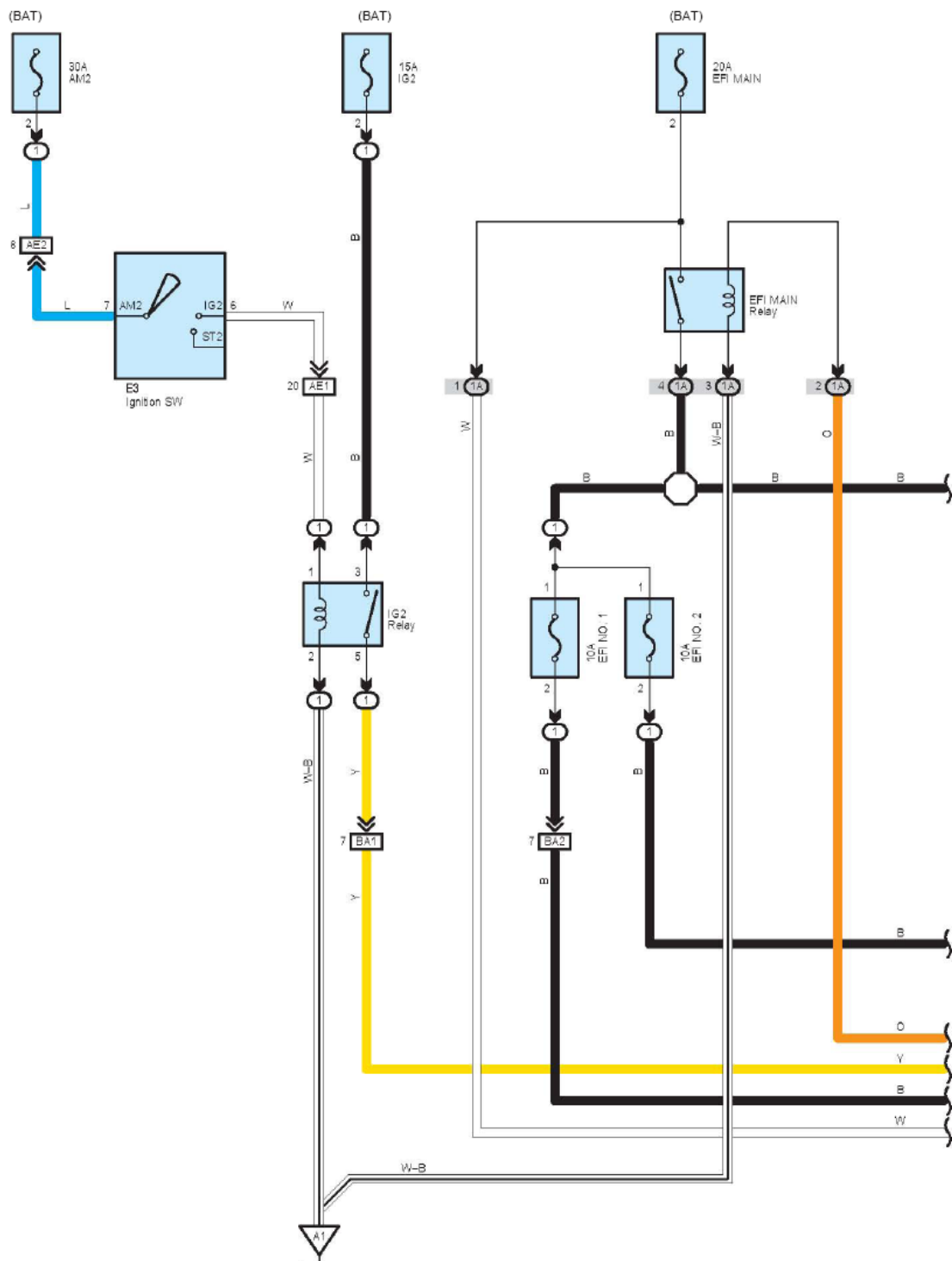
