



Introduction

Tri-gear Flowmeters are precise, reliable and rugged instruments for the volumetric flow of liquids in general industrial, petroleum and chemical applications that require high degrees of accuracy and repeatability. They operate on the Positive Displacement principle using advanced gear technology and offer a competitive alternative to their Oval Gear, Sliding Vane and Bi-Rotor alternatives.

Principal of operation

Liquid Passes into the single case measuring chamber and displaces two Tri-gears. Each rotation of a Tri-gear is proportional to a discrete unit of volume, in turn, the speed at which the gears rotate is directly proportional to flowrate. Reed and Hall Effect sensors mounted outside the pressure boundary detect the movement of the Tri-gears, thus allowing local or remote instruments to display flow total, rate of flow or facilitate batching applications.

Meters can be fitted with additional sensors to provide in phase or out of phase signals for applications such as bi-directional flow.

The Tri-Gear based flowmeter outperforms its competitors when it comes to the accurate metering of the majority of clean liquids including Solvents, Alcohols, Fuels, Oils, additives, chemicals, food bases, paints and viscous emulsions whether pumped or gravity fed. Additionally it is an excellent, higher accuracy replacement for transmitting variable area (Rotameter) flowmeters.

Benefits

- High Resolution Digital Output
- Wide Rangeability
- Bi-directional flow capability
- Digital or Analogue Outputs available.
- HART Output option.
- Less slippage than oval gear meters.
- Smoother and quieter than Oval Gear Meters.
- Dual Output standard (reed and hall effect)
- Low Mass Tri-gears facilitate fast response time to step changes in flowrate.





