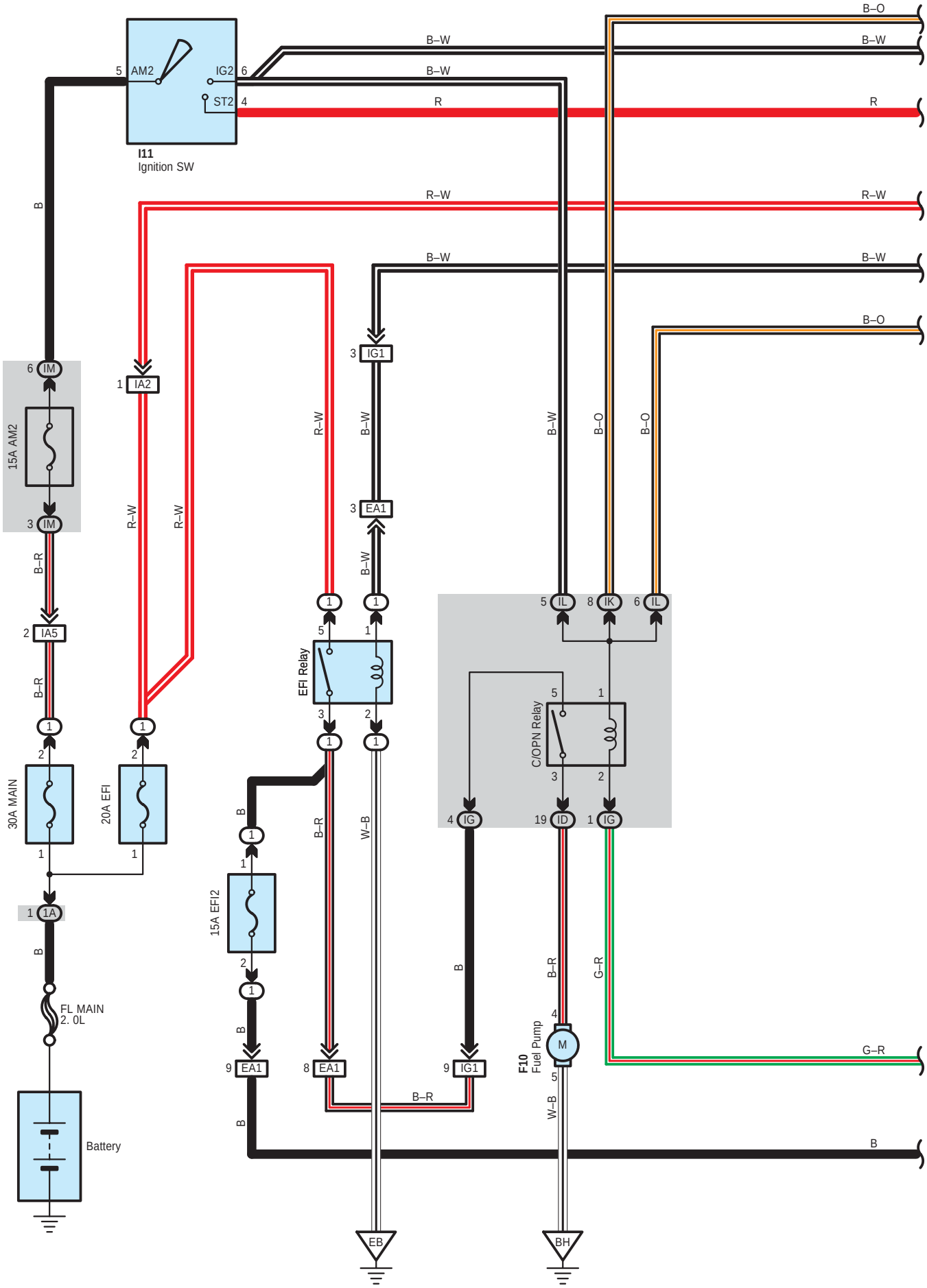
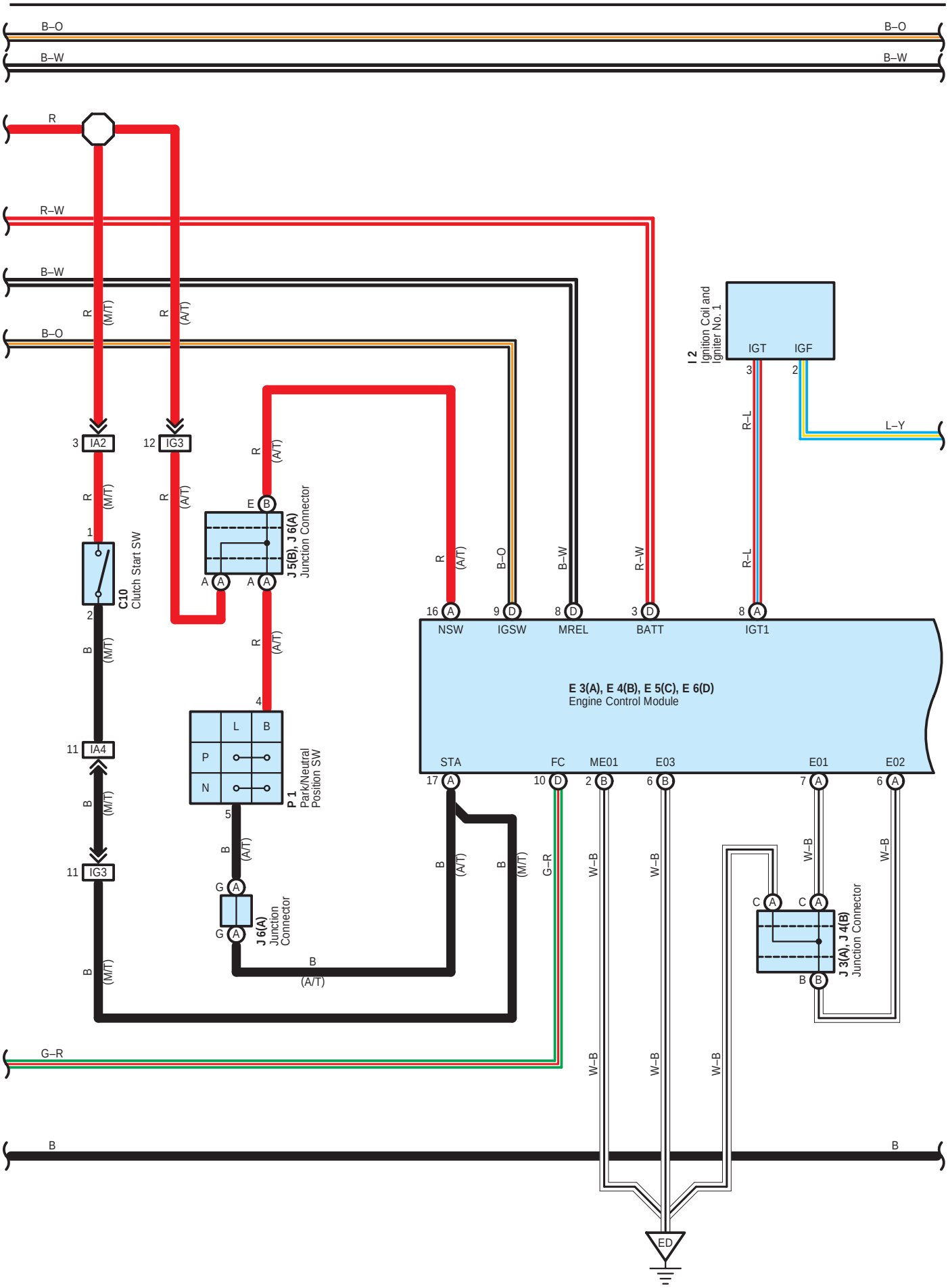
