

## Engine

14

### Emission Control System

#### Exhaust Gas Recirculation (EGR)

##### System Description

##### Exhaust Gas Recirculation

The EGR valve (89) is combined with an electric EGR vacuum transducer (Y31/1). The EGR vacuum transducer (Y31/1) stabilizes the sharply fluctuating intake manifold vacuum and is operated by the ME-SFI control module by means of a PWM signal; frequency about 10 Hz, On/Off ratio about 30-100%.

When the vacuum transducer is actuated, the EGR valve is opened to a varying extent by means of a vacuum of about 80-220 mbar and thus controls the quantity of exhaust gases which are recirculated.

Exhaust gas recirculation is conducted as a function of the map stored in the ME-SFI control module as soon as the following points are met:

- Coolant temperature between 60°C and 110°C =140 to 230 F
- Engine speed <3500 rpm
- Part load

The map is designed for optimal fuel consumption. In this case, as much exhaust gas as possible is recirculated without impairing engine running or emission levels.

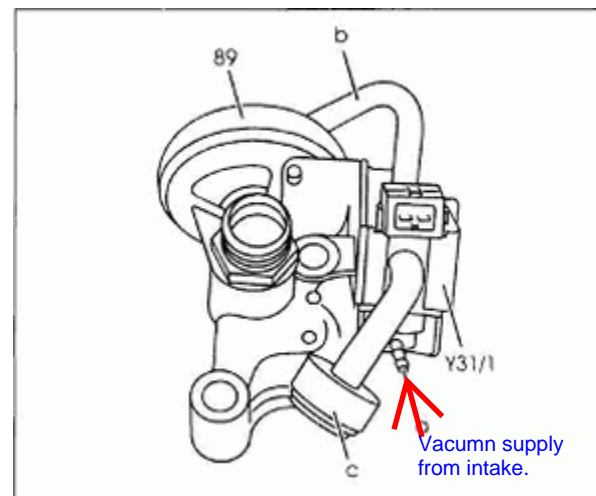
Low-oxygen exhaust is drawn inline with the opening cross-section at the EGR valve. As a result, the fuel/air mixture contains less oxygen. The combustion temperature drops and the formation of NOX is reduced. The inducted air mass is reduced by the quantity of exhaust gases which are recirculated. Accordingly, less fuel is metered by the ME-SFI control module.

##### Service Tips

Removal of catalytic converter and exhaust system. Refer to Group 49.

##### Air Injection

The electric pump is located on the engine at the front. A combination valve (air shutoff valve and check valve) is located at the front



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- Y31/1 EGR vacuum transducer
- a Vacuum supply from intake manifold
  - b Controlled vacuum from EGR vacuum transducer to EGR valve
  - c Air admission
  - 89 EGR valve

of the cylinder head on each bank of cylinders. The electric air pump is controlled in parallel with the air pump switchover valve.

**Oxygen Sensor Upstream of Catalytic Converter**

An oxygen sensor is screwed into each exhaust line near the engine in the front section of the exhaust pipe. The oxygen sensor control is accomplished separately for the left and right cylinder bank.