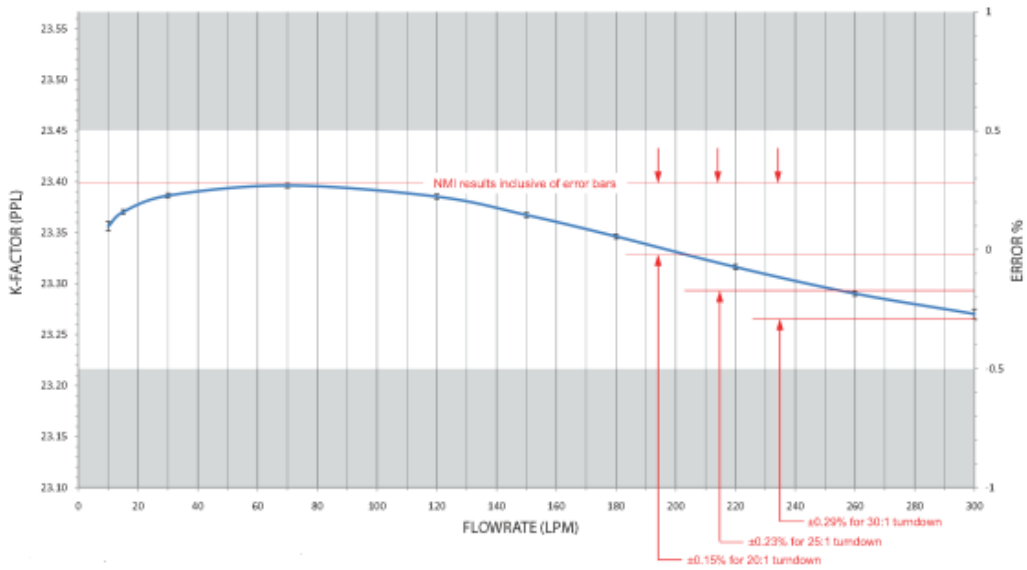
Performance and Specifications

Model prefix:	TG008	TG015	TG020	TG025	TG040	TG050
Capacity group:	small capacity	medium capacity				
Nominal size (inches)	8mm (3/8")	15mm (1/2")	20mm (3/4")	25mm (1")	40mm (1.5")	50mm (2")
*Flow range – litres/min – US gal/min	0.25 ~ 9.2 0.07 ~ 2.4	2-50 0.3 ~ 10.5	2 ~ 50 0.6 ~ 13	5 ~ 150 1.3 ~ 40	10 ~ 250 2.6 ~ 66	20 ~ 500 5 ~ 132
**Accuracy @ 3cp	± 1.0% of reading	± 0.25% of reading (15:1 turndown), ± 0.5% of reading (25:1 turndown)				
Repeatability	typically ± 0.01% of reading					
Temperature range	-30°C ~ +150°C (-22°F ~ +300°F), refer factory for lower & higher temperatures					
Maximum pressure (threaded meters)		BarG				
Aluminium meters	30					
316 Stainless Steel meters	34	30				
High Pressure Meters	400	400	400	400	400	250
Electrical – for pulse meters (see below for optional outputs)						
Output pulse resolution	Pulses/litre (pulses/US gallon) – nominal					
Reed Switch and Hall Effect	600 (2546)	77 (292.6)	77 (292.6)	33.5 (125.4)	11.5 (43.7)	6.5 (24.7)
High Resolution Hall / Quadrature	1340 (5092)	154 (585.2)	154 (585.2)	67 (254.6)	23 (87.4)	13 (49.4)
Reed Switch output	30Vdc x 200mA max. (maximum thermal shock 10°C (50°F)/minute)					
Hall Effect output (NPN)	3 wire open collector, 5 ~ 24Vdc max., 20mA max.					
Optional outputs	4 ~ 20mA, scaled pulse, quadrature pulse, flow alarms or two stage batch control					
Physical						
Protection class	IP66/67 (NEMA4X), integral ancillaries can be supplied Intrinsically Safe					
Noise generation @ maximum flow	-	75db				
Dimensions	refer data sheet					
Pressure drop chart	refer data sheet					
Min. filtration – microns (mesh)	75 microns (200 mesh)	150 microns (100 mesh)				
Approximate shipping weights (basic threaded meter)		kg				
Stainless Steel	2.2	3.0	3.0	4.0	9.0	12.0
Aluminium	1.0	1.5	1.5	2.0	4.0	6.0

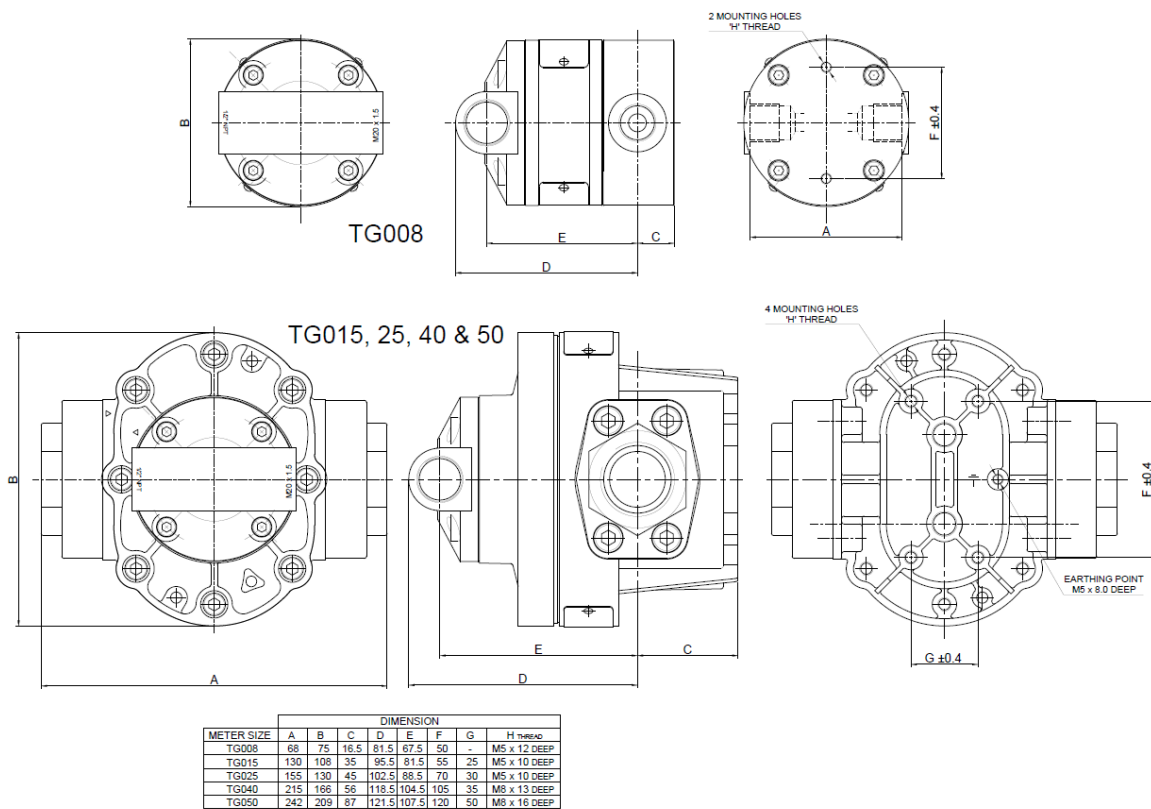
* Maximum flow is to be reduced as viscosity increases, see flow de-rating guide.

