Appendix A – NCWM HP-44 Amendment Package

NCWM HB-44 Amendment Package

Working Draft Heavy-Duty Hydrogen Fueling Dispensers and Mass Flow Meters

Purpose

This draft proposes amendments to NIST Handbook 44 Section 3.39 to recognize heavy-duty hydrogen fueling dispensers with maximum discharge rates up to 30 kg/min and a maximum Minimum Measured Quantity (MMQ) of 3.0 kg.

Proposed HB-44 Amendment

- Add a new subsection (c) under **S.8 Minimum Measured Quantity**:
  (c) Measuring systems having a maximum flow rate greater than 12 kg/min but not greater than 30 kg/min shall have a minimum measured quantity not exceeding 3.0 kg.
- Add a new subsection (c)(3) under **UR.1.3. Minimum Measured Quantity**:
  (c)(3) Measuring systems having a maximum flow rate greater than 12 kg/min but not greater than 30 kg/min shall have a minimum measured quantity not exceeding 3.0 kg.

Maximum Flow Rate	Maximum MMQ
≤ 4 kg/min	0.5 kg
>4 kg/min to 12 kg/min	1.0 kg
>12 kg/min to 30 kg/min	3.0 kg (Proposed)
• Table provided here only for clarification of flow rates and MMQ values.	

- Add a new Table T.2. under **T.2. Tolerances**:

Table T.2 **Accuracy Classes and Tolerances for Hydrogen Gas-Measuring Devices**			
Accuracy Class	**7.0**		
Application or Commodity Being measured		Hydrogen gas as a vehicle fuel	
Flow Rate	**MMQ**	**Acceptance Tolerance**	**Maintenance Tolerance**
≤ 4 kg/min	0.5 kg	5.0%	7.0%
>4 kg/min to ≤12 kg/min	1.0 kg	5.0%	7.0%
>12 kg/min to ≤30 kg/min	3.0 kg	5.0%	7.0%

Technical Justification

- Supports emerging heavy-duty hydrogen truck fueling infrastructure.
- Typical fills of 40–80 kg make a 3.0 kg MMQ a small portion of a transaction.
- At 30 kg/min, 3.0 kg is delivered in about 6 seconds, balancing practicality and measurement integrity.
- Provides a scalable framework for future high-flow hydrogen dispensers.
- Existing HB-44 requirements were developed primarily around passenger vehicle hydrogen dispensers.
- Heavy-duty hydrogen trucks typically receive 40–80 kg per fueling event.
- At 18 kg/min, a 3 kg MMQ corresponds to approximately 10 seconds of fueling, which is operationally practical.
- A 3 kg MMQ represents only about 4–7% of a typical heavy-duty fill, preserving consumer protection while recognizing the performance limits of high-flow systems.
- The proposal is consistent with the HB-44 philosophy that larger-capacity measuring systems may require proportionally larger MMQs.