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 GPM) FLOW RATES

Avery-Hardoll®

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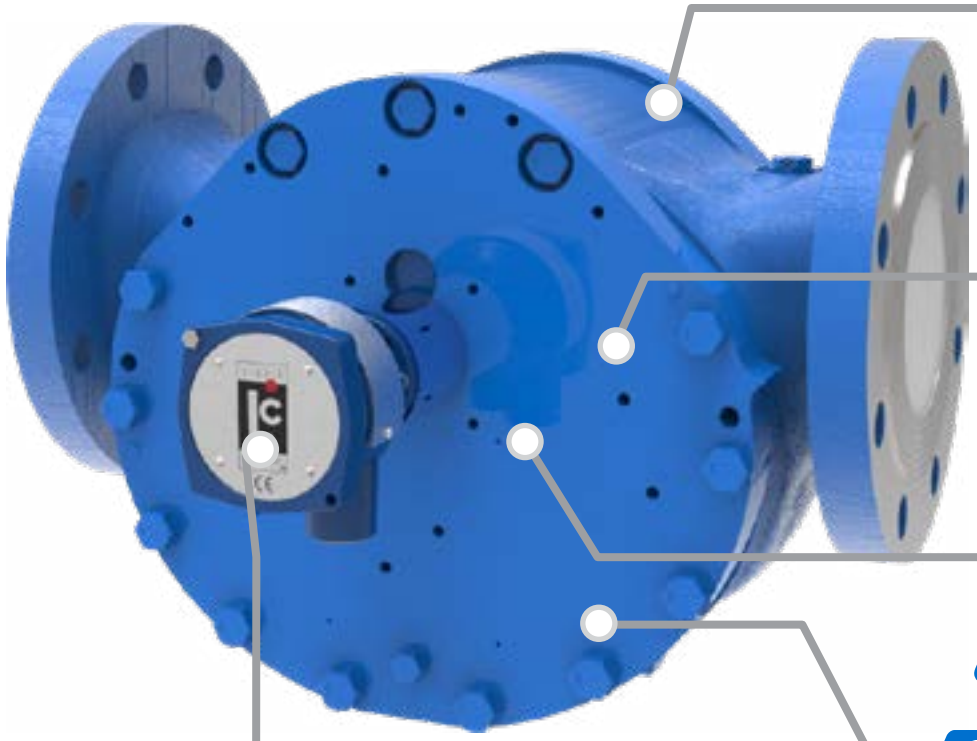
FEATURES & BENEFITS

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.



Cast carbon steel meter body

Precision machined steel front and rear covers

Durable corrosion resistant coating for environmental protection

Working pressure: 150 psi (10.3 bar)

Hydrostatic test pressure: 300 psi (20.7 bar)

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

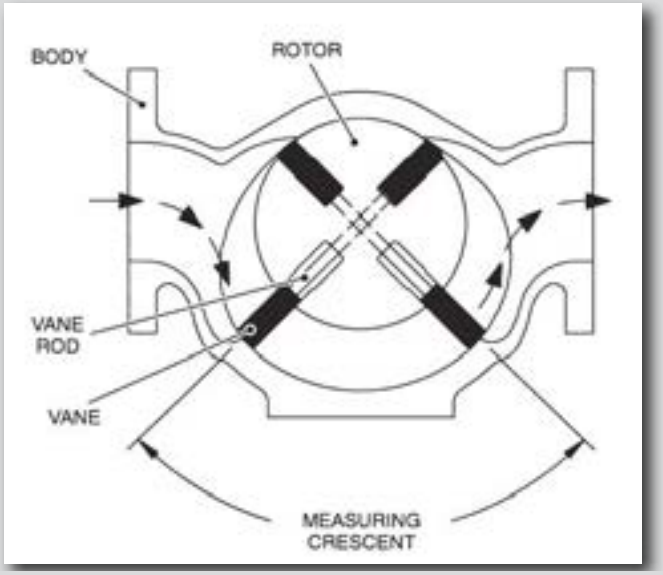
AVERY-HARDOLL METER RANGE

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	US Gallons	Liters	
DM	**4**	**102**	**66 - 660**	**250 - 2500**	**All Steel Meter, single body**
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 - 739	250 - 2800	
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

