DM SERIES METER

PRECISION POSITIVE DISPLACEMENT METER FOR BULK FUEL MEASUREMENT

THE LEADER IN ACCURATE, LONG-LIFE, FUEL METERING

MOST ACCURATE METER FOR BULK TERMINAL APPLICATIONS

UP TO 2500 LPM CONTINUOUS (660 USGPM) FLOW RATES

Avery-Hardoll®

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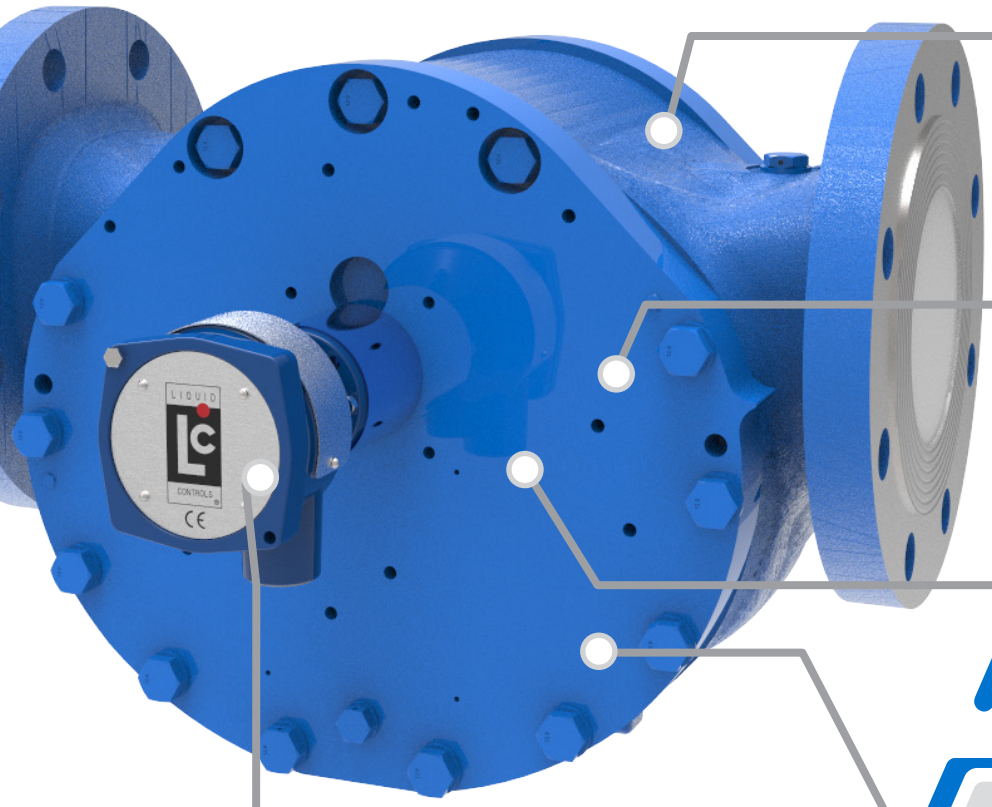
FEATURES & BENEFITS

THE MOST ACCURATE AVIATION FUEL METERS IN THE WORLD

The Avery-Hardoll Steel DM Series flowmeters are precision made, positive displacement, liquid measuring instruments that maintain the highest level of accuracy over a lifetime of operation. The Avery-Hardoll DM Steel Flowmeter is specifically designed to meet the rigorous demands of modern tank truck loading depots and fuel storage facilities.

It provides the highest level of pre-calibration repeatability and accuracy and industry leading ease of service without the inconvenience and cost of double-casing.



