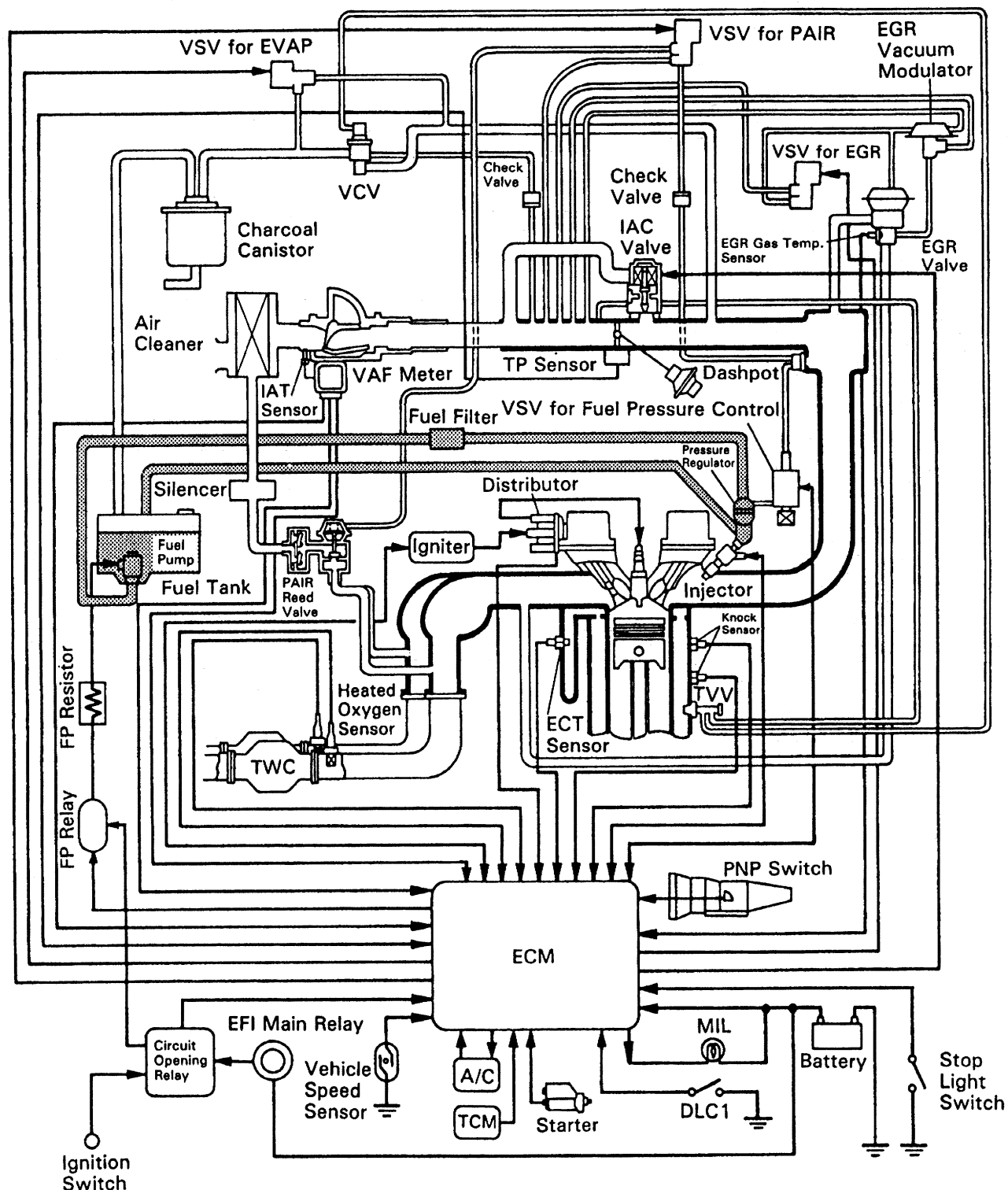


SFI SYSTEM

DESCRIPTION



The SFI (Sequential Multiport Fuel Injection) system is composed of three basic sub-systems: Fuel, Air Induction and Electronic Control Systems.

FUEL SYSTEM

Fuel is supplied under constant pressure to the SFI injectors by an electric fuel pump. The injectors inject a metered quantity of fuel into the intake port in accordance with signals from the ECM (Engine Control Module).

AIR INDUCTION SYSTEM

The air induction system provides sufficient air for engine operation.

ELECTRONIC CONTROL SYSTEM

The 1 FZ-FE engine is equipped with a TOYOTA Computer Controlled System (TCCS) which centrally controls the SFI, ESA, IAC diagnosis systems etc. by means of a Engine Control Module (ECM)–formerly SFI computer) employing a microcomputer.

The ECM controls the following functions are controlled:

1. Sequential Multiport Fuel Injection (SFI)

The ECM receives signals from various sensors indicating changing engine operation conditions such as:

Intake air volume

Intake air temperature (IAT)

Engine coolant temperature (ECT)

Engine speed (RPM)

Acceleration / deceleration

Exhaust oxygen content etc.

The 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.

Using data provided by sensors which monitor various engine functions (engine speed (RPM), engine coolant temperature (ECT), etc.), the microcomputer (ECM) triggers the spark at precisely the right instant.

3. Idle Air Control (IAC)

The ECM is programmed with target idling speed values to respond to different engine conditions (engine coolant temperature (ECT), air conditioning (A/C) ON/OFF, etc.). Sensors transmit signals to the ECM which controls the flow of air through the bypass of the throttle valve and adjust idle speed to the target value.

4. Diagnosis

The ECM detects any malfunctions and abnormalities in the sensor network and lights a malfunction indicator lamp (MIL) in the combination meter. At the same time, trouble is identified and a diagnostic trouble code (DTC) is recorded by the ECM. The diagnostic trouble code can be read by the number of blinks of the malfunction indicator lamp (MIL) when terminals TE1 and E1 are connected. The diagnostic trouble codes are referred to in a later page.

(See Diagnostic Trouble Code Chart in [EG-223](#))

5. Fail-Safe Function

In the event of the sensor malfunction, a back-up circuit will take over to provide minimal drivability, and the malfunction indicator lamp will illuminate.

SYSTEM CIRCUIT

EQ0C7-05

