

## Steam Traps

## Bi-Metal Adjustable Discharge Temperature

(Repairable)

WT5000

Bi-Metal

Model	WT5000 (Bi-Metal)
Sizes	3/8", 1/2", 3/4", 1"
Connections	NPT, SW
Body Material	Stainless Steel
PMO Max. Operating Pressure	650 PSIG
TMO Max. Operating Temperature	662°F
PMA Max. Allowable Pressure	900 PSIG
TMA Max. Allowable Temperature	800°F



## Typical Applications

**TRACING:** The WT5000 is specifically designed for steam tracing applications where accurate and adjustable control of condensate discharge temperature is desired. Can be used where a temperature sensitive medium is being transferred in piping system or held in a storage vessel and standard steam tracing methods may not be adequate to maintain specific product temperatures. Having the ability to adjust the condensate discharge temperature would allow for accurate temperature control of the product being traced. The significant feature of the WT5000 is that the condensate discharge temperature is easily field-adjustable.

## How It Works

Bi-metallic plates of dissimilar metals which are connected to the valve seat assembly respond to temperature variations. At relatively cool conditions, the trap is open for the discharge of condensate. When the temperature of the condensate is equal to or higher than the set temperature, the metals react and expand, closing the trap. External field-adjustability of the bi-metal element allows control of the condensate discharge temperature.

The condensate temperature can be field adjusted as follows:

To **INCREASE** the temperature, turn the adjuster screw:  
 → **COUNTERCLOCKWISE**

To **DECREASE** the temperature, turn the adjuster screw:  
 → **CLOCKWISE**

Note: The lower the set temperature, the more condensate will back-up in front of the trap inlet connection. Therefore, consideration should be given to providing adequate piping to accommodate any such back-up.

## Features

- Excellent for various steam tracing and small process applications using the additional energy (sensible heat) of the hot condensate
- Field-adjustable bi-metal element allows control of condensate discharge temperature
- Internal screen and seat/plug design help prevent pipe scale and debris from accumulating on seating surfaces to provide trouble-free operation
- In-line repairable

## Sample Specification

The steam trap shall be a bi-metal type with stainless steel body, seat, valve plug and bimetallic element. Bi-metal element shall be externally adjustable for control of condensate discharge temperature. Trap must be in-line repairable with a replaceable bi-metal element, valve plug and seat.

## Installation and Maintenance

Trap can be installed in any orientation. The body is made from stainless steel and is fully repairable while the steam trap remains in-line. If the trap fails, remove the cover and replace the internal working components. Repair kit includes bimetallic element (including valve stem and plug), seat and gasket.

## Helpful Selection Information

Available in 3/8" through 1" NPT and socket weld connections. Select this model for steam systems with maximum working pressure of 650 PSIG.

Size/Connection	Model Code	Weight lbs	Cross Reference TLV
3/8" NPT	WT5000-11-N	3.0	LEX3N-TZ
1/2" NPT	WT5000-12-N		
3/4" NPT	WT5000-13-N		
1" NPT	WT5000-14-N		
3/8" SW	WT5000-11-SW	3.0	LEX3N-TZ
1/2" SW	WT5000-12-SW		
3/4" SW	WT5000-13-SW		
1" SW	WT5000-14-SW		

## MATERIALS

Body and Cover	304 Stainless Steel
Bimetal Element	GB14
Valve Seat	420 Stainless Steel
Valve Stem	420 Stainless Steel

