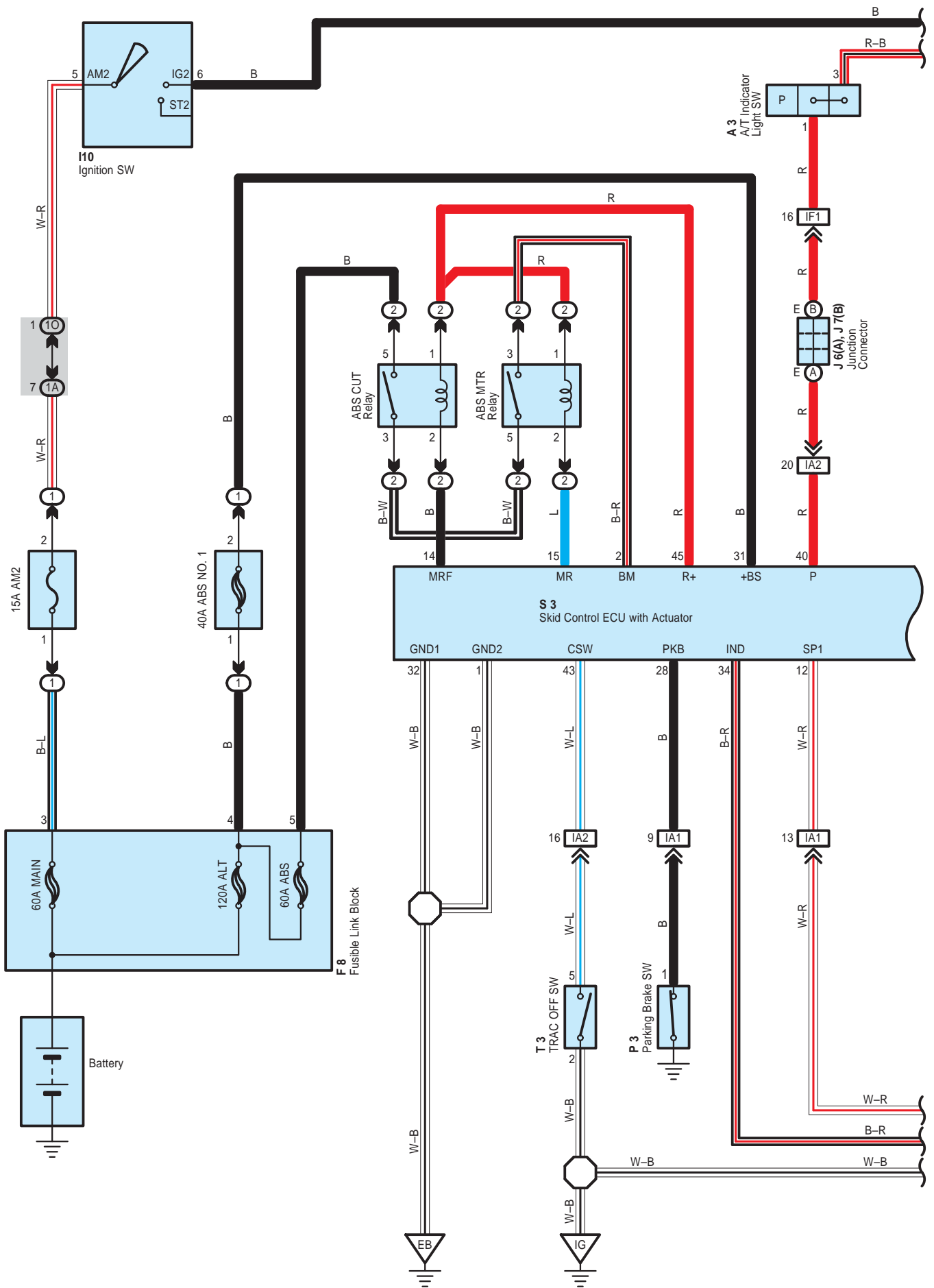
