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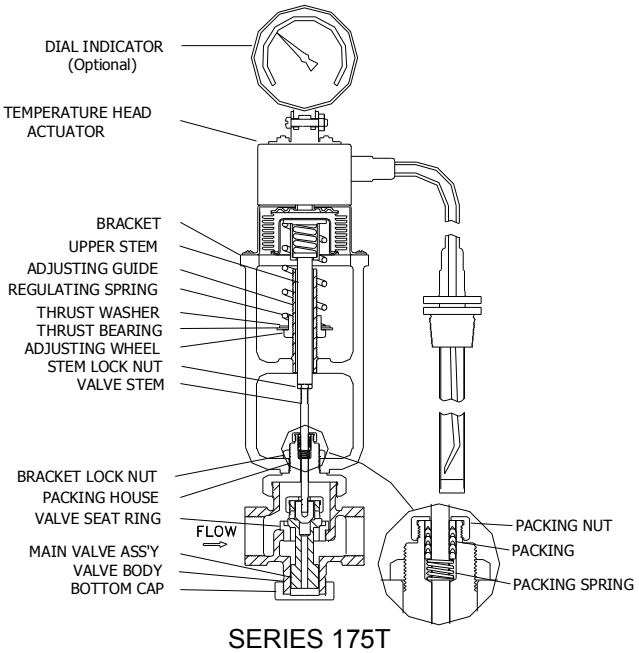
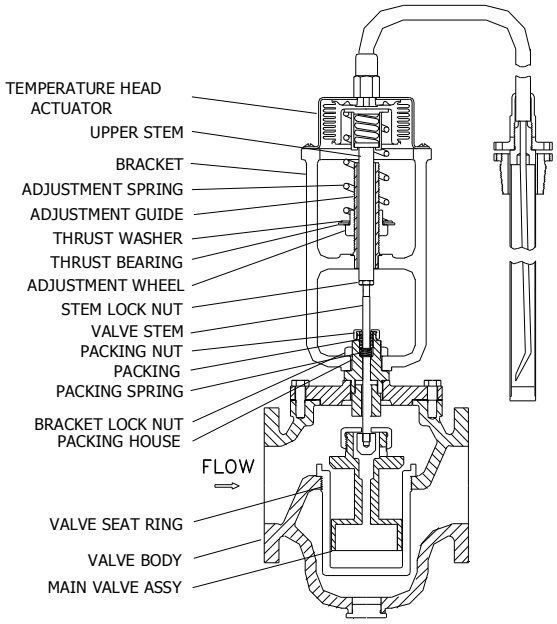
SERIES 175 & 175T

TEMPERATURE REGULATORS INSTALLATION INSTRUCTIONS

INSTRUCTION PART NO. 2229800 CR3414 REVISION 5



SERIES 175T
SCREWED ENDS



SERIES 175
FLANGED ENDS

INSTALLATION

After receiving regulator, unpack and inspect to ensure it was not damaged in shipping. The capillary and armor should never be cut, kinked, mashed or twisted. It may be coiled on a 4" radius or larger, but never less than 4".

Caution: When servicing or installing this regulator in a tank, all steam and /or water pressure must be turned off and the tank drained completely. When servicing or installing this regulator in other pressurized vessels, all steam and/or water must be turned off and the lines and vessels relieved of any pressure.

The pipeline must be blown down to ensure scale and foreign particles are removed.

The regulator must be installed with the bellows portion of the temperature head at the highest point in the vertical position.

The valve should be installed with flow in direction indicated by the arrow on the body. **Caution: When installing flanged valves make sure flange bolts are tightened evenly to avoid over-stressing and cracking the flanges.**

By-pass connections of the same size as the temperature regulator are recommended. Use gate valves before and after the temperature regulator and a globe valve as the bypass valve. A 'Y' strainer must be installed between the inlet side of the regulator and the inlet gate valve. (Make sure sufficient clearance is allowed so the strainer screen can be removed.)

CONNECTING THERMOSTATIC BULB SYSTEM

Remove the (4) bushing screws and remove the bulb bushing from from the bulb. Screw the bulb bushing into the selected threaded hole in the tank or pipeline and tighten securely. Then insert the bulb with the bushing gasket onto the bushing and fasten in place with (4) bulb bushing screws.

The bulb must be located in one of the following two positions:

- In the horizontal position with the word 'TOP' stamped on the bulb flange facing upwards.
- In the vertical position, the flange of the bulb must be at the highest point with the bulb pointing downward.

