Thermal actuator is filled at it’s free length with a liquid having a lower boiling point than water. As assembled, valve is normally open. When very hot condensate enters trap, thermal actuator fill vaporizes to a pressure higher than line pressure. This forces valve into seat orifice to prevent any further flow. As condensate collects, it takes heat from the actuator, lowering internal pressure. Line pressure will then compress thermal actuator to open valve and discharge condensate. Valve opening automatically adjusts to load conditions from minimum on very light loads to full lift at maximum load. Restricted orifice in TA502 (small opening at bottom of valve seat) prevents trap from discharging continuously on light loads such as are encountered on tracer lines.

APPLICATIONS
- Unit Heaters
- Air Vents
- Steam Tracing
- Drip Legs
- Platen Presses
- Plating Tanks
- Sterilizers
- Tire Presses
- Cooking Equipment
- Laundry Equipment
- Other Process Equipment

OPTIONS
- ISO - ISO Filled Actuator
- SLR - SLR Orifice
- SW - Socketweld

Canadian Registration #0E0591.9

MODELS*
- TA502 - Reduced capacity
- TA503 - Standard capacity
- TA504 - High capacity

*Add (-FC) for fail closed or (-FO) for fail open to end of model number

OPERATION
Thermal actuator is filled at it’s free length with a liquid having a lower boiling point than water. As assembled, valve is normally open. When very hot condensate enters trap, thermal actuator fill vaporizes to a pressure higher than line pressure. This forces valve into seat orifice to prevent any further flow. As condensate collects, it takes heat from the actuator, lowering internal pressure. Line pressure will then compress thermal actuator to open valve and discharge condensate. Valve opening automatically adjusts to load conditions from minimum on very light loads to full lift at maximum load. Restricted orifice in TA502 (small opening at bottom of valve seat) prevents trap from discharging continuously on light loads such as are encountered on tracer lines.
Steam trap shall be of balanced pressure design with stainless steel welded actuator capable of discharging condensate within 10°F of saturated temperature. Where greater sensitivity is required or protection from flash steam locking, a SLR orifice shall be available to allow condensate and flash steam evacuation at or near saturated temperatures. Where subcooling of condensate is desired alternate thermostatic actuator will be available to allow condensate evacuation at or near 40°F below saturated temperatures. Thermostatic actuator shall employ a conical valve lapped in matched sets with the seat ring assuring tight shut off. A minimum of three orifice sizes shall be available allowing for custom capacity sizing. Trap shall be stainless steel bodied suitable for pressures to 650 psig and available in 3/8” through 1” NPT or socketweld.

**Maximum Operating Conditions**

Standard Traps
PMO: Max. Operating Pressure 500 psig (34.5 barg)
TMO: Max. Operating Temperature 600°F (316°C)

ISO Option Traps
PMO: Max. Operating Pressure 650 psig (44.8 barg)
TMO: Max. Operating Temperature 650°F (343°C)

All Traps
PMA: Max. Allowable Pressure 650 psig (44.8 barg)
TMA: Max. Allowable Temperature 750°F (400°C)

**Materials of Construction**

Body & Cover ………….ASTM A351 Grade CF3M (316L)
Actuator……………………………Welded Stainless Steel
Valve & Sea ………………Hardened 416 Stainless Steel

**Dimensions**

<table>
<thead>
<tr>
<th>NPT or Socket weld</th>
<th>inches (mm)</th>
<th>Weight Lbs. (kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>B</td>
<td></td>
</tr>
<tr>
<td>3/8, 1/2&quot;</td>
<td>3/4&quot; (95)</td>
<td>13/4 (44)</td>
</tr>
<tr>
<td></td>
<td>1&quot; (25)</td>
<td>1.1 (0.5)</td>
</tr>
<tr>
<td>3/4&quot;</td>
<td>3 3/16&quot; (100)</td>
<td>13/4 (44)</td>
</tr>
<tr>
<td></td>
<td>1&quot; (25)</td>
<td>1.2 (0.54)</td>
</tr>
<tr>
<td>1&quot;</td>
<td>43/8&quot; (111)</td>
<td>13/4 (44)</td>
</tr>
<tr>
<td></td>
<td>1&quot; (25)</td>
<td>1.6 (0.73)</td>
</tr>
</tbody>
</table>

**Maximum Capacity**—lbs/hr 10°F Below Saturation (Kg/hr 5°C Below Saturation)

<table>
<thead>
<tr>
<th>Trap</th>
<th>Orifice Inch (mm)</th>
<th>Differential PSIG (barg)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>5 (0.34)</td>
<td>10 (0.67)</td>
</tr>
<tr>
<td>TA502</td>
<td>1/8 (3)</td>
<td>216 (98)</td>
</tr>
<tr>
<td>TA503</td>
<td>1/4 (6)</td>
<td>550 (249)</td>
</tr>
<tr>
<td>TA504</td>
<td>5/16 (8)</td>
<td>860 (390)</td>
</tr>
</tbody>
</table>

* Nicholson recommends ISO filled Actuator above 500 psi (34.5 bar) and for superheated steam.