Troubleshooting

HOW TO PROCEED WITH TROUBLESHOOTING

Perform troubleshooting in accordance with the procedure on the following page.

[1] CUSTOMER PROBLEM ANALYSIS

Using the customer problem analysis check sheet for reference, ask the customer in as much detail as possible about the problem.

[2] CHECK AND CLEAR DIAGNOSTIC CODES (PRECHECK)

First check the diagnostic code if there are any trouble codes stored in memory. If there are trouble codes, make a note of them, then clear them and proceed to ” **[3]**. Problem Symptom Confirmation”.

[3] PROBLEM SYMPTOM CONFIRMATION, [4] SYMPTOM SIMULATION

Confirm the problem symptoms. If the problem does not reappear, be sure to simulate the problem by mainly checking the circuits indicated by the diagnostic code in step **[2]**, using ”Problem Simulation Method”.

[5] DIAGNOSTIC CODE CHECK

Check the diagnostic codes. Check if there is abnormality in the sensors or the wire harness.
If the malfunction code is output, proceed to ” **[6]** Diagnostic Code Chart”. If the normal code is output, proceed to ” **[7]** Matrix Chart of Trouble Symptoms”.
Be sure to proceed to ” **[6]**. Diagnostic Code Chart” after **[2]** and **[3]**.
If troubleshooting is attempted after only the first malfunction code in the memory is output, errors could be made in the diagnosis.

[6] DIAGNOSTIC CODE CHART

If a trouble code is confirmed in the diagnostic code check, proceed to the check procedure indicated by the matrix chart for each diagnostic code.

[7] MATRIX CHART OF PROBLEM SYMPTOMS

If the normal code is confirmed in the diagnostic code check, perform inspection in accordance with the inspection order in the matrix chart of problem symptoms.

[8] CIRCUIT INSPECTION

Proceed with diagnosis of each circuit in accordance with the inspection order confirmed in **[6]**. and **[7]**. Judge whether the cause of the problem is in the sensor, actuators, wire harness and connectors, or the ECU.

[9] CHECK INPUT SIGNAL

For the steering sensor circuit, LEC switch circuit, etc., judge whether signals are being input correctly to the ECU or not. Instructions for this check are given in the circuit flow chart.

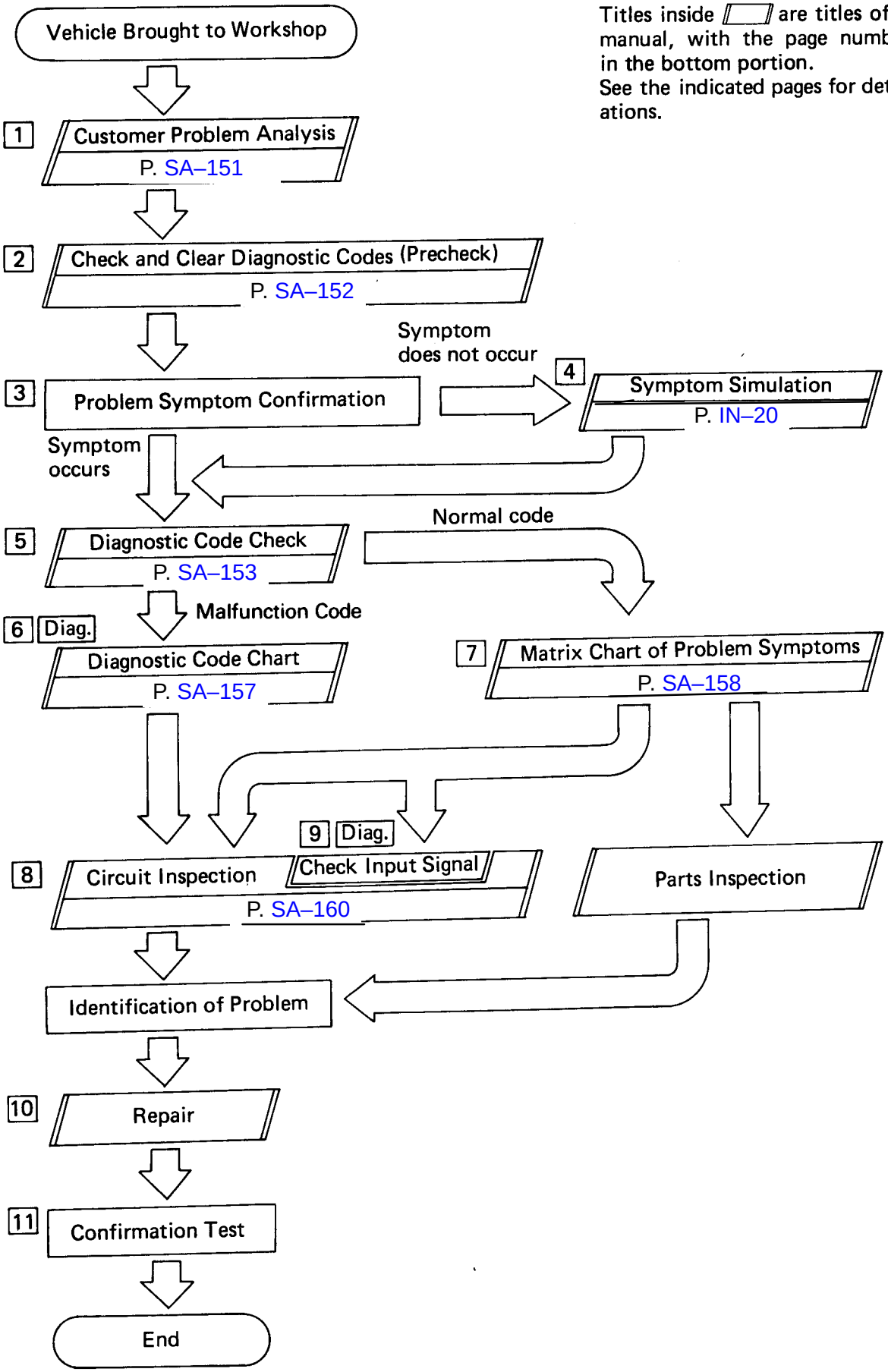
[10] REPAIRS

After the cause of the problem is located, perform repairs by following the inspection and replacement procedures in this manual.

[11] CONFIRMATION TEST

After completing repairs, confirm not only that the malfunction is eliminated, but also conduct a running test, etc., to make sure the entire suspension control system is operating correctly.

Titles inside [ ] are titles of pages in this manual, with the page number indicated in the bottom portion.
See the indicated pages for detailed explanations.



CUSTOMER PROBLEM ANALYSIS CHECK SHEET

SUSPENSION CONTROL System Check Sheet

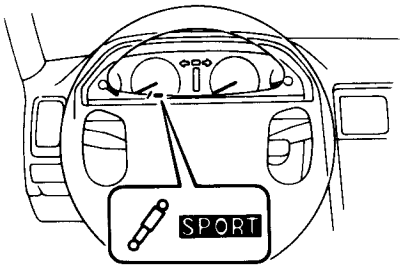
Inspector's Name

Customer's Name		**Registration No.**	
		Registration Year	/ /
		Frame No.	
Date Vehicle Brought In	/ /	**Odometer Reading**	km Mile

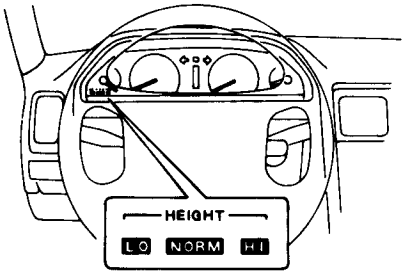
Date of Problem Occurrence		/ /
Frequency of Problem Occurrence		☐ Constant ☐ Sometimes (times per day, month) ☐ Once only
Conditions at Time of Problem Occurrence	**Weather**	☐ Fine ☐ Cloudy ☐ Rainy ☐ Snowy ☐ Various/Others
	Outdoor Temperature	☐ Hot ☐ Warm ☐ Cool ☐ Cold (Approx. °F(°C))
	Place	☐ Highway ☐ Suburbs ☐ Inner City ☐ Hill (☐ Up, ☐ Down) ☐ Rough Road ☐ Others ( )

Problem Symptom	☐ Malfunction in damping force and spring rate control.	☐ Cannot be changed by operating LRC switch. ☐ Anti-roll control does not operate. ☐ Anti-squat control does not operate. ☐ Anti-dive control does not operate. ☐ High speed control does not operate. ☐ Others ( )
	☐ Malfunction in vehicle height control	☐ Vehicle height cannot be changed by operating the height control switch. ☐ High speed control does not operate. ☐ Ignition Switch OFF Control does not operate. ☐ Others ( )
	☐ Others	

Diagnostic Code Check	**1st Time**	☐ Normal Code	☐ Malfunction Code (Code)
	2nd Time	☐ Normal Code	☐ Malfunction Code (Code)



LRC indicator light



SA0949
SA0872 Height control indicator lights

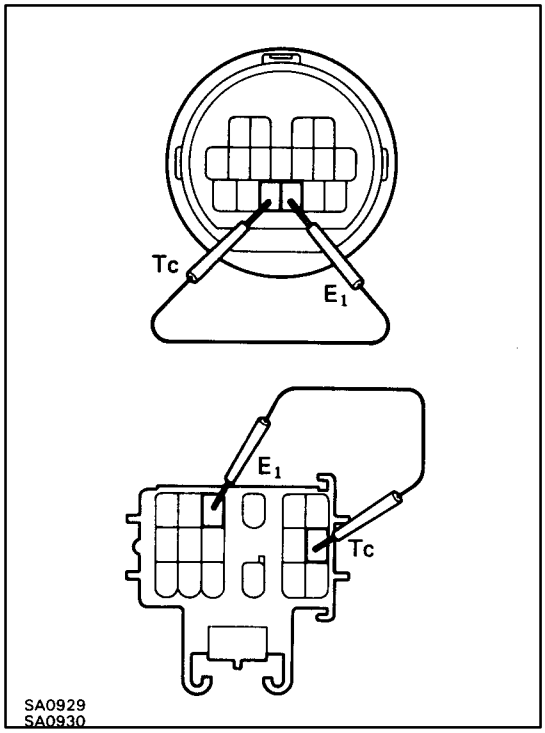
DIAGNOSIS SYSTEM
INDICATOR LIGHT CHECK

1. **Turn ignition switch on.**

2. **Check that LRC (Lexus Ride Control) indicator light and height control indicator lights come on for about two seconds.**
   HINT:
   - When the LRC switch is pressed to the SPORT side, the LRC indicator light continues to light up. Also, when the height control switch is pressed to the ”NORM” or ”HIGH” side, the corresponding height control indicator light, either ”NORM” or ”HI”, continues to light up.
   - Lighting position of the height control indicator light does not change even by switching the height control switch when ignition switch is on and engine is not running.
   - The ”HEIGHT” illumination light is kept on when the ignition switch is on.
   - When the height control indicator ”NORM” light flashes at 1 second intervals, it indicates that the ECU stores the malfunction codes in memory.

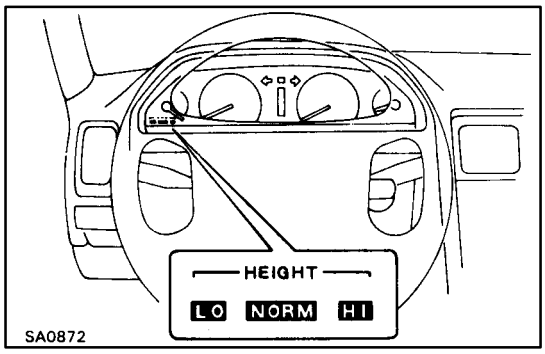
If the following troubles occur in the indicator light check, proceed to check the corresponding circuit and carry out troubleshooting. Numbers in the inspection circuit column indicate the inspection order.

Problem Symptom	Inspection Circuit	Page
After the ignition switch is turned on, the ”SPORT”, ”HI”, ”NORM” and ”LO” indicator lights do not light up.	1. Vehicle Height Control Power Source Circuit	SA–196
	2. Indicator Light Circuit	BE–127
The ”SPORT”, ”HI”, ”NORM” and ”LO” indicator lights light up for 2 seconds after the ignition is turned on, then all go off.	• Suspension Control Actuator Power Source Circuit	SA–193
Some of the indicator lights, ”SPORT”, ”HI”, ”NORM”, ”LO” or ”HEIGHT”, illumination light do not light up.	• Indicator Light Circuit or ”HEIGHT” Illumination Light Circuit	BE–127
Even though the LRC SW is pushed to the NORM side, the ”SPORT” indicator light continues to light up.	• LRC Switch Circuit	SA–206
The indicator light for a vehicle height different to the vehicle height selected by the height control switch continues to light up.	• Height Control Switch Circuit	SA–210

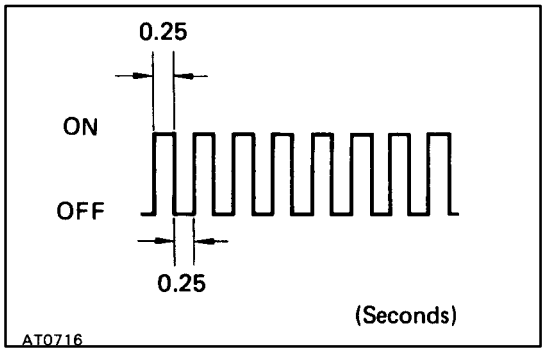


DIAGNOSTIC CODE CHECK

1. Turn ignition switch on.
2. Using SST, connect terminals between Tc and E1 of TDCL or check connector.
   SST 09843–18020

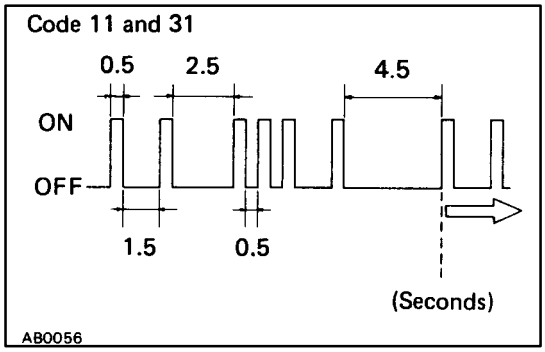


3. **Read the diagnostic code output by height control indicator ”NORM” light inside the meter.**
   HINT:
   - When the height control ON/OFF switch is in the OFF position, diagnostic code ”71” is output. This is not abnormal.
   - When a diagnostic code is not output, check the Tc terminal circuit on page SA–236.

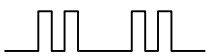
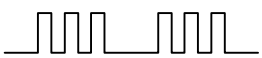
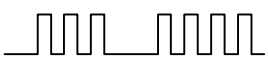


As an example, the blinking patterns for codes normal and 11, and 31 are as shown on the illustration.

4. Check the malfunction using the code table on the next page**.**
5. After completing the check, disconnect terminals Tc and E1, and turn off the display.
   HINT: In the event of 2 or more malfunction codes, indication will begin from the smaller numbered code and continue in order to the larger.



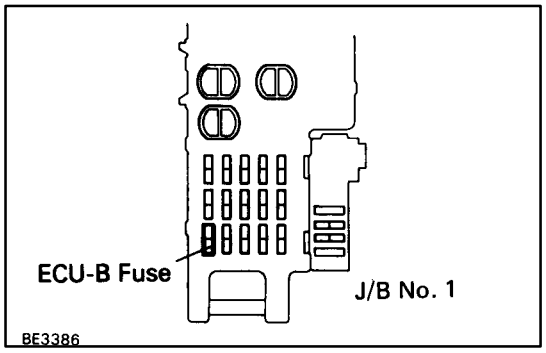
DIAGNOSTIC CODE

DTC	System	Blinking Pattern	Diagnosis	Warning *1	Memory *2
—	—	 BE3931	Normal	—	—
11	Height Control Sensor Front RH Circuit	 BE3931	• Open or short circuit in height control sensor circuit.	◯	◯
12	Height Control Sensor Front LH Circuit	 BE3931		◯	◯
13	Height Control Sensor Rear RH Circuit	 BE3931		◯	◯
14	Height Control Sensor Rear LH Circuit	 BE3931		◯	◯
21	Front Suspension Control Actuator Circuit	 BE3932	• Open or short circuit in suspension control actuator circuit.	◯	◯
22	Rear Suspension Control Actuator Circuit	 BE3932		◯	◯
31	No. 1 Height Control Valve Circuit	 BE3933	• Open or short circuit in height control valve circuit.	◯	◯
33	No. 2 Height Control Valve Circuit (for right suspension)	 BE3933		◯	◯
34	No. 2 Height Control Valve Circuit (for left suspension)	 BE3933		◯	◯
35	Exhaust Valve Circuit	 BE3933	• Open or short circuit in exhaust valve circuit.	◯	◯
41	No. 1 Height Control Relay Circuit	 BE3934	• Open or short circuit in No. 1 height control relay circuit.	◯	◯
42	Compressor Motor Circuit	 BE3934	• Short circuit in compressor motor • Compressor motor locked.	◯	◯
51*3	Continuous electric current to No. 1 height control relay	 BE3935	• Electric current is supplied to No. 1 height control relay for approx. 8.5 minutes or longer.	—	◯
52*4	Continuous electric current to exhaust	 BE3935	• Electric current is supplied to exhaust valve for approx. 6 minutes or longer.	—	◯

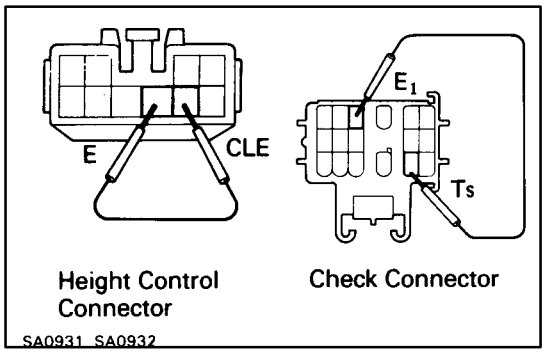
DIAGNOSTIC CODE (Cont'd)

Code	System	Blinking Pattern	Diagnosis	Warning *1	Memory *2
61	Suspension Control Signal	 BE3936	* ECU Malfunction	—	○
72	Suspension Control Actuator Power Source Circuit	 BE3937	* Open circuit in suspension control actuator power source circuit * AIR SUS fuse is burned out.	—	—
71* 5	Height Control ON/OFF Switch Circuit	 BE3937	* Height control ON/OFF switch is "OFF" position. * Short circuit in height control ON/OFF switch circuit.	○	—

*1: For codes in the Warning column with a O mark, the height control indicator "NORM" light blinks at 1 second intervals. For codes with the "–" mark, it does not blink.
*2: Codes with the O mark in the Memory column are stored in memory even when the ignition switch is off.
*3: Since the relief pressure of the compressed air is 10 kg/cm2, if vehicle height control is attempted on a steeply sloping road, or when the vehicle is overloaded, code "51" may be output and vehicle height control and damping force and spring rate control may be suspended. (This is not abnormal.) However, in this case, approximately 70 minutes after the ignition switch is turned off, then on again, vehicle height control, damping force and spring rate control are resumed.
*4: If vehicle height control is operated while removing wheels or while jacking up the vehicle, code "52" may be output, but this is not abnormal. When code "52" is output, vehicle height control and damping force and spring rate control are not carried out. However, control is resumed if the ignition switched is turned off, then on again.
*5: When the height control ON/OFF switch is in the "off" position, diagnostic code "71" is output.



BE3386



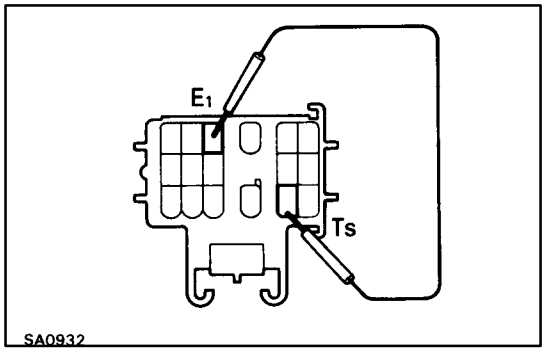
SA0931, SA0932

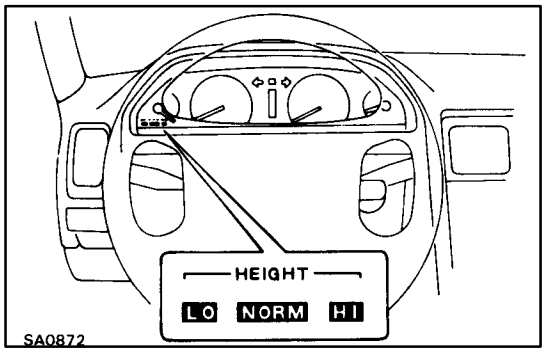
CANCELLING DIAGNOSTIC CODE

Diagnostic codes can be cancelled by carrying out either operation 1. or 2. below.

1. With the ignition switch off, remove the ECU–B fuse in the J/B No. 1 for ten seconds or longer.

2. With the ignition switch off, using SST, connect height control connector terminal 9 (terminal CLE) and 8 (terminal E) while at the same time connecting terminals Ts and E1 in the check connector. Maintain this state for 10 seconds or longer, then turn ignition switch on and disconnect the terminals.
   SST 09843–18020





CHECK INPUT SIGNAL

This function checks if signals from the steering sensor and stop light switch are being input normally to the ECU.

1. Turn ignition switch on.
2. Set each of the check items in the table below to the condition in Operation (A).
3. Using SST, connect terminals Ts and E1 of the check connector.
   SST 09843–18020
   HINT: At this time the height control indicator ”NORM” light flashes at 0.25 second intervals while the engine is stopped and stays on when the engine is running. (It indicates that the system has entered the input signal check mode.)
4. Check if the height control indicator ”NORM” light lights up when each of the individual check items is set to the condition in Operation (B).

Check Item	Operation (A)	Engine Condition*1		Operation (B)	Engine Condition*1	
		Stop	Running		Stop	Running
Steering Sensor	Steering straight ahead	A	B	Steering angle 45 degrees or larger	B	A
Stop Light Switch	OFF (Brake pedal not depressed)	A	B	ON (Brake pedal depressed)	B	A
Door Courtesy Switch	OFF (All doors closed)	A	B	ON (Each door opened)	B	A
Throttle Position Sensor	Accelerator pedal not depressed	A	B	Accelerator pedal fully depressed	B	A
No. 1 Vehicle Speed Sensor	Vehicle speed below 12 mph (20 km/h)	A	B	Vehicle speed 12 mph (20 km/h) or higher	B	A
Height Control Switch	NORM position	A	B	HIGH position	B	A
LRC Switch	NORM position	A	B	SPORT position	B	A
Height Control ON/OFF Switch	ON position	A	B	OFF position	B	A

*1: ”A” and ”B” under ”Engine Condition” indicate the condition of the height control indicator ”NORM” light when the check results are normal (when signals are being sent normally to the ECU). ”A” means that the light blinks every 0.25 seconds and ”B” means that it remains lit.

HINT:

- During operation of this check, damping force and spring rate control are stopped, and the damping force and spring rate are both fixed to the ”firm”. Vehicle height control continues to operate normally.
- During operation of this check, if terminals Ts and E1 of the check connector inside the engine compartment are connected, the diagnostic codes stored in memory are output. If no diagnostic code is stored in memory, the input signal check function operates.

DIAGNOSTIC CODE CHART

If a malfunction code is displayed during the diagnostic code check, check the circuit listed for that code in the table below (Proceed to the page given for that circuit).

Code	Inspection Circuit	See Page
11, 12, 13, 14	Height Control Sensor Circuit	SA–160
21, 22	Suspension Control Actuator Circuit	SA–166
31, 33, 34, 35	No. 1, No. 2 Height Control Valve & Exhaust Valve Circuit	SA–171
41	No. 1 Height Control Relay Circuit	SA–177
42	Compressor Motor Circuit	SA–181
51	Malfunctions which cause continuous supply of electric current to No. 1 height control relay.	SA–187
52	Malfunctions which cause continuous supply of electric current to exhaust valve.	SA–188
61	Replace suspension ECU	–
72	Suspension Control Actuator Power Source Circuit	SA–193
71	Height Control ON/OFF Switch Circuit	SA–189

MATRIX CHART OF PROBLEM SYMPTOMS

If a normal code is displayed during the diagnostic trouble code check but the trouble still occurs (reappears), perform troubleshooting for each problem symptom, checking the circuits for each symptom in the order given in the table below (Proceed to the page given for each circuit).

	See Page / Suspect Area / Symptom	SA–160 Height control sensor circuit	SA–166 Suspension control actuator circuit	SA–171 Height control valves, exhaust valve circuit	SA–177 No. 1 height control relay circuit	SA–181 Compression motor circuit
Malfunction in damping force and spring rate control	Condition of LRC indicator light does not change, despite operation of LRC switch.					
	Damping force and spring rate control do not operate at all.		**1**			
	Only anti-roll control does not operate.					
	Only anti-squat control does not operate.					
	Only anti-dive control does not operate.					
	Only high speed control does not operate.					
Malfunction in vehicle height control	Lighting up position of height control indicator light does not change according to operation of height control switch.	**4**				
	Vehicle height control function does not operate.	**5**				
	Only high speed control does not operate.					
	Hunting of vehicle height occurs.	**2**				
	Vehicle height control operates, but vehicle height is uneven.			**1**		
	Vehicle height control operates, but vehicle height is high or low. (Vehicle height in NORMAL mode varies from the standard value.)					
	When vehicle height is adjusted, it stops at extremely high or extremely low position.	**1**				
	Vehicle height control occurs even when height control ON/OFF switch is in “OFF” position.					
	Ignition Switch OFF control does not operate.					
	Ignition Switch OFF Control occurs even when the door is open.					
	Vehicle height is extremely low when vehicle is parked.					
	Compressor motor continues to operate.				**2**	**3**

HINT:

- If the instruction “Proceed to next circuit inspection shown on matrix chart” is given in the flow chart for each circuit, proceed to the circuit with the next highest number in the table to continue the check.
- If the trouble still reappears even though there are no abnormalities in any of the other circuits, then check and replace the Suspension ECU as the last step.

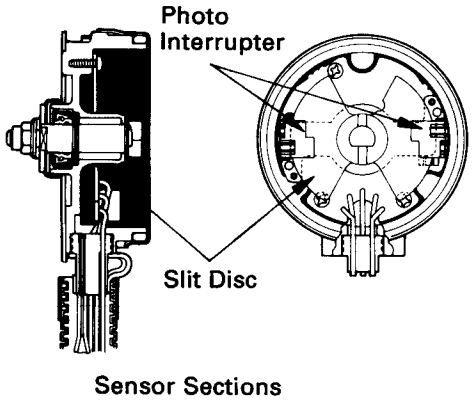
SA–189	SA–193	SA–196	SA–203	SA–206	SA–210	SA–214	SA–218	SA–223	SA–226	SA–231	SA–236	SA–240	SA–148	SA–147	SA–38 SA–128	IN–31
Height control ON/OFF switch circuit	Suspension control actuator power source circuit	Vehicle height control power source circuit	IC regulator circuit (Alternator circuit)	LRC switch circuit	Height control switch circuit	Stop light switch circuit	Steering sensor circuit	Throttle position signal circuit	Speed sensor circuit	Door courtesy switch circuit	Tc terminal circuit	Ts terminal circuit	Height control sensor link	Air leakage	Pneumatic cylinder/shock absorber	Suspension ECU
				1												2
	6			4							2	3			5	7
							1									2
								1								2
						1			2							3
									1							2
		3	2		1											5
4		2	1		3											6
																2
																3
1																2
		2								1						3
										1						2
														1	2	
														1		4

Diag. Code	11, 12, 13, 14	Height Control Sensor Circuit

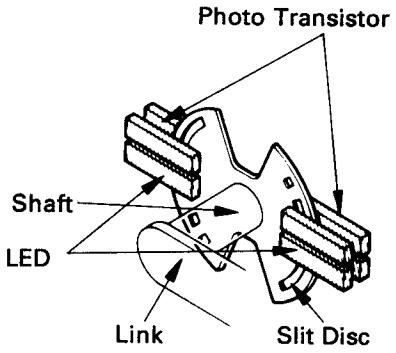
CIRCUIT DESCRIPTION

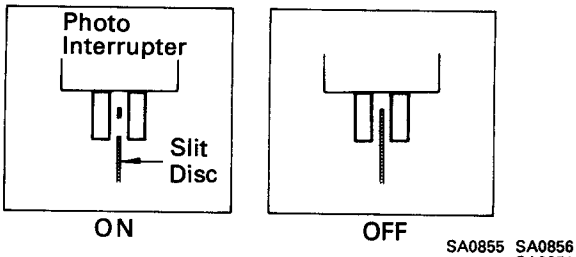
A height control sensor is fitted to each suspension and continuously monitors the distance between the body and the suspension lower arm to detect the vehicle height as well as the displacement volume of the suspension caused by road unevenness.

Each sensor consists of a slit disc that rotates with the link as a unit and four pairs of photo interrupters. The slit disc rotates between the LED and the photo transistor of each photo interrupter, as does the slit of the steering sensor. The height control sensor detects the vehicle height in 16 steps by the output combinations of the on/off signals of the photo interrupters, converts them into serial data and sends the data to the ECU.



Sensor Sections





SA0855 SA0856 SA0851

Code No. *1	Diagnosis	Trouble Area
11 12 13 14	Open or short circuit in height control sensor circuit.	•Harness or connector between ECU and height control sensor. •Height control sensor. •ECU

*1: Code 11 corresponds to the front RH height control sensor circuit.
Code 12 corresponds to the front LH height control sensor circuit.
Code 13 corresponds to the rear RH height control sensor circuit.
Code 14 corresponds to the rear LH height control sensor circuit.

Once the ECU stores diagnostic trouble code 11, 12, 13 or 14 in memory, vehicle height control, damping force and spring rate control are not carried out until a normal signal is input to the ECU from the height control sensor.

DIAGNOSTIC CHART

HINT 1:
- When diag. code 11 is displayed, check Front RH height control sensor circuit.
- When diag. code 12 is displayed, check Front LH height control sensor circuit.
- When diag. code 13 is displayed, check Rear RH height control sensor circuit.
- When diag. code 14 is displayed, check Rear LH height control sensor circuit.

HINT 2:
- Perform inspection from step **[1]** when diag. code 11, 12, 13 or 14 is displayed, and from step **[3]** when diag. code 11, 12, 13 or 14 is not displayed.

1 Check voltage between terminal 1 of height control sensor connector and body ground.
- NG → Check and repair harness or connector between No. 2 height control relay and height control sensor.
- OK ↓

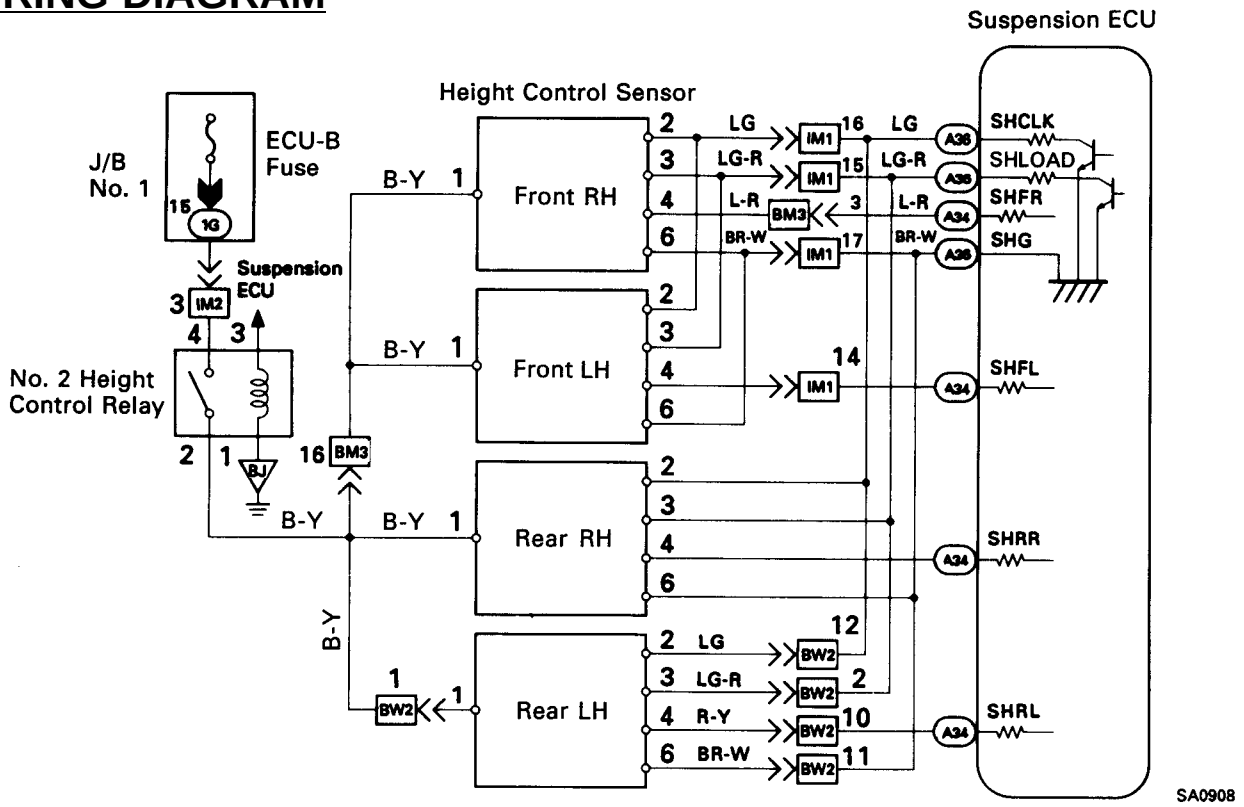
2 Check harness and connector between suspension ECU and height control sensor.
- NG → Repair or replace harness or connector
- OK ↓

3 Does malfunction disappear when a known good height control sensor is installed?
- YES → Replace height control sensor.
- NO ↓

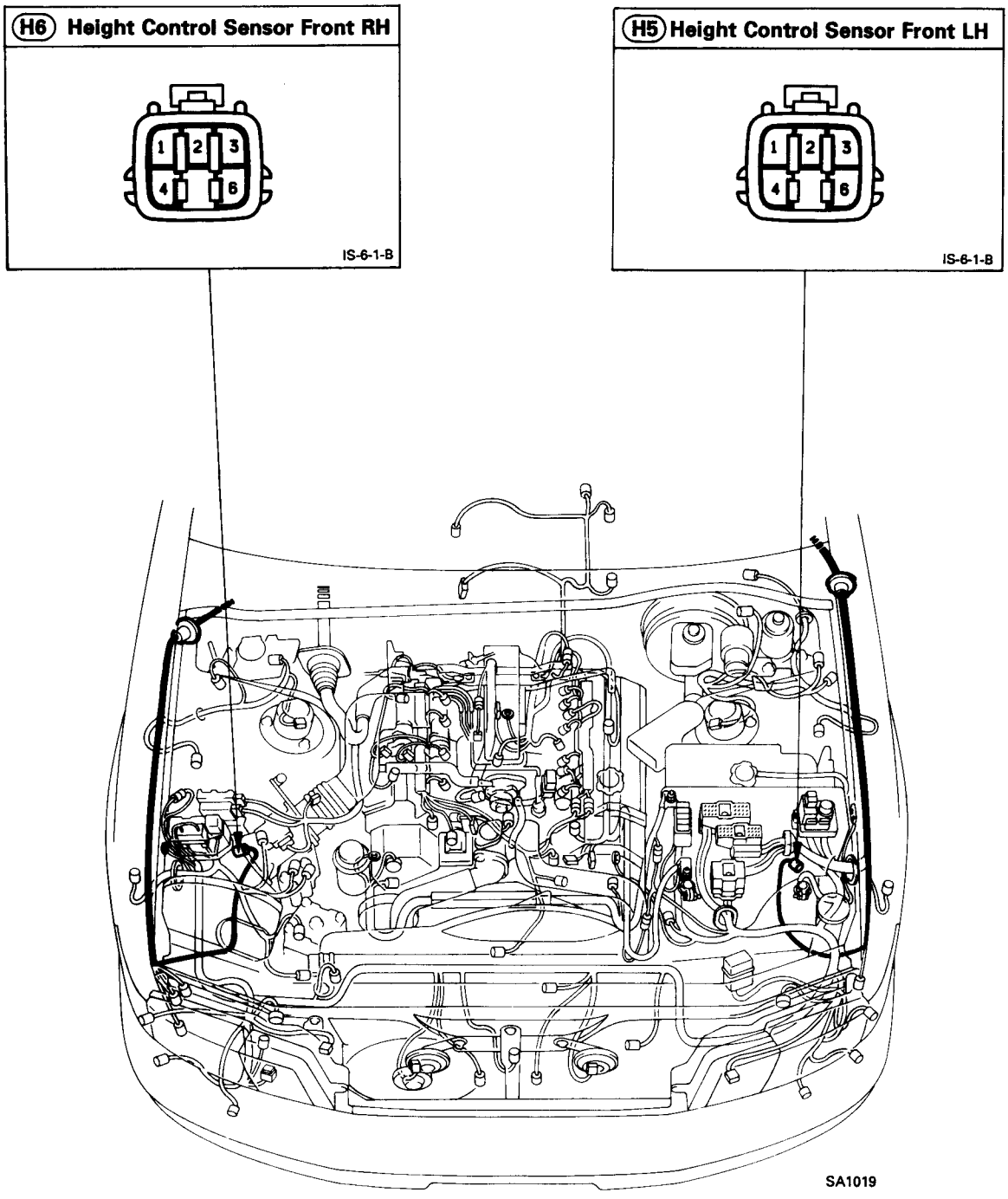
Proceed to next circuit inspection shown on matrix chart (See page SA–158).*1

*1: However, when diag. code 11, 12, 13, or 14 is displayed, check and replace suspension ECU.