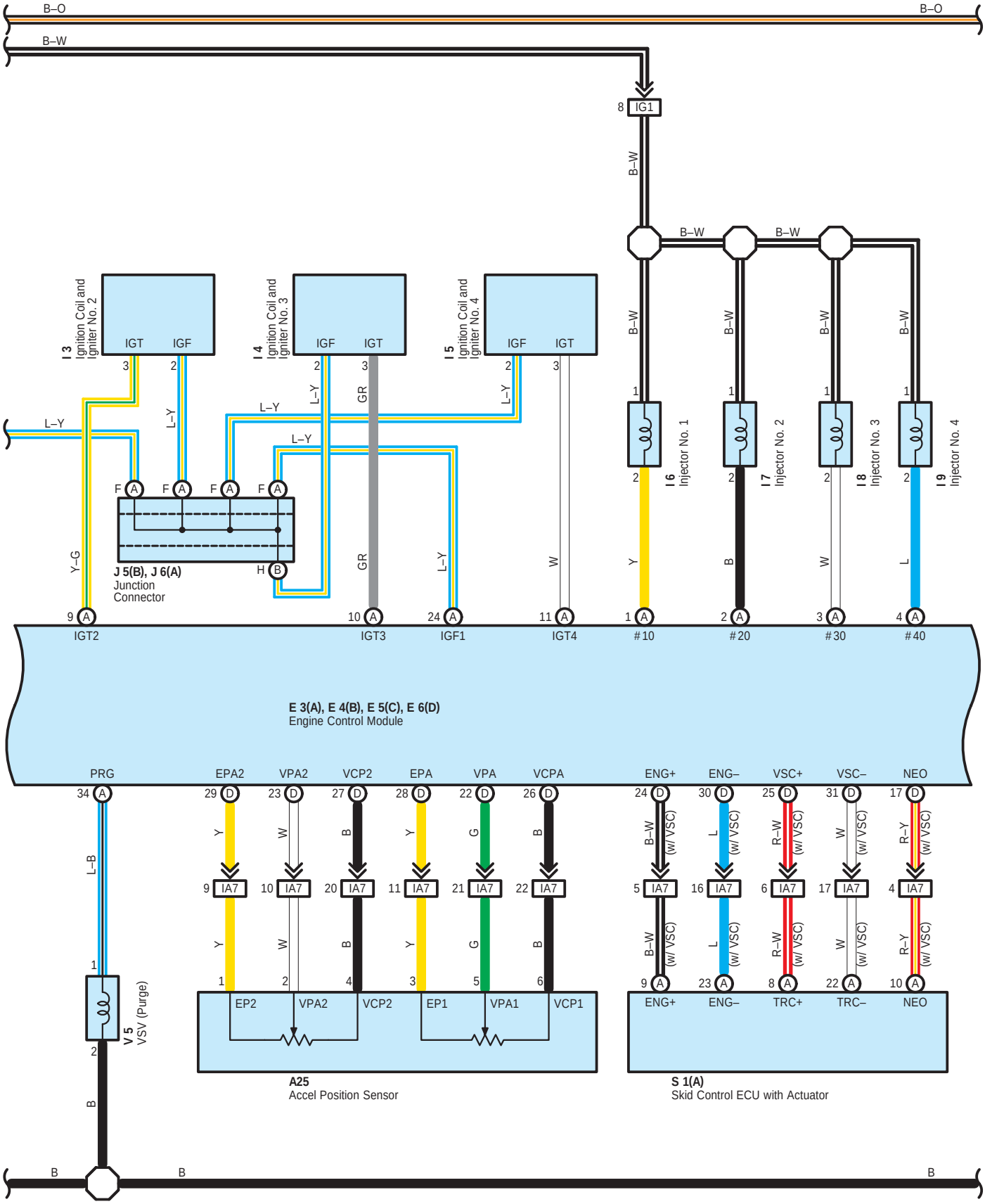
