THERMAX

Thermostatic Steam Trap

User Manual

1 Important Safety Instructions to the users

- This manual presents information that will help to install, operate and maintain the equipment properly. It is expected that the contents be carefully read before handling the equipment.
- All safety instructions and warnings given in these mounting and operating instructions, particularly those concerning installation, start-up and maintenance, must be strictly observed.
- To ensure appropriate use, only use the Thermostatic Steam trap in applications where the operating pressure and temperatures do not exceed the specifications used for sizing at the ordering stage.
- The manufacturer does not assume any responsibility for damage caused by external forces or any other external factors.
- Any hazards that could be caused in the Thermostatic Steam trap by the process medium, operating pressure or by moving parts are to be prevented by taking appropriate precautions.
- A good installation is a permanent asset while a bad one can be a constant source of trouble. It can cost much more to correct a bad installation than to put a new one.
- The Thermostatic Steam trap is a product of many years of knowledge, field experience & engineering effort, to provide long life & excellent service to the users. This unit will provide continued trouble-free service, if instructions on installation, operation and maintenance are properly followed.
- It is expected that the personal involved in Installation, Operation & Maintenance possess necessary qualification, competence, license & authority (if applicable) only should handle the product. It is solely the responsibility of the equipment owner & user to ensure that all applicable statutory (if applicable) norms are adhered to during Installation, Operation & Maintenance of this equipment.
- The mechanical devices supplied as a part of the unit are chosen because of their known ability to perform, with proper operating techniques and maintenance procedures. Tampering with the safeties & controls or bypassing any of these is not permissible at any time.
- Any “Automatic” features included in the design do not relieve the attendant of any responsibility. Such features may free him of certain repetitive chores and give him more time to devote to the proper upkeep of the equipment.
- No amount of written communication can replace intelligent thinking & reasoning.

The following symbols/terms have been used in this manual at the end of some chapters for the attention of the users:

This is a symbol of **“warning”** to the equipment user & provides information about practices or circumstances that should never be allowed as can lead to personal injury or death, property damage, or economic loss.

This symbol is for hot surface areas where there is chance of temperatures above ambient temperatures which causes injuries.

This symbol is to avoid hand/fingers getting crushed with the flange joints/pipes.

Avoid the injuries while working in steam leaking areas.

This is a symbol of **“Caution”** to the equipment user & provides information about the care to be taken on the actions or procedures which if not performed correctly may lead to personal injury or incorrect function of the instrument or connected equipment.

Recommended action

2 Abstract

Thank you for choosing sustainable solutions in energy and environment which helps in conserving resources and preserving the future. This manual describes the principle of operation, instructions for installation, operation & maintenance of “Thermostatic Steam trap” supplied by Thermax Ltd. The General Instructions which are not detailed out in this document to be performed in accordance with standard and safe acceptable practices as may be required by local codes, specifications and or regulations. The instruction contained within this manual must be read before undertaking any work on the equipment supplied and for any queries please contact Thermax Limited.

3 Product Identification

The product and its specifications, details are identified as per the figure 3.1A. The same will be shown on the name plate on the product.

For all maintenance, service & spares requests, it is important to mention the serial identification number as mentioned in the name plate details of your product to Thermax Ltd.

Figure 3.1A

4 Unloading Receiving and Inspection

- The Thermostatic Steam trap are supplied in assembled condition, duly packed which can be directly installation at site.

- Ensure that the wooden cases should not be dropped or turned to any other position other than marked on the cases.
- At the time of receipt at site, a thorough visual inspection of the product should be made for evidence of damage during shipment. Packaging slip should be referred for checking the items supplied for the system.
- On receipt of the consignment at site, check that all the cases have been received per delivery documents & packing slip.
- By careful inspection, determine whether any damage/ loss has occurred in transit, in spite of proper Checking and loading of each component/equipment, at our factory before dispatch.
- In the event of any damage is noted, the company should be notified at once so they can start claims procedure for repairs or replacements as per applicable clauses of contract.
- Your product is carefully manufactured, assembled and inspected at each level before dispatch. Sometimes during transit there is possibility of piping connections getting loose. The same to be tightened at site during installation if found loose.

5 Storage

The place of storage of these equipment's should be:

- Dust free, Clean, Dry and well ventilated

A) All the material should be stored under roof and should be protected from rain, water or direct sunlight.

B) Do not pile up cases.

C) Do not store heavy material on soft soil.

E) Parts should not be stored under corrosive atmosphere.

