

Rev	Date	Changes	Approved By
A	3/18/05	Original	Alan Elyousfi

1.0 PURPOSE:

1.1 To adjust a Vacuum Jacketed Manifold Assembly with CVI positoner and actuator. This assembly is used on the TC/TVC-4, REAL-36, REAL-48 models.

2.0 SCOPE:

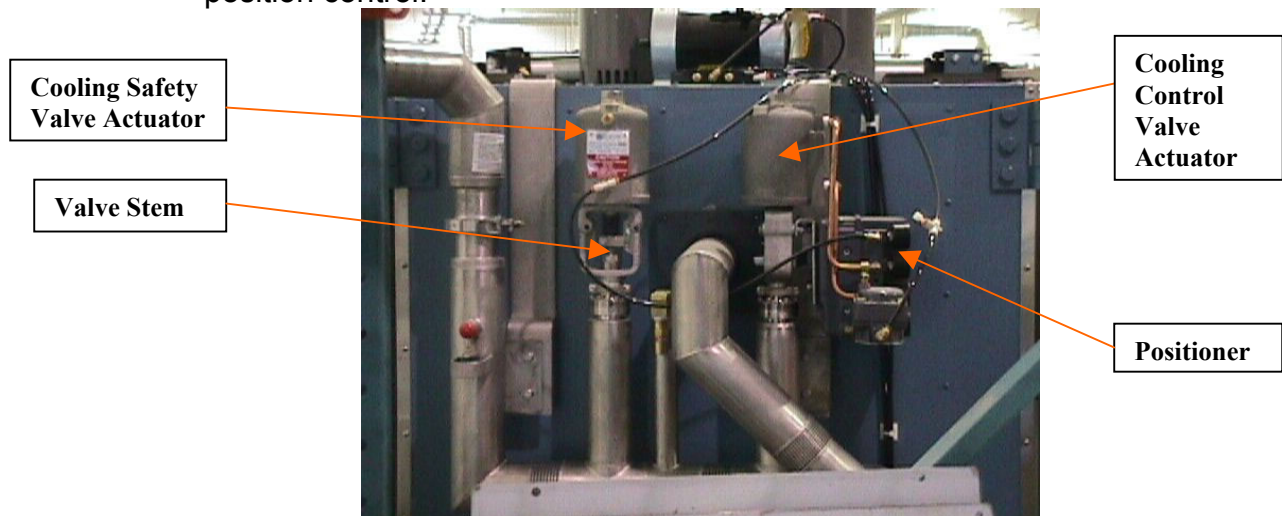
2.1 This document details the procedures required to adjust the valves on a vacuum jacketed manifold valve assembly using CVI valves and actuators.

3.0 REFERENCES:

3.1 Drawing #11060092

4.0 REFERENCES:

- 4.1 Valve Stem: Top portion of the valve that is connected to the valve seat. Moving the stem up moves the valve seat up (opening the valve) and vice-versa.
- 4.2 Actuator: Actuator is connected to the valve stem and converts a pressure input signal into vertical translation of the valve stem.
- 4.3 Positioner: Converts a 3-15psig pneumatic signal into valve open/close position control.