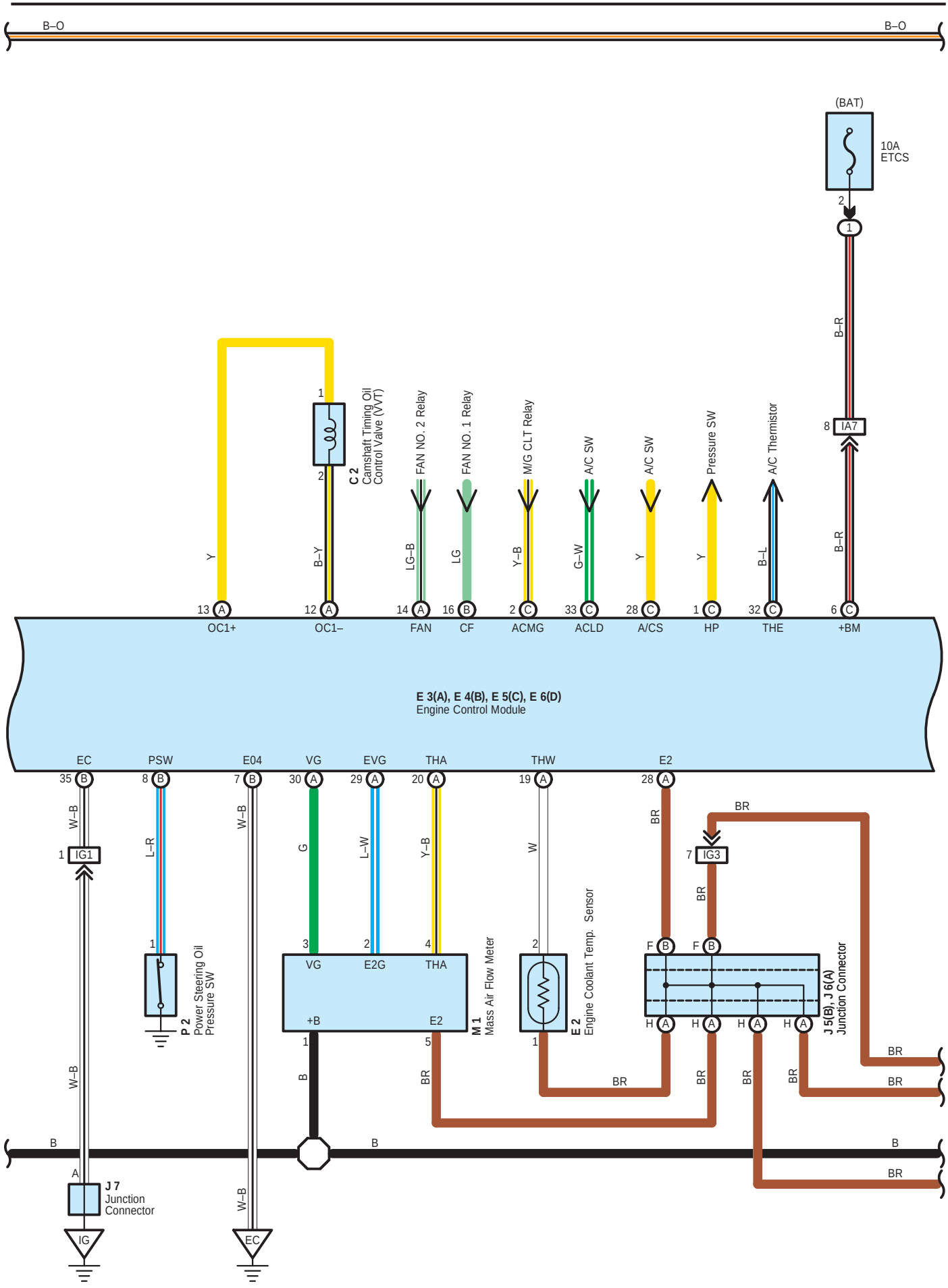
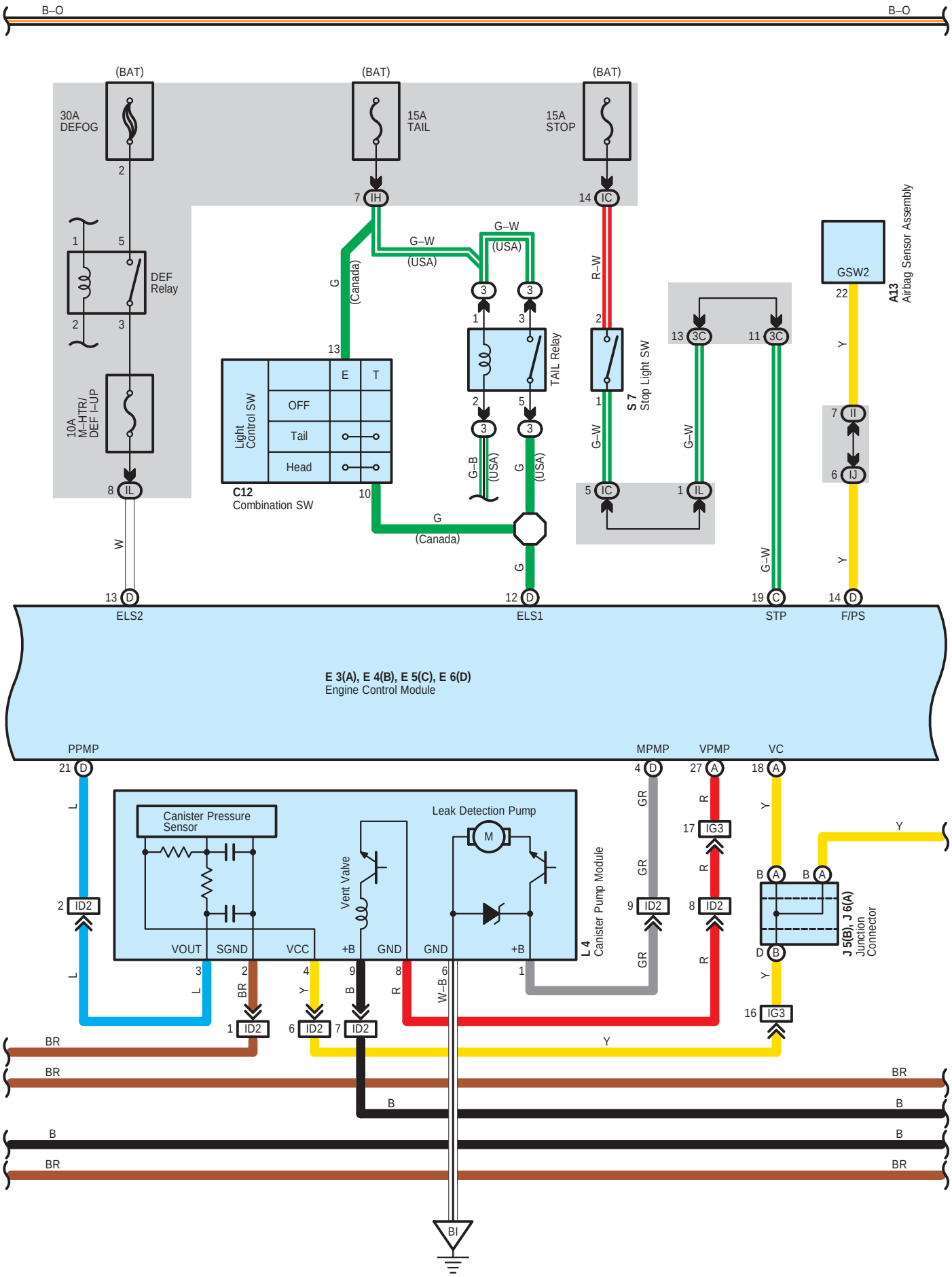