F) Periodically the unit should be inspected to make sure no damage, such as corrosion, is taking place.

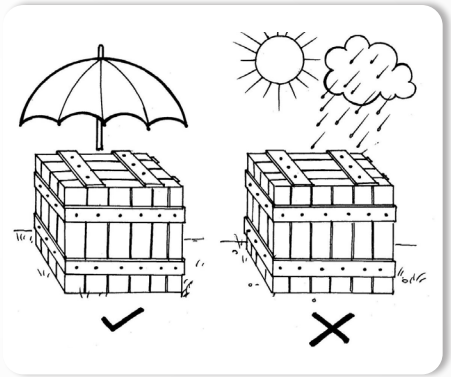


Figure No 5.1A: Material should be stored under roof.

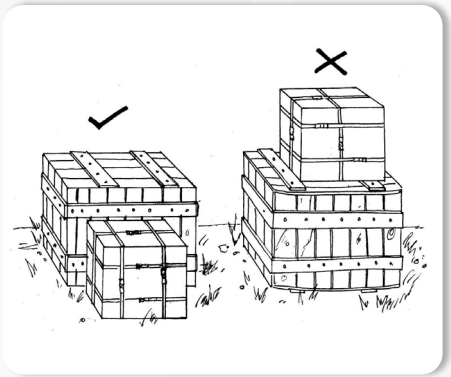
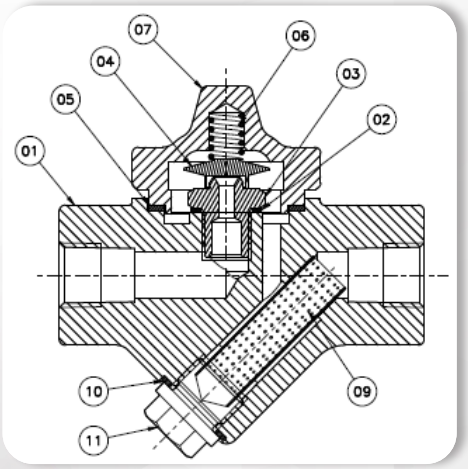


Figure No 5.1B: Do not pile up cases.

6 General description and use

The Balanced Pressure Thermostatic Steam Trap/Automatic Air Vent is designed for the discharge of condensate from steam systems / removal of air from steam space.

6.1 Design of Thermostatic Steam Trap



Sr. No.	Part Name
01	Body
02	Capsule seat gasket
03	Capsule seat
04	Capsule
05	Body gasket (SWG)
06	Spring
07	Top Cover
08	Hex. Bolt (For top cover)
09	Strainer
10	Strainer cap gasket
11	Strainer Cap

6.2 Operating conditions (Design)

PMO: Maximum operating pressure
& TMO: Maximum operating temperature

Model	Component	Material	PMO (kg/cm2)	TMO (°C)
RK 10290	Body/Top Cover	ASTM A 105	25.5	300

6.3 Function / Installation & Venting

1. The steam trap operates on the principal of differential temperature inside and outside of the capsule.
2. A special liquid contained within the capsule (04) evaporates or condenses due to changes in the temperature.
3. The operating temperature is only few degrees below the boiling point of water at the operating pressure.
4. When the temperature rises, the liquid evaporates, expanding the capsule to close the trap.
5. When the temperature drops, the liquid condenses bringing back the capsule to original position thus opening the trap.

7 Assembly

7.1 Installation

1. Remove protective caps from inlet and outlet.
2. The thermostatic steam trap should be screwed in/socket welded to the pipe line
3. The trap can be used in both vertical and horizontal flow directions. In vertical direction the flow direction is only from top to bottom and the reversed direction is not allowed.
4. No change in assembly is needed for change in direction.
5. Follow the arrow for the direction of flow (note arrow on the Body (01).
6. To avoid down times, it is recommended to install a shut-off valve in the upstream & downstream of the trap (In case of closed loop installation).

7.2 Start Up

The pressure build-up and heating-up of the housing should not take place abruptly. If leaks occur due to so-called settling after the first start-up, the hex bolt (08) can be retightened considering the indicated torque. Retightening may only be carried out when the housing is depressurized and warm to touch.

8 Maintenance / Inspection

The pressure build-up and heating-up of the housing should not take place abruptly. If leaks occur due to so-called settling after the first start-up, the screws can be retightened taking into account the indicated torque. Retightening may only be carried out when the housing is depressurized and warm to touch.