Max. allowable pressure drop is 140Kpa (20psi).

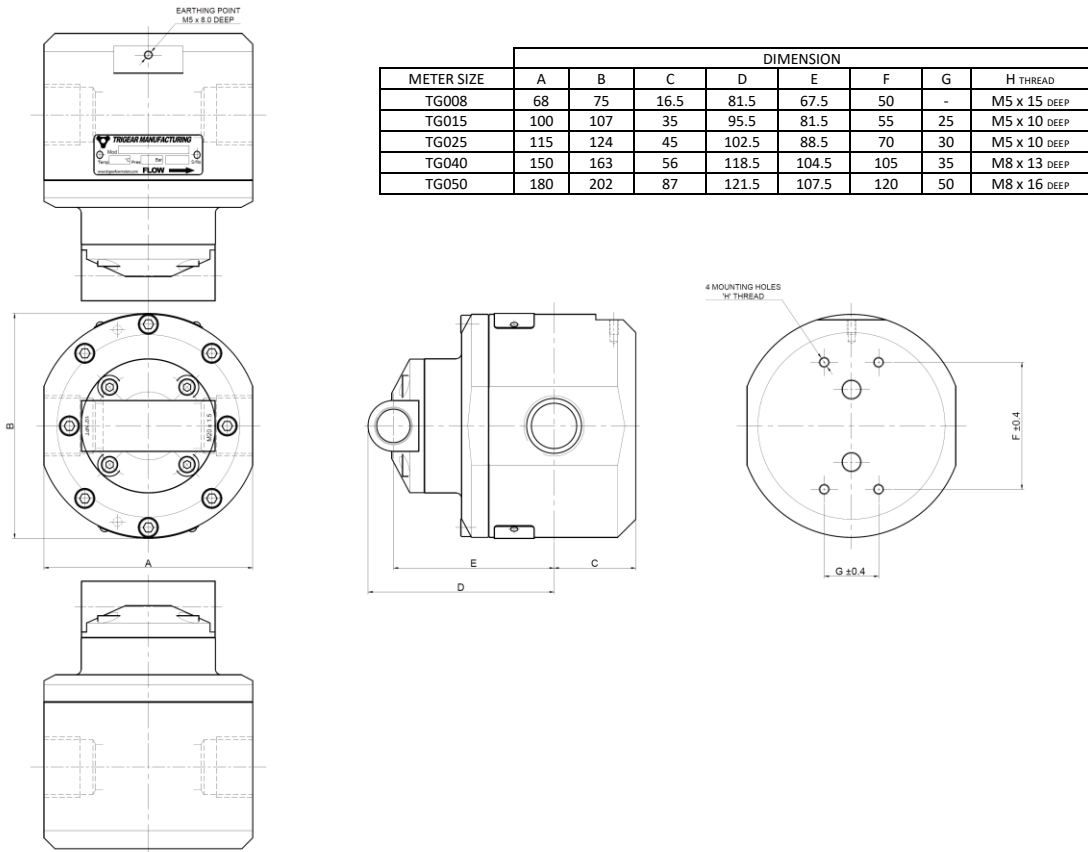
TG040A - Accuracy vs. Flowrate



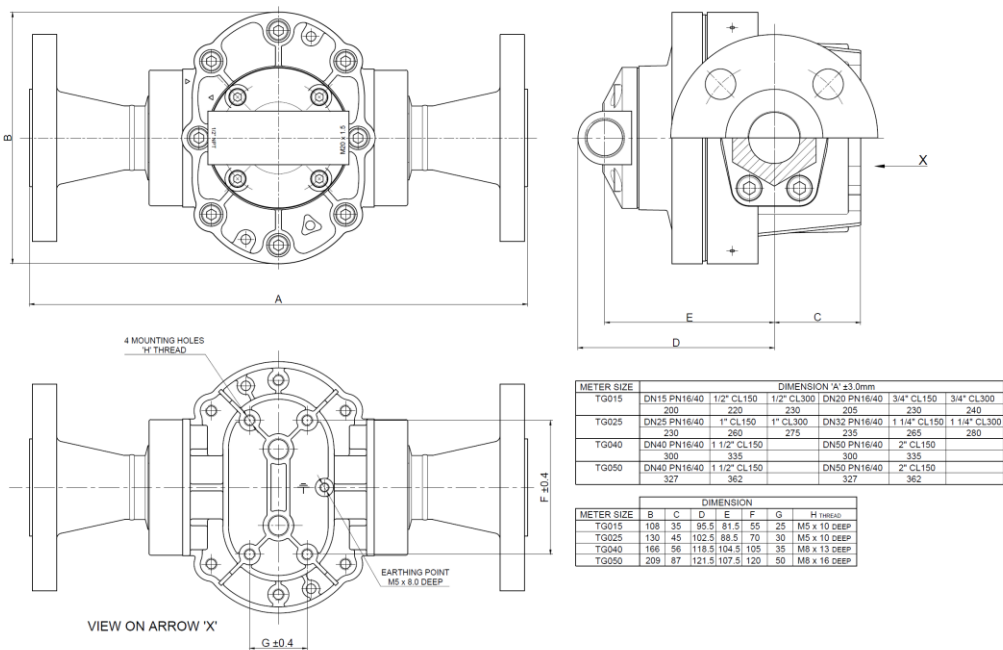
Stainless Steel Threaded Meter



Aluminium Threaded Meters



Flanged Meters





Model Designation

Size			
TG	008	3/8"	(8mm) aluminium or stainless steel
TG	015	1/2"	(15mm) aluminium or stainless steel
TG	020	3/4"	(20mm) aluminium or stainless steel
TG	025	1"	(25mm) aluminium or stainless steel
TG	040	1 1/2"	(40mm) aluminium or stainless steel
TG	050	2"	(50mm) aluminium or stainless steel

Body material

S	316L Stainless Steel
A	Aluminium
H	High Pressure TG008H-TG040H -400 Bar, TG050H -250 Bar

Tri-gear material

1	PPS (Ryton)
2	PEEK (FDA Approved Material)
6	Keishi cut PPS (Ryton) - for high viscosity liquids
8	Keishi cut PEEK - for high viscosity liquids

Bearing type

1	PPS (Ryton)
2	PEEK (FDA Approved Material)

O-ring material

1	Viton (<i>standard</i>)
2	EPR - (<i>Ethylene Propylene Rubber</i>)
3	Teflon encapsulated viton
4	Buna-N (<i>Nitrile</i>) 100°C (212°F) max.

Temperature limits

