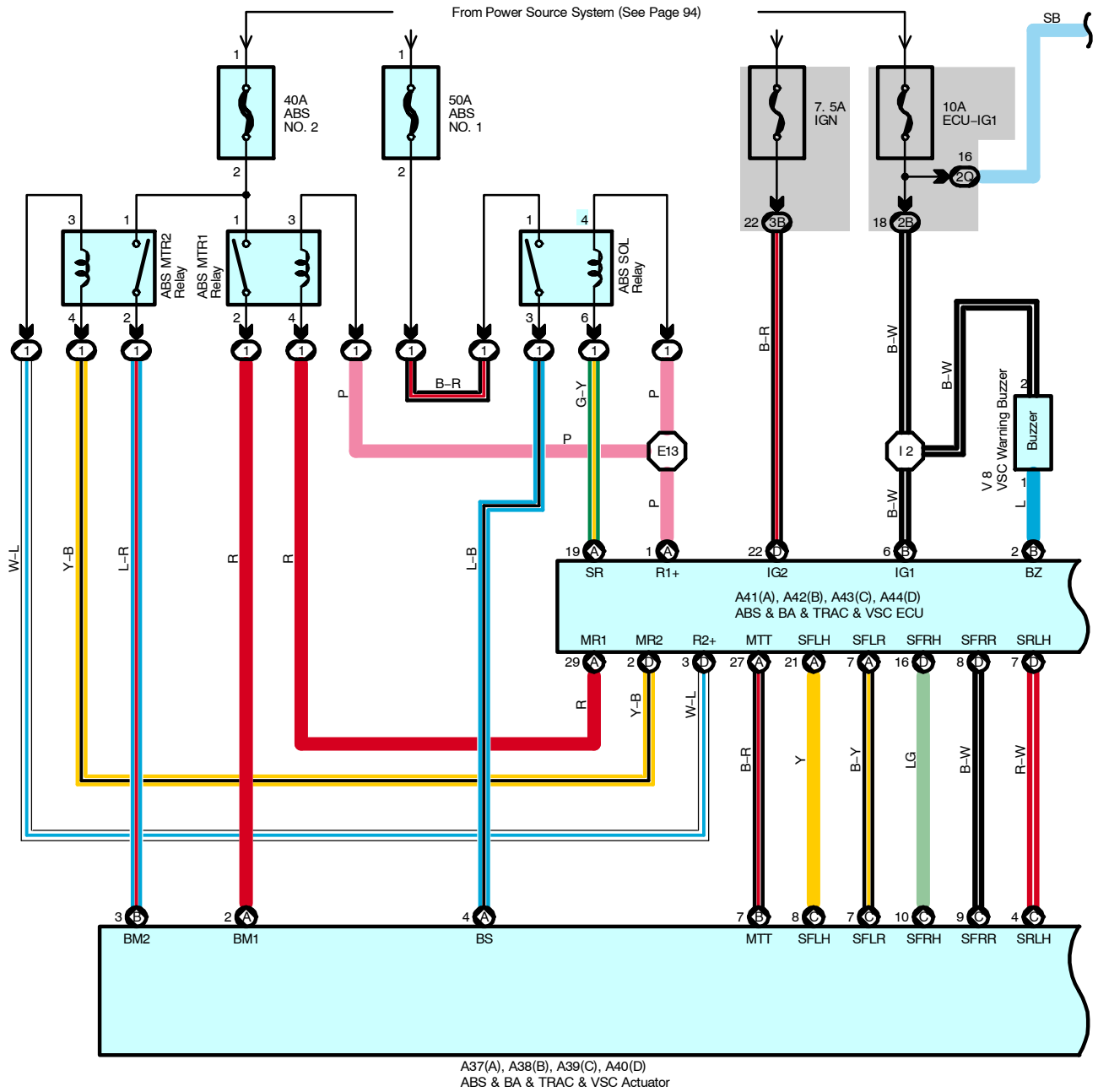