DM Meter with LC Pulse Output Device (POD) shown

Cast carbon steel meter body

Precision machined steel front and rear covers

Durable corrosion resistant coating for environmental protection

Working pressure: 16 bar (230 psi)

Hydrostatic test pressure: 24 bar (350 psi)

LC pulse output device (POD) shown

Precision carbon vanes for maximum measurement accuracy

Stainless steel bearings for maximum operational life

FULL PRODUCT RANGE

AVERY-HARDOLL METERS COVER MOST APPLICATIONS AND FLOW RANGES

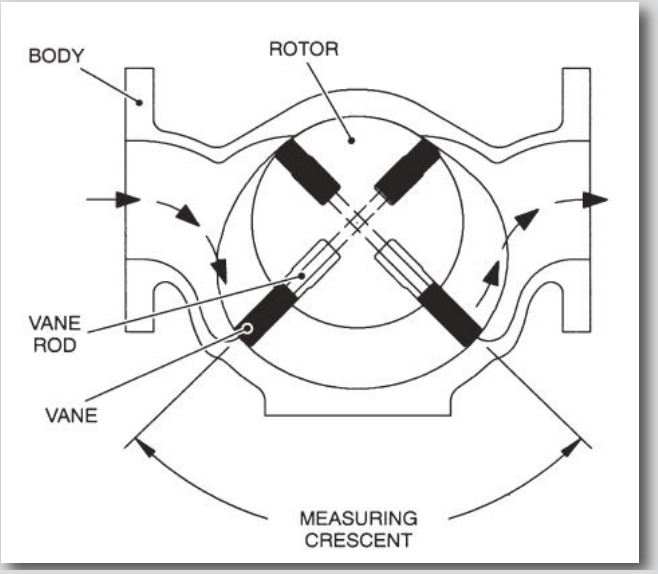
AVERY-HARDOLL METER RANGE

All Avery-Hardoll flowmeters are manufactured in three basic sizes with different ratings identified by a series number. The series numbers, sizes, flow rates, and a brief description of each series of meter are shown below.

TYPES OF FLOWMETERS

Series Number	Manifold		Flow Rate		General Description
	Inches	Millimeters	USGPM	Liters / Min	
DM	4	102	66 - 660	250 - 2500	All Steel Meter, single body Intermittent flow rate 800 USGPM or 3000 Liters/Min
BM250	2½	63	30 - 301	115 - 1140	Single Capsule Meters
BM950	3	76	34 - 361	130 - 1370	
BM450	3	76	52 - 541	200 - 2050	Double Capsule Meters
BM550	4	102	58 - 602	220 - 2280	
BM350	4	102	66 - 660	250 - 2500	
BM650	4	102	79 - 792	300 - 3000	Triple Capsule Meters
BM750	6	152	79 - 792	300 - 3000	
BM850	6	152	102 - 1022	387-3870	Triple Capsule Meter w/Aluminum Manifold for Aviation Applications

DM FLOWMETER MAIN COMPONENTS



DM Series flowmeters consist of three main components: The meter body, rotor and vane assembly and precision machined raised face flanges.

OPERATION

The product enters the meter and causes the rotor to revolve by pressure on the vanes. The proximity of the rotor to the body forms an efficient seal, while the profile of the body ensures that the vanes are guided through the measuring crescent, where the volume of product is accurately measured.

An extension shaft driving through a pressure tight gland in the meter front cover, transmits the rotor revolutions either directly to a pulse transmitter or by gearing to a step-less mechanical calibrator driving a mechanical register.

A calibrating mechanism and mechanical register are also attached to the front end cover. The calibrating mechanism can be replaced by a front cover incorporating a pulse transmitter when required for electronic systems, such as MASTERLOAD II™ or MASTERLOAD III™ registers

