SYSTEM OUTLINE

(ABS)

ABS is a brake system designed for the purpose to improve the operating ability securing the stability of the vehicle by preventing the looking–up of the vehicle controlling the wheel cylinder pressure of all the four wheels at the time of sudden braking.

1. INPUT SIGNALS

(1) Speed sensor signal

The speed of the wheels is detected and input to TERMINALS FL+, FR+, RL+ and RR+ of the ABS and traction ECU.

(2) Stop light SW signal

A signal is input to TERMINAL STP of the ABS and traction ECU when brake pedal is depressed.

2. SYSTEM OPERATION

When the wheels are to be locked–up, the solenoid inside the actuator will be controlled by the signal from the ABS and traction ECU and the brake fluid in the wheel cylinder will flow through the reservoir and reduce the hydraulic pressure.

While the ABS is in operation, as the ABS and traction ECU always outputs the operation signal to the pump inside the actuator, brake fluid stored inside the reservoir will be suctioned up by the pump inside the actuator and returned to the master cylinder.

When the hydraulic pressure of the wheel cylinder is decompressed or increased until the necessary hydraulic pressure, the solenoid inside the actuator is controlled by the control signal from the ABS and traction ECU and as a result, hydraulic pressure of the wheel cylinder will be closed at both routes of the master cylinder and reservoir sides and the hydraulic pressure of the wheel cylinder will become to be in the holding condition.

If the increase of hydraulic pressure volume of the wheel cylinder becomes necessary, with the control signal from the ABS and traction ECU, the solenoid inside the actuator will be controlled and become the same condition as usual and the brake fluid of the master cylinder will be sent to the wheel cylinder and will increase the hydraulic pressure of the wheel cylinder. At this time, in the case that the brake fluid stays left in the reservoir, it will be sucked up by the pump inside the actuator and will be sent to the wheel cylinder.

Also, increasing speed of the hydraulic pressure is controlled by outputting the increasing and the said holding one after another.

(Traction control)

Traction control system is designed to perform the engine output control by the fuel cut and hydraulic pressure control of driving wheel brake and control the spinning of the driving wheels. By doing this, it improves starting acceleration and operating ability of the vehicle securing the driving ability in accordance with the road surface condition.

3. TRACTION CONTROL OPERATION

Estimating the vehicle speed from the rear wheel speed, comparing it with the front, driving wheel speed and judging the grip condition of the driving wheels. From the estimated vehicle speed, target speed of the driving speed will be set. When the front, driving wheel speed exceeds the control starting speed, it judges that the tire slip is occurred and performs the fuel cut cylinder number control and brake control and then adjust to make the front wheel speed become the traction control target speed. Controlling of the traction control will be completed when the vehicle move on to the road where the driving wheels will not have a tire slip or when the driver decelerate.

SERVICE HINTS

A20 (A), A21 (B), A22 (C),A23(D) ABS AND TRACTION ECU

IG1–GROUND : **10**–**14** volts with the ignition SW at **ON** position
R+ –SR : **9**–**14** volts with the ignition SW at **ON** position and the ABS warning light off
R+ –MR : **0**–**1** volts with the ignition SW at **ON** position
WA–GROUND : **0**–**2** volts with the ignition SW at **ON** position and the ABS warning light on
: **10**–**14** volts with the ignition SW at **ON** position and the ABS warning light off
STP–GROUND : **0**–**1.5** volts with the stop light SW off
: **8**–**14** volts with the stop light SW on
D/G–GROUND : **10**–**14** volts with the ignition SW at **ON** position and the ABS warning light on
MT–GROUND : **0**–**1.5** volts with the ignition SW at **ON** position
NEO–GROUND : Pules generation with idling
IND–GROUND : **0**–**2** volts with the ignition SW at **ON** position and the TRAC indicator light on
: **10**–**14** volts with the ignition SW at **ON** position and the TRAC indicator light off
WT–GROUND : **0**–**2** volts with the ignition SW at **ON** position and the TRAC OFF indicator light on
: **10**–**14** volts with the ignition SW at **ON** position and the TRAC OFF indicator light off
CSW–GROUND : **0**–**1.5** volts with the ignition SW at **ON** position and the traction cut SW pushed
: **8**–**14** volts with the ignition SW at **ON** position and the traction cut SW released
TC, TS–GROUND : **8**–**14** volts with the ignition SW at **ON** position
TRC+, TRC– –GROUND : Pules generation with the traction control active
ENG+, ENG– –GROUND : Pules generation with the ignition SW at **ON** position
SRLH, SRLR, AST–GROUND : **10**–**14** volts with the ignition SW at **ON** position and warning light off
SFLH, SRRR, SRRH–GROUND : **10**–**14** volts with the ignition SW at **ON** position and warning light off
SFRR, SFRH, SFLR–GROUND : **10**–**14** volts with the ignition SW at **ON** position and warning light off
SRC, SMC, SPC–GROUND : **10**–**14** Volts with the ignition SW at **ON** position and the TRAC OFF indicator light off

S11 STOP LIGHT SW

2–1 : Closed with the brake pedal depressed

A7, A8 ABS SPEED SENSOR FRONT LH, RH

1–2 : **1.6**–**1.8** kΩ (**20**˚C)

A32, A33 ABS SPEED SENSOR REAR LH, RH

1–2 : **0.9**–**1.3** kΩ (**20**˚C)