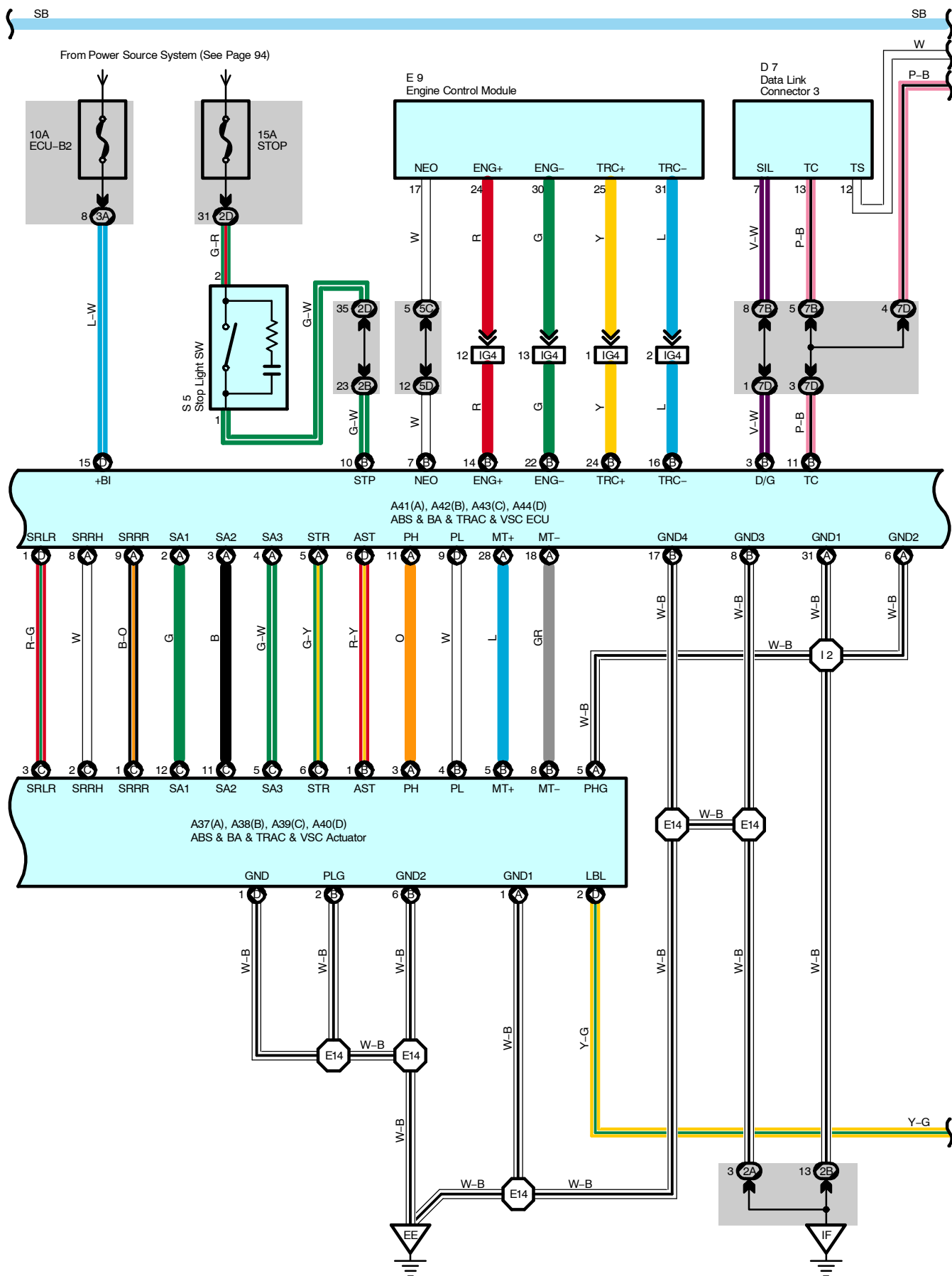
