

Proposal to Amend S&T Item MFM-15.1

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Introduction

The stated purpose of S&T item MFM-15.1 is to recognize the use of field standard meters to be used as field standards to test commercial mass flow meters. However, the minimum size test drafts proposed in MFM-15.1 prevents weights and measures officials from conducting tests at most flow rates using test drafts equal to the MMQs. Additionally, test drafts equal to the quantity delivered in one minute at the minimum flow rate can result in some invalid tests. The proposal MFM-15.1 also conflicts with paragraph N.4. of the MFM Code that instructs the weights and measures official to conduct tests at the MMQs when deliveries may occur near the MMQs.

To avoid these problems, this proposed amendment to Item MFM-15.1 states that test drafts greater than or equal to the MMQ may be used to test mass flow meters. This applies to tests at all flow rates. Furthermore, test drafts equal to or greater than the MMQs apply to all field standards that meet the accuracy requirements of Section 3.2. of the Fundamental Considerations.

Part b) of the proposal is to ensure that whichever field standard is used to test at the MMQ, the standard has the necessary accuracy, i.e., meets the one-third requirement of the Fundamental Considerations, to be used to test at the MMQ for the meter under test or for any other size of test draft that is used.

Proposed Amendment

Delete the addition of the proposed N.3.2. contained in MFM-15.1, but modify the existing N.3. in the Mass Flow Meter Code by adding text to state that any test drafts equal to or greater than the MMQ for the meter under test may be used as long as the standard meets the one-third requirement of the Fundamental Considerations for the size of the test draft used. The following amendment is proposed.

N.3. Test Drafts. – The minimum test shall be one test draft at the maximum flow rate of the installation and one test draft at the minimum flow rate. More tests may be performed at these or other flow rates. (Also see T.3. Repeatability.)

Test drafts shall be:

- a) **greater than or equal to the minimum measured quantity specified for the meter and the product measured in the installation; and**
- b) **the test quantity shall be in accordance with the accuracy requirements in Section 3.2. Tolerances for Standards in Appendix A, Fundamental Considerations.**

Justification

The current proposal in MFM-15.1 specifies that the minimum quantity for a test draft when using a field standard test meter shall be equal to or greater than the amount delivered in one minute at the flow rate being tested. The basis for this size test draft has not been explained. The proposal in MFM-15.1 can result in invalid tests when the MMQ for a mass flow meter is greater than the quantity delivered in one minute at the flow rate being tested. When the MMQ is much smaller than the quantity delivered in one minute at the flow rate being tested, then the test drafts will be significantly larger than needed to adequately test the mass flow meter. Furthermore, the proposed N.3.2. in MFM-15.1 conflicts with the existing N.4. in the Mass Flow Meter Code and would prevent weights and measures officials from carrying out the test prescribed in N.4. at the vast majority of flow rates.

N.4. of the Mass Flow Meter Code states that commercial meters shall be tested at the MMQ when it is used to make deliveries on the order of the MMQ:

N.4. Minimum Measured Quantity. – The device shall be tested for a delivery equal to the declared minimum measured quantity when the device is likely to be used to make deliveries on the order of the minimum measured quantity.

Since the stated purpose of MFM-15.1 is to recognize and allow the use of meters to be used as field standards, then it is necessary to ensure that the meter used as a field standard meets the one-third requirement of section 3.2 of the Fundamental Considerations for the quantity of the test draft at the flow rate being tested. It is possible that a field standard meter could meet the one-third requirement for a large quantity test draft, but does not meet the one-third requirement for smaller quantities of test drafts, especially at the MMQs for commercial meters. Consequently, there is a need to express both conditions (a) and (b) in the proposed addition shown above for Note paragraph N.3.