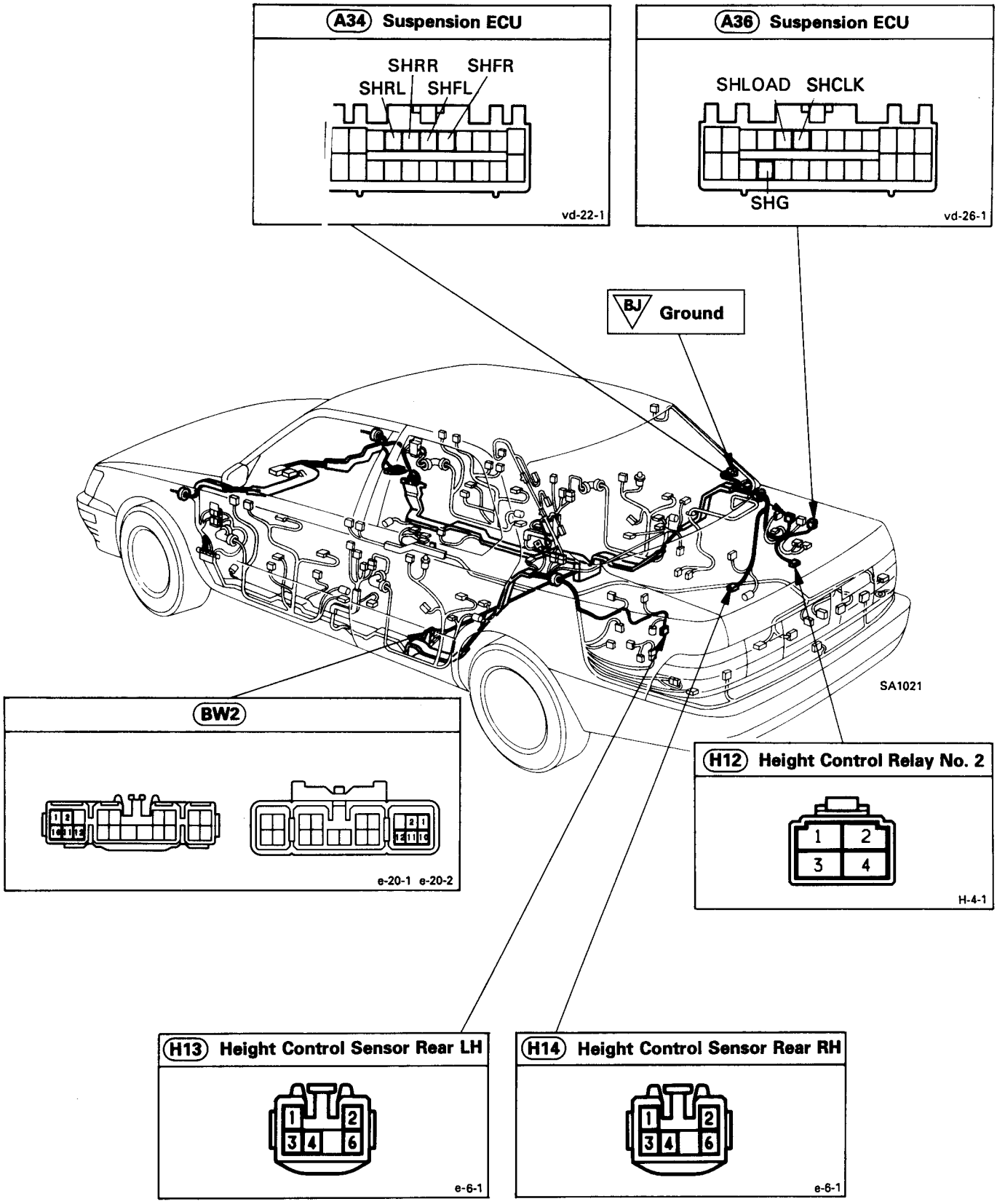
WIRING DIAGRAM



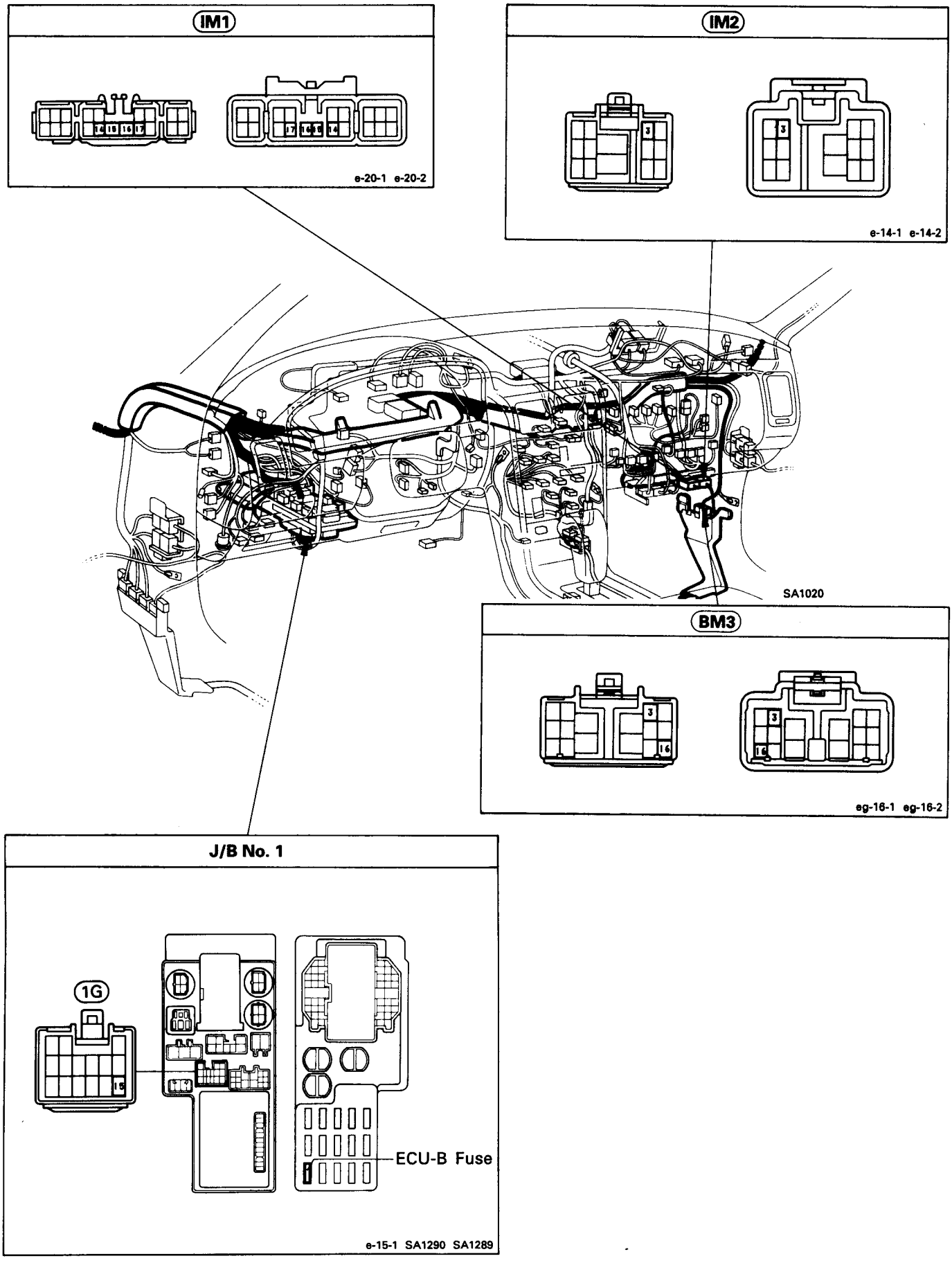
WIRING ROUTING



WIRING ROUTING



WIRING ROUTING

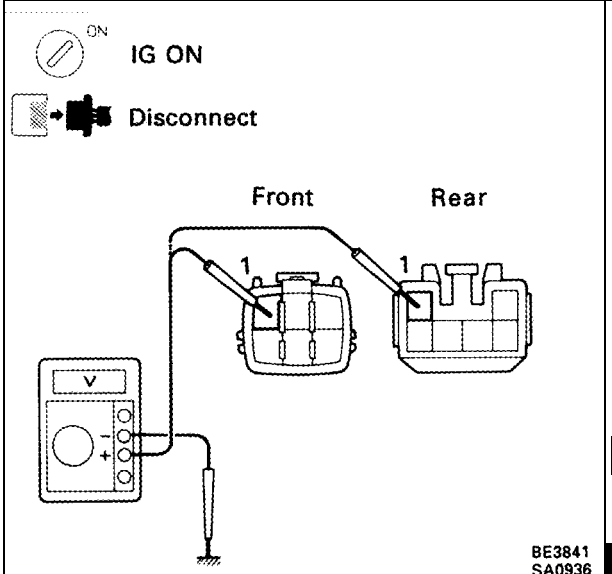


INSPECTION PROCEDURE

HINT 1:
- When diagnostic trouble code 11 is displayed, check Front RH height control sensor circuit.
- When diagnostic trouble code 12 is displayed, check Front LH height control sensor circuit.
- When diagnostic trouble code 13 is displayed, check Rear RH height control sensor circuit.
- When diagnostic trouble code 14 is displayed, check Rear LH height control sensor circuit.

HINT 2:
- Perform inspection from step **[1]** when diagnostic trouble code 11, 12, 13 or 14 is displayed, and from step **[3]** when diagnostic trouble code 11, 12, 13 or 14 is not displayed.

1 **Check voltage between terminal 1 of height control sensor connector and body ground.**



P For the front height control sensor,
1. Remove the front tire.
2. Disconnect the height control sensor connector.
3. Turn ignition switch on.

For the rear height control sensor,
1. Remove the luggage compartment trim front cover.
2. Disconnect the height control sensor connector.
3. Turn ignition switch on.

C Measure voltage between terminal 1 of height control sensor connector and body ground.

OK **Voltage: Battery voltage**

OK → **2**

NG → **Check and repair harness or connector between No. 2 height control relay and height control sensor.**

2 **Check harness and connector between suspension ECU and height control sensor .**

OK → **3**

NG → **Repair or replace harness or connector.**

3 **Does malfunction disappear when a known good height control sensor is installed?**

NO → **Proceed to next circuit inspection shown on matrix chart (SA–158). *1**

YES → **Replace height control sensor.**

*1: However, when diagnostic trouble code 11, 12, 13 or 14 is displayed, check and replace suspension ECU.

Diag. Code	21, 22	Suspension Control Actuator Circuit

CIRCUIT DESCRIPTION

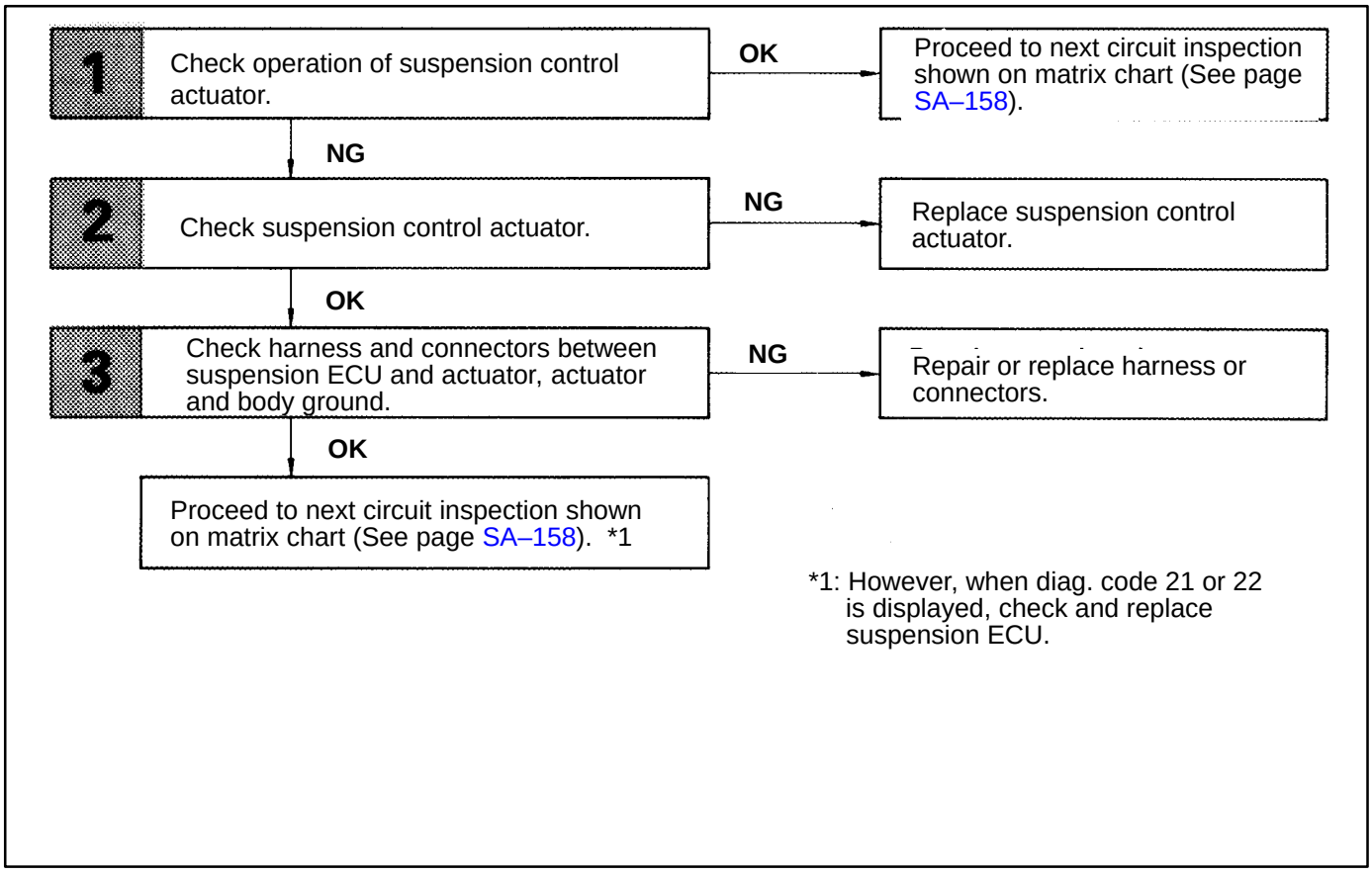
ECU sends a signal to suspension control actuator to drive the rotary valve of the shock absorber and the air valve of the pneumatic cylinder simultaneously, thus changing the shock absorber damping force and the suspension spring rate. A suspension control actuator is fitted to each pneumatic cylinder.
The actuator is driven electromagnetically so that it can accurately follow the driving conditions that change frequently.

Code No. *1	Diagnosis	Trouble Area
21 22	Open or short circuit in suspension control actuator circuit.	• Harness or connector between ECU and suspension control actuator. • Suspension control actuator. • ECU

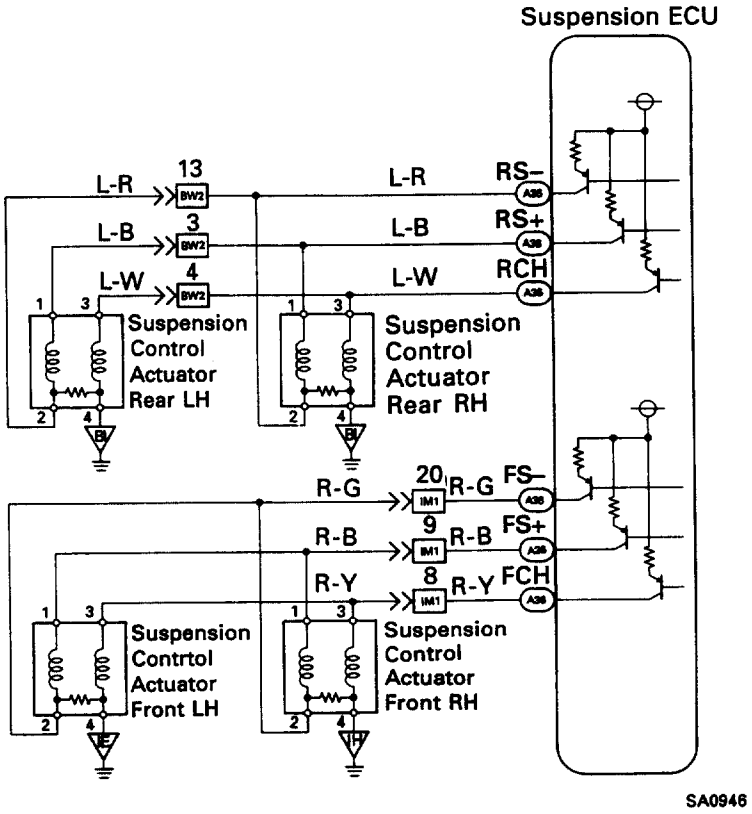
***1**: Code 21 corresponds to the front suspension control actuator circuit.
Code 22 corresponds to the rear suspension control actuator circuit.
Once the ECU stores diagnostic code 21 or 22 in memory, damping force and spring rate controls are not carried out.

DIAGNOSTIC CHART

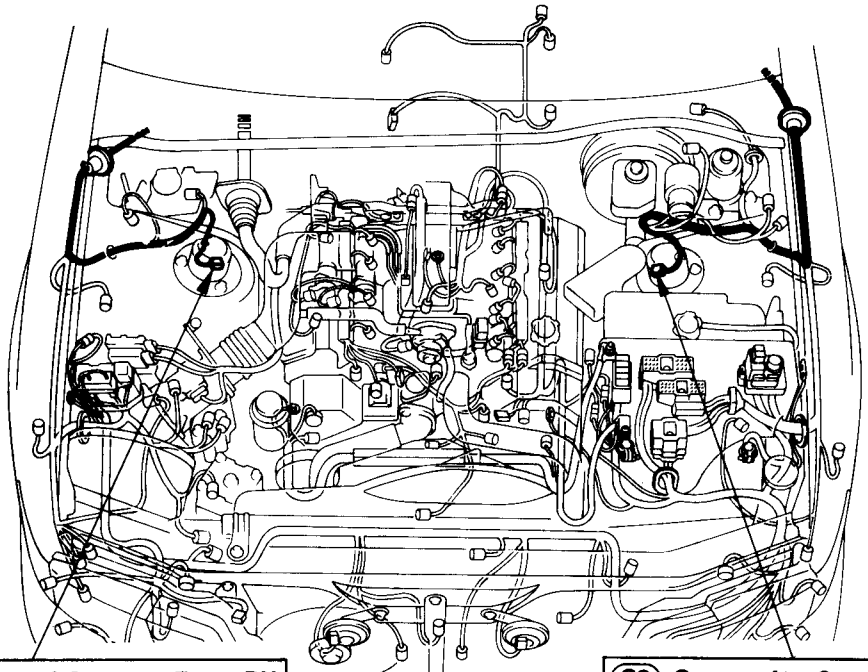
HINT 1: • When diag. code ”21” is displayed, check the front suspension control actuator circuit.
• When diag. code ”22” is displayed, check the rear suspension control actuator circuit.
HINT 2: • When diag. code 21 or 22 is displayed, perform inspection from step 2.

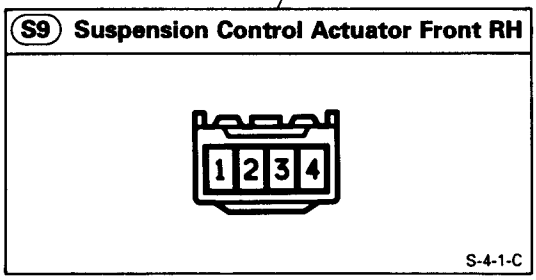


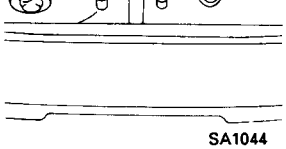
WIRING DIAGRAM

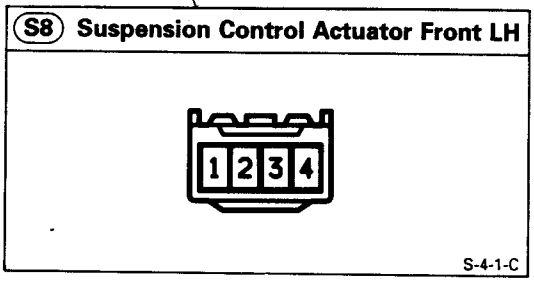


WIRING ROUTING

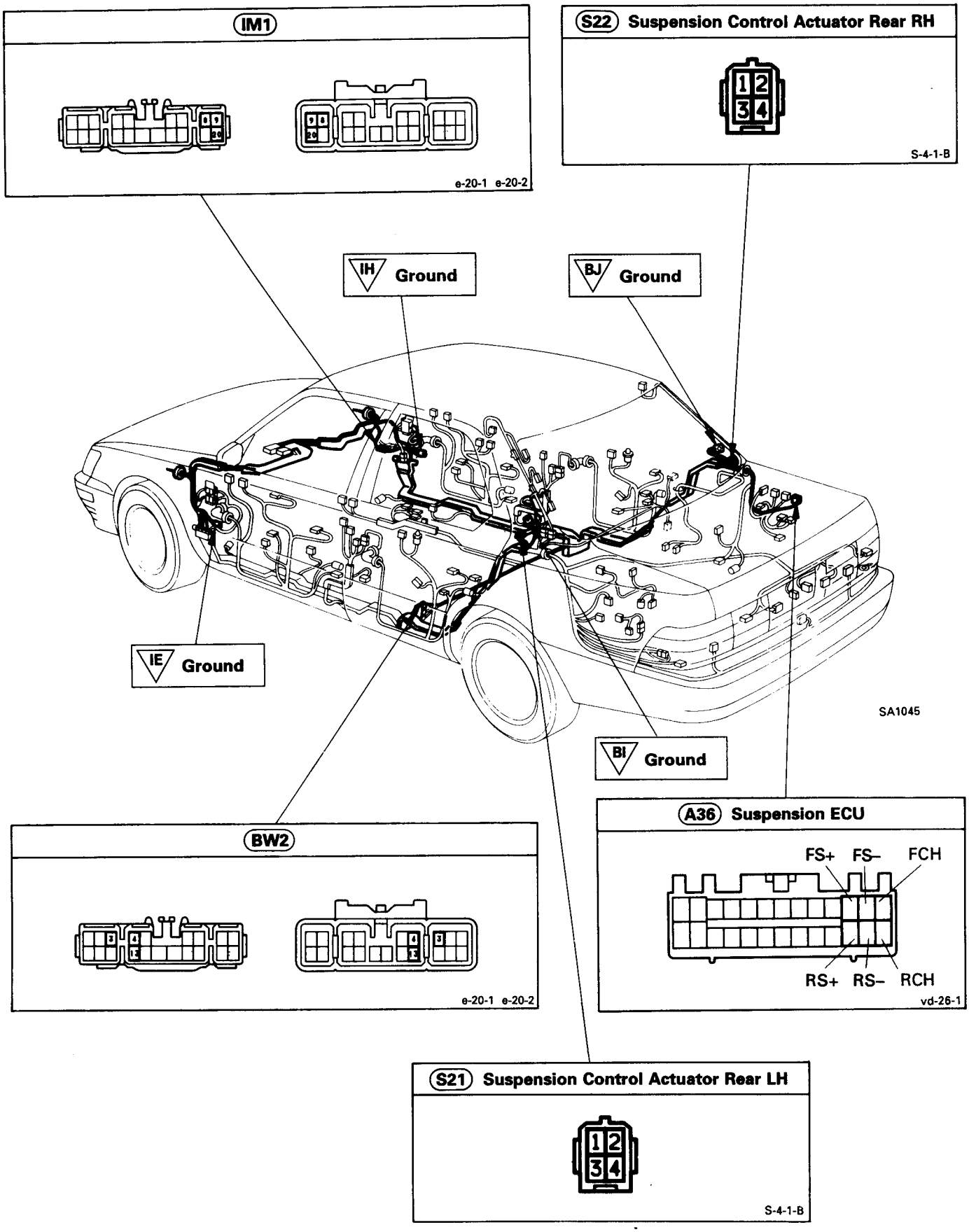








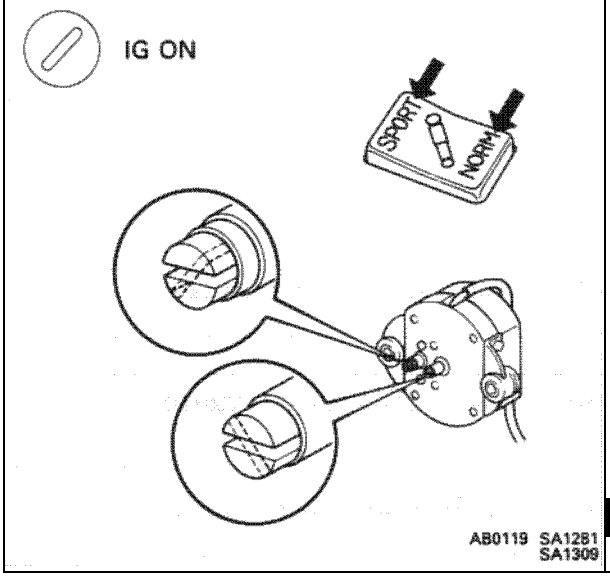
WIRING ROUTING



INSPECTION PROCEDURE

HINT 1: • When diagnostic trouble code “21” is displayed, check the front suspension control actuator circuit.
• When diagnostic trouble code “22” is displayed, check the rear suspension control actuator circuit.
HINT 2: • When diagnostic trouble code 21 or 22 is displayed, perform inspection from step **[2]**.

1 **Check operation of suspension control actuator.**



P For the front suspension control actuator,
1. Remove the actuator cover and actuator.
2. Turn ignition switch on.

For the rear suspension control actuator,
1. Remove the rear seat and package tray trim.
2. Remove the actuator cover and actuator.
3. Turn ignition switch on.

C Check operation of suspension control actuator when LRC switch is pressed to SPORT side and NORM side.

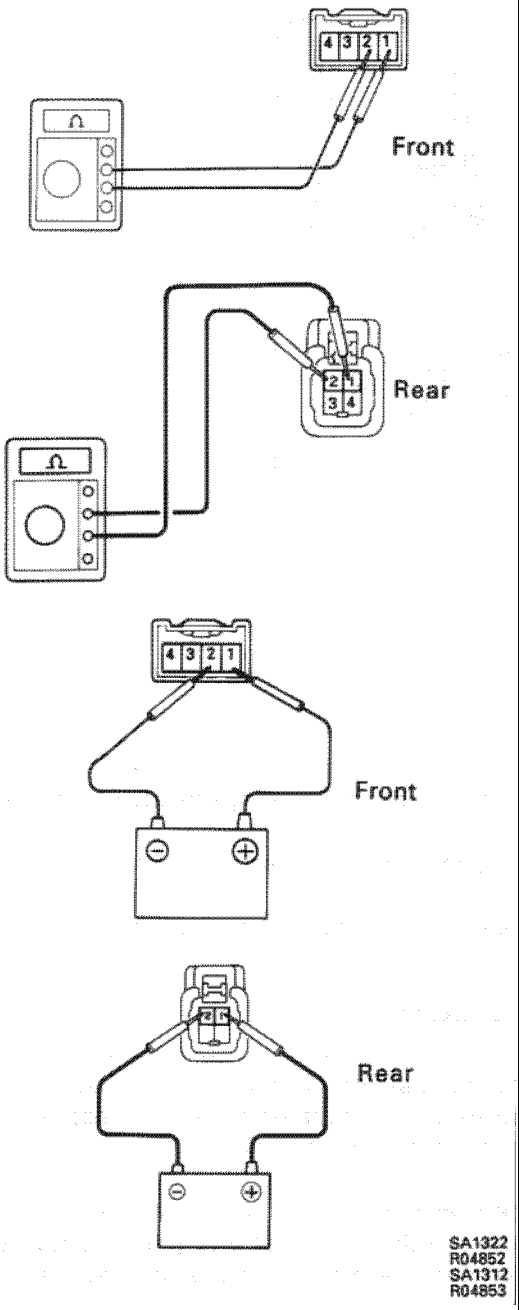
OK **The actuator operates.**

NG

Go to step [2].

OK **Proceed to next circuit inspection shown on matrix chart (See page SA–158).**

2 **Check suspension control actuator.**



P For the front suspension control actuator,

1. Remove the actuator cover and actuator.
2. Disconnect the actuator connector.

For the rear suspension control actuator,

1. Remove the rear seat and package tray trim, actuator cover and actuator.
2. Disconnect the actuator connector.

C Measure resistance between terminals of suspension control actuator connector shown below.

OK

Terminals	Resistance
1 – 2	3 – 6 Ω
3 – 4	3 – 6 Ω
2 – 4	2.3 – 4.3 kΩ

C Check operation of suspension control actuator when battery voltage is applied to the terminals of suspension control actuator connector shown below.

OK

Position	Battery ⊕	Battery ⊖
Firm	Terminal 1	Terminal 2
Medium	Terminal 3	Terminal 4
Soft	Terminal 2	Terminal 1

Hint Perform inspection in a short time (Within 1 second).

OK → **NG** **Replace suspension control actuator.**

3 **Check harness and connectors between suspension ECU and actuator, actuator and body ground.**

OK → **NG** **Repair or replace harness or connectors.**

Proceed to next circuit inspection shown on matrix chart (See page SA–158). *1

*1: However, when diagnostic trouble code 21 or 22 is displayed, check and replace suspension ECU.

Diag. Code	31, 33, 34, 35	Height Control Valves, Exhaust Valve Circuit

CIRCUIT DESCRIPTION

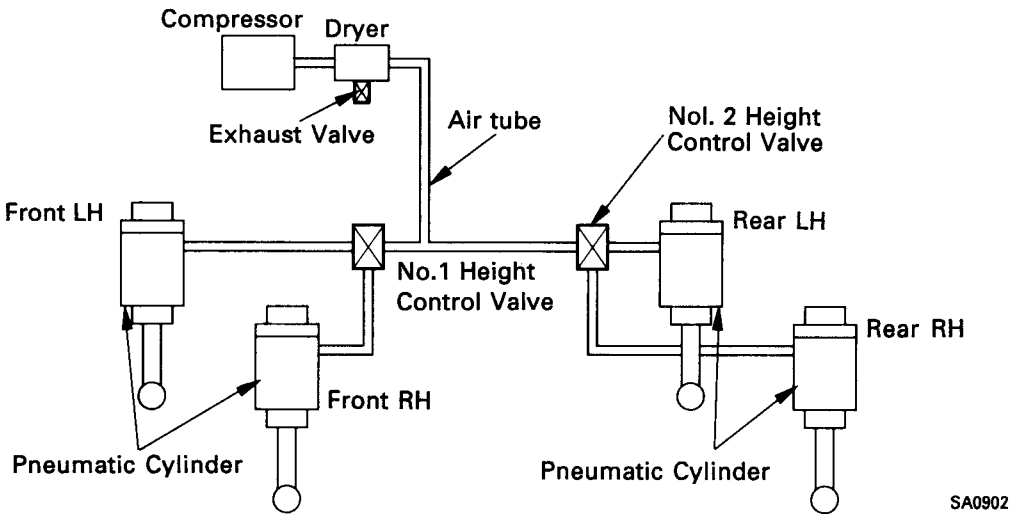
The ECU energizes the height control valve solenoid, which opens the valve and leads compressed air to the pneumatic cylinder, thus raising the vehicle height.

When lowering the vehicle height, the ECU energizes not only the height control valve solenoid but also the exhaust valve solenoid which open the valve and discharge the compressed air in the pneumatic cylinder to the atmosphere.

No.1 height control valve is for the front suspension control. It has two solenoid valves to control right hand and left hand pneumatic cylinders separately. No. 2 height control valve is for the rear suspension control and consists of two solenoid valves as does No.1 height control valve. Unlike the No. 1 solenoid valve, they do not operate separately. In the No. 2 height control valve, there is a relief valve to prevent an abnormal pressure build–up inside the air tubes.

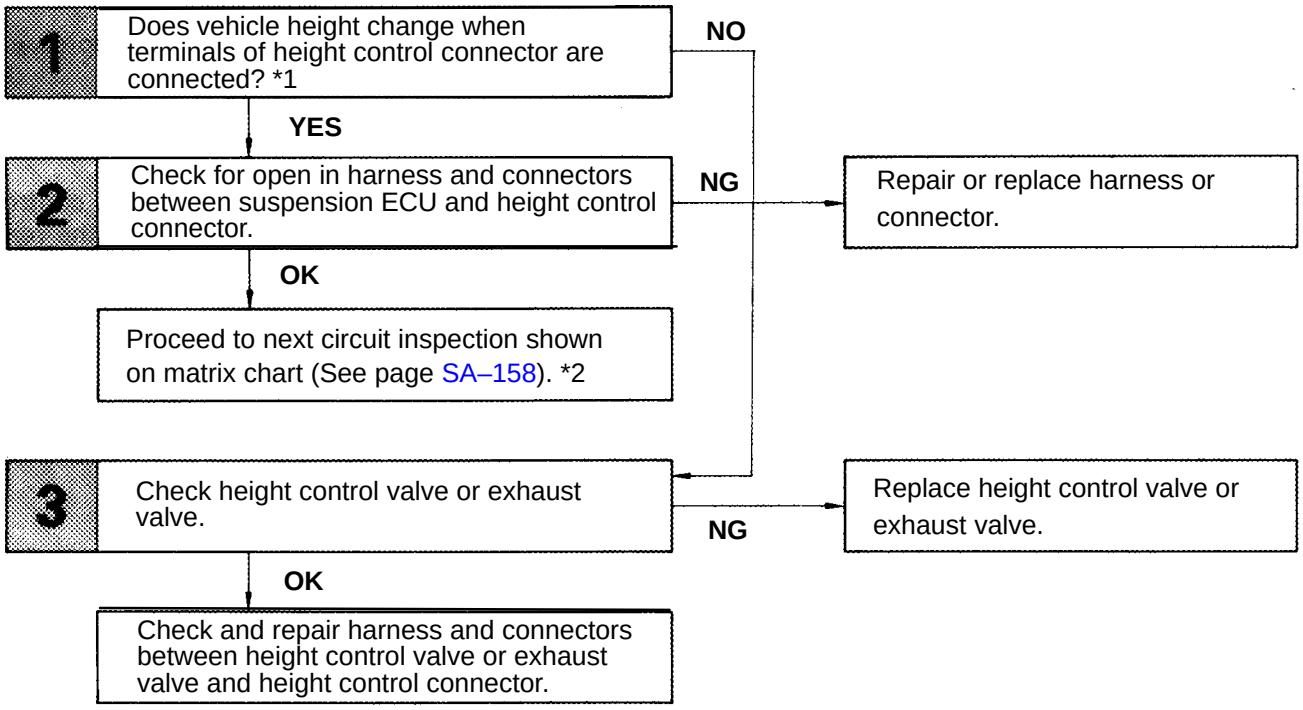
Code No.	Diagnosis	Trouble Area
31	Open or short circuit in No. 1 height control valve circuit.	• Harness or connector between ECU and height control valve. • Height control valve. • ECU
33	Open or short circuit in No. 2 height control valve circuit. (for right suspension)	
34	Open or short circuit in No. 2 height control valve circuit. (for left suspension)	
35	Open or short circuit in exhaust valve circuit.	• Harness or connector between ECU and exhaust valve. • Exhaust valve • ECU

Once the ECU stores diagnostic code 31, 33, 34 or 35 in memory, vehicle height control and damping force and spring rate controls are not carried out.



DIAGNOSTIC CHART

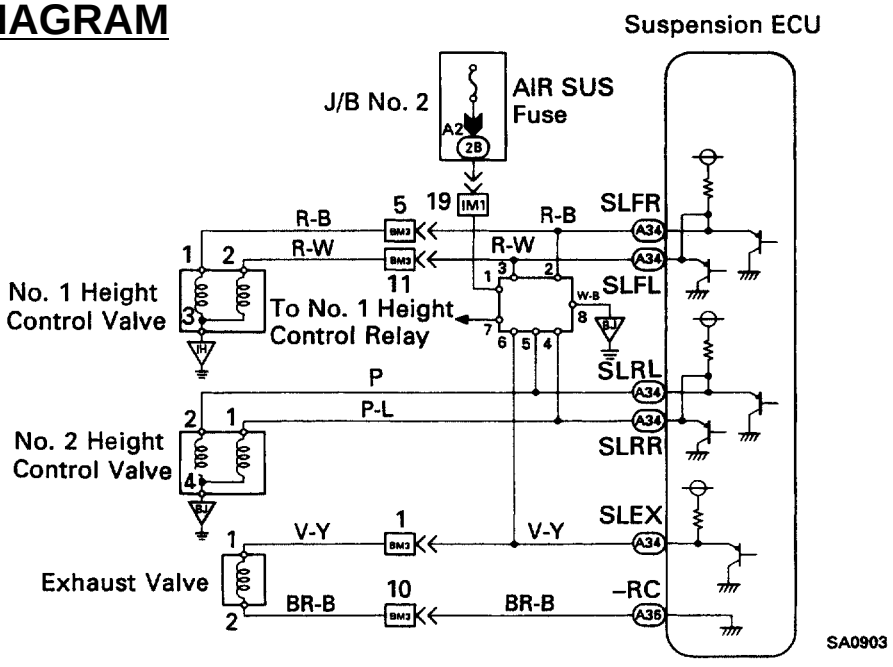
HINT: Proceed with troubleshooting in accordance with the flow chart shown below, regardless of whether or not diag. code 31, 33, 34 or 35 is displayed.