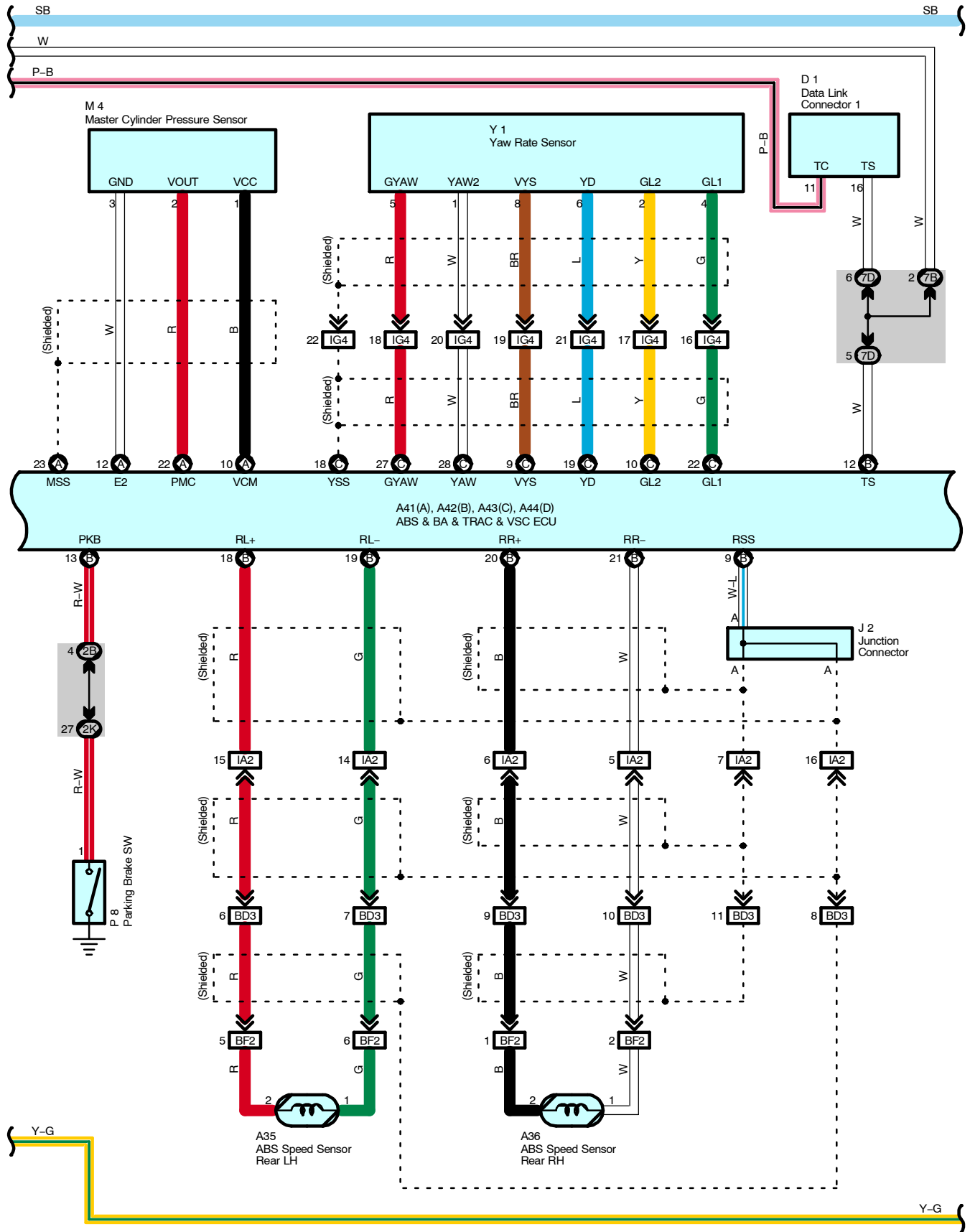
