Fuelling products

Measurement

Mechanical bulkmeters BM series

Mechanical bulk meter BM series

Key Features

- Positive displacement liquid measuring instruments
- Unequalled performance in measurement
- Free from installation effects
- Flow Rates of 25 gall/min (115 lit/min) to 850 gall/min (3870 lit/min)

BM SERIES METERS

Meggitt bulkmeters are precision made, positive displacement, liquid measuring instruments,which maintain accurate metering over long periods of operation. Simplicity of design and construction together with sustained accuracy has led to the widespread use of these meters on aviation refuelling vehicles, in oil terminals throughout the world and also as master meters for use in calibration.

Fuelling products

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Specification

OPERATION

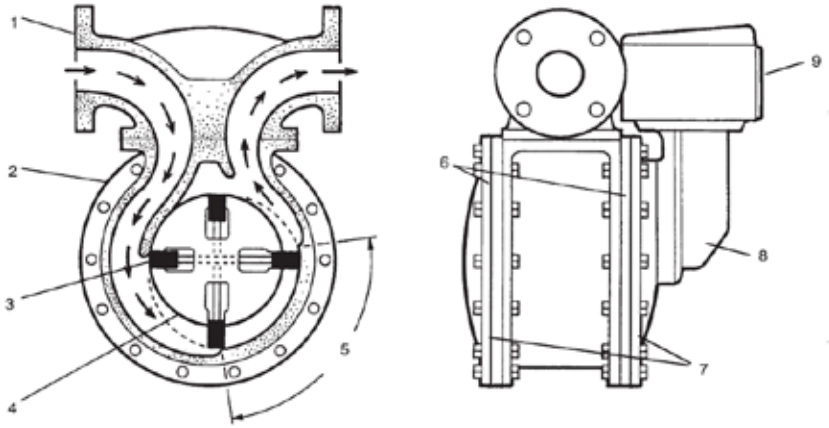
The positive displacement principle is the ONLY accurate method of measuring fluid flow. No other technology can achieve such accuracy because measurement becomes inferred, that is indirect and subject to assumption.The Meggitt bulkmeter directly converts volume to rotational output with minimum scope for error and with minimal disturbance from surrounding conditions, eg. turbulence from nearby valves, bends, etc.

The product enters the meter through the inlet manifold (1) and causes the rotor (4) to revolve by pressure on the vanes (3).

The proximity of the rotor (4) to the body (2) forms an efficient seal, whilst the profile of the casing ensures that the vanes (3) are guided through the measuring crescent (5), where the volume of product is accurately measured.

Product at line pressure fills the spaces between the inner (6) and outer (7) end covers providing `pressure balanced inner end covers' which are therefore protected from distortion due to changes in line pressure.

An extension shaft driving through a pressure tight gland in the meter front cover, transmits the rotor revolutions to the calibrating gearing (8) which drives the counter (9).



CONSTRUCTION

MANIFOLD:	Fabricated steel or ductile iron (ductile iron not available on triple capsule meters)
BODY:	Ni-Resist cast iron
VANES:	Carbon
ROTOR:	Aluminium or Ni-Resist cast iron
OUTER COVERS:	Aluminium or Ni-Resist cast iron
INNER COVERS:	Ni-Resist cast iron
BEARINGS:	Stainless steel
SEALS:	High nitrile or fluorocarbon

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Measurement

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PRESSURE LOSS

The low pressure drop for the BM series of Meggitt bulkmeters is shown on page 4.

VISCOUS PRODUCTS

Meggitt bulkmeters can be used on all petroleum products of all viscosities that are normally pumped. However there is obviously an increase in pressure drop with more viscous fuels which will, under normal circumstances, limit the maximum flowrate obtainable.

It is recommended that the pressure drop through a bulkmeter should not exceed 15 psi (one bar), above which the load on the bearings will start to cause wear. Consequently when using products with viscosities (at operating conditions) above 100 centistokes, it is necessary to reduce the maximum permitted flowrate. 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 (one bar) for continuous running at half speed.

METER ACCESSORIES

A full range of accessories is available for use with all Meggitt bulkmeters and these are described in the following paragraphs. Details may be obtained from each relevant leaflet.

COUNTERS

The meters are fitted with standard Veeder-Root counters, having a five large figure zeroising drum and a seven figure small non-zeroising totaliser and can be supplied to read in any of the following units:

Imperial gallons	US gallons	Cubic metres
Litres	Decalitres	

TICKET PRINTER

Available with or without identifier, in the following forms:

1. Batch delivery, starting at zero and showing the amount delivered.
2. Accumulative tote giving initial and final totaliser figures.

