

3. Cruise Control System

A: PRECAUTION

1. SUPPLEMENTAL RESTRAINT SYSTEM “AIRBAG”

Airbag system wiring harness is routed near the cruise control module and cruise control command switch.

CAUTION:

- All airbag system wiring harness and connectors are yellow. Do not use electrical test equipment on these circuits.
- Be careful not to damage airbag system wiring harness when servicing the cruise control module and cruise control command switch.

B: PRE-INSPECTION

1. FUNCTION TESTS

Conduct road tests by selecting a smooth, flat road or use free rollers for road test simulation.

● Cruise Control Main Switch

- 1) Turn ignition switch to ON.
- 2) Check that cruise control main switch indicator light comes on when main switch is pressed (ON).
- 3) Check that main switch indicator light goes out when main switch is pressed again (OFF).
- 4) Turn ignition switch to OFF with main switch ON (indicated by illumination). Turn ignition switch ON again to ensure that main switch indicator light remains OFF.

● Cruise Control Command Switch

- 1) Check that cruise control command switch is properly set in “SET/COAST”, “RESUME/ACCEL”, or “CANCEL” mode.
- 2) Also check that command switch returns to the original position when released.

● Constant Speed Test

- 1) Turn cruise control main switch to ON.
- 2) Drive the vehicle at a speed greater than 40 km/h (25 MPH).
- 3) Press command switch to set in “SET/COAST” mode.
- 4) Ensure that vehicle is maintained at the speed set when command switch was pressed.

● Acceleration Test

- 1) Set vehicle speed at a speed greater than 40 km/h (25 MPH).
- 2) Ensure that vehicle continues to accelerate while holding command switch in “RESUME/ACCEL” mode, and that vehicle maintains that optional speed when command switch is released.

● Deceleration Test

- 1) Set vehicle speed at an optional speed greater than 40 km/h (25 MPH).
- 2) Ensure that vehicle continues to decelerate while holding command switch in “SET/COAST” mode, and that it maintains that optional speed when command switch is released.

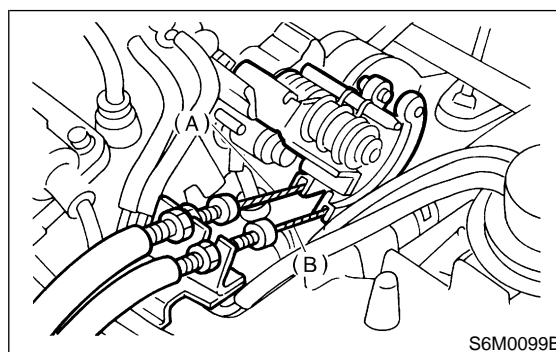
NOTE:

When vehicle speed reaches the lower speed limit of 30 km/h (19 MPH) during deceleration, cruise control will be released.

2. CRUISE CONTROL CABLE

3B21 : CHECK CRUISE CONTROL CABLE.

Check accelerator cable (A) and cruise control cable (B) installation.



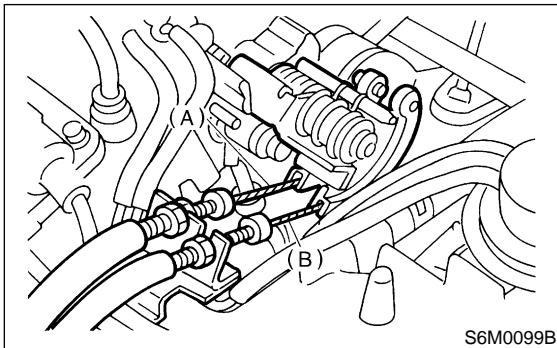
CHECK : *Is the cruise control cable securely installed to the left of the accelerator cable?*

YES : Go to step 3B22.

NO : Install cruise control cable securely. Go to step 3B22.

3B22 : CHECK ACCELERATOR CABLE.

Check function of accelerator cable (A) and cruise control cable (B).



- CHECK** : *Does the accelerator cable throttle cam move when the cruise control throttle is moved by hand?*
- YES** : Repair accelerator cable throttle cam. Go to step **3B23**.
- NO** : Go to step **3B23**.

