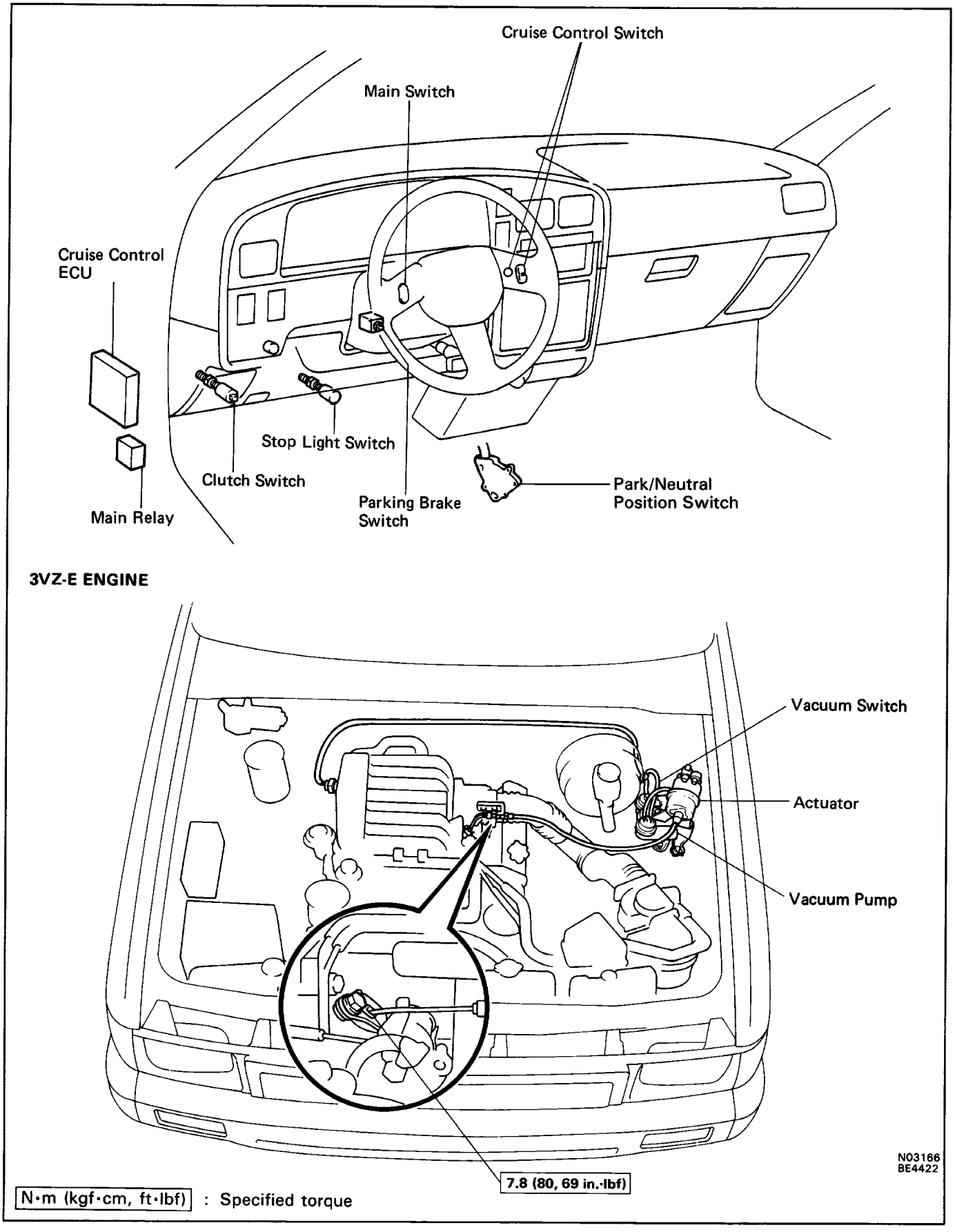
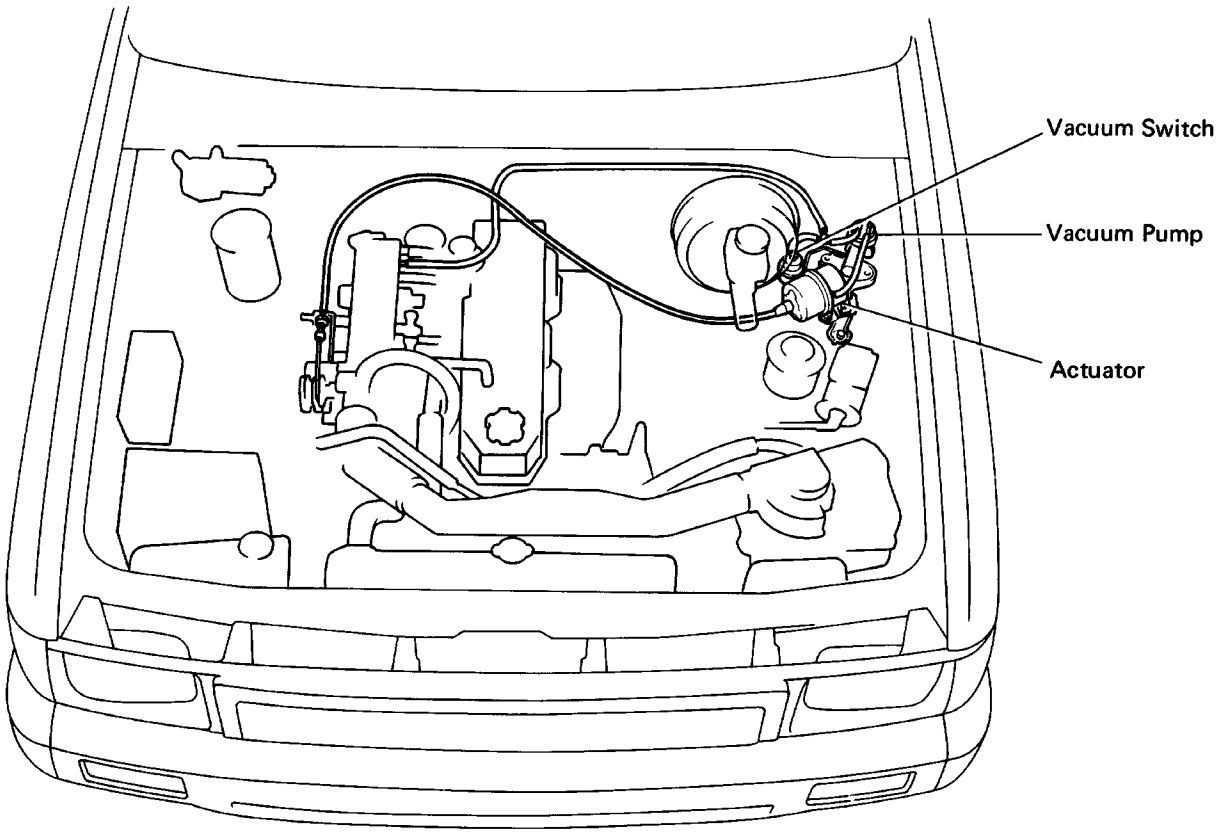
CRUISE CONTROL SYSTEM
Parts Location