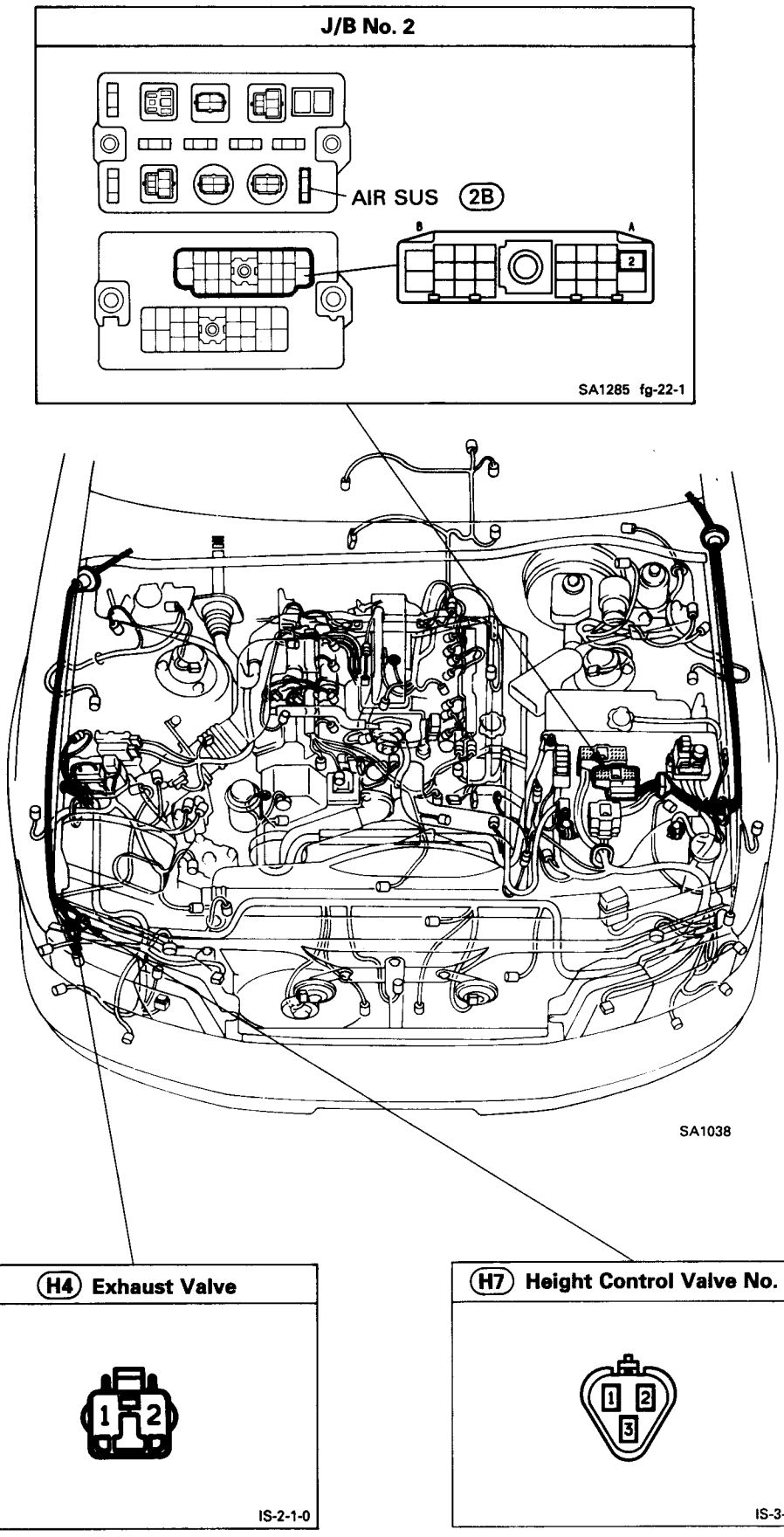
*1: When the compressor motor, No. 1 and No. 2 height control valves and exhaust valve are actuated directly with the height control connector, the ECU stores diagnostic codes 31, 33, 34, 35 or 41 in memory.

*2: When a problem cannot be found by performing the inspection in step **[1]** and **[2]**, the circuits for the No.1 and No.2 height control valves and the exhaust valve can be judged NORMAL.
However, if diag. codes 31, 33, 34 or 35 were displayed prior to step **[1]** and **[2]**, check and replace the suspension ECU.

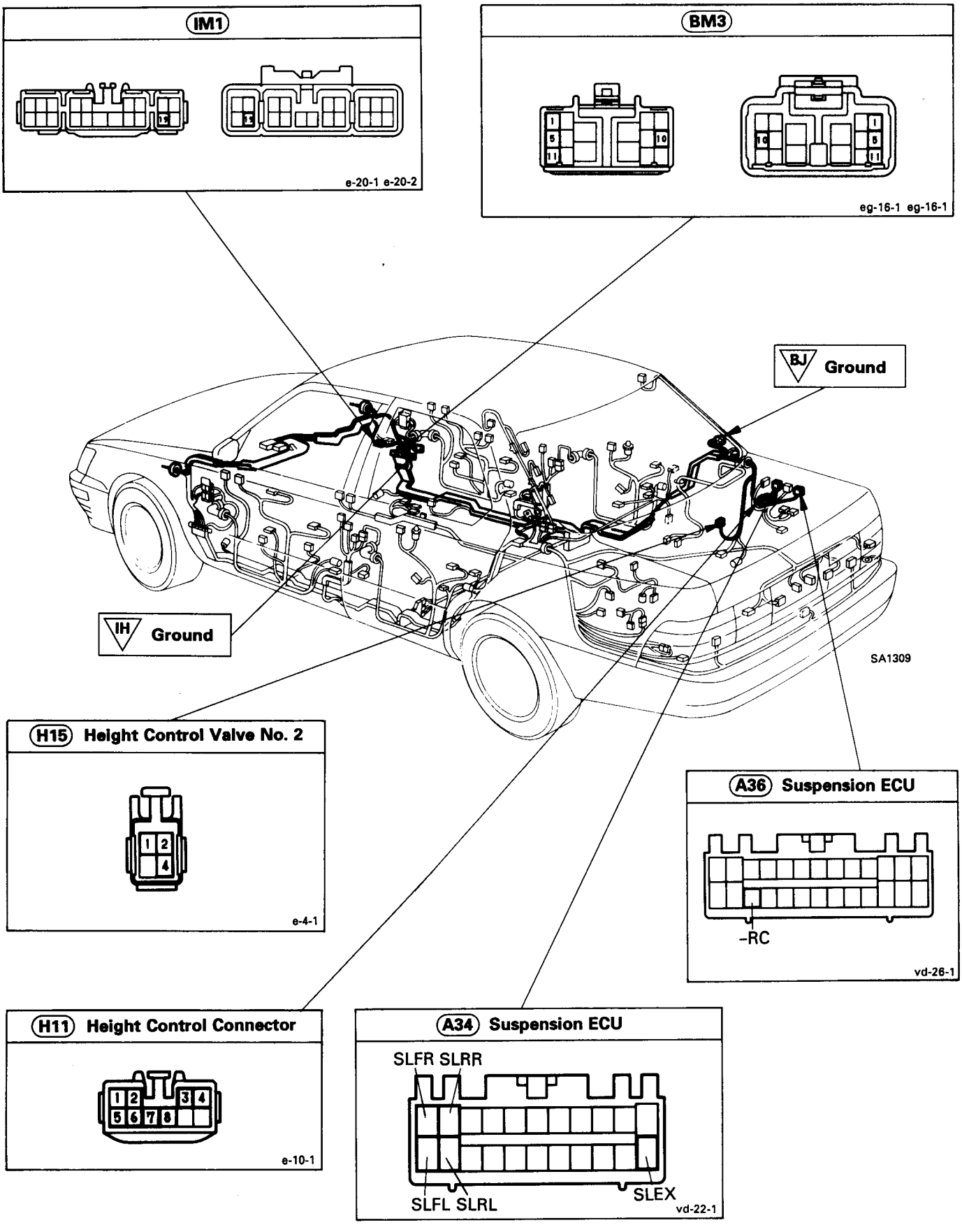
WIRING DIAGRAM



WIRING ROUTING



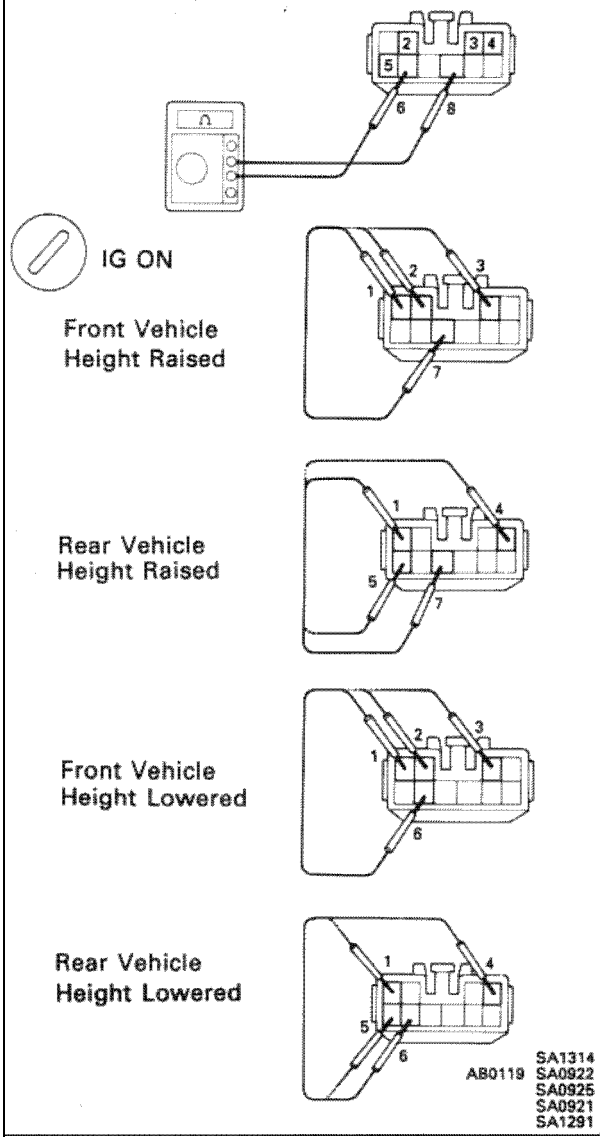
WIRING ROUTING



INSPECTION PROCEDURE

HINT1: • Proceed with troubleshooting in accordance with the flow chart shown below, regardless of whether or not diagnostic trouble code 31, 33, 34 or 35 is displayed.
HINT 2: • When diagnostic trouble code 31 is displayed, check the No. 1 height control valve circuit.
• When diagnostic trouble code 33 is displayed, check the No. 2 height control valve RH circuit.
• When diagnostic trouble code 34 is displayed, check the No. 2 height control valve LH circuit.
• When diagnostic trouble code 35 is displayed, check the exhaust valve circuit.
HINT 3: • If diagnostic trouble code 72 (suspension control actuator power source circuit) is displayed, perform inspection necessary for diagnostic trouble code 72 first (See page SA–193).

1 **Does vehicle height change when terminals of height control connector are connected? *1**



P Remove the luggage compartment RH side cover.

C Measure resistance between terminals of height control connector.

OK

Terminal	Resistance
2 – 8	9 – 15 Ω
3 – 8	9 – 15 Ω
4 – 8	9 – 15 Ω
5 – 8	9 – 15 Ω
6 – 8	9 – 15 Ω

C
1. Turn ignition switch on.
2. Check the change in vehicle height when the terminals of the height control connector shown below are connected.

○○ Connect

Height \ Terminal	1	2	3	4	5	6	7
Front RH Vehicle Height Raised	○	○					○
Front LH Vehicle Height Raised	○		○				○
Rear RH Vehicle Height Raised	○			○			○
Rear LH Vehicle Height Raised	○				○		○
Front RH Vehicle Height Lowered	○	○				○	
Front LH Vehicle Height Lowered	○		○			○	
Rear RH Vehicle Height Lowered	○			○		○	
Rear LH Vehicle Height Lowered	○				○	○	

OK **The vehicle height is raised or lowered as shown in the above table.**

Hint For circuit protection, never connect terminals 1 and 8 of height control connector.

YES

NO **Go to step [3].**

*1: When the compressor motor, No. 1 and No. 2 height control valves and exhaust valve are actuated directly with the height control connector, the ECU stores diagnostic trouble codes 31, 33, 34, 35 or 41 in memory. Furthermore, if the vehicle height is not raised or lowered in step **[1]**, it may be possible that battery voltage is not applied to terminal 1 of the height control connector.

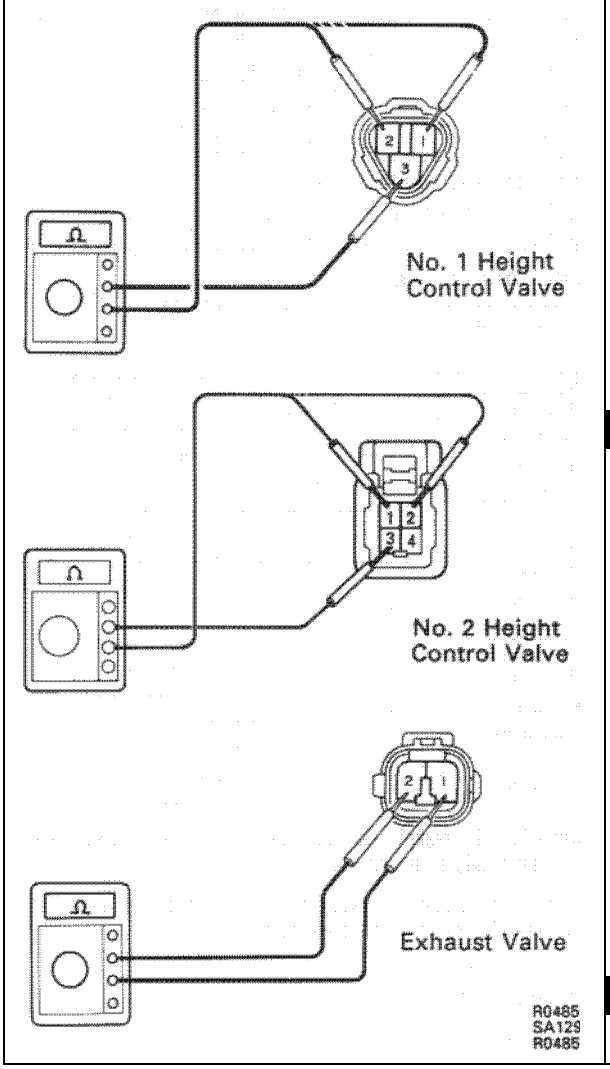
2 **Check for open in harness and connectors between suspension ECU and height control connector.**

OK → **NG** → **Repair or replace harness or connector.**

Proceed to next circuit inspection shown on matrix chart (See page SA–158). *2

*2: When a problem cannot be found by performing the inspection in step **[1]** and **[2]**, the circuits for the No. 1 and No. 2 height control valves and the exhaust valve can be judged NORMAL.
However, if diagnostic trouble codes 31, 33, 34 or 35 were displayed prior to step **[1]** and **[2]**, check and replace the suspension ECU.

3 **Check height control valve or exhaust valve.**



P For the No. 1 height control valve and exhaust valve,
1. Remove the front RH fender liner.
2. Disconnect the valve connector.

For the No. 2 height control valve,
1. Remove luggage compartment trim front cover.
2. Disconnect valve connector.

C Measure resistance between terminals.

OK

	Terminals	Resistance
No. 1 height control valve	1 – 3	9 – 15 Ω
	2 – 3	9 – 15 Ω
No. 2 height control valve	1 – 4	9 – 15 Ω
	2 – 4	9 – 15 Ω
Exhaust valve	1 – 2	9 – 15 Ω

C Check operating sound of valves when battery voltage is applied to the terminals shown below.

Valve	Battery ⊕	Battery ⊖
No. 1 height control valve	1	3
	2	3
No. 2 height control valve	1	4
	2	4
Exhaust valve	1	2

OK **It should make an operating sound (click).**

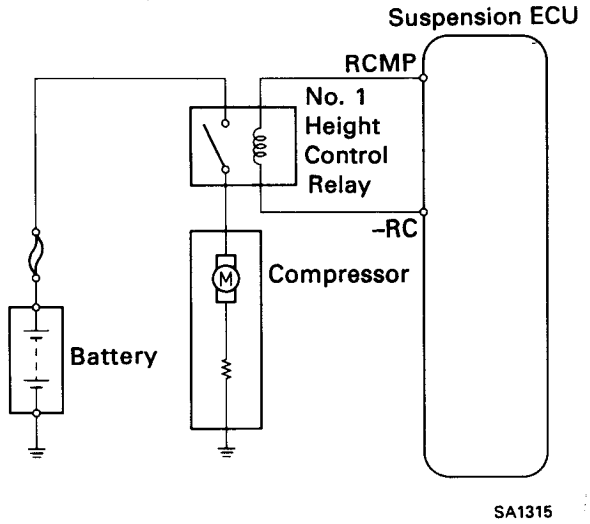
OK → **NG** → **Replace height control valve or exhaust valve.**

Check and repair harness and connectors between height control valve or exhaust valve and height control connector.

Diag. Code	41	No. 1 Height Control Relay Circuit

CIRCUIT DESCRIPTION

When raising of the vehicle height starts, a signal is sent from terminal RCMP of the ECU to switch the No. 1 height control relay on. As a result, current flows to the No. 1 height control relay coil, the contacts in the relay close, and thus battery voltage is applied to the compressor, the compressor produces compressed air.

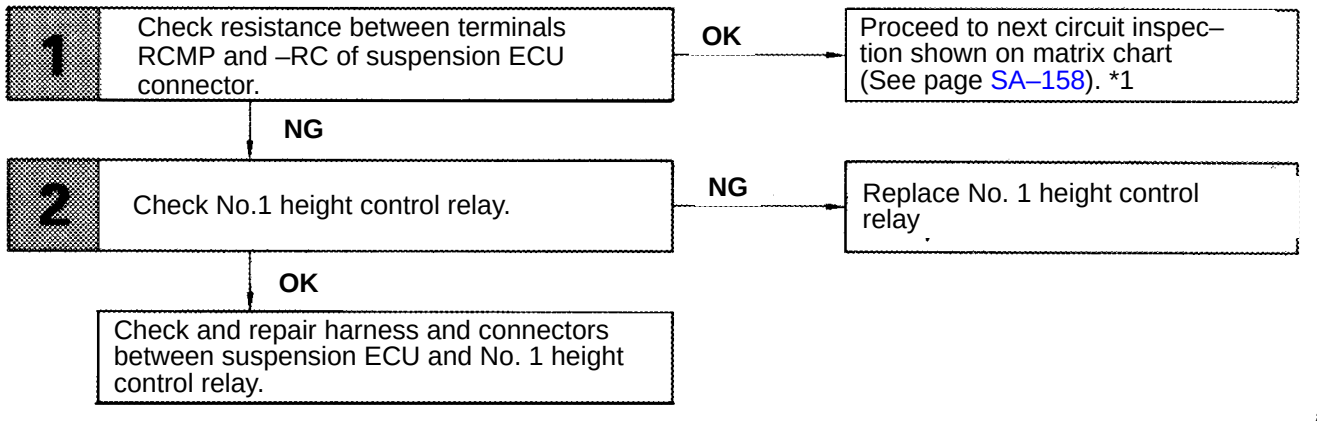


Code No.	Diagnosis	Trouble Area
41	Open or short circuit in No. 1 height control relay circuit.	• Harness or connector between ECU and No.1 height control relay. • No. 1 height control relay. • ECU

Once the ECU stores diagnostic code 41 in memory, vehicle height control and damping force and spring rate controls are not carried out.

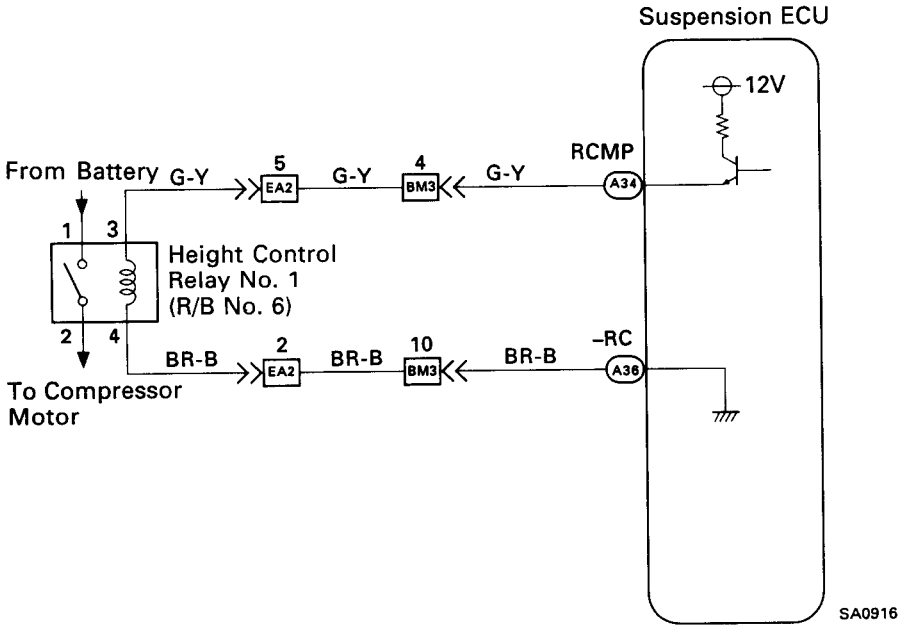
HINT: Since the terminal –RC of the ECU is also the ground terminal for the exhaust valve, when there is an open circuit at the terminal –RC, exhaust valve malfunction code ”35” may be output.

DIAGNOSTIC CHART

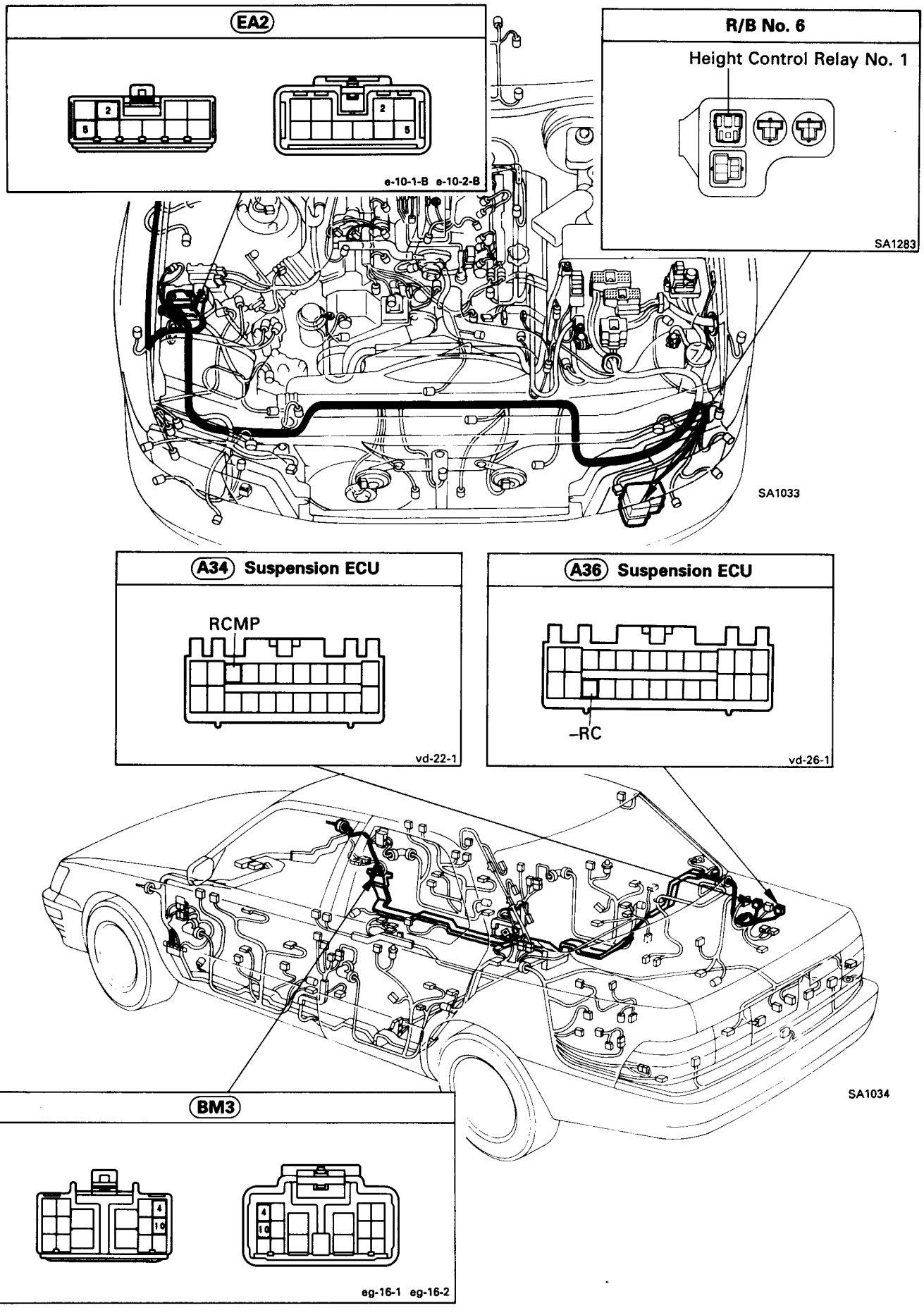


*1: However, when diag. code 41 is displayed, check and replace suspension ECU.

WIRING DIAGRAM

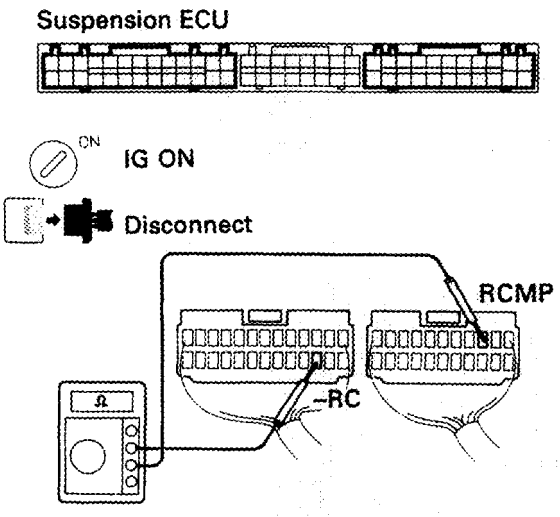


WIRING ROUTING



INSPECTION PROCEDURE

1 **Check resistance between terminals RCMP and –RC of suspension ECU connector.**



P
1. Remove luggage compartment RH side cover.
2. Disconnect suspension ECU connectors.

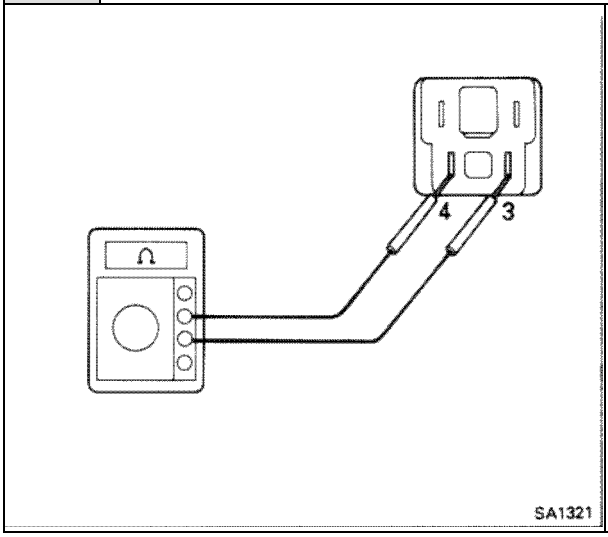
C Measure resistance between terminals RCMP and –RC of suspension ECU connector.

OK **Resistance: 50 – 100 Ω**

NG

OK **Proceed to next circuit inspection shown on matrix chart (See page SA–158). *1**

2 **Check No. 1 height control relay.**



P
1. Remove LH headlight (See page BE–35).
2. Remove No.1 height control relay.

C Measure resistance between terminals 3 and 4 of No. 1 height control relay.

OK **Resistance: 50 – 100 Ω**

OK

NG **Replace No. 1 height control relay.**

Check and repair harness and connectors between suspension ECU and No. 1 height control relay.

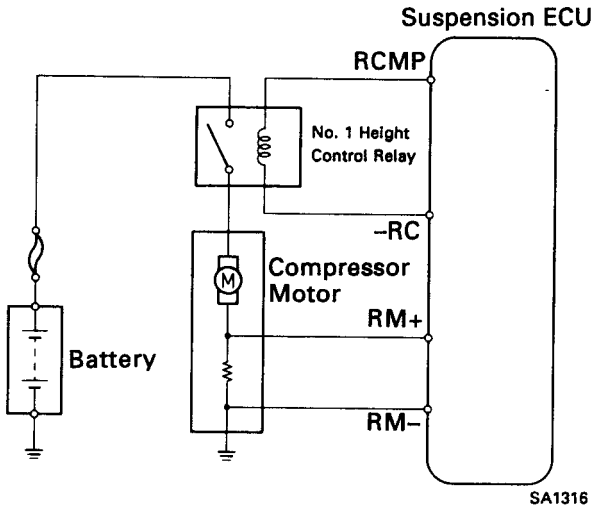
*1: However, when diagnostic trouble code 41 is displayed,check and replace suspension ECU.

Diag. Code	42	Compressor Motor Circuit

CIRCUIT DESCRIPTION

During raising of the vehicle height, a signal is sent from terminal RCMP of the ECU to switch the No. 1 height control relay on. As a result, the relay contacts close and the compressor motor turns, producing compressed air.

At this time also, the ECU senses the amount of current flow to the compressor motor by means of the differences in potential at the terminals RM+ and RM– of the ECU. In this way, the ECU monitors the compressor circuit for abnormalities.



Code No,	Diagnosis	Trouble Area
42	The potential differences at the terminal RM+ and RM– exceeds a predetermined value when the RCMP terminal is on.	• Harness or connectors between ECU and compressor motor. • Compressor motor. • ECU

When the ECU stores diagnostic code 42 in memory, damping force and spring rate controls and vehicle height control are not carried out.

DIAGNOSTIC CHART

1. Does compressor motor operate when terminals of height control connector are connected? *1
   - NO → Proceed to next circuit inspection shown on matrix chart (See page SA–158). *2
   - YES ↓
2. Check continuity between terminals RM + and RM– of suspension ECU connector
   - OK → Proceed to next circuit inspection shown on matrix chart (See page SA–158). *2
   - NG ↓
3. Check harness and connectors between suspension ECU and compressor.
   - NG → Repair or replace harness or connector
   - OK ↓

Replace compressor.

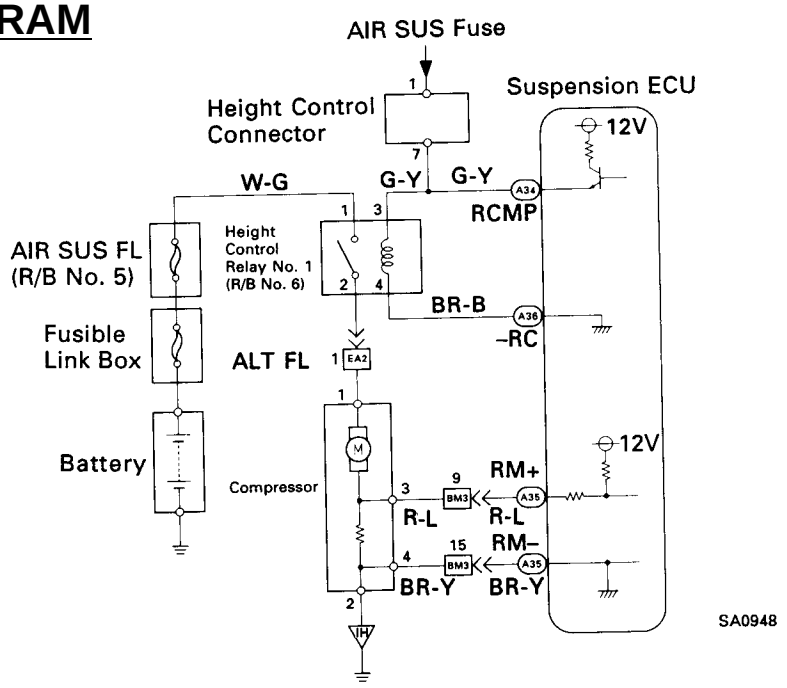
4. Check No. 1 height control relay.
   - NG → Replace No. 1 height control relay.
   - OK ↓
5. Check compressor motor.
   - NG → Replace compressor.
   - OK ↓

Check and repair harness and connectors between battery and relay, relay and compressor, compressor and body ground.

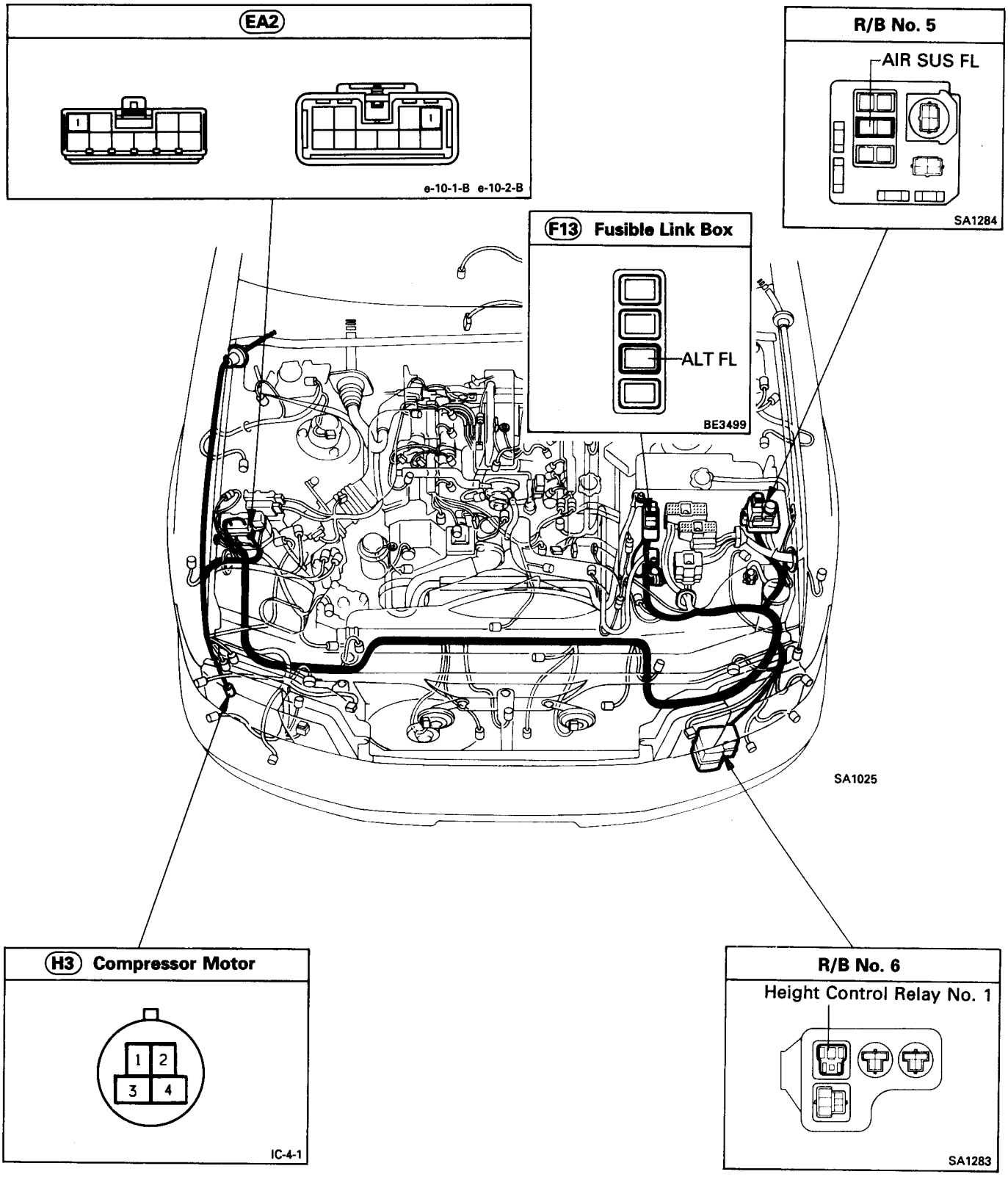
*1: When the compressor motor is actuated directly with the height control connector, the ECU stores diagnosticcode 41 in memory.

*2: However, when diag. code 42 is displayed, check and replace suspension ECU.