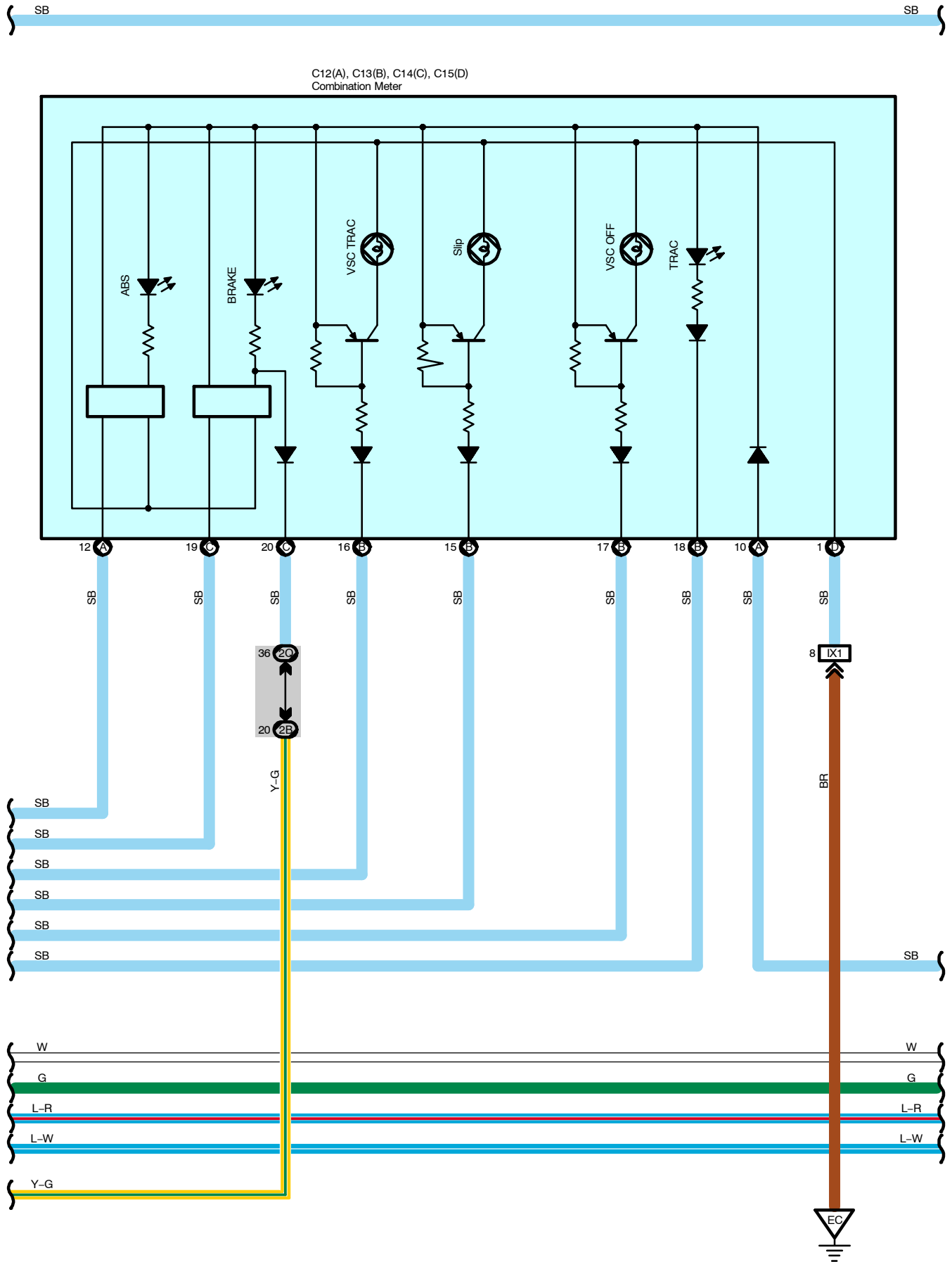
