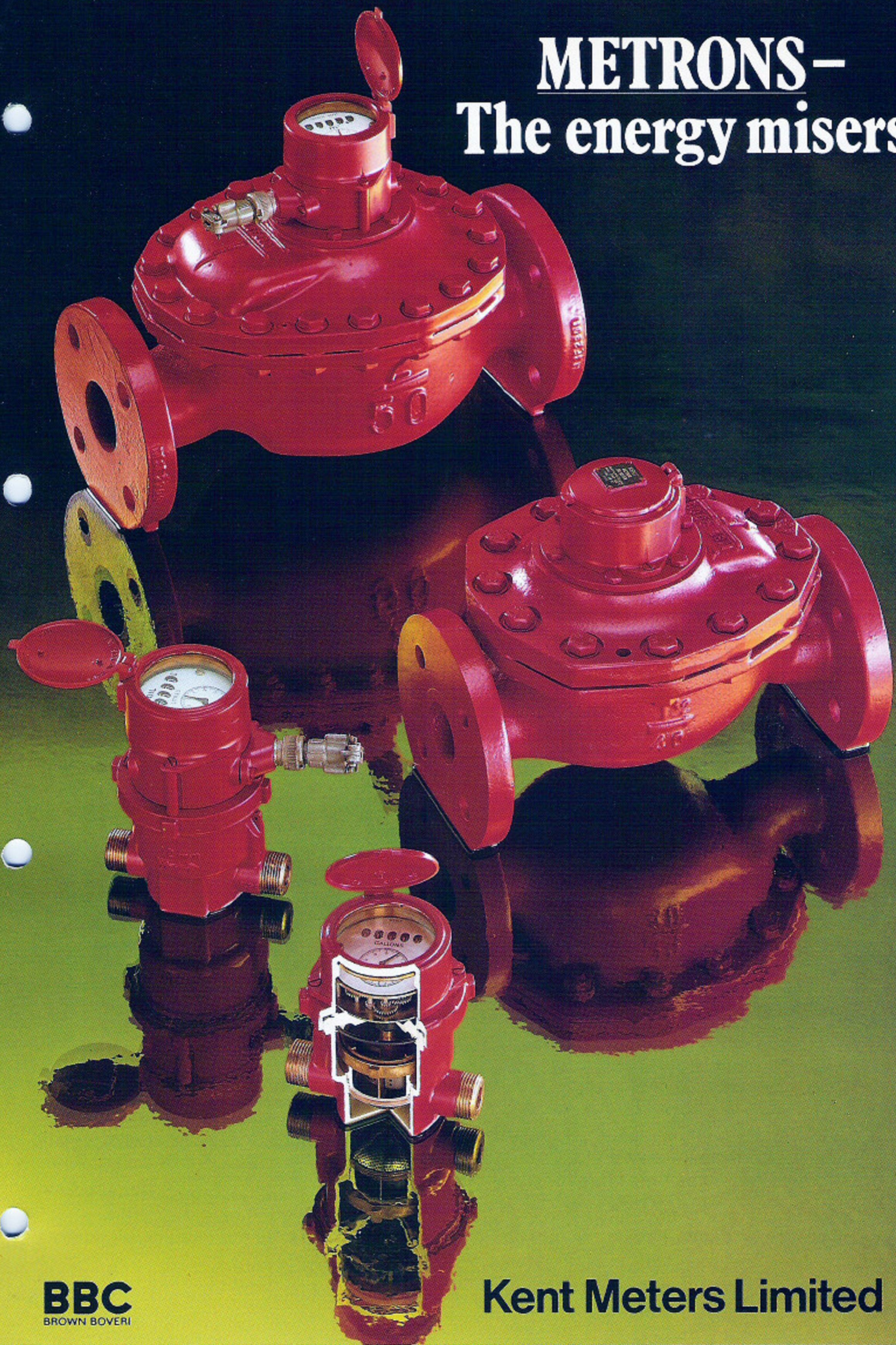


METRONS— The energy misers



BBC
BROWN BOVERI

Kent Meters Limited

Kent METRON – providing the information industry needs to control oil consumption.