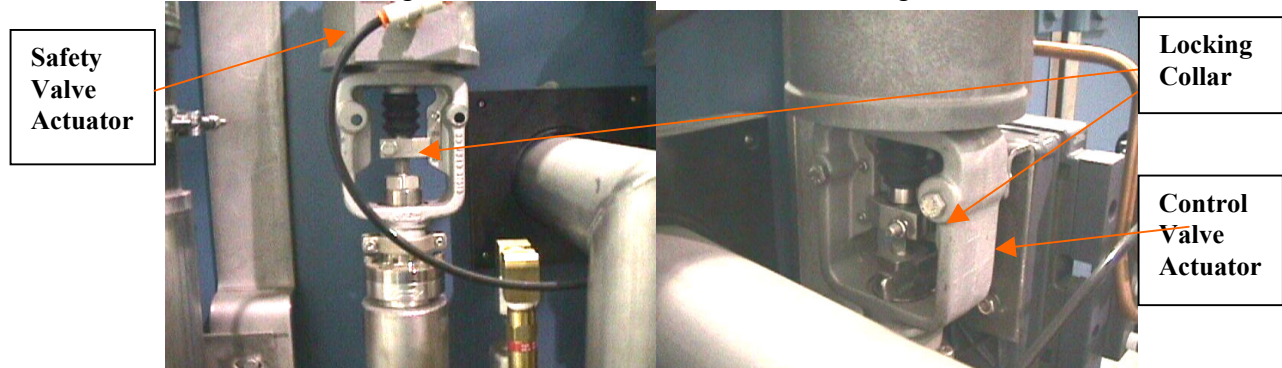


5.0 INSTRUCTION:

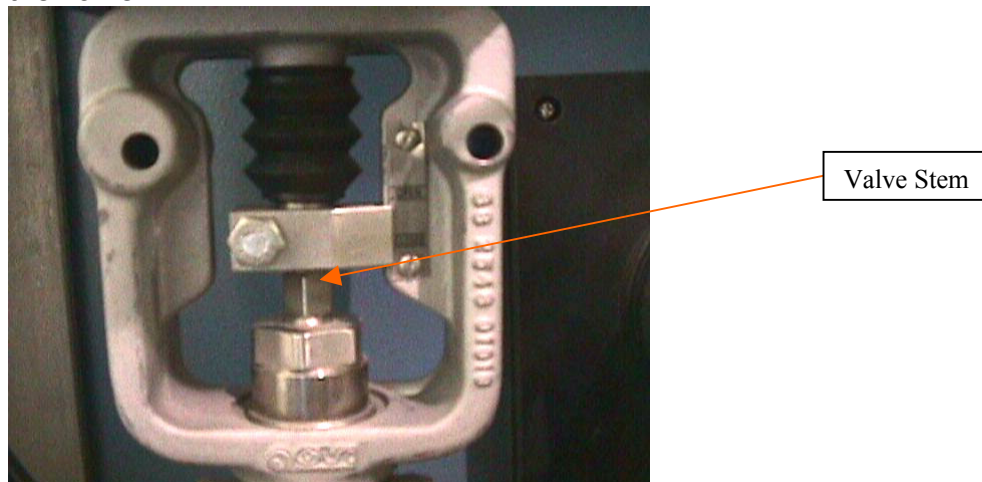
- 5.1 Before beginning the adjustment, drain any liquid nitrogen and pressure out of the system by closing the liquid nitrogen supply to chamber and commanding the chamber to cool for five minutes.
- 5.2 After pipe section has drained all liquid and pressure, stop the chamber.
- 5.3 **Valve adjustment (Steps 5.4 to 5.9)**
- 5.4 With the cooling event set to 'ON', go into the 'Controller Configuration' menu then to the 'PID Loops' menu. Under the temperature cooling section

set the output field to 100% by touching the screen where the value is displayed. A keypad will open up for you to type in 100. This will raise the valve seat off its' base and ensure no damage to the seat.

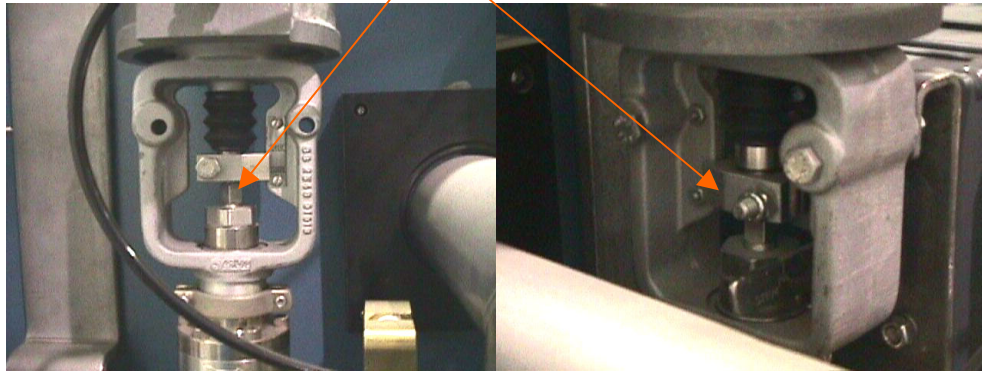
5.5 Loosen locking collar on both CVI actuator's using 1/2" wrenches