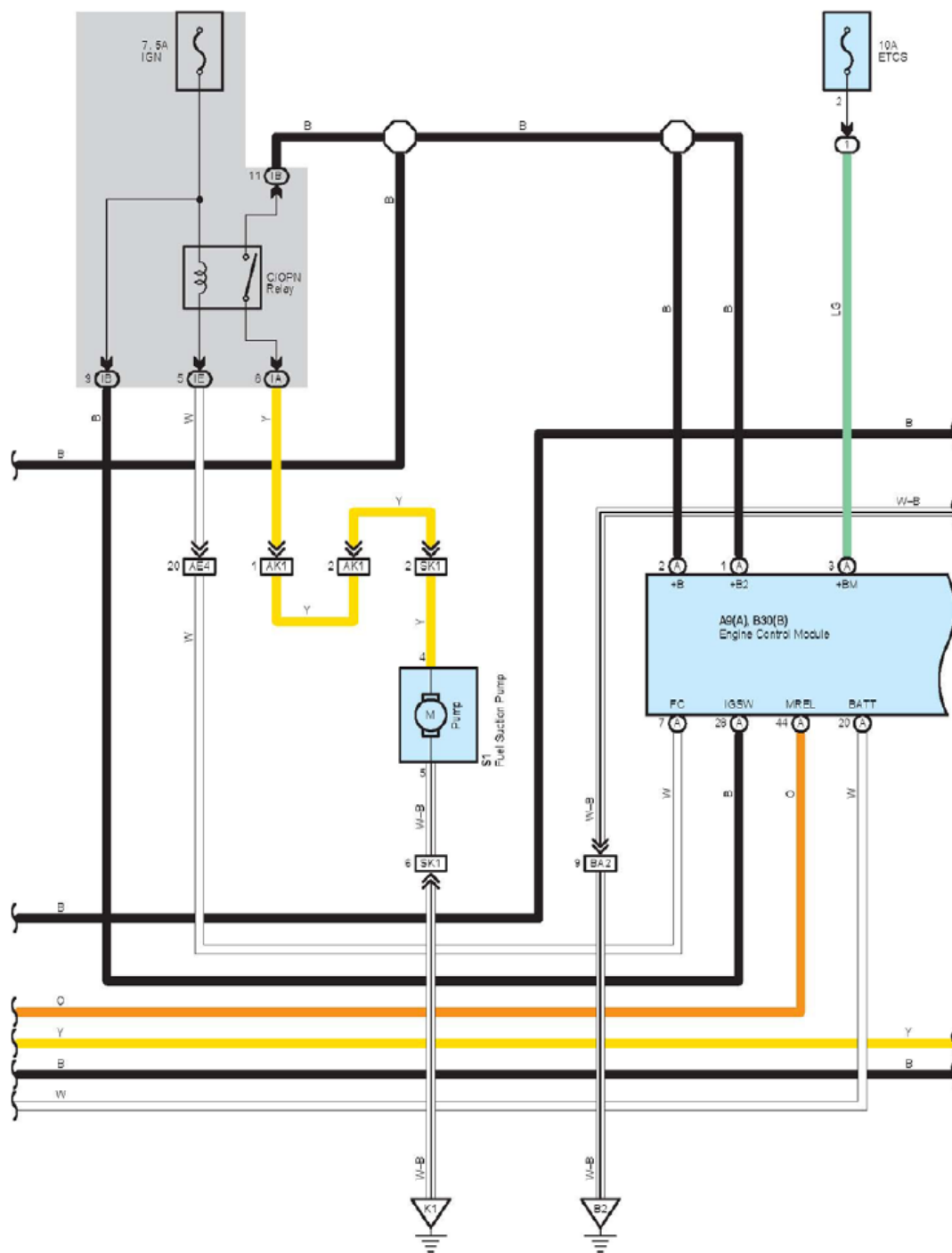
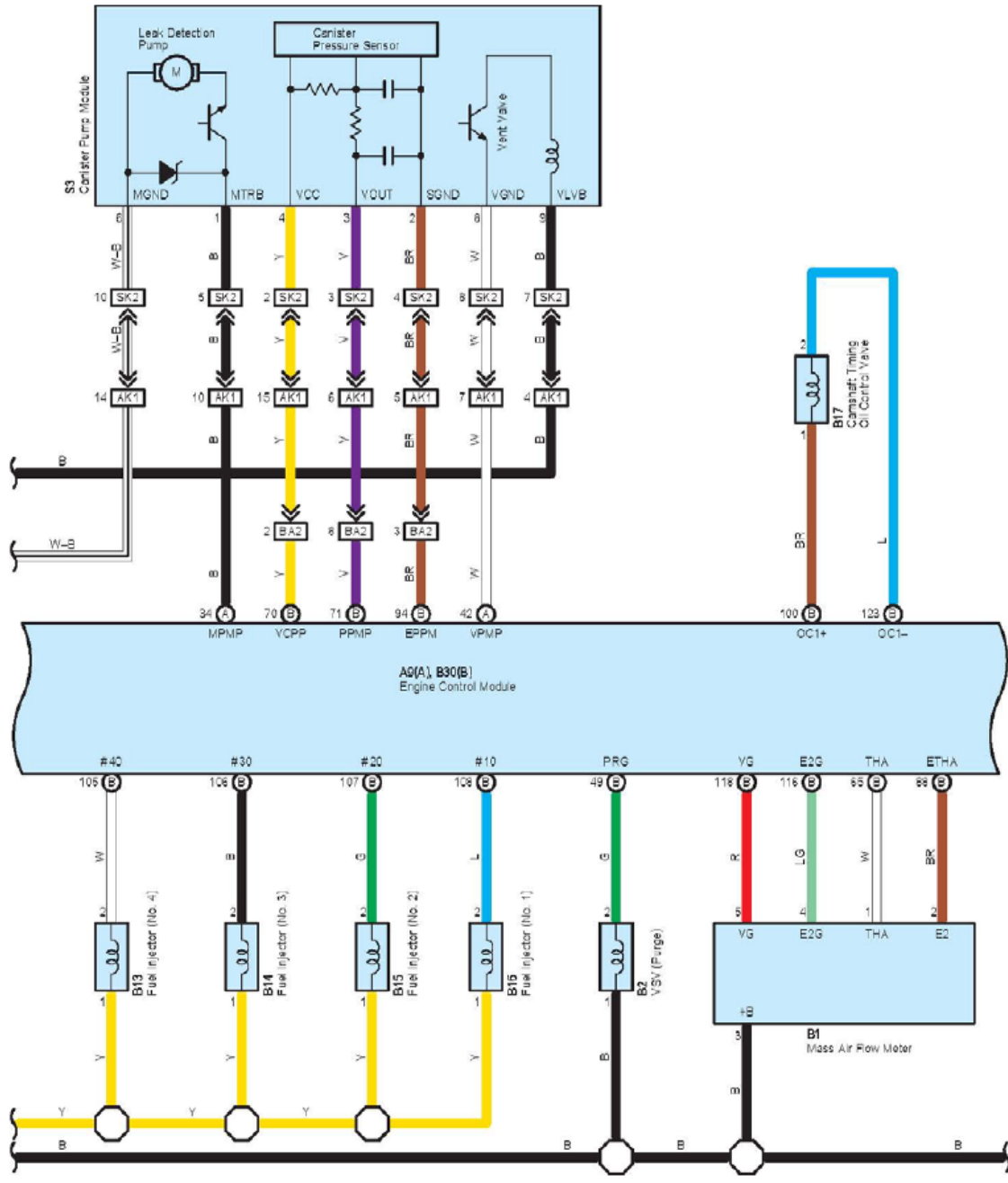
