Oval Gear Flowmeter OG

INSTALLATION AND OPERATION

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INSTALLATION

The pipe-work should be designed in such a way to eliminate reverse flow. The 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 fluid should be clean and homogenous. In all cases an upstream filter of at least 100 microns must be fitted. It is recommended that before the flow-meter 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 by-pass valve. On initial start-up increase the flow slowly to ensure no over speeding of the meter 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 pres-sure 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 cP, above this viscosity specially profiled gears MUST be used.

OUTPUT SIGNAL

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.

FAULT FINDING

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 cannot find a solution ask your supplier for technical support

ELECTRICAL CHARACTERISTICS

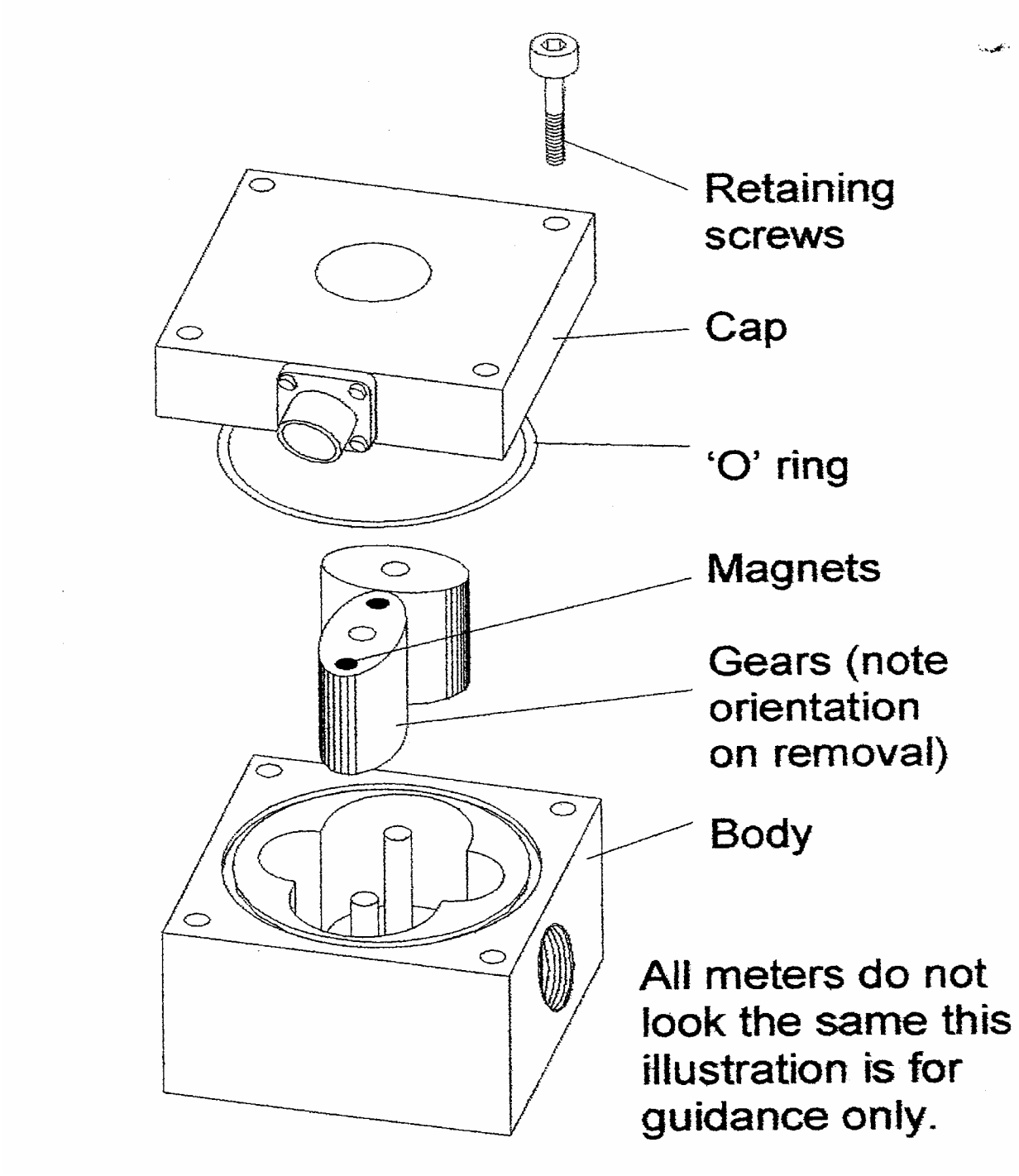
Hall Effect sensors

Supply voltage	4.5-24Vdc
Temp range	-40 to150°C
Rise & fall times	1.5uS max
Supply current	7.5mA typ.
Switch current	10mA max
Leakage current	10uA max.

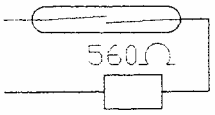
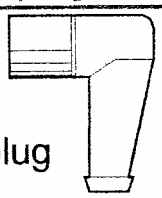
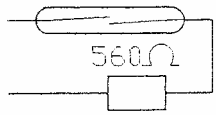
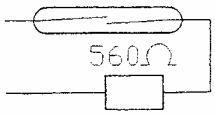
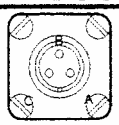
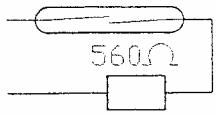
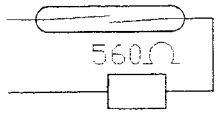
Reed switch

Contact material	Rhodium
Voltage	24 max
Current	100mA max
Operations	10 9

PARTS AND CONSTRUCTION



CONNECTION OPTIONS

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

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