Kent Metron oil meters are the accurate, reliable and economical way of obtaining all the information a user needs to control oil consumption and energy costs - and in real-time.

Wherever oil is used, stored or transported Metron meters measure, totalise and record flows - precisely. Typical applications include:

- Checking and totalising fuel oil flows to burners, furnaces, diesel engines and oil consuming processes.
- Recording draw-off from storage tanks.
- Measurement and control in batch or continuous petro-chemical process plant.

In every case Metron's volumetric rotary-piston design provides a direct and accurate measurement of oil flow as it occurs.

With the continually-rising prices of oil, continuous management of consumption is more important than ever. In addition to manual readings of the Metron at the point of flow they are designed to interface simply with remote instrumentation or batch control equipment.

Metron is therefore much more than a precision oil meter. With its range of ancillary equipment, designed and manufactured by Kent, it becomes the heart of a complete system for keeping oil consumption under control. Likewise the Metron can interface with specialised equipment or electronic systems.

Capacity	l/h	1,136	2,955	4,546	10,800	24,000	48,000
Sizes	mm	15	20	25	40	50	80

Versatility The Kent Metron series of integrating oil meters is manufactured in six sizes and two temperature ranges. Metron meters are suitable for use with all viscosities of oil at flow rates of up to 48,000 l/hr. Maximum temperature rating is either 80°C, or

150°C for use with oils which have to be heated to produce an acceptable viscosity for handling.

Various configurations are available. The three smaller sizes (15mm, 20mm, 25mm) can be supplied as either integrating meters, with a fixed counter cover for direct reading, or with a split counter cover. This can accept a switch contact unit which provides signals for remote instrumentation while still allowing direct reading. The 40mm, 50mm and 80mm pipe sizes have a split counter case fitted as standard equipment.

Accuracy All Metron meters are accurate to within 1% over a wide range of flows. Every meter is factory-tested to ensure that it meets the specified performance. The volumetric rotary-piston design means that accuracy is maintained irrespective of the plane in which the meter is mounted. To assist reading at whatever angle the meter is mounted, the dial can be rotated and locked in any one of the four cardinal positions. Registration is available in litres, Imperial gallons or US gallons.

Reliability Careful selection of materials and the simplicity of the volumetric rotary-piston design ensure that Metron oil meters have a long and reliable service life. Magnetic coupling between the piston and the counter eliminates the problems of gland wear and seepage associated with direct mechanical shaft drive designs.

A Complete System While the flow-data generated by a Metron oil meter can be read manually at the point of flow, in many applications today the oil meter is part of a complex instrumentation and control system. Recognising this, Kent Meters has designed the Metron to interface with systems and remote read-outs.

The following two types of switch-contact unit, custom designed for the Metron, are available as optional equipment.

The slow pulse-rate transmitter MRA 4607 provides a signal suitable for a batching unit or remote electro-mechanical counter such as a totalisator.

The high pulse-rate transmitter MRA 4605 provides a signal suitable for rate-of-flow indicators and other real-time instrumentation.

