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## Oval Gear Flow Meters Series OG1 – OG7 / OG2

### Chemically resistant and for high viscosity

These compact rugged oval gear flowmeters by Titan Enterprises are designed to give high performance with a low cost of ownership. These meters are happy measuring simple water like products as well as lubricating fluids. There are several versions; some can have totally non-metallic wetted components, PEEK™, ceramic and a choice of elastomer, which makes these the ideal choice for the metering of aggressive chemicals. The standard inlet and outlet are BSP or NPT female threads, flanges are also available. For OEM use alternatives, including manifold mountings, are available. The standard models are 316 St St, aluminum, and PEEK. \*) For hazardous areas the reed switch (simple apparatus) or Namur sensor may be used.



At the heart of the meter is a pair of toothed oval gears one of which contains chemically resistant magnets, the gears rotate freely on robust bearings. Rotation is detected through the chamber wall by a Hall Effect detector or a reed switch giving an accurate number of pulses per liter passed. The output is an NPN pulse or a voltage free contact closure either of which is readily interfaced with most electronic display or recording devices. This combination of materials and technology ensures a long life product with reliable, accurate operation throughout. PEEK is a superb material for gear and bearing manufacture, it has excellent pressure and velocity characteristics coupled with very good thermal properties and chemical resistance. For fluids with viscosities above 1000 cSt. especially cut gears are required and the flow range is reduced for a given meter size.

\*) OG6 and OG7 not available in PEEK

### Features

- Excellent chemical resistance
- Rugged construction
- Individual calibration
- High viscosity capability
- Low pressure loss
- Flow conditioning not required
- Compact meter assembly
- Hall Effect, Reed Switch or Namur sensor
- Good accuracy and repeatability
- IP67 / NEMA 4 protection
- Models up to 700 Bar
- Non-metallic version



MetraSmart Totalizer / Indicator  
See separate data sheet



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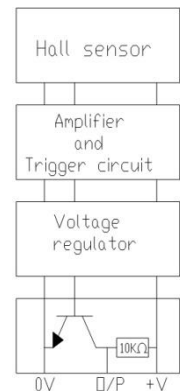
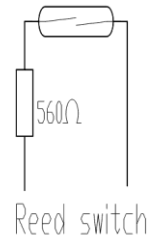
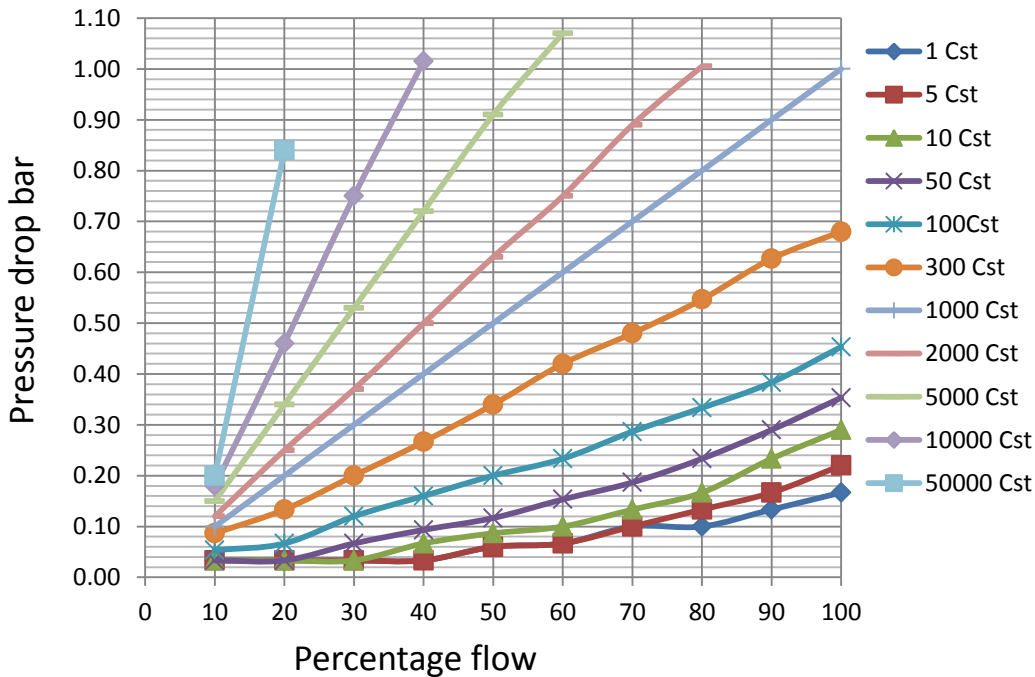
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## General Technical Specifications