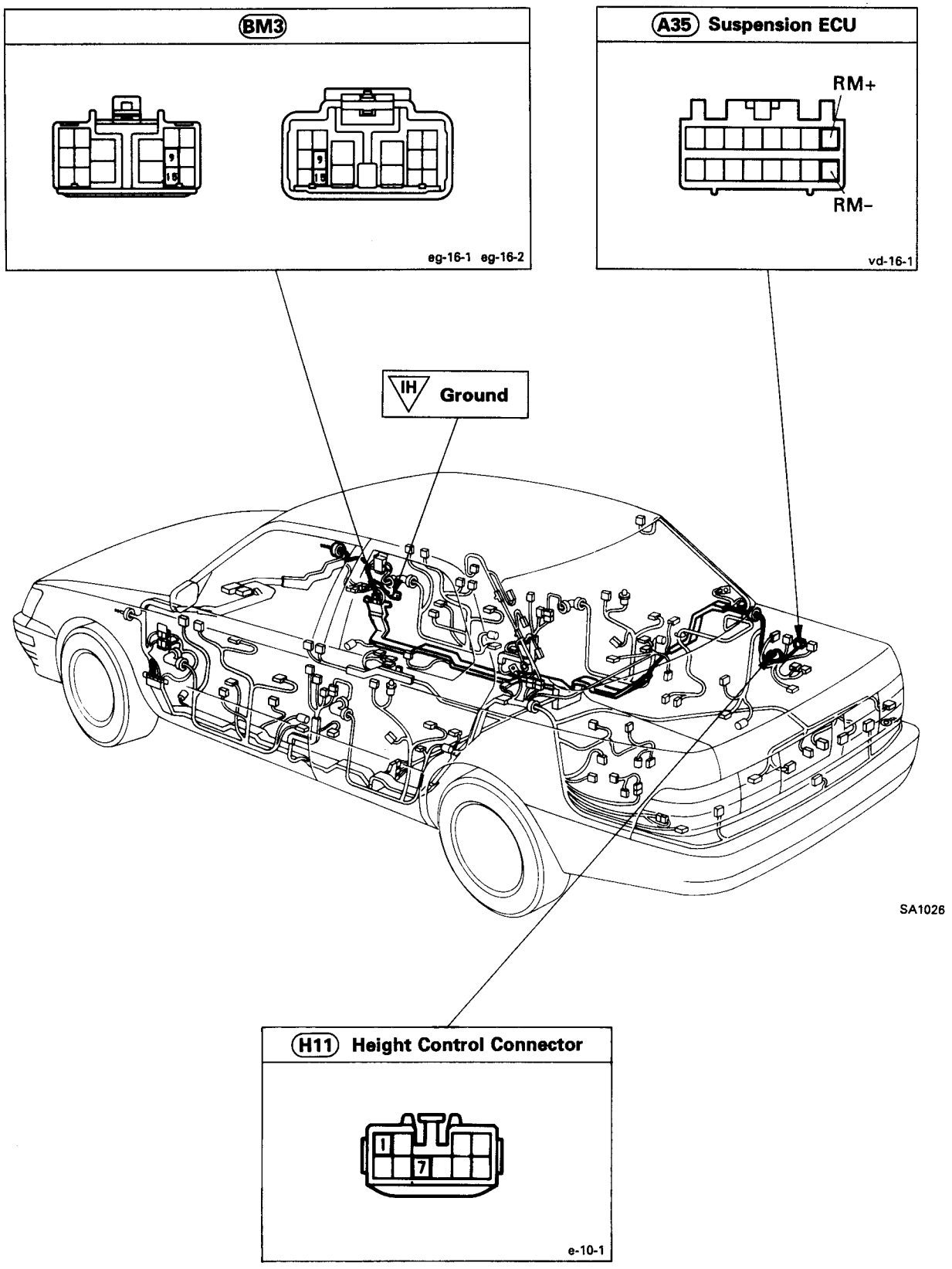
WIRING DIAGRAM



WIRING ROUTING

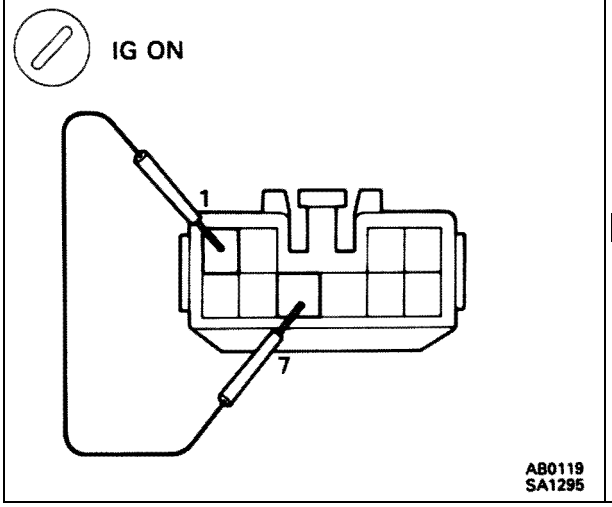


WIRING ROUTING



INSPECTION PROCEDURE

1 **Does compressor motor operate when terminals of height control connector are connected? *1**



P 1. Remove luggage compartment RH side cover.
2. Turn ignition switch ON.

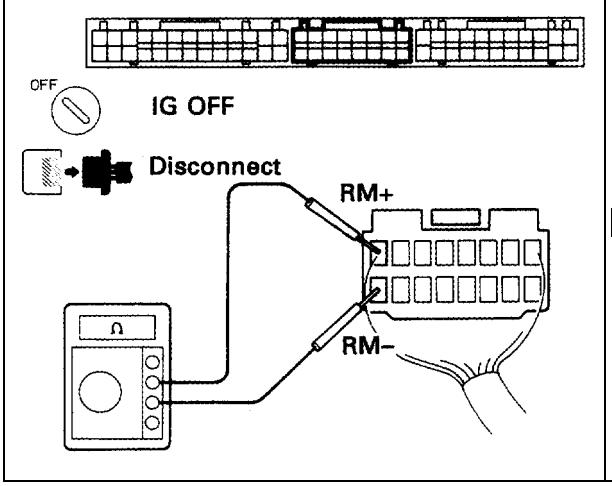
C Connect terminals 1 and 7 of height control connector.

OK **Compressor motor operates.**

YES

NO **Go to step [4].**

2 **Check continuity between terminals RM+ and RM– of suspension ECU connector.**



P Disconnect the suspension ECU connector.

C Check continuity between terminals RM+ and RM– of suspension ECU connector.

OK **Continuity**

NG

OK **Proceed to next circuit inspection shown on matrix chart (See page SA–158). *2**

3 **Check harness and connectors between suspension ECU and compressor.**

OK

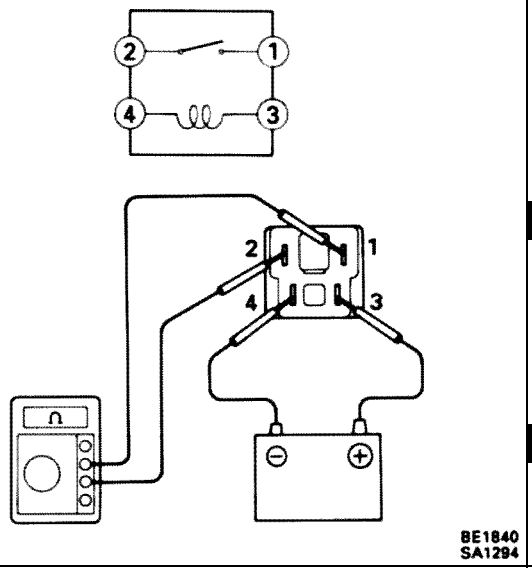
NG **Repair or replace harness or connector.**

Replace compressor.

*1: When the compressor motor is actuated directly with the height control connector, the ECU stores diagnostic trouble code 41 in memory.

*2: However, when diagnostic trouble code 42 is displayed, check and replace suspension ECU.

4 Check No. 1 height control relay.



P
1. Remove LH headlight (See page BE–35).
2. Remove No. 1 height control relay.

C Check continuity between terminals of No. 1 height control relay shown below.

OK

Terminals 1 and 2	Open
Terminals 3 and 4	Continuity

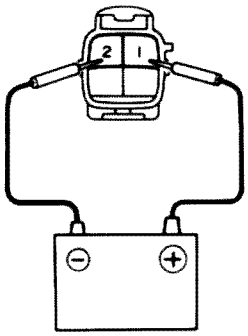
C
1. Apply battery voltage between terminals 3 and 4.
2. Check continuity between terminals 1 and 2.

OK

Terminals 1 and 2	Continuity

OK → **NG** → **Replace No. 1 height control relay.**

5 Check compressor motor.



P
1. Remove the front RH fender liner.
2. Disconnect the compressor motor connector.

C Connect the positive ⊕ lead to terminal 1 and negative ⊖ lead to terminal 2 of compressor motor connector.

OK **Compressor motor operates.**

OK → **NG** → **Replace compressor.**

Check and repair harness and connectors between battery and relay, relay and compressor, compressor and body ground.

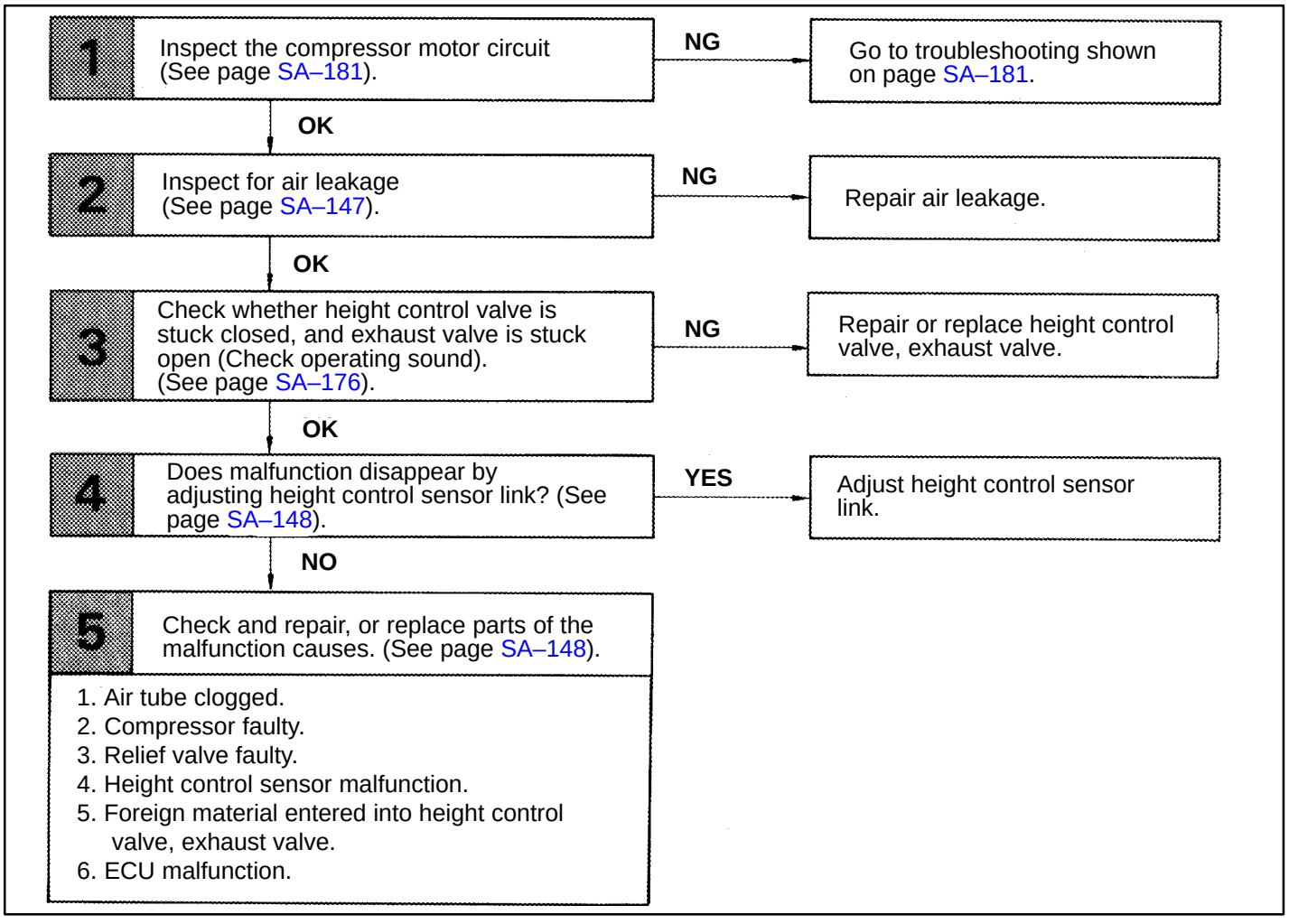
Diag. Code	51	Continuous electric current to No. 1 height control relay

CIRCUIT DESCRIPTION

Code No.	Diagnosis	Trouble Area
51*1	Electric current is supplied to No.1 height control relay, which drives compressor motor, for approx. 8.5 minutes or longer.	• Compressor motor • Compressor • Air tube • No.1, No. 2 height control valves • Exhaust valve • Height control sensor link • Height control sensor • Relief valve • ECU

*1: Since the relief pressure of the compressed air is 10 kg/cm^2, if vehicle height control is attempted on a steeply sloping road, or when the vehicle is overloaded, the compressor motor operated continuously to raise vehicle height, and causes electric current to flow to No.1 height control relay for approx. 8.5 minutes or longer.
Thus code "51" may be output and vehicle height control and damping force and spring rate controls may be suspended. (This is not abnormal.) However, in this case, approximately 70 minutes after the ignition switch is turned off, then on again, vehicle height control and damping force and spring rate control are resumed again.

DIAGNOSTIC CHART



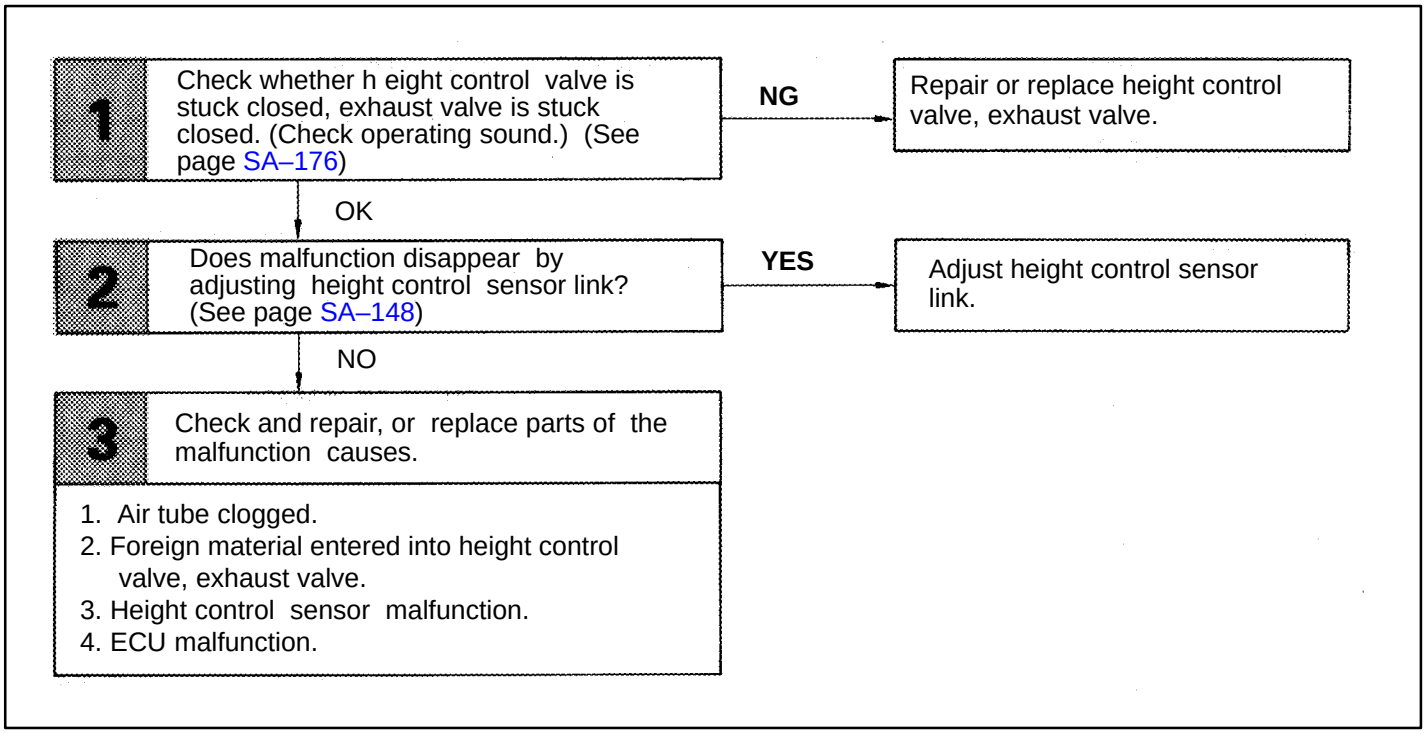
Diag. Code	52	Continuous electric current to exhaust valve

CIRCUIT DESCRIPTION

Code No.	Diagnosis	Trouble Area
52*1	Electric current is supplied to exhaust valve, which decreases vehicle height, for approx. 6 minutes or longer.	• Height control valve • Exhaust valve • Air tube • Height control sensor link • Height control sensor • ECU

*1: If vehicle height control is operated while removing wheels or while jacking up the vehicle, code ”52” maybe output, but this is not abnormal. When code ”52” is output, vehicle height control, damping force and spring rate controls are not carried out.
However, control is resumed if the ignition switch is turned off, then on again.

DIAGNOSTIC CHART



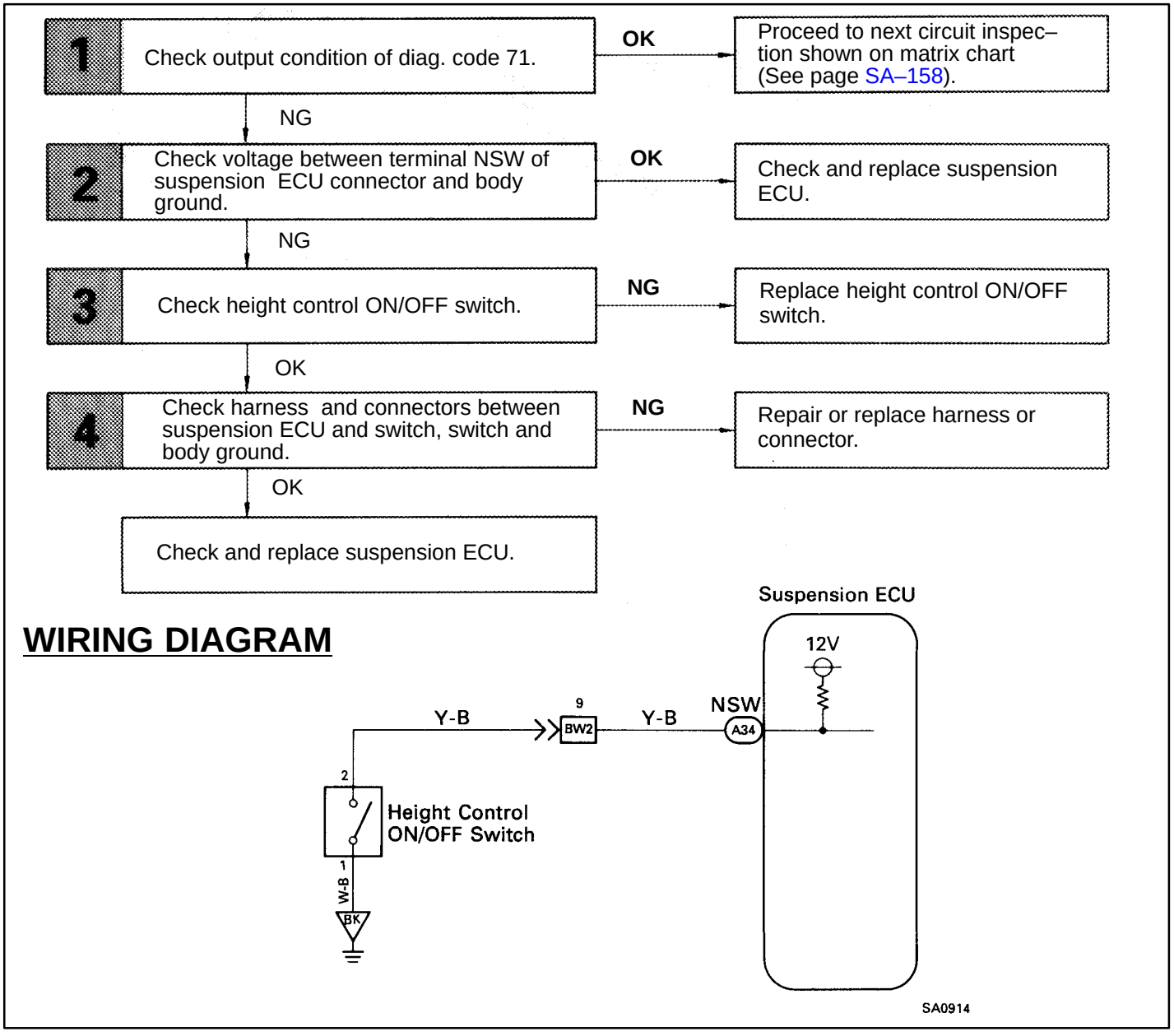
Diag. Code	71	Height Control ON/OFF Switch Circuit

CIRCUIT DESCRIPTION

When the height control ON/OFF switch is in the ”OFF” position, this circuit is closed, and when it is in the ”ON” position, this circuit is open. When the switch is in the ”OFF” position, vehicle height control is not carried out and diagnostic code ”71” is output.

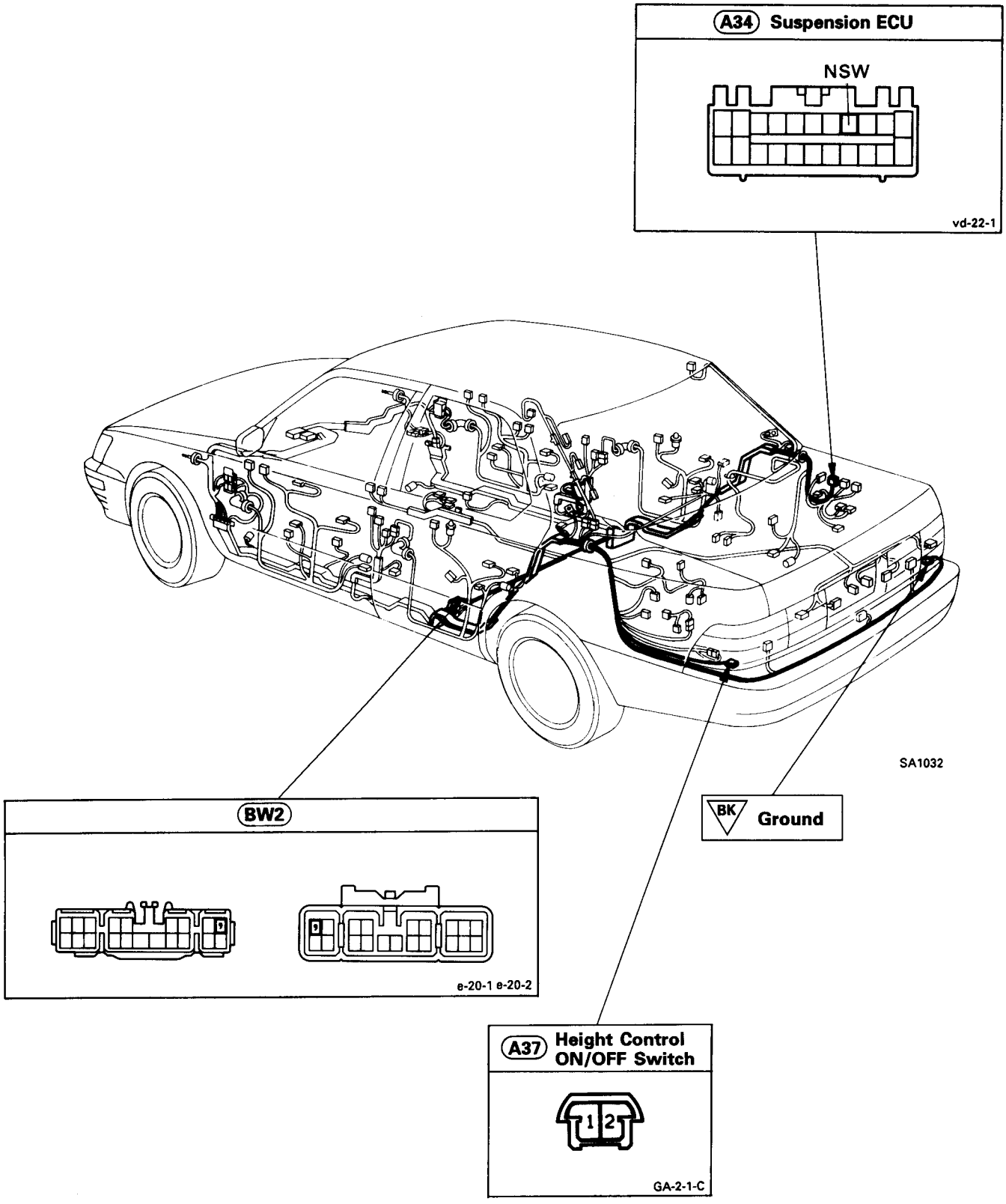
Code No.	Diagnosis	Trouble Area
71	• Height control ON/OFF switch is in ”OFF” position. • Short circuit in height control ON/OFF switch circuit.	• Harness or connector between ECU and height control ON/OFF switch. • Height control ON/OFF switch. • ECU

DIAGNOSTIC CHART



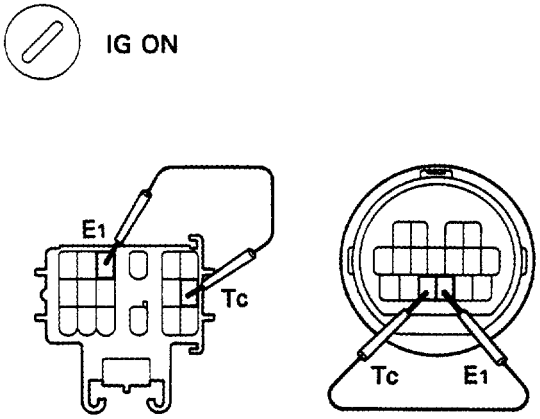
WIRING DIAGRAM

WIRING DIAGRAM



INSPECTION PROCEDURE

1 Check output condition of diagnostic trouble code 71.



P

1. Connect terminals Tc and E1 of TDCL or Check Connector.
2. Turn ignition switch on.

C

Read diagnostic trouble code when height control ON/OFF switch is pushed to the “ON” position and “OFF” position.

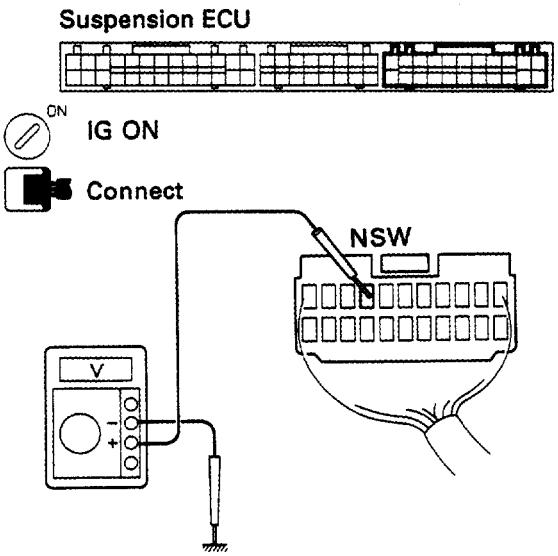
OK

Switch Position	Code
"ON" position	"Code 71" not output
"OFF" position	"Code 71" output

NG

OK → **Proceed to next circuit inspection shown on matrix chart (See page SA–158).**

2 Check voltage between terminal NSW of suspension ECU connector and body ground.



P

1. Remove luggage compartment RH side cover.
2. Turn ignition switch on.

C

Measure voltage between terminal NSW of suspension ECU connector and body ground, when height control ON/OFF switch in in “ON” position and “OFF” position.

OK

Height control ON/OFF SW	Voltage
"ON" position	Battery voltage
"OFF" position	0 V

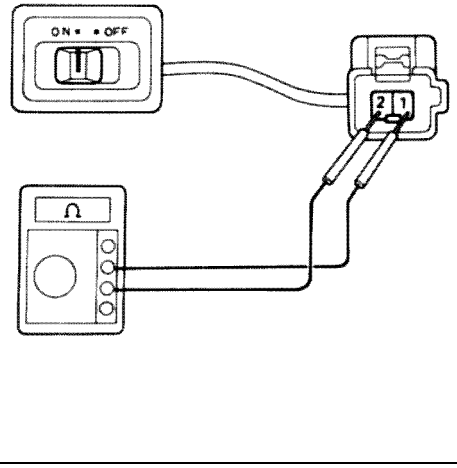
NG

OK → **Check and replace suspension ECU.**

Go to step [3].

3 **Check height control ON/OFF switch.**

Height Control
ON/OFF Switch



R04855

P
1. Remove luggage compartment LH side cover.
2. Disconnect height control ON/OFF switch connector.

C Measure resistance between terminals of height control ON/OFF switch connector, when height control ON/OFF switch is in “ON” position and “OFF” position.

OK

SW Position	Resistance
ON	∞ Ω (Open)
OFF	0 Ω (Continuity)

OK → **NG** → **Replace height control ON/OFF switch.**

4 **Check harness and connectors between suspension ECU and switch, switch and body ground.**

OK → **NG** → **Repair or replace harness or connector.**

Check and replace suspension ECU.

Diag. Code	72	Suspension Control Actuator Power Source Circuit

CIRCUIT DESCRIPTION

Code No.	Diagnosis	Trouble Area
72	Battery voltage is not applied to terminal +B of the ECU when ignition switch is ON.	• AIR SUS fuse. • Harness or connectors between ECU and engine main relay. • ECU

If diagnostic code 72 is stored in the ECU memory, damping force and spring rate control is not carried out until battery voltage is supplied to terminal +B of the ECU.

DIAGNOSTIC CHART

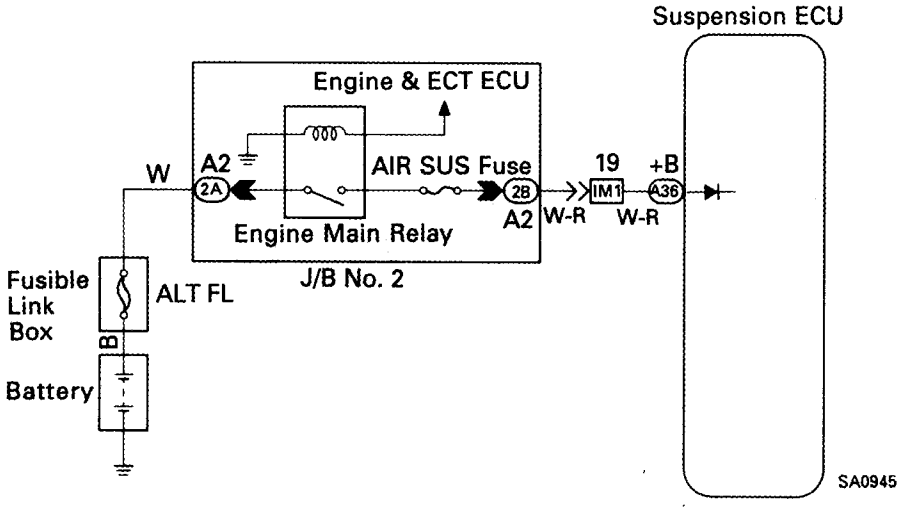
1 Check voltage between terminal +B of suspension ECU connector and body ground.

OK → Proceed to next circuit inspection shown on matrix chart (See page SA–158). *1

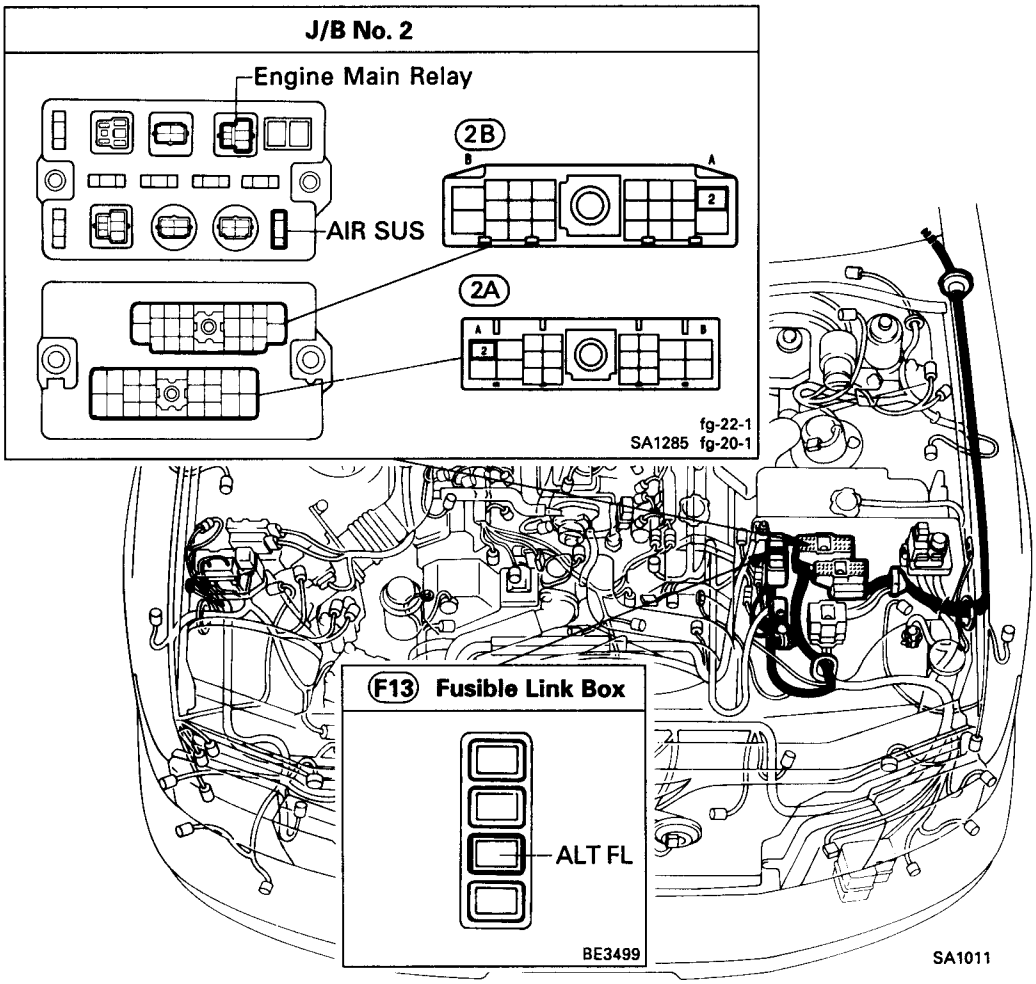
NG → Check and repair AIR SUS fuse, harness and connectors between suspension ECU and engine main relay.

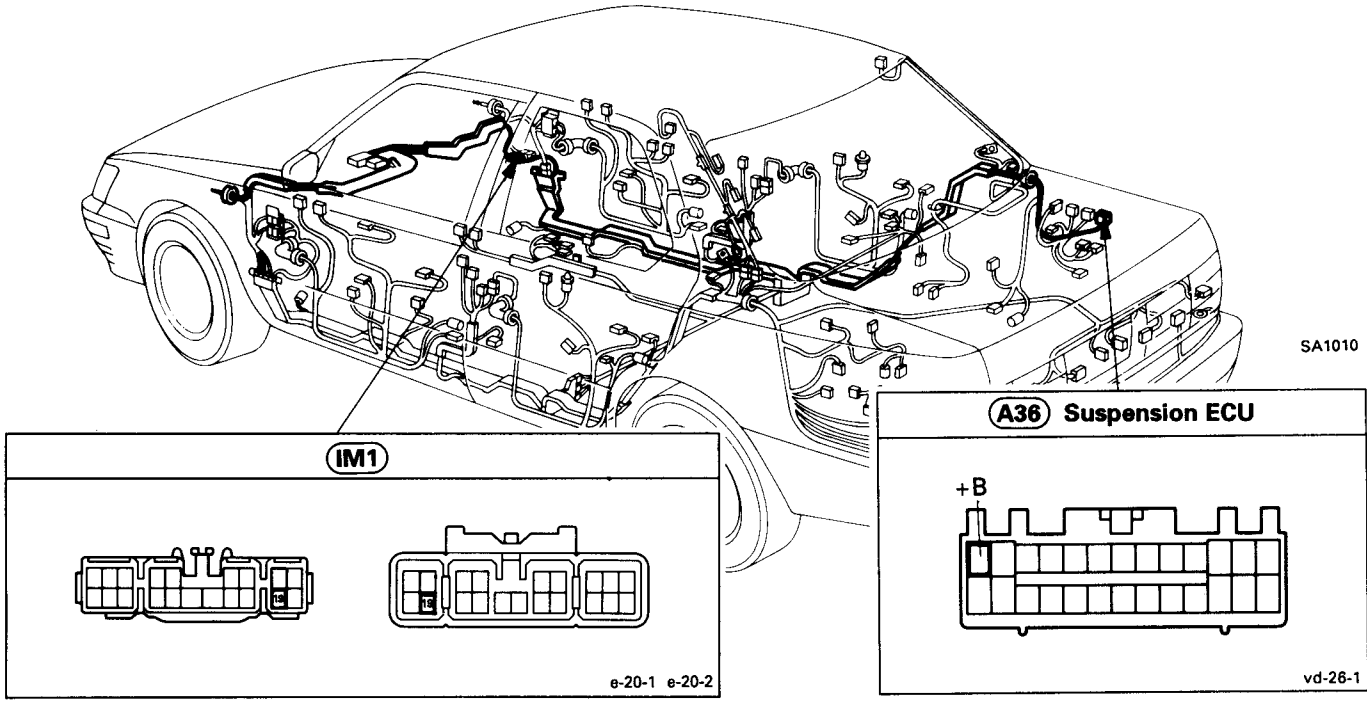
*1: However, when diag. code 72 is displayed, check and replace suspension ECU.

WIRING DIAGRAM



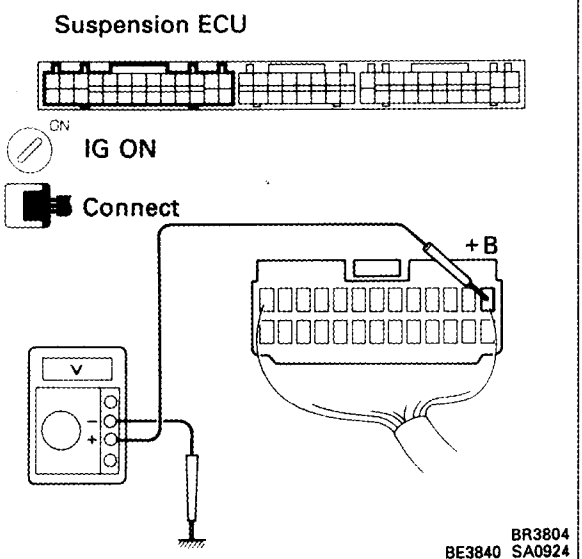
WIRING ROUTING





INSPECTION PROCEDURE

1 **Check voltage between terminal +B of suspension ECU connector and body ground.**



P (1) Remove luggage compartment RH side cover.
(2) Turn ignition switch on.

C Measure voltage between terminal +B of suspension ECU connector and body ground.

OK **Voltage: Battery voltage**

NG

Check and repair AIR SUS fuse, harness and connectors between suspension ECU and engine main relay

OK **Proceed to next circuit inspection shown on matrix chart (See page SA–158). *1**

*1: However, when diag. code 72 is displayed, check and replace suspension ECU.