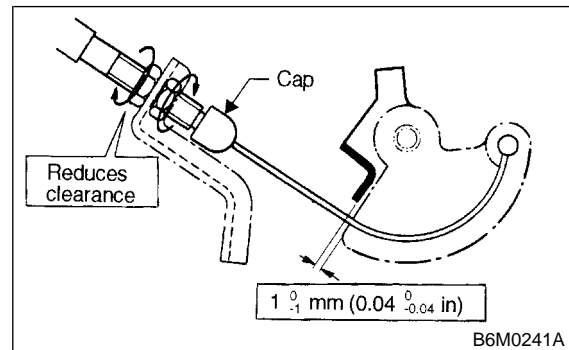
3B23 : CHECK THROTTLE CAM.

Check function of throttle cam.

- CHECK** : *Does the throttle cam move smoothly?*
- YES** : Go to step **3B24**.
- NO** : Repair throttle cam. Go to step **3B24**.

3B24 : CHECK CABLE FREE PLAY.

Ensure that throttle cam-to-lever clearance is within specifications.



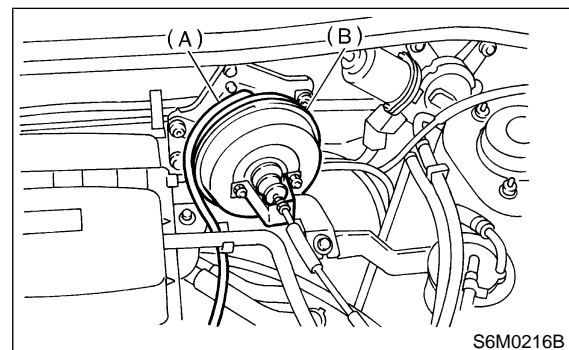
- CHECK** : *Is throttle cam-to-lever clearance between 0 and 1 mm (0 and 0.04 in)?*
- YES** : Go to step **3B31**.
- NO** : Adjust cable end by adjusting nuts. Go to step **3B31**.

NOTE:

Ensure that cap is positioned in groove.

3. VACUUM HOSE**3B31 : CHECK VACUUM HOSE VISUALLY.**

Check vacuum hose (A) (which connects actuator (B) and intake manifold).

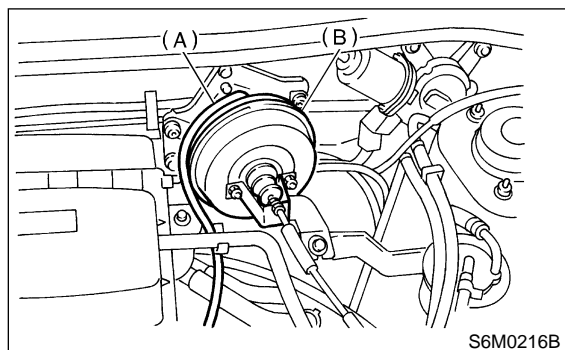


- CHECK** : *Is there disconnection or cracks in vacuum hose?*
- YES** : Replace vacuum hose. Go to step **3B41**.
- NO** : Go to step **3B41**.

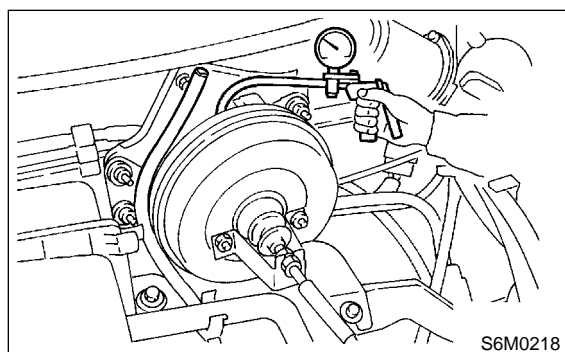
4. ACTUATOR

3B41 : CHECK FUNCTION OF ACTUATOR.

1) Disconnect vacuum hose (A) from actuator (B).



2) Connect vacuum pump as shown in figure.



3) Make sure that cruise control cable moves smoothly and quickly when a vacuum pressure of 40.0 kPa (300 mmHg, 11.81 inHg) is applied to actuator.

- CHECK** : Does cruise control cable have a stroke of 35 mm (1.38 in)?
- YES** : Go to step 3B42.
- NO** : Replace actuator. <Ref. to 6-2 [W12B1].> Go to step 3B42.

NOTE:

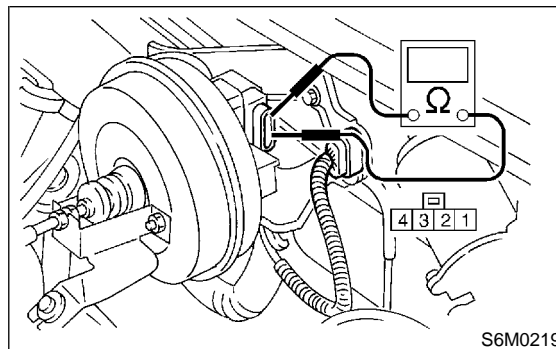
- When vacuum pressure is released from condition 3) above, make sure the cable returns to its original position smoothly and quickly.
- After inspection, disconnect vacuum pump and connect vacuum hose.

