GF Series

Positive Discplacement Flow Meters with Conditioned Output

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 linearizes 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.

Make it BLUE®

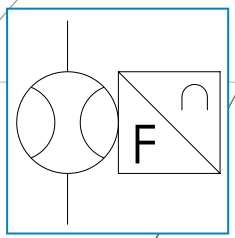
Features

- Bi-Directional operation.
- Wide range of hydraulic oil, lubrication oils, and fuels.
- Output options 4-20 mA & Pulse (both linearized).

Specifications

Maximum Rated Pressure:		420 bar, 6,000 psi
Maximum Rated Flow:		150 L/min, 40 US gpm
Fluid Temperature Range:		-40 to 120°C, -40 to 284°F
Compatible Fluids:		Mineral oils to ISO 11158. Other fluids consult sales office.
Porting:		BSPP, SAE
Material:	**Body Materials:**	Stainless Steel
	Internal Materials:	Stainless Steel
	Seals:	NBR (Other seals consult sales office)
Output:		4 - 20 mA (2wire) Linearize frequency
IP Rating:		IP65

ISO Symbol:



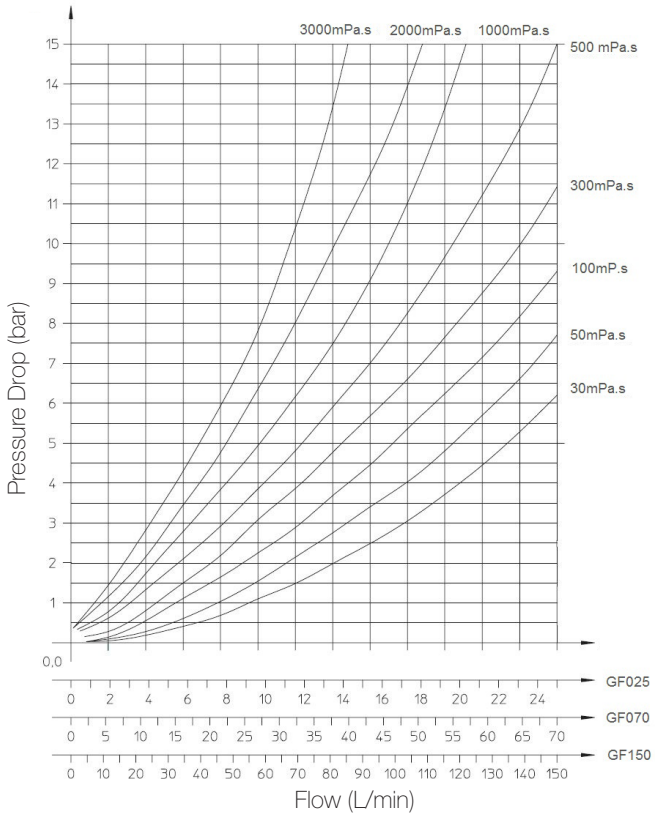
Sales Order Code

Please contact our technical sales to team to discuss any special order requirements.

MODEL NUMBER	RATED FLOW RANGE	MALE FITTING	MAX RATED PRESSURE
GF025-MAP-B-6	0.1 to 25 L/min	1/2” BSPP	420 bar
GF025-MAP-S-6	0.03 to 7 US gpm	3/4” -16UN JIC Male	6000 psi
GF070-MAP-B-6	0.5 to 70 L/min	3/4” BSPP	420 bar
GF070-MAP-S-6	0.15 to 19 US gpm	1-1/16” -16UN JIC Male	6000 psi
GF150-MAP-B-6	1 to 150 L/min	3/4” BSPP	420 bar
GF150-MAP-S-6	0.26 to 40 US gpm	1-1/16” -16UN JIC Male	6000 psi

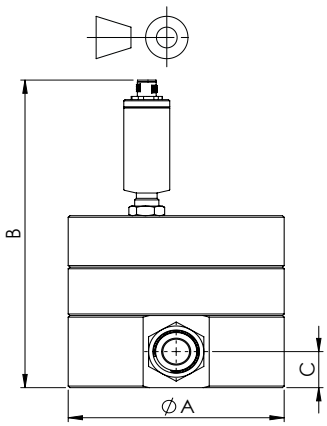
Units are delivered with male to male fitting to provide thread form stated above.
The whole assembly, including the fittings has a safe working pressure of 420 bar, 6000 psi.

