

## Instruction Manual for Thermostatic Steam Trap UTST

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### 1.Product Overview:-

The enthalpy in the steam basically has two components : The Latent heat and the Sensible heat. Whereas condensate has only sensible heat. This condensate has to be removed as soon as it is formed, because it hinders to efficient heat transfer as well as leads to water hammer phenomenon as it is hot water (having more Specific Gravity) that moves with high velocity of steam (8 to 10 times higher than water), carrying enough momentum to rupture pipes and which is damaging to the plant pipelines as well as piping equipments. Hence, need to remove condensate from steam main and trap steam. This is done by steam trap.

UKL Thermostatic trap has a unique Simple design, Minimum number of components and where the Bellow is enclosed and protected thus ensuring long life for the Bellows.

These traps used largely on Tracing lines or Tank Farms where steam is supplied to maintain Temp / viscosity of the Oil.

### 2. Working Principal :-

Condensate temperature is used to open the trap by contracting the capsule, discharging condensate in low temperature. This trap works on the difference in Enthalpy of Steam and Condensate. A capsule attached to a Bellow filled with precise amount of a Hydrocarbon, Expands and contracts in response to the rising/lowering of Enthalpy. Thereby shutting and opening the valve. Condensate has lower Enthalpy, causing the bellow to contract and the seat to retract which opens the valve and allow discharge of condensate and expands as soon as it comes in contact of Hot steam, causing seat to close the valve.



**MATERIAL OF CONSTRUCTION:**  
ASTM A 105

**SIZES AVAILABLE:-**  
½", ¾", and 1"

**END CONNECTIONS:**  
Threaded to NPT , BSP and BSPT  
Socket Weld to ASME B 16.11  
Flanged - #150/#300/#600

**INSTALLATION:-**  
Preferably in horizontal position.

### **3. Installation and Commissioning Instructions:**

Your UKL make TST steam traps will provide you with long, trouble-free service if they are correctly installed and maintained.

A few minutes of your time spend reading these instructions now may save hours of trouble and downtime later.

- Before installing trap, the inlet piping should be carefully blown down to remove any existing pipe debris.
- An arrow mark is punched on every trap body showing the flow direction. Install the trap by fixing the inlet & outlet ports accordingly.
- It must be carefully noted that TST traps work on expansion/compression of capsule so can be mounted vertical as well as horizontal. When the trap is mounted horizontally,
- It is advisable to install the Isolation Valves on either sides of trap to facilitate the servicing.
- If the trap discharges condensate into a closed condensate return system or where there is a lift at the trap, a check valve should be fitted at the outlet of the trap.
- It is preferable to install a 'Test Valve' at outlet & before isolation valve for testing the trap functioning.
- Testing of trap: trap can be tested either by Test Valve, pyrometer, ultrasonic stethoscope or a rod with sufficient length can be touched to the trap body & vibrations can be sensed by hands if trap is operating.

- **General Instructions:-**

- a. **The Drain Point**

The drain point should be so arranged that the condensate flows easily into the trap. This point needs to be properly appreciated.

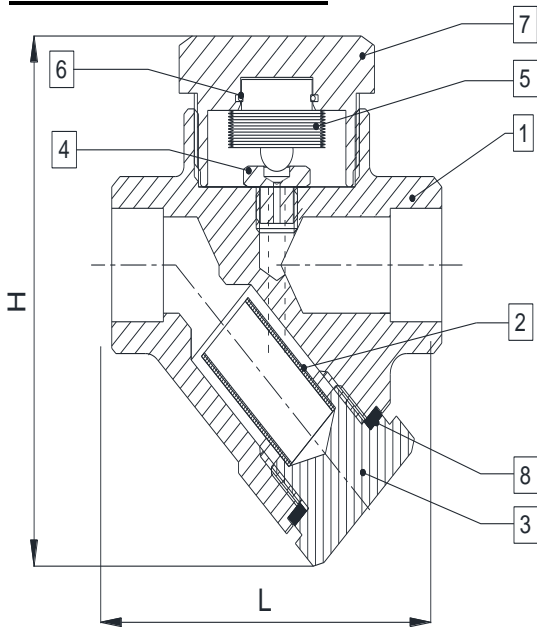
- b. **Air Binding**

When air gets pumped / locked into the trap, in the space meant for steam, the trap function ceases. Unless the air thus trapped, is released by making proper provision for venting it, the trap and by extension the plant may take a long time warming up and may never work at its full potential

- c. **Group trapping:-**

Many times it is observed that one trap is used for trapping steam or removing condensate from multiple units, for reasons of economy, which is wrong. Each individual unit may have different consumption levels of steam, and consequently may generate different volumes of condensate at different pressures, which may tend to obstruct or prevent the proper draining of condensate of other units, leading to water logging and other performance related complications. Therefore it is always recommended to use individual traps for individual units, and the outlets of all these individual units are connected to a Common condensate collection, return main/drain point.

