LOW PRESSURE FLOWMETER

LPF

PRESENTATION

The ***LPF*** (Low Pressure Flowmeter) is dedicated to test the shot to shot flow for indirect gasoline low pressure injectors.

SYSTEM DESCRIPTION

The equipment is composed of :

• a mechanical part integrating the volumic chamber, the pressure and the temperature measurement

• an electronic part driving the measurement cycle, collecting datas at each revolution and calculating volume and mass injected for each shot.

• a precise pressure regulator to adjust the input pressure placed above the injector (in option).

• a quick filling electrovalve (in option).

PRINCIPLE

The LPF is placed above the injector. It creates the input pressure for the injector using gas regulation which guaranties a high stability. This pressure could be precisely adjusted by the optional pressure regulator placed at the nitrogen input.

The pressure sensor is placed just at the input of the injector to validate the good pressure at each revolution.

The volume measurement is realized by a piston displacement. The direct result is a measured volume. With the density information and the temperature measurement, the equipment calculates the mass injected for each shot.

The LPF can measure up to 5 shots on a window of 25% of a complete period. The injection rate gives directly the static flow of the injector. The frequency is programmable from 0.5 to 50 Hz.

For each period, the equipment delivers the volume and mass measured corresponding to the dynamic flow, the static flow, the temperature and the frequency of test.

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PRODUCT ADVANTAGES

- Because of the nitrogen regulation, the LPF warranty a **high stability for the input pressure of the injector.**
- The LPF measures each injection separately with **0.1 mg precision**. This gives the opportunity of a real standard deviation measurement on the injector.
- Simultaneous measurement of the **static and dynamic flow**.
- Possibility of driving the injector and programming a complete test cycle without any other instruments.
- External synchronisation to link this measurement with other physical settings.
- Detection of the physical opening of the injector and delay measurement with the logic start.

TECHNICAL SPECIFICATIONS

Precision	0-20mm^3 : <0.05mg 20-100mm^3 : 0,1mg
Measure range (per period)	0 to 100 mm^3
Feeding pressure for the injector	Up to 10 bar
Number of driving shots per period	Up to 5
Injector driving output	TTL and power (complete LPF)
Extern injector driving copy input (use of external driver)	TTL
Injection duration resolution	1µs or 0,2°
Maximum pulse width	6500µs or 70° angle
Maximum time during 2 injections	6500µs or 70° angle
Opening delay measurement resolution	1µs
Opening delay measurement repeatability	15µs
First injection recognizing	>1mm^3/stroke
Frequency range	0,5 to 50Hz (30 to 3000 rev/min)
Analog input	0-10V bits of resolution
Average window input	TTL logic level
Average window output	TTL logic level
Lift signal output	Signal 15V full scale 70,4 mV for 1mm^3
Analog injection rate output	Signal ±15V Approx 24mV for 1mm^3/ms
Analog programmable BNC outputs	Signal 0-10V Scale : programmable
Cursor output	Signal 0-10V
Electronic working temperature	0°C to 50°C
Injection working temperature	-30°C to +130°C
Sensor cooling temperature	0°C to +50°C
Power supply	230V/50Hz or 110V/60Hz
Consumption	60VA
Electronic rack size	Rack 19" 3U or 6U
Mechanical part size	180mm x 234mm

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