Vehicle Height Control Power Source Circuit

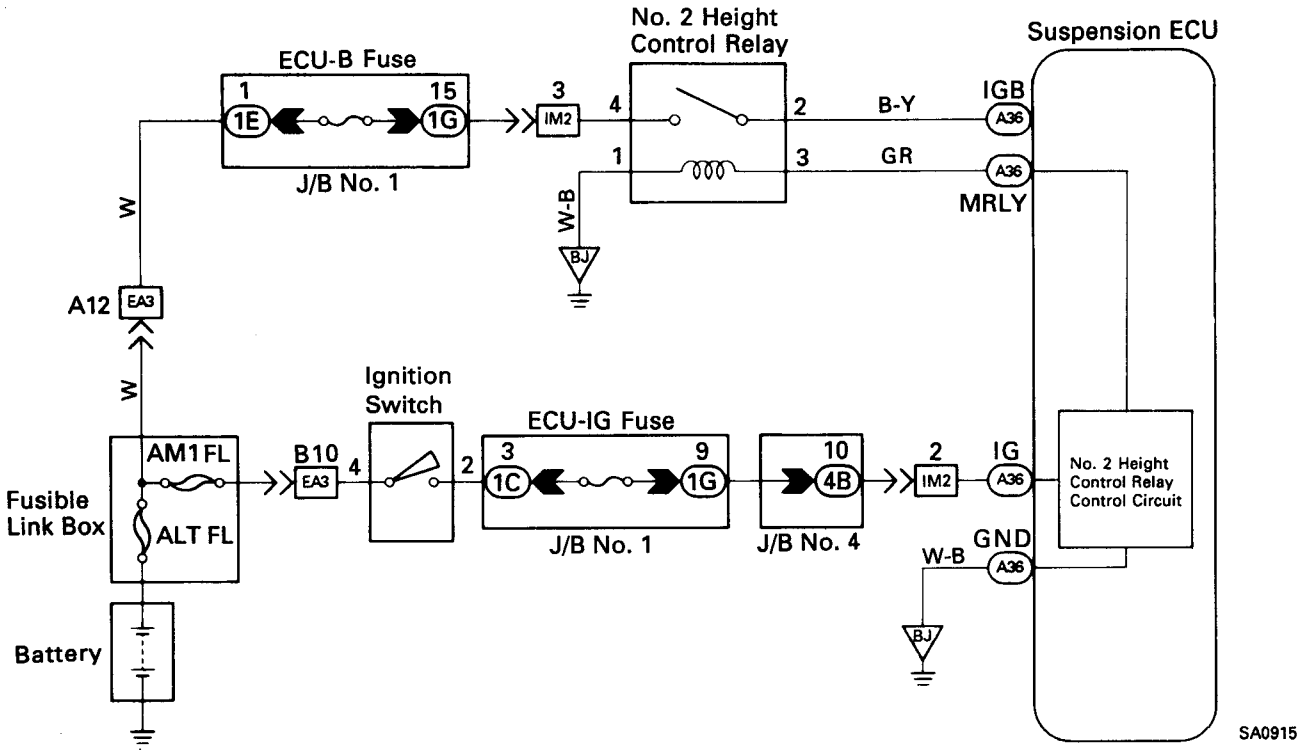
CIRCUIT DESCRIPTION

When the ignition switch is turned on, battery voltage is applied to terminal IG of the suspension ECU. When this happens, the No. 2 height control relay control circuit in the ECU sends signals to terminal MRLY and switches the No. 2 height control relay on. This causes current to flow to the coil and thus the contacts in the No. 2 height control relay close. This in turn causes battery voltage to be supplied to terminal IGB. Terminal IGB is the power supply for driving the height control valve and terminal IG is used as the power supply for the suspension control indicator. Furthermore, the ECU detects the ignition switch on or off condition at terminal IG. Even when the ignition switch is turned off, the ECU continues to send signals to No. 2 height control relay from terminal MRLY to keep it on for a set period of time to perform Ignition Switch Off Control.

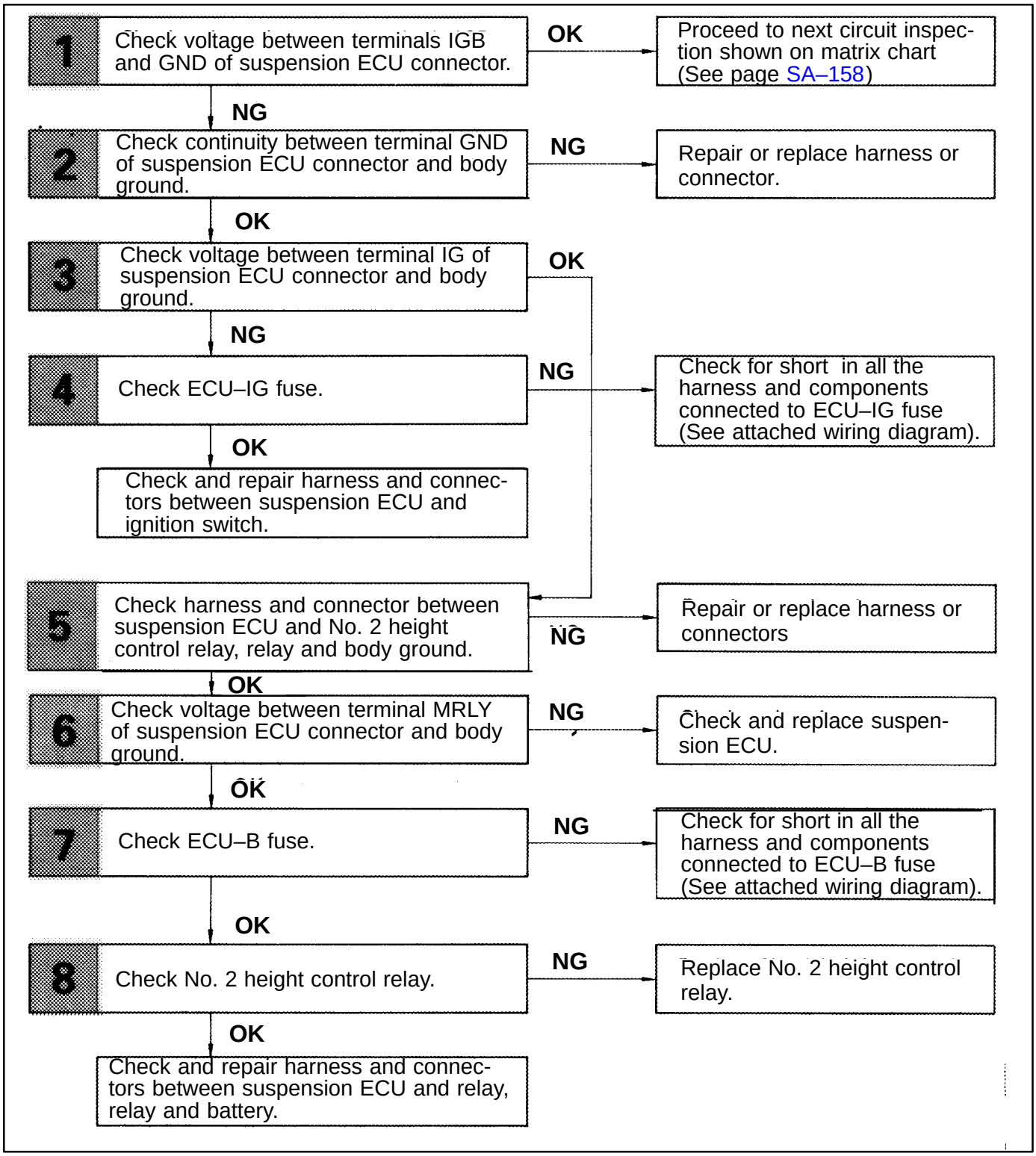
DIAGNOSTIC CHART

See next page for DIAGNOSTIC CHART.

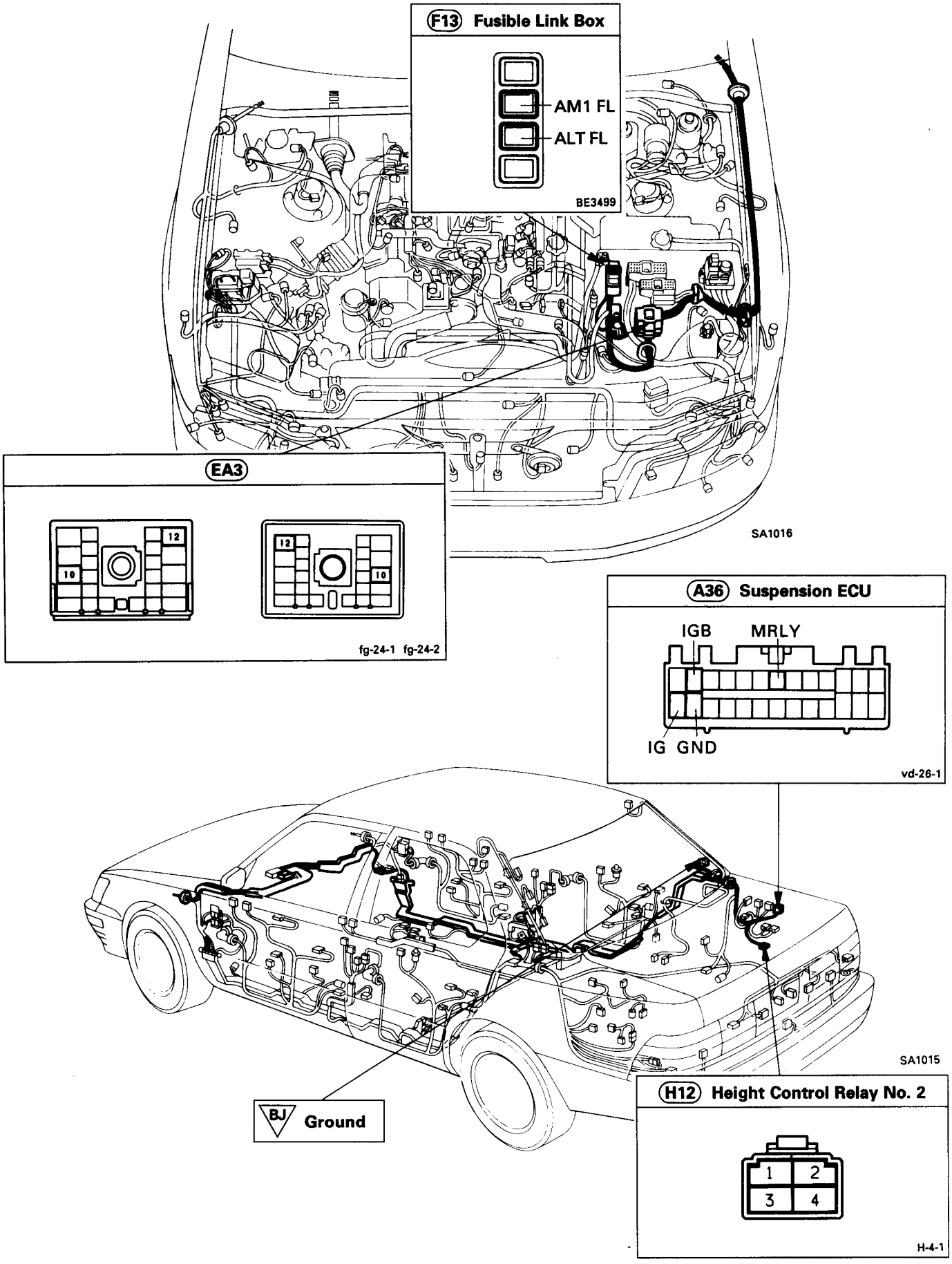
WIRING DIAGRAM



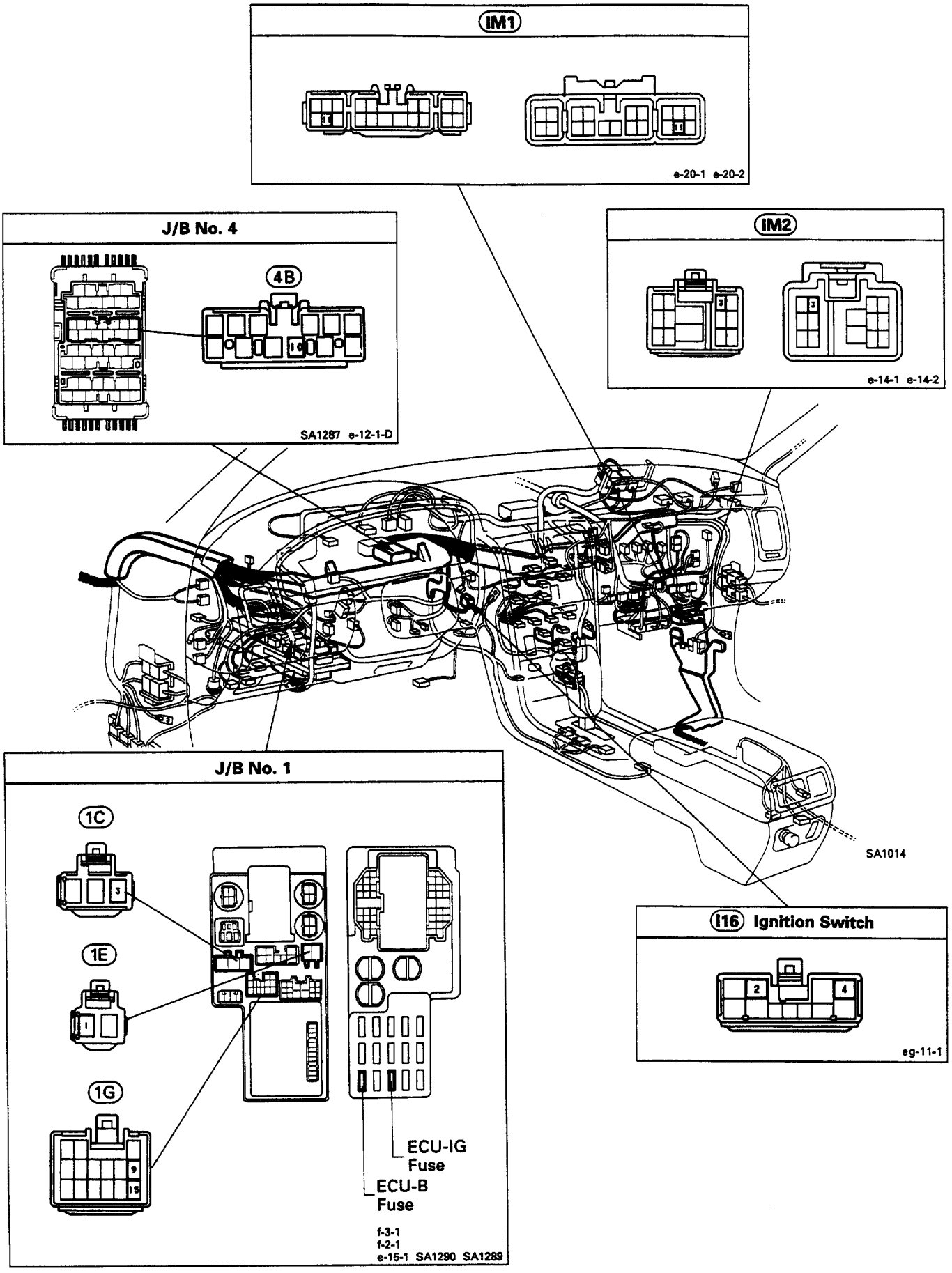
DIAGNOSTIC CHART



WIRING ROUTING

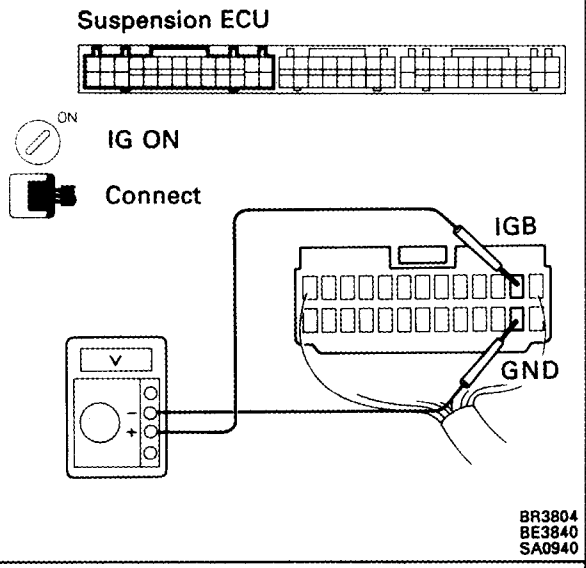


WIRING ROUTING



INSPECTION PROCEDURE

1 **Check voltage between terminals IGB and GND of suspension ECU connector.**



P (1) Remove luggage compartment RH side cover.
(2) Turn ignition switch on.

C Measure voltage between terminals IGB and GND of suspension ECU connector.

OK **Voltage: Battery voltage**

NG

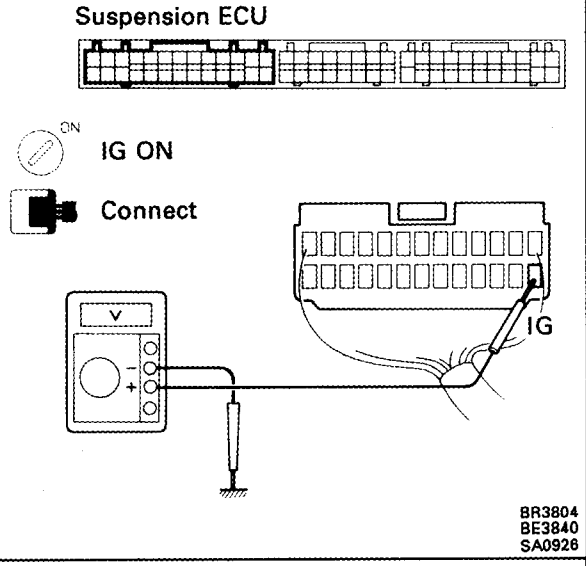
OK → **Proceed to next circuit inspection shown on matrix chart. (See page SA–158).**

2 **Check continuity between terminal GND of suspension ECU connector and body ground.**

OK

NG → **Repair or replace harness or connector.**

3 **Check voltage between terminal IG of suspension ECU connector and body ground.**



P Turn ignition switch on.

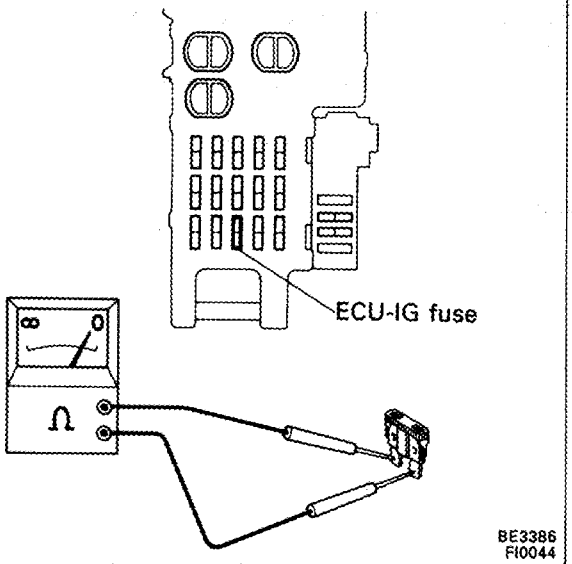
C Measure voltage between terminals IG of suspension ECU connector and body ground.

OK **Voltage: Battery voltage**

NG

OK → **Go to step 5.**

4 **Check ECU–IG fuse.**



P (1) Remove the No. 1 under cover and LH lower pad.
(2) Remove ECU–IG fuse from J/B No. 1.

C Check continuity of ECU–IG fuse.

OK **Continuity**

OK

NG **Check for shorts in all the harness and components connected to ECU–IG fuse (See attached wiring diagram).**

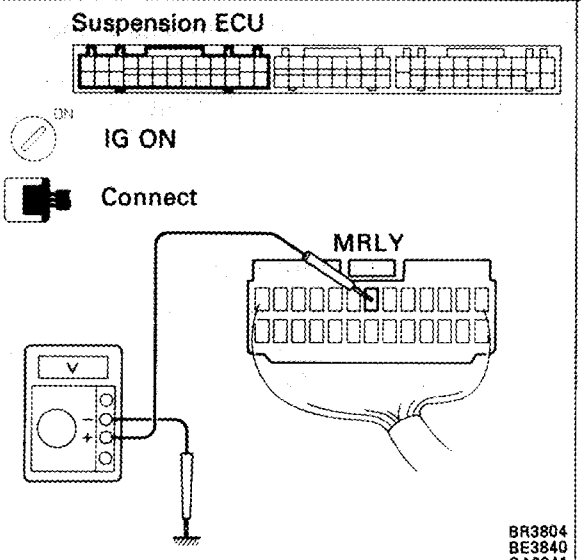
Check and repair harness and connectors between suspension ECU and ignition switch.

5 **Check harness and connectors between suspension ECU and No. 2 height control relay, relay and body ground.**

OK

NG **Repair or replace harness or connector.**

6 **Check voltage between terminal MRLY of suspension ECU connector and body ground.**



P Turn ignition switch on.

C Measure voltage between terminal MRLY of suspension ECU connector and body ground.

OK **Voltage: Battery voltage**

OK

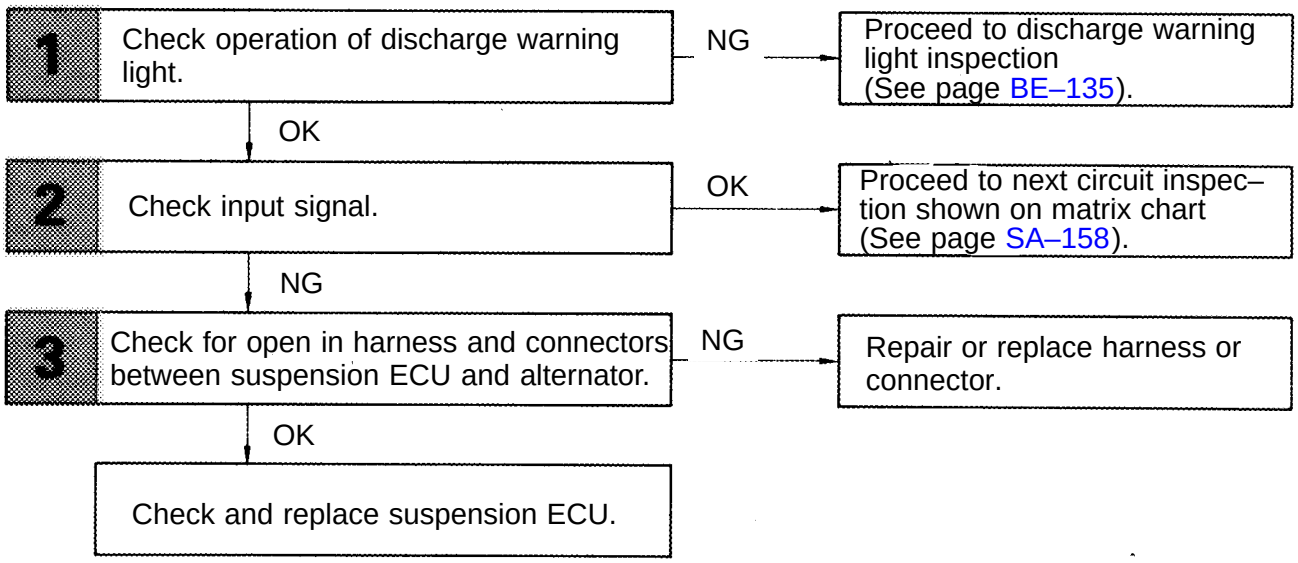
NG **Check and replace suspension ECU.**

IC Regulator Circuit (Alternator Circuit)

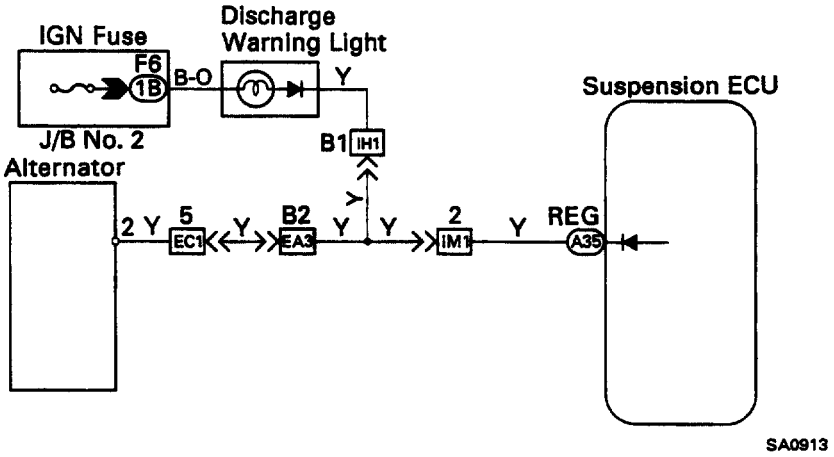
CIRCUIT DESCRIPTION

When the engine is stopped, the alternator does not generate electricity, so the voltage at ECU terminal REG is low. While the engine is running with the alternator generating electricity, the voltage at terminal REG becomes high. Thus the ECU detects the alternator generating condition and controls vehicle height only when the alternator is in generating condition (except for Ignition Switch OFF Control).

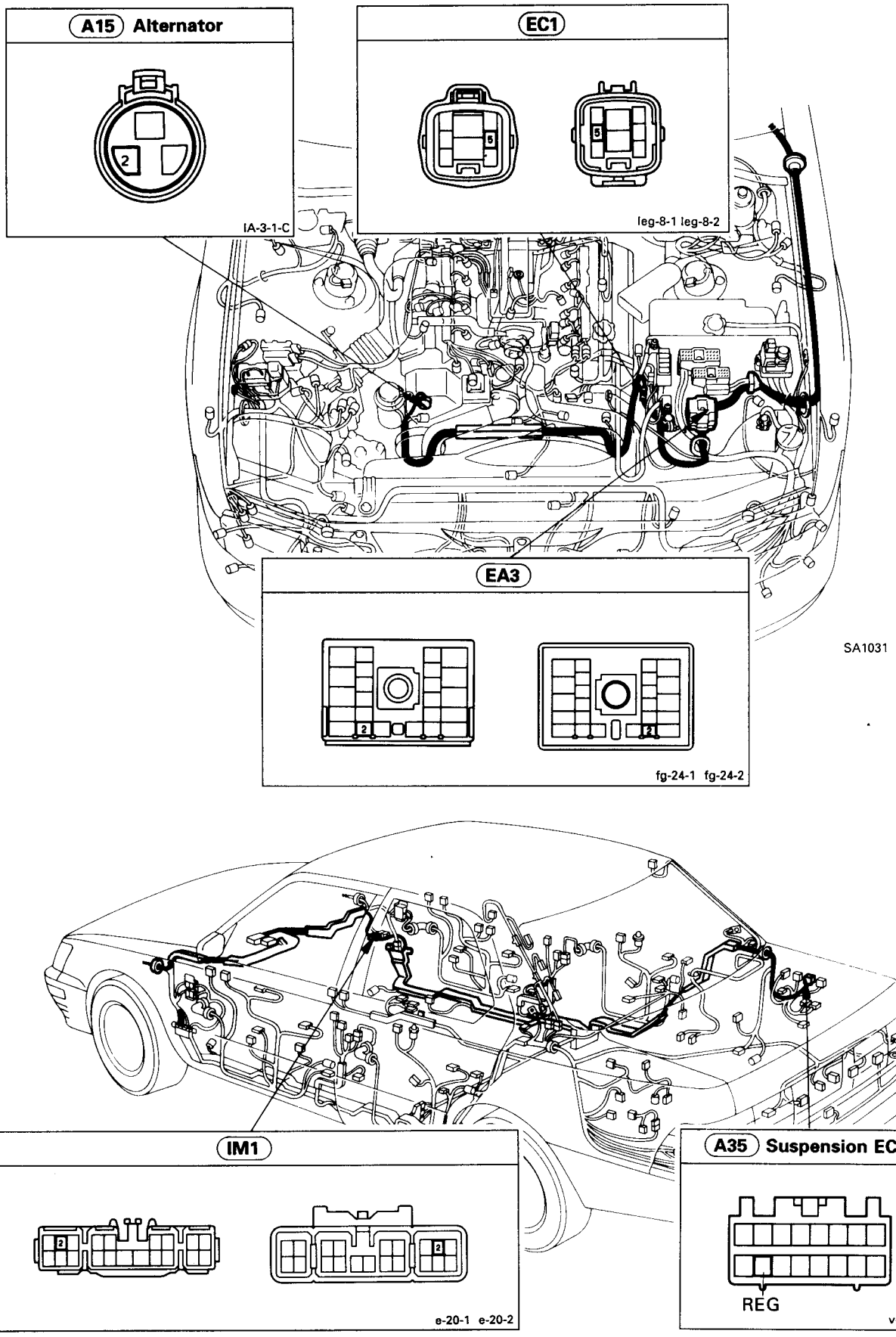
DIAGNOSTIC CHART



WIRING DIAGRAM

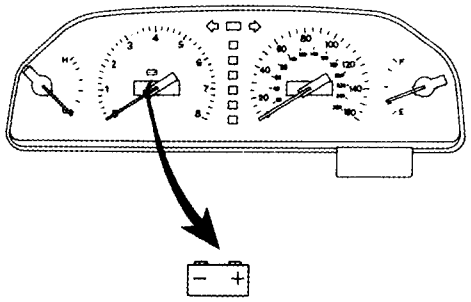


WIRING ROUTING



INSPECTION PROCEDURE

1 **Check operation of discharge warning light.**



C Check operation of discharge warning light when engine is stopped (with ignition switch on) and running.

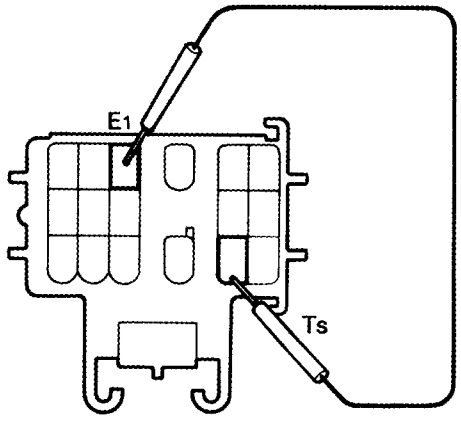
OK

Engine Condition	Light
Stopped (IG: ON)	Comes on
Running	Goes off

OK

NG → **Proceed to discharge warning light inspection (See page BE–135).**

2 **Check input signal (See page SA–156)**



C (1) Connect terminals Ts and E1 of check connector.
(2) Turn ignition switch on.

P Check the lighting up condition of the height control indicator “NORM” light when the engine is stopped (with ignition switch on) and running.

OK Changes between lighting up and blinking by engine operating conditions.

Engine Condition	Stopped (IG: ON)	Running
Light Condition	Lighting up	Blink
	Blink	Lighting up

NG

OK → **Proceed to next circuit inspection shown on matrix chart (See page SA–158).**

3 **Check for open in harness and connectors between suspension ECU and alternator.**

OK

NG → **Repair or replace harness or connector.**

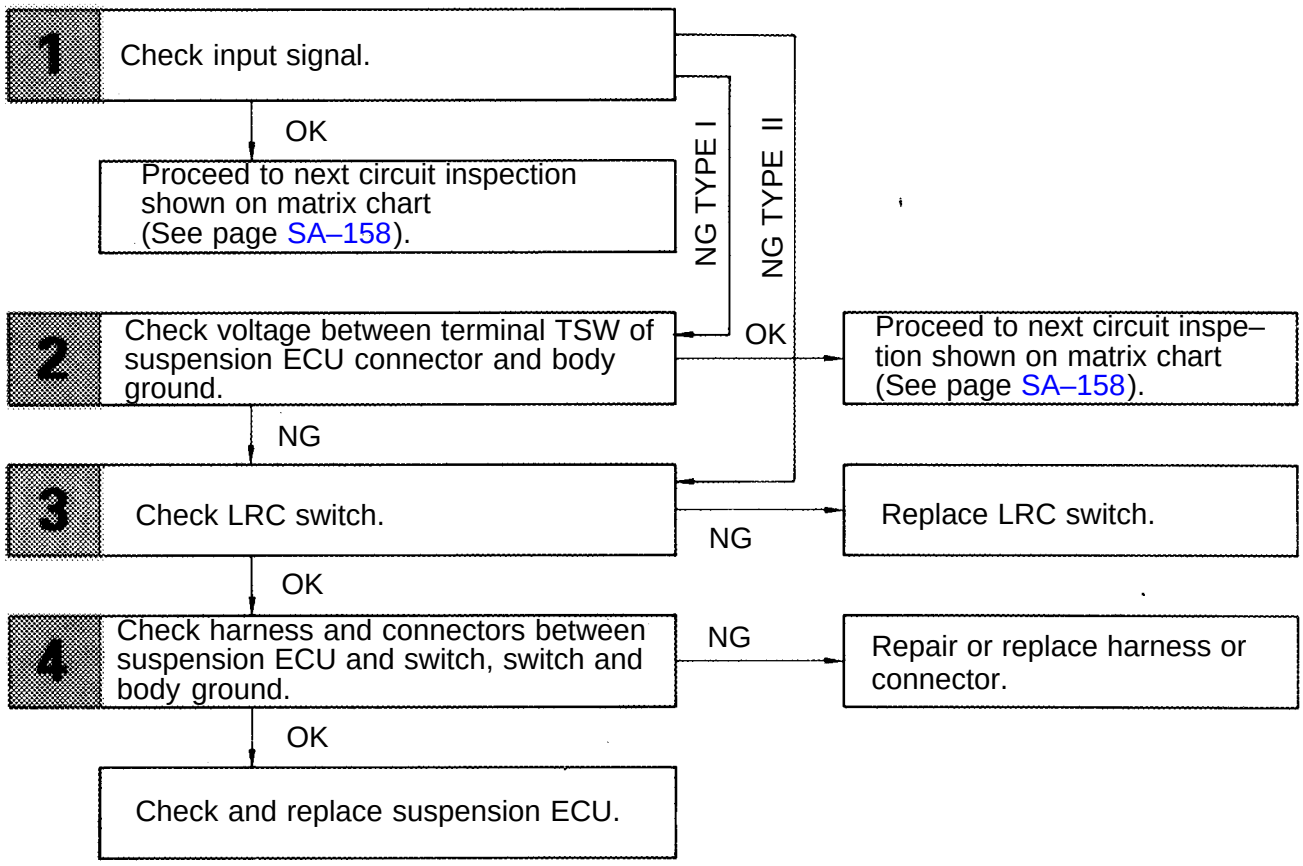
Check and replace suspension ECU.

LRC Switch Circuit

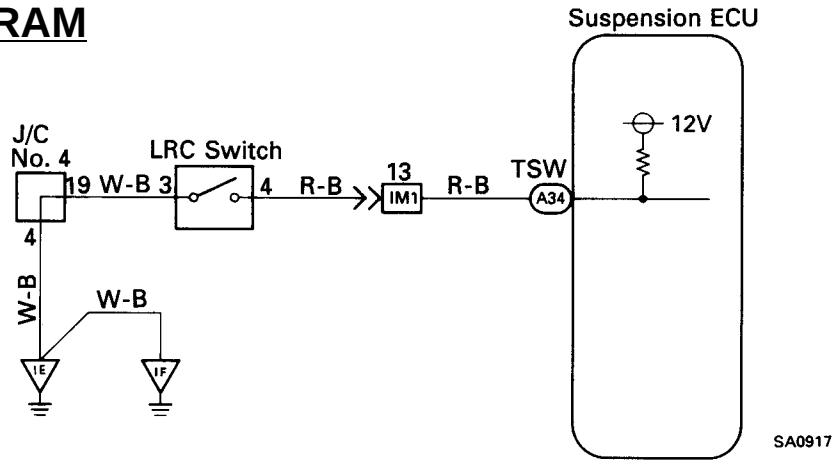
CIRCUIT DESCRIPTION

The LRC (Lexus Ride Control) switch comes on when it is pressed to the SPORT side and goes off when pressed to the NORM side.
The ECU detects the LRC switch condition, operates the suspension control actuator accordingly and changes the damping force of shock absorber and the spring rate of pneumatic cylinder.