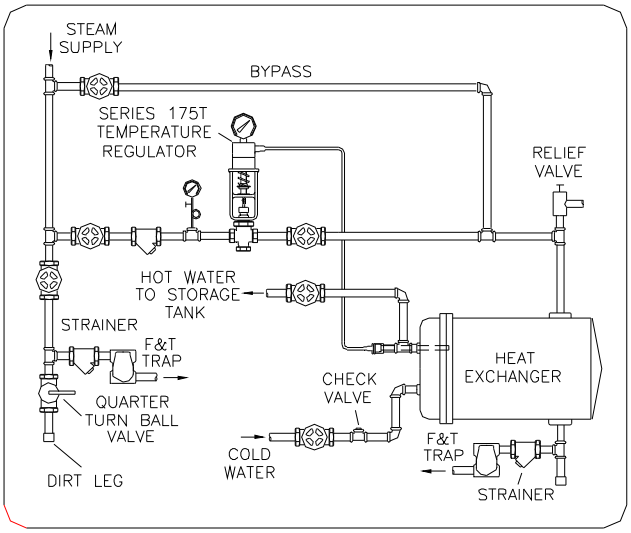
A loop of a few turns of capillary tubing next to the regulator is recommended to absorb vibration from occurring in the pipeline.

When installing the bulb, make sure the entire bulb is exposed to the fluid that it will be sensing.

When the sensing bulb is installed in the thermal well, a heat transfer compound must be packed into the socket to increase heat transfer from the liquid to the bulb.

Install an accurate thermometer in the system as close to the thermostatic bulb as possible.

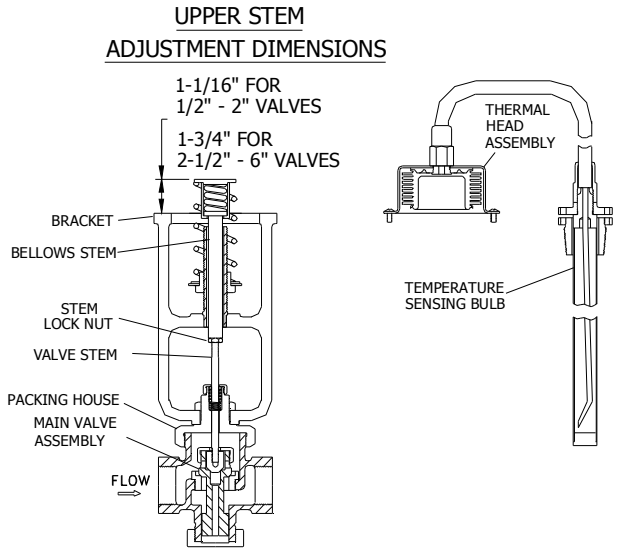
If there is any uncertainty about our product, do not proceed with servicing or installation. Please call the factory or our authorized representative.



SERVICE INSTRUCTIONS

1) Before attempting any service on this regulator, make sure of the following:
- a) All steam and/or water pressure is turned off and the tank (if any) is drained completely. Also, all lines and vessels must be relieved of any pressure at the valve and bulb area.
- b) Bulb must be allowed to cool fully.
- c) Remove all the compression from the regulating spring by turning the adjusting wheel to its low limit.
- d) Wear heat resistant gloves.

2) READJUSTING UPPER STEM HEIGHT
- a) The upper stem height has been factory set and should never be tampered with.
- b) If inadvertently this setting has been altered, reset as follows:
  1) Remove temperature sensing bulb from the media it's sensing.
  2) Cool bulb to 30 degrees below the low end of its The low end of its temperature range.
  3) After bulb is cooled, remove thermal head assembly from bracket.
  4) Confirm that the main valve assembly is against its seat and then rotate upper stem assembly until applicable setting dimension is achieved.
  5) Retighten stem lock nut against end of upper stem.
  6) Replace thermal head assembly and re-test valve operation.



3) REPLACING THE THERMAL ELEMENT
- a) After Step 1, follow CAUTION LABEL instructions on Temperature Head then loosen the (4) bulb bushing screws slightly.
- b) Wiggle the bulb flange to break gasket connection and ensure that all pressure has been relieved from system.
- c) Bulb must be allowed to cool fully.
- d) Remove (4) screws completely and remove bulb from pipe, tank or well.
- e) Remove temperature head from the bracket by removing eight round head screws.
- f) Install the new thermal element in reverse order.

