

# macnaught flow measurement



**fuel and oil meters**

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The "F" range of oval gear fuel and oil meters from **Macnaught** are a family of positive displacement oval gear flowmeters that are **optimized for fuel and oil measurement** applications.

Macnaught Fuel and Oil meters are constructed utilizing a **robust cast aluminium body** suitable for use in the harshest environments. **Our bearing-less PTFE/PPS rotors** provide exceptionally **low pressure drop** and can even be used in **gravity fed applications**. This unique rotor design ensures minimal wear resulting in many **years of reliable service**. This approach has proven over time to provide **consistently accurate flow measurement** that is not affected by variations in temperature, viscosity, or pressure.

Another benefit of our unique rotor design is simplicity of repair. With only **2 moving parts**, our meters are **simple to repair**, require minimal repair parts stock, and can even be repaired inline, resulting in **less downtime**.

Oval Gear flowmeters are ideally suited to applications requiring **accurate dispense quantities**. Measurement of very **low flow rates, pulsating flow, small batch sizes, viscous products**, and non-conductive liquids are all ideal uses for oval gear meters. Because these meters don't require flow conditioning, **no straight piping runs** are required, so they can be used in installations where space is limited without effecting performance.

With **12 mechanical and digital display options** to choose from, Macnaught flowmeters are the perfect choice with outputs and displays to suit virtually any application requirement.

## Applications

- Service and Fueling Trucks
- Fuel Depots
- Portable Fueling Systems
- Bio-Diesel Blending and Production
- Lubricant Blending and Dispensing
- Hydraulic Fluid Dispensing and test stands
- Boiler and generator fuel consumption
- Fuel consumption for mining, construction, and military vehicles
- Bitumen/ Asphalt production



## Meter Selection

### Step 1 Verify Fluid Compatibility & Application Conditions

Determine if your fluid is compatible with the wetted parts of the meter. All wetted parts are made from: Aluminium, FKM, PPS, and 316SS. Also determine if the Pressure and Temperature are within the stated limits.

Tips: If the temperature is between 80-120C, our Solvent meters use a high temperature SS rotor and can be used on high temperature fuel oil applications as well. We also offer high pressure models in our industrial meter line if the operating pressure is beyond the limits of our Fuel and Oil meters.

### Step 2 Choose the model based on your flow rate

(see Flow Range Chart)

Tips: If possible, choose a meter model where your expected flow rates fall between 20-80% of the maximum flow range for optimum performance. If you are measuring a high viscosity fluid (over 1000cp), the maximum flow range will be lower. You should consult the factory if you are unsure which model you need.

### Step 3 Choose your connection thread type

Tips: We also offer flange adaptor kits for all of our meters from F025 and larger (see step 5). We offer ANSI 150, DIN PN16, and JIS flange adaptors. Our adaptors can be fitted to any of our meters regardless of the threaded connection type. Flange adaptors are ordered separately in step 5. Please note that if you order a mechanical meter and want NPT threads with display in Litres, a type "3" connection should be specified. Also note that the F050 and larger meters do not include threaded connections. The adaptors must be ordered separately.

### Step 4 Choose Standard or High Viscosity Rotors

Tips: Choose high viscosity rotors if the fluid is above 1000cp. If the fluid is between 100 and 1000cp and the flow rate is over 50% of the maximum rated flow of the meter, high viscosity rotors can be used if lower pressure drop is required.

### Step 5 Choose Mechanical Display or Pulse Output options

Tips: Choose a pulse output if you want to use a digital display. The Digital displays are listed in the next step and can either be mounted on the meter or remotely. Our standard pulse output comes with both hall effect sensor and reed switch outputs. If you are installing the meter in a hazardous environment, you can choose option "2" which will give you 2 reed switches, which classifies the output of the meter as a "simple device".

### Step 6 Choose Accessories

(See Chart 1 & 2)

Tips: All of our digital displays can be mounted either locally on the meter itself, remotely on a wall, on a panel, or nearby on the piping. Just choose the functions you need and the housing type you require.

If you are looking for flanged end connections, you can also order the appropriate flange type here. For models F050 and larger, adaptors must be ordered with the meter.

Our strainers all come with the appropriate mesh size for the meter that they fit, so the connection size is the only choice you need to make.