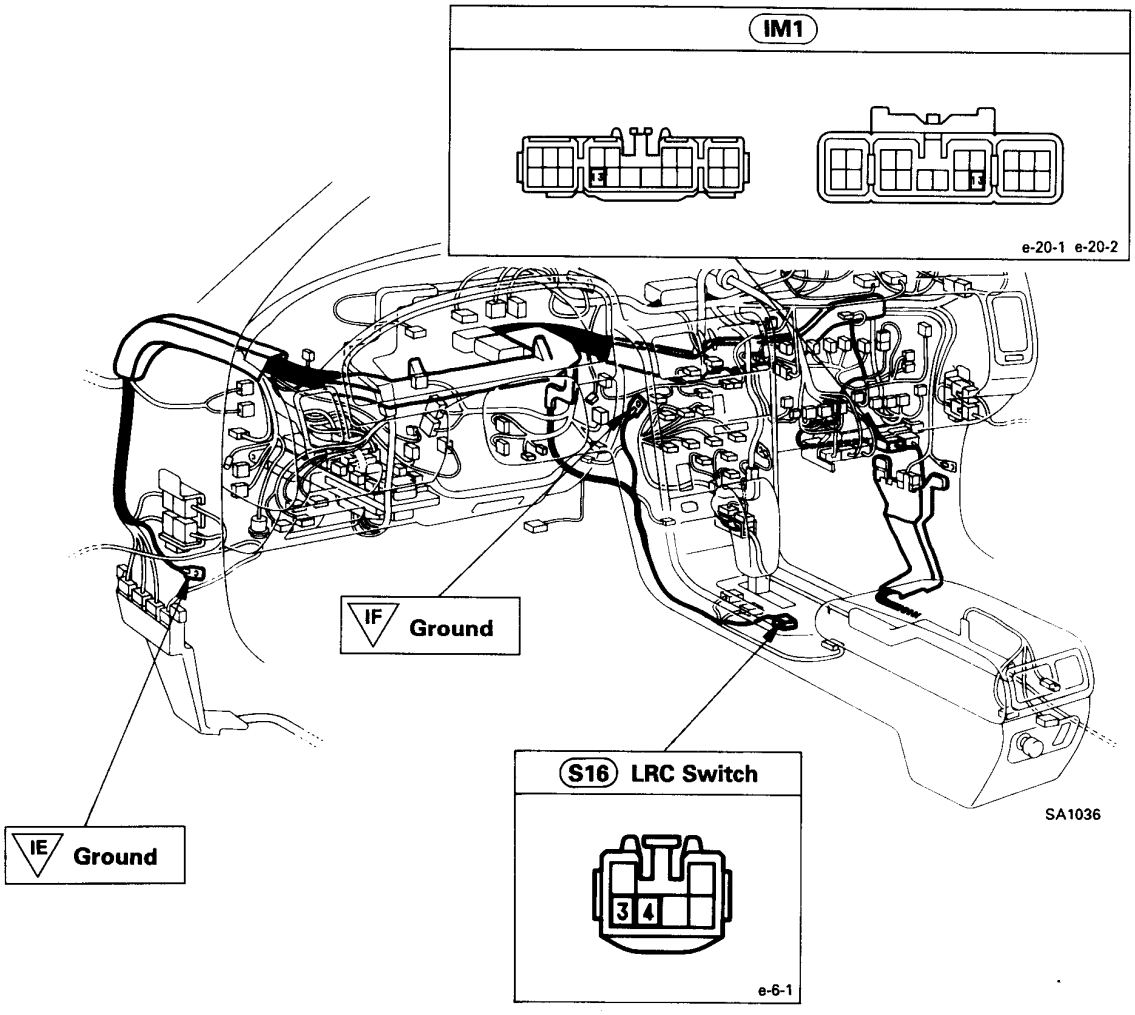
DIAGNOSTIC CHART

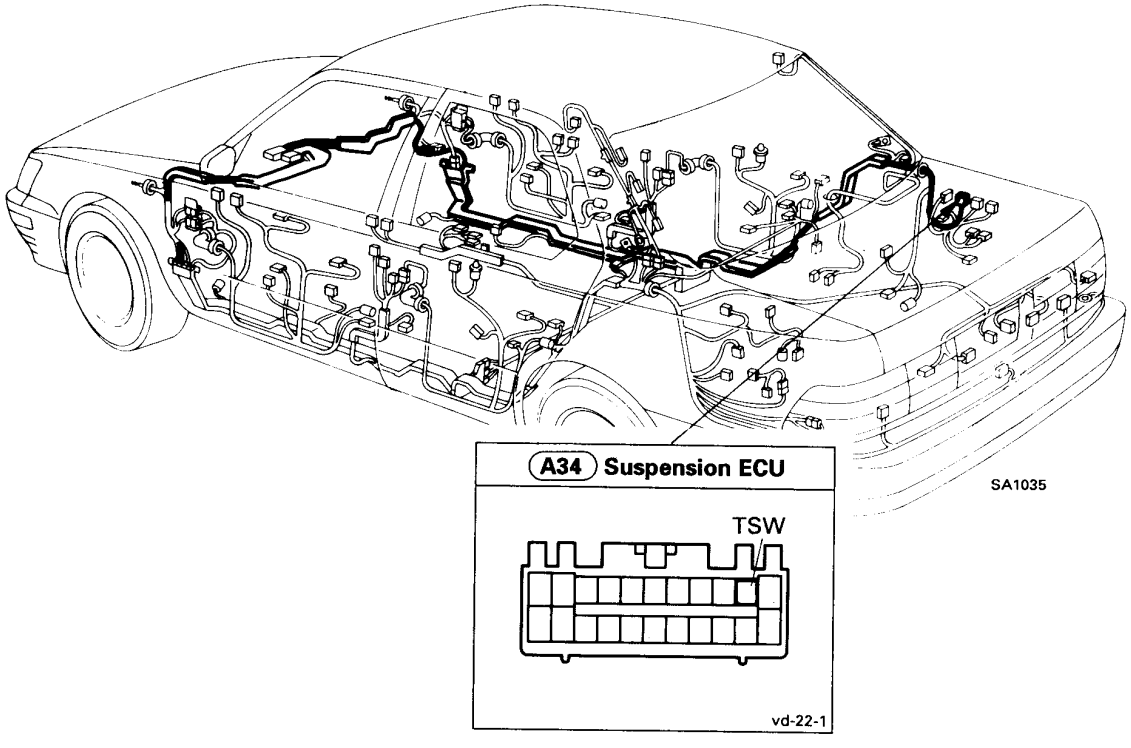


WIRING DIAGRAM



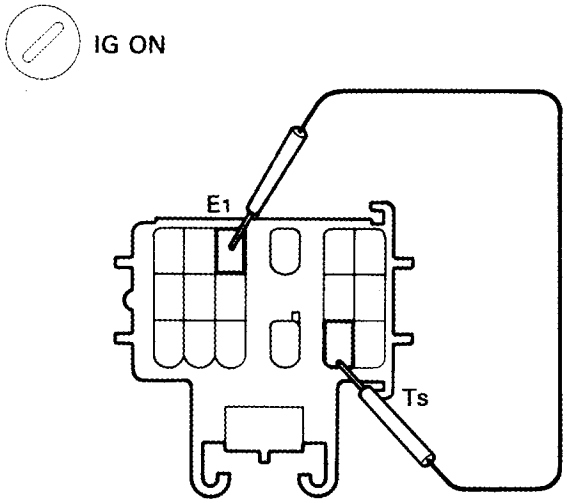
WIRING ROUTING





INSPECTION PROCEDURE

1 Check input signal



P See page SA–156.

C Check the lighting up condition of the height control indicator “NORM” light when the LRC switch is pressed to the “SPORT” side and “NORM” side.
Do this with the engine stopped.

Result

Switch Position	NORM	SPORT	Result
"NORM" Indicator Light	Blink	Light up	OK
	Light up	Light up	NG Type I
	Blink	Blink	NG TYPE II

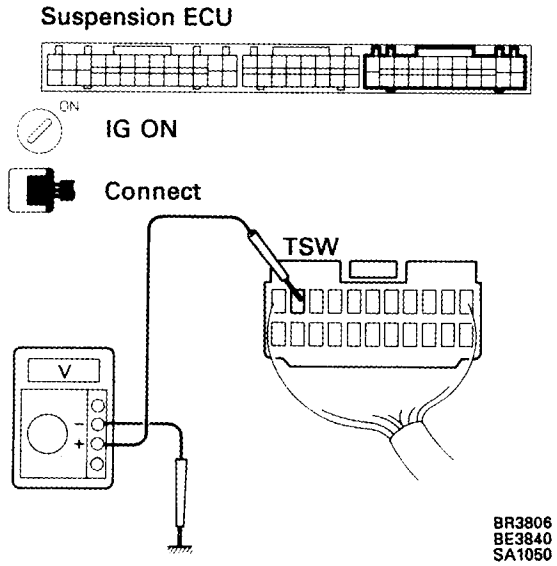
OK

NG Type I → Go to step 2.

NG Type II → Go to step 3.

Proceed to next circuit inspection shown on matrix chart (See page SA–158).

2 Check voltage between terminal TSW of suspension ECU connector and body ground.



P (1) Remove luggage compartment RH side cover.
(2) Turn ignition switch on.

C Measure voltage between terminal TSW of suspension ECU connector and body ground, when LRC switch is pressed to “NORM” side and “SPORT” side.

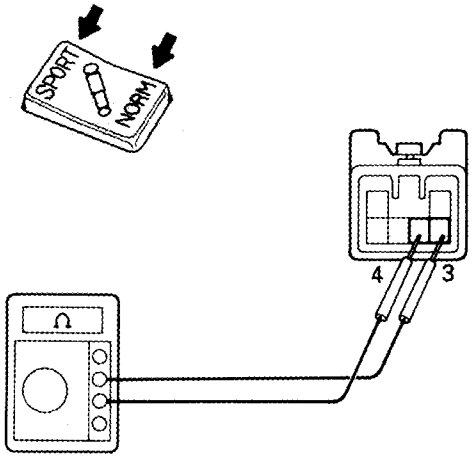
OK

Switch position	Voltage
NORM	Battery voltage
SPORT	0 [V]

NG

OK → **Proceed to next circuit inspection shown on matrix chart (See page SA–158).**

3 **Check LRC switch.**



SA1281
SA0939

P Disconnect LRC switch connector.

C Measure resistance between terminal 3 and 4 of LRC switch connector, when LRC switch is pressed to “NORM” side and “SPORT” side.

OK

Switch position	Resistance
NORM	∞ Ω (Open)
SPORT	0 Ω (Continuity)

OK

NG → Replace LRC switch.

4 **Check harness and connectors between suspension ECU and switch, switch and body ground.**

OK

NG → **Repair or replace harness or connector.**

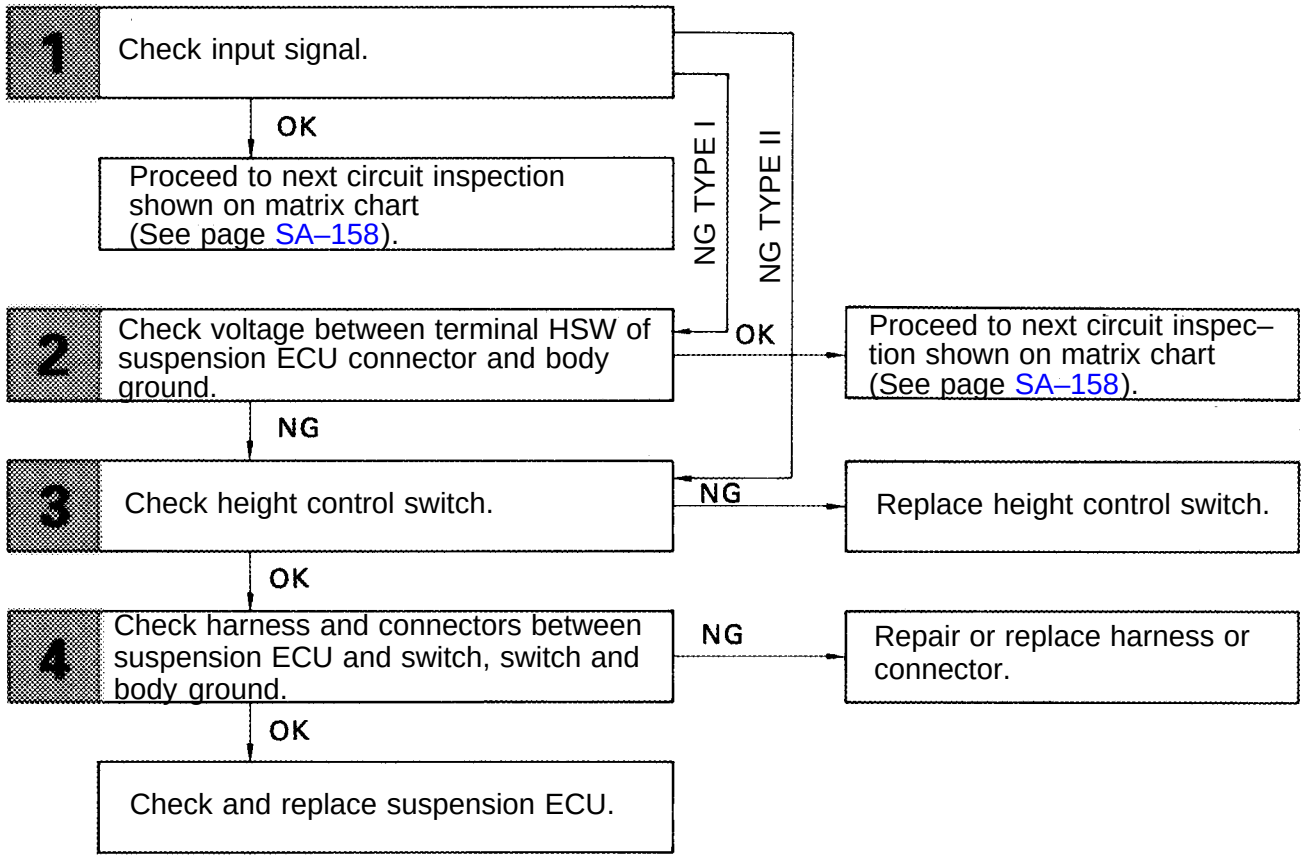
Check and replace suspension ECU.

Height Control Switch Circuit

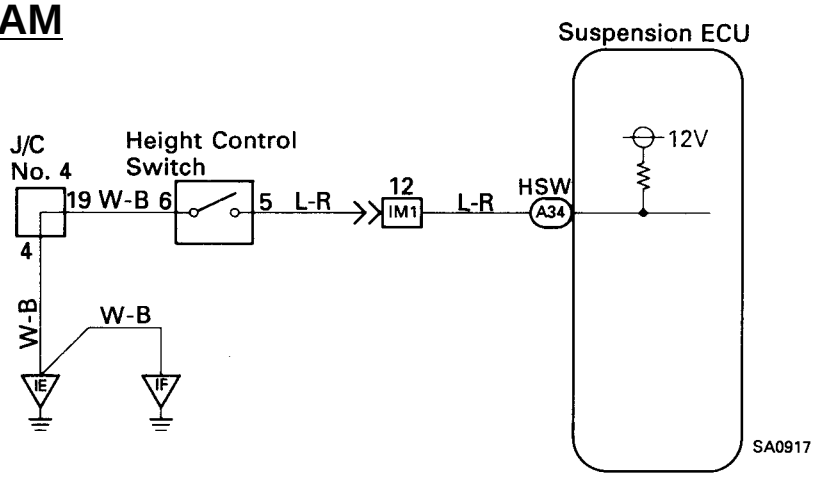
CIRCUIT DESCRIPTION

The height control switch comes on when it is pressed to the ”HIGH” side and goes off when pressed to the ”NORM” side. The ECU detects the height control switch condition, and raises or lowers the vehicle height accordingly.

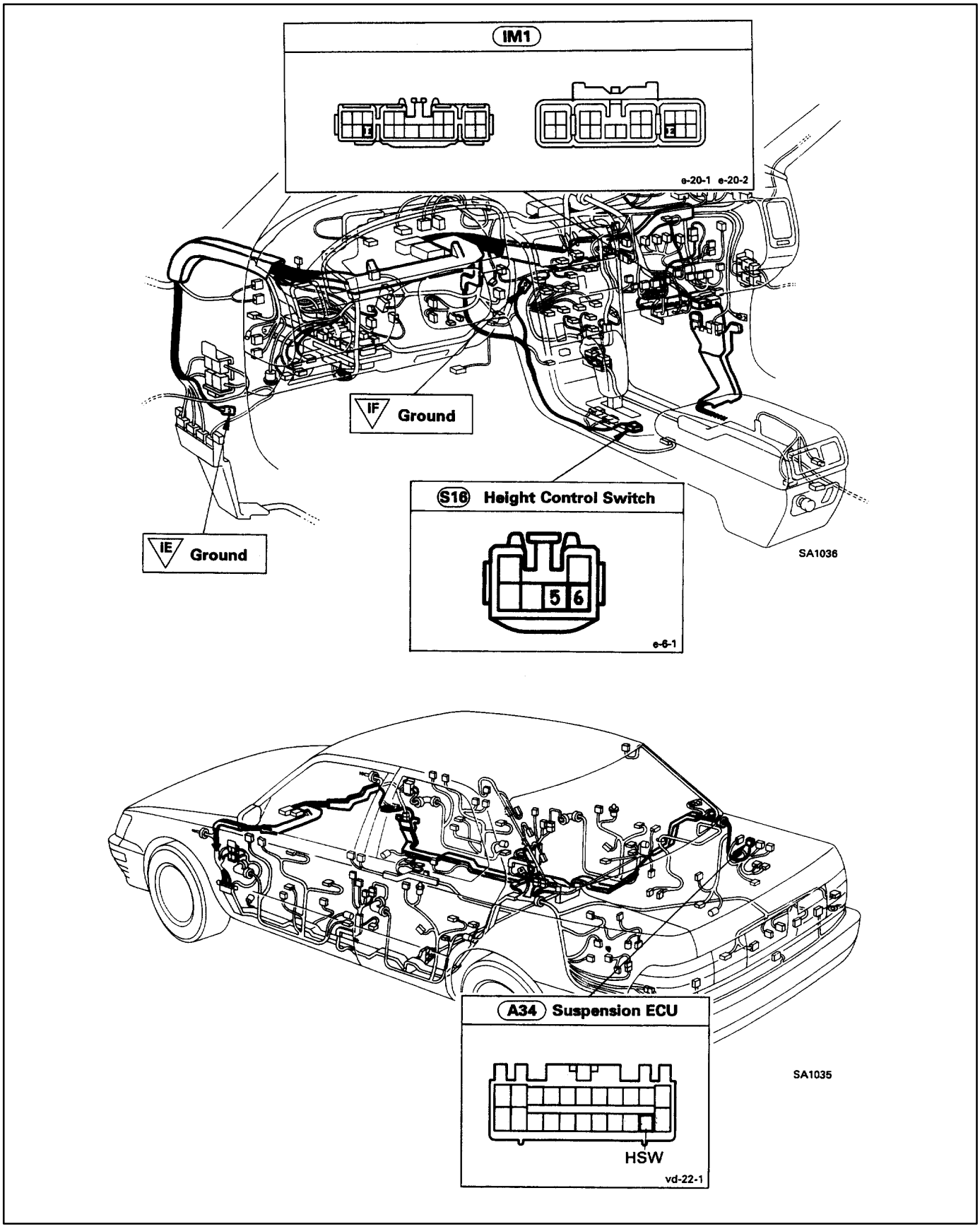
DIAGNOSTIC CHART



WIRING DIAGRAM

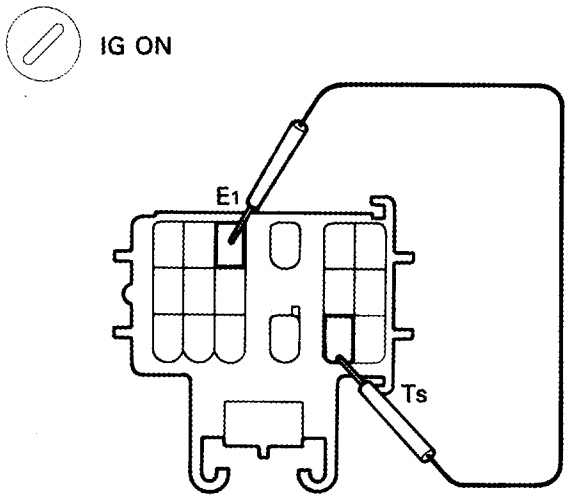


WIRING ROUTING



INSPECTION PROCEDURE

1 **Check input signal.**



P See page SA–156

C Check the lighting up condition of the height control indicator “NORM” light when the height control switch pressed to the “HIGH” side and “NORM” side.
Do this with the engine stopped.

Result

Switch Position	NORM	HIGH	Result
"NORM" Indicator Light	Blink	Light up	OK
	Light up	Light up	NG Type I
	Blink	Blink	NG TYPE II

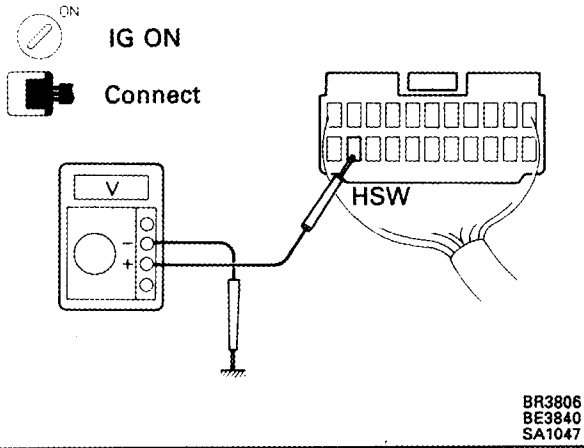
OK

NG Type I → Go to step 2.

NG Type II → Go to step 3.

Proceed to next circuit inspection shown on matrix chart (See page SA–158).

2 **Check voltage between terminal HSW of suspension ECU connector and body ground.**



P (1) Remove luggage compartment RH side cover.
(2) Turn ignition switch on.

C Measure voltage between terminal HSW of suspension ECU connector and body ground, when the height control switch is pressed to “NORM” side and “HIGH” side.

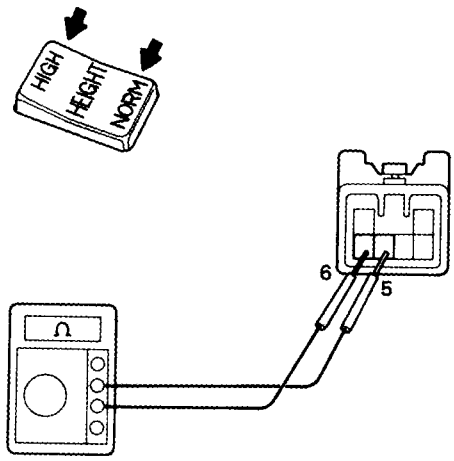
OK

Switch position	Voltage
NORM	Battery voltage
HIGH	0V

NG

OK → **Proceed to next circuit inspection shown on matrix chart (See page SA–158).**

3 **Check height control switch.**



SA1282
SA0934

P Disconnect height control switch connector.

C Measure resistance between terminal 5 and 6 of height control switch connector, when height control switch is pressed to “NORM” side and “HIGH” side.

OK

Switch position	Resistance
NORM	∞ Ω (Open)
HIGH	0 Ω (Continuity)

OK

NG → **Replace height control switch.**

4 **Check harness and connectors between suspension ECU and switch, switch and body ground.**

OK

NG → **Repair or replace harness or connector.**

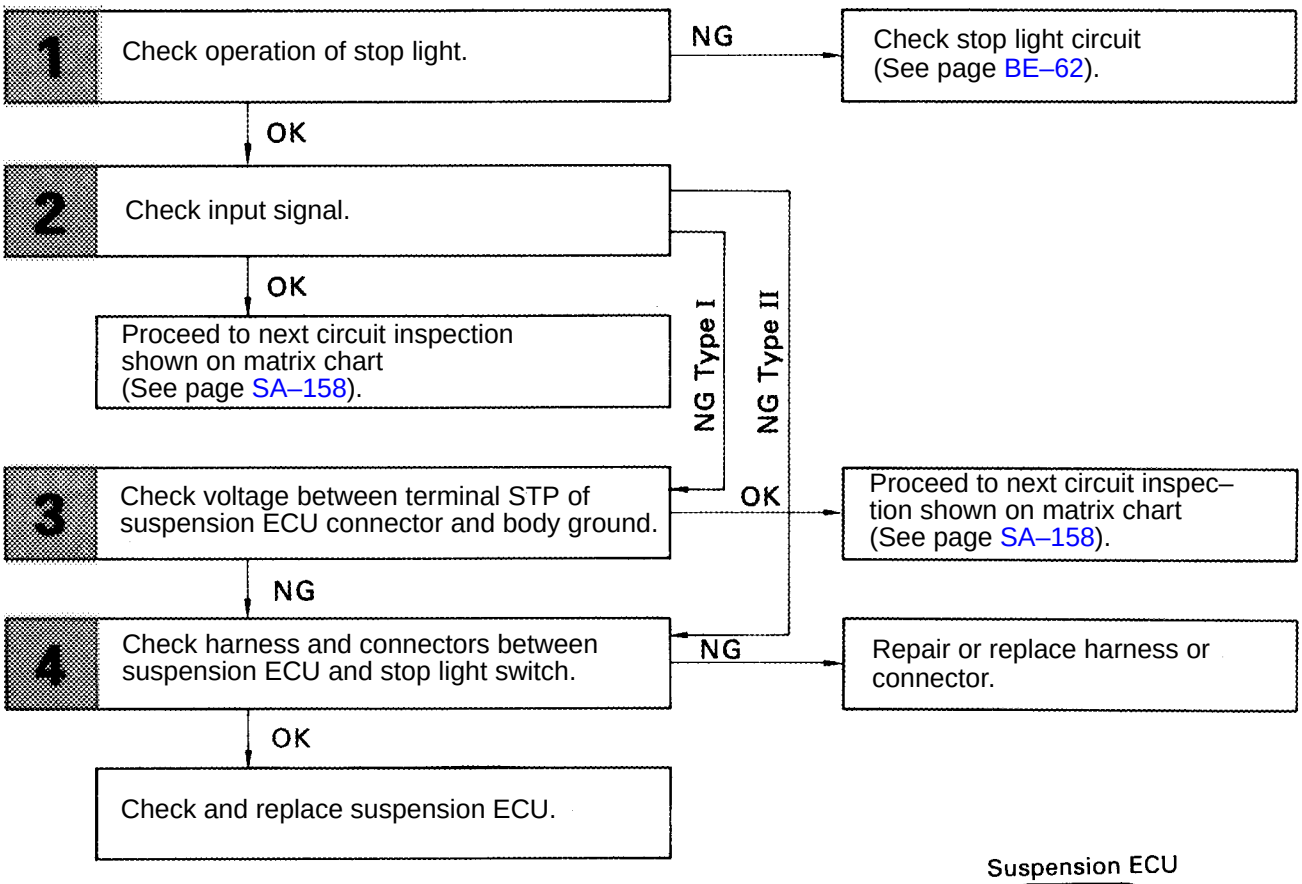
Check and replace suspension ECU.

Stop Light Switch Circuit

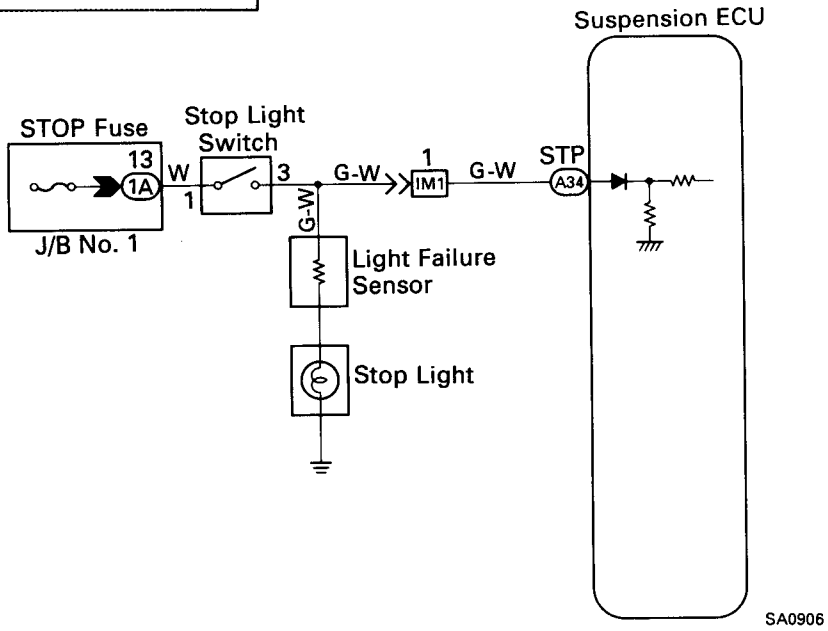
— CIRCUIT DESCRIPTION

When the brake pedal is depressed, the stop light switch comes on and battery voltage is applied to terminal STP of ECU. This signal is used by the ECU as one of the starting conditions for Anti–dive control.

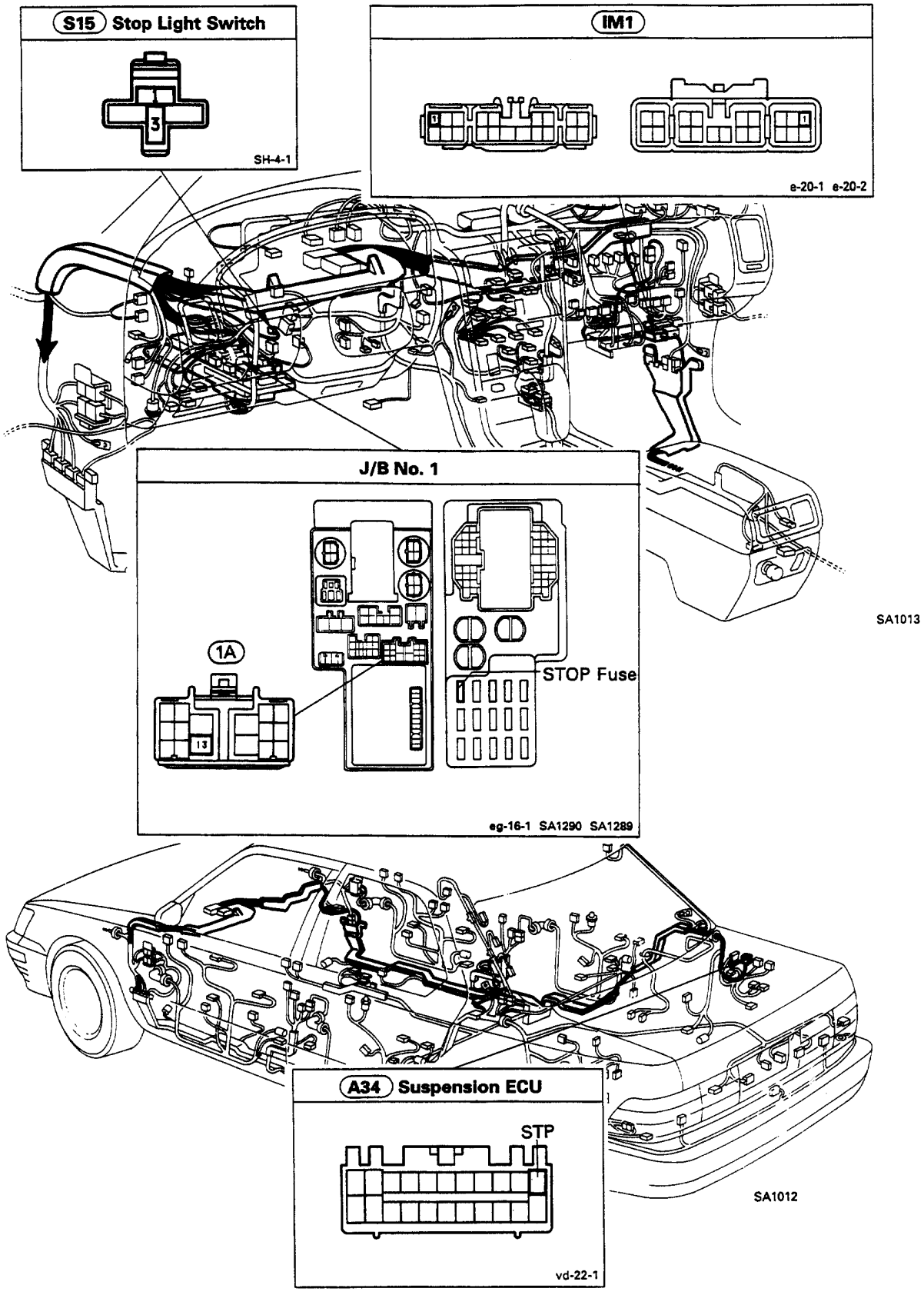
DIAGNOSTIC CHART



WIRING DIAGRAM



WIRING ROUTING



INSPECTION PROCEDURE

1 **Check operation of stop light.**

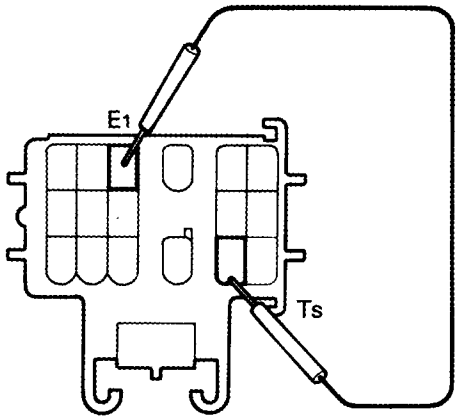
C Check that stop light comes on when brake pedal is depressed and turns off when brake pedal is released.

OK

NG → **Check stop light circuit (See page BE–62).**

2 **Check input signal**

IG ON



AB0119
SA0932

P See page SA–156.

C Check the lighting up condition of the height control indicator “NORM” light when brake pedal is depressed and released.
Do this with the engine stopped.

Result

Brake pedal	Released	Depressed	Result
"NORM" Indicator Light	Blink	Light up	OK
	Light up	Light up	NG Type I
	Blink	Blink	NG TYPE II

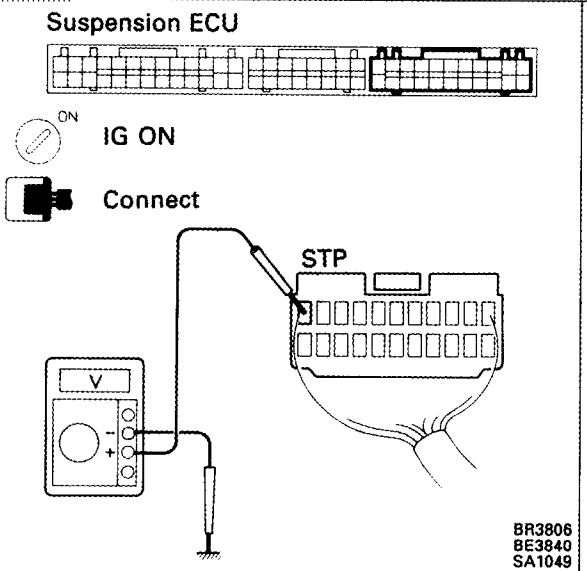
OK

NG Type I → **Go to step 3**

NG Type II → **Go to step 4**

Proceed to next circuit inspection shown on matrix chart (See page SA–158).

3 **Check voltage between terminal STP of suspension ECU connector and body ground.**



P (3) Remove luggage compartment RH side cover.

(4) Turn ignition switch on.

C Measure voltage between terminal STP of suspension ECU connector and body ground, when brake pedal is released and depressed.

OK

Brake pedal	Voltage
Released	0V
Depressed	Battery voltage

NG

OK → **Proceed to next circuit inspection shown on matrix chart (See page SA–158).**

4 **Check harness and connectors between suspension ECU and stop light switch.**

OK

NG → **Repair or replace harness or connector.**

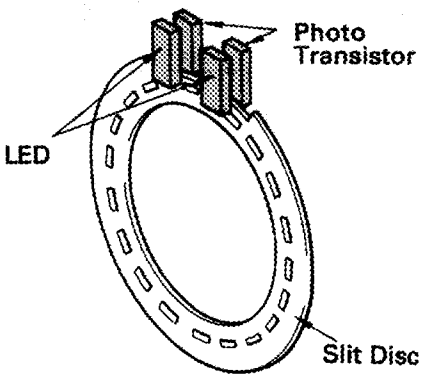
Check and replace suspension ECU.

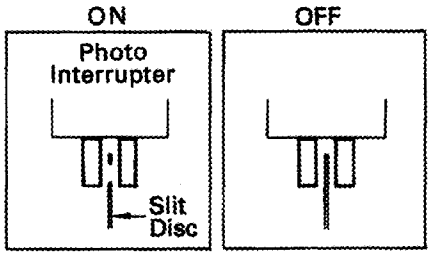
Steering Sensor Circuit

CIRCUIT DESCRIPTION

The steering sensor is fitted to the turn signal switch assembly and detects the steering direction and angle. The sensor consists of a slit disc that rotates with the steering wheel as a unit, and a pair of photo interrupters. Each photo interrupter consists of an LED (Light Emitting Diode) and a photo transistor, located facing each other. It converts the change in the light irradiation between the two elements to the on/off signals. The slit disc rotates between the LED and the photo transistor of the pair of photo interrupters. As the steering wheel is operated, the slit disc rotates with the wheel as a unit and shuts and makes the light transmission between the two elements. The pair of photo interrupters have phases and the suspension ECU detects the steering direction and angle based on the changes of the each output.

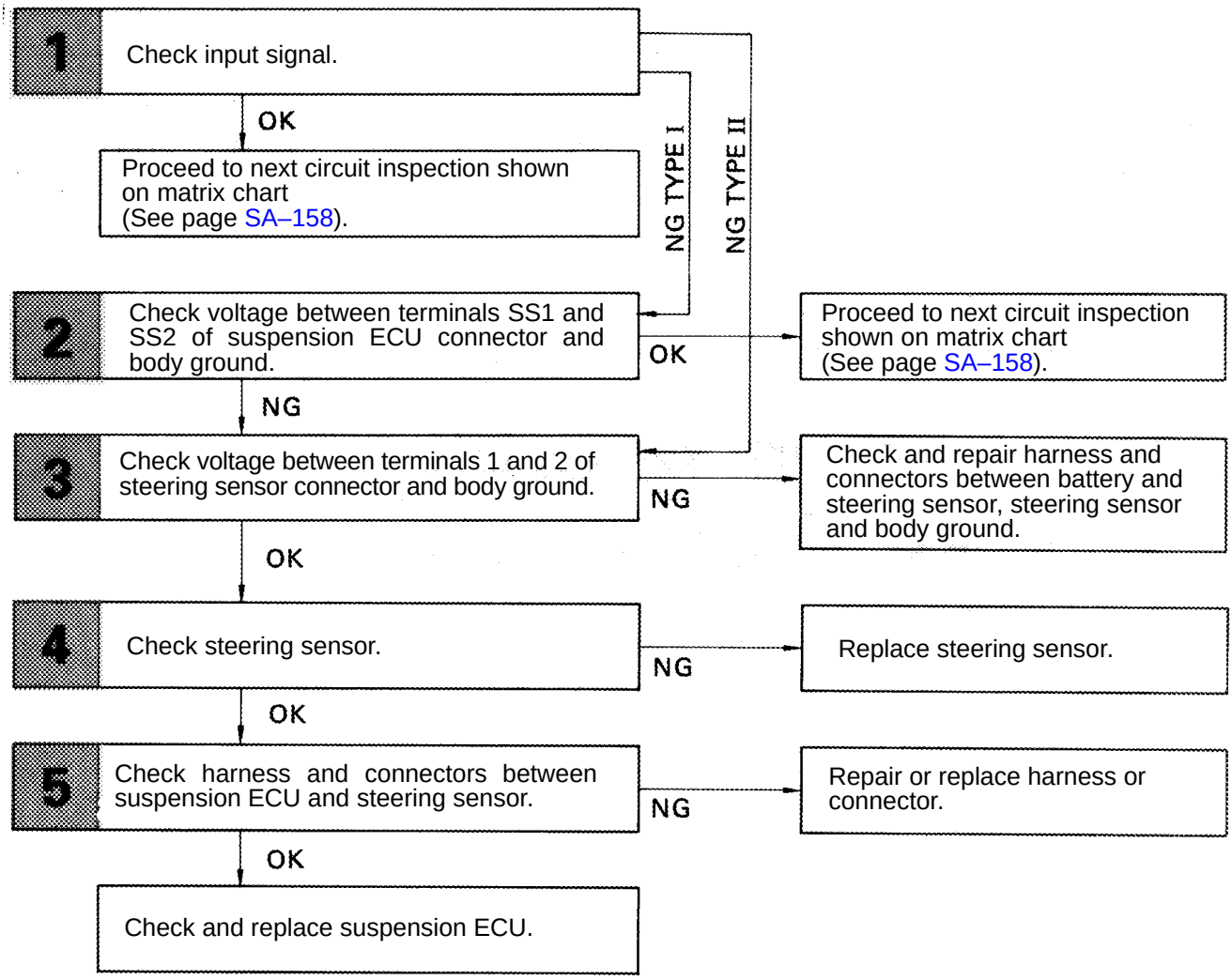
And when it is judged that the steering wheel's turning angle is large and the speed is greater than a set value, the ECU causes the damping force and spring rate to increase.