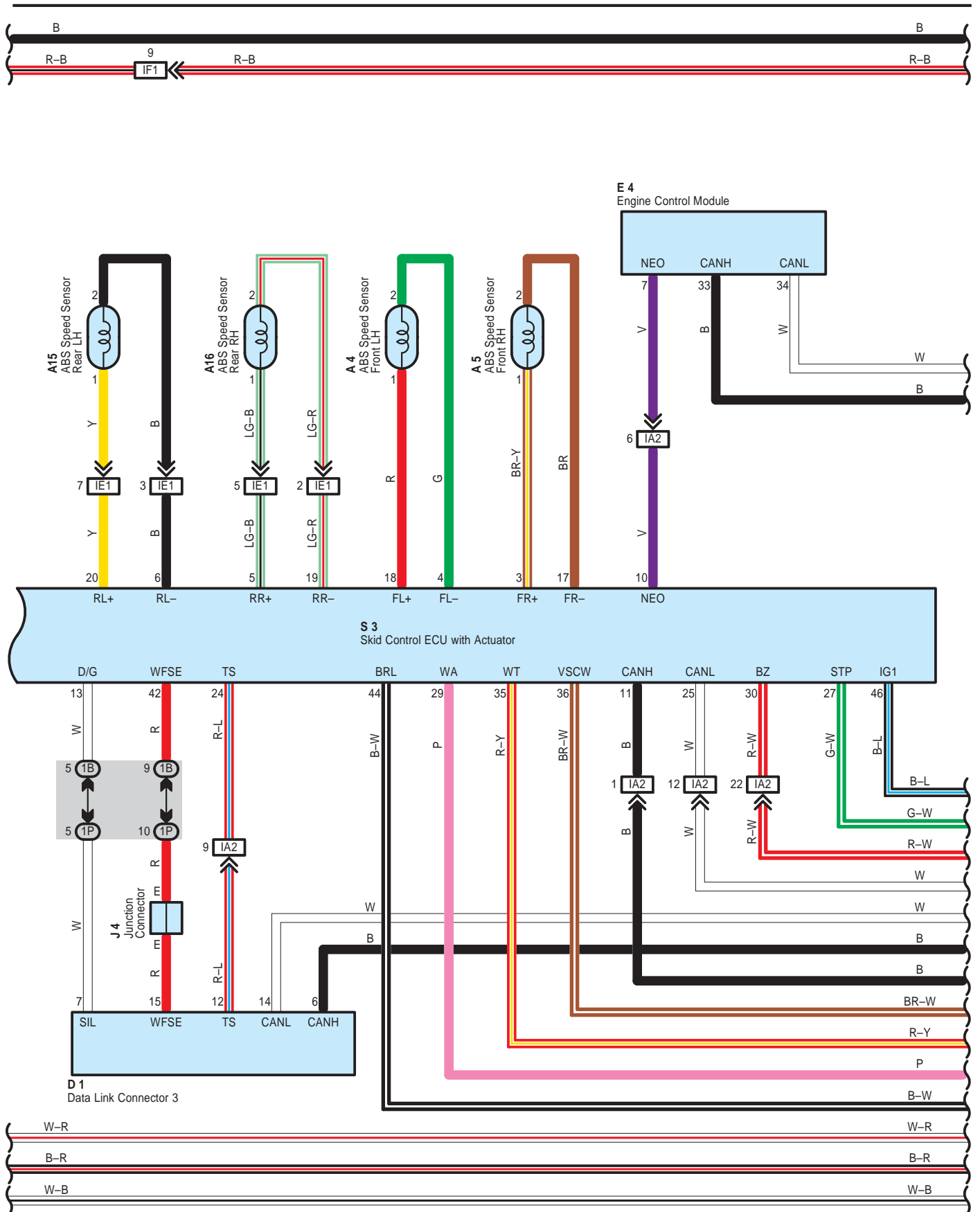