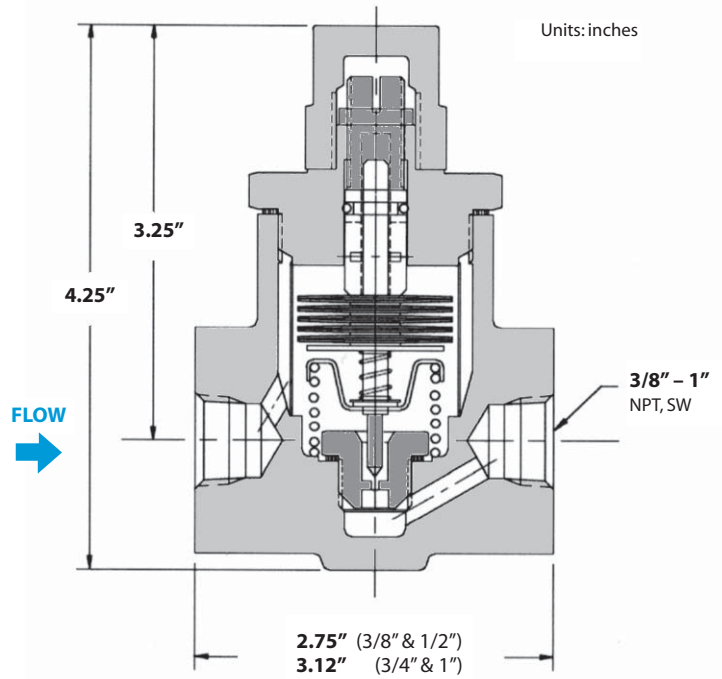
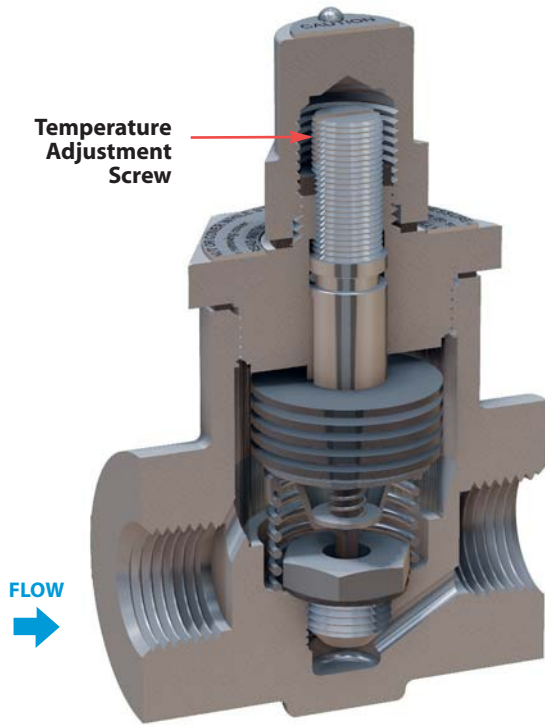
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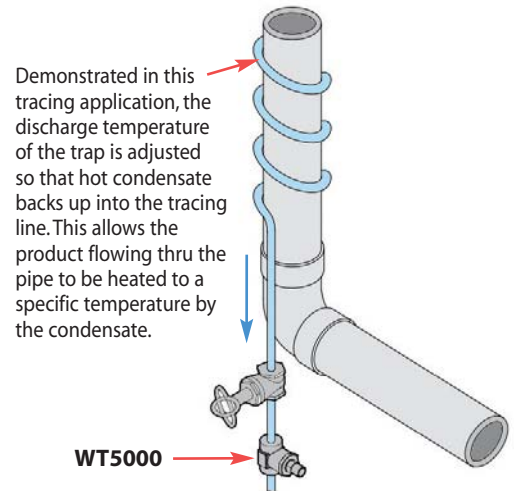
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**Notes:**

- 1) Capacities in chart are based on discharging condensate to atmospheric pressure (0 PSIG).
- 2) **Initial Opening Temperature = T** is the temperature at which the trap just begins to open. A negligible amount of condensate flow takes place at this temperature. It is adjustable between 120°F and 390°F.
- 3) **Initial Opening Temperature** must be at least 27 degrees below the saturated steam temperature to prevent possible steam loss.
- 4) When the condensate cools below the initial opening temperature, the Bi-metal mechanism opens further, increasing trap capacity. Trap capacity can be adjusted up to the max value given in the chart.
- 5) For instructions on setting the trap discharge temperature and capacity, refer to the Watson McDaniel Installation and Maintenance Guide.
- 6) *Example:* A WT5000 trap with 125 PSIG Steam Inlet Pressure can be set to an Initial Opening Temperature between 120°F and 326°F. It can pass up to 413 lbs/hr when the temperature of the condensate is 80°F below the initial opening temperature (T-80°F).



**T = Initial Opening Temperature of the Trap** can be set from 120°F to 390°F

**Trap Capacities at Various Inlet Pressures – Lbs/hr @ T, T-20°F, T-40°F, T-60°F, T-80°F**

Condensate Discharge Temperature	Saturated Steam Temperature (°F) (based on given steam inlet pressure)															
	250	274	298	338	353	366	388	406	422	436	448	460	470	489	497	
T can range from 120°F to 390°F.	Maximum Initial Opening Temperature must be at least 27 degrees below saturated steam temperature. (390°F max)															
T range for Steam Inlet Pressure of 15 PSIG is 120 to 223°F																
	223	247	271	311	326	339	361	379	390							390
	Steam Inlet Pressure (PSIG)															
	15	30	50	100	125	150	200	250	300	350	400	450	500	600	650	
T = Initial Opening Temp.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
T-20°F 20° below Initial Opening Temperature	56	70	102	144	161	177	204	228	250	270	289	306	323	354	368	
T-40°F 40° below Initial Opening Temperature	116	164	212	300	336	368	425	475	520	562	600	637	671	735	756	
T-60°F 60° below Initial Opening Temperature	134	190	245	346	387	424	490	548	600	648	693	735	775	849	883	
T-80°F 80° below Initial Opening Temperature	143	202	261	370	413	453	523	584	640	691	739	784	826	905	942	