- Accuracy: see Table 1
- Repeatability:  $\pm 0.1\%$
- Pulse output: Hall Effect (NPN), Reed Switch or Namur sensor
- Pressure ratings: 10 bar (145 psi), 50 bar (725 psi), 400 bar (5800 psi) or 700 bar (10150 psi)
- Temperature ratings: 80 °C (176 °F), 100 °C (212 °F) or 150 °C (302 °F)
- Body: Peek or 316 stainless steel
- Gears / Magnets: carbon filled Peek / Ceramic
- Spindles: stainless steel
- Seals: Viton, Nitrile, EPDM or Kalrez
- Connections: NPT or BSP female standard; flanges on request
- Supply voltage: 4.5 – 24 Vdc (Hall Effect)
- Reed Switch: 24 V / 100 mA max.
- Protection class: IP67 / Nema 4X
- Calibration: for water over 6-points with certificate
- Strainer / filter: recommended for particulates > 80 micron

## Percentage of flow vs viscosity



Sensor block diagram



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## Flow Ranges and Pulses in Liters

Model	Water Flow		30 cSt. Oil Flow		K-factor 1/liter
	Range liter/min	Accuracy ± %	Range liter/min	Accuracy ± %	
OG1	0.1 – 1.0	1.0 *)	0.01 – 1.00	0.75 *)	2050
OG2	0.15 – 4.0	1.0 *)	0.03 – 4.00	0.75 *)	1100
OG3	0.5 – 10.0	0.5 *)	0.05 – 10.0	1.0 **)	400
OG4	2.5 – 50.0	1.0 **)	0.25 – 50.0	0.5 **)	110
OG5	4.0 – 100	0.75	0.5 – 100	0.5	70
OG6	10.0 – 200	1.0	2.0 – 200	0.5	21
OG7	20.0 – 500	1.0	5.0 – 500	0.5	15

Table 1a

\*) Percentage of full scale; other percentages of reading  
 \*\*) 0.5% full scale for PEEK body

## Flow Ranges and Pulses in Gallons

Model	Water Flow		30 cSt. Oil Flow		K-factor 1/gallon
	Range gal/min	Accuracy ± %	Range gal/min	Accuracy ± %	
OG1	0.026 – 0.264	1.0 *)	0.003 – 0.264	0.75 *)	7760
OG2	0.04 – 1.06	1.0 *)	0.008 – 1.06	0.75 *)	4164
OG3	0.13 – 2.64	0.5 *)	0.013 – 2.64	1.0 **)	1514
OG4	0.66 – 13.21	1.0 **)	0.07 – 13.21	0.5 **)	416
OG5	1.06 – 26.42	0.75	0.13 – 26.42	0.5	265
OG6	2.64 – 52.83	1.0	0.53 – 52.83	0.5	79
OG7	5.28 – 132.1	1.0	1.32 – 132.1	0.5	57

Table 1b

\*) Percentage of full scale; other percentages of reading  
 \*\*) 0.5% full scale for PEEK body



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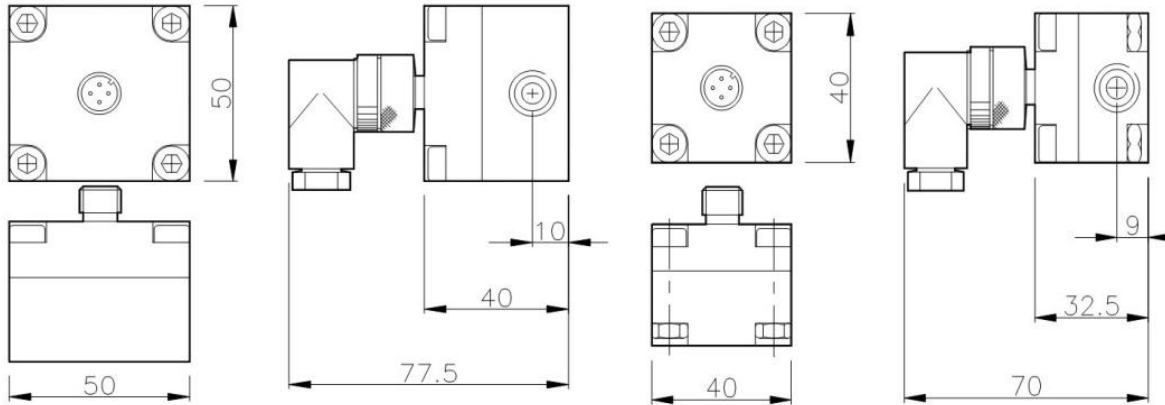
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## Oval Gear Meter OG2

