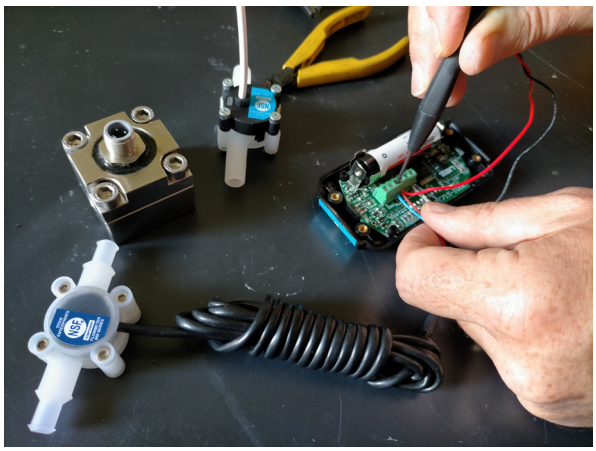
TECHNICAL PRODUCT
INSTRUCTION SHEET

Oval Gear Flowmeters

- OG1
- OG2
- OG3
- OG4
- OG5
- OG6
- OG7
- Metra-Clear OGs

- Aluminium
- PEEK
- Reed switch
- Stainless steel
- Flanged or screwed
- Hall effect
- Intrinsically Safe Sensor option (Namur Switch)

Wiring instruction videos for Titan flowmeters can be found on the website.



INSTALLATION

The pipe-work should be designed in such a way to eliminate reverse flow. The flow meter should be installed in a position that prevents it from draining down as, on start-up, serious damage could result by 'impacting' an empty flowmeter with a high velocity fluid stream. The liquid should be clean and homogenous. In all cases an upstream filter of at least 80 microns **MUST** be fitted. **It is recommended that before the flowmeter is installed in the line a 'dummy' section of pipe is inserted and the system flushed.** This is to eliminate any debris in that section of the line. The pipe must not stress the body of the meter and should be fully supported either side with appropriate isolation valves, and in some cases, a bypass valve. On initial start-up, increase the flow slowly to ensure no over speeding of the flowmeter occurs as the air is forced from the line. This is best achieved by monitoring the flow rate and ensuring that a 50% over-range is not exceeded. **Never blow a flowmeter with an airline.** Care should be taken to ensure that no air enters the system (e.g. leaky pump gland) or that no cavitation takes place.

Oval gear flowmeters work by using the low differential pressure generated across the body to drive a pair of oval gears. This rotation can be detected by a variety of means to give either a TTL (NPN transistor) or contact closure pulse output. The unit is manufactured in a choice of materials and pressure ratings to suit most applications and as with all positive displacement flowmeters, the performance improves with increasing viscosity, achieving an accuracy of ±0.1% of reading with higher viscosities. The standard meters can be used up to 1000 cSt; above this viscosity, specially profiled gears **MUST** be used.

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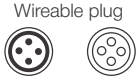
Oval Gear Flowmeters

ELECTRICAL CHARACTERISTICS

Hall Effect Sensor		Reed Switch	
Supply	8 to 24Vdc	Contact material	Rhodium
Temp range	-40 to 150°C	Voltage	24Vdc max
Rise and fall times	1.5uS max	Current	100mA max
Supply current	7.5mA typ	Operations	10^9
Switch current	10mA max	'R' Series resistor 560Ω. For hazardous areas 'X' no protection is fitted.	
Leakage current	10uA max		

It is recommended that all "signal" cables are screened and run separately to power lines and switched inductive loads and are located well away from inverters and other "noisy" apparatus. Always use sound wiring practice. Hall effect detector **(NPN)** requires an external pull-up resistor connected between the output and a suitable power supply to attain a pulse. Typically the flowmeter PSU may be used but sometimes a dc pulse, which is of a different voltage, may be required e.g. using a PLC with a 24V PSU and an internal 5V rail for the pull-up resistor/ pulse input. The reed switch has a protection resistor of 560 Ohms in series with the connections unless it is specified for hazardous areas when the resistor is excluded.