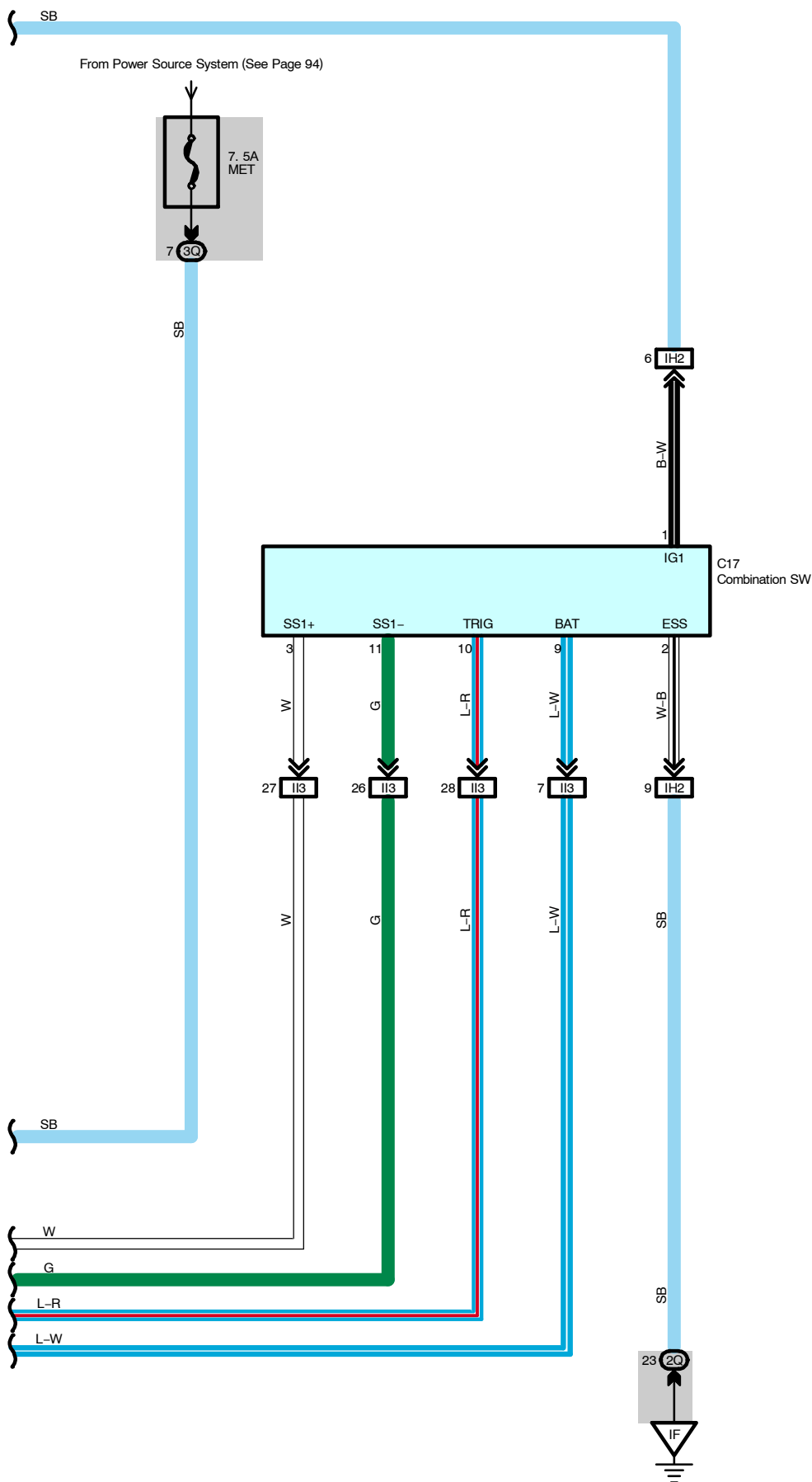












