



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.

Principles 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, chemical, 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	± 0.5% of reading	± 0.25% of reading (15:1 turndown), ± 0.5% of reading (25:1 turndown)				
Repeatability	typically ± 0.01% of reading					
Temperature range	-20°C ~ +120°C (-4°F ~ +250°F), refer factory for lower & higher temperatures					
Maximum pressure (threaded meters)			bar (PSI)			
Aluminium meters	30 (440)					
316 Stainless Steel meters	34 (495)	30 (440)				
High Pressure models	refer factory					
Electrical – for pulse meters (see below for optional outputs)						
Output pulse resolution	Pulses/litre (pulses/US gallon) – nominal					
Reed Switch and Hall Effect	670 (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).

Dimensions

METER SIZE	DIMENSION							
	A	B	C	D	E	F	G	H THREAD
TG008	68	75	16.5	81.5	67.5	50	-	M5 x 12 DEEP
TG015	130	108	35	95.5	81.5	55	25	M5 x 10 DEEP
TG025	155	130	45	102.5	88.5	70	30	M5 x 10 DEEP
TG040	215	166	56	118.5	104.5	105	35	M8 x 13 DEEP
TG050	242	209	87	121.5	107.5	120	50	M8 x 16 DEEP

Stainless Steel

METER SIZE	DIMENSION							
	A	B	C	D	E	F	G	H THREAD
TG008	68	75	16.5	81.5	67.5	50	-	M5 x 15 DEEP
TG015	100	107	35	95.5	81.5	55	25	M5 x 10 DEEP
TG025	115	124	45	102.5	88.5	70	30	M5 x 10 DEEP
TG040	150	163	56	118.5	104.5	105	35	M8 x 13 DEEP
TG050	180	202	87	121.5	107.5	120	50	M8 x 16 DEEP

Aluminium

Product Codes

Size

TG008	3/8"	(8mm)	Aluminium or stainless steel
TG015	1/2"	(15mm)	Aluminium or stainless steel
TG020	3/4"	(20 mm)	Aluminium or stainless steel
TG025	1"	(25mm)	Aluminium or stainless steel
TG040	1 1/2"	(40mm)	Aluminium or stainless steel
TG050	2"	(50mm)	Aluminium or stainless steel
TG080	3"	(80mm)	Aluminium or stainless steel
TG100	4"	(100mm)	Aluminium or stainless steel

Body material

S	316L Stainless Steel
A	Aluminium

Rotor 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 (standard)
2	EPR – (Ethylene Propylene Rubber)
3	Teflon encapsulated viton
4	Buna-N (Nitrile) 100°C (212°F) max.

Temperature limits

1	80°C (180°F) No Heat Insulation – maximum for meter readout
2	
5	120°C (250°F) – Heat Insulator fitted for meter mounted readout

Process Connections

1	BSP female threaded
2	NPT female threaded
3	*Tri-Clamp hygenic ferrules
4	ANSI-150 RF flanges
5	ANSI-300 RF flanges
6	PN16 DIN flanges
7	JIS 10kg/cm ² flanged
9	Customer nominated

Cable entries

0	M26 x 1.5mm (exclusive to FRT Rate Totaliser)
1	M20 x 1.5mm
2	1/2" NPT adaptor

Integral options

00	Hall Effect and Reed Switch Pulse Outputs with GRN terminal cover (glass reinforced nylon)
HR	High Resolution
420	Analogue Output Module
ExH	Explosion proof (Exd I/IIB 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 and 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
102	Contrec 102 Rate Totaliser
202	Contrec 202DI ATEX I.S. Flowrate Totaliser
SB	Specific build requirement

Trigear 20-25

Filton Process Control Engineering
Unit 2, The Old Grain Store,
Ditchling Common Industrial Estate,
Ditchling, East Sussex
BN6 8SG
United Kingdom
Tel: 01444 248777
Fax: 01444 243750
Email: sales@filton.com