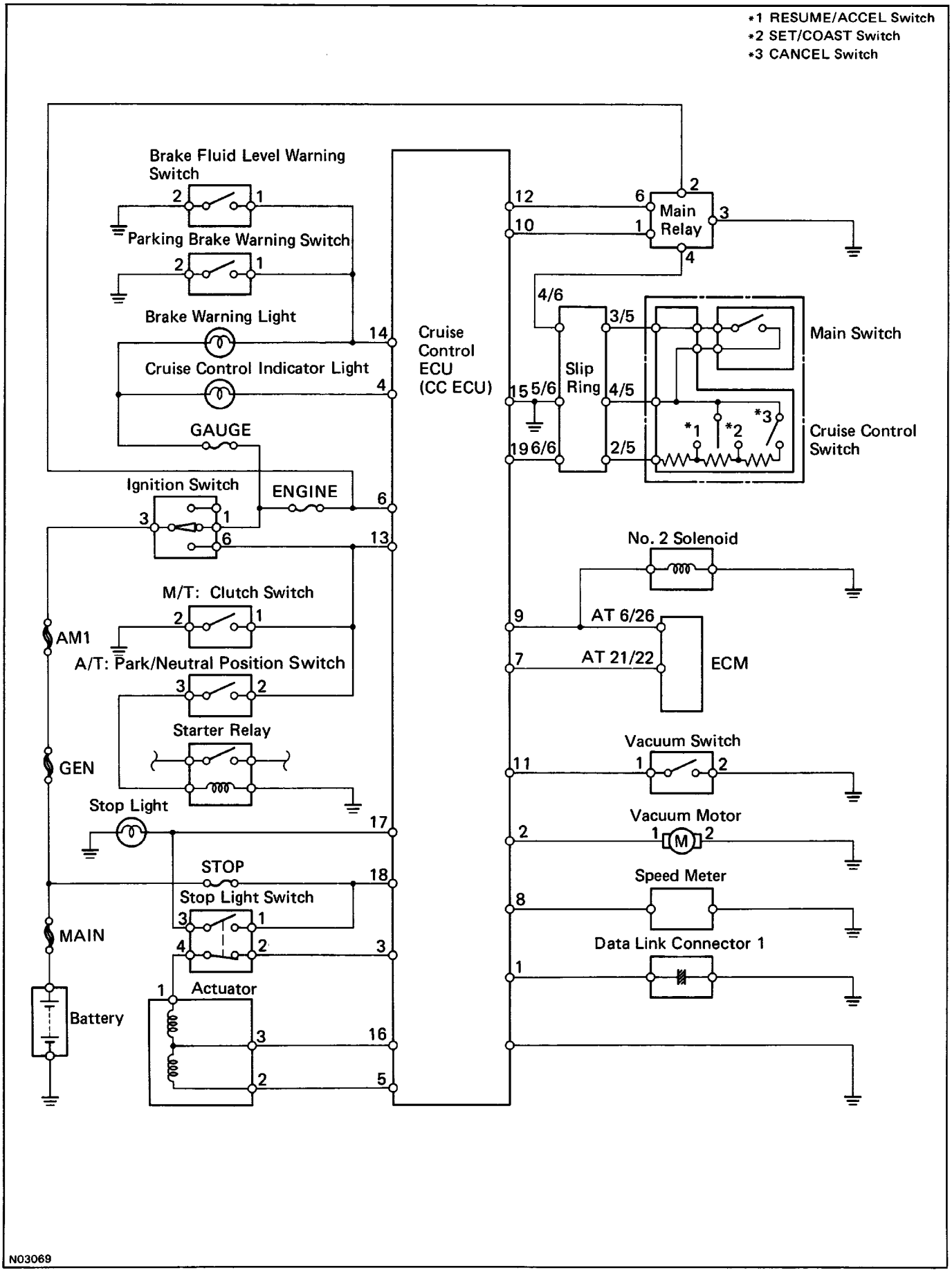


22R-E ENGINE



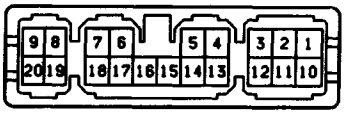
BE3035

Wiring Diagram



Connector Diagrams

Cruise Control ECU

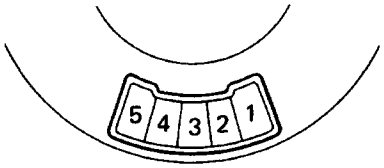


Main Relay

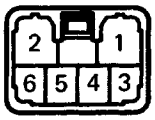
Main Switch

Cruise Control Switch

Slip Ring Speed
(Control Switch Side)



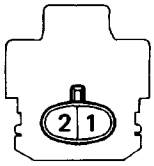
(Wire Harness Side)



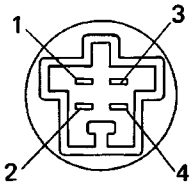
Actuator

Vacuum Pump

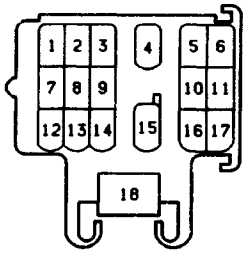
Vacuum Switch



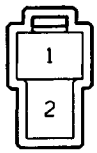
Stop Light Switch



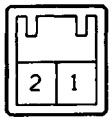
Data Link Connector 1



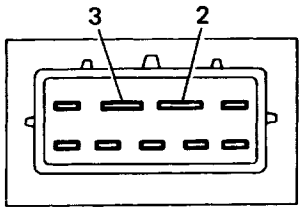
Parking Brake Switch



Clutch Switch



Park/Neutral Position Switch



S-20-2 S-6-2 IS-2-2-C S-5-1-B GA-2-1-C
BE1930 S-6-2 IS-3-2-A
IS-2-2-0 BE5756 SH18-1
H-2-2 G-2-2 BE1485

System Description

Standby Operation

- When the ignition switch is turned ON (IG), current flows from the battery to terminal 6 of the Cruise Control ECU (hereafter called ECU).
- When the ignition switch is turned ON (IG), current flows from the battery to terminal 2 of the Main Relay.

Operation

1. MAIN SWITCH OPERATION

When the main switch is pushed ON, current flows from terminal 2 of the main relay → terminal 4 →terminal 4!6 of the slip ring–i terminal 3I5–terminal 3/5 → of the cruise control switch (hereafter called SCS)–i terminal 1/2 → terminal 1 of the main switch–terminal 2 →/terminal 2I2 of the SCS → ter–minal 4I5 → terminal 4/5 of the slip ring → terminal 5/6 → ground.
As a result, the main relay turned ON → current flows to terminal 12 of ECU.
After that, current flows through the ”CRUISE” indicator light to terminal 4 of the ECU.
Therefore, the main switch remains on and continues to supply current to terminal 12 of the ECU.

2. SPEED CONTROL SWITCH OPERATION

The cruise control switch controls the SET, COAST, RESUME, ACCEL and CANCEL functions.
When the each speed control switch is pushed ON, sends a signal (each voltage) from terminal 2I5 of the SCS → terminal 2l5 of the slip ring → terminal 6/6 → terminal 19 of the ECU.
Then, the vehicle speed at the moment the switch (SET position) is released is registered in memory.

3. SPEED CONTROL OPERATION

When the vehicle speed is set by the cruise control switch, the ECU send a signal from terminal 3 of the ECU terminal 2 of the stop light switch → terminal 4 → terminal 1 of the actuator (release valve side).
At the same time, the ECU sends a signal from terminal 5 of the ECU → terminal 2 of the actuator (control valve side).
Then, the actuator increases or decreases the throttle valve opening angle in accordance with the sig–nal from the ECU.

4. CANCEL OPERATION

The Cruise Control System is provided with several types of the cancel, such as the cruise control switch (CANCEL), the stop light switch, the parking brake switch and the park/neutral position switch (AM or clutch switch (M/T).

(a) Cruise Control Switch (CANCEL)

When the cruise control switch (CANCEL) is pushed ON, sends a cancellation signal from terminal 2/5 of the SCS → terminal 2I5 of the slip ring → terminal 6/6 → terminal 9 of the ECU.

(b) Parking Brake Switch

When the parking brake lever is pulled, the parking brake switch turned ON → Sends a cancella–tion signal (ground voltage) to terminal 14 of the ECU.

(c) Park/Neutral Position Switch (A/T)

When the shift lever is set to the ”N” or ”P” position, the park/neutral position switch turned ON → sends a cancellation signal (ground voltage) to terminal 14 of the ECU.

(d) Clutch Switch (M/T)

When the clutch pedal is depressed, the clutch switch is turned ON → sends a cancellation signal (ground voltage) to terminal 13 of the ECU.

(e) Stop Light Switch

When the brake pedal is depressed, the SW B of stop light switch is turned OFF → the release valve (in actuator) is opened, and the SW A of stop light switch is turned ON → sends a cancel–lation signal to terminal 17 of the ECU.

Therefore, the operation of the cruise control system is canceled and the actuator is shut off due to the operation of these switches.