MECHANICAL PRESET AND PRESET VALVE

A Veeder-Root preset register with five figure resettable counter is used to preset a batch to be delivered. This controls a lever operated preset valve via a mechanical linkage, providing two stage closure and precise shut off of flow.

MECHANICAL PRESET WITH MICROSWITCHES

Microswitches can be fitted to the preset register to control pump start and stop, and solenoid operated preset valves.

RATE OF FLOW INDICATOR

SWIVEL

MASTERLOAD

Electronic calibration, display and control system suitable for both depot and vehicle applications.

Fuelling products

Measurement

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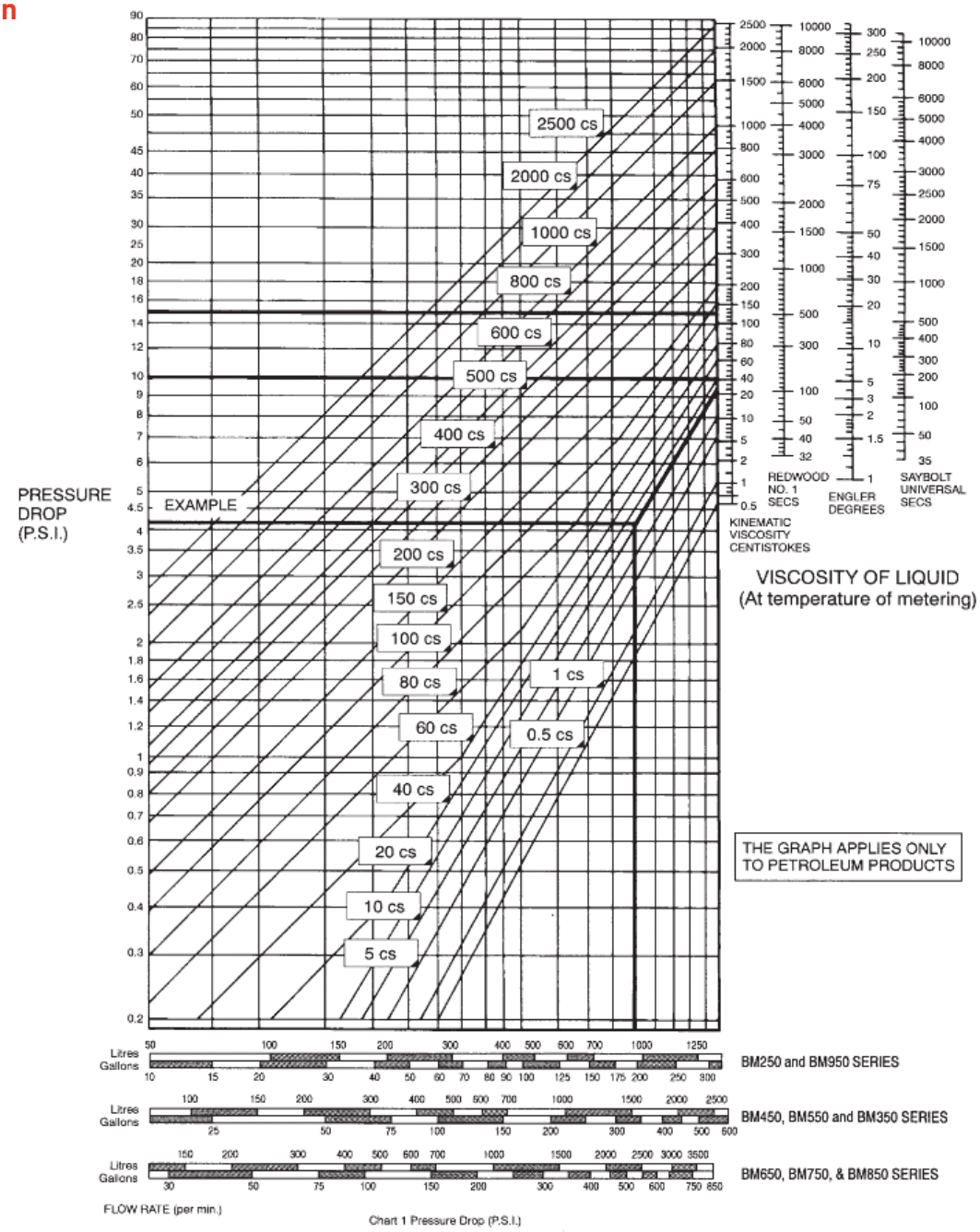


Chart 1 Pressure Drop (P.S.I.)

