

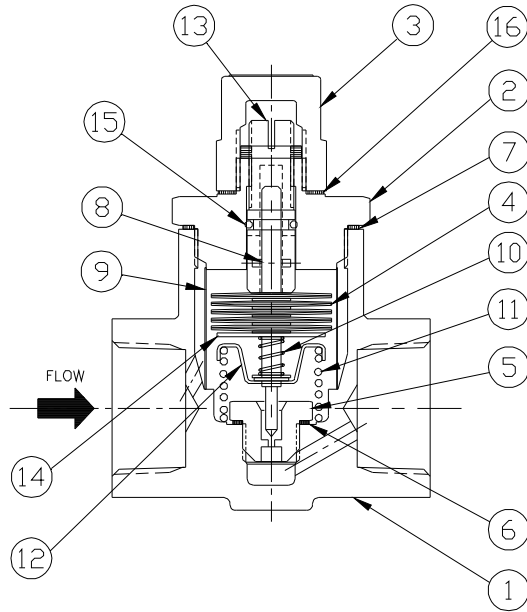


428 Jones Boulevard
Limerick Airport Business Center
Pottstown, PA 19464

Phone: (610) 495-5131
Fax: (610) 495-5134
www.watsonmcdaniel.com

INSTALLATION & MAINTENANCE GUIDE
SERIES WT5000
ADJUSTABLE DISCHARGE TEMPERATURE
BIMETALLIC STEAM TRAP
INSTRUCTION PART NO. 2437200

REVISION 0



CONSTRUCTION MATERIALS		
ITEM	PART	MATERIAL
1	BODY	SS, ASTM A-351, Gr CF8
2	COVER	SS, ASTM A-351, Gr CF8
3	CAP NUT	SS, ASTM A-351, Gr CF8
4	BIMETAL ELEMENT	GB14
5	VALVE SEAT	420F STAINLESS STEEL
6	SEAT GASKET	A240 S31600
7	COVER GASKET	A240 S31600
8	VALVE STEM	420 STAINLESS STEEL
9	SCREEN	304 STAINLESS STEEL
10	SPRING	304 STAINLESS STEEL
11	SPRING	304 STAINLESS STEEL
12	SPRING GUIDE	304 STAINLESS STEEL
13	ADJUSTING SCREW	303 STAINLESS STEEL
14	THRUST PLATE	304 STAINLESS STEEL
15	O-RING	VITON/FLUOREL
16	CAP NUT GASKET	A240 S31600

DESIGN PARAMETERS

PMA 900 PSIG up to 800°F
TMA 800°F @ 900 PSIG

LIMITING OPERATING CONDITIONS

PMO – 650 psig
TMO – 662°F
Discharge Temperature Range – 120°F - 390°F

QUICK START GUIDE AND PRODUCT NOTES

APPLICATION - THIS BIMETALLIC STEAM TRAP OFFERS DISCHARGE TEMPERATURE ADJUSTABILITY BETWEEN 120°F AND 390°F AND IS GENERALLY USED ON STEAM TRACING AND SMALL PROCESS APPLICATIONS FOR MAXIMUM ENERGY USAGE.

OPERATING CHARACTERISTICS – ALTHOUGH IT IS POSSIBLE FOR THE OPERATIONAL CYCLE OF THIS TRAP TO BE CYCLIC, DEPENDING ON THE STABILITY OF THE APPLICATION IT WILL TYPICALLY REACH A POINT OF EQUILIBRIUM AND HAVE A STEADY DISCHARGE OF CONDENSATE.

ORIENTATION – TRAP CAN BE INSTALLED HORIZONTALLY OR VERTICALLY WITH THE FLOW ARROW POINTING IN THE DIRECTION OF THE FLUID FLOW. HORIZONTAL INSTALLATIONS SHOULD HAVE THE ADJUSTING SCREW POINTING UPWARD. VERTICAL INSTALLATION SHOULD BE WITH FLUID FLOW DOWNWARD ONLY.

REPAIRABILITY – THIS TRAP IS IN-LINE REPAIRABLE WITH A REPLACEMENT TRAP CAPSULE.

CONSIDERATIONS – UNLESS A SPECIFIC DISCHARGE TEMPERATURE IS REQUESTED FROM THE FACTORY AT THE TIME OF ORDER, THE STANDARD SETTING FOR THIS TRAP IS 175 °F AT 120 psig. TRAP CAN BE MANUALLY FIELD-ADJUSTED TO OTHER DISCHARGE TEMPERATURE SETTINGS. CONSULT THE APPROPRIATE SECTION IN THIS MANUAL FOR ALTERNATE DISCHARGE TEMPERATURE SETTING INSTRUCTIONS WHILE IN THE FIELD.