3B42 : MEASURE RESISTANCE OF VALVE.

- 1) Disconnect connector from actuator.
- 2) Measure resistance between terminals of actuator.

Terminals

No. 2 — No. 3:



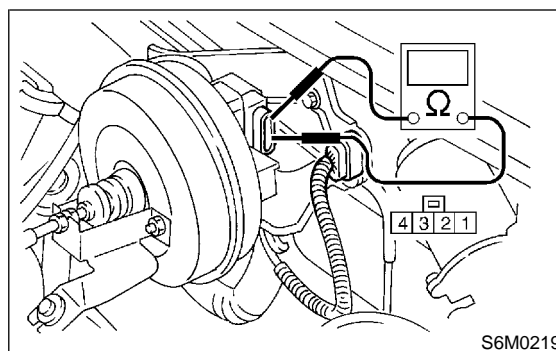
- CHECK** : Is resistance less than 100 Ω?
- YES** : Go to step 3B43.
- NO** : Replace actuator. <Ref. to 6-2 [W12B1].>

3B43 : MEASURE RESISTANCE OF VALVE.

Measure resistance between terminals of actuator.

Terminals

No. 2 — No. 1:



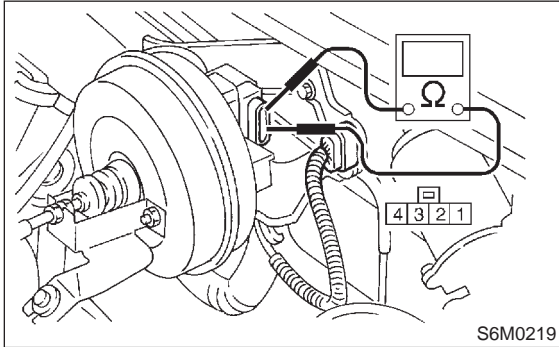
- CHECK** : Is resistance less than 69 Ω?
- YES** : Go to step 3B44.
- NO** : Replace actuator. <Ref. to 6-2 [W12B1].>

3B44 : MEASURE RESISTANCE OF VALVE.

Measure resistance between terminals of actuator.

Terminals

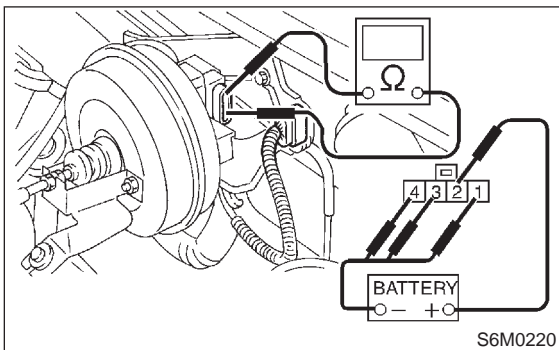
No. 2 — No. 4:



- CHECK** : *Is resistance less than 69 Ω ?*
- YES** : Go to step **3B45**.
- NO** : Replace actuator. <Ref. to 6-2 [W12B1].>

3B45 : CHECK FOR LEAKAGE AND STICKING OF VALVES.

- 1) Disconnect connector from actuator.
- 2) Make sure that cruise control cable moves smoothly when connecting + (positive) battery cable to terminal No. 2 and – (negative) battery cable to terminals No. 1, 3 and 4 of actuator connector.



- CHECK** : *Does cruise control cable have a stroke of 35 mm (1.38 in) within 3 seconds?*
- YES** : Go to step **3B46**.
- NO** : Replace actuator. <Ref. to 6-2 [W12B1].> Go to step **3B46**.

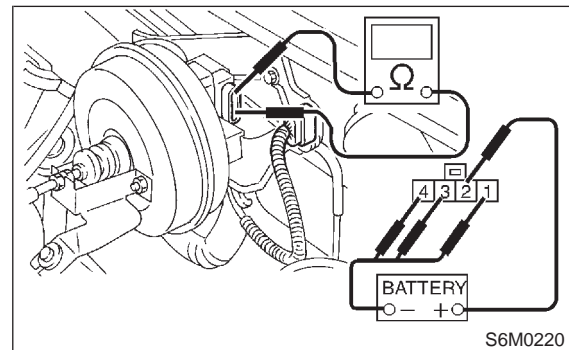
3B46 : CHECK FOR LEAKAGE AND STICKING OF VALVES.

