oil per year.