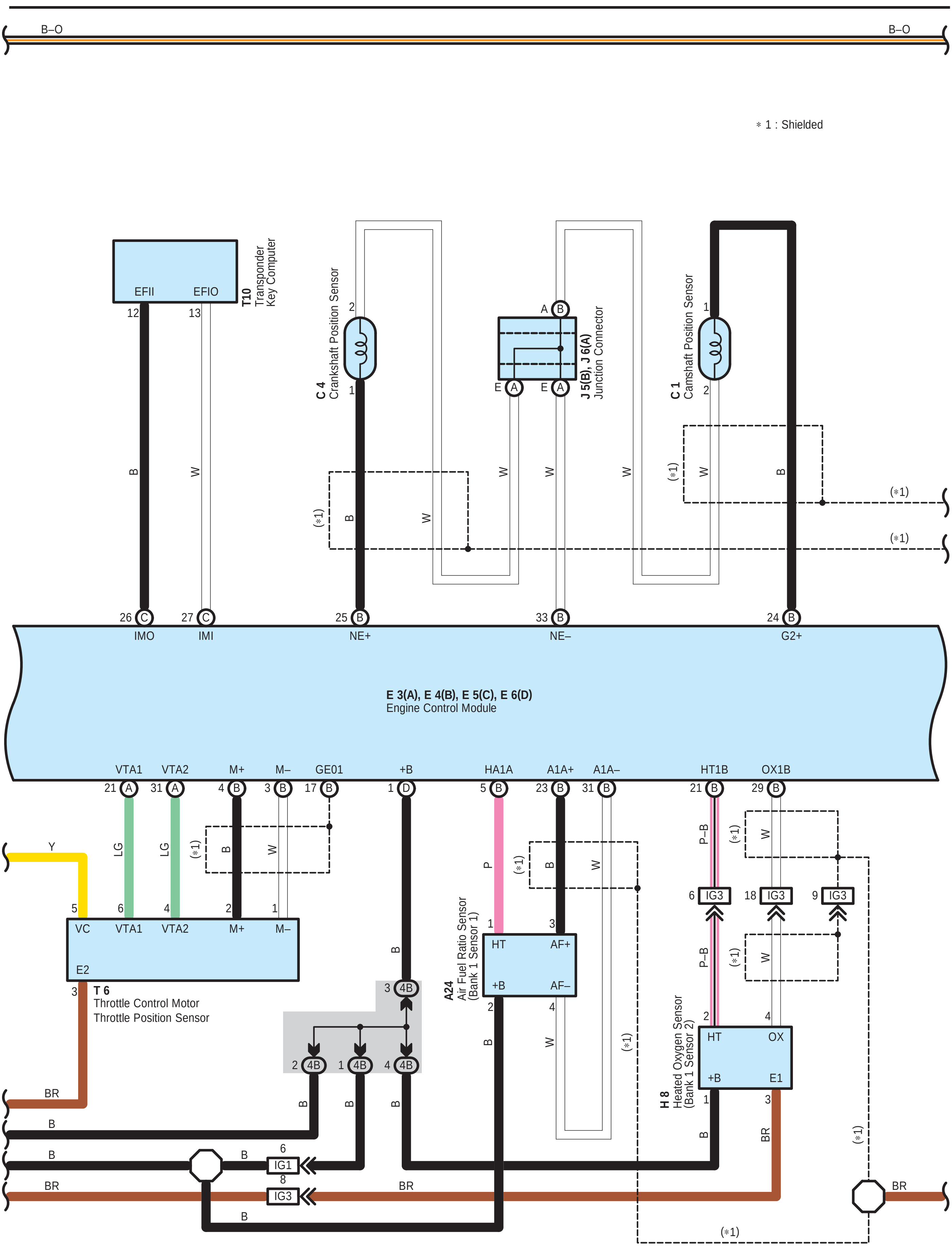

