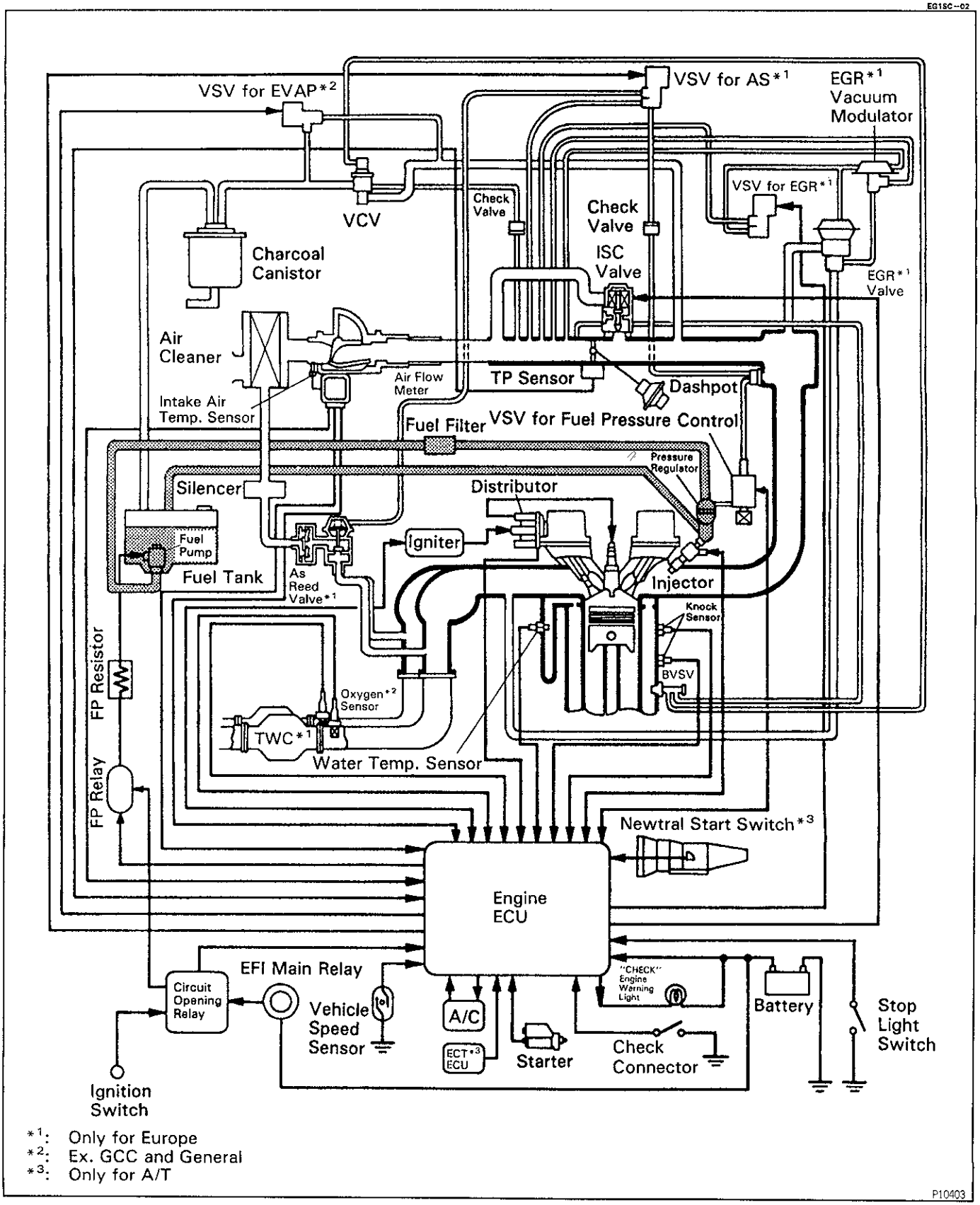
EFI SYSTEM

DESCRIPTION



The EFI (Electronic 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 EFI injectors by an electric fuel pump. The injectors inject a metered quantity of fuel into the intake port in accordance with signals from the ECU (Electronic Control Unit).

AIR INDUCTION SYSTEM

The air induction system provides sufficient air for engine operation.

ELECTRONIC CONTROL SYSTEM

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

The ECU controls the following functions:

1. Electronic Fuel Injection (EFI)
   The ECU receives signals from various sensors indicating changing engine operation conditions such as:
   Intake air volume
   Intake air temperature
   Water temperature
   Engine speed
   Acceleration / deceleration
   Exhaust oxygen content etc.
   The 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 (engine speed, coolant temperature, etc.), the micro computer (ECU) triggers the spark at precisely the right instant.
3. Idle Speed Control (ISC)
   The ECU is programmed with target idling speed values to respond to different engine conditions (coolant temperature, air conditioning (A/C) ON/OFF, etc.). Sensors transmit signals to the ECU which controls the flow of air through the by–pass of the throttle valve and adjust idle speed to the target value.
4. Diagnosis
   The ECU detects any malfunctions and abnormalties in the sensor network and lights a "CHECK" engine warning light on the combination meter. At the same time, 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. The diagnostic trouble codes are referred to the later page.
   (See Diagnostic Code Chrat in EG–194)
5. Fail–Safe Function
   In the event of the sensor malfunction, a back–up circuit will take over to provide minimum drivability, and the "CHECK" engine warning will illuminate.

EG0C7-07

SYSTEM CIRCUIT