When the battery cable is disconnected from former condition <Ref. to 6-2 [T3B4].> Step 2), make sure the cable returns to its original position smoothly.

- CHECK** : *Does cruise control cable get back to its original position within 1.5 seconds?*
- YES** : Go to step **3B47**.
- NO** : Replace actuator. <Ref. to 6-2 [W12B1].> Go to step **3B47**.

3B47 : CHECK CABLE MOVEMENT.

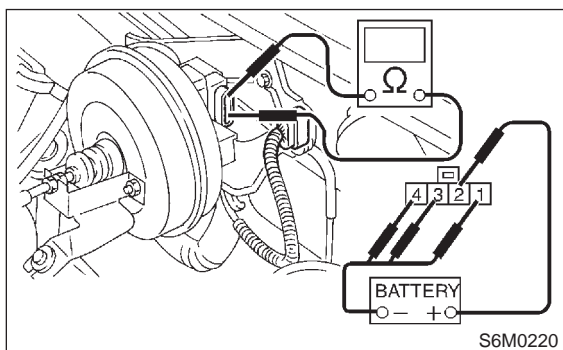
Connect + (positive) battery cable to terminal No. 2 and – (negative) battery cable to terminals No. 1, 3 and 4 of actuator connector.



- CHECK** : *Does cruise control perform pull operation?*
- YES** : Go to step **3B48**.
- NO** : Replace actuator. <Ref. to 6-2 [W12B1].> Go to step **3B48**.

3B48 : CHECK CABLE MOVEMENT.

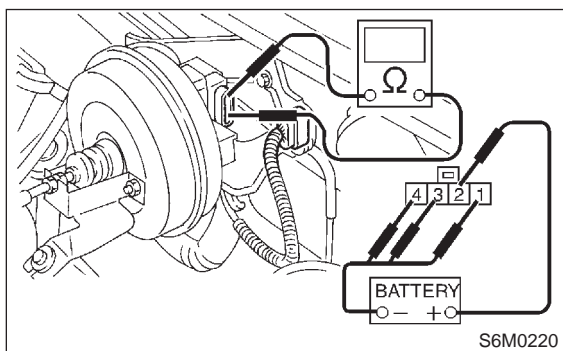
Connect + (positive) battery cable to terminal No. 2 and – (negative) battery cable to terminals No. 1 and 4 of actuator connector.



- CHECK** : *Does cruise control perform hold operation?*
- YES** : Go to step **3B49**.
- NO** : Replace actuator. <Ref. to 6-2 [W12B1].> Go to step **3B49**.

3B49 : CHECK CABLE MOVEMENT.

Connect + (positive) battery cable to terminal No. 2 and – (negative) battery cable to terminal No. 4 of actuator connector.



- CHECK** : *Does cruise control perform release operation?*
- YES** : Go to step **3B51**.
- NO** : Replace actuator. <Ref. to 6-2 [W12B1].> Go to step **3B51**.

5. POWER SUPPLY**3B51 : CHECK BATTERY.**

Measure battery specific gravity of electrolyte.