I11
Ignition SW
AM2
IG2
ST2
B–W
B–O
R
R–W
B
B–R
W–B
G–R
15A AM2
30A MAIN
20A EFI
15A EFI2
EFI Relay
C/OPN Relay
F10
Fuel Pump
FL MAIN
2. 0L
Battery
IM
IA2
IA5
IG1
EA1
IL
IK
IG
ID
1A
EB
BH


B–O
B–W
R
R–W
B–W
B–O
R (M/T)
R (A/T)
3 IA2
12 IG3
1
2
C10
Clutch Start SW
B (M/T)
11 IA4
B (M/T)
11 IG3
B (M/T)
R (A/T)
E B
A A
J 5(B), J 6(A)
Junction Connector
4
L B
P
N
P 1
Park/Neutral
Position SW
5
B (A/T)
G A
G A
J 6(A)
Junction
Connector
B
(A/T)
I 2
Ignition Coil and
Igniter No. 1
IGT IGF
3 2
R–L
L–Y
R–L
16 A NSW
9 D IGSW
8 D MREL
3 D BATT
8 A IGT1
E 3(A), E 4(B), E 5(C), E 6(D)
Engine Control Module
STA FC ME01 E03 E01 E02
17 A
10 D
2 B
6 B
7 A
6 A
B (A/T)
B (M/T)
G–R
W–B
W–B
W–B
W–B
W–B
C A C A
B B
J 3(A), J 4(B)
Junction Connector
G–R
B
B
ED