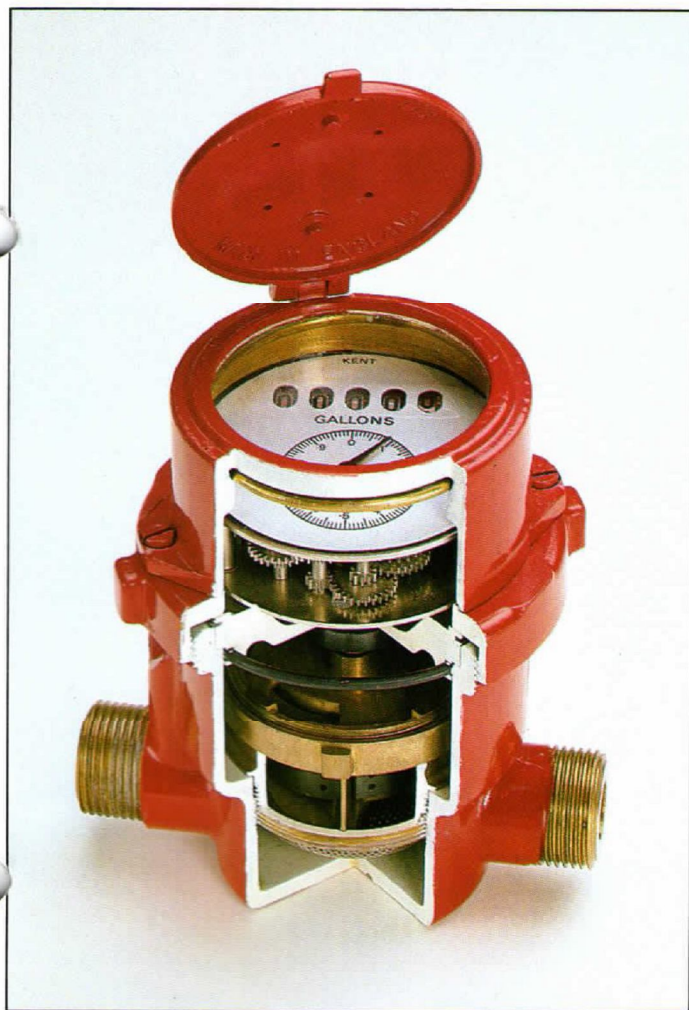
In both instances these units take their power supply from the associated instrumentation.

Reed Switch Specification

Maximum contact rating – 15vA A.C. or D.C.
Maximum switching current – 0.5 amp A.C. or D.C.
Maximum switching voltage – 200v D.C. 125v A.C.
Minimum breakdown voltage – 400v D.C.
Initial contact resistance – 150 milliohms.

NOTE

If non-Kent Meters equipment is used, the switch load must be non-inductive.



Kent – world leaders in control and instrumentation systems – also manufactures a range of remote equipment for use with the Metron.

Pressure and Temperature Ratings

Maximum working temperature 150°C (300°F)
Maximum working pressure for 15, 20 and 25mm sizes is 21 kg/cm² (300 psi) and for 40, 50 and 80mm sizes is 10.5 kg/cm² (150 psi).

Installation Kent Metron oil meters are installed in the pipeline with either screwed

ends or flanges for the 15mm – 25mm sizes. The 40, 50 and 80mm sizes of meter are flanged only, drillings to B.S.10 Table 'E'; B.S.4504 Table 16/11; A.N.S.I. B. 16.1/5. or DIN 2533. A strainer of not less than 100 mesh should be fitted up-stream of the meter. If such a filter is not fitted, the one year guarantee provided with all Metron oil meters is invalidated. Before the meter and filter are fitted pipelines must be flushed thoroughly. To simplify subsequent servicing it is recommended that each meter and its associated filter are installed with a by-pass.

A range of cartridge and Y-type strainers are provided by Kent for use with the Metron range. Cartridge-type strainers provide 25 micron filtration and are available with ¼ in. and ½ in. bsp connections. This type of filter is particularly recommended for the 15mm Metron meter when measuring thin cold oil. The Y-type strainers are fitted with 100 mesh monel metal screens and are available in standard (up to 14 kg/cm²) and high-pressure (up to 42 kg/cm²) versions. The high pressure version is fitted with a stainless steel screen.

Ancillary Equipment

BATCHING UNIT

For dispensation of pre-determined quantities of liquid, the batching unit provides a five figure preset impulse counter, a six figure resettable totaliser counter with locking facility, together with start and emergency stop control.

See publication No. 293-3.

PERCENTAGE FLOW RATE INDICATOR

The signal from the meter switch contact unit is used for switching a pulse to current convertor, providing an analogue output expressed as a percentage of the associated meter capacity, alternatively the indicator dial can be supplied scaled with flow rate at a small extra cost.

