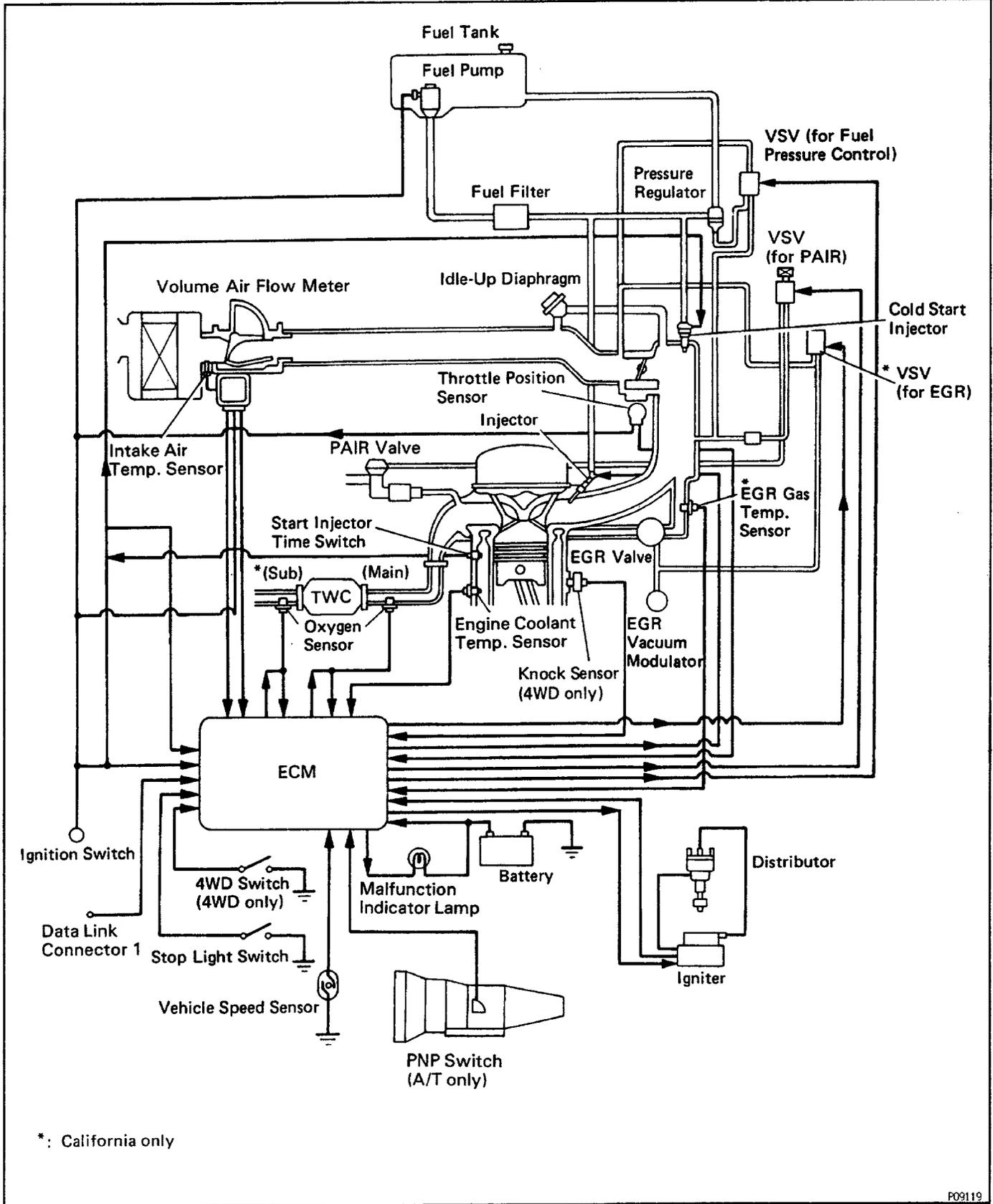


MFI SYSTEM

DESCRIPTION

EG1X9-01



*: California only

The MFI system is composed of three basic subsystems: Fuel, Air Induction and Electronic Control Systems.

FUEL SYSTEM

An electric fuel pump supplies sufficient fuel, under a constant pressure, to the MFI injectors. In accordance with signals from the ECM, these injectors inject the most appropriate quantity of fuel for the engine condition into the intake manifold.

Each injector injects, at the same time, one half of the fuel required for ideal combustion with each engine revolution.

AIR INDUCTION SYSTEM

The air induction system provides just the right amount of air for the engine operating condition.

ELECTRONIC CONTROL SYSTEM

The 22R-E engine is equipped with a Toyota Computer Controlled System (TCCS) which centrally controls the MFI, ESA, A/T (4WD), diagnosis systems, etc. by means of an Engine Control Module (ECM, formerly the MFI computer) employing a microcomputer.

By means of the ECM, the TCCS controls the following functions:

1. Multiport Fuel Injection (MFI)

The receives signals from various sensors indicating changing engine operating conditions such as: Intake air volume

Intake air temperature

Coolant temperature

Engine rpm

Acceleration/deceleration

Exhaust oxygen content etc.

These signals are utilized by the ECM to determine the injection duration necessary for an optimum air-fuel ratio.

2. Electronic Spark Advance (ESA)

The ECM is programmed with data for optimum ignition timing under all operating conditions various engine functions (RPM, intake air volume, coolant temperature etc.), the microcomputer (ECM) triggers the spark at precisely the right instant. .

3. Diagnosis Function

When the ECM detects malfunction or abnormalities in the sensor network, it lights the Mal-function Indicator Lamp in the combination meter. At the same time, the trouble is identified and a diagnostic trouble code is recorded by the ECM. The diagnostic trouble code can be read by the number of blinks of the malfunction Indicator lamp when terminals TE1 and E1 are connected. The diagnostic trouble codes are explained on pages [EG1-114](#),115.

4. Fail-Safe Function

In the event of a sensor malfunction, a backup circuit will take over to provide minimal drivability, and the Malfunction Indicator Lamp will light up.