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 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 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.

Traction control SW

The traction control SW is used to stop the TRC function. After the engine is started, the TRC system is stopped (turned off) and the TRC OFF indicator light lights up. When the traction control SW is pressed again, the TRC system enters the stand–by mode. If the engine is stopped and restarted, the TRC system enters the stand–by mode regardless of the traction control 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, sensor signals, and/or actuators, the skid control 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 regardless of the ABS, TRC, and VSC systems.

Service Hints

S6 (A), S7 (B), S8 (C), S9 (D) Skid Control ECU

(C) 7–Ground : Approx. 12 volts with ignition SW at ON or ST position
(D) 22–Ground : Always approx. 12 volts
(A) 15, (A) 22, (B) 17, (B) 15, (D) 2, (D) 3–Ground : Always continuity

○ : Parts Location

Code	See Page	Code	See Page	Code	See Page
A4	36 (LHD 1MZ–FE)	C8 B	40 (LHD)	S7 B	41 (LHD)
	46 (RHD 1MZ–FE)		50 (RHD)		51 (RHD)
A5	36 (LHD 1MZ–FE)	D3	40 (LHD)	S8 C	41 (LHD)
	46 (RHD 1MZ–FE)		50 (RHD)		51 (RHD)
A7	36 (LHD 1MZ–FE)	E6	40 (LHD)	S9 D	41 (LHD)
	46 (RHD 1MZ–FE)		50 (RHD)		51 (RHD)
A8	36 (LHD 1MZ–FE)	J2	41 (LHD)	S13	41 (LHD)
	46 (RHD 1MZ–FE)		51 (RHD)		51 (RHD)
A33	42 (LHD)	J5	41 (LHD)	S14	41 (LHD)
	52 (RHD)	J12 A	41 (LHD)		51 (RHD)
A34	42 (LHD)		51 (RHD)	T4	41 (LHD)
	52 (RHD)	J13 B	51 (RHD)		51 (RHD)
B2	36 (LHD 1MZ–FE)	P3	41 (LHD)	V6	41 (LHD)
	46 (RHD 1MZ–FE)		51 (RHD)		51 (RHD)
C7 A	40 (LHD)	S6 A	41 (LHD)	Y1	41 (LHD)
	50 (RHD)		51 (RHD)		51 (RHD)

⬭ : Relay Blocks

Code	See Page	Relay Blocks (Relay Block Location)
2	23	ABS R/B (Radiator Side Support LH)

⬭ : Junction Block and Wire Harness Connector

Code	See Page	Junction Block and Wire Harness (Connector Location)
1C	25	Engine Room Main Wire and Engine Room J/B (Engine Compartment Left)
1E		
1G		
2B	28	Instrument Panel Wire and Driver Side J/B (Lower Finish Panel)
2G	28	Engine Room Main Wire and Driver Side J/B (Lower Finish Panel)
2L	29	Instrument Panel Wire and Driver Side J/B (Lower Finish Panel)
2M		
2O		
2P		
2R		
3A	34 (LHD)	Instrument Panel Wire and Passenger Side J/B (Instrument Panel Brace RH)
	35 (RHD)	Instrument Panel Wire and Passenger Side J/B (Instrument Panel Brace LH)
3B	34 (LHD)	Instrument Panel Wire and Passenger Side J/B (Instrument Panel Brace RH)
	35 (RHD)	Instrument Panel Wire and Passenger Side J/B (Instrument Panel Brace LH)

▭ : Connector Joining Wire Harness and Wire Harness

Code	See Page	Joining Wire Harness and Wire Harness (Connector Location)
IC1	72 (RHD)	Instrument Panel Wire and Floor Wire (Right Kick Panel)
IC2	60 (LHD)	Instrument Panel Wire and Floor Wire (Left Kick Panel)
IF4	60 (LHD)	Engine Room Main Wire and Instrument Panel Wire (Right Side of Steering Column Tube)
	72 (RHD)	Engine Room Main Wire and Instrument Panel Wire (Left Side of Steering Column Tube)
IK1	62 (LHD)	Engine Wire and Instrument Panel Wire (Behind the Glove Box)
	74 (RHD)	
IK2	62 (LHD)	
	74 (RHD)	
IM1	62 (LHD)	Instrument Panel Wire and Floor No.2 Wire (Right Kick Panel)
IM3	74 (RHD)	Instrument Panel Wire and Floor No.2 Wire (Left Kick Panel)

: Ground Points

Code	See Page	Ground Points Location
EA	56 (LHD 1MZ–FE)	Right Fender
	68 (RHD 1MZ–FE)	
EB	68 (RHD 1MZ–FE)	
ED	56 (LHD 1MZ–FE)	Left Fender
	68 (RHD 1MZ–FE)	
II	60 (LHD)	Cowl Side Panel LH
IJ	72 (RHD)	Instrument Panel Reinforcement LH
IN	72 (RHD)	Instrument Panel Reinforcement RH

: Splice Points

Code	See Page	Wire Harness with Splice Points	Code	See Page	Wire Harness with Splice Points
I12	74 (RHD)	Instrument Panel Wire			