: PARTS LOCATION

Code		See Page
A5	A	96 (LHD)
		104 (RHD)
A6	B	96 (LHD)
		104 (RHD)
A7		96 (LHD)
		104 (RHD)
A8		96 (LHD)
		104 (RHD)
A14		98 (LHD)
		106 (RHD)
A20	A	98 (LHD)
		106 (RHD)
A21	B	98 (LHD)
		106 (RHD)
A22	C	98 (LHD)
		106 (RHD)

Code		See Page
A23	D	98 (LHD)
		106 (RHD)
A32		100 (LHD)
		108 (RHD)
A33		100 (LHD)
		108 (RHD)
B2		96 (LHD)
		104 (RHD)
C3		96 (LHD)
		104 (RHD)
C10	A	98 (LHD)
		106 (RHD)
C11	B	98 (LHD)
		106 (RHD)
D4		98 (LHD)
		106 (RHD)

Code		See Page
E2	A	96 (LHD)
		104 (RHD)
E3	B	96 (LHD)
		104 (RHD)
J1		97 (LHD)
J5		99 (LHD)
		107 (RHD)
J7		99 (LHD)
		107 (RHD)
S11		99 (LHD)
		107 (RHD)
T6	A	99 (LHD)
		107 (RHD)
	B	99 (LHD)
		107 (RHD)

: RELAY BLOCKS

Code	See Page	Relay Blocks (Relay Block Location)
1	80 (LHD)	Engine Room No.1 R/B (Engine Compartment Right)
	81 (RHD)	Engine Room No.1 R/B (Engine Compartment Left)
2	80 (LHD)	Engine Room No.2 R/B (Engine Compartment Right)
	81 (RHD)	Engine Room No.2 R/B (Engine Compartment Left)

: JUNCTION BLOCK AND WIRE HARNESS CONNECTOR

Code	See Page	Junction Block and Wire Harness (Connector Location)
1E	82 (LHD)	Instrument Panel Wire and Driver Side J/B (Left Kick Panel)
	88 (RHD)	Instrument Panel Wire and Driver Side J/B (Right Kick Panel)
1F	82 (LHD)	Instrument Panel Wire and Driver Side J/B (Left Kick Panel)
1G	88 (RHD)	Instrument Panel Wire and Driver Side J/B (Right Kick Panel)
1H		
1K	82 (LHD)	Engine Room Main Wire and Driver Side J/B (Left Kick Panel)
1L	82 (LHD)	Instrument Panel Wire and Driver Side J/B (Left Kick Panel)
2A	84 (LHD)	Engine Room Main Wire and Passenger Side J/B (Right Kick Panel)
	90 (RHD)	Instrument Panel Wire and Passenger Side J/B (Left Kick Panel)
2B	84 (LHD)	Engine Room Main Wire and Passenger Side J/B (Right Kick Panel)
2D	84 (LHD)	Instrument Panel Wire and Passenger Side J/B (Right Kick Panel)
2E	84 (LHD)	Instrument Panel Wire and Passenger Side J/B (Right Kick Panel)
	90 (RHD)	Instrument Panel Wire and Passenger Side J/B (Left Kick Panel)
2F	84 (LHD)	Instrument Panel Wire and Passenger Side J/B (Right Kick Panel)
2G	84 (LHD)	Instrument Panel Wire and Passenger Side J/B (Right Kick Panel)
	90 (RHD)	Engine Room Main Wire and Passenger Side J/B (Left Kick Panel)
2H	90 (RHD)	Instrument Panel Wire and Passenger Side J/B (Left Kick Panel)
2L		
2N	90 (RHD)	Engine Room Main Wire and Passenger Side J/B (Left Kick Panel)

: CONNECTOR JOINING WIRE HARNESS AND WIRE HARNESS

Code	See Page	Joining Wire Harness and Wire Harness (Connector Location)
IA2	114 (LHD)	Instrument Panel Wire and Engine Room Main Wire (Near the Driver Side J/B)
IA3	114 (LHD)	Instrument Panel Wire and Engine Room Main Wire (Near the Driver Side J/B)
	124 (RHD)	Instrument Panel Wire and Engine Room Main Wire (Near the Passenger Side J/B)
IB1	114 (LHD)	Instrument Panel Wire and Floor No.2 Wire (Near the Driver Side J/B)
IF1	126 (RHD)	Instrument Panel No.3 Wire and Instrument Panel Wire (Right Side of the Instrument Panel)
IG1	116 (LHD)	Instrument Panel Wire and Engine Room Main Wire (Near the Passenger Side J/B)
	126 (RHD)	Instrument Panel Wire and Engine Room Main Wire (Near the Driver Side J/B)
IH3	116 (LHD)	Instrument Panel Wire and Floor Wire (Near the Passenger Side J/B)
	126 (RHD)	Instrument Panel Wire and Floor Wire (Near the Driver Side J/B)
BC1	128 (RHD)	Floor No.2 Wire and Floor Wire (Under the Right Rear Cushion)

: GROUND POINTS

Code	See Page	Ground Points Location
EC	112 (LHD)	Left Fender Apron
	122 (RHD)	
ID	114 (LHD)	Cowl Side Panel LH
	124 (RHD)	
IF	124 (RHD)	Cowl Side Panel RH
IG	114 (LHD)	
IH	114 (LHD)	Front Floor Panel Center LH
	124 (RHD)	Front Floor Panel Center RH

: SPLICE POINTS

Code	See Page	Wire Harness with Splice Points	Code	See Page	Wire Harness with Splice Points
I4	126 (RHD)	Engine Room Main Wire			