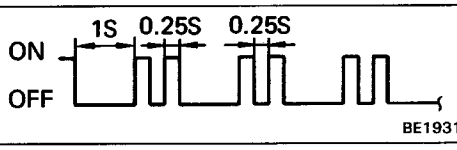
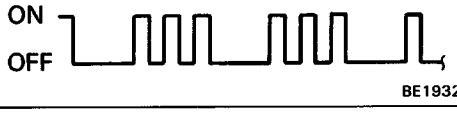
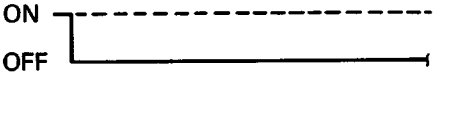
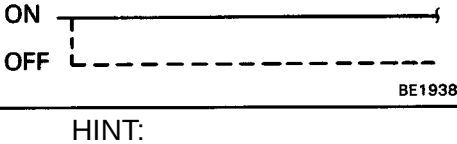
Diagnosis System

Output of Diagnostic Trouble Code

READ DIAGNOSTIC TROUBLE CODE

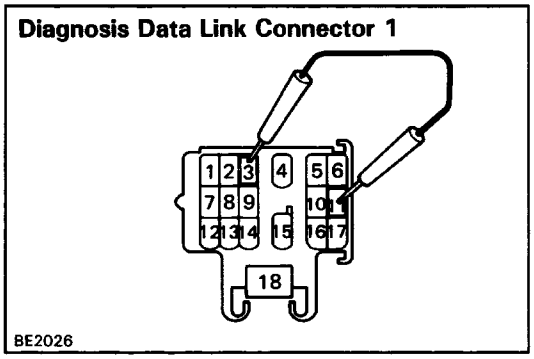
(Type A)

(a) Turn the ignition switch on.
(b) Push the SET/COAST switch on, and keep it on.
(c) Push the main switch on.
(d) Check that the indicator light ”CRUISE” light–on in the combination meter and after 3 seconds check that the indicator light ”CRUISE” blinks.
(e) Turn the SET/COAST switch off.
(f) Meet the conditions listed below.
(g) Read the diagnostic trouble code on the indicator light ”CRUISE”.

No.	Conditions	Indication code	Diagnosis
1	Push the cruise control switch SET/COAST on.		SET/COAST circuit is normal.
2	Push the cruise control switch RESUMEIACCEL on.		RESUMEIACCEL circuit is normal.
3	Vacuum switch is turned ON.		Vacuum switch circuit is normal.
4	Each cancel switch turned ON. • Cruise control switch (to CANCEL) • Stop light switch • Park/Neutral Position switch (to N or P Position) • Clutch switch • Parking brake switch		Each cancel switch is normal.
5	Drive approx. 40 km/h (25 mph) or over.		Speed sensor circuit is normal.
6	Drive approx. 40 km/h (25 mph) or below.		Speed sensor circuit is normal.

HINT:

- Indication codes appear in order from No. 1.
- If there is no indication code, perform diagnosis and inspection. (See page BE–64)
- Indication is stopped, when the MAIN switch is re–pushed.

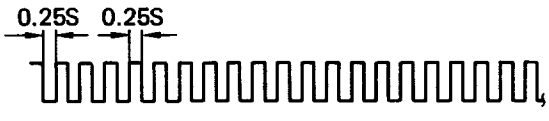
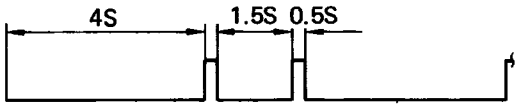
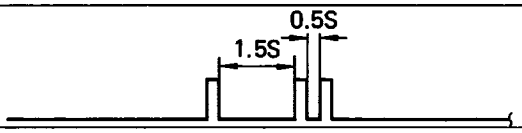
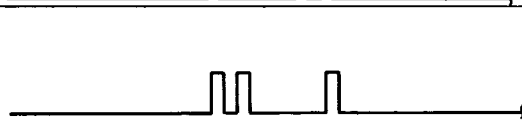
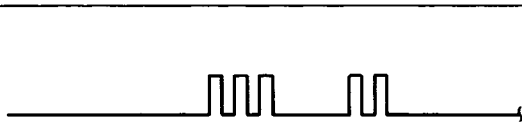


(Type6)

(a) If while driving with the cruise control on, the sys–tem is canceled by a malfunction in either the actuator, speed sensor or cruise control switch circuit, the cruise control indicator light ”CRUISE” will blink 5 times.

(b) While stopping, connect terminals 3 and 1 1 of the data link connector 1.
HINT: Should the ignition switch turned off, the diagnostic trouble code will be erased from the computer memory.

(c) Read the diagnostic trouble code on the indicator light ”CRUISE”.

Indication code		Diagnosis
		Normal.
11		Control valve circuit of actuator is abnormal.
12		Release valve circuit of actuator is abnormal.
21		Speed sensor circuit is abnormal.
23		*Vehicle speed has decreased by 16 km/h (10 mph) or more from the set speed.
32		SET/COAST switch signal and RESUMEIACCEL switch signal stay on simultaneously.
34		Control switch does not turn off before switching.

* If the set speed can be maintained when the speed control switch is again set at SET/COAST, there is no malfunction .

When 41 code is indicated, replace the cruise control ECU.

41	

HINT:

¿

- Indication codes appear in order from No. 11
- If there is no indication code, perform diagnosis and in–spection. (See page BE–84)

Troubleshooting

You will find the troubles easier using the table well shown below. In this table, each number shows the priority of causes in troubles. Check each part in order.

Chart No.					C	A	B	E	G, H	F	I	I	D		
Inspection Item / Diagnosis Code / Problem	Type B	Type A		ECU	Actuator	Main Switch	Control Switch	Stop Light Switch	Clutch Switch or Park/ Neutral Position Switch	Parking Brake Switch	Vacuum Switch	Vacuum Pump	Speed Sensor' or Speedometer Cable	Speedometer Cable Function	Others
• "CRUISE" indicator light blinks 5 time. • Cruise control system does not set. • Cruise control system does not operate.	11			2	1										
	12			3	1			2							
	21			2									1		
	23			6	2						5	4	3	1	*2
	32			2			1								
	Normal	5	OK	8	7	1	2	3	4	5				6	*3
			NG	2									1		
Setting speed deviated on high or low side.		3	OK	6	5						4	3	2	1	
			NG								1				
Vehicle speed fluctuates when speed con–trol switch turned to SET.				4	3								1	2	
Setting speed does not cancel when brake pedal depressed.		4	OK	3	1			2							
			NG	2				1							
Setting speed does not cancel when park–ing brake lever pulled.		4	OK	2	1										
			NG	2						1					
Setting speed does not cancel when shifted to "N" position. (A/T)		4	OK	2	1										
			NG	2					1						
Setting speed does not cancel when clutch pedal depressed. (M/T)		4	OK	2	1										
			NG	2					1						
Vehicle speed does not decrease when cruise control switch turned to COAST.		1	OK	3	1									2	
			NG	2			1								
Vehicle speed does not accelerate when cruise control switch turned to ACCEL.		2	OK	3	1									2	
			NG	2			1								
Vehicle speed does not return to memo–rized speed when control switch turned on RESUME.		2	OK	3	1									2	
			NG	2			1								
Setting speed does not cancel when cruise control switch turned to CANCEL.		4	OK	2	1										
			NG	2			1								
Speed can be set below about 40 km/h (25 mph).		5	OK	2	1										
			NG	2									1		
Cruise control will not disengage even at about 40 km/h (25 mph).		5	OK	2	1										
			NG	3									1	2	
Acceleration response is sluggish when cruise control switch turned to "ACCEL" or "RESUME".		3	OK	4	3							2		1	*2
			NG								1	2			

" : in the Speedometer Vacuum Hose *3: Vacuum Hose & Brake Fluid

Inspection Chart

A **INSPECTION OF POWER SOURCE CIRCUIT**

Turn ignition switch on

Is ENGINE fuse normal?

No → Replace fuse. Is operation normal?

No → • Short circuit in wire harness between ENGINE fuse and terminal 2 of main relay.
• Inspect main relay. (See page BE–82)

Yes

Yes → Fuse faulty.

MAIN RELAY

INSPECT GROUND CONNECTION
Disconnect connector from main relay.
Is there continuity between terminal 3 of main relay and ground?

No → • Open circuit in wire harness between terminal 3 of main relay and ground.
• Ground faulty.

Yes

INSPECT POWER SOURCE
Is there battery positive voltage between terminal 2 of main relay and ground with ignition switch turned on?

No → Open circuit in wire harness between ENGINE fuse and terminal 2 of main relay.

Yes

INSPECT MAIN RELAY OPERATION
Is main relay operation normal?
(See page BE–81)

No → Main relay faulty.
Replace main relay. Then recheck system.

Yes

Is there continuity between terminal 6 on wire harness side connector and ground?

Yes → Short circuit in wire harness between terminals6 of main relay and 12 of CC ECU.

No

Is there continuity between terminal 1 on wire harness side connector and ground?