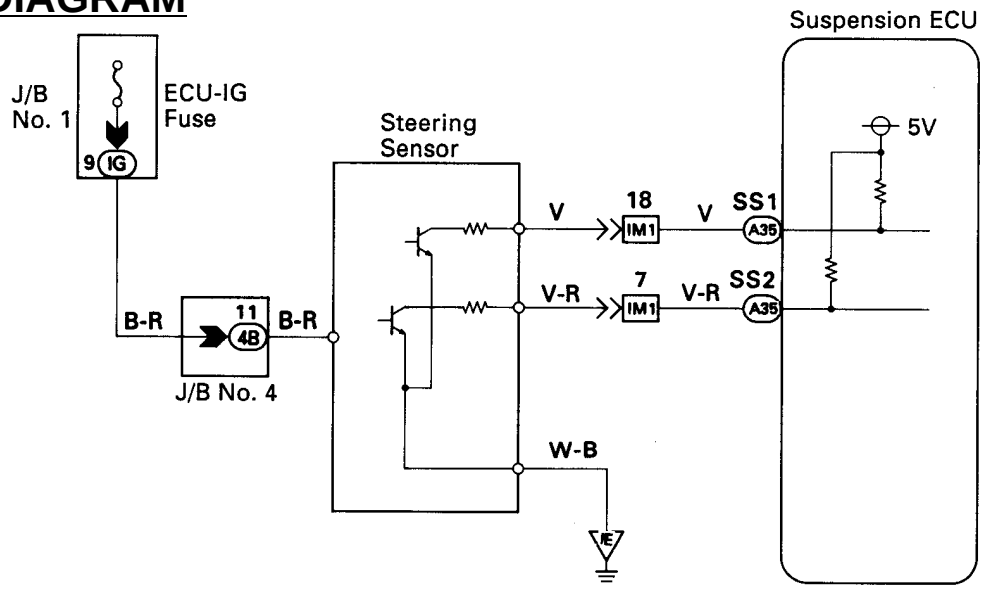


SA0849 SA0851

DIAGNOSTIC CHART

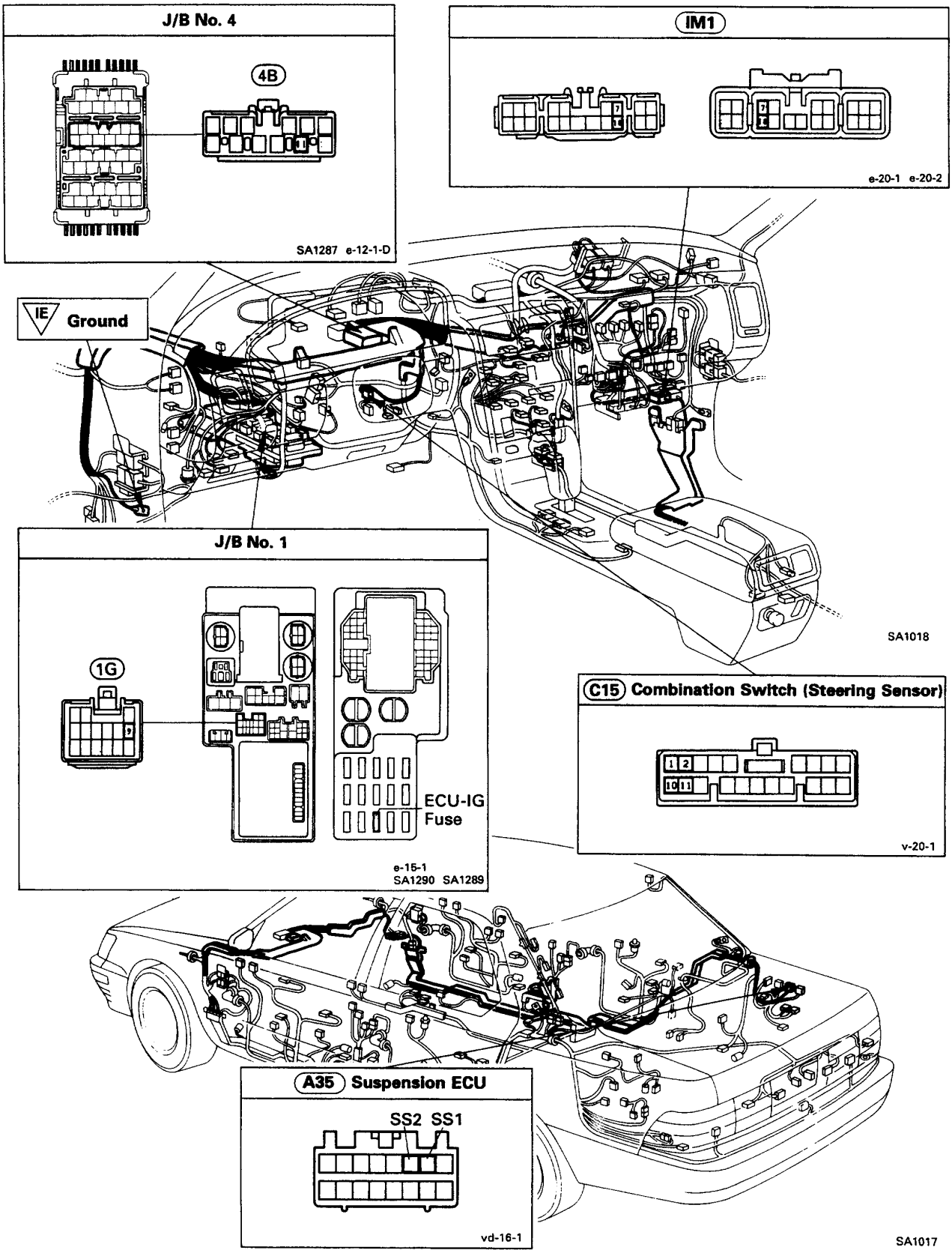


WIRING DIAGRAM



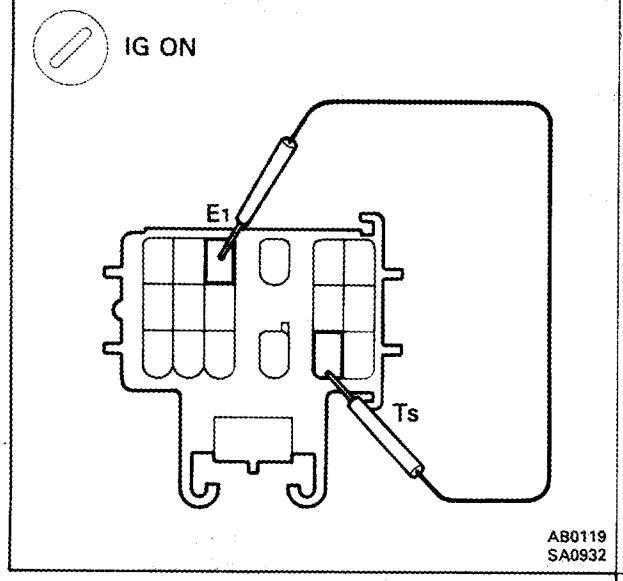
SA3100

WIRING ROUTING



INSPECTION PROCEDURE

1 Check input signal.



P See page SA–156.

C Check the lighting up condition of the height control indicator “NORM” light when the steering wheel is not turned and turned over 45 degrees.
Do this with the engine stopped.

Result

Steering wheel turning angle	Less than 45°	Over 45°	Result
"NORM" Indicator Light	Blink	Light up	OK
	Light up	Light up	NG Type I
	Blink	Blink	NG TYPE II

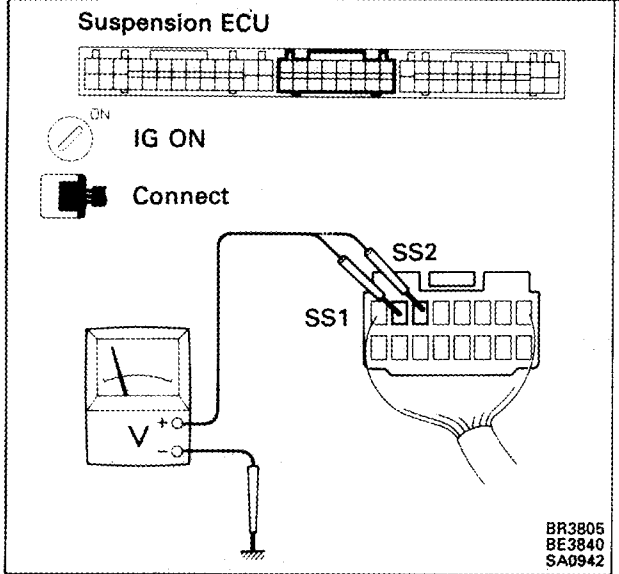
OK

NG Type I → Go to step 2.

NG Type II → Go to step 3.

Proceed to next circuit inspection shown on matrix chart (See page SA–158)

2 Check voltage between terminals SS1 and SS2 of suspension ECU connector and body ground.



P (1) Remove luggage compartment RH side cover.
(2) Turn ignition switch on.

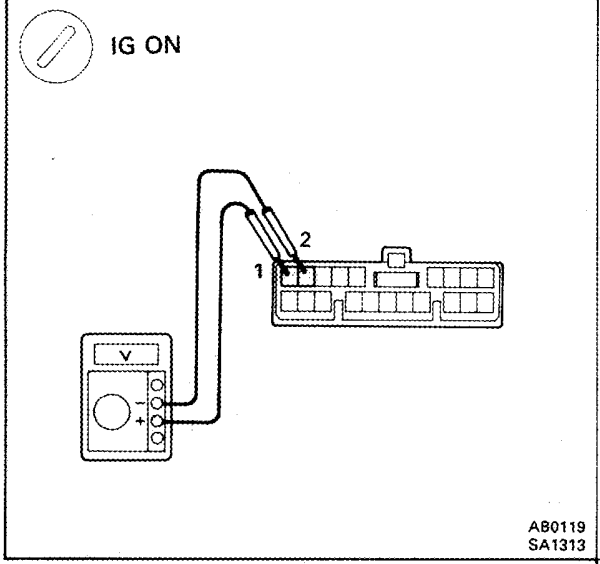
C Measure voltage between terminal SS1 and SS2 of the suspension ECU connector and body ground, when steering wheel is being turned slowly.

OK **Changes between 0 V and approx. 5 V.**

NG

OK → **Proceed to next circuit inspection shown on matrix chart (See page SA–158)**

3 **Check voltage between terminals 1 and 2 of steering sensor connector and body ground.**



P (1) Remove steering wheel.
(2) Disconnect steering sensor connector.
(3) Turn ignition switch on.

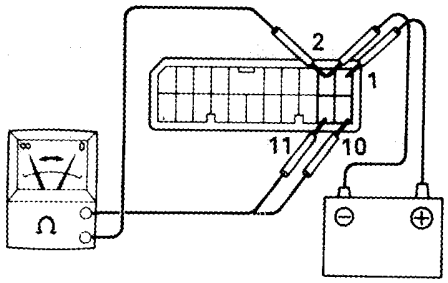
C Measure voltage between terminals 1 and 2 of steering sensor connector.

OK **Voltage: Battery voltage**

OK

NG **Check and repair harness and connectors between battery and steering sensor and body ground.**

4 **Check steering sensor.**



P (1) Remove steering wheel.
(2) Disconnect steering sensor connector.
(3) Connect positive (+) lead to terminal 1 and negative (–) lead to terminal 2 of steering sensor connector.

C measure resistance between terminal 10, 11 and 2 of steering sensor connector when the rotating part of steering sensor is turned slowly.

OK **Changes between 0 Ω and infinity. (∞ Ω)**

OK

NG **Replace steering sensor.**

5 **Check harness and connectors between suspension ECU and steering sensor.**

OK

NG **Repair or replace harness or connector.**

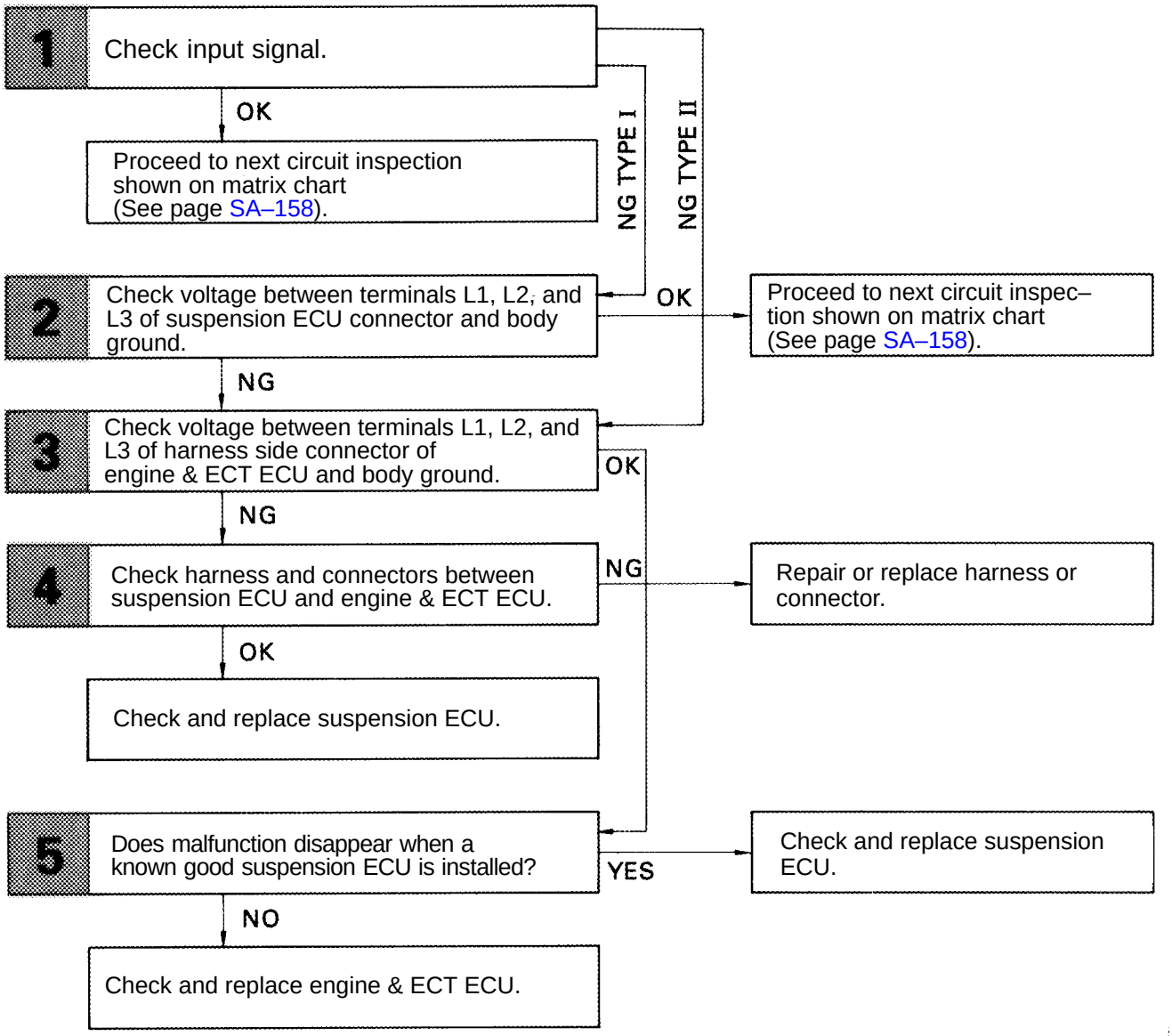
Check and replace suspension ECU.

Throttle Position Signal Circuit

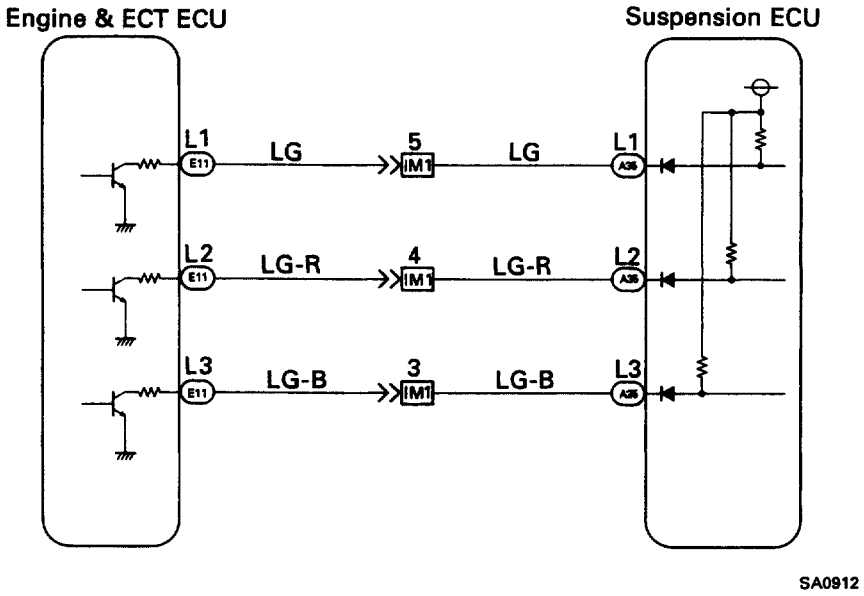
CIRCUIT DESCRIPTION

The suspension ECU communicates with the engine & ECT ECU and detects the throttle valve opening angle and opening speed. The suspension ECU uses this signal as one of the operating conditions for Anti–squat control.

DIAGNOSTIC CHART

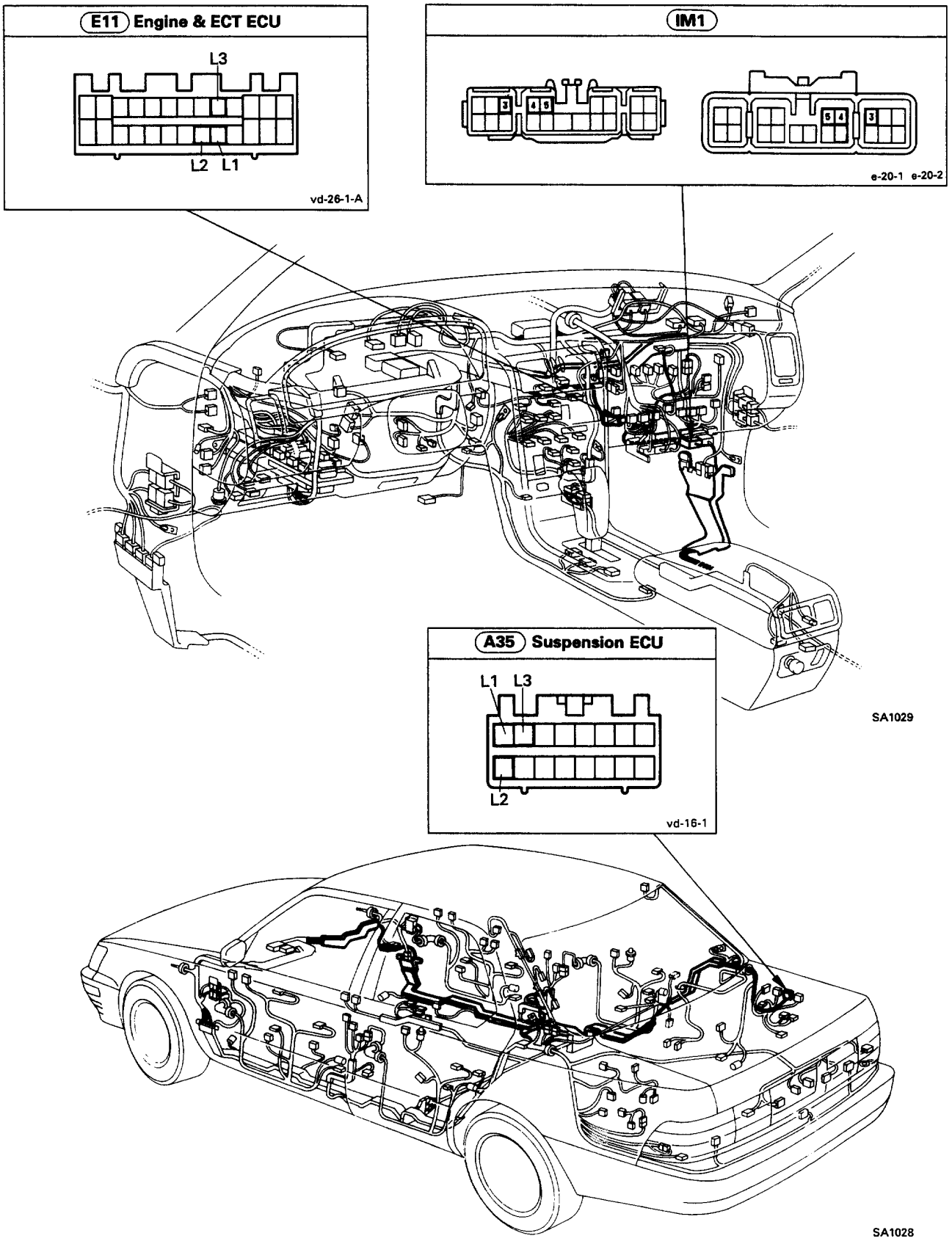


WIRING DIAGRAM



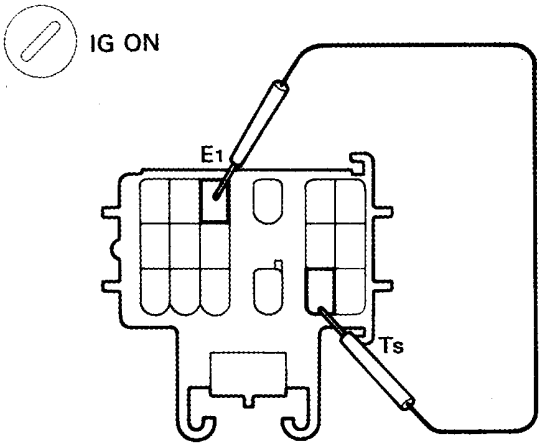
SA0912

WIRING ROUTING



INSPECTION PROCEDURE

1 Check input signal.



P See page SA–156.

C Check the lighting up condition of the height control indicator “NORM” light when the steering wheel is not turned and turned over 45 degrees.
Do this with the engine stopped.

Result

Accelerator Pedal	Fully Released	Fully depressed	Result
"NORM" Indicator Light	Blink	Light up	OK
	Light up	Light up	NG Type I
	Blink	Blink	NG TYPE II

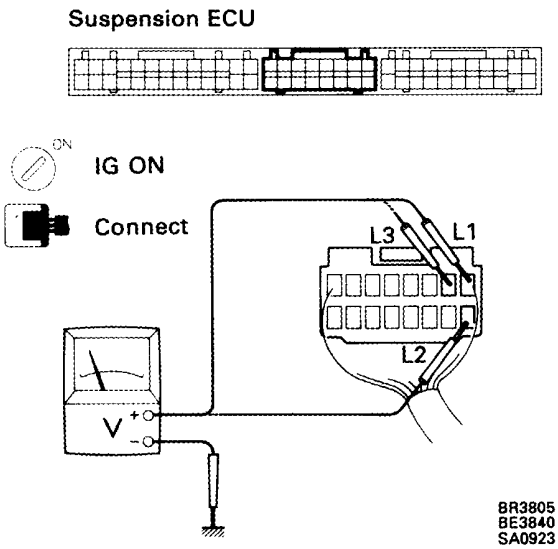
OK

NG Type I → Go to step 2

NG Type II → Go to step 3

Proceed to next circuit inspection shown on matrix chart (See page SA–158)

2 Check voltage between terminals L1, L2 and L3 of suspension ECU connector and body ground.



P (1) Remove luggage compartment RH side cover.
(2) Turn ignition switch on.

C Measure voltage between terminals L1, L2 and L3 of the suspension ECU connector and body ground, with the accelerator pedal from fully released to fully depressed condition.

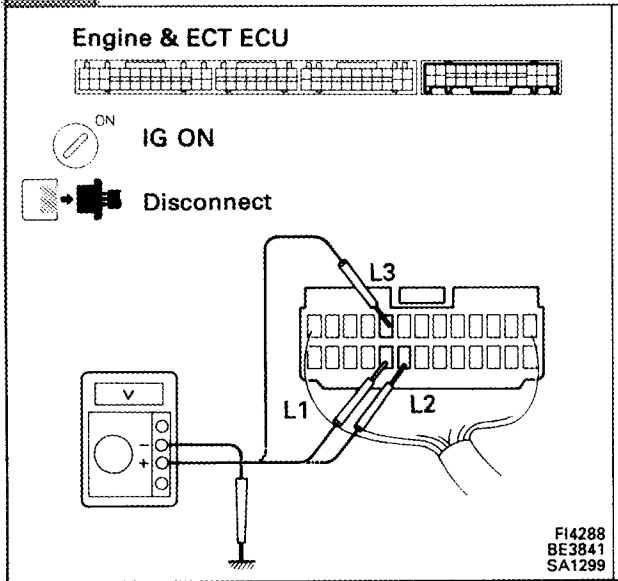
OK

Terminal \ Pedal	Fully Released ⟷ Fully depressed
L1	5V ⟷ 0V
L2	5V ⟷ 0V ⟷ 5V
L3	5V ⟷ 0V ⟷ 5V ⟷ 0V ⟷ 5V

NG

OK → **Proceed to next circuit inspection shown on matrix chart (See page SA–158)**

3 **Check voltage between terminals L1, L2 and L3 of harness side connector of engine & ECT ECU and body ground.**



P (1) Remove the RH lower pad and disconnect engine & ECT ECU connector. cover.
(2) Turn ignition switch on.

C Measure voltage between terminals L1, L2 and L3 of the harness side connector of engine & ECT ECU and body ground.

OK **Voltage: Approx. 5V**

NG

OK 〉 **Go to step 5.**

4 **Check harness and connectors between suspension ECU and engine & ECT ECU.**

OK

NG 〉 **Repair or replace harness or connector.**

Check and replace suspension ECU.

5 **Does malfunction disappear when a known good suspension ECU is installed?**

NO

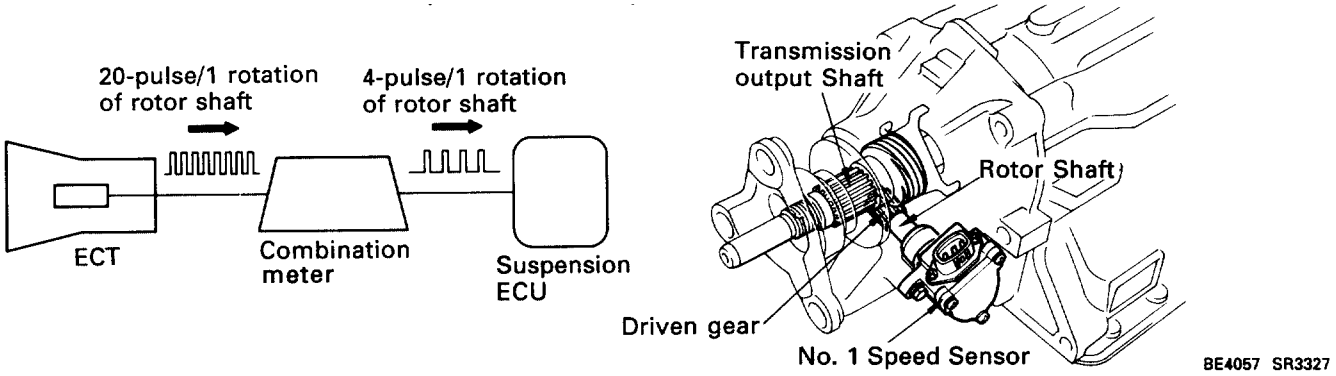
YES 〉 **Check and replace suspension ECU.**

Check and replace engine & ECT ECU.

Speed Sensor Circuit

CIRCUIT DESCRIPTION

The speed sensor is driven by the gear of the transmission via the rotor shaft, and for each rotation of the shaft, the speed sensor sends a 20 pulses signal to the meter. This signal is converted inside the meter and sent as a 4 pulses signal to the suspension ECU.
The ECU calculates the vehicle speed from this pulse frequency.



DIAGNOSTIC CHART

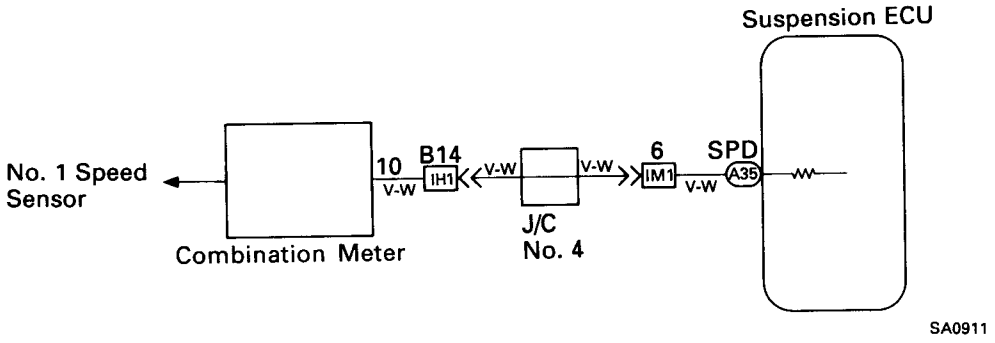
1	Check input signal	OK	Proceed to next circuit inspection shown on matrix chart (See page SA–158)
2	Check speedometer circuit. (See combination meter troubleshooting on pages BE–118, 119)	NG	Repair or replace harness or connector or combination meter assembly.

NG

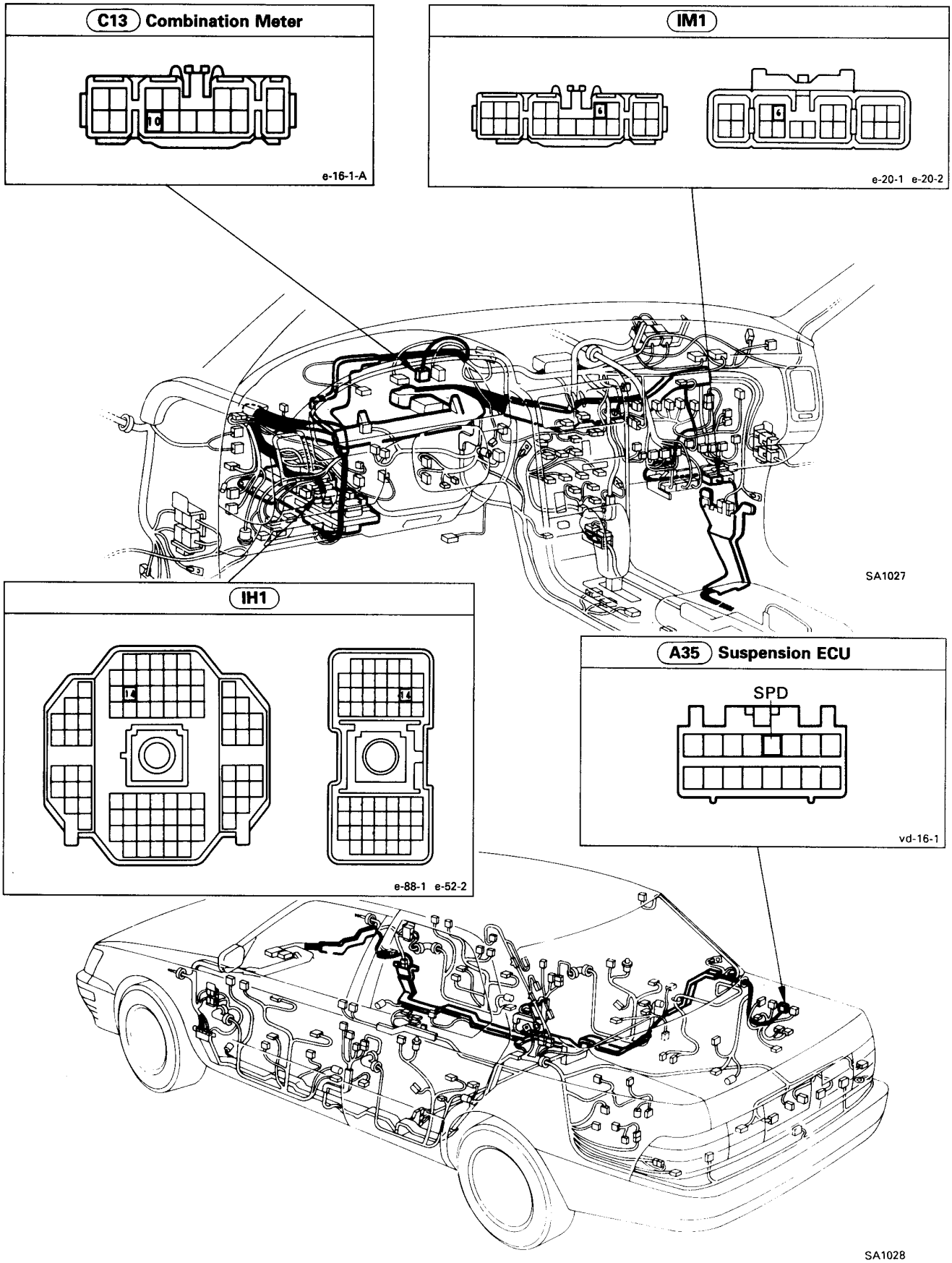
OK

Check and replace suspension ECU.

WIRING DIAGRAM

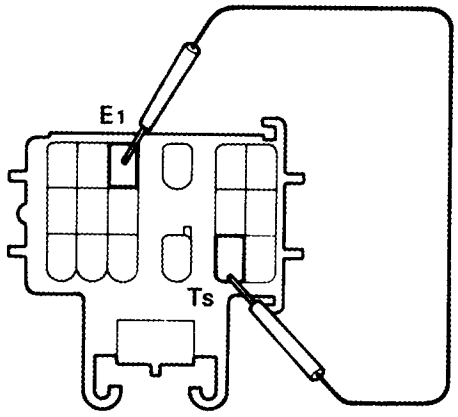


WIRING ROUTING



INSPECTION PROCEDURE

1 **Check input signal.**



P (1) See page SA–156.
(2) Start the engine.

C Check the lighting condition of the height control indicator “NORM” light when vehicle speed is driven over 12 mph (20km/h) and below 12 mph (20km/h).

Result

Vehicle Speed	Below 12 mph	Over 12 mph	Result
"NORM" Indicator Light	Light up	Blink	OK
	Light up	Light up	NG
	Blink	Blink	

NG

OK → **Proceed to next circuit inspection shown on matrix chart (See page SA–158)**

2 **Check speedometer circuit. (See combination meter troubleshooting on pages BE–118, 119)**

OK

NG → **Repair or replace harness or connector or combination meter assembly.**

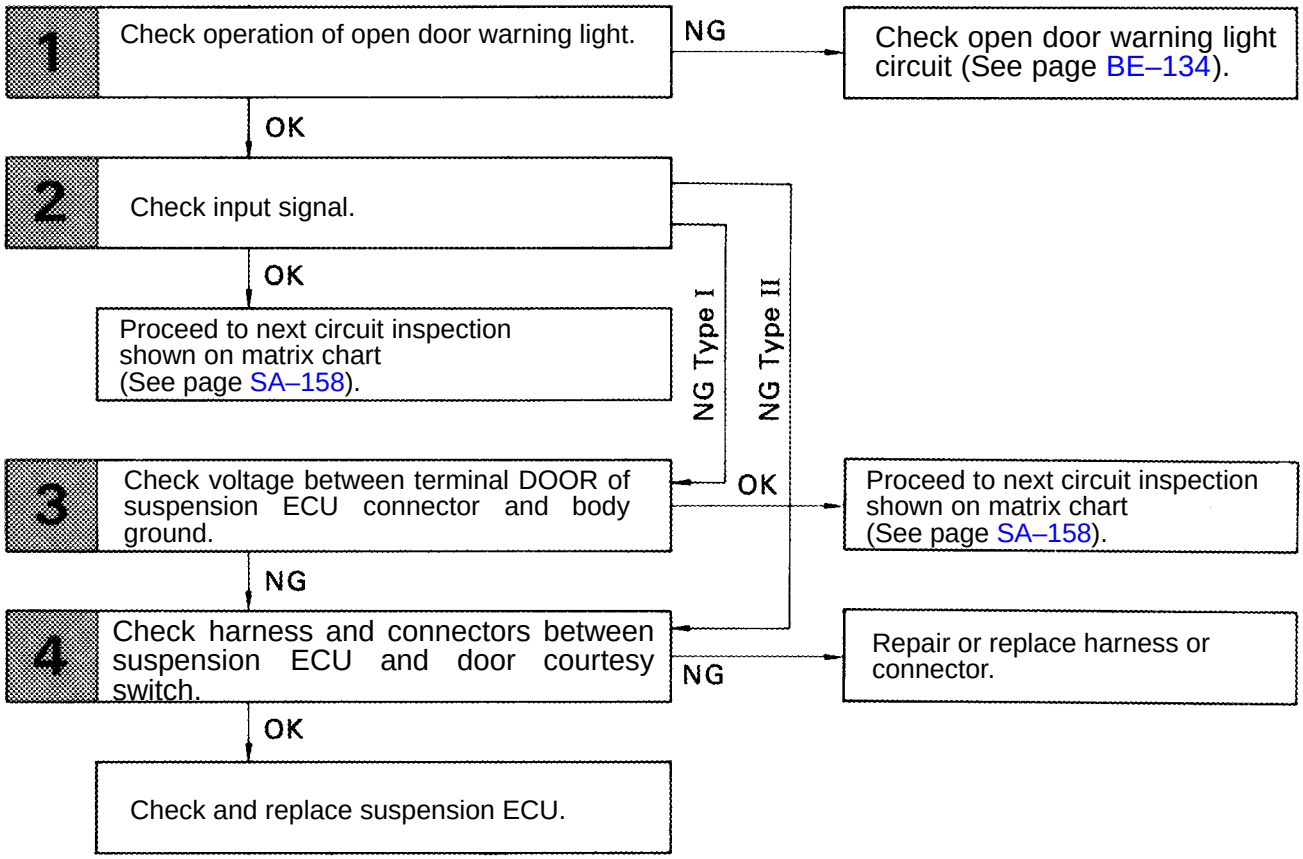
Check and replace suspension ECU.

