

# Instruction Manual for Thermodynamic Steam Trap

UTD 120

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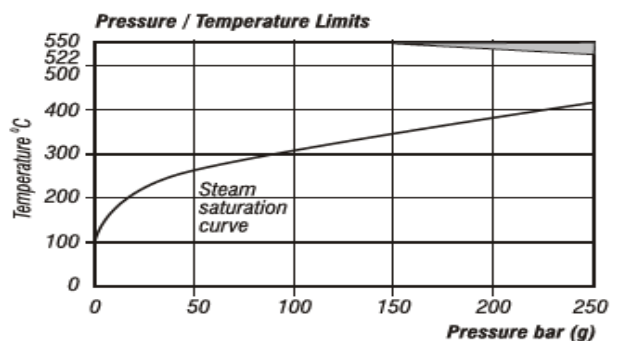
**1.Product Overview:-**

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.

The thermodynamic traps separate condensate and steam based on velocity which in case of steam is higher than that of condensate. These are used mainly on drip lines of the main steam distribution line, platen presses and super heated steam lines to remove condensate. The UTD 120 is a steam trap with integral strainer specifically designed to meet above application. An insulating cover can be fitted as a option on superheated steam mains.

**2. Working Principal :-**

Condensate pressure is used to open the trap by lifting the disc, discharging condensate in low pressure. Due to low pressure flashing of condensate takes place. High flash steam velocity (approximately 5 times of condensate) creates a low pressure zone below the disc. Accumulated flash steam force over the disc becomes greater than the incoming condensate pressure this leads to closure of the disc. Subsequently the flash steam condenses and the incoming higher pressure condensate pushes the disc opening the trap and thus the cycle continues.



**■ The Product MUST NOT BE USED in this section**  
 Note: If the product is used at pressures above 170 bar then a reduction in working life may be experienced.

**OPERATING CONDITIONS**

Size	End Conn. →	SW	BW
½", ¾", 1"	Press. Psi	3627	3627
	Temp F	1022	1022

Hydro Test Pressure : 1.5 times design pressure

**Max Operating Back Pressure :-**

50% of the Upstream pressure.

**Min Operating Pressure for satisfactory Operation :-**

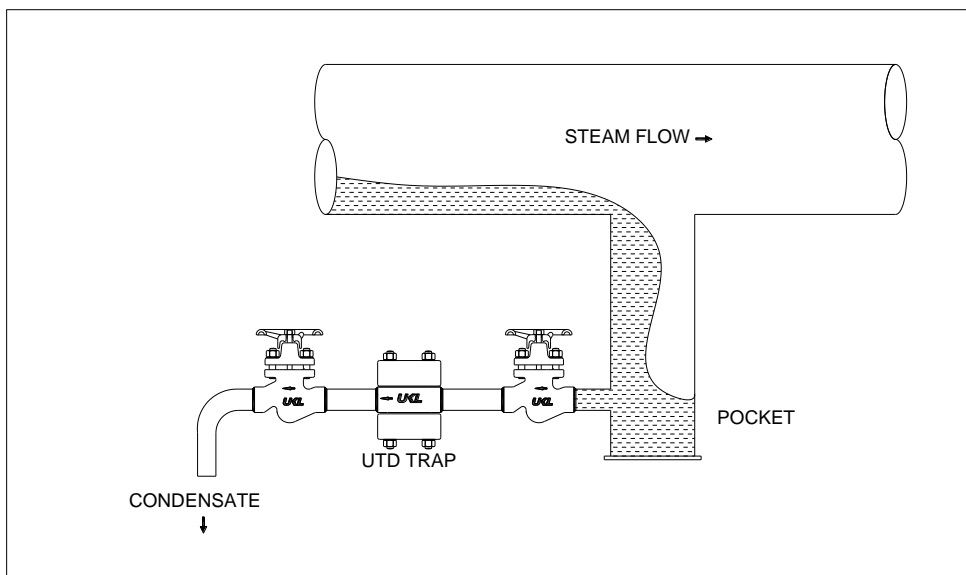
116 psi

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

Your UKL make TD 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 movement of disc must be in vertical direction.
- Isotubs/ Insulating cover must be provided on cap in cold areas.
- 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.
- The typical steam trap installation along with drain pocket is as shown in the schematic diagram below.



- 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.