Connection options

M12 connector	Reed	Hall effect*
Wireable plug 	Pin 3, Pin 4 — 560Ω	Pin 1 +4.5-24V Pin 2 Not used Pin 3 0 Volts Pin 4 Output
Moulded plug 	White Not used Blue — 560Ω Black Not used Brown	Blue 0 Volts Brown +4.5-24V Black Output White Not used
Connector 	0V OP — 560Ω +V Not used	0V 0 Volts +V +4.5-24V OP Output
MIL socket 	Pin A Pin C — 560Ω Pin B Not used	Pin A 0 Volts Pin B +4.5-24V Pin C Output
Flying lead 	Screen Blue — 560Ω Red Not used	Screen 0 Volts Red +4.5-24V Blu Output

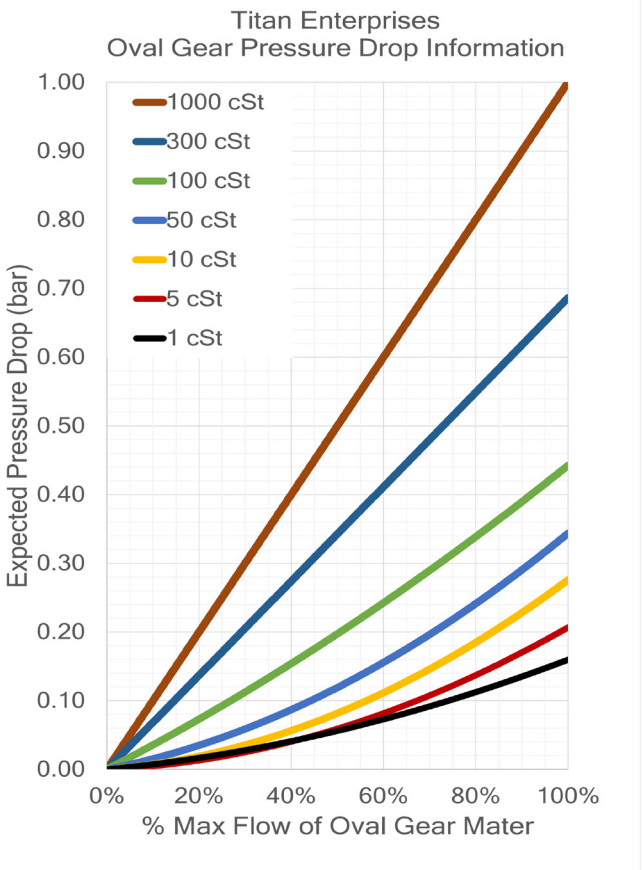
*Pull Up Resistor Required (10KOhm supplied)

COMMISSIONING

If problems occur during commissioning always check the fundamentals first.

- Is the flowmeter/instrument the correct one for the installation?
- Is the power connected to the meter and the instrument, and is it turned on?
- Is the instrument set/wired correctly? I/P port, pulse type, frequency span, units etc.
- Where possible check the O/P from the flowmeter with an oscilloscope before proceeding.
- Was the line flushed prior to installing the meter?
- Was the flow increased slowly?
- Is the meter blocked?

If you are unable to find a solution, ask your supplier for technical support or contact technical@flowmeters.co.uk.



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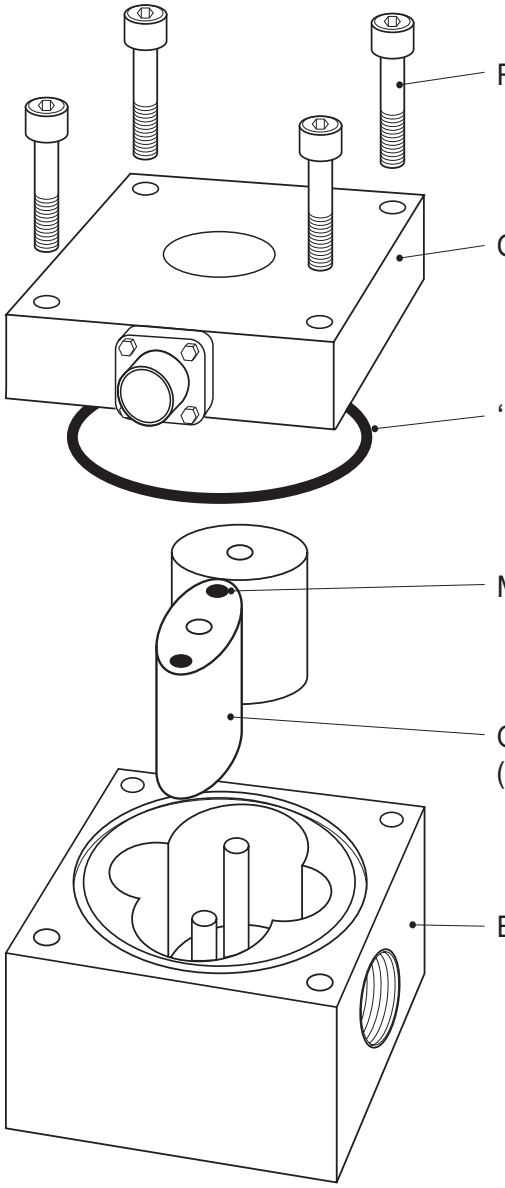
EXAMPLE OVAL GEAR ASSEMBLY



All oval gear meters do not look the same as each model has a specific standard flow rate. This illustration is for guidance only.

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