DM METERS SPECIFICATIONS

PRECISION POSITIVE DISPLACEMENT BULK FUEL METERS

SPECIFICATION

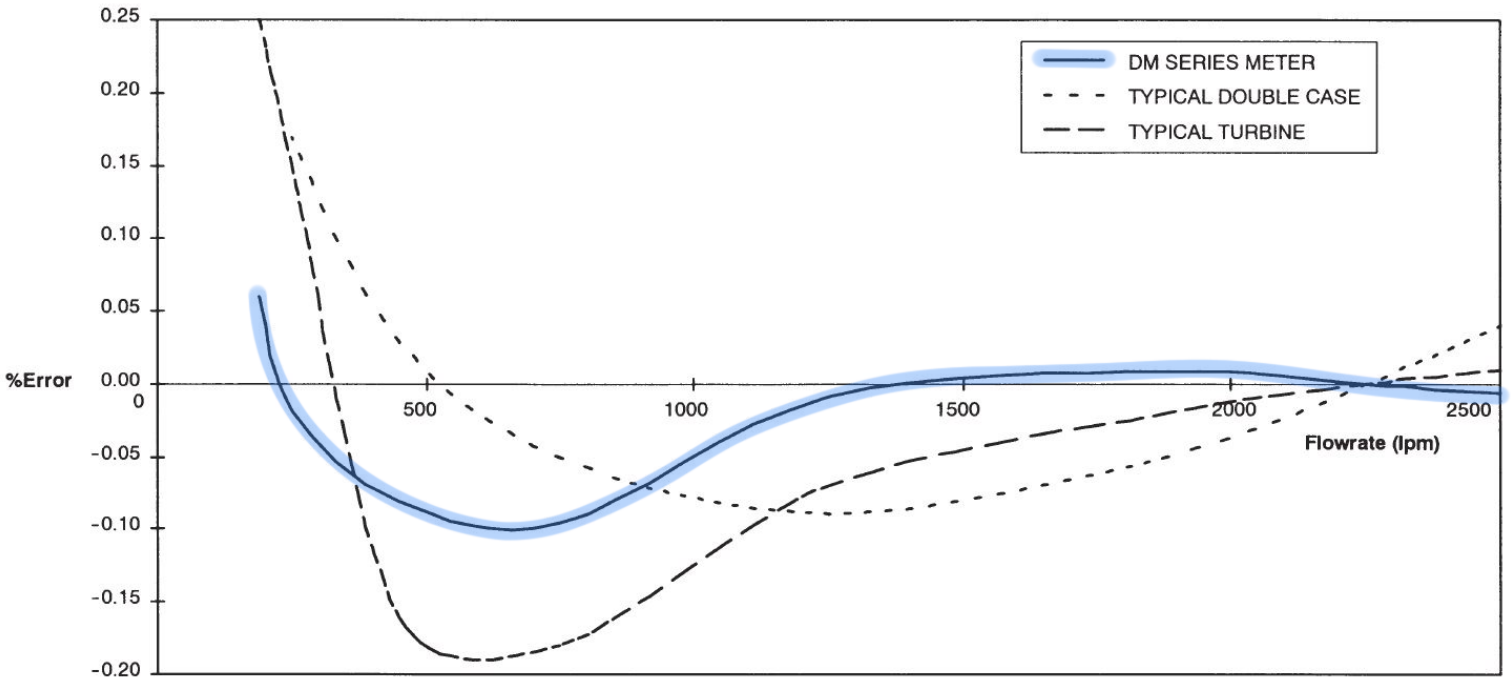
- FLOW RATE: 660 GPM (2500 LPM) Continuous
- MAX FLOW RATE: 800 GPM (3000 LPM) Intermittent
- FLANGES: 4" ANSI 150 (RF or FF)
- MAX WORKING PRESSURE: 230 psi (16 bar)
- TEST PRESSURE: 350 psi (24 bar)
- TEMPERATURE RANGE: -18ºF to 212ºF (-28º C TO 100º C)
- VOLUME PER REVOLUTION: 1.5 gallons (5.75 liters)
- TURN DOWN RATIO: 10:1
- ACCURACY ±0.075% with linearized pulser, ±0.125% or better with bare meter
- REPEATABILITY 0.02% or better
- WEIGHT (WITH TRANSMITTER): 155 lbs (70kg)

ACCURACY

The positive displacement principle is the only accurate method of measuring liquid flow. No other technology can achieve the same level of volumetric accuracy. This is particularly true in depot applications where flow rates, pressure and temperature can vary during a delivery.

The Avery-Hardoll flowmeter positively measures fluid volume with minimum scope for error and with minimal effect from pressure variations, temperature change or turbulence from near by valves or bends.

