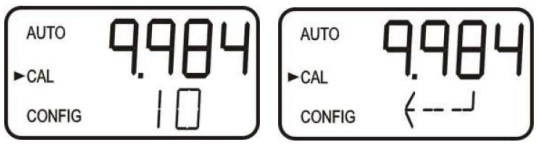
# *Micro TOL Turbidimeter Startup and Calibration*

- **Take care in connecting the wiring, do not apply power to the analog connection.**
  - **The terminals are marked on the board or you can consult the manual.**
- **Allow Micro TOL to "warm up" at least 30 minutes before calibrating the Micro TOL.**
  - **Remember to clean the standards with a lint-free cloth and glass cleaner if needed.**
- **Purge the sample line before connecting the flow head. Particularly if the sample line is new.**
- **Check the flow head for leaks before inserting the flow head in the optical well.**
  - **Clean the flow through cuvette with a lint free cloth and glass cleaner if needed.**
- **Don't forget to install the desiccant and desiccant indicator.**
- **If you suspect micro bubbles use the back pressure clamp to add some back pressure.**
  - **Micro bubbles may not be visible to the naked eye but will cause NTU to increase.**
- **For pressurized sample you may need to install the seal screw on the sample OUT bulkhead.**

## Calibration Procedure

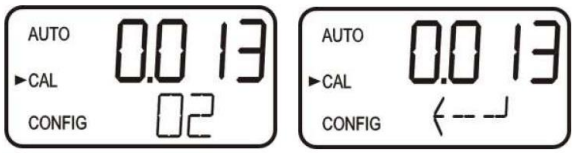
**NOTE: During the calibration procedure the analog output is held with the last value stored before the calibration screen is selected. Normal analog function resumes when the unit returns to AUTO.**

Select the calibration function of the instrument by pressing the MODE/EXIT button once. The arrow beside CAL will be illuminated on the display. The lower display shows alternating 10 (the value of the standard that is requested) and ENTER. The upper display shows the real-time reading to allow the standard to be indexed. You can select any of the three values using the up and down arrows to select the desired value.




NOTE: The display toggles between the standard value (in this instance 10) and the ENTER symbol ENTER

- Remove the flow through unit.
- Insert the requested NTU standard (1000, 100, 10, 1 or 0.02).
  - Index the standard to the lowest value on the upper display.
- Press the ENTER button to accept the calibration.
- The lower display will count down the progress of the calibration step.
- The lower display will now change to show the next standard and ENTER, requesting the next standard. Follow the same procedure from above.
- ***NOTE: Not all steps are pictured here in order to save space.***




NOTE: The display toggles between the standard value (in this instance 0.02) and the ENTER symbol ENTER

- Insert the requested 0.02 NTU standard.
- Index the standard to the lowest value on the upper display.
- Press the ENTER button to accept the calibration.
- The instrument will return to AUTO mode at the end the calibration.

***NOTE: During calibration, the fan inside the instrument is turned off to extend the life of the desiccant. The fan will be turned on during calibration countdowns and after returning to the AUTO mode or after five minutes, whichever comes first. It is recommended that the measurement chamber be kept covered during the calibration period and that the flow through cuvette be replaced immediately after the calibration to prevent premature saturation of the desiccant.***

**Vapor Purge / Desiccant Use**

The Micro TOL is equipped with a continuous vapor purge system. A replaceable desiccant pouch in the lower portion of the instrument dries the air. System heat is used to warm the air. A fan inside the instrument continuously circulates heated dry air around the optical well and the flow through cuvette. This feature eliminates the need for a dry purge line.

The Micro TOL monitors the replaceable desiccant pouch condition continuously. The LCD display will show DESC on the lower line in the event that the desiccant pouch needs replacement. Replacement desiccant pouches are available from HF scientific or Lazenby & Associates, Inc. (Part # 21555R). Refer to section10.2 Replacing or installing the Desiccant Pouch. The desiccant status can activate an alarm to notify the operator of a saturated desiccant.