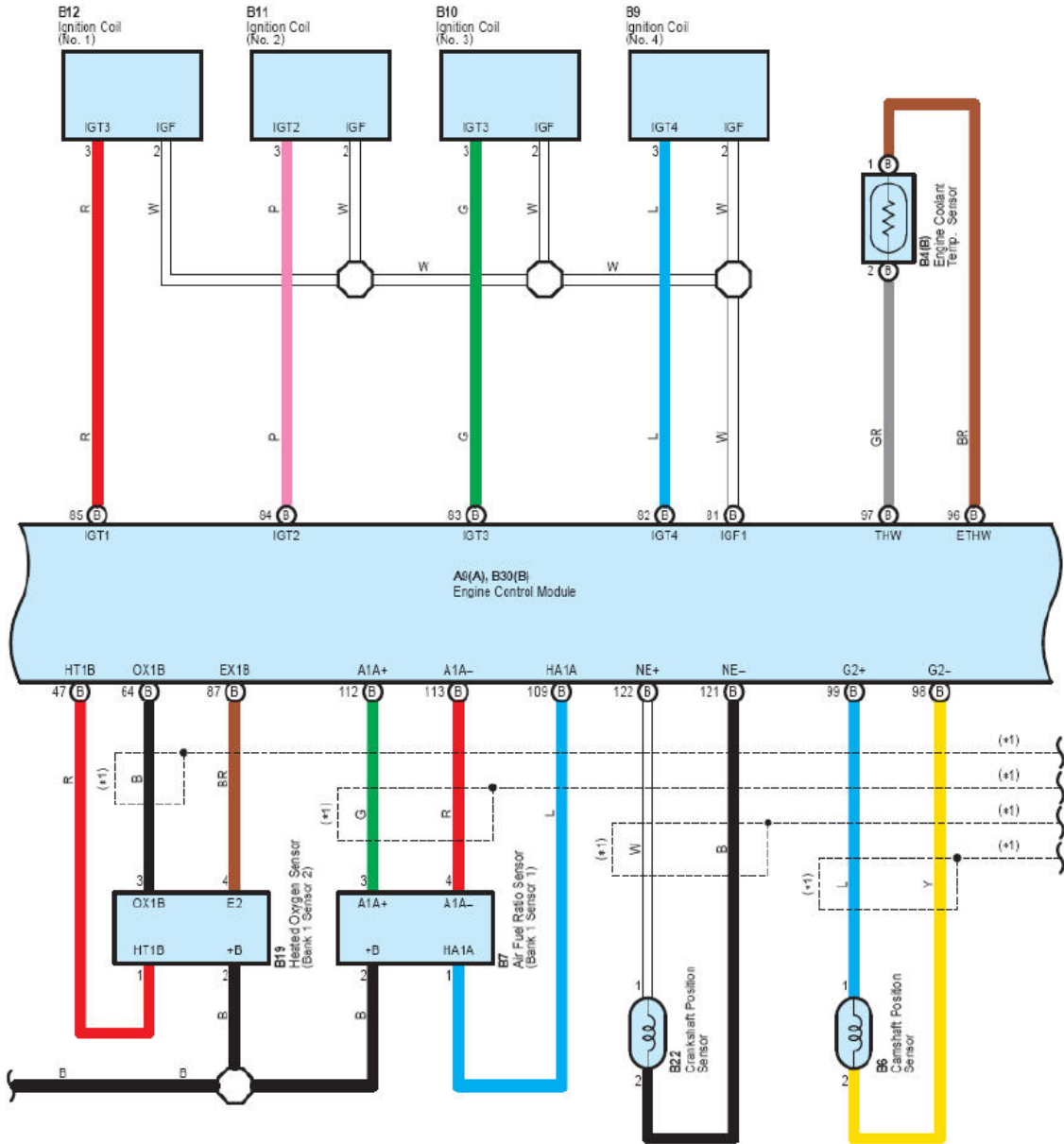