8.1 Opening the trap and dismantling the capsule

1. The steam trap must be depressurized. Shut off the system securely in front of and behind the steam trap.
2. Leave the housing to cool down until it is warm to touch.
3. Loosen the hex bolt (08).
4. Remove the top cover (07) and remove the spring (06).
5. Pull out the capsule (04) from the capsule seat (03).

8.2 Installing the capsule and assembly of the trap

1. Coat threads of capsule seat (03) and thread of the hex bolt (08) with a temperature-resistant lubricant.
2. Visually check the gasket seating area of the Body (01) and the top cover (07) and ensure it is clean.
3. Insert the body gasket (05) in the groove.
4. Assemble the capsule seat (03) and the capsule seat gasket (02).
5. Visually check the sealing surface of capsule seat (03) for wear or any scoring.
6. Tighten the capsule seat (03) to the torque as specified in the table.
7. Push the capsule (04) carefully into the capsule seat (03)
8. Assemble the top cover (07) with the compression spring (06).
9. Tighten hex bolt (08) evenly according to the torque specified in the table

Size	Tightening Torque
Capsule Seat	85-90
Strainer Cap	75-80
Hex Bolt	20-25

8.3 Care And Maintenance

1 The stem trap needs periodic cleaning of the strainer.

2 The steam trap must be depressurized. Shut off the system securely in front of and behind the steam trap.

3 Leave the housing to cool down until it is warm to touch

4 Loosen the strainer cap (11) and unscrew it.

5 Take out the strainer (09) and clean with compressed air or with any solvent.

6 Place the strainer (09) in to the strainer cap (11) and tighten it with the torque specified as above.

9 Warranty

Only trained or instructed personnel may be assigned to operation or servicing.

All our equipment is thoroughly inspected before dispatch and therefore can be depended upon for long and trouble-free services. We undertake to make goods by replacement or repair, defects arising out of faulty design, materials or workmanship within 12 (Twelve) months of the date of commissioning or 18 (Eighteen) months from the date of dispatch whichever is earlier subjected to mentioned in your purchase order warranty terms. The parts, in respect of which a claim is made, must be sent to our works at buyer's expenses. If the claim is found to be legitimate, we shall refund such expenses.

Warranty Excludes

a) Normal Wear & Tear

b) Damages/defects due to wrong operation at the purchaser's end, and/or arising out of forced major.

c) Bought out components are guaranteed by us only to the extent of guarantees given to us by our suppliers.

d) Electrical components such as heaters, motors, contactors etc. Rubber components and instruments such as pressure gauges, thermometers, Controllers, etc. are however, not covered under this warranty.

This warranty is valid subject to the following conditions:-

a) Installation completed within three months from the date of dispatch of the equipment and as per our installation instructions.

b) The supply/ installation formally accepted as per the handing over clause.

c) Use of specified utilities in technical quotation.

d) The equipment being operated and maintained as per our Operation and maintenance Manual.

e) The equipment or part thereof not being subject to accident, alteration, abuse or misuse.

f) Any replacements/repairs required under provisions of the above warranty will be carried out at our's option either at site or at works. In the latter case, Buyer will send the defective parts to our works at Buyer's cost & liability.

g) Warranty period for the entire equipment including replaced or repaired parts will be limited to the unexpired portion of the total warranty period.

h) Accessories and fittings not manufactured by us, form an integral part of the equipment supplied, the warranty for such accessories & fitting will be in line with main equipment.

i) If the purchaser delays to lift the equipment up its readiness, the warranty will be limited to 18 months from the date of readiness at our works.

j) Any repair / replacement on our equipment during the warranty period shall be carried out by authorized representatives in writing from us.

k) The warranty obligations will be honoured by us provided Buyer has fulfilled obligations under the order relating to release of due payments, etc.

l) After repairs/replacement, warranty period for the entire equipment including replaced or repaired parts will be limited to the unexpired portion of the total warranty period.

m) Any short supply or damages to the equipment to be intimated to Thermax within 15 days of receipt of material at site. Any late report will void the warranty.

n) If the transit insurance is in client scope, damages and missing items during transit to be claimed by clients directly.

o) Any improper use, intervention in the design and deviation from the design data will automatically lead to termination of the warranty.

10 Critical Spares

1. Capsule with 10° sub cooling
2. Capsule with 28° sub cooling
3. Strainer & set of gaskets (2 sets)

Conserving Resources,
Preserving the Future.

THERMAX


Air Pollution Control


Boiler and Heater


Build-Own -Operate


Chemical


Cooling


Projects and Energy Solutions


Process Heating


Renewable Energy


Water and Waste Solutions

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