**Drain Vent**

The Micro TOL has been fitted with a drain vent in the "OUT" bulkhead fitting. This fitting allows for atmospheric equalization, thus helping to alleviate bubble formation in the cuvette. Refer to Figure 4. Upon initial flow minor leakage may occur through the drain vent. This will subside once normal flow is established. For some high pressure systems, where the vent hole continuously leaks, a 6:32 seal screw is provided which should be inserted into the vent hole and tightened.

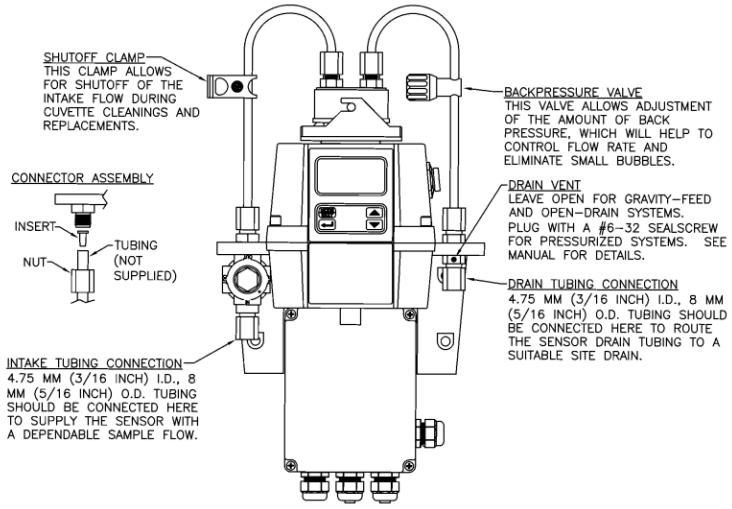



**Figure 4: Recommended Plumbing for the Instrument**

**Instrument Configuration (CONFIG mode)**

The instrument has been designed to provide the ability to customize the instrument according to needs at any time during normal operation. This mode has been split into sub-menus to facilitate instrument configuration. This section describes how to use each of the sub-menus to configure the instrument.

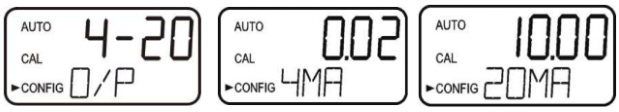
*While in the configuration mode, the instrument has a time-out feature that automatically returns the system operation to the AUTO mode after a fifteen (15) minute period.*

Enter the CONFIG mode of the instrument by pressing the MODE/EXIT button until the arrow beside CONFIG is illuminated, then press the ENTER button. Note: To exit the CONFIG mode, press the MODE/EXIT button.

**Selecting the Output (O/P) and setting up the analog output (4 – 20 mA)**

The first configuration selection is the O/P (Output). The selections are 4-20 for the 4-20 mA output, 485 for the RS-485 and OFF if no outputs are required. Select the desired output by using the UP and DOWN buttons. Once the desired output has been set, press the ENTER button to accept it. The next prompts will depend on the output selected.

**Setting the 4-20 mA**




If the 4-20 mA output was turned on, prompts to set the 4mA (4MA) and 20mA (20MA) turbidity values will be displayed. The first prompt will be the turbidity limit assigned to the 4 mA output level: Select the turbidity level to assign to the 4MA using the UP and DOWN buttons. The factory setting is 0.02 NTU since this is the lowest standard value. Once the desired level has been set, press the ENTER button to accept it.

Note: There is an analog "tweaker" function in the Micro TOL software. To access the "tweaker" function use the CONFIG menu, enter the EXTD menu option and the 4 mA and 20 mA tweaker functions are the last two menu options on the unit.

**ALARM SET POINT: Alarm setup is similar to the O/P and alarms can be HIGH / LOW / OFF.**