See publication No. 291-3.

REMOTE TOTALISER

The total throughput is displayed on a eight figure register and period throughput is displayed on a six figure manual reset to zero register which may be security locked if required. The standard unit incorporates a monostable electronic module to smooth the input pulse signals and minimise the current drain during no flow conditions.

See publication No. 290-3.

COMBINED RATE OF FLOW AND TOTALISER

Combines the percentage flow rate indicator with a remote totaliser in a single unit.

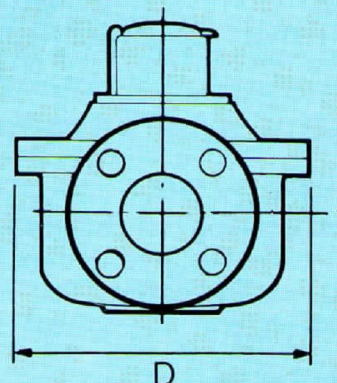
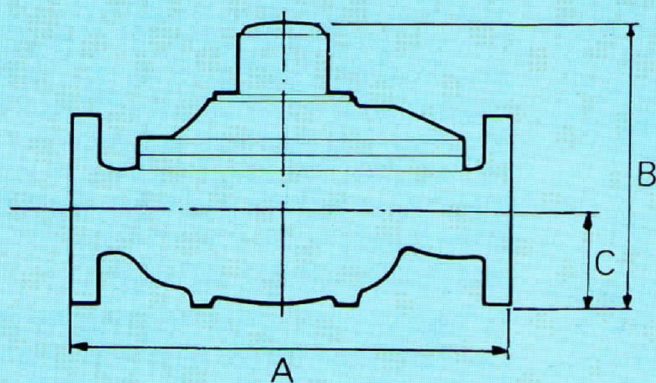
See publication No. 292-3.

PERFORMANCE

Sizes		15mm		20mm	
Viscosity at operating temperature	Redwood No. 1 Centistokes	28-80 secs 1.65-19c/s	over 80 secs over 19c/s	28-80 secs 1.65-19c/s	over 80 secs over 19c/s
Accuracy to 1% down to	lph gph u.s.g.p.h.	68 15 18	18 4 4.8	114 25 30	23 5 6
Accuracy to 2% down to	lph gph u.s.g.p.h.	30 6.6 8.0	14 3.0 3.6	68 15 18	18 4 4.8
Maximum recommended continuous flow	lph gph u.s.g.p.h.	720 150 180	720 150 180	1440 300 360	1440 300 360
Peak flow for short duration	lph gph u.s.g.p.h.	1136 250 300	1136 250 300	2955 650 780	2955 650 780
Minimum counter registration	litre g. & u.s.g.	0.1 .01		0.1 .01	
Counter resets to zero at	litre g. & u.s.g.	1,000,000 100,000		1,000,000 100,000	
High speed switch closures per unit registration	litre imp. gall u.s. gall	375.5 1706.64 1422.2		196.15 891.6 743	
Low speed units per switch closure	litre g. & u.s.g.	1 0.10		1 0.10	
Net weight	kg lbs	2.4 5.25		2.95 6.50	