- 5.6 Turn the valve stem upwards into the actuator (left to right) with a 3/8" wrench until it stops. Do this on both actuators.
- 5.7 Turn the cooling event off so that both actuators go to their closed position.
- 5.8 Turn stem downward (from right to left) until you feel medium resistance (this is the valve seat closing fully into its' base). Do this on both actuators. Again turn the cooling events on and set the cooling output to 100% as described above. Continue turning the valve stem right to left (2) additional full turns on both actuators. This will assure proper back seat pressure on the valve.

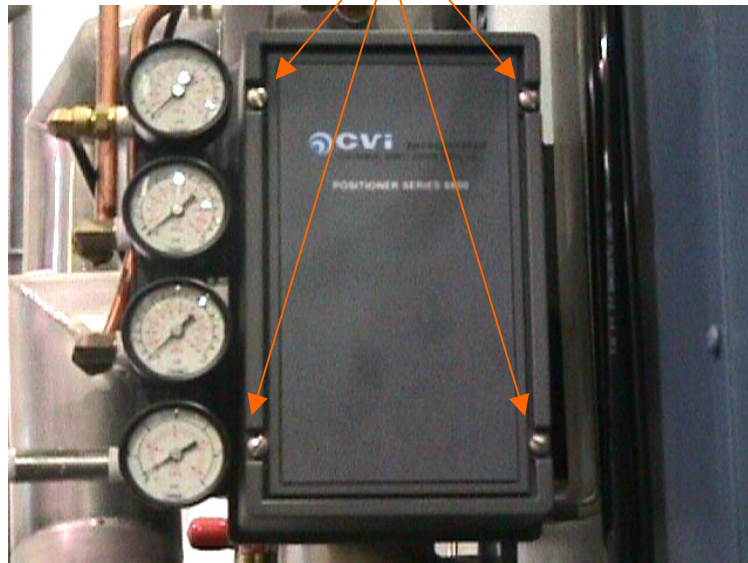


5.9 Tighten locking collars on both valves.



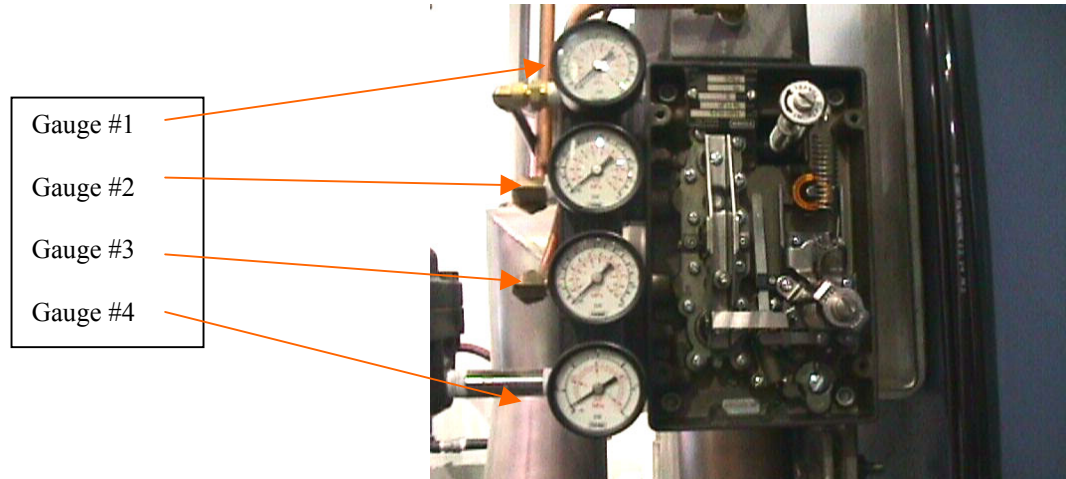
5.10 **Positioner Adjustment:** Loosen (4) flat head screws from positioner cover and remove.