System Outline

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 ABS & BA & TRAC & VSC ECU 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 ABS & BA & TRAC & VSC ECU detects that the fluid pressure in the wheel cylinder is insufficient, the ECU 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.

VSC indicator light

If an error occurs in the VSC system, the VSC indicator lights up to warn the driver.

4. Traction Mode and VSC Function

When the center differential of the transfer is locked, the VSC function is turned off. At this time, the VSC OFF indicator light in the combination meter will come on, and informs the driver that the VSC function is OFF.

5. 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.

6. Fail Safe Function

If an error occurs in the ABS & BA & TRAC & VSC ECU, sensor signals, and/or actuators, the ABS & BA & TRAC & VSC ECU 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 without the ABS, BA, TRAC, and VSC systems.

Service Hints

A41 (A), A42 (B), A44 (D) ABS & BA & TRAC & VSC ECU

(D)15–Ground : Always approx. 12 volts
 (B) 6–Ground : Approx. 12 volts with ignition SW at ON or ST position
 (D)22–Ground : Approx. 12 volts with ignition SW at ON or ST position
 (B)10–Ground : Approx. 12 volts with brake pedal depressed
 (A) 6, (A) 31, (B) 8, (B) 17–Ground : Always continuity

A12 ABS Speed Sensor Front LH

2–4 : Approx. 1.07 kΩ (20 °C, 68 °F)

A13 ABS Speed Sensor Front RH

1–2 : Approx. 1.07 kΩ (20 °C, 68 °F)

A35, A36 ABS Speed Sensor Rear LH, RH

1–2 : Approx. 1.2 kΩ (25 °C, 77 °F)

○ : Parts Location

Code	See Page	Code	See Page	Code	See Page
A12	68	A42	B	D7	70
A13	68	A43	C	E9	70
A35	72	A44	D	J2	71
A36	72	C12	A	M4	69
A37	A	C13	B	P1	69
A38	B	C14	C	P8	73
A39	C	C15	D	S5	71
A40	D	C17	70	V8	71
A41	A	D1	68	Y1	71

○ : Relay Blocks

Code	See Page	Relay Blocks (Relay Block Location)
1	22	Engine Room R/B (Engine Compartment Left)

○ : Junction Block and Wire Harness Connector

Code	See Page	Junction Block and Wire Harness (Connector Location)
2A	28	Engine Room No.2 Wire and Cowl Side J/B LH (Left Kick Panel)
2B		
2D	28	Dash Wire and Cowl Side J/B LH (Left Kick Panel)
2K	28	Floor No.1 Wire and Cowl Side J/B LH (Left Kick Panel)
2Q	30	Instrument Panel Integration Wire and Cowl Side J/B LH (Left Kick Panel)
3A	40	Engine Room No.2 Wire and Cowl Side J/B RH (Right Kick Panel)
3B		
3E	40	Dash Wire and Cowl Side J/B RH (Right Kick Panel)
3Q	42	Instrument Panel Integration Wire and Cowl Side J/B RH (Right Kick Panel)
5C	56	Dash Wire and J/B No.5 (Behind the Combination Meter)
5D	56	Engine Room No.2 Wire and J/B No.5 (Behind the Combination Meter)
6C	60	Dash Wire and J/B No.6 (Behind the Grove Box)
6D	60	Engine Wire and J/B No.6 (Behind the Grove Box)
7B	64	Dash Wire and J/B No.7 (Behind the Grove Box)
7D	64	Engine Room No.2 Wire and J/B No.7 (Behind the Grove Box)

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

Code	See Page	Joining Wire Harness and Wire Harness (Connector Location)
IA2	78	Engine Room No.2 Wire and Floor No.1 Wire (Left Kick Panel)
IG1	78	Engine Room No.2 Wire and Dash Wire (Behind the Combination Meter)
IG4		
IH2	80	Instrument Panel Integration Wire and Column Wire (Near the Ignition SW)
II3	80	Dash Wire and Column Wire (Near the Ignition SW)
IN2	80	Engine Wire and Dash Wire (Behind the Glove Box)
IU4	82	Instrument Panel Integration Wire and Dash Wire (Behind the Glove Box)
IX1	82	Instrument Panel Integration Wire and Engine Wire (Behind the Glove Box)
Ib2	84	Dash Wire and Dash Wire (Behind the Combination Meter)
BD3	86	Floor No.3 Wire and Floor No.1 Wire (Left Rear Side Quarter Panel)
BF2	86	Frame Wire and Floor No.3 Wire (Left Side of Rear Floor Crossmember)

 : **Ground Points**

Code	See Page	Ground Points Location
EC	76	Rear Bank of Right Cylinder Head
EE	76	Front Left Side of Fender Apron
IF	78	Set Bolt of Cowl Side J/B LH

 : **Splice Points**

Code	See Page	Wire Harness with Splice Points	Code	See Page	Wire Harness with Splice Points
E13	76	Engine Room No.2 Wire	I2	80	Engine Room No.2 Wire
E14					