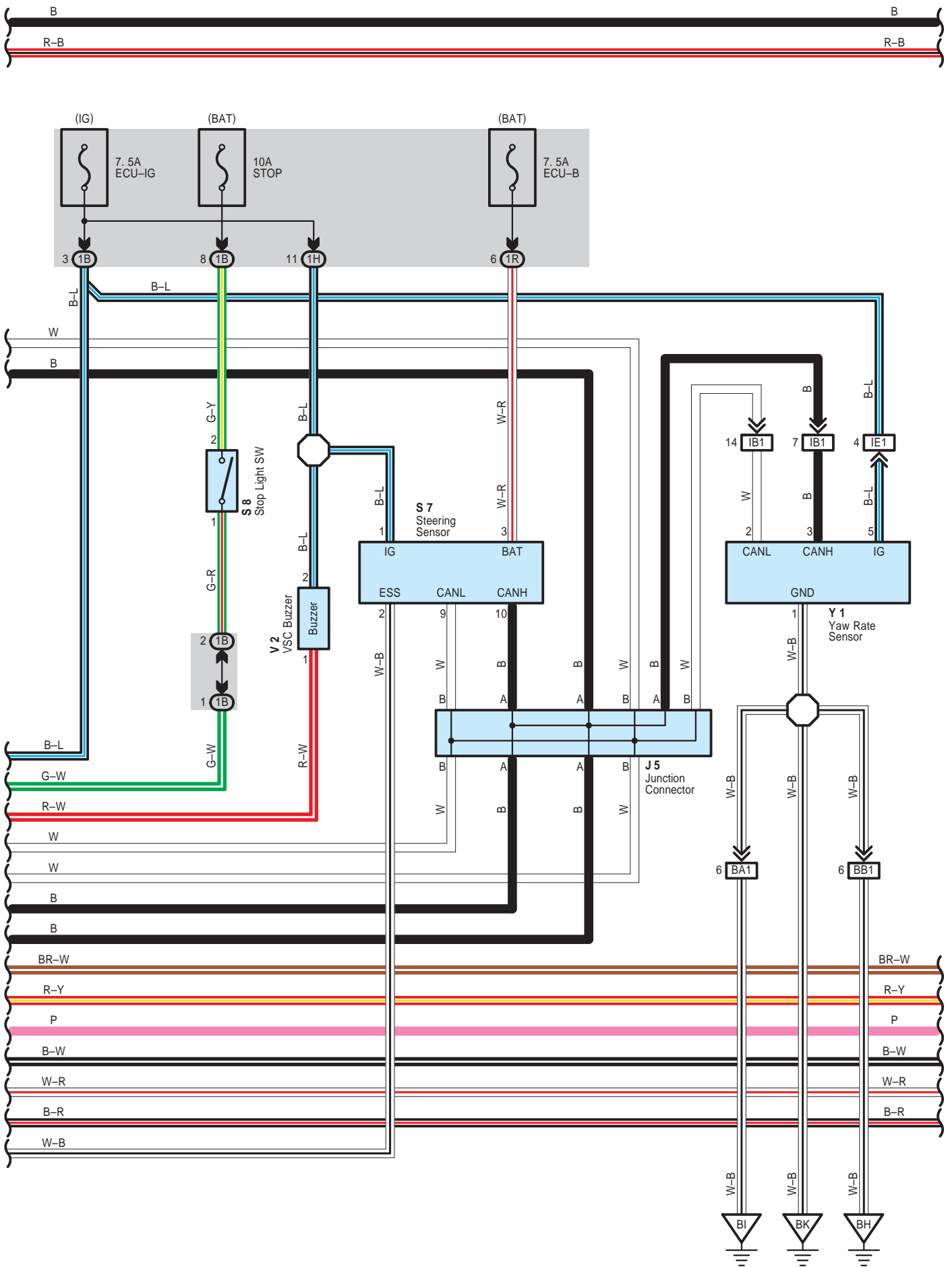


