

STUF-200H Calibration Procedure

1. Meter configure and transducer installation

Please refer to the Quick Start for details.

1.1 Configure the meter, e.g., pipe parameters, flow parameters, transducer type, etc.

1.2 Clamp transducers on the pipe according to the spacing indicated in window M25.

1.3 Fine tune the installation so that the triplets in M90, S, Q and R, are in the right ranges.

For calibration, we recommend that $S \geq 700$, $Q \geq 80$ and $99.5\% < R < 100.5\%$ when flow is stopped.

2. Zero calibration

2.1 Stop flow. Make sure pipe is full and the liquid does not move.

2.2 Set the Scale Factor in M45 to 1, the Damping factor in M40 to 0 and the Low Cutoff Velocity in M41 to 0.

2.3 Reset the factory Zero. Go to window M43, press the ENT key, select Yes, and press ENT again.

2.4 Check velocity reading (M01). If less than 0.09ft/s, go to the next step.

Otherwise, check whether the input parameters are correct. If they are, adjust transducer installation to reduce this number.

2.5 Start the Zero calibration process:

Go to window M42. Press the ENT key to start the calibration process. The progress will be indicated by a number on the upper right corner of the LCD. The number starts from 38 and decreases to 0. The Zero calibration is done when the number reaches to 0.

2.6 Watch the velocity reading in window M01. Record the maximum of the readings, which will be used as Low Cutoff later.

Normally, the readings should be within ± 0.05 ft/s.

3. Linearity calibration

3.1 Set the Damping factor in M40 to 5s. Set the Low Cutoff velocity to the value recorded in the above step.

3.2 Set up the units for velocity, flow rate and totalizer. Make the units small so you can have more valid digits.

For totalizer, you may set the Totalizer Multiplier in M33 to $\times 0.01$ to increase the valid digits. The final reading should be multiplied by 100.

3.3 Set up the reference flow measurement system.

3.4 Setup the pipe flow to run at a low flow rate. Wait for the flow to be stabilized (> 2 min).

3.5 Make sure the triplets in M90 are still in the right ranges (they may differ slightly from those when flow is still). Then, go to menu M38 to use the manual totalizer.

Note: Since there is no digit input in the flowmeter for synchronizing the calibration, we have to do the Start and Stop manually. This should be OK as far as the calibration duration is long enough to overcome the error caused by human response delay.

3.6 Simultaneously press the ENT key in M38 and the START button of the reference measurement system (for a weight-based calibration system, this will direct the flow to the weighting tank).

3.7 When the reference system reaches to its specified weight or time, press the ENT key in M38 and the STOP button of the reference system simultaneously.

3.8 Record the totalizer reading of the flowmeter and the reading from the reference system.

3.9 Change the flow rate to a median value, make sure the triplets in M90 are still in the right ranges, then, go back to step 3.6 for the middle point calibration.

When the middle point is done, change the flow rate to the desired maximum value, go back to step 3.6 for the maximum point calibration.

3.10 Use the three point data to find out the best calibration coefficient for the flowmeter (you may use linear fitting function in Excel to obtain the coefficient). This coefficient will be the flowmeter Scale Factor. Enter the value in menu window M45.

3.11 The flowmeter is now ready for use. If you need more calibration points, just change the flow rate in smaller steps and follow steps 3.6 to 3.8.