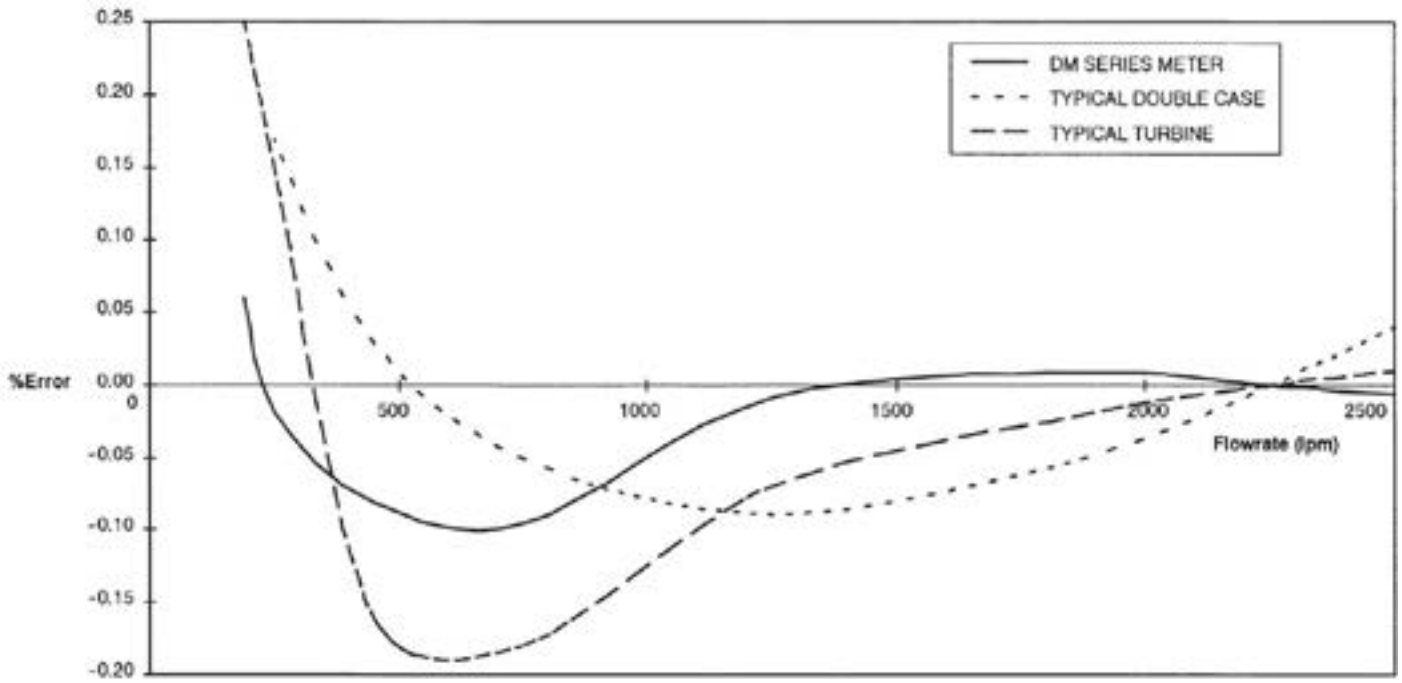
- FLOW RATE: 2500 LPM (660 GPM) Continuous
- MAX FLOW RATE: 3000 lpm (800 GPM) Intermittent
- FLANGES: 4" ANSI 150
- MAX WORKING PRESSURE: 10.5 bar (15psi)
- TEST PRESSURE: 21 bar (300psi)
- TEMPERATURE RANGE: -28° C TO 100° C
- VOLUME PER REVOLUTION: 5.75 LITERS
- TURN DOWN RATIO: 10:1
- ACCURACY ±0.125% or better
- REPEATABILITY 0.02% or better
- WEIGHT (WITH TRANSMITTER): 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.