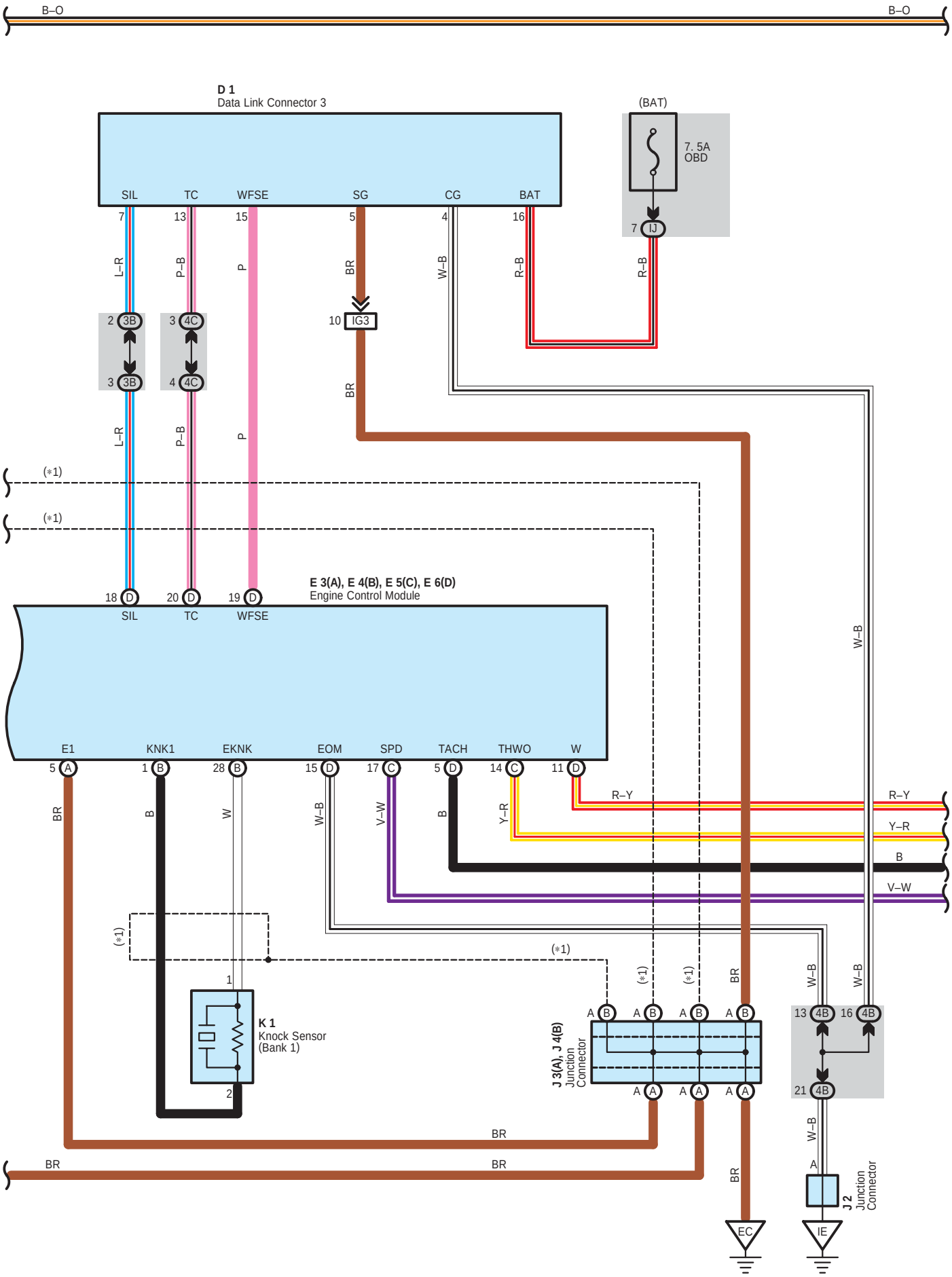

B–O
B–O
B–W
8 IG1
B–W
B–W
B–W
I 3 Ignition Coil and Igniter No. 2
IGT
IGF
I 4 Ignition Coil and Igniter No. 3
IGF
IGT
I 5 Ignition Coil and Igniter No. 4
IGF
IGT
L–Y
L–Y
L–Y
L–Y
L–Y
GR
GR
F A
H B
J 5(B), J 6(A) Junction Connector
Y–G
W
L–Y
I 6 Injector No. 1
I 7 Injector No. 2
I 8 Injector No. 3
I 9 Injector No. 4
Y
B
W
L
9 A IGT2
10 A IGT3
24 A IGF1
11 A IGT4
1 A #10
2 A #20
3 A #30
4 A #40
E 3(A), E 4(B), E 5(C), E 6(D)
Engine Control Module
PRG
EPA2
VPA2
VCP2
EPA
VPA
VCPA
ENG+
ENG–
VSC+
VSC–
NEO
34 A
29 D
23 D
27 D
28 D
22 D
26 D
24 D
30 D
25 D
31 D
17 D
L–B
Y
W
B
Y
G
B
B–W (w/ VSC)
L (w/ VSC)
R–W (w/ VSC)
W (w/ VSC)
R–Y (w/ VSC)
9 IA7
10 IA7
20 IA7
11 IA7
21 IA7
22 IA7
5 IA7
16 IA7
6 IA7
17 IA7
4 IA7
1
2
3
4
5
6
9 A
23 A
8 A
22 A
10 A
V 5 VSV (Purge)
2
B
EP2
VPA2
VCP2
EP1
VPA1
VCP1
ENG+
ENG–
TRC+
TRC–
NEO
A25
Accel Position Sensor
S 1(A)
Skid Control ECU with Actuator
B
B
B