SETTING DISCHARGE TEMPERATURE

The traps are factory set as follows: 175 °F at 120 psig (1.6 turns – counterclockwise - from the “0” position)

Note: The “0” position is defined as the clockwise turning of the adjustment screw to the point that it stops. The factory setting of 1.6 turns – counterclockwise – from “0” is indicated by a notch on the top of the adjusting screw aligned with a similar notch on the cover. The height of the adjusting screw above the cover is also stamped into the cover for future reference. If necessary to return to the “1.6 turn” position at any time, adjust the screw to the height indicated on the cover, making certain the notches on the screw and cover are aligned. Consult the “Discharge Set Temperature Adjustment Chart” below to determine the correct number of turns to achieve the desired conditions. This should be done prior to making any adjustments.

1. Trap can be adjusted prior to installation. However, if trap is to be adjusted once installed, follow the guidelines on the following page for proper installation. Before making any adjustments, make certain trap is isolated from both supply and return line pressures and that trap has cooled to room temperature prior to any servicing being performed.
2. To gain access to the adjusting screw, use a wrench to secure the cover and use another wrench to slowly loosen the cap nut, allowing any residual steam pressure to dissipate.
3. While securing the locknut with a wrench, insert a screwdriver into the slot on the adjusting screw and slowly begin turning clockwise until it stops. This is the “0” position.
4. Consult the tables on the following page to determine the number of turns required to achieve the desired set conditions.
5. To set the trap, turn the adjusting screw counterclockwise, noting the number of turns from the “0” position. For simplicity and greater accuracy of adjustment, use the “Adjustment Screw Turn Gauge” template in this manual. It can be cut out and placed over the cover for reference once the cap nut is removed.
6. Continue adjusting the screw the proper number of turns until the set position is achieved. Depending on the number of turns required, it may be advisable to remove the wrench from the cap nut to allow for easier adjustment.
7. Once the set position is achieved, hold the position of the adjusting screw with the screwdriver and tighten the locknut to the proper torque as indicated in this manual.
8. If the temperature must be readjusted for any reason, it is recommended to return the setting to the “0” position before beginning. Consult above for instructions.

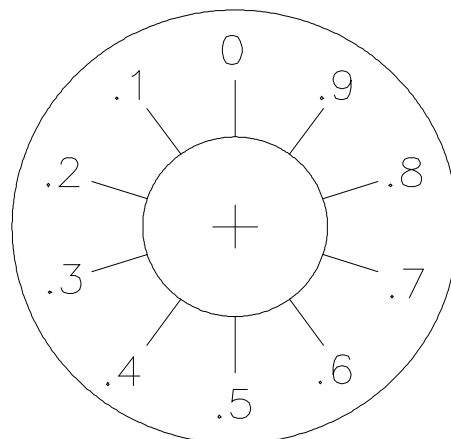
COMPONENT TORQUE VALUES (ft-lb)

Cover	180 - 190
Cap Nut	25 - 30
Valve Seat	20 - 24

REPLACEMENT PARTS

Description	Part Number
Repairable Trap Capsule	Consult Factory

Adjusting Screw Turn Gauge



DISCHARGE SET TEMPERATURE ADJUSTMENT CHARTS

- 1) BOTH charts are to be referenced to determine adjusting screw set position.
- 2) Based on the capacity requirement, enter the FLOW chart at the application pressure drop and note the number of turns required.
- 3) Now, enter the TEMPERATURE chart at the desired discharge temperature and note the number of turns.
- 4) Add the values noted in #2 and #3 above to determine the total number of turns of the adjusting screw from the “0” position.
- 5) Follow the setting instructions as outlined above.