While conventional meters are calibrated at only one flow rate, the DM-series Bulkmeter with LCR-II or LCR 600 electronic registers with Pulse Output Device (POD) can be calibrated over multiple points across the flow range to provide the absolute highest level of accuracy.



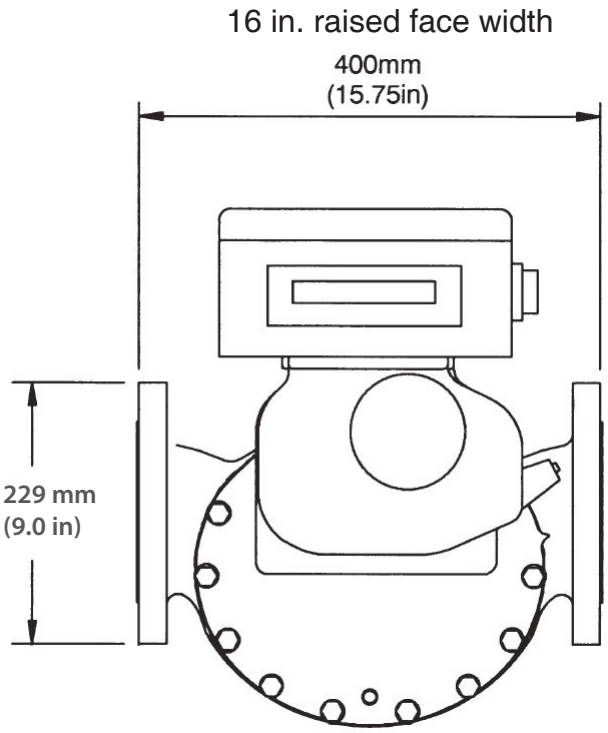
IMPORTANT INFORMATION ABOUT VISCOUS PRODUCTS

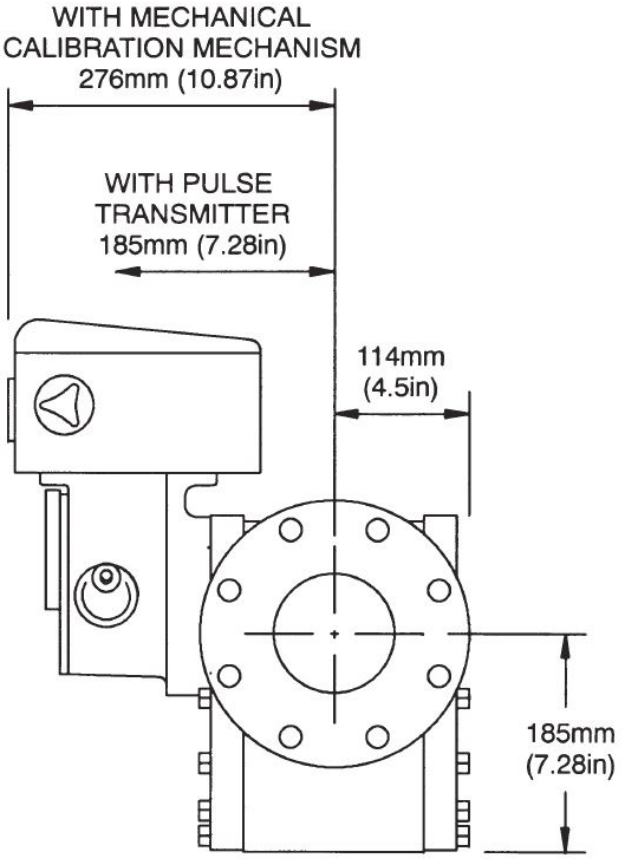
Avery-Hardoll flowmeters can be used on all petroleum products of all viscosities. However, there is an increase in pressure drop with more viscous fuels, which under normal circumstances will limit the maximum flow rate obtainable.