Engine Control for 2AZ-FE

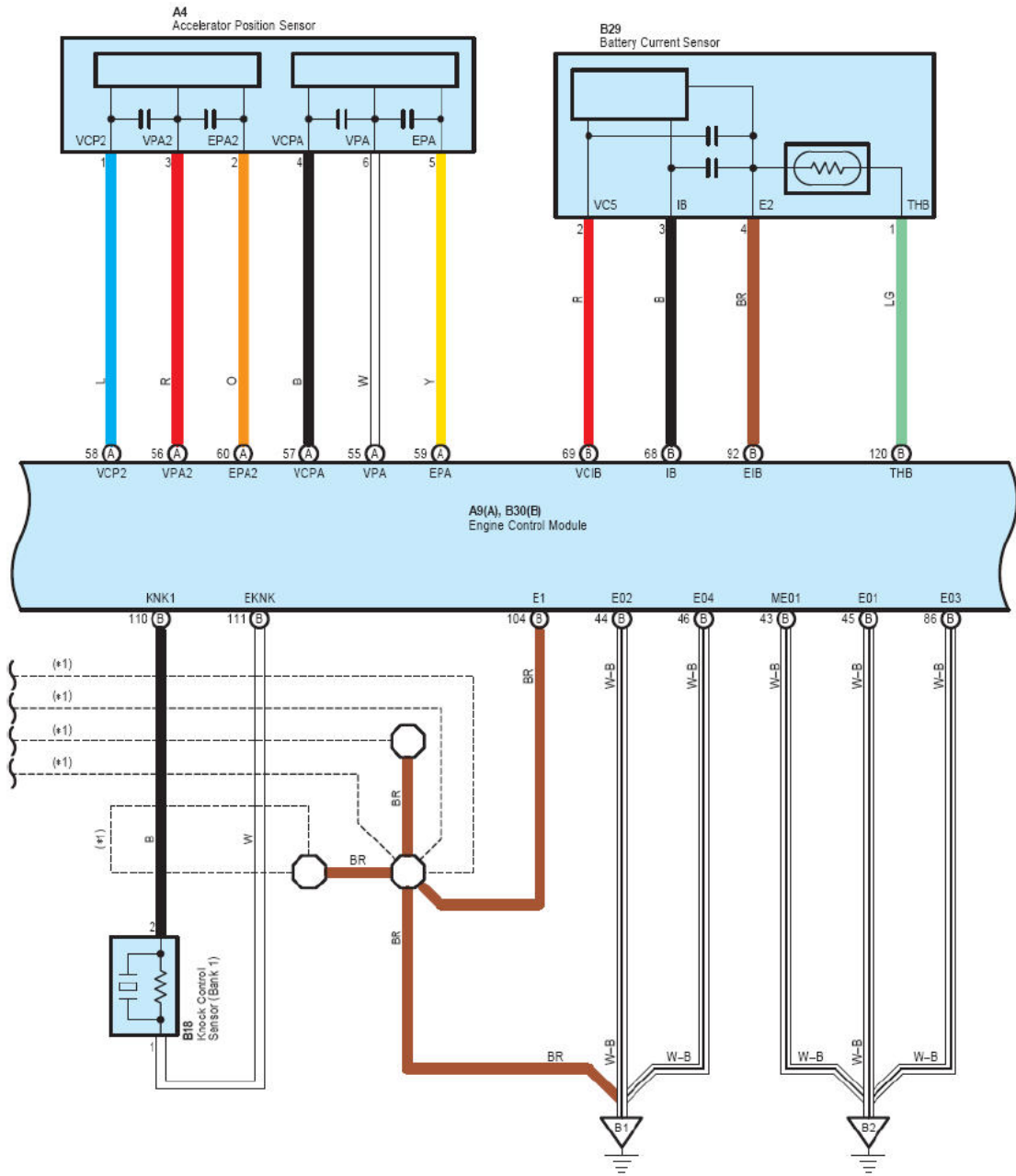


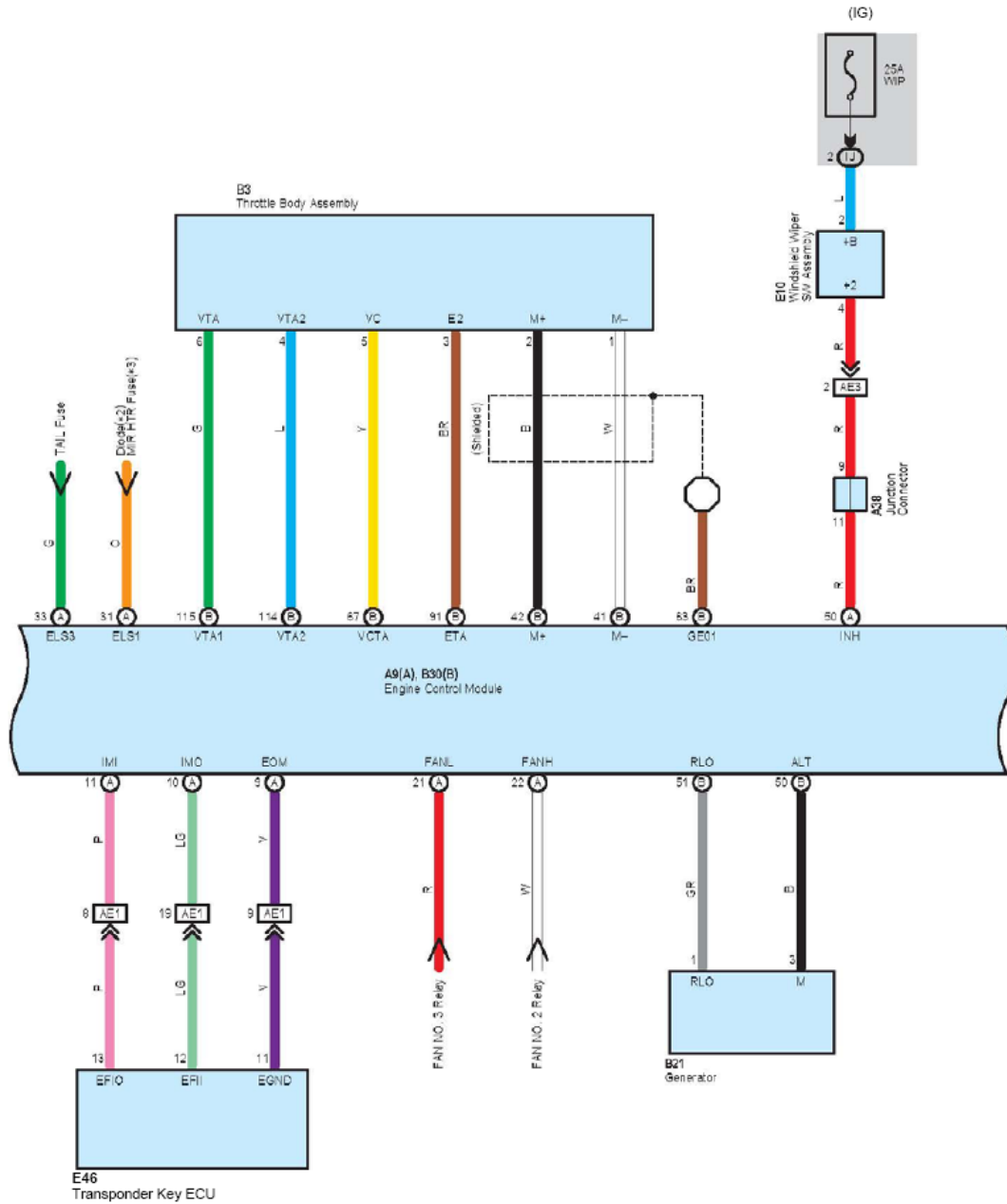


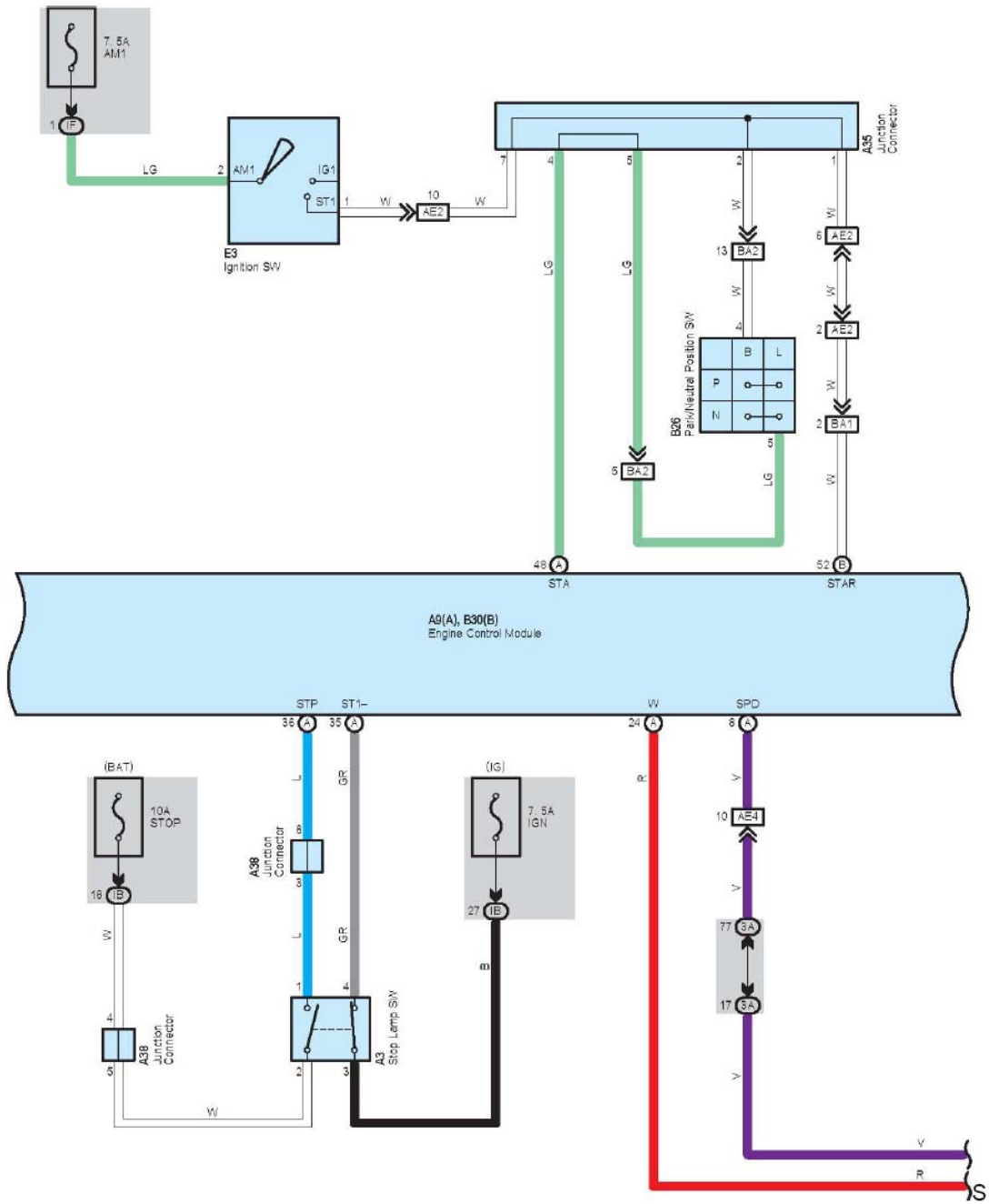


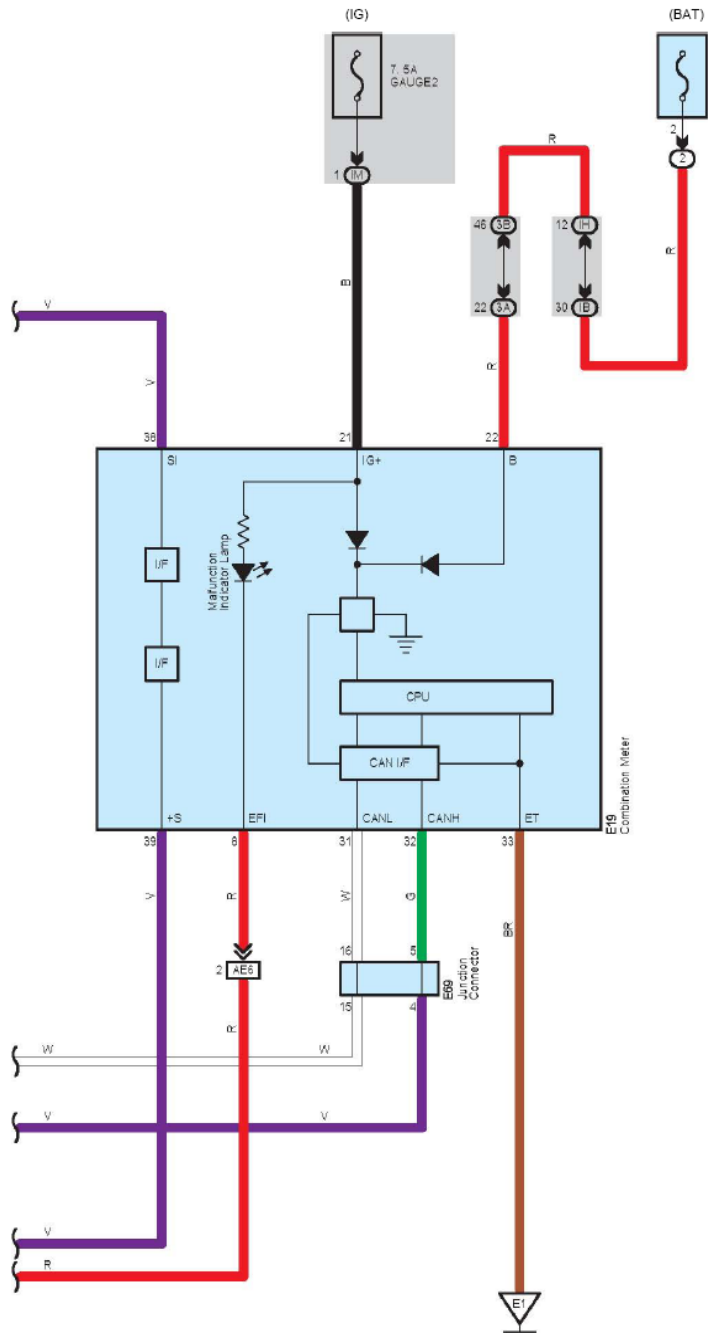


- * 1 : Shielded
- * 2 : w/ Power Outlet (115V)
- * 3 : w/o Power Outlet (115V)









System Outline

The engine control system utilizes a microcomputer and maintains overall control of the engine, transmission etc. An outline of the engine control is given here.

1. Input Signals

(1) Engine coolant temp. signal circuit

The engine coolant temp. sensor detects the engine coolant temp. and has a built-in thermistor with a resistance, which varies according to the engine coolant temp.. The engine coolant temp. which is input into TERMINAL THW of the engine control

module as a control signal.

(2) Intake air temp. signal circuit

The intake air temp. sensor is installed in the mass air flow meter and detects the intake air temp. which is input as a control signal to TERMINAL THA of the engine control module.

(3) Vehicle speed signal circuit

The vehicle speed signal is input from the speed sensor to skid control ECU with actuator, and are sent to the engine control module through communication control.

(4) RPM signal circuit

Camshaft position and crankshaft position are detected by the camshaft position sensor and crankshaft position sensor. Camshaft position is input as a control signal to TERMINAL G2+ of the engine control module, and engine RPM is input into TERMINAL NE+.

(5) Throttle position signal circuit

The throttle position sensor detects the throttle valve opening angle as a control signal, which is input into TERMINALS VTA1 and VTA2 of the engine control module.