Fuelling products

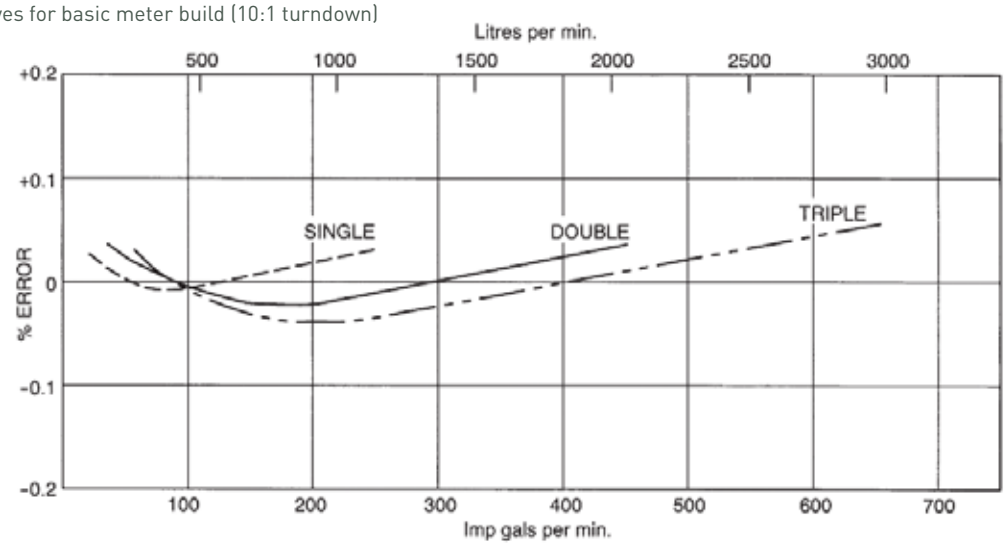
Measurement

Mechanical bulkmeters BM series

Specification

Maximum working pressure:	10.5 bar (150 psi)
Test pressure:	21 bar (300 psi)
Temperature range:	-28°C to 100°C
Volume per revolution:	2.27 litres (single capsule) 4.54 litres (double capsule) 6.82 litres (triple capsule)
Repeatability typically:	.02%

Typical accuracy curves for basic meter build (10:1 turndown)



CALIBRATION

Calibration adjustment is provided to minimize the meter error at any selected flowrate. Adjustment is stepless; no gear changing is necessary; and the calibration screw is easily accessible after breaking a seal and removing a sealing screw.

All meters are tested to 300 psi (21 bar).
All Meggitt meters are tested before despatch at a range of flowrates and test certificates can be supplied if requested.

The fluid used for testing is odorless kerosene.

Specific gravity at 60/60°F, 15/15°C = 0.8
Viscosity at 60°F, 15°C = 2.4 centistokes.

Suggested correction to be made to the calibrating mechanism when used with products with different viscosities as follows:

Gasoline	+ 0.1%	+ means increase counter readings
Kerosene	0.0%	- means decrease counter readings
Gas Oil	- 0.1%	
Fuel Oil	- 0.22%	

Fuelling products

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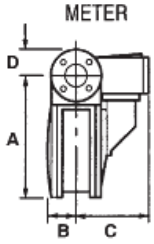
Mechanical bulkmeters BM series

Key Dimensions

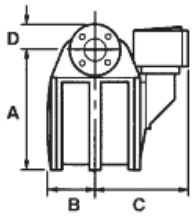
BM series — Flow range

SINGLE CAPSULE METER



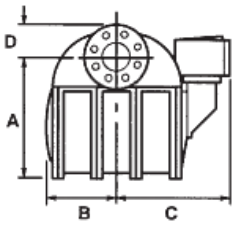
METER SERIES	PIPELINE SIZE	FLOW RATE			FLANGES	
		Imp Gall	Lpm	m^3/hr	Conform to	Material
BM 250	2 1/2" (63mm)	25 to 250	115 to 1140	7 to 68	ASA 150 FF	DUCTILE IRON STEEL
BM 950	3" (76mm)	30 to 300	130 to 1370	8 to 82	ASA 150 FF	DUCTILE IRON STEEL