Threads in inches, dimensions in mm.



PEEK™ body ¼" thread

316 Stainless Steel, ¼" thread

Terminations	
Stainless Steel	M12 instrument socket
Peek	M12 instrument socket



Stainless Steel Oval Gear Meter OG2 up to 400 bar (5800 psi)



Peek Oval Gear Meter OG2



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## Oval Gear Meter OG2 4lpm Totalizer



The OG2 oval gear totalizer is designed to give high performance with a low cost of ownership. It has a standard flow range from 0.1 to 4 lpm on 30 cSt oil or post mix syrup and 0.2 to 4 lpm on water like liquids. The standard process connections are ½” John Guest push in sockets, a Polyphenylene sulfide (PPS) body, 316 stainless steel spindles, Polytetrafluoroethylene (PTFE) coated magnets and silicon/nitrile seals.

At the heart of the meter is a pair of toothed oval gears one of which contains chemically resistant PTFE coated magnets, the gears rotate freely on robust 316 stainless steel spindles.

Rotation is detected through the chamber wall by a reed switch giving approximately 1100 pulses per liter passed. The display is a 6 digit totalizer with a liter (L) symbol as standard, other units are available for OEM customers e.g. Kg, gals, etc. The electronic housing cover is molded in tough polycarbonate. This combination of materials and technology ensures a long life product with reliable, accurate operation throughout its estimated 4 year battery life.

An OEM model would be e.g. totally non-metallic wetted components, PEEK™, ceramic and an elastomer which makes this the ideal choice for the metering of aggressive chemicals. The flowmeter without display is also possible.

Standard OG2-RS1-SRJ-T		
Flow range	- Water - 30 cSt Oil - Post Mix Syrup	0.2 – 4.0 lpm 0.1 – 4.0 lpm 0.1 – 4.0 lpm
Wetted materials	- Body - Gears - Seal - Magnet	PPS Carbon filled PEEK™ Silicon/Nitrile PTFE coated
Accuracy	- Water - 30 cSt oil - Post Mix Syrup	± 2.0% FSD ± 1.0% FSD ± 1.0% FSD
Repeatability		± 0.2%
Detector Type		Reed switch
Process Connections		½” John Guest socket
Approx. 'K' factor - Pulses/Liter		1100
Weight		0.285kg (10 oz.)





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### Model Ordering Code

OG2

**P** - **S** - **1** - **V** - **R** - **QN**

<u>Body Material</u>	<u>Code</u>
Peek	P
316 Stainless Steel	S
PPS with Display 1)	R

<u>Temperature Rating</u>	<u>Code</u>
80 °C / 176 °F 1)	S
100 °C / 212 °F	T
150 °C / 302 °F *)	U

<u>Pressure Rating</u>	<u>Code</u>
10 bar / 145 psi 1)	1
50 bar / 725 psi *)	5
400 bar / 5800 psi *)	4
700 bar / 10150 psi *)	7

<u>Seal</u>	<u>Code</u>
Viton	V
Nitrile	N
Silicon 1)	S
EPDM	E
Kalrez	K

<u>Detector</u>	<u>Code</u>
Hall Effect	H
Reed Switch 1)	R
Namur	N

<u>Connections</u>	<u>Code</u>
¼" NPT Female	QN
¼" BSP Female	QB
Flanges	QF
½" John Guest 1)	J-T

\*) Stainless Steel body only

1) OG2 4 lpm Totalizer for post mix syrup, 30 cSt oil