The chart below list the available accessories and consult price list for part numbers

## Part Number Selection

F	Fuel and Oil Meters			
	<b>Model</b>	<b>Nominal Size</b>	<b>Flow Range</b>	<b>Max Pressure</b>
	006	1/4"	0.5-100 lph/ 0.13-26.4 gph	10 Bar/150 PSI
	009	1/4"	15-500 lph/ 4-132 gph	10 Bar/150 PSI
	012	1/2"	2-30 lpm/ 0.5-8 gpm	55 Bar/800 PSI
	019	3/4"	3-80 lpm/ 0.8-21 gpm	55 Bar/800 PSI
	025	1"	6-120 lpm/ 1.6-32 gpm	55 Bar/800 PSI
	040	1.5"	10-250 lpm/ 2.64-66 gpm	55 Bar/800 PSI
	050	2"	15-500 lpm/ 4-130 gpm	55 Bar/800 PSI
	075	3"	20-733 lpm/ 5-194 gpm	12 Bar/175 PSI
	100	4"	120-1200 lpm/ 31.7-317 gpm	12 Bar/175 PSI
		<b>Port Type</b>		
		1	BSP (Rp)	(Port adaptors MUST be ordered separately on models 050 and larger)
		2	NPT	(Port adaptors MUST be ordered separately on models 050 and larger)
		3	NPT-Litre Calibration	(Port adaptors MUST be ordered separately on models 050 and larger)
			<b>Rotor Type</b>	
			S	Standard
			V	High Viscosity (F009 and Larger)
				<b>Display Type</b>
				1 Electronic Pulse Meter- Reed Switch and Hall-Effect Outputs
				2 Reed Switch Only- for Hazardous Location Service
				3 Standard Duty Mechanical Register (35 Bar/500 PSI) (models F012, 025 and larger only)
				4 Heavy Duty Mechanical Register (35 Bar/500 PSI) (models F012, 025 and larger only)
				5 Analogue Mechanical Register (35 Bar/500 PSI) (models F025 and larger only)
F	025-	1	S	1