Yes → Short circuit in wire harness between terminals 1 of main relay and 10 of CC ECU.

No

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Disconnect combination switch connector.

Is there continuity between terminal 4 of main relay connector on wire harness side and ground?

Yes → Short circuit in wire harness between terminals 4 of main relay and 4I6 of slip ring.

No

Connect connector to main relay.

SLIP RING

Disconnect connectors from slip ring.

INSPECT POWER SOURCE
Is there battery positive voltage between terminal 4I6 on wire harness side connector and ground with ignition switch turned on?

No → Open circuit in wire harness between terminals 4 of wire harness side connector and 4I6 of slip ring.

Yes

INSPECT GROUND CONNECTION
Is there continuity between terminal 5I6 on wire harness side connector and ground?

No → Open circuit in wire harness side between terminal 5I6 of slip ring and ground.

Yes

INSPECT SLIP RING CONTINUITY
Is slip ring continuity normal?
(See page BE–81)

No → Slip ring faulty.
Replace slip ring. Then recheck system.

Yes

MAIN SWITCH

Disconnect connector from main switch.

Is there continuity between terminals 1I2 and 3I5 of speed control switch?

No → Open circuit in speed control switch between terminals 1/2 and 3I5.

Yes

INSPECT MAIN SWITCH CONTINUITY
Is main switch continuity normal?
(See page BE–80)

No → Main switch faulty.
Replace main switch. Then recheck system.

Yes

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Is there continuity between terminals 2I2 and 4I5 of speed control switch?
No → Open circuit in cruise control switch between terminals 2I2 and 4I5.

Yes

Connect connectors to slip ring.

INSPECT POWER SOURCE
Is there battery positive voltage between terminal 1/2 of cruise control switch and ground with ignition switch turned on?
No → Short circuit in wire harness between terminals 1/2 and 3/5 of cruise control switch.

Yes

Connect connector to main switch.

ECU

Disconnect connector from CC ECU and inspect connector on wire harness side as follows.

INSPECT GROUND CONNECTION
Is there continuity between terminal 15 and ground?
No →
- Open circuit in wire harness between terminal 15 and ground.
- Ground faulty.

Yes

INSPECT POWER SOURCE
Is there battery positive voltage between terminal 12 and ground with ignition switch and main switch is turned on?
No → Open circuit in wire harness between terminals 12 of CC ECU and 6 of main relay.

Yes

Disconnect connector from main relay.

Is there continuity between terminals 10 of CC ECU and 1 of main relay wire harness side connector?
No → Open circuit in wire harness between terminals 10 of CC ECU and 1 of main relay.

Yes

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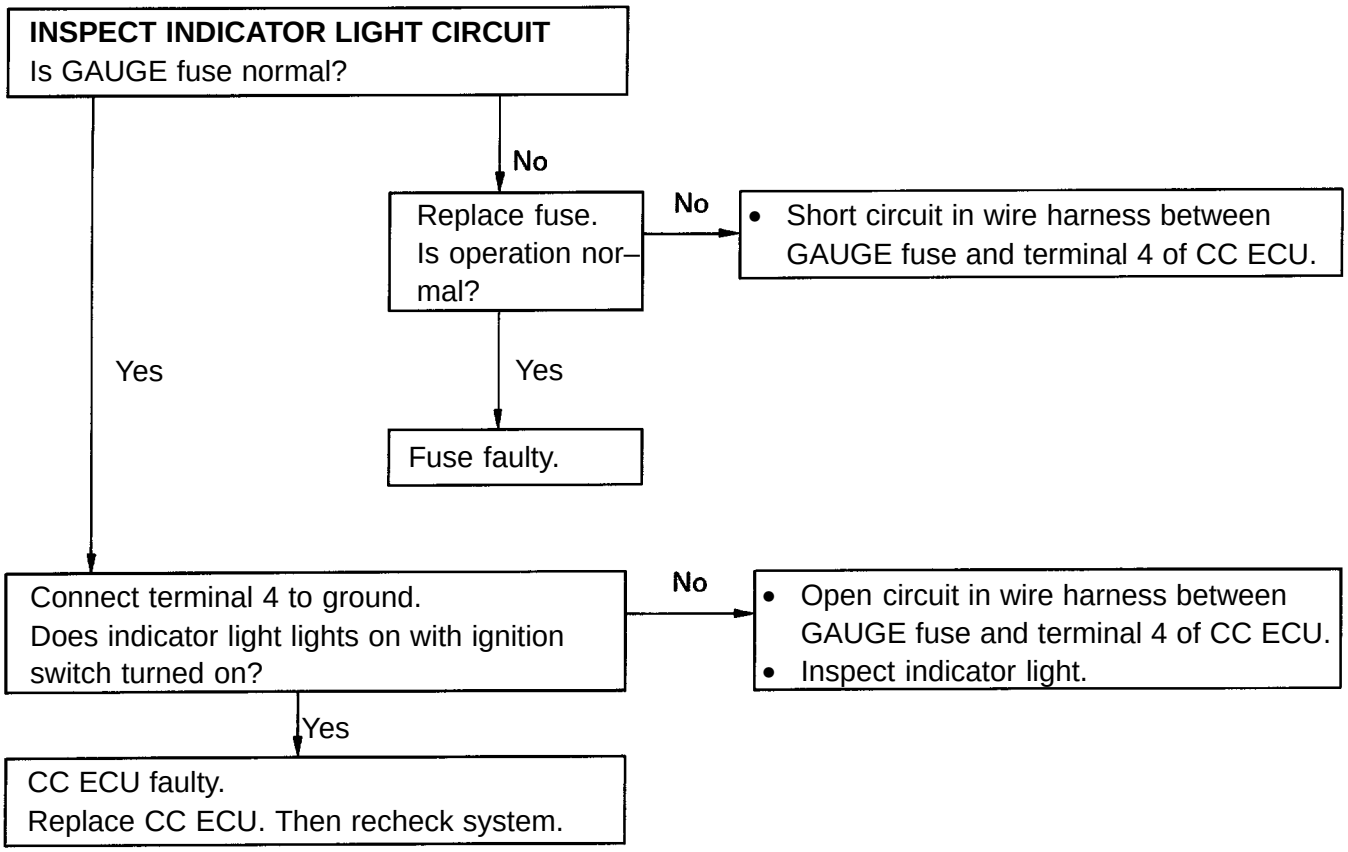

B INSPECTION OF CRUISE CONTROL SWITCH CIRCUIT

Turn ignition switch off.

CRUISE CONTROL SWITCH

Disconnect connector from control switch.

INSPECT CONTROL SWITCH
Is control switch operation normal?
(See page BE–81)

No → Speed control switch faulty.
Replace cruise control switch. Then re–check system.

Yes

SLIP RING

Disconnect connector from slip ring.

INSPECT GROUND CONNECTION
Is there continuity between terminal 5I6 on wire harness side connector and ground?

No →
- Open circuit in wire harness between terminal 5I6 of slip ring and ground.
- Ground faulty.

Yes

INSPECT SLIP RING CONTINUITY
Is slip ring continuity normal?
(See page BE–82)

No → Slip ring faulty.
Replace slip ring. Then recheck system.

Yes

ECU

Connect connectors to slip ring.
Disconnect connector from CC ECU and in–spect connector on wire harness side as fol–lows.

INSPECT GROUND CONNECTION
Is there continuity between terminal 15 and ground?

No →
- Open circuit in wire harness between terminal 15 of CC ECU and ground.
- Ground faulty.

Yes

INSPECT CRUISE CONTROL SWITCH CIRCUIT
Is there no continuity between terminals 19 and 15 with control switch is off?

No → Short circuit in wire harness between ter–minal 19 of CC ECU and terminal 6I6 of slip ring.

Yes

Is there approx. 68Ω between terminals 19 and 15 with control switch RESUME/ACCEL is pushed on?

No → Open circuit in wire harness between ter–minal 19 of CC ECU and terminal 6I6 of slip ring.

Yes

CC ECU faulty.
Replace CC ECU. Then recheck system.

C INSPECTION OF ACTUATOR CIRCUIT

Turn ignition switch off.

VACUUM HOSE

Are there cracks or other damage on the vacuum hose?

Yes → Vacuum hose faulty.
Replace vacuum hose. Then recheck system.

No

ACTUATOR

INSPECT CABLE FREEPLAY
Is control cable freeplay less than 10 mm (0.39 in.)?