**BILL OF MATERIAL:**



No.	PART NAME	MATERIAL	MATERIAL CODE
1	Body	Forged Steel	ASTM A105
2	Filter (Perforated Sheet)	Stainless Steel	AISI 304
3	Filter Cap	Forged Steel	ASTM A105
4	Valve Seat	Stainless Steel	AISI 304
5	Bellows	Std.	---
6	E- Ring	Stainless Steel	AISI 304
7	Cover	Forged Steel	ASTM A105
8	Spiral Wound Gasket	Stainless Steel	S.S. With Graphite Filler

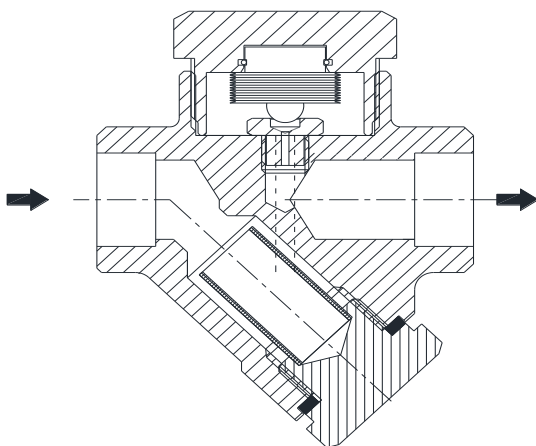
Dimensions (in)				
Connections		½"	¾"	1"
NPT, BSP, SW	L	3.1	3.1	3.5
	H	4.2	4.2	4.8
Flanges #150	L	8.3	8.7	8.9
Flanges #300	L	8.9	9.5	9.6
Flanges #600	L	9.4	10.0	10.2
Weight (lb)		2.2	2.2	2.5

**OPERATING CONDITIONS :**

Sub cooling Temp Available : 50-59 °F

Size	End Conn	BSP	NPT	SW
½", ¾", 1"	Press. Psi	177.8	455	455
	Temp °F	500	752	752

**TST MOUNTING:-**



RECOMMENDED

UKL-IM-IU-UTST -R00-MAY 2017



## 5. Maintenance and Troubleshooting:

### MAINTENANCE:

- **Strainers**

This trap is fitted with an in-built strainer.

Please ensure that the strainer is clean.

It is necessary to clean the strainer periodically.

Unscrew filter cap using spanner.

Withdraw filter and clean.

If damaged replace with new one.

- **Other parts**

As mentioned above, please ensure that water-hammer conditions in the condensate line does not occur. We recommend that the unit is serviced annually, with the help of our trained service personnel. It is also recommended that the operating and maintenance staff is duly trained at our Training Center.

### TROUBLESHOOTING:

- **Trap is leaking live steam.**

The most likely reason for this is possible deposition of dirt on the valve seating area.

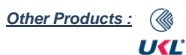
Please ensure that the strainer screen is removed and cleaned properly. It is necessary to inspect the seat and valve for any dirt deposition. If this is noticed, clean the surfaces and refit. If the problem persists, contact UKL.

- **Trap is not discharging any condensate.**

Please ensure that clean condensate is coming to the trap. Then check for steam or air locking of trap. Under such circumstances, loose the cover cap slightly so that entrapped air or steam should be released to atmosphere, the trap refitted and taken in line. Please ensure that the required differential pressure is available across the trap.

### 6. Storage:

- UTST and the respective spares should be stored only in enclosed dry rooms in a non-aggressive atmosphere. Fully assembled UTST Traps must be stored as supplied by UNI KLINGER. Spare parts must be handled with care and should be stored in their original packing.
- It is recommended to take protective measures if parts are stored in dusty conditions.
- The ambient temperature in store room must be between -4 Deg. F and +122 Deg. F.
- Sudden change in temperatures must be avoided.
- Any damage due to inappropriate storage shall release UNI KLINGER of any obligations derived from warranty, guarantee, and product liability.



**Other Products :** Cast / Forged Steel Piston Valves, Bellow seal valves, High Pressure valves (Gate/Globe) , Strainers – “Y” Type, ITVS Steam Traps (Thermodynamic, Thermostatic, Ball Float Traps and IBT), Pressure Reducing Station, Condensate Recovery Products. Level Gauges (Reflex, Transparent, Bicolor), Sight Glass, Hot Water Generation System, Safety and Relief Valves.  
**FSD Products :** Compressed Asbestos / Non Asbestos Fiber Sheetting / Cut Gaskets, Spiral Wound Gaskets.

*In view of technical progress design and dimensions are subjected to change without notice.*



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