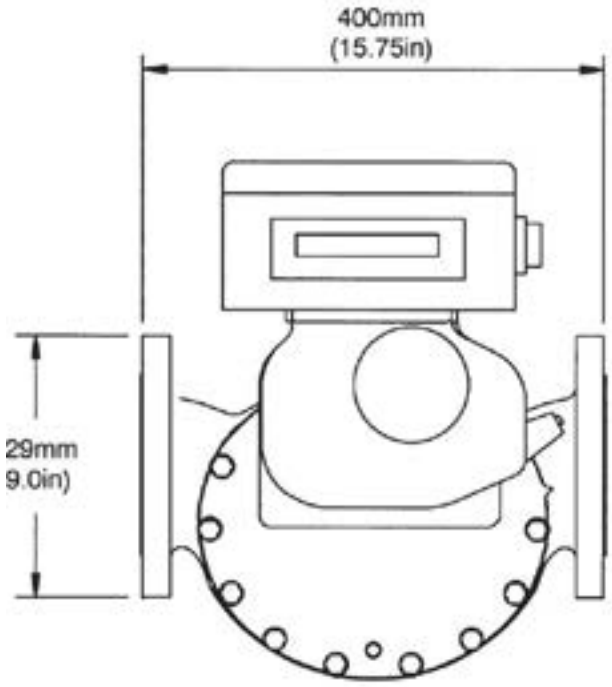
The Avery-Hardoll flowmeter positively measures fluid volume with minimum scope for error and with minimal effect from pressure variations, temperature change or turbulence from near by valves or bends.

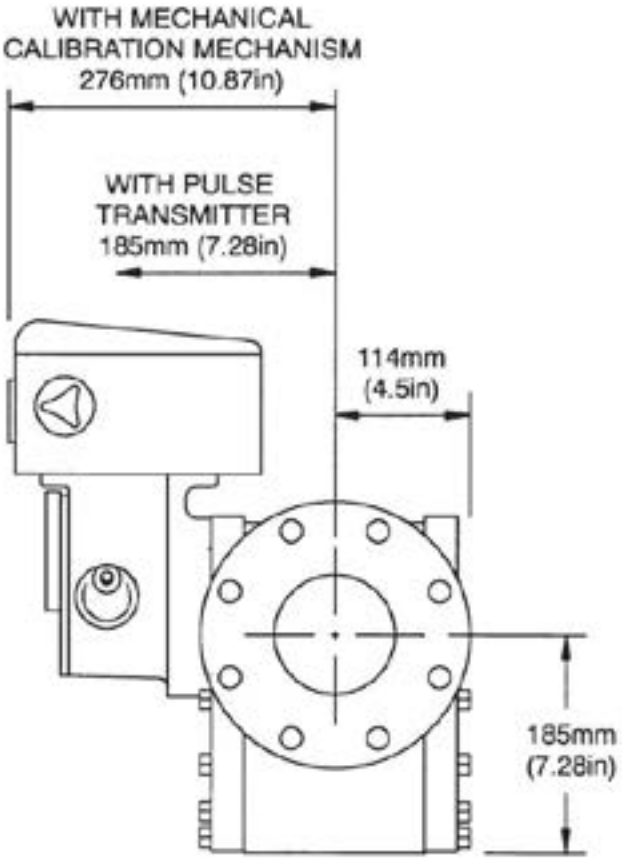
While conventional meters are calibrated at only one flow rate, MASTERLOAD II™ and MASTERLOAD III™ calibrate over the across multiple points across the flow range to provide the absolute highest level of accuracy.