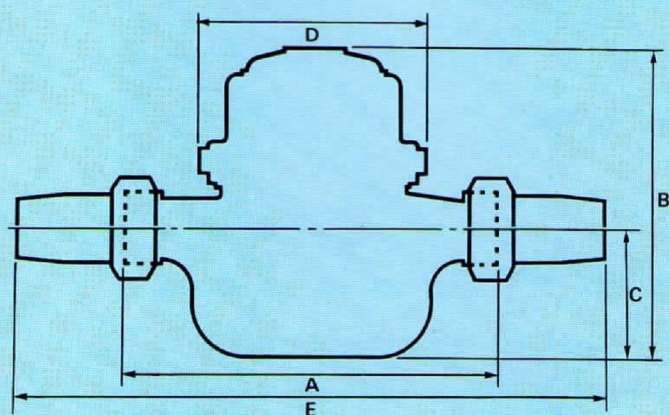
Dimensions

A length	mm in	114 4.5		165 6.5	
B height	mm in	137 5.38		137 5.38	
B1 height with pulse unit	mm in	171 6.73		171 6.73	
B2 height with 2 pulse units	mm in	205 8.07		205 8.07	
C height to centreline	mm in	20 0.78		57 2.24	
D width	mm in	100 4.0		100 4.0	
E length with tailpiece	mm in	190 7.5 $\frac{3}{8}$ in tailpiece	200 7.85 $\frac{1}{2}$ in tailpiece	267 10.5	
Flanged meter	mm in	140 5.5		203 8.0	



Metron 40mm-80mm Dimensions

	25mm		40mm		50mm		80mm	
	28-80 secs 1.65-19c/s	over 80 secs over 19c/s	28-80 secs 1.65-19c/s	over 80 secs over 19c/s	28-80 secs 1.65-19c/s	over 80 secs over 19c/s	28-80 secs 1.65-19c/s	over 80 secs over 19c/s
	180 40 48	45 10 12	410 90 108	136 30 36	818 180 216	272 60 72	1636 360 432	546 120 144
	136 30 36	32 7 8.4	205 45 54	68 15 18	410 90 108	136 30 36	818 180 216	272 60 72
	2160 500 600	2160 500 600	5400 1200 1500	5400 1200 1500	12000 2600 3000	12000 2600 3000	24000 5200 6000	24000 5200 6000
	4546 1000 1200	4546 1000 1200	10800 2400 3000	10800 2400 3000	24000 5200 6000	24000 5200 6000	48000 10400 12000	48000 10400 12000
	0.1 .01		1.0 1.0		10.0 1.0		10.0 1.0	
	1,000,000 100,000		10,000,000 10,000,000		100,000,000 10,000,000		100,000,000 10,000,000	
	98.4 447.26 372.72		33.62 129.68 130.02		15.48 59.04 59.19		7.64 29.25 29.32	
	1 0.10		10 10		100 10		100 10	
	5.44 12.00		16 32.50		27 59.40		42 92.40	
	198 7.8		280 11.0		346 13.62		422 16.61	
	162 6.38		216 8.5		248 9.76		281 11.06	
	196 7.72		250 9.84		282 11.10		315 12.40	
	230 9.06		284 9.76		316 12.45		349 13.75	
	71 2.8		59 2.32		81 3.19		94 3.7	
	117 4.6		198 7.8		234 9.21		274 10.78	
	311 12.25		— —		— —		— —	
	254 10.0		— —		— —		— —	