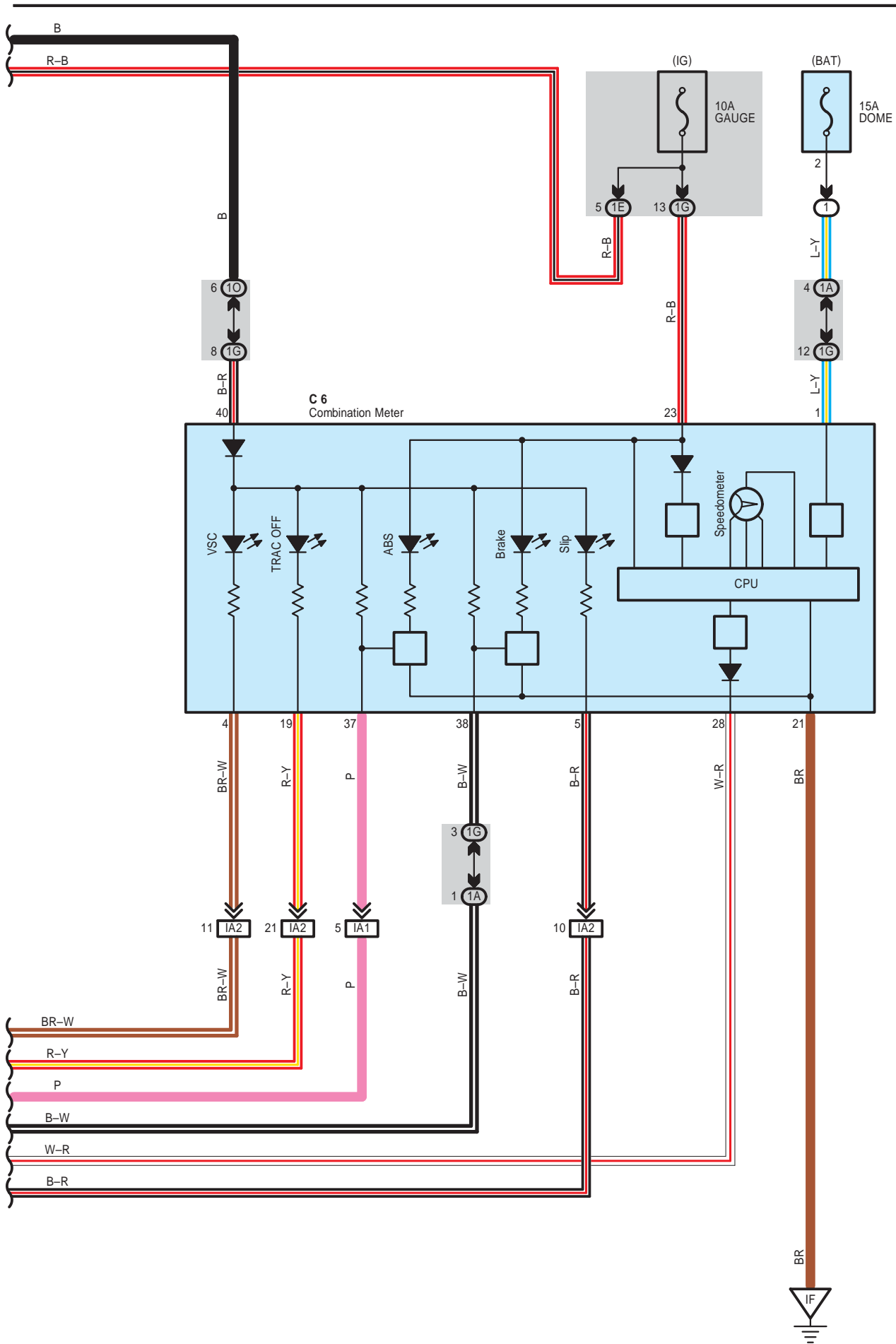
# ABS, TRAC and VSC





# ABS, TRAC and VSC





## System Outline

### 1. ABS Operation

If the brake pedal is depressed suddenly, the ABS controls the hydraulic pressure of the wheel cylinders for all the four wheels to automatically avoid wheel locking and ensure the directional and steering stability of the vehicle. If the brake pedal is depressed suddenly, the skid control ECU with actuator controls the solenoids in the actuators using the signals from the sensors to move the brake fluid to the reservoir in order to release the braking pressure applied to the wheel cylinder. If the skid control ECU with actuator detects that the fluid pressure in the wheel cylinder is insufficient, the skid control ECU with actuator controls the solenoids in the actuators to increase the braking pressure.

### 2. Traction Control Operation

The traction control system controls the engine torque, the hydraulic pressure of the driving wheel cylinders, slipping of the wheels which may occur at start or acceleration of the vehicle, to ensure an optimal driving power and vehicle stability corresponding to the road conditions.

### 3. VSC Operation

Unexpected road conditions, vehicle speed, emergency situation, and any other external factors may cause large under- or over-steering of the vehicle. If this occurs, the VSC system automatically controls the engine power and wheel brakes to reduce the under- or over-steering.

To reduce large over-steering :

If the VSC system determines that the over-steering is large, it activates the brakes for the outer turning wheels depending on the degree of the over-steering to produce the moment toward the outside of the vehicle and reduce the over-steering.