No → Adjust control cable freeplay.

Yes

INSPECT ACTUATOR OPERATION
Disconnect connector from actuator.
Is actuator operation normal?
(See page BE–82)

No → Actuator faulty.
Replace actuator. Then recheck system.

Yes

Is there continuity between terminal 3 on wire harness side connector and ground?

No → Open circuit in wire harness between terminal 3 of actuator and terminal 16 of ECU.

Yes

STOP LIGHT SWITCH

INSPECT STOP LIGHT SWITCH CIRCUIT
Disconnect connector from stop light switch.
Is there continuity between terminal 4 of wire harness side connector and ground?

Yes → Short circuit in wire harness between terminal 1 of actuator and terminal 4 of stop light switch.

No

Connect the connector to actuator.
Is there continuity between terminal 4 of wire harness side connector and ground?

No → Open circuit in wire harness between terminal 1 of actuator and terminal 4 of stop light switch. .

Yes (There is resistance approx. 71Ω)

INSPECT STOP LIGHT SWITCH CONTINUITY
Is stop light switch continuity normal?
(See page BE–80)

→ Replace stop light switch. Then recheck system.

Yes

Connect connector to stop light switch.

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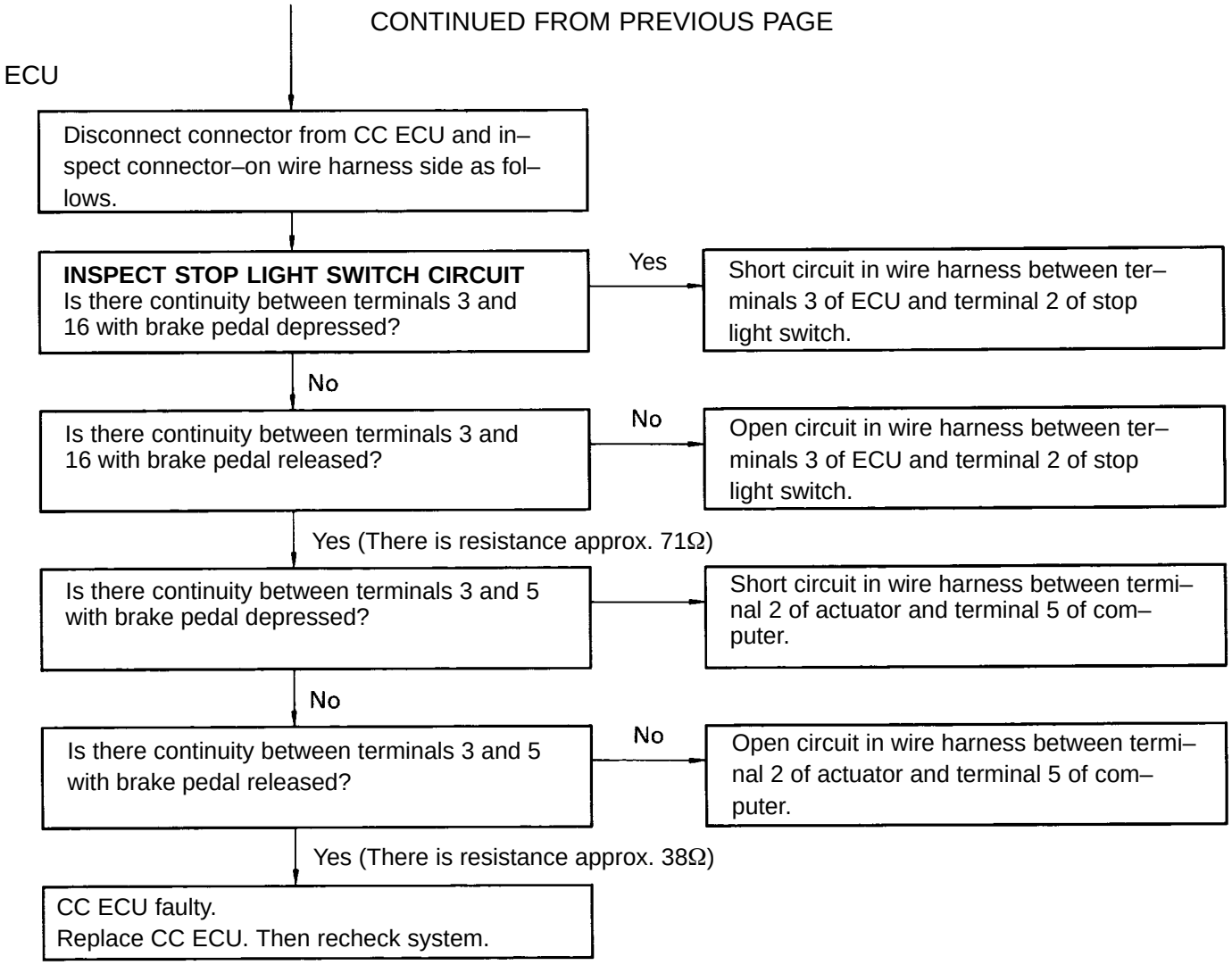
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ECU
Disconnect connector from CC ECU and inspect connector–on wire harness side as follows.
INSPECT STOP LIGHT SWITCH CIRCUIT
Is there continuity between terminals 3 and 16 with brake pedal depressed?
Yes
Short circuit in wire harness between terminals 3 of ECU and terminal 2 of stop light switch.
No
Is there continuity between terminals 3 and 16 with brake pedal released?
No
Open circuit in wire harness between terminals 3 of ECU and terminal 2 of stop light switch.
Yes (There is resistance approx. 71Ω)
Is there continuity between terminals 3 and 5 with brake pedal depressed?
Short circuit in wire harness between terminal 2 of actuator and terminal 5 of computer.
No
Is there continuity between terminals 3 and 5 with brake pedal released?
No
Open circuit in wire harness between terminal 2 of actuator and terminal 5 of computer.
Yes (There is resistance approx. 38Ω)
CC ECU faulty.
Replace CC ECU. Then recheck system.

D INSPECTION OF SPEED SENSOR CIRCUIT

SPEED METER CABLE

INSPECT SPEED METER CABLE
Does not meter fluctuate when driving at a steady speed?

Yes → Meter cable faulty.
Replace meter cable. Then recheck system.

No

Turn ignition switch off.

SPEED SENSOR

Disconnect connector from combination meter.

INSPECT GROUND CONNECTION
Is there continuity between terminal6 of wire harness side connector and ground?

No →
- Open circuit in wire harness between terminal B of combination meter and ground.
- Ground faulty.

Yes

INSPECT SPEED SENSOR OPERATION
Is there sensor operation normal?
(See page BE–33).

No → Speed sensor faulty.
Replace speed sensor. Then recheck system.

Yes

Connect connectors to combination meter.

ECU

Disconnect connector from CC ECU and inspect connector on wire harness side as follows.
Turn ignition switch on.

INSPECT SPEED SENSOR CIRCUIT
Does the voltage between terminal 8 and ground change repeatedly from OV to approx. 5V or more when speedometer shaft is turned?

No → Open or short circuit in wire harness between terminal 8 of CC ECU and terminal A of combination meter.

Yes

CC ECU faulty.
Replace CC ECU. Then recheck system.

E INSPECTION OF STOP LIGHT SWITCH CIRCUIT

Turn ignition switch off.

Is STOP fuse normal?

No → Replace fuse. Is operation normal?

No → Short circuit in wire harness between terminal 18 of CC ECU or terminal 1 of stop light switch and fuse.

Yes → Fuse faulty.

STOP LIGHT SWITCH

INSPECT GROUND CONNECTION
Disconnect connector from stop light switch.
Is there continuity between terminal 3 of wire harness side connector and ground?

No →
- Open circuit in wire harness between terminal 3 and ground.
- Bulb burned out.
- Ground faulty.

Yes

INSPECT STOP LIGHT SWITCH CONTINUITY
Is stop light switch continuity normal?
(See page BE–80).

No → Stop light faulty.
Replace stop light switch. Then recheck system.

Yes → Connect connector to stop light switch.

ECU

Disconnect connector from CC ECU and inspect connector on wire harness side as follows.

INSPECT STOP FUSE CIRCUIT
Is there battery positive voltage between terminal 17 and ground with brake pedal released?

Yes → Short circuit in wire harness between terminal 17 of CC ECU and STOP fuse.

No

Is there battery positive voltage between terminal 17 and ground with brake pedal depressed?