Number of Adjustment Screw Turns - based on FLOW requirements

Capacity lb/hr	Pressure Differential, psi										
	25	50	75	100	150	200	250	300	350	400	450
25	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0
50	0.3	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1
100	0.7	0.5	0.4	0.3	0.3	0.2	0.2	0.2	0.2	0.2	0.2
200	1.3	0.9	0.8	0.7	0.5	0.5	0.4	0.4	0.4	0.3	0.3
300	-	-	1.1	1.0	0.8	0.7	0.6	0.6	0.5	0.5	0.5
400	-	-	-	1.3	1.1	0.9	0.8	0.8	0.7	0.7	0.6
500	-	-	-	-	1.4	1.2	1.0	1.0	0.9	0.8	0.8
600	-	-	-	-	-	-	1.3	1.1	1.1	1.0	0.9
700	-	-	-	-	-	-	-	1.3	1.2	1.2	1.1
800	-	-	-	-	-	-	-	-	-	1.3	1.2

Number of Adjustment Screw Turns - based on TEMPERATURE requirements

Discharge Temperature, °F								
120	150	175	200	225	250	300	350	390
0.6	1.1	1.5	2.0	2.4	2.8	3.6	4.5	5.2

Example: For a capacity requirement of 300 lb/hr at 100 psi pressure differential and a desired discharge temperature of 250°F, first enter the FLOW table to determine a turn requirement of 1. Then enter the TEMPERATURE table to determine a turn requirement of 2.8. Therefore, the total number of turns of the adjusting screw from the "0" position to achieve the above conditions is 1+2.8=3.8

INSTALLATION & START-UP

1. Before installing the trap, blow out piping thoroughly to remove loose scale and dirt. Observe the pressure limitations shown on the trap label.
2. After removing any protective seals or plugs, install the trap below steam piping in a location easily accessible for maintenance and inspection. Be certain to install with flow in the direction indicated on either the trap body or tag.
3. Trap should be installed in appropriately sized piping for either tracing or small process applications.
4. To provide for easy maintenance and service, install isolation valves on each side of the trap. Although the trap includes a screen, it is recommended to include an additional upstream strainer.
5. If discharge piping is to be elevated, be certain that the available differential pressure is adequate to permit proper drainage. (Two feet of lift equals approximately one psi of head pressure.)
6. If not requested at the time of order and the condensate discharge temperature was not set, then field-adjustment is required prior to operation. Consult below for setting instructions.
7. For start-up, open the outlet isolation valve fully. Then gradually open the inlet isolation valve, allowing pressure to build slowly.

MAINTENANCE INSTRUCTIONS

1. The trap should be disassembled periodically for cleaning of the strainer screen, and inspection and cleaning of the bimetallic element and seat.
2. Isolate trap from both supply and return line pressures. Wait until trap can be comfortably touched by hand before any servicing is performed.
3. To clean the plug and seat remove cover and wipe plug and seat surfaces with cleaning solvent. CAUTION: Never use any abrasives on valve plug or seating surface. *If parts are worn, replace trap capsule.*
4. Capsule Replacement and Reassembly – Ensure that all gasket surfaces are clean and dry. Replace old components with entire contents of repair kit. Reassemble trap components as necessary, ensuring appropriate components are tightened properly to the torque values noted previously in this manual.

CLEAN-OUT FUNCTION

1. Turn steam off by first closing the inlet isolation valve, followed by closing the outlet isolation valve. Make certain trap has cooled to room temperature before further servicing.
2. While holding the cover with a wrench, slowly loosen and remove the cap nut with another wrench. Be cautious of any potential residual pressurized steam.
3. Note the current position of the adjusting screw.
4. Use a flat-headed screwdriver to hold the adjusting screw in place and use a wrench to slowly remove the locknut. Do not allow the adjusting screw to rotate.
5. To loosen debris, slowly tighten the adjusting screw until it stops, noting the number of turns required (as this will be used to return the unit to its original set position in a later step).
6. Slowly loosen the adjusting screw until it stops to prepare the trap for flushing.
7. Replace the cap nut and tighten it to the proper torque.
8. Turn steam on to the trap by first fully opening the outlet isolation valve followed by slowly opening the inlet isolation valve. Allow steam to flush the trap for approximately 10-15 seconds, not exceeding 30 seconds.
9. Once again, turn the steam off as instructed in Step #1. After trap has cooled to room temperature, remove the cap as instructed in Step #2.
10. Slowly tighten the adjusting screw until it stops – this is the starting position for setting the trap. Using the number of turns noted in Step #5, slowly loosen the adjusting screw until the original set position is achieved.
11. Replace and tighten the locknut while holding the adjusting screw in place with a flat-headed screwdriver.
12. Replace the cap nut and tighten it to the proper torque.
13. Turn the steam on to the trap by first fully opening the outlet isolation valve followed by slowly opening the inlet isolation valve. Allow sufficient time for system to stabilize before checking the set temperature.