(6) Battery signal circuit

Voltage is constantly applied to TERMINAL BATT of the engine control module. With the ignition SW turned on, the voltage for engine control module start-up power supply is applied to TERMINALS +B and +B2 of the engine control module via the EFI MAIN relay.

The current flowing through the IGN fuse flows to TERMINAL IGSW of the engine control module.

(7) Intake air volume signal circuit

Intake air volume is detected by the mass air flow meter and the signal is input to TERMINAL VG of the engine control module as a control signal.

(8) Stop lamp SW signal circuit

The stop lamp SW is used to detect whether the vehicle is braking or not and the signal is input into TERMINAL STP of the engine control module as a control signal.

(9) Starter signal circuit

To confirm whether the engine is cranking, the voltage is applied to the starter motor during cranking is detected and the signal is input into TERMINAL STA of the engine control module as a control signal.

(10) Engine knock signal circuit

Engine knocking is detected by knock sensor and the signal is input into TERMINAL KNK1 as a control signal.

(11) Air fuel ratio signal system

The air fuel ratio is detected and input as a control signal into TERMINAL A1A+ of the engine control module.

(12) Oxygen sensor signal circuit

The oxygen density in the exhaust gases is detected and input as a control signal into TERMINAL OX1B of the engine control module. To maintain stable detection performance by the heated oxygen sensor, a heater is used for warming the sensor. The heater is also controlled by engine control module (O1B-).

2. Control System

SFI system

The SFI system monitors the engine condition through the signals input from each sensor to the engine control module. And the control signal is output to TERMINALS #10, #20, #30 and #40 of the engine control module to operate the injector (Inject the fuel). The SFI system controls the fuel injection operation by the engine control module in response to the driving conditions.

ESA system

The ESA system monitors the engine condition through the signals input to the engine control module from each sensor. The best ignition timing is decided according to this data and the memorized data in the engine control module and the control signal is output to TERMINALS IGT1, IGT2, IGT3 and IGT4. This signal controls the igniter to provide the best ignition timing for the driving conditions.

3. Diagnosis System

With the diagnosis system, when there is a malfunction in the engine control module signal system, the malfunctioning system is recorded in the memory. The malfunctioning system can be found by reading the code displayed by the malfunction indicator lamp.

4. Fail-safe System

When a malfunction has occurred in any system, if there is a possibility of engine trouble being caused by continued control based on the signals from that system, the fail-safe system either controls the system by using data (Standard values) recorded in the engine control module memory or else stops the engine.

Relay Blocks

Code	Relay Blocks (Relay Block Location)
1	Engine Room R/B No.1 (Engine Compartment Left)
2	Engine Room R/B No.2 (Engine Compartment Right)

Junction Block and Wire Harness Connector

Code	Junction Block and Wire Harness (Connector Location)
1A	Engine Room Main Wire and Engine Room J/B (Engine Compartment Left)
3A	Instrument Panel Wire and J/B No.3 (Instrument Panel Center)Instrument Panel Wire and J/B No.3 (Instrument Panel Center)
3B _	
4A	Instrument Panel Wire and J/B No.4 (Instrument Panel Center)
IA	Floor Wire and Instrument Panel J/B (Cowl Side Left)
IB	Engine Room Main Wire and Instrument Panel J/B (Cowl Side Left)
ID	Instrument Panel Wire and Instrument Panel J/B (Cowl Side Left)Instrument Panel Wire and Instrument Panel J/B (Cowl Side Left)
IE _	
IF _	
IH _	
IJ _	
IM	

Connector Joining Wire Harness and Wire Harness

Code	Joining Wire Harness and Wire Harness (Connector Location)
AE1	Engine Room Main Wire and Instrument Panel Wire (Left Side of the Instrument Panel)Engine Room Main Wire and Instrument Panel Wire (Left Side of the Instrument Panel)
AE2 _	
AE3 _	
AE4 _	
AE6 _	
AK1	Engine Room Main Wire and Floor Wire (Left Kick Panel)
BA1	Engine Wire and Engine Room Main Wire (Inside of the Engine Room R/B No.1 and Engine Room J/B No.1)Engine Wire and Engine Room Main Wire (Inside of the Engine Room R/B No.1 and Engine Room J/B No.1)
BA2 _	
SK1	Fuel Gauge Wire and Floor Wire (Under the Console Box)Fuel Gauge Wire and Floor Wire (Under the Console Box)
SK2 _	

Ground Points

Code	Ground Points Location
A1	Front Left Fender
B1	Left Side of the Cylinder HeadLeft Side of the Cylinder Head
B2 _	
E1	Left Kick Panel
K1	Left Center Pillar