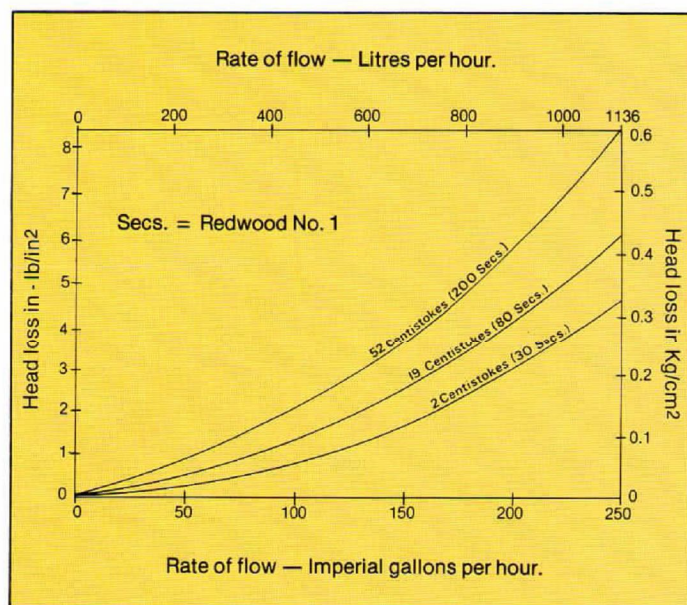


Metron 15mm-25mm Dimensions

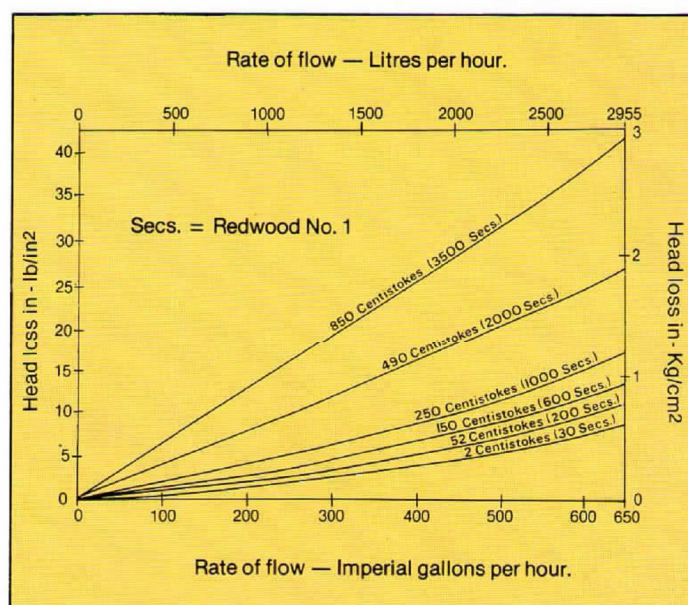
Materials of wet parts of meter

	15mm-25mm	40mm-80mm
Meter Body	Brass	Cast Iron
Working Chamber	Brass	Bronze
Top Plate	Brass	Bronze
Joint Plate	Brass	Nickel Plated Brass
Piston	Anodized Aluminium Alloy	Anodized Aluminium Alloy
Internal Strainer	Nickel Plated Copper	Nickel Plated Copper
'O' Ring	Viton	Viton
Thimble	Bronze	Bronze
Joint Gasket	—	Special Compound

