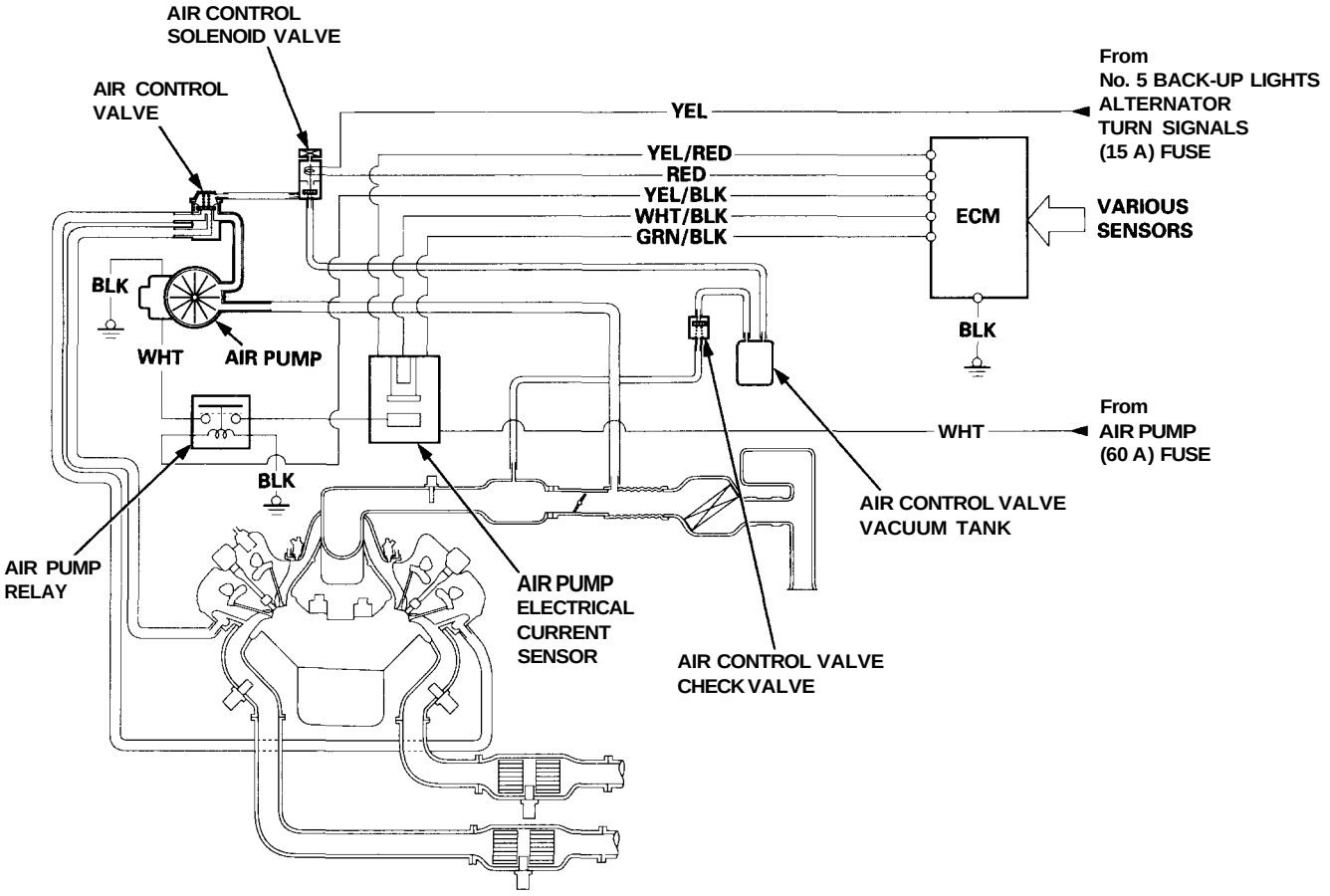
Pulsed Secondary Air Injection System Description

The air pump system is designed to advance the activation of the catalyst and to reduce the hydrocarbons (HC), carbon monoxide (CO), and oxides of nitrogen (NOx) in the exhaust gas.

The system operates after the engine starts under the following conditions:

- The engine coolant temperature is between 0°C and 70°C (32°F and 158°F).
- The difference in engine coolant temperature is more than 20°C (36°F) between the time when the engine is started and when the engine is stopped in the previous driving cycle.



When the engine is started, the air pump runs and sends fresh air to the air control valve. The air control valve allows the fresh air to flow to the exhaust ports when its diaphragm is pulled by engine vacuum. It gets engine vacuum from the air control solenoid, which is activated by the ECM. Once the fresh air flows into the exhaust ports near the exhaust valves, it reacts with the exhaust gases, raising exhaust gas temperatures. This promotes faster warm-up of the catalytic converter.

The system operates for a maximum of 60 seconds, but the running time shortens in relation to the engine coolant temperature and the intake air temperature. When the system is not operating, the air control solenoid and the air control valve are closed to prevent exhaust gases from entering the system.

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