



COMPUFLOW GRAVIMETRIC FUEL FLOWMETER

FEATURES

- ◆ True Gravimetric System
- ◆ Specifically designed to allow for High Recirculating Fuel Flow Rates
- ◆ Two 4 figure Displays
- ◆ Weight or Flow Rate and Time, Total Engine Revolutions or Speed Display Selectable
- ◆ Analogue Output of all Displayed Parameters is available
- ◆ Fuel Measurement Quantity readily available over a Wide Range
- ◆ Safety – Explosion-proof Valve and Intrinsically Safe Circuits are used throughout
- ◆ Minimum Change of Head during tests
- ◆ 4 Models to suit Engines up to 4MW

THE COMPUFLOW RANGE

CAPACITY (Kilograms)	FLOW RATE (Grams per second)	ENGINE POWER (Kilowatts)
0.3	From 0.15 - 10	Up to 120
1.0	From 0.3 - 33	Up to 400
3.0	From 1.5 - 100	Up to 1200
10.0	From 5.0 - 330	Up to 4000

DESCRIPTION

Compuflow, CUSSONS' microprocessor controlled gravimetric fuel meter, is a multi-function engine fuel flow measurement system. It is designed to be compatible with both automatic and manually controlled engine test systems and is suitable for a wide range of fuels; diesel, petrol, alcohol, etc.

Compuflow comprises three units; the Fuel Weighing Module, which is sited in the engine test cell, the Electrical Interface Unit and the Control and Display Unit, which for safety are located outside the engine test cell.

The fuel weighing module is internally divided by a horizontal partition. A fuel supply pipe from an external source enters the upper section of the module, and is taken through a solenoid valve to the lower section. Within the lower section of the fuel weighing module is an aluminium weighing container. Supported by a sensitive load cell, the container incorporates an externally suspended fuel flow assembly. The fuel flow assembly includes a fuel supply pipe and engine feed and return pipes. Recirculated fuel is returned to the weighing container through the fuel flow assembly, and enters the container above a baffle.

The baffle prevents vapour bubbles entering the engine fuel supply pipe. When weighing is in progress the solenoid valve is closed, and thus the weight of fuel used can be measured. When metering is not in progress, the valve regularly operates and the fuel level is kept above a pre-set datum.

Fuel flow rate is measured either as the time taken to use a pre-selected amount of fuel or the fuel used in a pre-set time. COMPUFLOW displays these values by means of two 4-digit numbers. Between tests the last values calculated remain displayed to aid recording.

Overfilling is prevented by two capacitive level sensors which isolate the solenoid filling valve supply. At the same time, an operator's warning lamp is illuminated and an alarm sounds. Accidental emptying of the container is prevented by the COMPUFLOW microprocessor software program.

The minimum fuel flow rate is 0.2 grams per second, and the maximum, in the case of the 10 kilogram model, is 330 grams per second.

TECHNICAL SPECIFICATION

EXTERNAL DIMENSIONS

FUEL WEIGHING MODULE

300g, 1 kg and 3 kg models

Height 665 mm

Depth 380 mm

Width 450 mm

10 kg model

Height 830 mm

Depth 500 mm

Width 500 mm

CONTROL AND DISPLAY UNIT

All models

Height 170 mm

Depth 500 mm

Width 496 mm

ELECTRICAL INTERFACE UNIT

300g, 1 kg, 3 kg models

Height 300 mm

Depth 200 mm

Width 300 mm

10 kg model

Height 230 mm

Depth 90 mm

Width 250 mm

MATERIALS

Fuel container – Anodised aluminium

Pipes and fittings – Stainless steel

Seals – Viton

FUEL LEVEL SENSORS

Two capacitive sensors.

LOAD CELL TYPE

Strain gauge.

ENGINE REVOLUTIONS INPUT

100mV from variable reluctance sensor.

AMBIENT TEMPERATURE RANGE

0 to +70°C

ACCURACY

The accuracy of the system is dependent upon the weight of fuel used and the time taken to use it. As an example, timing over a 30 second period will give an answer accurate to $\pm 0.25\%$ of reading or $\pm 0.05\%$ of the maximum recommended flow rate whichever is the greater. A smaller timescale or less fuel will result in slightly reduced accuracy.

CALIBRATION

A set of weights is supplied.

MANUAL CONTROL

Operating Mode – Time or Quantity
Start Reading
Repetitive Readings
Overflow Reset

REMOTE CONTROL

Remote start by momentary contacts' closure.

EXTERNAL COMPUTER

Signals available to an external computer or data logger are:

Analogue output values of all parameters available on the display.

Start-stop timing pulses

Input signals from external computer:

Operating mode select; Time or Quantity
Start Reading
Repetitive Readings

Select by BCD signal; Numerical value of Time or Quantity

SERVICES

Electrical:-

Selectable between 220V – 240V, 50Hz and 110V – 120V, 60Hz, single phase, 90VA

Fuel Supply Head:-

Must be between 0.5 and 1 metre.

Venting:-

The Fuel Weighing Module must be vented to an extraction plant whose flow rate is not less than 5 cubic metres per hour.

Location:-

The Fuel Weighing Module must be securely mounted against vibration within the engine test cell. The Electrical interface Unit and the Control Unit must be mounted in a safe area.

SAFETY

Safety aspects have been of prime importance during COMPUFLOW design and development. The system has been built for use in hazardous areas defined as Zone II.

PRODUCT NUMBER REFERENCE

P8125 300g system

P8126 1 kg system

P8127 3 kg system

P8123 10 kg system

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