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

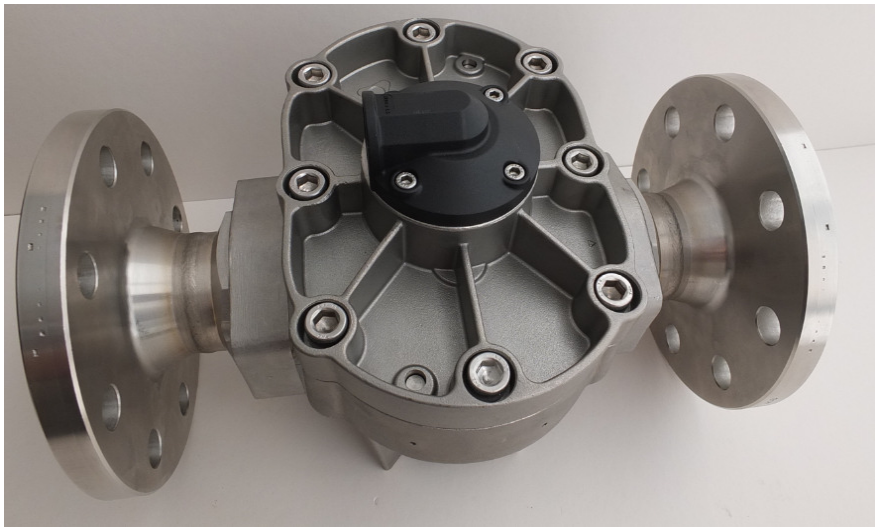
Liquid Passes into the single case measuring chamber and displaces two Tri-gears. Each rotation of a Tri-gear is proportional to a discrete unit of volume, in turn, the speed at which the gears rotate is directly proportional to flowrate. Reed and Hall Effect sensors mounted outside the pressure boundary 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 flowmeters outperform 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 device suitable for terminal applications such as tanker loading and bunkering.

Benefits

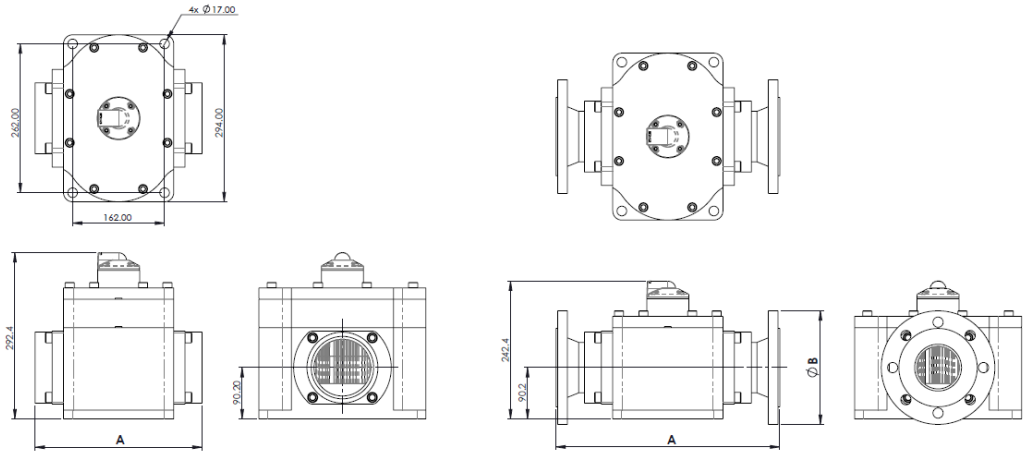
- High Resolution Digital Output
- Wide Rangeability
- Bi-directional flow capability
- Digital or Analogue Outputs available.
- HART Output option.
- Less slippage than oval gear meters.
- Smoother and quieter than Oval Gear Meters.
- Dual Output standard (reed and hall effect)
- Low Mass Tri-gears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



Performance and Specifications

Nominal size (inches)	**TG080 (3")**		**TG100 (4")**
*Flow range - (LPM) litres/min	25 - 750		50 - 1500
- (GPM) US gal/min	6.5 - 200		13 - 400
Accuracy @ 3cp	± 0.5% of reading (± 0.25% of reading over 6:1 turndown)		
Repeatability	Typically, ± 0.03% of reading		
Temperature range	-30ºC - +120ºC (-22ºF - +250ºF)		
Maximum pressure	Bar (psi)		
Aluminium meters	15 (220)		15 (220)
Stainless Steel	20 (290)		20 (290)
Electrical - for pulse meters (see below for optional outputs)			
Output pulse resolution	pulses / litre (pulses / US gallon) - nominal		
Reed switch	2.8 (10.6)		1.4 (5.3)
Hall effect	11.2 (42.5)		5.6 (21.5)
Quadrature Hall Effect option	5.6 (21.2)		2.3 (10.6)
Reed switch output	30Vdc x 200mA max. (maximum thermal shock 10ºC (18ºF)/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 (NEMA4XI, optional Ex II 2G E x Ex d IIC T6 to T4, Ex II 1G Ex ia IIC T2 or T4 Ga. Integral readouts can be supplied to either classification.		
Overall dimensions	Refer Below		
Recommended filtration	350 microns (40 mesh)		

	CONNECTION TYPE					
DIMENSION	3"BSP	4"BSP	PN16 DN80	PN16 DN100	DN80 ANSI150	DN80 ANSI300
A	294	294	394	398	433.8	465.4
B	125	125	200	220	190	254



Model Designation

Size

TG	080	3"	(40mm)	aluminium or stainless steel
TG	100	4"	(50mm)	aluminium or stainless steel

Body material

S	316L Stainless Steel
A	Aluminium

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

Temperature limits

2	120°C (250°F) - see note 1
5	120°C (250°F) - see note 2

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	Hall Effect and Reed Switch Outputs, GRN Terminal Cover.
HR	High Resolution Hall Effect output
420	Analog output - 4 wire, 4 ~20mA output option
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 & 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
F112	Fluidwell F112 ATEX I.S. Flowrate Totaliser with 4-20mA o/p and linearization
F018	Fluidwell F018 ATEX I.S. Flowrate Totaliser with 4-20mA o/p and HART
SB	Specific build requirement

Model No. Example

TG	100	A	1	1	1	-	1	2	1	HR

Notes:

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