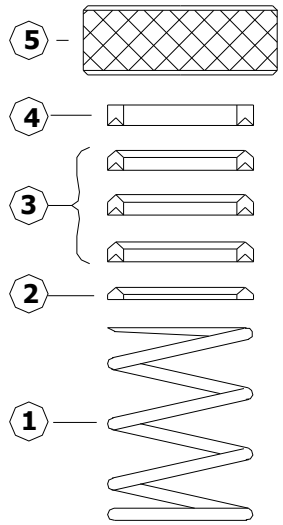
4) SERVICING MAIN VALVE SEAT AND DISC
- a) Consult factory for proper repair kit and any questions regarding this servicing.
- b) Shut down system as described in Step 1.
- c) Bulb must be allowed to cool fully.
- d) Wait for parts to cool.
- e) Mark valve stem threads right below stem nut, and remove the valve stem and locknut.
- f) Remove the packing house.
- g) Pull out main valve disc and inspect disc and main valve seat for wear. On internal pilot operated direct acting regulators, inspect pilot main valve and seat area for same. (Minor wear can be corrected by lapping disc and seat together with 400 grit lapping compound). Inspect disc(s) and seat(s) for signs of scale or dirt which could have caused leakage. Replace if necessary (Replacement seats and discs should be lapped in.)
- h) Reassemble as required making sure the stem thread mark is right below the stem nut and that the upper stem setting has not been moved.

PMA/TMA

NPT	250 PSIG@450F	250# Flg. 250 PSIG@450F
124# Flg. 125 PSIG@450F		Max. Inlet Pressure 250 PSIG

REPLACING VALVE STEM PACKING

a) Make sure steam supply is safely shut off.
b) Allow sufficient time for valve to cool.
c) Remove the bracket/temperature head assembly from valve. This is done by loosening the bracket lock nut, the stem lock nut (make a note of the stem lock nut position relative to the end of the valve stem thread for reassembly) and unscrew the end of the valve stem from the bellows stem. The bracket/temperature head assembly can then be lifted off the valve.
d) Remove the packing nut, old packing and spring out of the packing chamber.
e) Clean all surfaces of the stuffing box and stem. If the stem is corroded , worn or marred, it must be replaced.
f) Blow all debris from the stuffing box and the replacement packing. PACKING MUST BE CLEAN AND FREE OF FOREIGN MATERIAL.
g) Install new packing as follows:
NOTE: V tings must be carefully installed over the stem threads and into the stuffing bore to avoid snagging of the lips on threads on the bore. A sharp edge on these lips is imperative for sealing.
   1) Install spring.
   2) Male adapter with flat side in first against spring.
   3) V-rings with lips in first.
   4) Female adapter with cavity in against V-rings and flat side out.
   5) Install packing nut.
h) Reinstall bracket over stem and onto packing house.
i) Tighten bracket lock nut and screw valve stem into end of upper stem (referring to amount of engagement noted during disassembly) and tighten stem nut to end of upper stem.



TROUBLE SHOOTING

PROBLEM	POSSIBLE CAUSE	CORRECTION
1. System will not come up to required temperature 1a. Valve will not open	a) Valve undersized. b) Downstream piping undersized. c) Pipe line strainer blocked d) Inlet or outlet gate valve partially closed. e) Inlet pressure too low causing reduced capacity through valve. f) Packing nut too tight causing stem to bind and not open completely. g)Thermostatic bulb not installed in proper location (bulb in hot spot). h) Condendsate not being drained as required.	a) Check capacity of valve against load. b) Check velocity of steam in piping system. c)Clean screen. d)Open valves. e)Check with gage and correct as required. f)Make sure packing nut is only hand tight. Replace packing if necessary. g)Use a glass thermometer to check temp. throughout system; relocate bulb if necessary. h)Check to insure that stem trap is installed in proper location and that it is functioning properly.
2. Temperature of system overrides required or set temperature. 2a. Valve will not shut.	a)Adjustment wheel not set to proper temperature. b)Dirt lodged between main valve & main valve seat; valve or seat worn; main valve seat threads leaking; on internal pilot operated direct acting regulators, inspect pilot main valve and seat for the same. c)Bypass valve open. d)Valve is extremely oversized. e)Thermostatic bulb not installed in proper location (bulb in cold spot). f)Packing nut too tight causing stem to bind and not move from present position. g)Thermal system failed.	a)Readjust to desired temperature. b)See service instruction. c)Close valve. d)Check catalogue for rated capacities. e)Use glass thermometer to check temp. throughout system & at bulb; relocate bulb if necessary. f)Make sure packing nut is only hand tight. Replace packing if necessary. g)By controlling manually the flow to the source (heat exchanger, tank etc.) one can watch the stem movement to see if it opens all the way (5/16" on ½"-2" and ½" on 2-1/2"-6" valves) and if it shuts all the way. If there is a by pass around the temp. regulator with a gate of globe shut off valve you can supply enough steam or water to satisfy the temp. and shut off the valve. If there is a gate or globe shut off valve before or after the temp. regulator you can starve the system by partially shutting these valves and the temp. regulator should open all the way. If there is no or very little movement of the stem during the above tests, the temp. head has probably failed.
3.Slow temperature response	a)No heat transfer grease in the thermal well.	a)Fill well with heat transfer grease.