No → Open circuit in wire harness between terminal 17 of CC ECU and STOP fuse.

Yes → CC ECU faulty.
Replace CC ECU. Then recheck system.

F INSPECTION OF PARKING BRAKE SWITCH CIRCUIT

Turn ignition switch off.

BRAKE FLUID LEVEL WARNING SWITCH

INSPECT GROUND CONNECTION
Disconnect connector from brake fluid level warning switch.
Is there continuity between terminal 2 of wire harness side connector and ground?

No →
- Open circuit in wire harness between terminal 2 of brake fluid level warning switch.
- Ground faulty.

Yes ↓

INSPECT BRAKE WARNING SWITCH
Is brake fluid level warning switch operation normal?
(See page BE–38)

No → Brake warning switch faulty.
Replace brake warning switch.

Yes ↓

Connect the connector to brake warning switch.

PARKING BRAKE SWITCH

INSPECT GROUND CONNECTION
Disconnect connector from parking brake switch.
Is there continuity between terminal 2 of wire harness side connector and ground?

No →
- Open circuit in wire harness between terminal 2 of parking brake switch.
- Ground faulty.

Yes ↓

INSPECT PARKING BRAKE SWITCH OPERATION
Is parking brake switch operation normal?
(See page BE–40)

No → Replace parking brake switch.

Yes ↓

Connect connector to parking brake switch.

ECU

Disconnect connector from CC ECU and inspect connector on wire harness side as follows.

Ignition switch turned on.

Is there no voltage between terminal 14 and ground with parking brake lever pulled up?

No → Open circuit in wire harness between terminal 14 of ECU and terminal 1 of parking brake switch or brake warning light.

Yes ↓

Is there battery positive voltage between terminal 14 and body ground with parking brake released?

No → Short circuit in wire harness between terminal 14 of ECU and terminal 1 of parking brake switch, terminal 1 of brake fluid level warning switch or brake warning light.

Yes ↓

CC ECU faulty.
Replace CC ECU. Then recheck system.

G INSPECTION OF CLUTCH SWITCH CIRCUIT

Turn ignition switch off.

CLUTCH SWITCH

INSPECT GROUND CONNECTION
Disconnect connector from clutch switch.
Is there continuity between terminal 2 of wire harness side connector and ground?

No → Open circuit in wire harness between terminal 2 of the clutch switch and ground.

Yes

INSPECT CLUTCH SWITCH CONTINUITY
Is clutch switch continuity normal?
(See page BE–81)

No → Replace clutch switch.

Yes

Connect connector to clutch switch.

ECU

Disconnect connector from CC ECU and inspect connector on wire harness side as follows.

INSPECT CLUTCH SWITCH CIRCUIT
Is there continuity between terminal 13 and ground when clutch pedal is depressed?

No → Open circuit in wire harness between terminal 13 of ECU and terminal 1 of clutch switch.

Yes

CC ECU faulty.
Replace CC ECU. Then recheck system.

H INSPECTION OF PARK/NEUTRAL POSITION SWITCH CIRCUIT

Turn ignition switch off.

PARK/NEUTRAL POSITION SWITCH

INSPECT GROUND CONNECTION
Disconnect connector from park/neutral position switch.
Is there continuity between terminal 3 of wire harness side connector and ground?

No → Open circuit in wire harness between terminal 3 of park/neutral position switch and ground.

Yes

INSPECT PARK/NEUTRAL POSITION SWITCH OPERATION
Is park/neutral position switch operation normal?
(See page AT–26, 79, 137 or 196)

No → Replace park/neutral position switch.

Yes

Connect connector to park/neutral position switch.

ECU

Disconnect connector from CC ECU and inspect connector on wire harness side as follows.

INSPECT PARK/NEUTRAL POSITION SWITCH CIRCUIT
Is there continuity between terminal 13 and ground when shifted to ”N” and ”P” position?

No → Open circuit in wire harness between terminal 13 of ECU and terminal 2 of park /neutral position switch.

Yes

CC ECU faulty.
Replace CC ECU. Then recheck system.

INSPECTION OF VACUUM CIRCUIT

Turn ignition switch off.

VACUUM HOSE

Are there cracks or other damage on the vacuum hose?

Yes → Replace vacuum hose.

No

VACUUM SWITCH

INSPECT VACUUM SWITCH CIRCUIT
Disconnect connector from vacuum switch.
Is there continuity terminal 2 of vacuum switch and ground?

No →
- Open circuit in wire harness between terminal 2 of vacuum switch and ground.
- Ground faulty.

Yes

INSPECT VACUUM SWITCH OPERATION
Is vacuum switch normal?
(See page BE–82)

No → Replace vacuum switch.

Yes

VACUUM PUMP

INSPECT GROUND CONNECTION
Disconnect connector from vacuum pump.
Is there continuity between terminal 2 of wire harness side connector and ground?

No →
- Open circuit in wire harness between terminal 2 of vacuum pump and ground.
- Ground faulty.

Yes

INSPECT VACUUM PUMP OPERATION
Is vacuum pump operation normal?
(See page BE–82)

No → Replace vacuum pump.

Yes

Connect connector to vacuum switch and pump.

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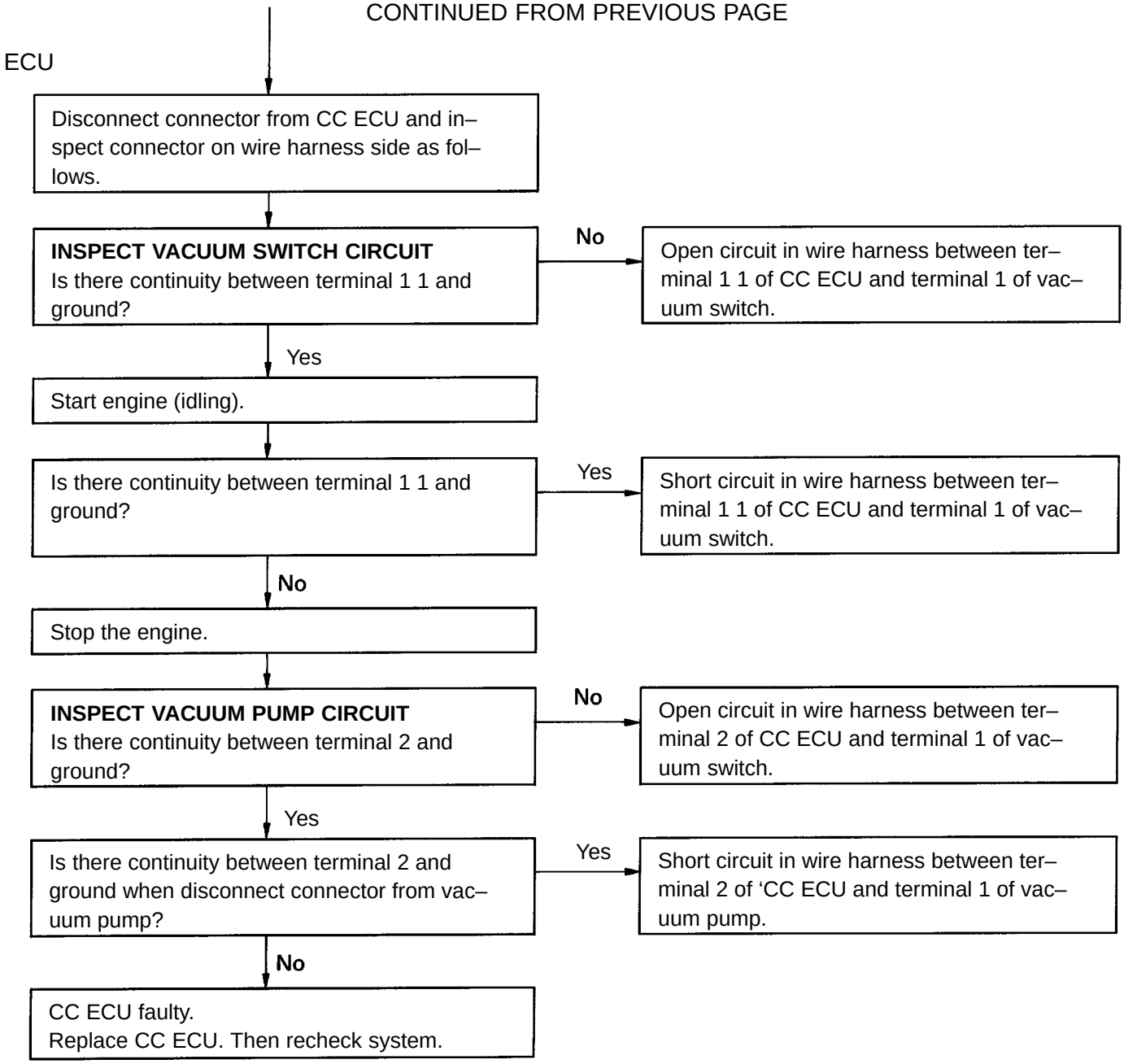


J INSPECTION OF ECM SOLENOID CIRCUIT

Start engine (idling).