Screws

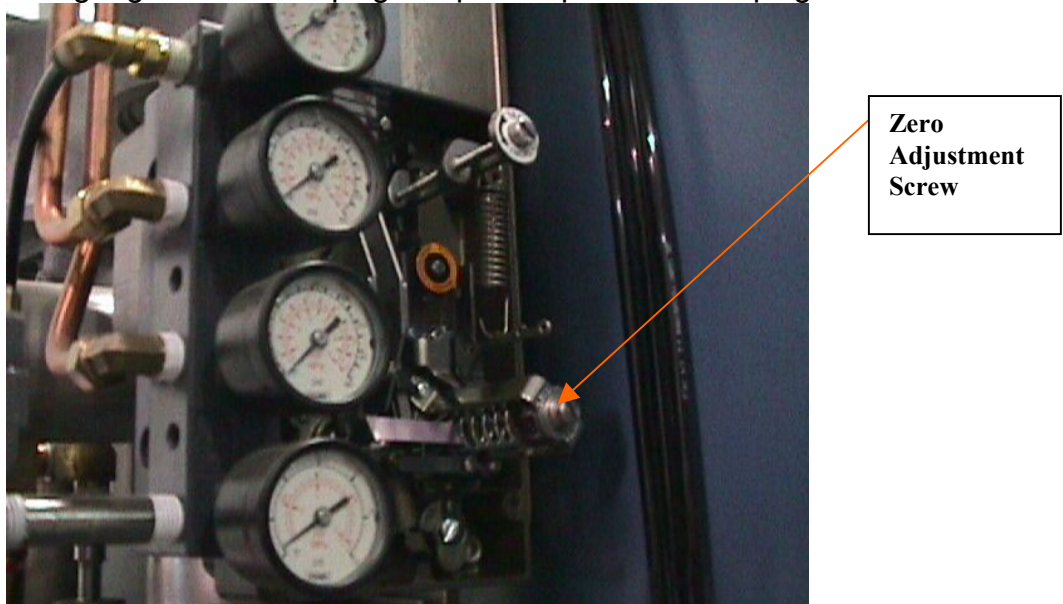


5.11 Close doors on chamber, enable fans and cooling events

5.12 Check gauge pressures. Gauge #1 and #2 should equal main line pressure on Chamber, gauge #3 should read 0 psig, gauge #4 should read approximately 3 psig. If gauges read accordingly skip to step 5.15

