



NATIONAL TYPE EVALUATION PROGRAM

Certificate of Conformance

for Weighing and Measuring Devices

For:

Meter Indicating Volume / Meter Indicating Mass
Vehicle Tank Meter, Stationary Meter
Models: 40E and 8FE, D8E (LPG mass) and
8FF, 8DF, D8C (CNG mass), and D8L(LNG mass)
Digital Electronics (Transmitter): Promass 40, 8F, 8D
Sensor: Promass E and F and L

Submitted By:

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Standard Features and Options

Standard Features:

- Coriolis Dual Tube Design using 904L Stainless Steel Flow Tubes
- NEMA 4X, IP67 Enclosures
- Class I Division 2 NI or Class I Division 1 XP
- Pulse Output
- MODBUS Digital Communication
- Ethernet Communication

Options:

- Backlit, Two-Line Liquid Crystal Display for Flow Rate and Non-Resettable Total
- Backlit, Four-Line Liquid Crystal Display for Flow Rate and Non-Resettable Total
- Approved and Compatible Indicating Elements Accepting Pulse Input
- **5000 psi (345 bar) Pressure Rating**

This device was evaluated under the National Type Evaluation Program and was found to comply with the applicable technical requirements of "NIST Handbook 44: Specifications, Tolerances and Other Technical Requirements for Weighing and Measuring Devices." Evaluation results and device characteristics necessary for inspection and use in commerce are on the following pages.

Ronald Hayes
Chairman, NCWM, Inc.

John Gaccione
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Meter Indicating Volume or Mass / 40E and 8FE and D8E (LPG mass), 8FF and 8DF and D8F (CNG mass), D8LX (LNG mass)

Issued: August 15, 2014

Application: For use in vehicle mounted and stationary applications. The Promass device may be configured with volume or mass assigned to the pulse output. The meter may be used to measure normal and compressed liquids in units of volume and measure compressed natural gas in units of mass (see Model Designation: *) only as listed in the table below. The meter must be used with an approved and compatible indicating element.

Products:

Product Groups	Typical Products ¹	Specific Gravity
Normal Liquids	Diesel Exhaust Fluid (urea solution)	1.1
Compressed Liquids	LPG, Propane, Butane, Ethane Freon 11, Freon 12, Freon 22, etc.	0.3 to 0.65
	NH ₃	0.56 to 0.68
Compressed Gases	CNG	0.6 to 0.8
Cryogenic Liquids	N ₂ , LNG	

¹**Note:** The Typical Products listed in this table are not limiting or all-inclusive; there may be other products and product trade names, which fall into a product family. Water and a product such as stoddard solvent or mineral spirits may be used as test products in the fuels, lubricants, industrial, and food-grade liquid oils product family.

Model Designation:

Model Number	Meter Size	Flow Rate (gal/min) *[lb/min] **[lb/min]
*8DF08-XXXXXXXXXXNXX	0.375 inch	*1 to 66
*8FF08-XXXXXXXXXXNXX		
*D8CX08-XXXXXXXXXXXXXX		
40E15-XXXXX9XXXXXX	0.5 inch	1 to 58 *2 to 175 **6 to 205
8FE15-XXXXXXXXXXNXX		
D8EX15-XXXXXXXXXXXXXX		
*8DF15-XXXXXXXXXXNXX		
*8FF15-XXXXXXXXXXNXX		
*D8CX15-XXXXXXXXXXXXXX		
**D8LX15-XXXXXXXXXXXXXX		
40E25-XXXXX9XXXXXX	1 inch	10 to 115 *3 to 330 **13 to 410
8FE25-XXXXXXXXXXNXX		
D8EX25-XXXXXXXXXXXXXX		
*8DF25-XXXXXXXXXXNXX		
*8FF25-XXXXXXXXXXNXX		
*D8CX25-XXXXXXXXXXXXXX		
**D8LX25-XXXXXXXXXXXXXX		
40E40-XXXXX9XXXXXX	1 1/2 inch	20 to 230



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8FE40-XXXXXXXXXXNX		
D8EX40-XXXXXXXXXXXX		
<p>Any Position within the model number designated by an “X” is not a metrological feature. Model number digit 9 in the 11th position from left or an “N” in the 16th position from left in the extended order code designates a custody transfer digital electronics version.</p>		

Identification: Identification badges are located on the electronic transmitter housing and on the neck support attaching the electronic transmitter housing to the sensor. When the electronic transmitter housing is located remotely from the sensor, identification badges are located on the electronic transmitter housing and on the sensor wiring compartment.

Sealing: Calibration and configuration parameters are under a physical seal. The transmitter is sealed by a wire security seal threaded through a drilled head screw securing the cover to the transmitter housing. The remote sensor has no adjustable components that require use of a security seal.

Alternately, access to the transmitter programming may be sealed with a pressure sensitive seal across the seam between the access cover and the electronic housing.

Operation: The complete system includes a Promass E sensor and Promass 40 or 8F or 8D or D8 digital electronics. An approved and compatible indicating element accepts a pulse input or MODBUS digital input from the Promass digital electronics.