ECM

Is there battery positive voltage between terminal 6126 of ECM and ground?

No → Short or open circuit in wire harness between terminal 6/26 of ECM and terminal 9 of CC ECU.

Yes

Is there voltage approx. 5V between terminal 7 of CC ECU and ground?

No → Short or open circuit in wire harness between terminal 7 of CC ECU and terminal of EC M .

Yes

Stop engine.

ECU

Disconnect connector from CC ECU and inspect connector on wire harness side as follows.

INSPECT ECM SOLENOID CIRCUIT
Is there continuity between terminal 9 and terminal 6126 of ECM?

No → Open circuit in wire harness between terminal 9 of CC ECU and terminal 6I26 of ECM.

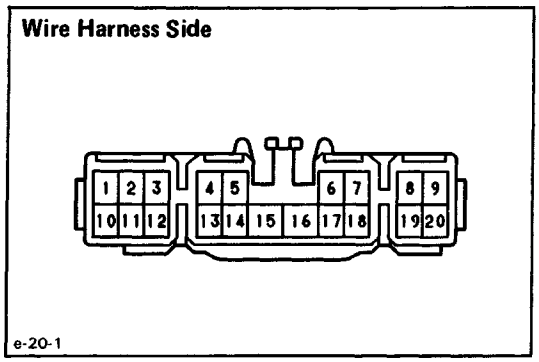
Yes

Is resistance value about 11–15Ω between terminal 9 and ground?

No → Open or short circuit in wire harness between terminal 9 of CC ECU and terminal of ECM or No. 2 solenoid.

Yes

CC ECU faulty.
Replace CC ECU. Then recheck system.



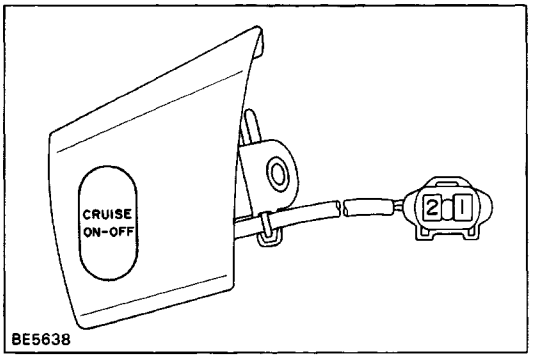
Cruise Control ECU Circuit Inspection of ECU Circuit

Disconnect the connector from the ECU and inspect the connector on the wire harness side as shown below.

Connection or Measure item	Check for	Tester Connection	Condition		Specified valve
Data Link Connector 2	Continuity	1 – Ground	Short terminals between "Te" and "El"		Continuity
			Released		No continuity
Vacuum pump		2 – Ground	Constant		Continuity *1
Speed sensor (in combination meter)		8 – Ground	Vehicle moving slowly		1 pulse each 40 cm approx. (15.75 in.)
Vacuum switch		11 – Ground	Vacuum	No vacuum	Continuity
				More than 70 + 30 mmHg 6.69 f 1.18 in. Hg 22.66 + 4.0 kPa	No continuity
Park/Neutral Position switch (A/T)		13 – Ground	Shift position	"N" or "P" position	Continuity
				⍰, ,.2⍰, ⍰p⍰ or "R" position	No continuity
Clutch switch (M/T)		13 – Ground	Clutch pedal position	Depressed	Continuity
				Released	No continuity
Parking brake switch		14 – Ground	Parking brake lever position	Pulled	Continuity
				Released	No continuity
Body ground		15 – Ground	Constant		Continuity
Stop light switch		17 – 18	Brake pedal position	Depressed	Continuity *1
				Released	No continuity
CANCEL switch	Resistance	19 – Ground	Cruise control switch position	CANCEL switch is pushed	Approx. 4180
				Released	No continuity
RESUMEIACCEL switch		19 – Ground		RESUME/ACCEL switch is pushed	Approx. 68Ω
				Released	No continuity
SET/COAST switch		19 – Ground		SET/COAST switch is pushed	Approx. 1980
				Released	No continuity
Stop light switch and actuator (release valve)		3 – 16	Brake pedal position	Depressed	No continuity
				Released	Approx. 71Ω
Actuator (control valve)		5 – 16	Constant		Approx. 380
No. 2 solenoid valve		9 – Ground	Constant		less than 1511
GAUGE fuse and indicator light	Voltage	4 – Ground	Ignition switch position	ON	Battery positive voltage
				LOCK, ACC	No voltage
ENGINE fuse		6 – Ground	Ignition switch position	ON	Battery positive voltage
				LOCK, ACC	No voltage
O/D circuit		7 – Ground	Ignition SW position	ON	Approx. 5V or more
				LOCK or ACC	No voltage
ENGINE fuse, main switch and main relay		10 – Ground	Ignition switch ON and MAIN switch position	ON	less than 0.3 V
				OFF	No voltage
		12 – Ground	Ignition switch ON –and MAIN switch position	ON	Battery positive voltage
				OFF	No voltage

* 1 There is resistance in the circuit.

If circuit is as specified, replace the ECU.



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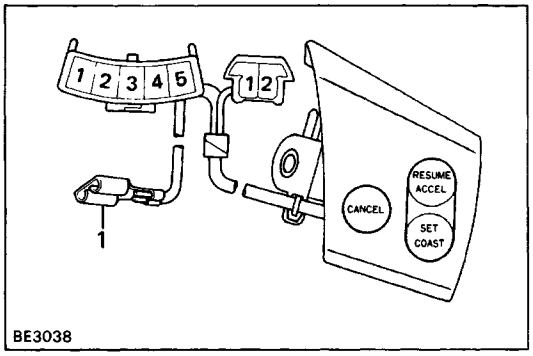


BE3038

Parts Inspection

1. INSPECT SWITCHES
(Main Switch/Continuity)

Terminal / Switch position	1	2
OFF		
ON	○	○

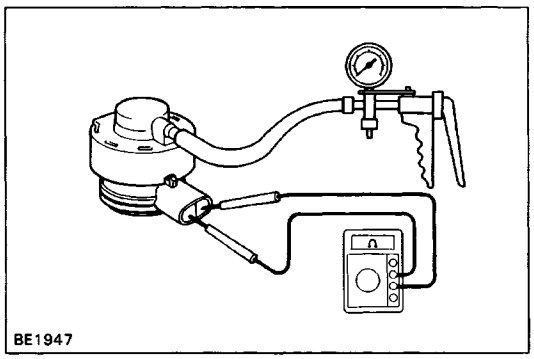
If continuity is not as specified, replace the switch.
(Cruise Control Switch /Continuity)

Terminal / Condition	1/2	2/2	3/5	4/5
Constant	○		○	
		○		○

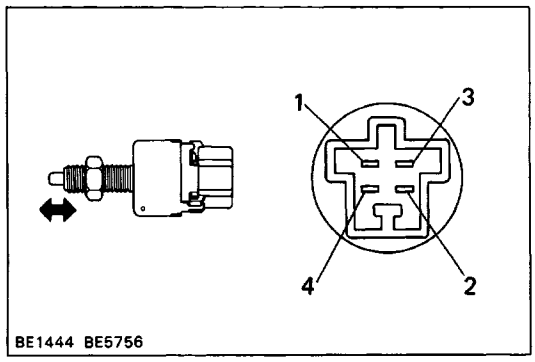
If continuity is not as specified, replace the switch.
(Cruise Control Switch/Resistance)
Measure the resistance value between terminals 2/5 and 4I5 or 2I2.

Switch position	RESISTANCE (Ω)
OFF	No continuity
RESUME/ACCEL	Approx. 68
SET/COAST	Approx. 198
CANCEL	Approx. 418

If resistance value is not as specified, replace the switch.