## Flow Range Chart

flow rate liters per minute

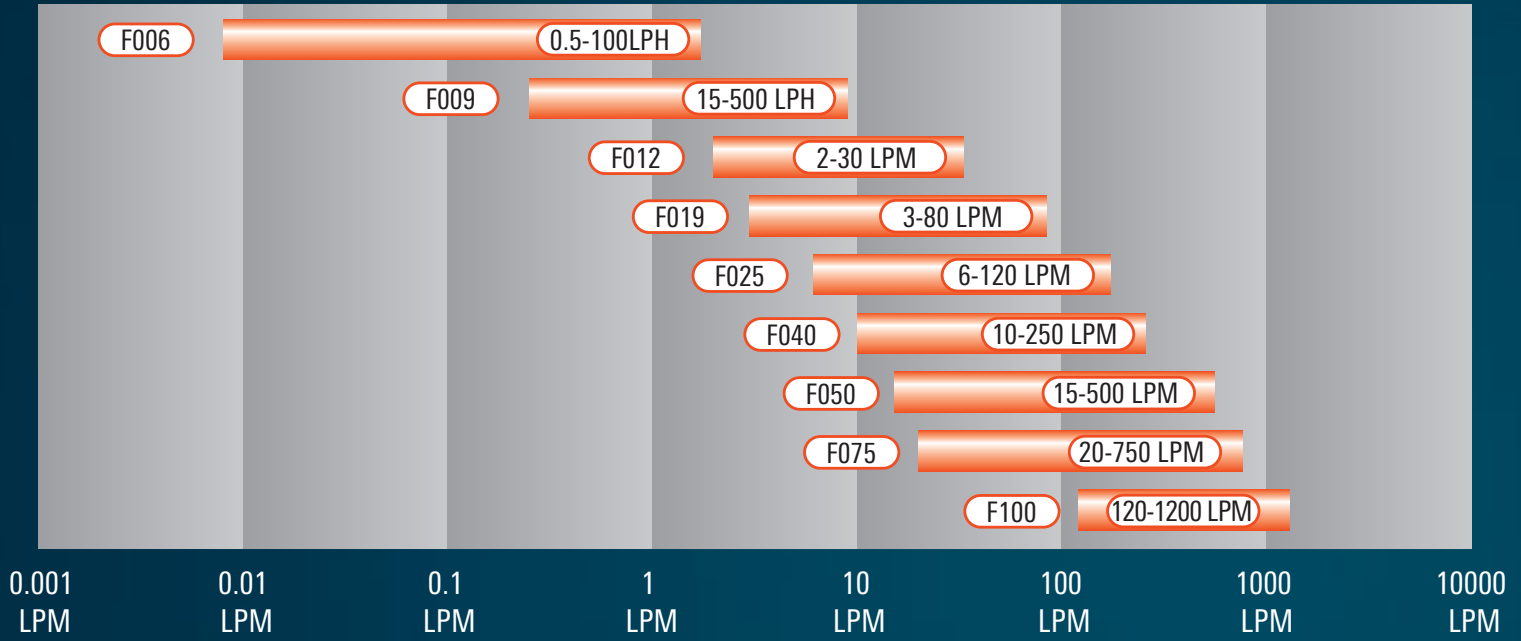


Chart 1

	Mechanical Registers			Digital Displays								
	M	MR	MA	DR	DRA	ER	ERA	ERB	ERS	ERX	ERAX	ERBX
Meter Mounted Displays	■	■	■	■	■	■	■	■	■	■	■	■
Total	■	■	■	■	■	■	■	■	■	■	■	■
Resettable Total	■	■	■	■	■	■	■	■	■	■	■	■
Flow Rate Display				■	■	■	■	■	■	■	■	■
Pulse Output						■			■			
4-20 ma Output (Passive)						■						■
4-20 ma Output (Active)									■			
Batch Control (Relay Out)								■				
Batch Control (Transistor Out)												■
Net Use Function									■			
Intrinsic Safety										■	■	■
Aluminium Housing IP67		■	■	■	■	■	■	■	■	■	■	■
Plastic Housing	■											
Digit Size (mm/ in.)	5mm	17mm	5mm	12mm	12mm	17mm	17mm	17mm	17mm	17mm	17mm	17mm

Chart 2 Strainers and Flange Adaptor Kit (Sold Separately)

when flange adaptors are used, pressure rating reverts to flange rating

	F006	F009	F012	F019	F025	F040	F050	F075	F100
SS Y-Strainer	■	■	■	■	■	■	■	■	■
Aluminium Strainer/Air eliminator					■	■	■	■	■
ANSI					■	■	■	■	■
DIN					■	■	■	■	■
JIS					■	■	■	■	■
BSP (Rp)							■	■	■
BSP (Rc)					■	■	■	■	■
NPT							■	■	■

## Features

### Designed and Manufactured in Australia

- Quality is controlled from concept to completion by Macnaught
- Improved Availability
- 2 Year Warranty

### Mechanical Displays *(See Chart 1)*

- IP67 Versions for use in high pressure washdowns
- Low-cost version with plastic housing
- Enhanced Accuracy

### Electronic Displays *(See Chart 1)*

- All displays have resettable and non-resettable totals
- 4-20ma and pulse output versions
- Batch controllers
- Meter mounted and remote displays
- Compact version for use with small meters or where space is limited
- Intrinsically safe for use in hazardous areas

### Bearingless PPS Rotors

- Minimize Wear
- Low Pressure Drop
- Quiet Operation
- Simple Repairs
- Reduced Friction

### Modular End Connections *(See Chart 2)*

- Flexible Inventory for Faster Delivery
- Wide Variety of Connection Types
- Threaded Mounting Holes

### Cast Aluminium Body

- Robust Design
- Suitable for use in the harshest outdoor environments

### Strainers and Air Eliminators Available

*(See Chart 2)*



# Trust Macnaught

Established in 1948, Macnaught has a 60 year tradition of excellence in manufacturing. Macnaught began marketing flowmeters in 1965 and has been manufacturing oval gear flowmeters since the early 1990's.

Our decades of experience have resulted in a simple, robust, and highly accurate family of flowmeters that are optimized to suit a broad range of applications and markets. Macnaught offers optimized solutions for Fuel and Oil measurement, Bulk Fuel Custody Transfer, Corrosive Chemicals, Solvents, and a wide variety of other industrial liquids.

With full ISO 9001 and 14001 accreditation, you can be secure in the knowledge that quality and environmental responsibility are at the forefront of every decision at Macnaught.

Trust Macnaught to deliver the performance, value, and reliability required in today's most demanding environments. With distributors in over 60 countries and global sales support, Macnaught has become a global leader in fluid management solutions. Our focus on oval gear flow measurement reflects our commitment to excellence in providing optimized solutions for fluid management applications.

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Quality Endorsement applicable to  
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