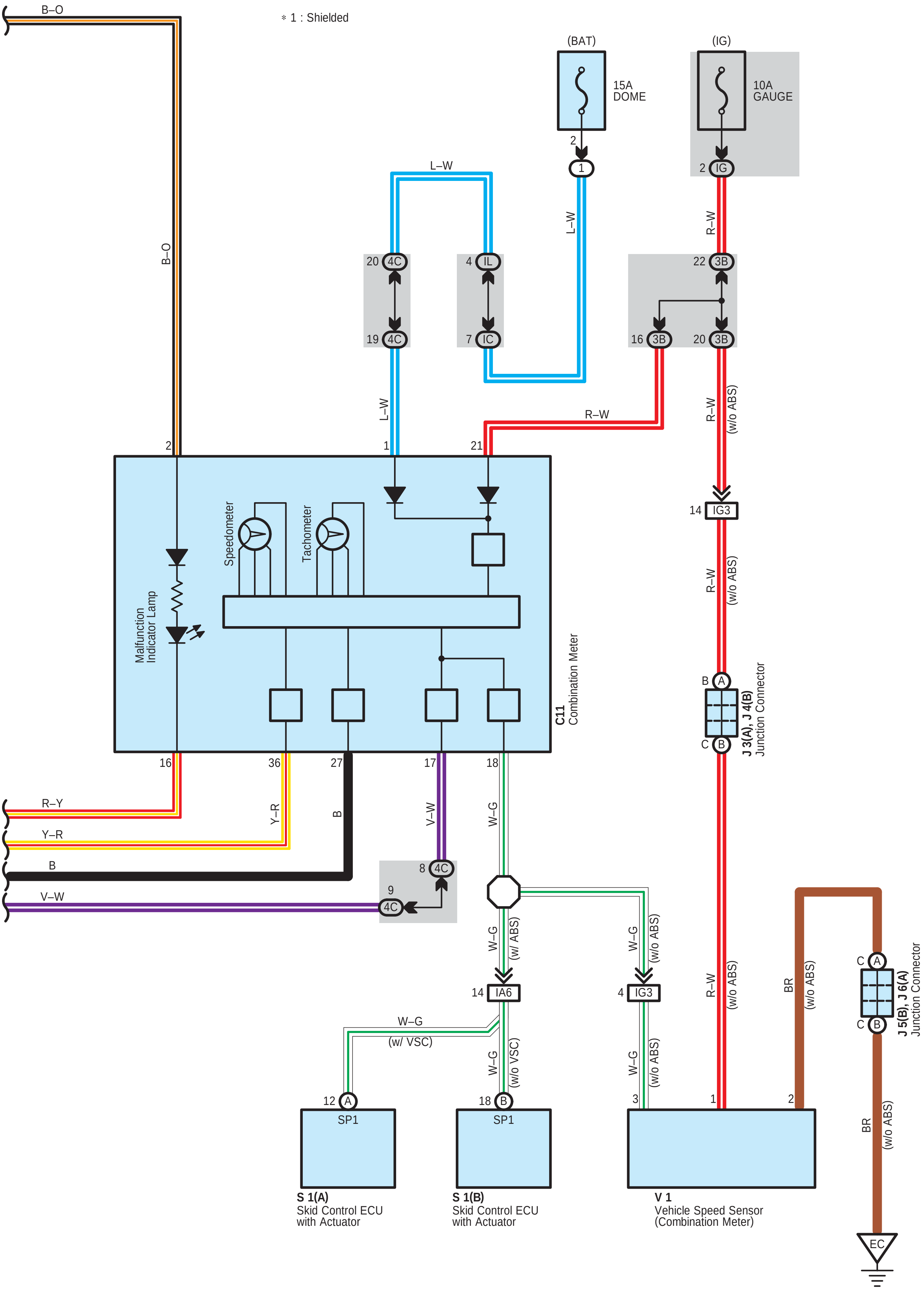

B–O
B–O
(BAT)
10A
ETCS
2
1
B–R
8
IA7
B–R
6
C
+BM
1
2
C 2
Camshaft Timing Oil
Control Valve (VVT)
Y
B–Y
13
A
OC1+
12
A
OC1–
FAN NO. 2 Relay
LG–B
14
A
FAN
FAN NO. 1 Relay
LG
16
B
CF
M/G CLT Relay
Y–B
2
C
ACMG
A/C SW
G–W
33
C
ACLD
A/C SW
Y
28
C
A/CS
Pressure SW
Y
1
C
HP
A/C Thermistor
B–L
32
C
THE
E 3(A), E 4(B), E 5(C), E 6(D)
Engine Control Module
EC
PSW
E04
VG
EVG
THA
THW
E2
35
B
8
B
7
B
30
A
29
A
20
A
19
A
28
A
W–B
L–R
W–B
G
L–W
Y–B
W
BR
BR
1
IG1
7
IG3
BR
1
P 2
Power Steering Oil
Pressure SW
3
VG
2
E2G
4
THA
M 1
Mass Air Flow Meter
+B
E2
2
E 2
Engine Coolant Temp. Sensor
F
B
F
B
J 5(B), J 6(A)
Junction Connector
H
A
H
A
H
A
H
A
1
B
5
BR
1
BR
BR
BR
BR
BR
BR
BR
B
B
B
A
J 7
Junction
Connector
IG
W–B
EC


B–O
B–O
(BAT)
30A DEFOG
15A TAIL
15A STOP
DEF Relay
10A M–HTR/ DEF I–UP
Light Control SW
OFF
Tail
Head
C12 Combination SW
TAIL Relay
S 7 Stop Light SW
GSW2
A13 Airbag Sensor Assembly
ELS2
ELS1
STP
F/PS
E 3(A), E 4(B), E 5(C), E 6(D) Engine Control Module
PPMP
MPMP
VPMP
VC
Canister Pressure Sensor
Leak Detection Pump
Vent Valve
VOUT
SGND
VCC
+B
GND
GND
+B
L 4 Canister Pump Module
J 5(B), J 6(A) Junction Connector
BI



B–O
B–O
∗ 1 : Shielded
EFII
EFIO
12
13
T10
Transponder
Key Computer
C 4
Crankshaft Position Sensor
J 5(B), J 6(A)
Junction Connector
C 1
Camshaft Position Sensor
IMO
IMI
NE+
NE–
G2+
E 3(A), E 4(B), E 5(C), E 6(D)
Engine Control Module
VTA1
VTA2
M+
M–
GE01
+B
HA1A
A1A+
A1A–
HT1B
OX1B
VC
E2
T 6
Throttle Control Motor
Throttle Position Sensor
A24
Air Fuel Ratio Sensor
(Bank 1 Sensor 1)
HT
AF+
AF–
H 8
Heated Oxygen Sensor
(Bank 1 Sensor 2)
OX
E1
IG1
IG3
4B
(∗1)


B–O
B–O
D 1
Data Link Connector 3
SIL
TC
WFSE
SG
CG
BAT
(BAT)
7. 5A
OBD
7
IJ
L–R
P–B
P
BR
W–B
R–B
2 3B
3 3B
3 4C
4 4C
10 IG3
(*1)
(*1)
E 3(A), E 4(B), E 5(C), E 6(D)
Engine Control Module
18 D
20 D
19 D
SIL
TC
WFSE
E1
KNK1
EKNK
EOM
SPD
TACH
THWO
W
5 A
1 B
28 B
15 D
17 C
5 D
14 C
11 D
BR
B
W
W–B
V–W
Y–R
R–Y
K 1
Knock Sensor
(Bank 1)
J 3(A), J 4(B)
Junction
Connector
13 4B
16 4B
21 4B
J 2
Junction
Connector
EC
IE



B–O
＊1 : Shielded
(BAT)
15A
DOME
(IG)
10A
GAUGE
L–W
2
1
2
IG
R–W
20
4C
4
IL
22
3B
19
4C
7
IC
16
3B
20
3B
L–W
R–W
R–W
(w/o ABS)
2
1
21
Speedometer
Tachometer
Malfunction
Indicator Lamp
C11
Combination Meter
14
IG3
R–W
(w/o ABS)
B
A
C
B
J 3(A), J 4(B)
Junction Connector
16
36
27
17
18
R–Y
Y–R
B
V–W
Y–R
B
V–W
W–G
8
4C
9
4C
W–G
(w/ ABS)
W–G
(w/o ABS)
R–W
(w/o ABS)
BR
(w/o ABS)
C
A
C
B
J 5(B), J 6(A)
Junction Connector
14
IA6
4
IG3
W–G
(w/ VSC)
W–G
(w/o VSC)
W–G
(w/o ABS)
12
A
SP1
18
B
SP1
3
1
2
BR
(w/o ABS)
S 1(A)
Skid Control ECU
with Actuator
S 1(B)
Skid Control ECU
with Actuator
V 1
Vehicle Speed Sensor
(Combination Meter)
EC

System Outline

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

1. Input Signals

(1) Engine coolant temp. signal system

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. Thus the engine coolant temp. is input as a control signal to TERMINAL THW of the engine control module.

(2) Intake air temp. signal system

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) Power steering oil pressure signal system

Power steering oil pressure is detected by the power steering oil pressure SW and is input as a control signal to TERMINAL PSW of the engine control module.