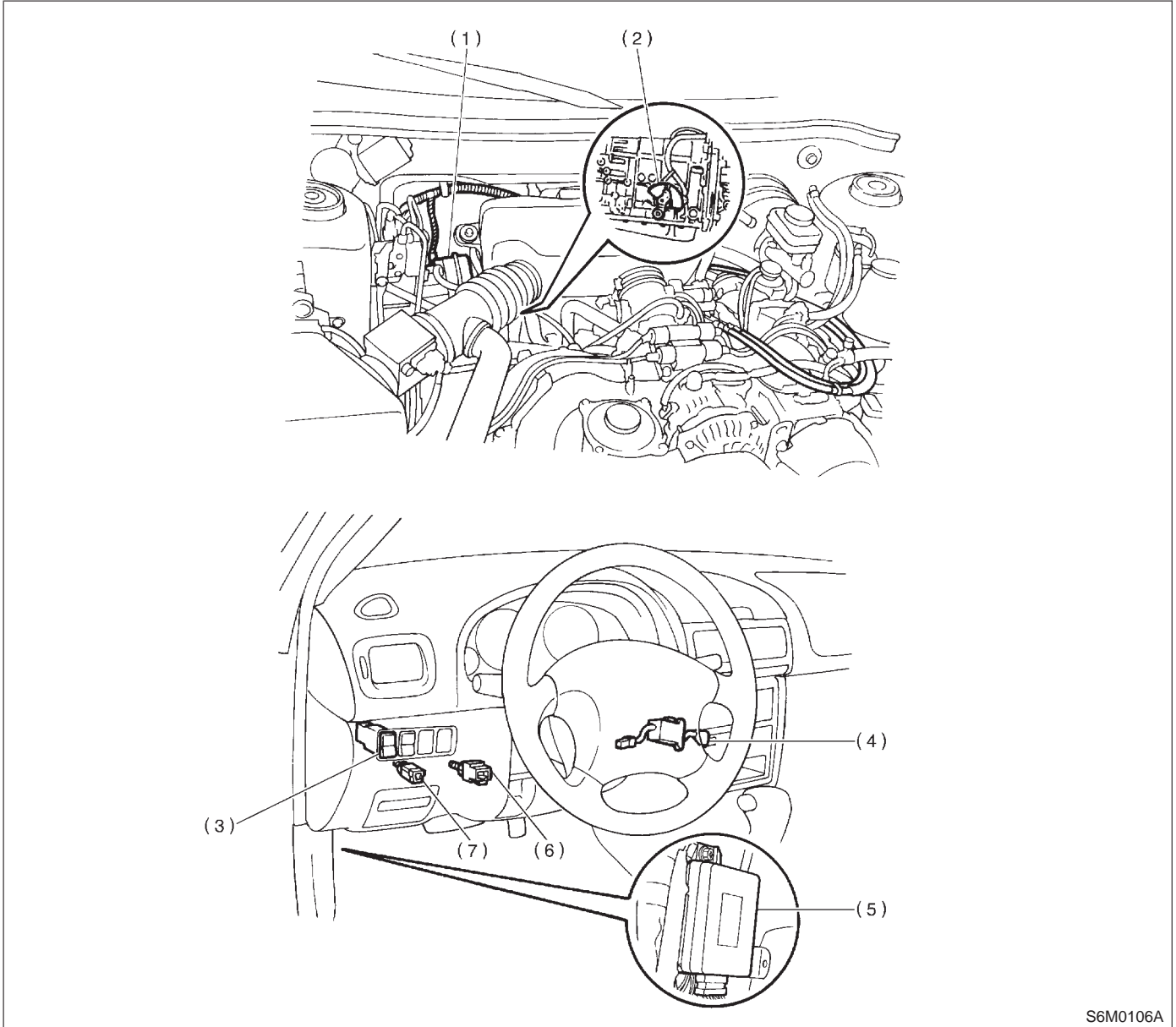
- CHECK** : *Is battery specific gravity more than 1.250?*
- YES** : Go to step **3B52**.
- NO** : Charge or replace battery. <Ref. to 6-2 [W2A0].> Go to step **3B52**.

3B52 : CHECK FUSES, CONNECTORS AND HARNESSSES.

Check the condition of the main and other fuses, and harnesses and connectors. Also check for proper grounding.

- CHECK** : *Is there anything unusual about the appearance of main fuse, fuse, harness, connector and grounding?*
- YES** : Repair or replace faulty parts. End of pre-inspection.
- NO** : End of pre-inspection.