It is recommended that the pressure drop through a flowmeter should not exceed 15 psi (1 bar), above which the load on the bearings will start to cause wear. Consequently when using products with viscosities above 100 centistokes (at operating conditions), it is necessary to reduce the maximum permitted flow rate. As a guide, it is suggested that the pressure drop through the meter should not exceed 10 psi (0.7 bar) for continuous running at maximum speed or 15 psi (1 bar) for continuous running at half speed.

PHYSICAL CHARACTERISTICS

DIMENSIONS AND CALIBRATION TESTING





CONSTRUCTION

- BODY: CARBON STEEL - ASTM 216 WCB
- END COVERS: CARBON STEEL
- ROTOR: ALUMINUM ALLOY
- VANES: CARBON
- BEARINGS: NON CORRODIBLE STAINLESS STEEL
- SEALS: HIGH NITRILE or FLUOROCARBON

MECHANICAL CALIBRATION

Calibration adjustment is step-less, with no necessary gear changing. All meters are tested at a range of flow rates before dispatch. Test certificates available upon request.

- Fluid used for testing: Kerosene
- Specific gravity: at 15°C = 0.8

DM series with Mechanical Register

DM series meter with AH 3-Channel Pulser

DM series meter with LC 2-Channel Pulse Output Device (POD)

REGISTRATION & CONTROLS

ELECTRONIC REGISTRATION AND PRESET CONTROLLERS

LCR.iQ® *ELECTRONIC REGISTER*

LCR.iQ® provides an easy to use, intuitive operator interface and ties together critical sensing devices in aviation fueling systems, reducing complexity, improving efficiency and safeguarding all fueling system data.

- Large 7" high definition, full color video display
- Customizable screen and setup prompts
- Day/night mode brightness adjustment
- Largest viewable digits in the industry
- Weights & measures audit logs
- Customizable printed tickets
- Instant on-board diagnostics
- Full alpha-numeric keypad
- Large LED back lit keypad
- Stores 10,000 + records

MULTILOAD II PRESET CONTROLLERS

MultiLoad II is the only preset that can boast nearly limitless flexibility (custom logic), extended use (external expansion), and easy maintenance (roomy interior).

- Up to 5 meters and 16 additives per arm
- Wireless communication options
- Scaled for 1-2 arm applications
- Control up to 12 loading arms
- Alphanumeric keypad options
- Integrated card reader options
- Multi-lingual interface
- Internal I/O options
- Color display

REGISTRATION & ACCESSORIES

ELECTRONICS OPTIONS

MASTERLOAD II™

LCR-II™

ADD'L COMPATIBLE REGISTERS

Highly accurate and versatile microprocessor-based electronic registers.

DM METER WITH POD

CONFIGURED FOR ELECTRONICS

- With Liquid Controls 2-Channel Pulse Output Device (POD)
- Compatible with LC's full range of electronic registers and controllers
- Flexibility of installation for remote mounted electronics

ACCESSORIES

115-3 Digital Preset Valve

Temperature Volume Compensation (TVC)

Differential Pressure Transducer

2 Channel LC POD pulser

Masterload II Pulser

Large Digital Remote Display

Paper Receipt Printer

Avery-Hardoll®

BULK FUEL FLOWMETERS

Avery-Hardoll flowmeters are precision made, positive displacement, liquid measuring instruments; considered the most accurate aviation fuel flowmeters in the world.

ELECTRONIC REGISTRATION

LCR.iQ® provides an easy to use, intuitive operator interface and ties together critical sensing devices in aviation fueling systems, reducing complexity, improving efficiency and safeguarding all fueling system data.

To learn more about Avery-Hardoll products, visit: **AveryHardoll.com**

LIQUID CONTROLS®

Liquid Controls offers a full range of:

- M Series Meters
- MS Series Meters
- Electronic Registration
- Valves
- Air Eliminators & Strainers
- Fueling Accessories
- Wireless Data Management

Liquid Controls proudly manufactures the Avery-Hardoll and LC brand meters and is the leading manufacturer of positive displacement flowmeters and fuel data management systems in the world.

To learn more about what LC can offer you visit: **LCMeter.com**

IDEX

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