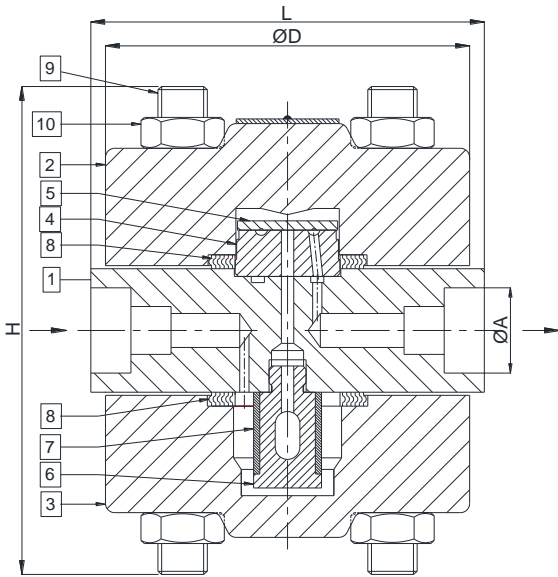
- b. Air Binding

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 MATERIALS :-**




No.	PART NAME	MATERIAL	MATERIAL CODE
1	Body	Alloy Steel	ASTM A182 F22- Cl3
2	Top Cover	Alloy Steel	ASTM A182 F22- Cl3
3	Bottom Cover	Alloy Steel	ASTM A182 F22- Cl3
4	Seat	Tool Steel	ASTM A 681 Gr D2
5#	Disc	Tool Steel	ASTM A 681 Gr D2
6	Filter Housing	Stainless Steel	AISI 316
7#	Filter	Stainless Steel	AISI 304
8#	Gasket	Spiral Wound	S.S. With Graphite Filler
9#	Stud	Alloy Steel	ASTM A 193 Gr B16
10#	Nut	Alloy Steel	ASTM A 194 Gr 4 / Gr7

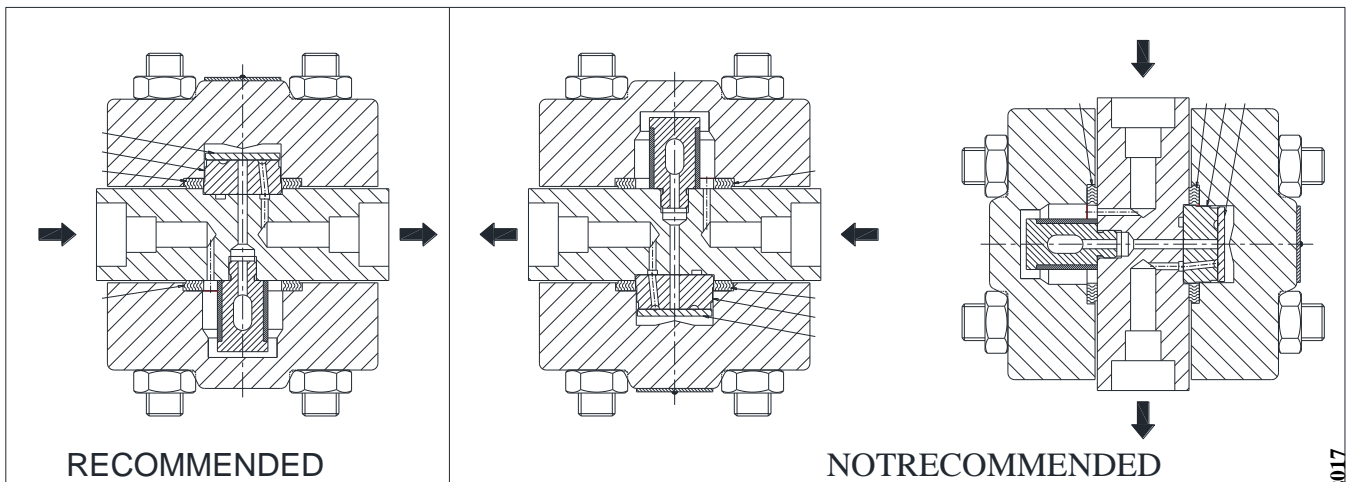
# Available as Spares.

Notations	Dimensions (in)		
	½"	¾"	1"
<b>L</b>	5.0	5.0	5.0
<b>H</b>	6.2	6.2	6.2
<b>ØD</b>	4.6	4.6	4.6
<b>ØA</b>	0.9	1.1	1.3
<b>Weight(lb)</b>	23.5	23.5	24.6

**Recommended Tightening Torques**

Item	Part	 or mm	Nm
9	Stud	M16	85-90
10	Nut	23A/F M16	160-180

**UTD120 MOUNTING:-**



## 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.

Unscrew the main bore cap using spanner.

If the wear on the surface of the disc and the body seat, is minor they can be refaced by lapping individually on a flat surface. If the wear on the seating surface of the body is major then seating surface must be ground and lapped. The total amount of metal removed in this way should not exceed (0.01 in). The disc may be replaced by a new one. While re-assembling, suitable high temperature anti seize grease should be applied to threads. The disc is placed with the grooved side in contact with the body seating surface. Then screw the cover and tighten it with suitable torque apply maximum of (30 to 35 Nm). torque while tightening.

Ensure, the disc is free, by shaking the trap.

### TROUBLESHOOTING:

#### **Trap is leaking live steam.**

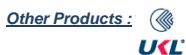
The most likely reason for this is possible deposition of dirt on the valve seating area. Please ensure that the strainer screen is removed and cleaned properly. It is necessary to inspect the seat and spindle of any dirt deposition. If this is noticed, clean the surfaces and refit. If the problem persists, 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 released to atmosphere, the trap refitted and taken in line. Please ensure that the required differential pressure is available across the trap

### 6. Storage:

- UTD120 and the respective spares should be stored only in enclosed dry rooms in a non-aggressive atmosphere. Fully assembled UTD120 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.



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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