

# GF Series

## Positive displacement flow meters with conditioned output

Up to

- 150 lpm, 40 US gpm
- 420 bar, 6000 psi

The GF series gear type flow meters are ideal for precision measurement on medium to high viscosity hydraulic and lubrication fluids, or in applications where the fluid viscosity can change substantially due to large variations in temperature.

The GF series are positive displacement flow meters with a conditioned output, that are designed for measuring flows on hydraulic and lubrication systems, on test stands, machine tools and other fixed or mobile applications. The GF flow meters offer high accuracy and excellent viscosity stability and can be installed anywhere in the circuit for monitoring, production testing, commissioning, development testing and analysis of control systems. The compact design allows the GF series flow meters to be installed where space is limited.

The GF gear type flow meters have a built-in micro-controller that linearises and conditions the signal from the flow meter to provide an accurate and linear output signal. This enables you to connect the flow meter directly into your digital display, PLC or custom DAQ system without having to worry about complex calibration factors or lookup tables.



Symbol



\* Units are delivered with male to male fitting  
to provide thread form stated over

Hydraulic measurement and control



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### Features

- **FLOW:** 0.1 – 150 lpm,  
0.03 – 40 US gpm
- **PRESSURE:** up to  
420 bar, 6000 psi.
- **OUTPUT OPTIONS:**  
4-20 mA & pulse  
(both linearized)
- **BI-DIRECTIONAL**  
operation
- **CALIBRATION:**  
21 cSt as standard.  
Special calibration  
possible. Calibration  
certificate supplied as  
standard.
- **FLUIDS** Oils, fuels, water  
glycol, water oil emulsions,  
phosphate esters.
- **STAINLESS STEEL**  
Body, gears and transducer  
as standard.



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(Issue 5)

## Specifications

Model number	Male Fitting	Flow range	Pressure
GF025-MAP-B-6	1/2" BSPP	0.1 to 25 lpm	420 bar
GF025-MAP-S-6	3/4" -16UN JIC Male	0.03 to 7 US gpm	6000 psi
GF070-MAP-B-6	3/4" BSPP	0.5 to 70 lpm	420 bar
GF070-MAP-S-6	1-1/16" -16UN JIC Male	0.15 to 19 US gpm	6000 psi
GF150-MAP-B-6	3/4" BSPP	1 to 150 lpm	420 bar
GF150-MAP-S-6	1-1/16" -16UN JIC Male	0.26 to 40 US gpm	6000 psi

**Note:** GF series flow meters with CAN output for use with Webtec HPM data loggers are also available, please contact Sales.

### Functional specification

**Ambient temperature:** 5 to 40 °C (41 - 104 °F)  
**Fluid type:** Oils, fuels, water glycol, water oil emulsions, phosphate esters  
**Fluid Viscosity:** 1 to 10000 cSt (calibrated at 21 cSt. NB. Pressure drop may reach unacceptable levels with high viscosity fluids. Contact sales regarding calibration on fluids below 15 cSt.)  
**Fluid temperature:** - 40 to 120 °C (41 - 194 °F) continuous use.  
**Accuracy, analogue signal:** 15 to 100% of range: 0.5% of indicated reading  
Below 15% fixed accuracy of 0.5% of 15% of full scale.  
**Frequency signal:** 0.5% of indicated reading  
**Calibration resolution:** 7 points as standard, up to 20 points optional - please contact sales  
**Repeatability:** Better than ± 0.1%  
**Degree of protection\*:** IP65 (EN60529) \*With cable connected  
**Installation requirements:** Clamp hoses close to meter. It is recommended that a min. 50 micron filter is installed in the circuit prior to the flow block.



### Electrical specification

**Supply voltage (VS):** 13 - 30 VDC  
**Current output:** 2 wire loop, max loop resistance =  $(VS - 12) / 0.02$ , (max = 800ohms).  
**Output frequency:** galvanically isolated open collector.  
**Scaling:** Full scale flow = 20mA and 1000Hz  
**Response time:** 48ms + 1 period of detected frequency.  
**Temperature stability:** <100ppm/K  
**Direct connection:** to C2000 and HPM6000 with dedicated cable - please contact sales