BE1947

(Vacuum Switch /Operation)
(a) Check that there is continuity between terminals with no vacuum.
(b) Check that there is no continuity between terminals with a vacuum of 170 ± 30mmHg (6.69 ± 1.18 in. Hg, 22.66 ± 4. 00 kPa) or above.
If operation is not as specified, replace the switch.



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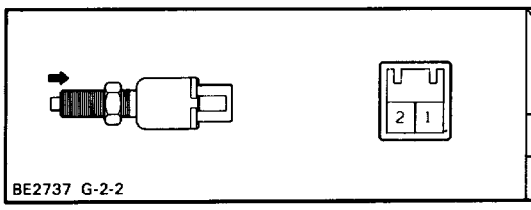
(Stop Light Switch /Continuity)
Inspect the switch continuity between terminals.

Terminals / Switch position	1	2	3	4
Switch pin free (Brake pedal depressed)	○		○	
Switch pin pushed in (Brake pedal released)		○		○

If continuity is not as specified, replace the switch.

(Clutch Switch /Continuity)
Inspect the switch continuity between terminals.



Condition \ Terminal	1	2
Switch pin free (Clutch pedal depressed)	○	○
Switch pin pushed in (Clutch pedal released)		

If continuity is not as specified, replace the switch.

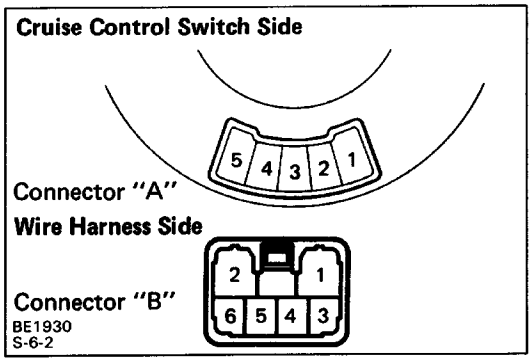
(Brake Fluid Level Warning Switch/Operation)
See step 2 on page BE–39.

(Parking Brake Switch/Operation)
See step 2 on page BE–40.

(Park/Neutral Position Switch /Operation)
See pages AT–26, 79, 137 or 196.

2. INSPECT SPEED SENSOR
See step 2 on page BE–34.

3. INSPECT SLIP RING
(Continuity)
Inspect the continuity between terminals.



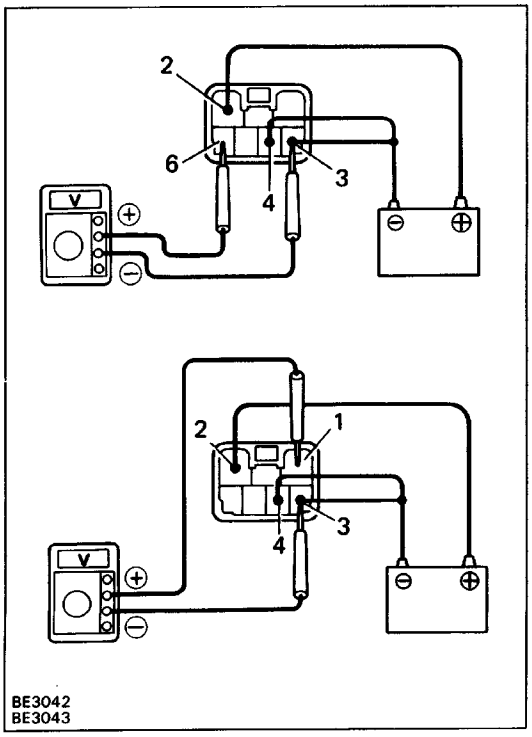
Condition \ Terminal	A-2	A-3	A-4	B-4	B-5	B-6
Constant	○					○
		○		○		
			○		○	

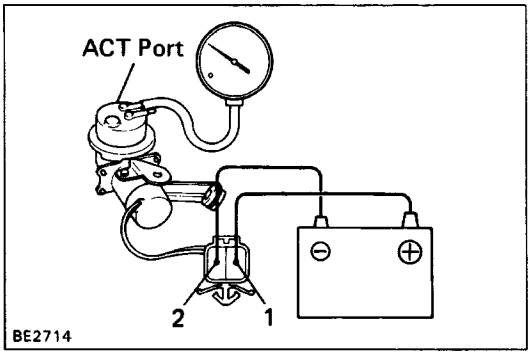
If continuity is not as specified, replace the slip ring.

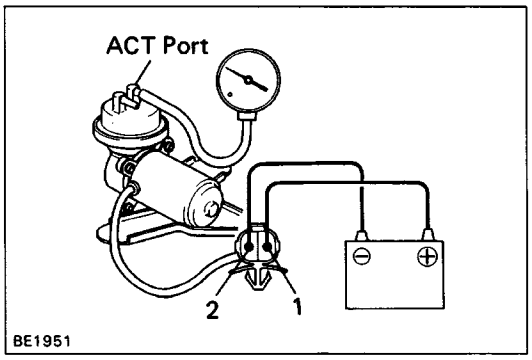
4. INSPECT MAIN RELAY
(Operation)

(a) Connect the positive (+) lead from the battery to terminal 2 and the negative (–) lead to terminals 3 and 4.
(b) Connect the positive (+) lead from the voltmeter to terminal 6 and the negative (–) lead to terminal 3, check that there is battery positive voltage.
(c) Change the positive (+) lead to terminal 1, check that there is voltage less than 0.3V.

If operation is not as specified, replace the relay.







5. INSPECT VACUUM PUMP

(3VZ–E Engine)

(a) Connect a vacuum gauge to the ACT side of the pump.

(b) Connect the positive (+) lead from the battery to terminal 1 and the negative (–) lead to terminal 2.

(c) Check that there is a vacuum of 200 mmHg (7.87 in. Hg, 26.7 kPa) or above.

If operation is not as specified, replace the pump.

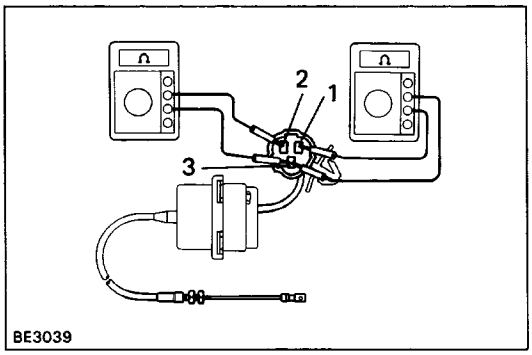
(22R–E Engine)

(a) Connect a vacuum gauge to the ACT side of the pump.

(b) Connect the positive (+) lead from the battery to terminal 1 and the negative (–) lead to terminal 2.

(c) Check that there is a vacuum of 200 mm Hg (7.87 in.Hg, 26.7 kPa) or above.

If operation is not as specified, replace the pump.



6. INSPECT ACTUATOR

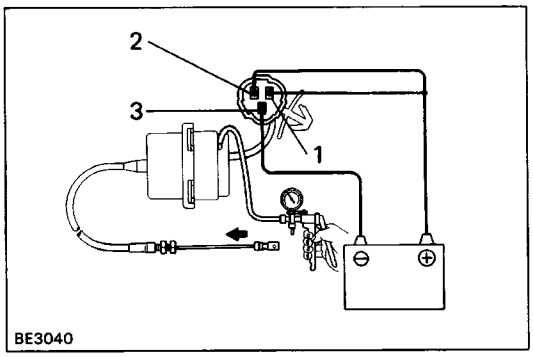
(Resistance)

Measure the resistance value between terminals as fol–lows.

Resistance: 1–3 Approx. 71Ω

2–3 Approx. 38Ω

If the resistance value is not as specified, replace the ac–tuator.



(Operation)

(a) Connect the positive (+) lead from the battery to terminals 1 and 2, and the negative (–) lead to ter–minal 3.

(b) Slowly apply vacuum from 0 to 300 mmHg (0 to 11.81 in.Hg, 0 to 40.0 kPa), check that the control cable can be pulled smoothly.

Cable stroke: Approx. 36 mm (1.42 in.)

(c) With the vacuum stabilized, check that the control cable does not return.

HINT: As you apply and hold the vacuum with the vac–uum pump, the drawn in diaphragm will in some cases return. This does not indicate a malfunction. Actuator leakage is allowable.

(d) Disconnect terminal 1 or 2 and check that the con–trol cable returns to its original position and the vac–uum returns to 0 mmHg (0 in. Hg, 0 kPa).

If operation is not as specified, replace the actuator.