

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

6. PPS OPERATION

The ECU of the PPS (Hydraulic reaction type) controls the hydraulic pressure applied to the hydraulic reaction chamber in the gear box control unit to change the steering force and provide optimum steering feeling at any vehicle speed and under any steering conditions.

SERVICE HINTS

S11 (A), S12 (B), S14 (D) SKID CONTROL ECU

(B) 6-GROUND : Approx. 12 volts with ignition SW at ON or ST position

(A)23-GROUND : Always approx. 12 volts

(A) 3, (A) 5, (D) 15, (D) 22-GROUND : Always continuity

VSC AND PPS (LHD)

: PARTS LOCATION

Code		See Page	Code		See Page	Code		See Page
A5	A	112 (LHD)	D1		117 (LHD)	J18	B	117 (LHD)
A6	B	112 (LHD)	D2	A	117 (LHD)	P1		115 (LHD)
A7		112 (LHD)	D4	C	117 (LHD)	P2		118 (LHD)
A8		112 (LHD)	E3		112 (LHD)	P3	A	118 (LHD)
A14		116 (LHD)	G1		117 (LHD)	S11	A	119 (LHD)
A24		116 (LHD)	H18		117 (LHD)	S12	B	119 (LHD)
A27		116 (LHD)	J3	A	114 (LHD)	S13	C	119 (LHD)
A33		120 (LHD)	J4	B	114 (LHD)	S14	D	119 (LHD)
A34		120 (LHD)	J7		114 (LHD)	S18		119 (LHD)
B1		112 (LHD)	J11		117 (LHD)	S21		119 (LHD)
B3		116 (LHD)	J13	A	117 (LHD)	T7		119 (LHD)
C6		116 (LHD)	J14	B	117 (LHD)	V7		119 (LHD)
C12		116 (LHD)	J17	A	117 (LHD)	Y1		119 (LHD)

: RELAY BLOCKS

Code	See Page	Relay Blocks (Relay Block Location)
3	83 (LHD)	Engine Room No.3 R/B (Engine Compartment Left)
4	84 (LHD)	Fusible Link Block (Engine Compartment Right)

: JUNCTION BLOCK AND WIRE HARNESS CONNECTOR

Code	See Page	Junction Block and Wire Harness (Connector Location)
DC	88 (LHD)	Engine Room Main Wire and Driver Side J/B (Left Kick Panel)
DE	87 (LHD)	Instrument Panel Wire and Driver Side J/B (Left Kick Panel)
DF		
DH		
PC	93 (LHD)	Engine Room Main Wire and Passenger Side J/B (Right Kick Panel)
PE	94 (LHD)	Instrument Panel Wire and Passenger Side J/B (Right Kick Panel)
PF		
PH		

: CONNECTOR JOINING WIRE HARNESS AND WIRE HARNESS

Code	See Page	Joining Wire Harness and Wire Harness (Connector Location)
EB1	140 (LHD)	Engine Wire and Engine Room Main Wire (Inside of ECU Box)
IB3	142 (LHD)	Instrument Panel Wire and Engine Room Main Wire (Cowl Side Panel LH)
IC2	142 (LHD)	Instrument Panel Wire and Floor No.2 Wire (Cowl Side Panel LH)
IG2	144 (LHD)	Instrument Panel Wire and Floor Wire (Cowl Side Panel RH)
IH2	144 (LHD)	Instrument Panel Wire and Engine Room Main Wire (Cowl Side Panel RH)

: GROUND POINTS

Code	See Page	Ground Points Location
EB	140 (LHD)	Under the Fusible Link Block
EC	140 (LHD)	Radiator Side Support LH
EF	140 (LHD)	LH Side of Cylinder Head
IG	142 (LHD)	Left Side of Instrument Panel
IH	142 (LHD)	Right Side of Shift Lever
IK	142 (LHD)	Cowl Side Panel RH

: SPLICE POINTS

Code	See Page	Wire Harness with Splice Points	Code	See Page	Wire Harness with Splice Points
E1	140 (LHD)	Engine Room Main Wire	E6	140 (LHD)	Engine Room Main Wire
E5			I6	144 (LHD)	Instrument Panel Wire

