

## Engine

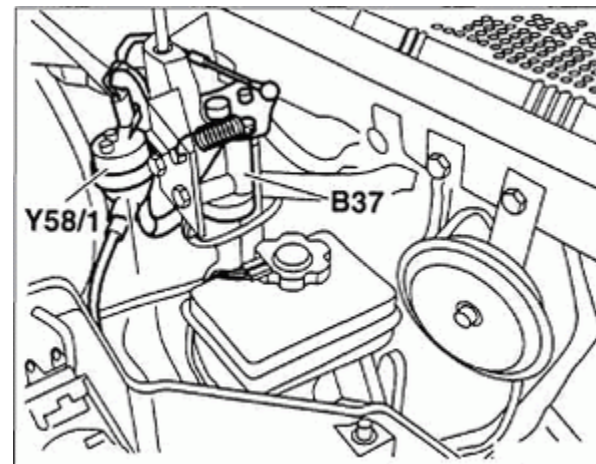
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### Electronic Accelerator Control

#### Accelerator Control

#### System Description

Pedal control is sensed by the pedal value sensor (B37) which electronically controls the throttle valve.



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#### Component Description

##### Electric Throttle Valve Actuator

The accelerator control is entirely electronic except for the Bowden cable that attaches to the pedal value sensor from the pedal.

An electric throttle valve actuator (M16/1), controlled by the ECM (N3/10), is an electromotor design.

The throttle valve actuator eliminates direct physical linkage between the accelerator pedal and the throttle plate.

#### System Operation

The pedal value sensor (B37) sends an accelerator position signal to the engine control unit.

The engine control unit evaluates this sensor information against other sensor inputs such as:

- Intake air volume
- Engine coolant temperature
- Engine RPM
- Vehicle road speed
- Engine load

The above signals determine the exact amount of throttle opening.

The signal is sent from the engine control unit (N3/10) to throttle actuator (M16/1).

Intelligent software in the ECU evaluates the driver's accelerator commands and "decides" how to act on them.

For example, when the accelerator is fully depressed, the engine control system may command less than WOT if a fully open throttle valve is unnecessary for full load operation. This reduces fuel consumption and component wear. Two throttle position sensors (potentiometers) send a feedback signal to the engine control unit, telling it the throttle is correctly positioned.

#### **Limp-Home Mode**

Emergency running characteristics are also safeguarded by the use of intelligent software. If there is a malfunction of one sensor the throttle valve opening will be limited to 60%. If both throttle position sensors fail, the engine will not accelerate higher than idle speed.