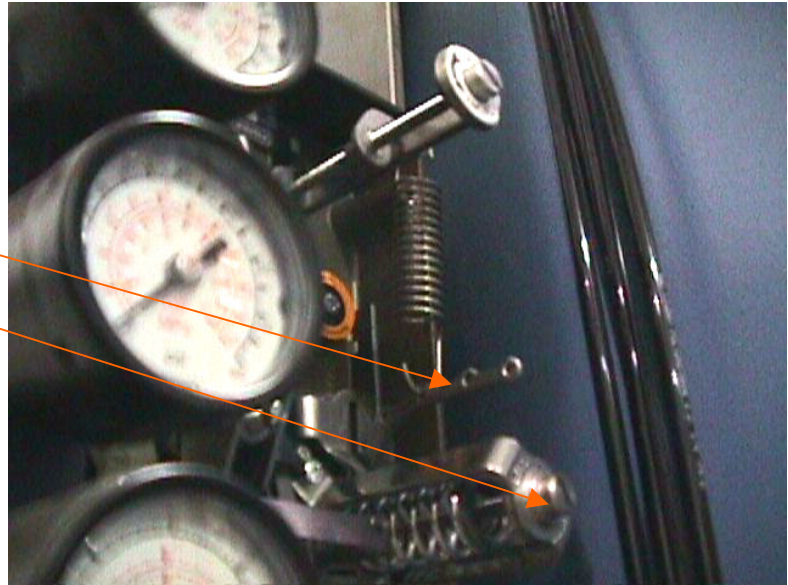


- 5.13 Zero adjustment of gauge #3 is required if it has a reading of more than 0 psig, the Zero adjustment screw will need to be turned counter clockwise until gauge #3 reads 0 psig. Stop once pressure is 0 psig.



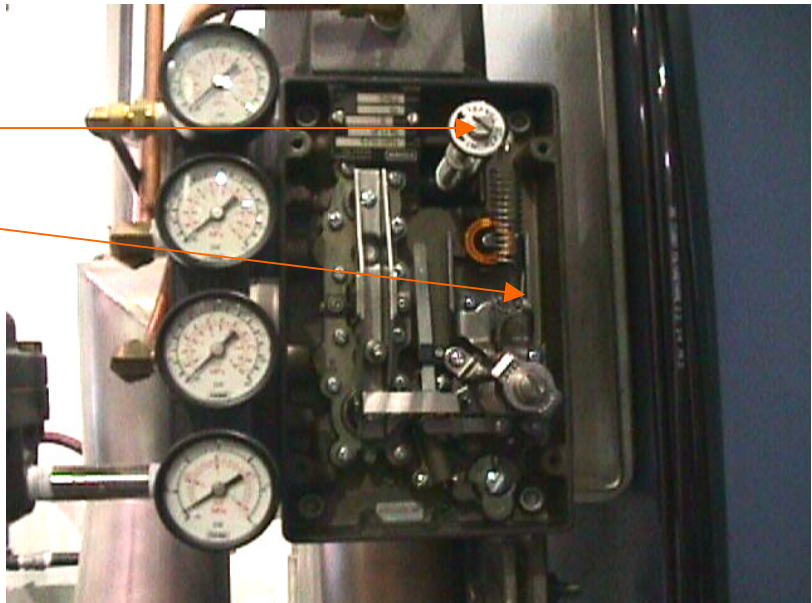
- 5.14 With your finger, place slight upward pressure on the summing beam lever, if the valve stem does not move upwards (open) at all, turn the adjustment screw clockwise in $\frac{1}{4}$ turn intervals until the valve moves slightly upwards with slight pressure. *(If the adjustment screw is turned in too far, gauge #3 will start to rise in pressure and when downward pressure is applied to the summing beam lever the valve will close slightly).* The zero setpoint on this positioner has now been set.

Summing Beam
Zero Adjustment Screw



- 5.15 The valve needs to be fully open when the chamber is at 100% cooling. The valve span will need to be adjusted to confirm this action. You will need to run the chamber at 100% cooling with the nitrogen supply valve still closed so that no liquid will actually flow through the system. If you put slight upward pressure on the summing beam and the valve stem does not rise, then it is open all the way and proceed to step 5.18. If it does move upwards (rise), then go to step 5.16.
- 5.16 The span is not opened 100% and will contribute to the chamber not cooling properly. The fine span adjustment screw will need to be turned counter clockwise until the valve does not further open with slight upward pressure on the summing beam.

Fine Adjustment Screw
Summing Beam



- 5.17 If span was changed on the positioner, then repeat Zero adjustment by

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following steps 5.11 thru 5.14.

- 5.18 Reinstall the positioner cover.
- 5.19 Turn on liquid nitrogen supply with doors closed, fans on, cooling event enabled, and 0% output (no temperature setpoint). Watch the chamber temperature to ensure that it does not slowly drop. Run a cooling setpoint to ensure valve is operating properly.