Door Courtesy Switch Circuit

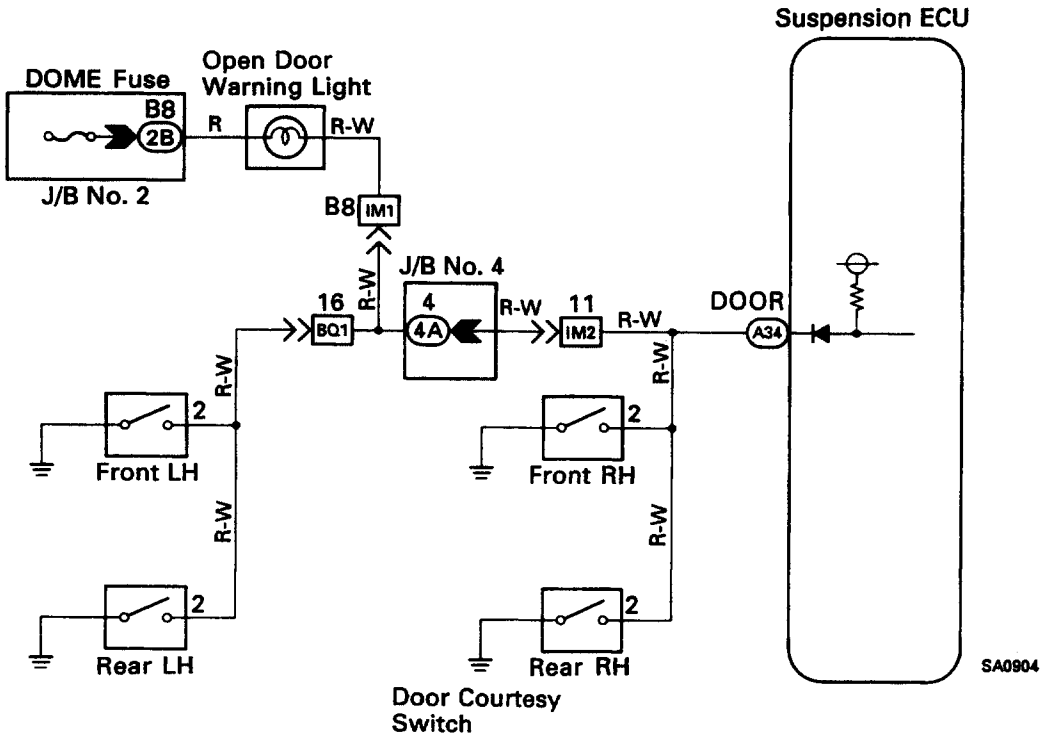
CIRCUIT DESCRIPTION

The door courtesy switch comes on when the door is opened and goes off when the door is closed. Therefore, battery voltage is applied to the terminal DOOR of the ECU when all the doors are closed and 0V is applied when even one door is opened. When the ECU detects a door open signal, it suspends Ignition Switch OFF Control.

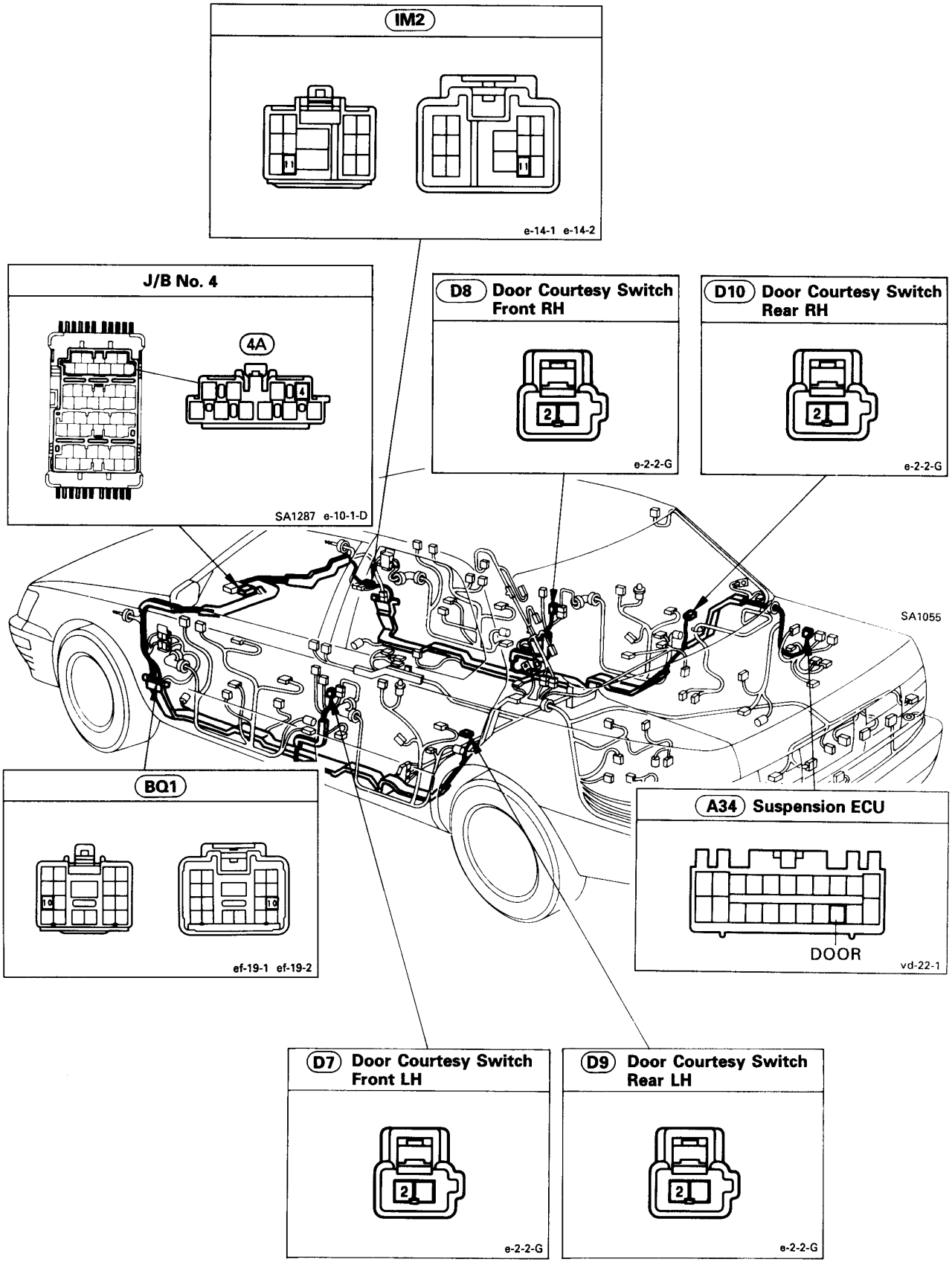
DIAGNOSTIC CHART



WIRING DIAGRAM



WIRING ROUTING



INSPECTION PROCEDURE

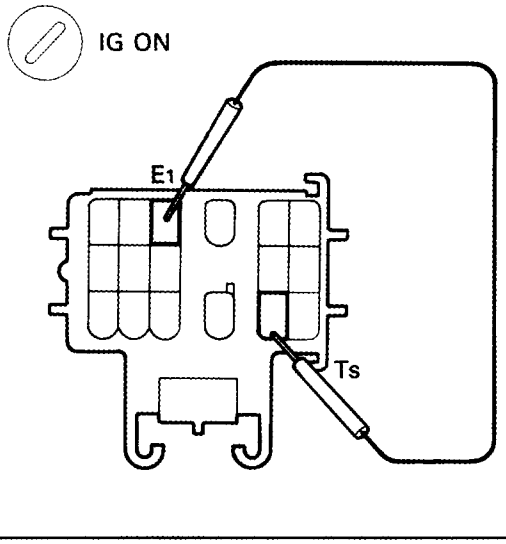
1 **Check operation of open door warning light.**

C Check that open door warning light comes on when each door is opened and goes off when all doors are closed.

OK

NG → **Check open door warning light circuit. (See page BE–134)**

2 **Check input signal.**



P See page SA–156.

C Check the lighting up condition of the height control indicator “NORM” light when all doors are closed and each door is opened.
Do this with the engine stopped.

Result

Door condition	All doors closed	Each door opened	Result
"NORM" Indicator Light	Blink	Light up	OK
	Light up	Light up	NG Type I
	Blink	Blink	NG Type II

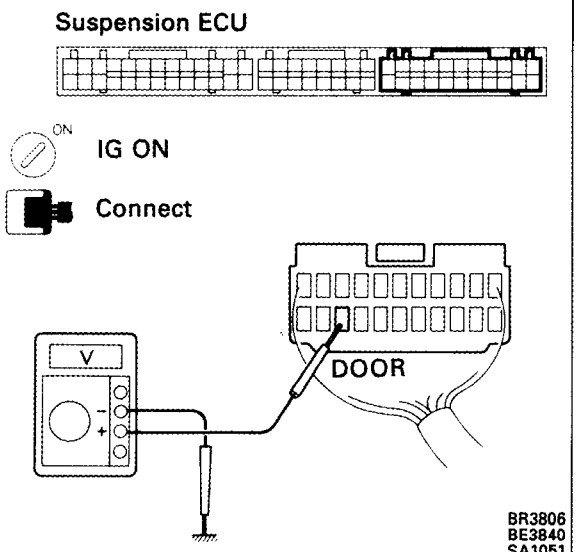
OK

NG Type I → **Go to step 3**

NG Type II → **Go to step 4**

Proceed to next circuit inspection shown on matrix chart (See page SA–158)

3 **Check voltage between terminal DOOR of suspension ECU connector and body ground.**



P (1) Remove luggage compartment RH side cover.

(2) Turn ignition switch on.

C Measure voltage between terminal DOOR of the suspension ECU connector and body ground, when all doors are closed and each door is opened.

OK

	Voltage
All doors closed	Battery voltage
Each door opened	0V

NG

OK → **Proceed to next circuit inspection shown on matrix chart (See page SA–158)**

4 **Check harness and connectors between suspension ECU and door courtesy switch.**

OK

NG → **Repair or replace harness or connector.**

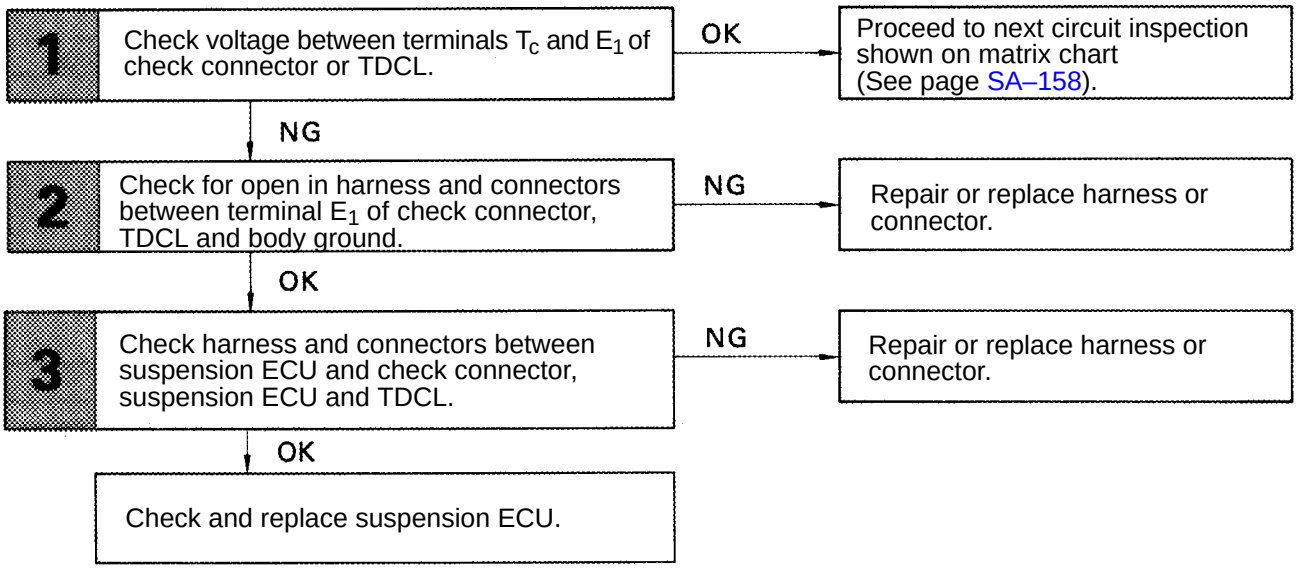
Check and replace suspension ECU.

Tc Terminal Circuit

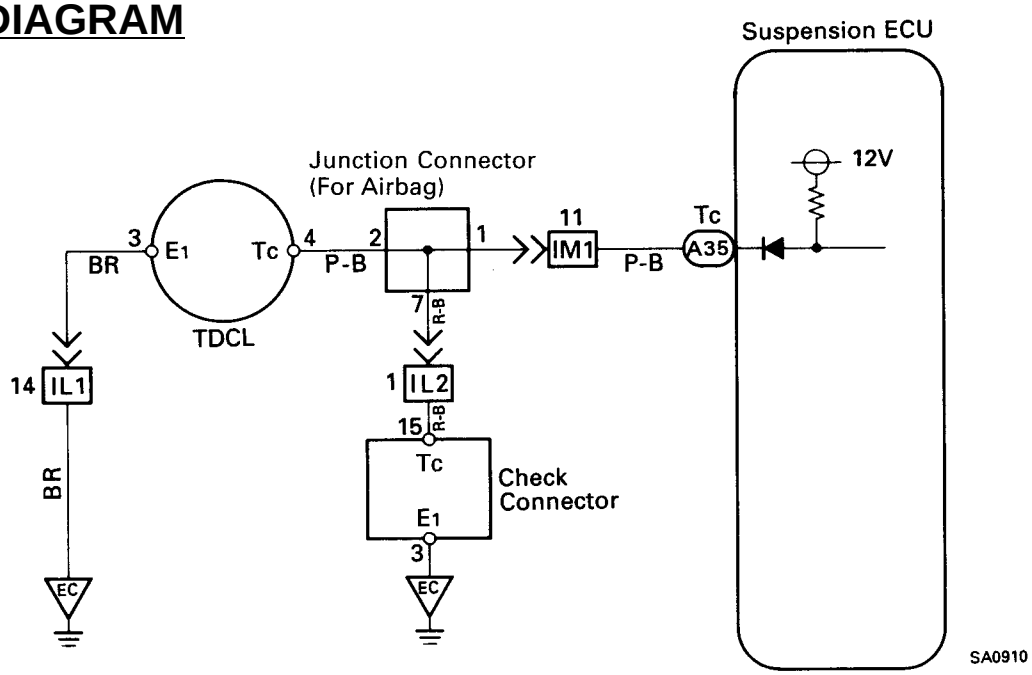
CIRCUIT DESCRIPTION

By connecting terminals Tc and E1 of the TDCL or check connector, the diagnostic codes stored in the ECU memory can be displayed by the height control indicator ”NORM” light.

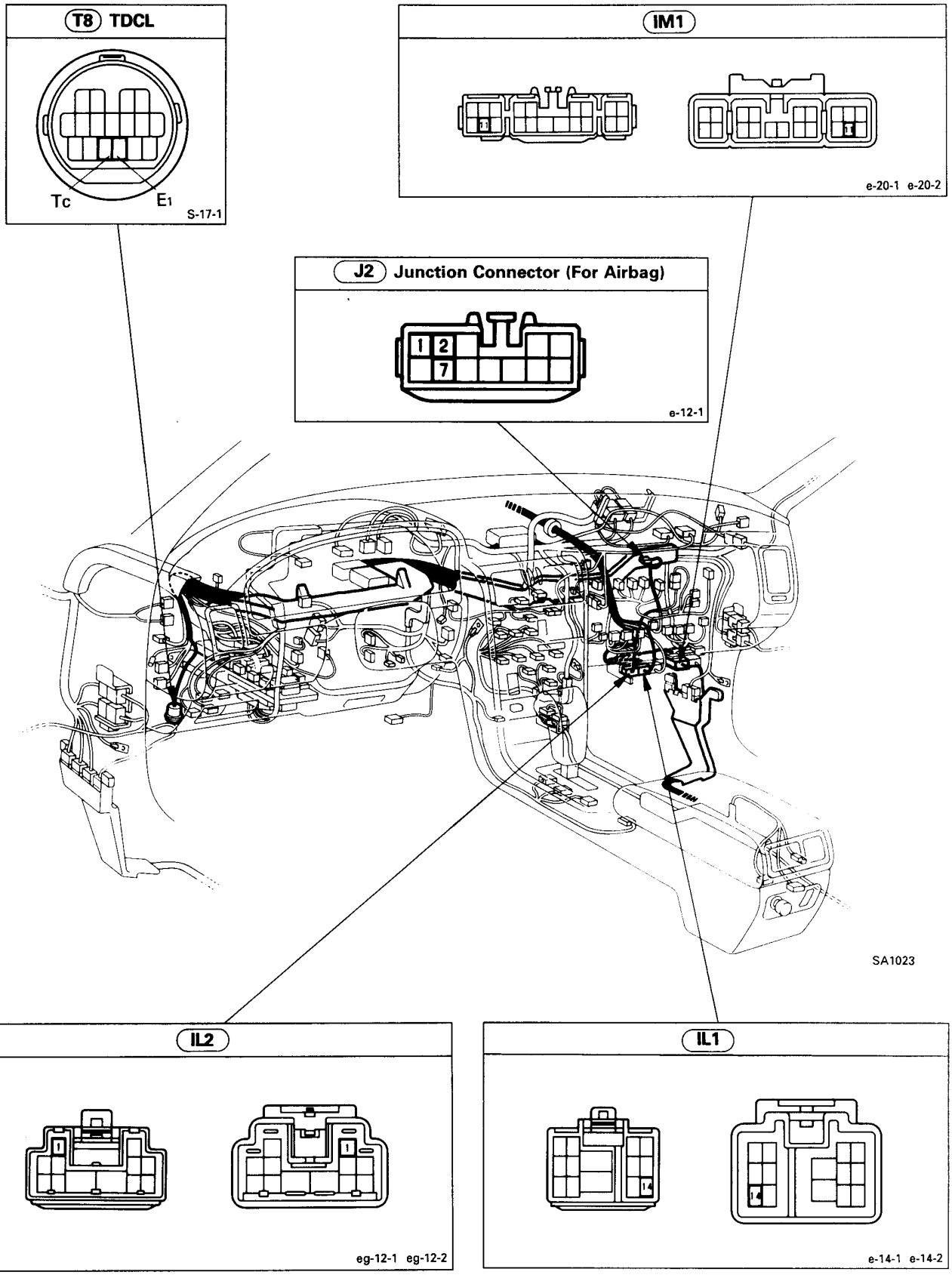
DIAGNOSTIC CHART



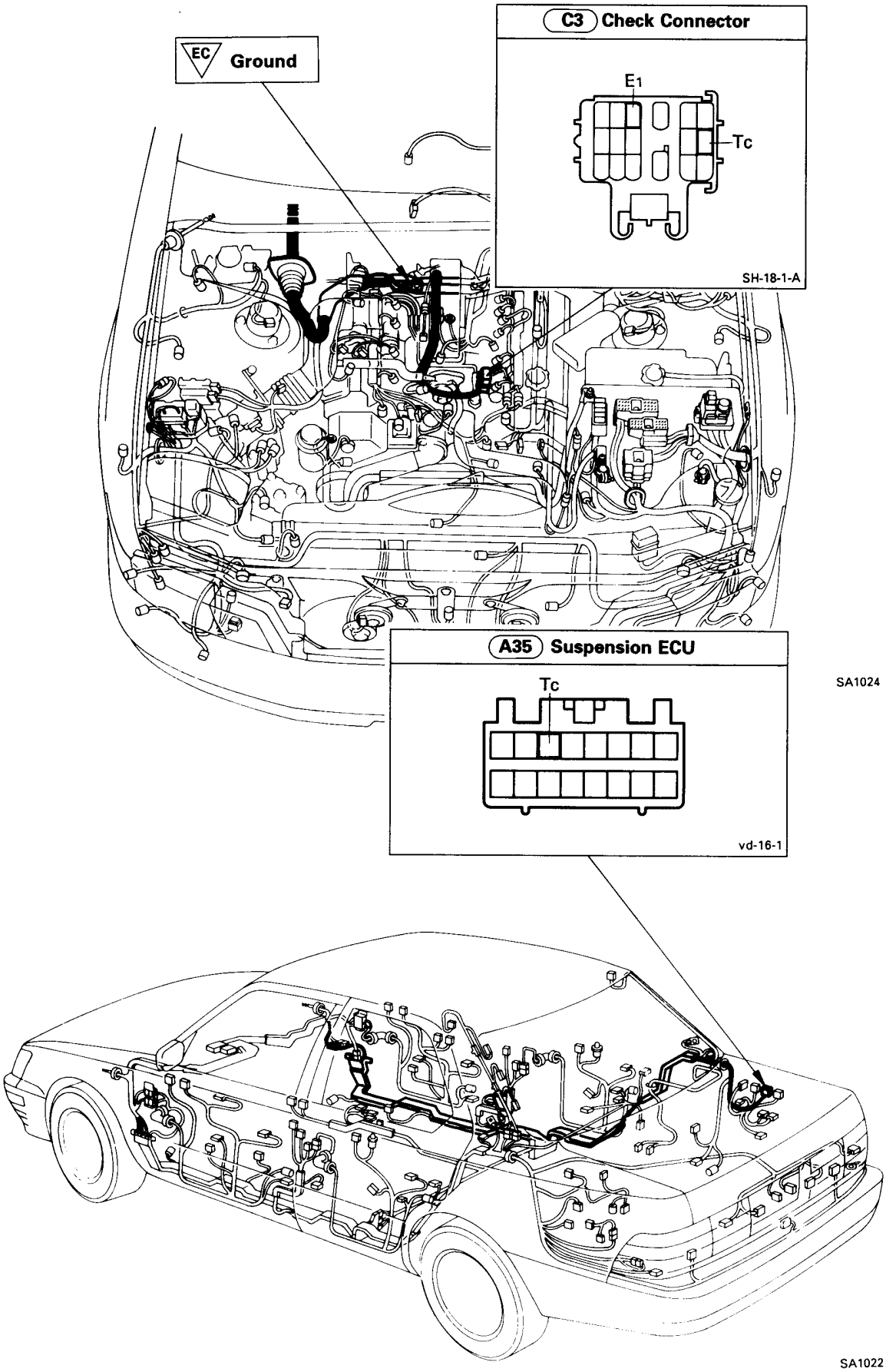
WIRING DIAGRAM



WIRING ROUTING



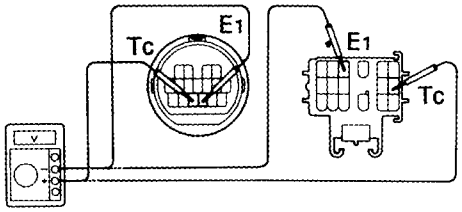
WIRING ROUTING



INSPECTION PROCEDURE

1 **Check voltage between terminals T_c and E_1 of check connector or TDCL.**

IG ON



AB0119
AB0120

P Turn ignition switch on.

C Measure voltage between terminals T_C and E_1 of check connector or TDCL.

OK **Voltage: Battery voltage**

NG

OK → **Proceed to next circuit inspection shown on matrix chart (See page SA–158).**

2 **Check for open in harness and connectors between terminal E1 of check connector, TDCL and body ground.**

OK

NG → **Repair or replace harness or connector.**

3 **Check harness and connectors between suspension ECU and check connector, suspension ECU and TDCL.**

OK

NG → **Repair or replace harness or connector.**

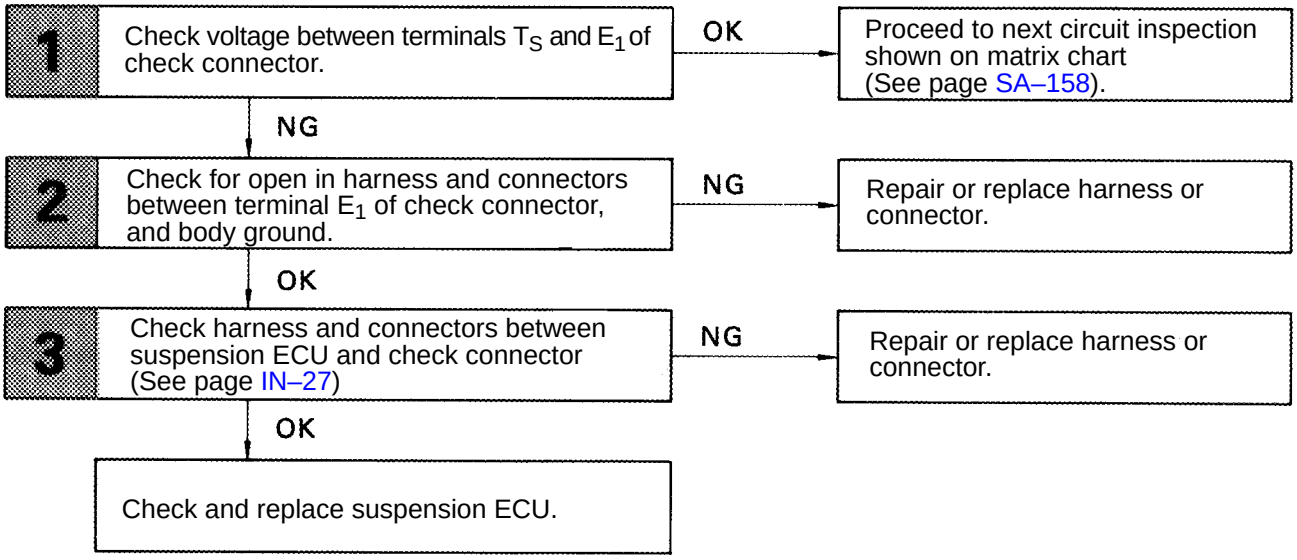
Check and replace suspension ECU.

Ts Terminal Circuit

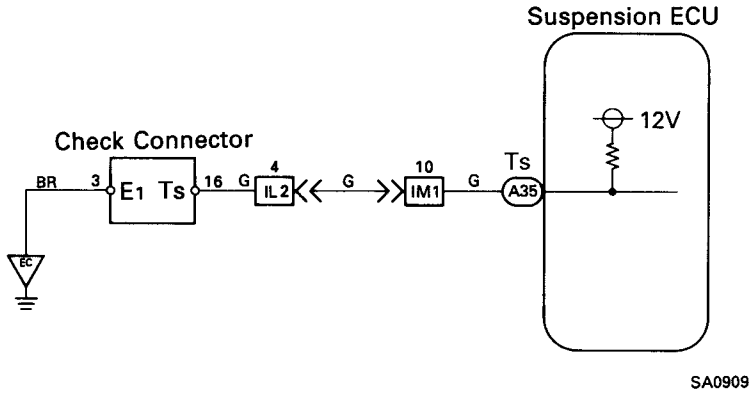
CIRCUIT DESCRIPTION

By connecting terminals Ts and E1 of the check connector, an input signal check can be performed (See page SA–156).

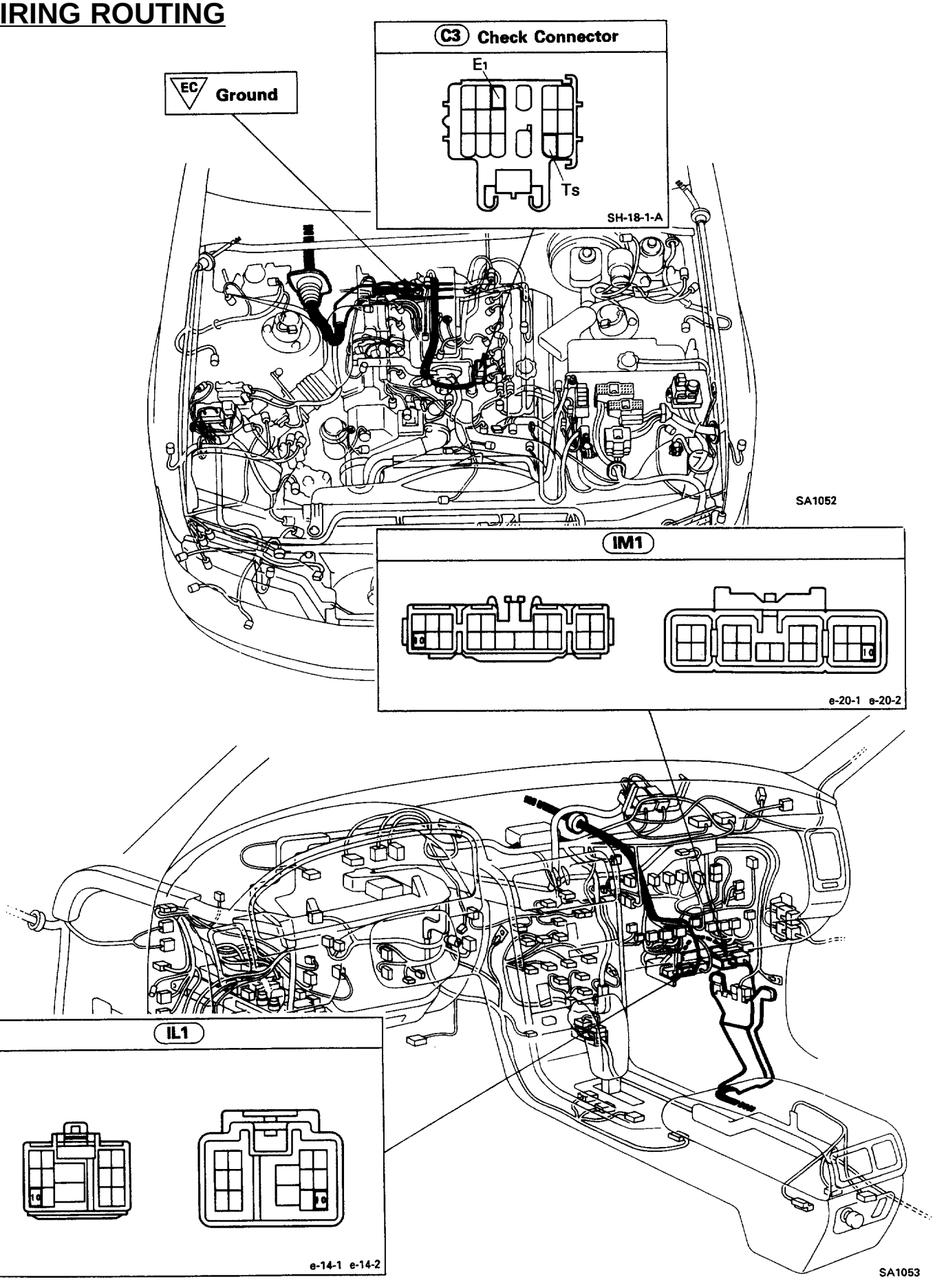
DIAGNOSTIC CHART



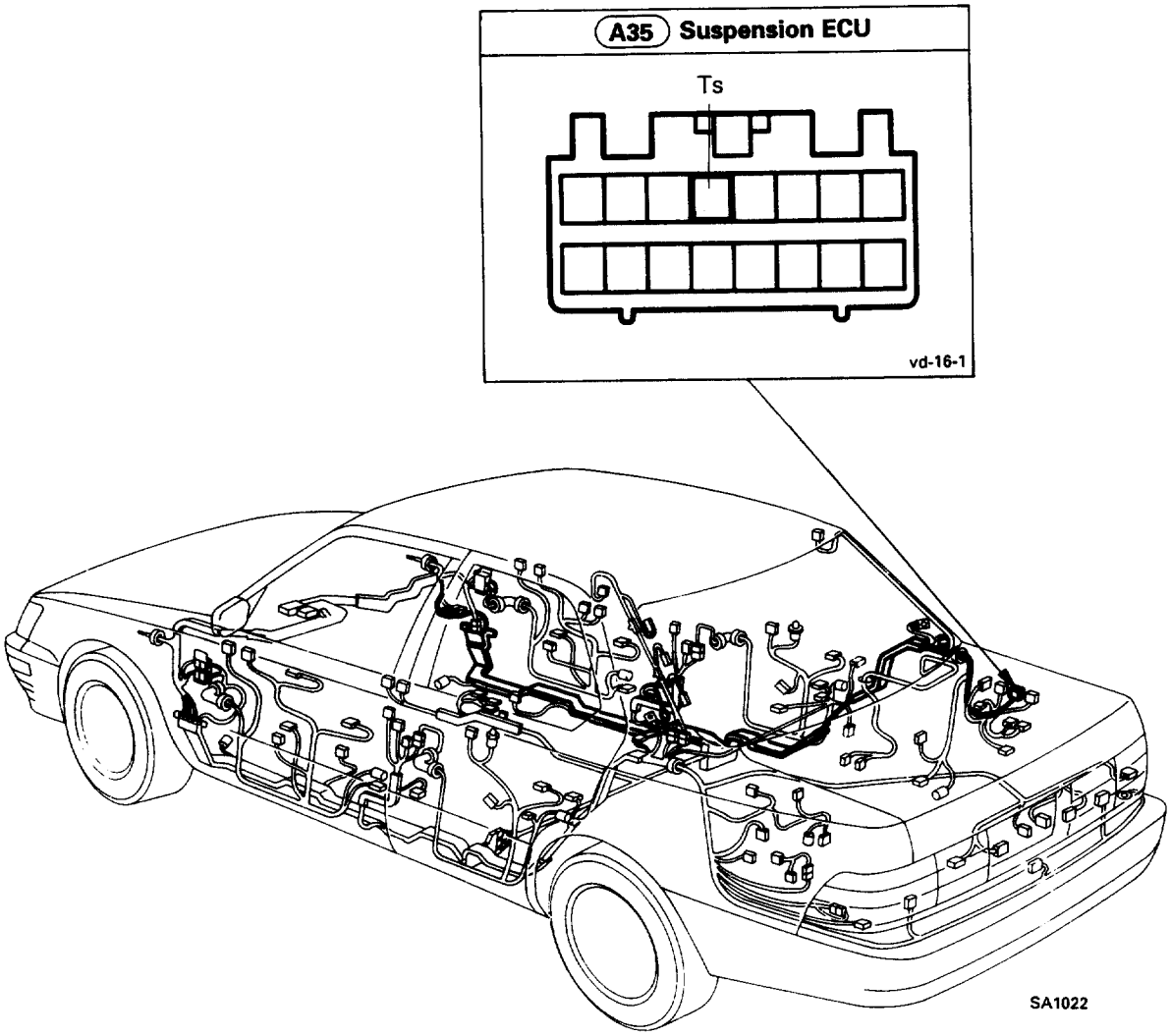
WIRING DIAGRAM



WIRING ROUTING

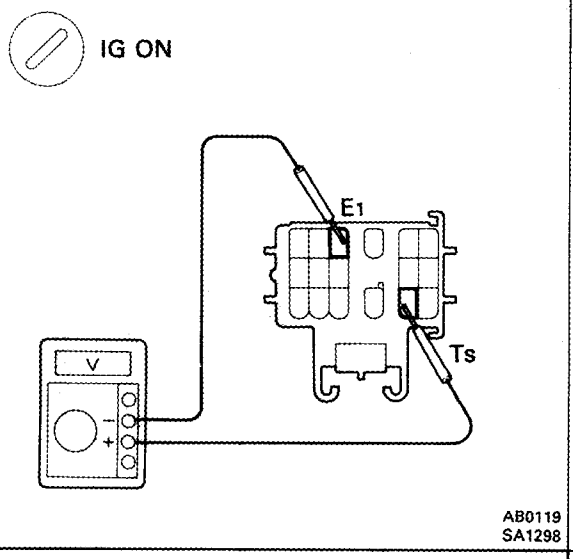


WIRING ROUTING



INSPECTION PROCEDURE

1 **Check voltage between terminals Ts and E_1 of check connector.**



P Turn ignition switch on.

C Measure voltage between terminals Ts and E_1 of check connector.

OK **Voltage: Approx. 10 V**

NG

OK → **Proceed to next circuit inspection shown on matrix chart (See page SA-158).**

2 **Check for open in harness and connectors between terminal E_1 of check connector, and body ground.**

OK

NG → **Repair or replace harness or connector.**

3 **Check harness and connectors between suspension ECU and check connector.**

OK

NG → **Repair or replace harness or connector.**

Check and replace suspension ECU.