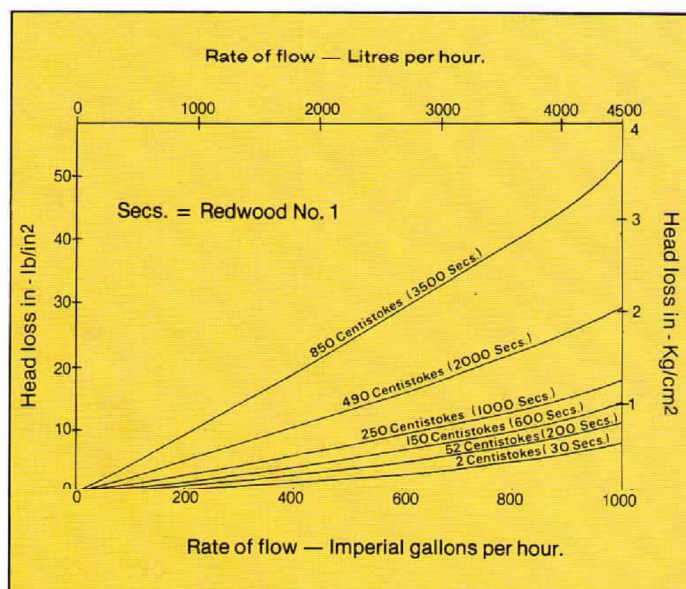
PRESSURE LOSSES



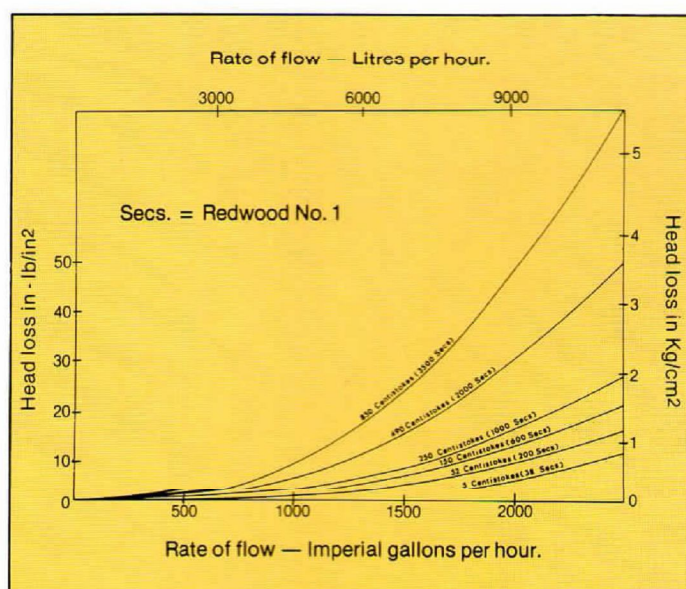
1/2 in METRON



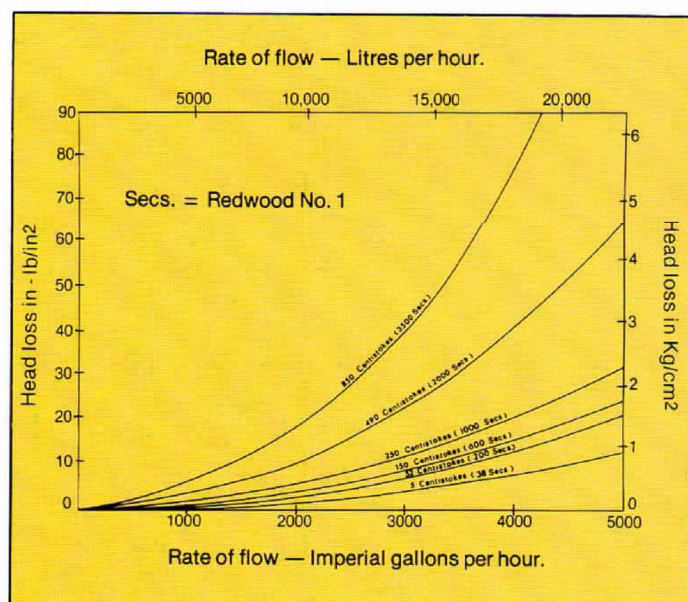
3/4 in METRON



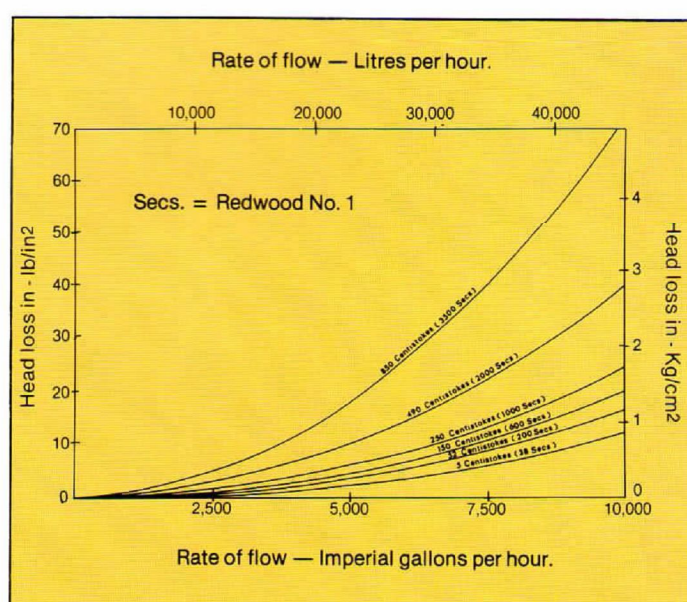
1 in METRON



1 1/2 in METRON



2 in METRON



3 in METRON