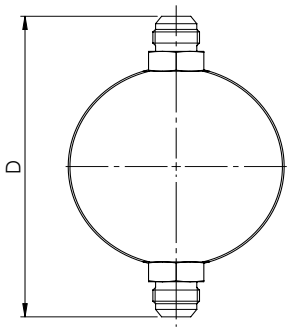
Pressure Drop Chart



Installation Details

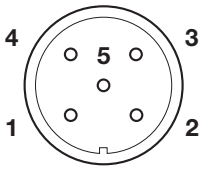
Model No	A		B		C		D		Weight	
UNITS	mm	Inch	mm	Inch	mm	Inch	mm	Inch	kg	lb
GF025-MAP-B-6	84	3.3	161	6.3	12	0.47	136	5.4	3.1	6.8
GF025-MAP-S-6	84	3.3	161	6.3	12	0.47	134.5	5.3	3.1	6.8
GF070-MAP-B-6	125	4.9	182	7.2	19	0.75	175	6.9	8.8	19.4
GF070-MAP-S-6	125	4.9	182	7.2	19	0.75	187	7.4	8.8	19.4
GF150-MAP-B-6	175.5	6.9	245	9.7	22.5	0.9	224	8.8	23.3	51.4
GF150-MAP-S-6	175.5	6.9	245	9.7	22.5	0.9	236	9.3	23.3	51.4





Connecting Details

4 - 20 mA



Pins

1 = +In
2 = 4 - 20mA out
3 = Frequency ground
4 = O/C Frequency pulse out
5 = N/C

NB. N/C - Do not connect

Connecting cable (5m)	FT10228-05
Extension cable (5m)	FT10229-05
Connector (M12x1, 5 pin)	FT9880
C2000 mA cable	FT10951-05
C2000 TTL cable	FT10949-05
HPM mA cable	FT10950-05

Functional Specification

Ambient temperature range:	5 to 40° C, 41 to 104 °F
Accuracy:	
Analogue signal:	Reading 15% to 100% of flow range - 0.5% of indicated reading. Readings below 15% of full-scale flow - fixed accuracy of 0.075% of full scale.
Frequency signal:	0.5% of indicated reading.
Repeatability:	Better than ± 0.1%
Calibration resolution:	7 points as standard, up to 20 points optional - please consult sales office.
Degree of protection:	IP65 (EN60529) With cable connected.

Electrical Specification

Supply voltage (VS):	15 - 30 VDC
Current output:	2 wire loop, max loop resistance = (VS - 12) / 0.02. max = 800 ohms.
Output frequency:	Galvanically isolated open collector.
Scaling:	Full scale flow = 20mA and 1000Hz
Response time:	48ms + 1 period of detected frequency.
Temperature stability:	<100 ppm/k
Direct connection:	to C2000 and HPM7000 with dedicated cable - please contact sales office.

Construction Materials

Flow body:	Stainless Steel 303, (DIN 1.4305)
Adapters:	Stainless Steel 303, (DIN 1.4305)
Assembly bolts:	High Tensile steel, class 12.9 - Contact sales office for stainless steel options.
Internal parts: Gears:	Stainless Steel (DIN 1.4122)
Bearings:	Stainless Steel (DIN1.4037)
Transducer:	Stainless Steel (DIN 1.4104)

Hazardous Environments

Mechanical Body:	Suitable for use inside zones 1 and 2 for gas haze and vapours.
Transducers:	ATEX Ex Zone1: II 2G Ex ia IIC T4
	ATEX Ex Zone2: II3G Ex nA IIC T4. Compatible devices are available - please contact sales office.

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. Transducer electronics enhance the accuracy of the output signal by applying correction data to the detected RPM signal.

Installation

The positive displacement flow meter should be connected using flexible hoses. Inlet and outlet connections should always have a similar bore size to that of the flow meter to prevent venturi or constriction effects.
The flexible hose should be clamped close to the positive displacement flow meter - for further information see GF gear flow meter manual.

Filtration

It is recomended that a minimum of 50 micron filter is installed in the circuit prior to the flow meter.