To reduce large under-steering :

If the VSC system determines that the under-steering is large, it controls the engine power and activates the rear wheel brakes to reduce the under-steering.

TRAC OFF SW

The traction control SW is used to stop the TRAC function. After the engine is started, the TRAC system is stopped (turned off) and the TRAC OFF indicator light lights up. When the TRAC OFF SW is pressed again, the TRAC system enters the stand-by mode. If the engine is stopped and restarted, the TRAC system enters the stand-by mode regardless of the traction control SW.

VSC system cannot cut off by using TRAC OFF SW.

### 4. Mutual System Control

To efficiently operate the VSC system at its optimal level, the VSC system and other control systems are mutually controlled while the VSC system is being operated.

Engine throttle control

The engine power does not interfere with the VSC brake control by controlling the opening of the throttle and reducing the engine output.

Engine control and electronically controlled transmission control

The strong braking force does not interfere with the braking force control of the VSC system by turning off the accel. and reducing changes in the driving torque at shift-down.

VSC system operation indication

The Slip indicator light flashes and the buzzer sounds intermittently to warn the driver that the current road is slippery, while the VSC system is being operated.

### 5. Fail Safe Function

If an error occurs in the skid control ECU with actuator, sensor signals, and/or actuators, the skid control ECU with actuator inhibits the brake actuator control and inputs the error signal to the engine control module. According to the error signal, the brake actuator turns off the solenoid and the engine control module rejects any electronically controlled throttle open request from the VSC system. As a result, the vehicle functions regardless of the ABS, TRAC, and VSC systems.

## ○ : Parts Location

| Code | See Page | Code | See Page | Code | See Page |
|------|----------|------|----------|------|----------|
| A3   | 28       | E4   | 30       | P3   | 31       |
| A4   | 28       | F8   | 28       | S3   | 29       |
| A5   | 28       | I10  | 30       | S7   | 31       |
| A15  | 32       | J4   | 31       | S8   | 31       |
| A16  | 32       | J5   | 31       | T3   | 31       |
| C6   | 30       | J6   | A 31     | V2   | 31       |
| D1   | 30       | J7   | B 31     | Y1   | 31       |

 : **Relay Blocks**

| Code | See Page | Relay Blocks (Relay Block Location)       |
|------|----------|---|
| 1    | 22       | Engine Room R/B (Engine Compartment Left) |
| 2    | 23       | ABS R/B (Engine Compartment Right)        |

 : **Junction Block and Wire Harness Connector**

| Code | See Page | Junction Block and Wire Harness (Connector Location)                |
|------|----------|---|
| 1A   | 24       | Engine Room Main Wire and Instrument Panel J/B (Lower Finish Panel) |
| 1B   |          |   |
| 1E   | 25       | Instrument Panel Wire and Instrument Panel J/B (Lower Finish Panel) |
| 1G   |          |   |
| 1H   |          |   |
| 1O   |          |   |
| 1P   |          |   |
| 1R   |          |   |

 : **Connector Joining Wire Harness and Wire Harness**

| Code | See Page | Joining Wire Harness and Wire Harness (Connector Location)                    |
|------|----------|---|
| IA1  | 35       | Engine Room Main Wire and Instrument Panel Wire (Behind the Reinforcement LH) |
| IA2  |          |   |
| IB1  | 35       | Floor Wire and Instrument Panel Wire (Behind the Reinforcement LH)            |
| IE1  | 35       | Engine Room Main Wire and Floor Wire (Left Side of Cowl Panel)                |
| IF1  | 35       | Engine Wire and Instrument Panel Wire (Behind the Glove Box)                  |
| BA1  | 36       | Rear Door No.1 LH Wire and Floor Wire (Center Pillar LH)                      |
| BB1  | 36       | Rear Door No.1 RH Wire and Floor Wire (Center Pillar RH)                      |

 : **Ground Points**

| Code | See Page | Ground Points Location      |
|------|----------|-----------------------------|
| EB   | 34       | Front Left Fender Apron     |
| IF   | 35       | Instrument Panel Brace LH   |
| IG   | 35       | Right Kick Panel            |
| BH   | 36       | Rear Door LH                |
| BI   | 36       | Rear Door RH                |
| BK   | 36       | Rear Quarter Panel Inner RH |