



## 4.12 Mass Airflow Sensor and Intake Air Temperature Sensor

The MAF sensor is a combined MAF sensor and IAT sensor.

### 4.12.1 Mass Airflow Sensor

#### 4.12.2 Description

Airflow is determined by the cooling effect of the intake air passing over a "hot film" element contained within the device. The higher the air flow the greater the cooling effect and the lower the electrical resistance of the "hot film" element. The signal from the device is then used by the ECM to calculate the MAF into the engine.

The measured airflow is used in determining the fuel quantity to be injected in order to maintain the stoichiometric air fuel ratio required for correct operation of the engine and exhaust catalysts. Should the device fail there is a software backup strategy that will be evoked once a fault has been diagnosed. A fault is detected if the MAF signal exceeds the maximum or minimum threshold for a given speed range or the difference between the calculated load and the actual MAF signal is too great.

Mass Airflow Sensor								
Component/ System	Fault Codes	Monitoring Strategy Description	Malfunction Criteria	Threshold value	Secondary Parameter	Enable Conditions	Time Required	MIL Illumination
Mass Airflow Sensor	P0102	range check (min)	air flow verses engine Speed	<2.43 g/sec(@ 800 rpm) To 8.96 g/sec(@ 5000 rpm)	engine speed	> 400 rpm > 200 rpm (for > 0.3 sec)	0.5 sec/ continuous	two driving cycles
	P0103	range check (max)	4.0 litre 4.6 litre	>40.0g/sec to 224.5g/sec > 46.7g/sec to 248.9g/sec (1000 RPM to 5400 rpm)		> 200 rpm (for > 0.3 sec)	0.3 sec/ continuous	
	P0101	rationality check (low/high)	comparison of calculated load (engine speed and throttle position) to actual MAF signal	adaptation factor (af) 1.5 < af < 0.35	engine speed engine load ECT	800< rpm< 4000 2<TL msec<6.5 > -9.75° C	immediately/ continuous	

If the above table does not include details of the following enabling conditions: - IAT, ECT, vehicle speed range, and time after engine start-up then the state of these parameters has no influence upon the execution of the monitor.