(4) RPM signal system

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 signal system

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

(6) Vehicle speed signal system

The vehicle speed is detected by the ABS speed sensor and the signal is input to TERMINAL SPD of the engine control module via the comb. meter and the skid control ECU with actuator. (w/ ABS)

The vehicle speed is detected by the vehicle speed sensor installed in the transaxle and the signal is input to TERMINAL SPD of the engine control module via the comb. meter. (w/o ABS)

(7) NSW signal system (A/T)

The Park/Neutral position SW detects whether the shift position is in neutral or not, and inputs a control signal to TERMINAL NSW of the engine control module.

(8) A/C SW signal system

The operating voltage of the A/C SW is detected and is input as a control signal to TERMINAL A/CS of the engine control module.

(9) Battery signal system

Voltage is constantly applied to TERMINAL BATT of the engine control module. When the ignition SW is turned to on, voltage for engine control module operation is applied via the EFI relay to TERMINAL +B of the engine control module.

(10) Intake air volume signal system

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

(11) STA signal system

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

(12) Oxygen sensor signal system

The oxygen density in the exhaust gases is detected and is input as a control signal into TERMINAL OX1B of the engine control module. To maintain stable detection performance by the oxygen sensor, a heater is used for warming the sensor. The heater is also controlled by the engine control module (HT1B).

(13) Engine knock signal system

Engine knocking is detected by the knock sensor (Bank 1) and input as a control signal to TERMINAL KNK1 of the engine control module.

(14) Electrical load signal system

When systems which cause a high electrical load such as the rear window defogger, taillight are turned on, a signal is input to TERMINALS ELS1 and ELS2 as a control signal.

(15) Air fuel ratio signal circuit

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

2. Control System

* SFI system
  The SFI system monitors the engine conditions through the signals, which are input from each sensor to the engine control module. Based on this data and the program memorized in the engine control module, the most appropriate fuel injection timing is decided and current is output to TERMINALS #10, #20, #30 and #40 of the engine control module, operating the injectors (to inject fuel). This is the system which finely controls the fuel injection in response to the driving conditions, through the engine control module.
* ESA system
  The ESA system monitors the engine conditions using the signals, which are input to the engine control module from each sensor. Based on this data and the program memorized in the engine control module, the most appropriate ignition timing is decided and current is output to TERMINALS IGT1, IGT2, IGT3 and IGT4 of the engine control module. This output controls the ignition coil and igniter No. 1 , No. 2 , No. 3 and No. 4 to produce the most appropriate ignition timing for the driving conditions.
* Knock control system
  Knock control system controls the gate based on the engine rotation speed and detects knocking by the peak value of the knock sensor (Bank 1) output during the gate open period, and then controls it to the most suitable ignition timing in proportion to the driving condition.
* Evapoparge control system
  This system leads the vapor stuck to the canister to the serge tank in order not to agitate the air fuel by adjusting the fuel injection volume.
  The signal at this time will be output from TERMINAL PRG of the engine control module to VSV (Purge).

3. Diagnosis System

With the diagnosis system, when there is a malfunctioning in the engine control module signal system,the malfunction system is recorded in the memory. The malfunctioning system can be found by reading the display (Code) of the malfunction indicator lamp.

4. Fail–Safe System

When a malfunction occurs 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 the data (Standard values) recorded in the engine control module memory or else stops the engine.

○ : Parts Location

Code	See Page	Code	See Page	Code	See Page
A13	36	F10	38	J6 A	37
A24	34	H8	37	J7	37
A25	36	I2	35	K1	35
C1	34	I3	35	L4	39
C2	34	I4	35	M1	35
C4	34	I5	35	P1	35
C10	36	I6	35	P2	35
C11	36	I7	35	S1 A	35
C12	36	I8	35	S1 B	35
D1	36	I9	35	S7	37
E2	34	I11	37	T6	35
E3 A	36	J2	37	T10	37
E4 B	36	J3 A	37	V1	35
E5 C	36	J4 B	37	V5	35
E6 D	36	J5 B	37		

▭ : Relay Blocks

Code	See Page	Relay Blocks (Relay Block Location)
1	23	Engine Room R/B (Engine Compartment Left)
3	28	RH R/B (Right Side of the Instrument Panel Reinforcement)

: Junction Block and Wire Harness Connector

Code	See Page	Junction Block and Wire Harness (Connector Location)
IC	25	Engine Room Main Wire and Instrument Panel J/B (Lower Finish Panel)
ID	25	Floor Wire and Instrument Panel J/B (Lower Finish Panel)
IG	25	Instrument Panel Wire and Instrument Panel J/B (Lower Finish Panel)
IH		
II		
IJ		
IK	24	
IL		
IM		
1A	23	Engine Wire and Engine Room J/B (Engine Compartment Left)
3B	29	Instrument Panel Wire and RH J/B (Right Side of the Instrument Panel Reinforcement)
3C		
4B	32	Instrument Panel Wire and Center J/B (Behind the Combination Meter)
4C		

: Connector Joining Wire Harness and Wire Harness

Code	See Page	Joining Wire Harness and Wire Harness (Connector Location)
EA1	40	Engine Wire and Engine Room Main Wire (Inside of the Engine Room R/B)
IA2	42	Engine Room Main Wire and Instrument Panel Wire (Instrument Panel Reinforcement LH)
IA4		
IA5		
IA6		
IA7		
ID2	42	Instrument Panel Wire and Floor Wire (Left Kick Panel)
IG1	43	Engine Wire and Instrument Panel Wire (Blower Unit RH)
IG3		

: Ground Points

Code	See Page	Ground Points Location
EB	40	Front Left Suspension Tower
EC	40	Left Side of the Cylinder Head
ED		
IE	42	Behind Combination Meter
IG	42	Right Kick Panel
BH	44	Left Quarter Panel
BI	44	Right Quarter Panel