Test Conditions: This certificate supersedes Certificate of Conformance Number 01-006A2 and was issued to include additional devices. One one-inch Promass L sensor with a Promass D8 digital electronics was tested gravimetrically while delivering liquefied nitrogen gas (0.8 specific gravity; 1= water) in a stationary system. The emphasis of the evaluation was on device design, operation, and performance. Multiple test drafts were conducted. Results of the same flow rates were compared for repeatability. An acceptance tolerance of 1.5% was applied as specified above. Tests were repeated with the one inch Promass L sensor with a Promass D8 digital electronics was tested gravimetrically while delivering water (1.0 specific gravity) in a stationary system. Multiple test drafts were conducted. An acceptance tolerance of 0.2% was applied as specified above. Additionally, requirements for power interruption were evaluated. The tests were repeated after approximately 60 days and 410 000 kilograms. Previous test conditions are listed below for reference.

Certificate of Conformance Number 07-006A2: One half inch diameter Promass F sensor with a Promass 8F digital electronics and one half inch diameter Promass F sensor with a Promass 8D (NTEP CC 01-059A7) digital electronics was tested gravimetrically while dispensing compressed natural gas (0.6 to 0.8 specific gravity; 1 = air) from a stationary dispenser. The emphasis of the evaluation was on device design, operation, and performance. Multiple test drafts were conducted at the flow rates up to 97 lb/min. Results of the same flow rates were compared for repeatability. An acceptance tolerance of 1.5% was applied as specified above. Additionally, requirements for power interruption were evaluated. The tests were repeated after approximately 60 days.

Certificate of Conformance Number 07-006A1: A one inch diameter Promass E sensor and Promass 8F digital electronics, connected to a separate primary indicating element, Midwest Computer Register, Model: MCR 05 (NTEP CC 06-031A1), and installed on a vehicle dispensing propane was submitted for evaluation. The primary indicating element was connected to a printer. The emphasis of the evaluation was on device design, operation, and performance. Three tests each, using temperature compensated and uncompensated deliveries, at four different flow rates spanning from 40 lpm to 280 lpm were conducted. Tests mentioned above were repeated after 180 days and a throughput of approximately 2,260,164 liters.

A one half inch diameter Promass E sensor and Promass 8F digital electronics, was installed in a Gilbarco Encore 500 series dispenser (NTEP CC 02-019A15) for testing. The dispenser with the Coriolis meter was evaluated and tested at a manufacturer’s facility using the 2009 edition of NCWM Publication 14 as the basis for the evaluation. Emphasis of this test was to assure that the new meter communicated accurately with the Encore series electronics, that the Encore electronics could calibrate the meter and that the combination of the new meter and Encore electronics was stable and accurate. Volumetric accuracy testing was done at 5 flow rates (1, 3, 5, 7 10 GPM) with a minimum of 4 drafts per flow rates for both the initial and subsequent test. The meter was retested after having dispensed 20490 gallons of DEF. It is noted that the DEF dispenser is provided with a heater to prevent the DEF from freezing and damaging the meter, valves, piping etc. While provided with a heater, DEF is not a heated product. The heater only works at the



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temperature approaching the DEF freezing point. The unit is also provided with a means to not allow or to stop DEF product flow if the DEF product temperature reached a temperature that is beyond the ability of the heater to maintain the product temperature i.e. power outage during a very cold period. This feature was tested.

Certificate of Conformance Number 07-006: A one inch diameter Promass E sensor and Promass 40 digital electronics, connected to a separate primary indicating element (Model: MCR 05 NTEP CC 06-031A1), and installed on a vehicle dispensing propane was submitted for evaluation. The primary indicating element was connected to a printer. The emphasis of the evaluation was on device design, operation, and performance. Four tests each, using temperature compensated and uncompensated deliveries, at five different

Certificate of Conformance Number 07-006 continued: flow rates spanning from 10 gpm to 92 gpm were conducted. Tests mentioned above were repeated after 34 days and a throughput of approximately 220 600 gallons. Acceptance tolerance of 0.6% was applied to flow rates of 34 gpm and greater, and acceptance tolerance 1.0% special tests to flow rates less than 34 gpm.

Evaluated By: R. Norman Ingram (CA) 07-006; Allen Katalinic, (NC) 07-006A1, 07-006A2, 07-006A3

Type Evaluation Criteria Used: NIST, Handbook 44: Specifications, Tolerances and Other Technical Requirements for Weighing and Measuring Devices, 2014. NCWM, Publication 14: Measuring Devices, 2014.

Conclusion: The results of the evaluation and information provided by the manufacturer indicate the device complies with applicable requirements.

Information Reviewed By: S. Patoray (NCWM), L. Bernetich (NCWM) 07-006, J. Truex (NCWM) 07-006A1, 07-006A2, 07-006A3

Examples of Device:



Model 40E



Model 8FE



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Model 8FF



Model 8DF

Model D8EX

Model D8CX



Model D8LX





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