### Construction material

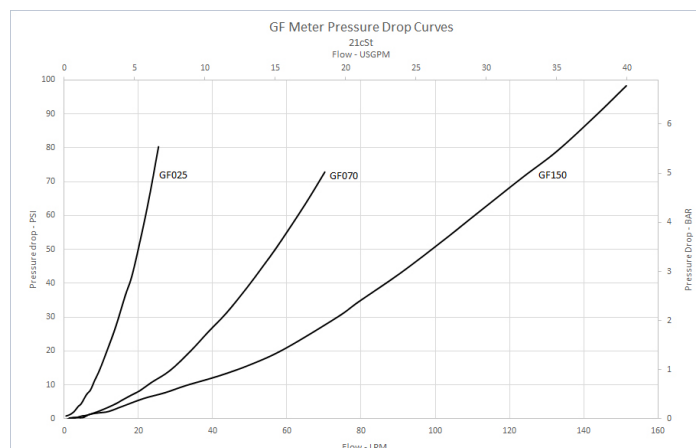
**Flow body:** DIN 1.4305 (S.S 303)  
**Adapters:** DIN1.4305 (S.S 303)  
**Assembly bolts:** High Tensile steel, class 12.9 (Contact sales for stainless steel options)  
**Internal parts:** Gears: DIN 1.4122 (S.S), Bearings: DIN 1.4037 (S.S)  
**Transducer:** DIN 1.4104 (S.S)  
**Seals:** NBR (Nitrile) others are available - please consult sales office.

### Hazardous Environments

**Mechanical body:** suitable for use inside zones 1 and 2 for gas haze and vapours.  
**Transducer:** ATEX  Zone1: II 2G Ex ia IIC T4 and ATEX  Zone2: II3G Ex nA IIC T4 compatible devices are available - please contact sales.

### Operation

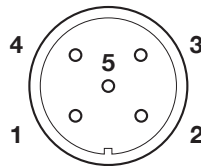
Gear flow meters are positive displacement devices where each precisely measured dose of fluid rotates the gears by one tooth; the design is similar to a gear pump. The gears which transfer the fluid are accurately machined to have minimal clearance when fitted in the meter cavity. This makes the gear meter very accurate and able to measure very low flows. The gears run free on precision bearings and present little resistance to the fluid, causing low insertion pressure drops. The RPM of the gears is detected by a sensitive transducer. The transducer incorporates electronics that convert the RPM in to a 4-20mA or pulse signal that is proportional to flow; A CAN output is also available. Transducer electronics can enhance the accuracy of the output signal by applying correction data to the detected RPM signal.



## Connection Details

(Plug viewed from top)

### 4 - 20 mA



Pins

1 = +VS

2 = 4 -20 mA out

3 = Frequency ground

4 = O/C frequency pulse out

5 = N/C

NB. N/C - Do not connect

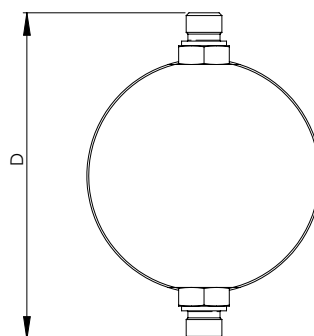
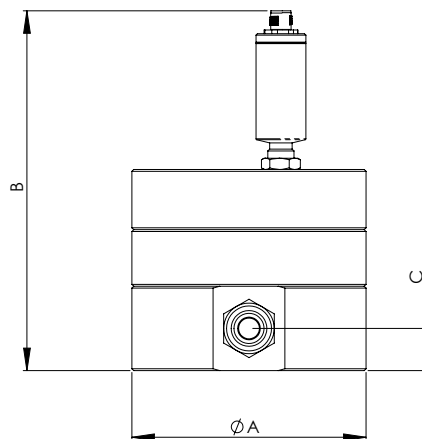
<b>Connecting cable</b> (5m)	FT10228-05
<b>Extension cable</b> (5m)	FT10229-05
<b>Connector</b> (M12x1 5 pin)	FT9880
<b>C2000 mA cable</b>	FT10951-05
<b>C2000 TTL cable</b>	FT10949-05
<b>HPM6000 mA cable</b>	FT10950-05

**NB.** See manual for precise connection details.

Dimensions in mm (inches)

Model No.	A	B	C	D	Weight
GF025-MAP-B-6	84.4 (3.3)	161 (6.3)	12 (0.47)	136.5 (5.4)	3.1 Kg
GF025-MAP-S-6	84.4 (3.3)	161 (6.3)	12 (0.47)	135.5 (5.4)	3.1 Kg
GF070-MAP-B-6	125 (4.9)	182 (7.2)	17 (0.67)	175 (6.9)	8.8 Kg
GF070-MAP-S-6	125 (4.9)	182 (7.2)	17 (0.67)	187 (7.4)	8.8 Kg
GF150-MAP-B-6	175.5 (6.9)	245 (9.7)	22.5 (0.9)	224 (8.8)	23.3 Kg
GF150-MAP-S-6	175.5 (6.9)	245 (9.7)	22.5 (0.9)	236 (9.3)	23.3 Kg

**NB.** The whole assembly, including the fittings has a safe working pressure of 420 bar.  
The fittings must not be tightened higher than the specified torque!



APPROVED