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

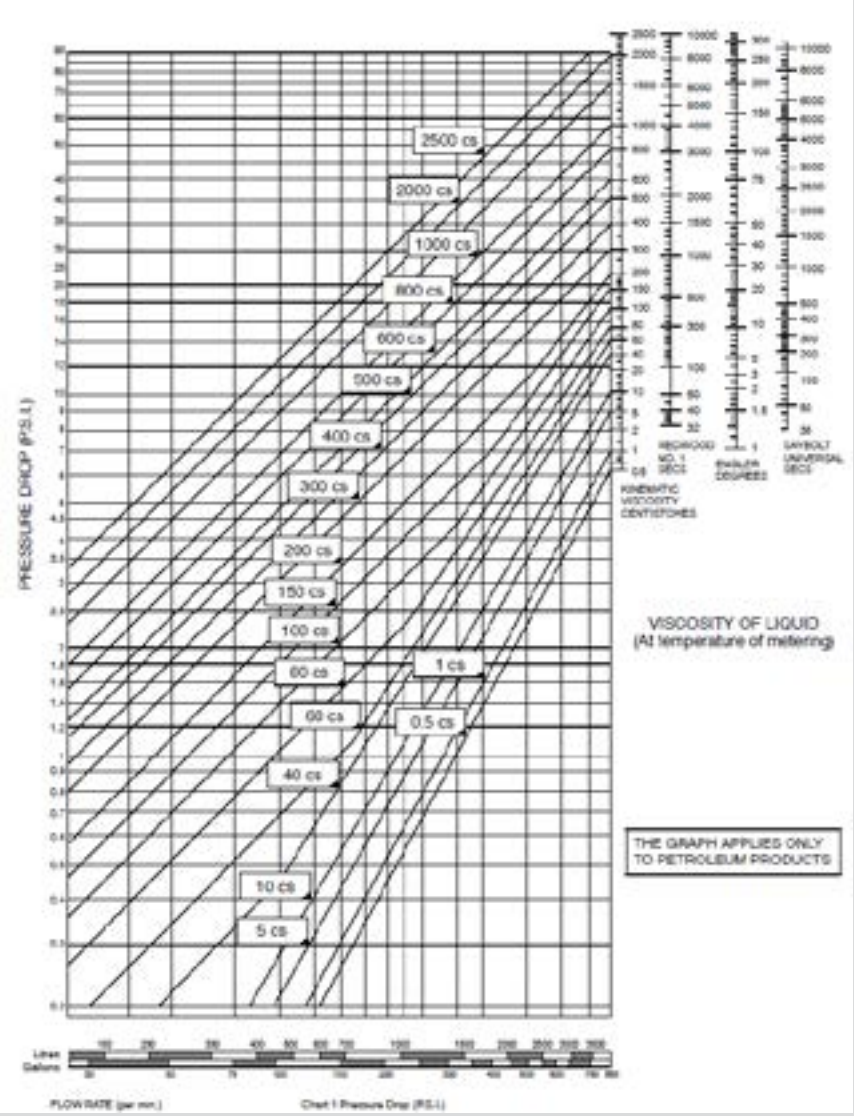
Calibration adjustment is step-less, with no necessary gear changing. All meters are tested at a range of flow rates before dispatch. Test certificates available upon request.

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

PERFORMANCE

PERFORMANCE AND PRESSURE DROP CALCULATIONS

PRESSURE DROP CHART (PSI)



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.

The low pressure drop for the BM Series of Avery-Hardoll flowmeters is displayed on the left.

REGISTRATION & ACCESSORIES

ELECTRONIC REGISTRATION

MASTERLOAD II™

LCR-II™

ELECTRONIC REGISTERS

Highly accurate and versatile microprocessor-based electronic controllers. The industry standard in simplicity and reliability for aviation fueling applications.

MASTERLOAD III™

LCR 600™

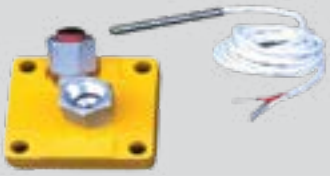
SMART REGISTERS

- Increased accuracy with multi-point calibration
- Easy to operate along with secure protected data
- Automated fueling with FlightConnect® (option)
- Long-life durability in harsh environments

ACCESSORIES

FlightConnect®

Automated Fueling - Wireless Data System
(for MASTERLOAD III™ or LCR 600)



Temperature Volume Compensation (TVC)

Differential Pressure Transducer

2 Channel LC POD pulser

3 Channel Avery-Hardoll 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

MASTERLOAD II™ is an intrinsically safe microprocessor based electronic controller that enhances the performance and operation of positive displacement and turbine meters.

MASTERLOAD III™ is an advanced dual microprocessor based electronic meter register for Zone 1 hazardous areas that is "FlightConnect Ready" for automated fueling and wireless data reporting.

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

silea Liquid Transfer S.r.l.

Silea also offers a full range of:

- Loading arms
- Floating suctions
- Pumps & pump units
- Folding stairs
- Skids

Silea was born in 1968, sensing the future development of the oil sector, both in the distribution and in the transfer of products.

Located in the district of Bologna, in Ozzano dell'Emilia, over the years, the company specialized in the transfer of hydrocarbons, producing loading and unloading arms, floating suctions, pumps, folding stairs for tank trucks, etc.

Today, thanks to over 50 years of experience, Silea has also expanded and developed its market in other sectors, such as food, chemical and bitumen; obviously, without losing sight of the most historic Oil & Gas sector, within which Silea remains a point of reference, for the quality of the products and the historicity of the brand.

To learn more about us: **www.silea.it**

Silea Liquid Transfer S.r.l.

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