

## PREAMBLE

### HOW TO RE-CALIBRATE THE 99103-A & 99903 MANIFOLD

Our calibration process involves 16 steps and each step was designed to perform a specific task within that process.

Before I provide you with the details, I need to summarize for you what each step is for:

- Step #1 Identifies the software revision level of the unit.
- Step #2 Is always 500 (DO NOT CHANGE).
- Step #3 Calibrates the High Side Pressure at 0 PSI (Input pressure must be 0 PSI when calibrating this step).
- Step #4 Calibrates the High Side Pressure (we use a calibrated 300 PSI source, but you can use another known pressure to calibrate).
- Step #5 Calibrates the Low Side Pressure at 0 PSI (Input pressure must be 0 PSI when calibrating this step).
- Step #6 Calibrates the Low Side Pressure (we use a calibrated 300 PSI source, but you can use another known pressure to calibrate).
- Step #7 Calibrates the Vacuum Gauge at ATM (we use a calibrated ATM Vacuum Tube to calibrate this point).
- Step #8 Calibrates the vacuum at 96 microns (we use a calibrated 96 micron Vacuum Tube to calibrate this deep vacuum point).
- Step #9 Calibrates the High Side Temperature Thermocouple (a known low temperature reference is required).
- Step #10 Is always 423 (this corresponds to the boiling point of water (100°C or 212°F) DO NOT CHANGE, for K type thermocouple.
- Step #11 Calibrates the Low Side Temperature Thermocouple (a known low temperature reference is required).
- Step #12 Is always 423 (this corresponds to the boiling point of water (100°C or 212°F) DO NOT CHANGE, for K type thermocouple.
- Step #13 DO NOT CHANGE, this is a number that is specific to the unit.
- Step #14 DO NOT CHANGE, this is a number that is specific to the unit.
- Step #15 MUST BE 200, DO NOT CHANGE, this number is a temperature correction factor for the pressure sensors in the unit (High Side).
- Step #16 MUST BE 200, DO NOT CHANGE, this number is a temperature Correction factor for the pressure sensor in the unit (LOW SIDE).

The Keypad is used for entering and exiting the Calibration Process. I will call the keypad buttons by numbers instead of their function, starting with the left most key, which will be 1 (Vacuum) followed by 2 (Select), 3 (Power), 4 (Enter) and 5 (B/LT).

(A) To Enter the Calibration Mode turn the Unit ON then: Press 5 (and hold) **then** Press 1 and **hold both down** until the LCD screen goes blank.

Now (momentarily one button at a time) press the following button sequence 2, 1, 2. At this point you will see the following on the LCD screen:

Lower right screen will display the number 1 - This means you are in Calibration step #1 (the top center of the LCD displays the CALIBRATION VALUE of that particular step.

MY RECOMMENDATION IS THAT YOU RECORD ALL THE CALIBRATION VALUES IN YOUR MANIFOLD **BEFORE** ANY CHANGES ARE MADE, JUST IN CASE AN ERROR IS MADE. You record the numerical value that appears in the TOP CENTER of the LCD screen in each step.

Press ENTER to move to step #2 etc. until you reach step #16. Record every value in each step. Pressing ENTER one more time (after step #16) will EXIT the Calibration Mode.

A NOTE OF PRECAUTION:

When you are in the Calibration Mode, you can not go backwards and you will be unable to shut the unit OFF. You must first exit the calibration mode if you pass a step or if you wish to shut the unit OFF.

You are now ready to re-calibrate your manifold.

Follow instruction in (A) above and re-enter the Calibration Mode.