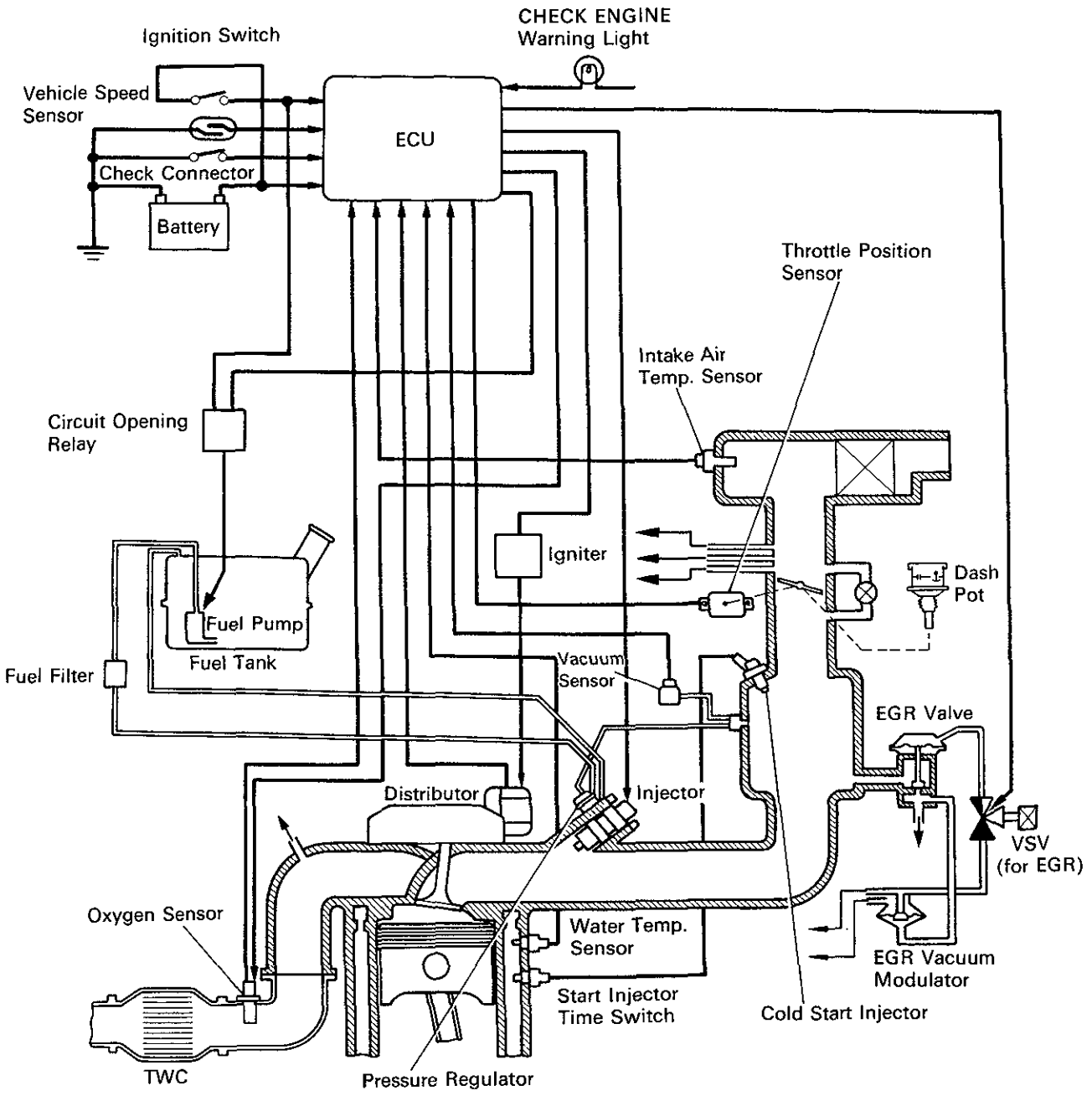
SYSTEM DESCRIPTION



The EFI 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 EFI injectors. These injectors inject a metered quantity of fuel into the intake manifold in accordance with signals from the ECU. 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 sufficient air for engine operation.

ELECTRONIC CONTROL SYSTEM

The 2RZ-E engine is equipped with a Toyota Computer Control System (TCCS) which centrally controls the EFI, ESA diagnosis systems, etc. by means of an Electronic Control Unit (ECU – formerly EFI computer) employing a microcomputer.

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

1. Electronic Fuel Injection (EFI)

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

   Intake manifold absolute pressure
   Intake air temperature
   Coolant temperature
   Engine rpm
   Acceleration/deceleration
   Exhaust oxygen content etc.

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

2. Electronic Spark Advance (ESA)

   The ECU is programmed with data for optimum ignition timing under any and all operating conditions. Using data provided by sensors which monitor various engine functions (rpm, intake manifold absolute pressure, coolant temperature, etc.), the microcomputer (ECU) triggers the spark at precisely the right instant.

3. Diagnosis

   The ECU detects any malfunctions or abnormalties in the sensor network and lights the "CHECK ENGINE" warning light on the instrument panel. At the same time, the trouble is identified and a diagnostic code is recorded by the ECU. The diagnostic code can be read by the number of blinks of the "CHECK ENGINE" warning light when terminals TE1 and E1 are connected. There are 14 different diagnostic codes including one for "normal operation."

4. Fail-Safe

   In the event of a sensor malfunction, a backup circuit will take over to provide minimal drivability, and the "CHECK ENGINE" warning light will light.