DOUBLE CAPSULE METER



METER SERIES	PIPELINE SIZE	FLOW RATE			FLANGES	
		Imp Gall	Lpm	m^3/hr	Conform to	Material
BM 450	3" (76mm)	45 to 450	200 to 2050	12 to 123	ASA 150 FF	DUCTILE IRON STEEL
BM 550	4" (102mm)	50 to 500	220 to 2280	14 to 136	ASA 150 FF	DUCTILE IRON STEEL
BM 350	4" (102mm)	55 to 550 / 615	250 to 2500 / 2800	15 to 150 / 168	ASA 150 FF / intermittent use	DUCTILE IRON STEEL

TRIPLE CAPSULE METER



METER SERIES	PIPELINE SIZE	FLOW RATE			FLANGES	
		Imp Gall	Lpm	m^3/hr	Conform to	Material
BM 650	4" (102mm)	65 to 650	300 to 3000	18 to 177	ASA 150 FF	STEEL
BM 750	6" (152mm)	65 to 650	300 to 3000	18 to 177	ASA 150 FF	STEEL
BM 850	6" (152mm)	85 to 850	387 to 3870	23 to 232	ASA 150 FF / used on aviation kerosene	STEEL

NOTE:
All steel manifolds are available with raised face and 300lb flanges and dimensions.

Fuelling products

Measurement

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Key Dimensions

FLANGE BOLT HOLES			DIMENSION BETWEEN FLANGE FACES		METER DIMENSIONS								APPROX. WEIGHT OF BASIC METER	
No.	SIZE				A		B		C		D			
Off	mm	ins	mm	ins	mm	ins	mm	ins	mm	ins	mm	ins	kg	lbs
4	19	.75	356	14	410	16.1	107	4.2	285	11.2	89	3.5	65	143
4	19	.75	356	15.75	400	15.75	107	4.2	285	11.2	89	3.5		
4	19	.75	356	14	410	16.1	107	4.2	285	11.2	95	3.75	65	143
4	19	.75	356	15.75	400	15.75	107	4.2	285	11.2	95	3.75		

FLANGE BOLT HOLES			DIMENSION BETWEEN FLANGE FACES		METER DIMENSIONS								APPROX. WEIGHT OF BASIC METER	
No.	SIZE				A		B		C		D			
Off	mm	ins	mm	ins	mm	ins	mm	ins	mm	ins	mm	ins	kg	lbs
4	19	.75	400	15.75	407	16.0	170	6.7	348	13.7	95	3.75	105	232
4	19	.75	400	15.75	430	16.9	170	6.7	348	13.7	95	3.75		
8	19	.75	400	15.75	420	16.5	170	6.7	348	13.7	115	4.5	112	247
8	19	.75	400	15.75	430	16.9	170	6.7	348	13.7	115	4.5		
ALL DIMENSIONS AS BM 550														

FLANGE BOLT HOLES			DIMENSION BETWEEN FLANGE FACES		METER DIMENSIONS								APPROX. WEIGHT OF BASIC METER	
No.	SIZE				A		B		C		D			
Off	mm	ins	mm	ins	mm	ins	mm	ins	mm	ins	mm	ins	kg	lbs
8	19	.75	400	15.75	430	16.9	233	9.2	411	16.2	115	4.5	126	278
8	22	.875	400	15.75	430	16.9	233	9.2	411	16.2	140	5.5	143	315
ALL DIMENSIONS AS BM 750														

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Optional Extras

EXTENDED COUNTER DRIVE

Provided for installations where the counter is required to be read at height above the bulkmeter.

VERTICAL MOUNTING

All sizes of Meggitt BM series bulkmeters can be supplied with counters and counter extensions arranged so that the meters can be mounted in vertical pipework.

TEMPERATURE COMPENSATED METERS

Refer to Masterload II system data sheet

VOLUME / WEIGHT ADAPTOR

Refer to Masterload II system data sheet

ADDITIVE MECHANISM

Mechanically injects fractional proportions of additives at a pre-determined ratio.

STRAINER

Essential to prevent damage to the meter and is available with 40, 60, 80, 100 and 120 mesh baskets, with either cast iron or cast steel body.

AIR SEPARATOR

Prevents entrained air reaching the meter.

FLOW GOVERNOR

Limits flow rate at maximum meter capacity when several meters are fed from one pump.

Contact

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