1	80°C (180°F) No Heat Insulation - maximum for meter mounted readout.
2	120°C (250°F) - Use Heat Insulator (Option 5) if meter mounted readout.
3	150°C (300°F) max. (Hall Effect output only).
5	120°C (250°F) - Heat Insulator fitted for meter mounted readout

Process connections

1	BSP female threaded
2	NPT female threaded
4	ANSI-150 RF flanges
5	ANSI-300 RF flanges
6	PN16 DIN flanges
9	Customer nominated

Cable entries

0	M16 x 1.5mm (exclusive to FRT Rate Totaliser)
1	M20 x 1.5mm
2	1/2" NPT

Integral options

00	Reed and Hall Effect output
HR	High Resolution Hall Effect output
420	Analog output - 4 wire, 4 ~20mA output option
ExH	Explosion proof - Exd IIIB T4/T6 (Hall Effect)
ISH	Intrinsically safe (I.S.) Hall Effect output
RS	Reed Switch only
F1	FRT-00 Flow Rate Totaliser - No output - display only
F2	FRT-AP Flow Rate Totaliser - 4-20mA output proportional to flowrate & scaled pulse output
F3	FRT-ALP Flow Rate Totaliser - Alarm and/or scaled pulse output
F4	FRT-BC Flow Rate Totaliser - 2 stage batch control

DSTG – 2121

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