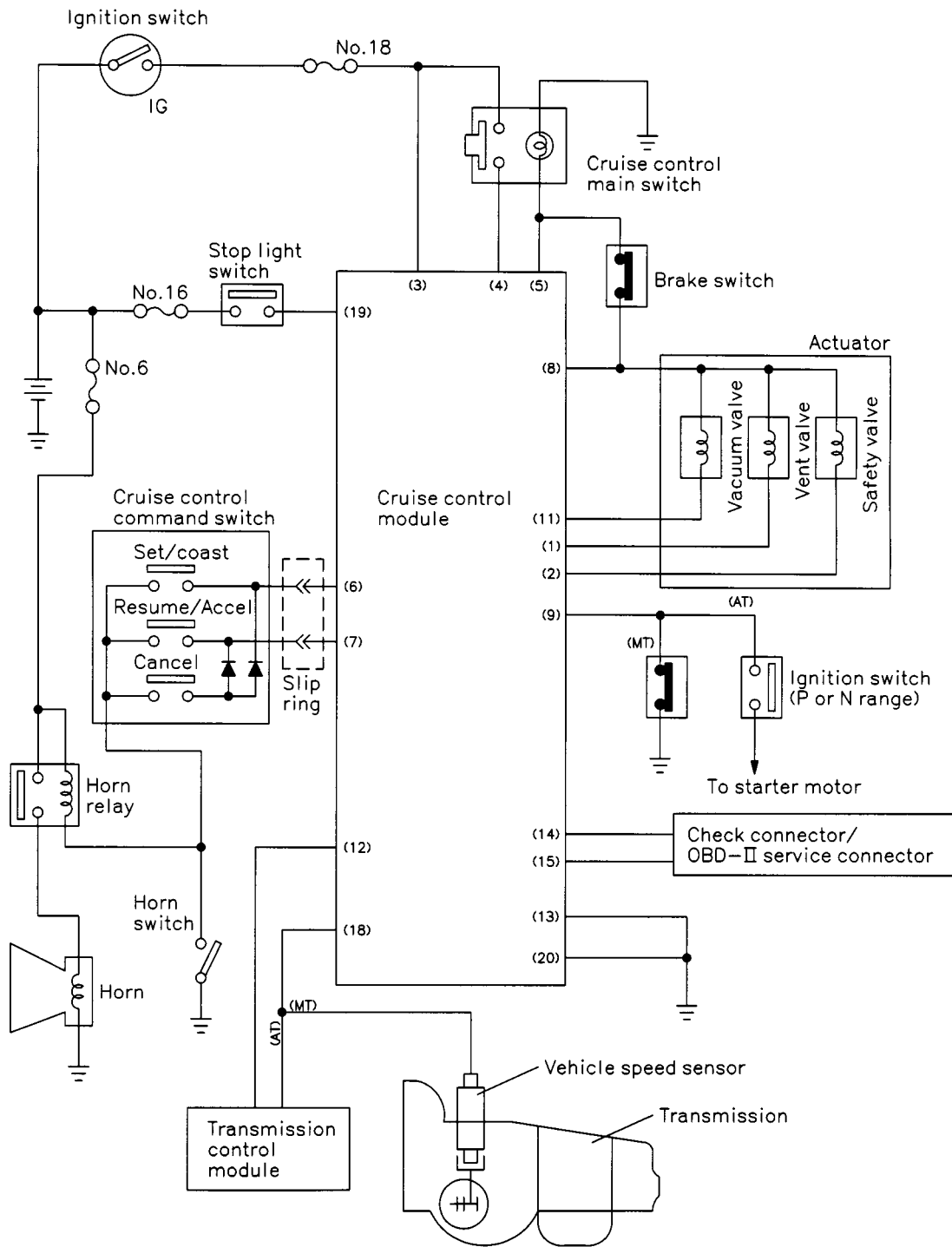
C: ELECTRICAL COMPONENTS LOCATION



S6M0106A

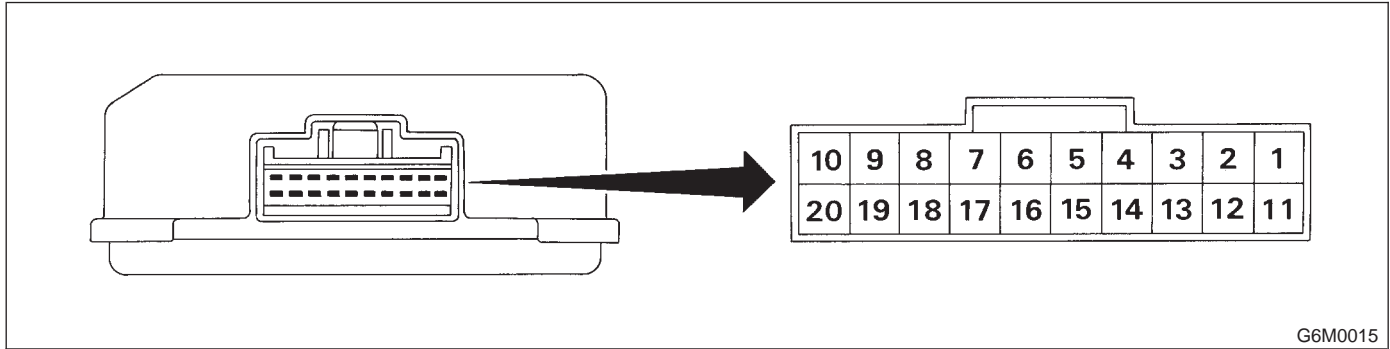
- | | | |
|--------------------------------|-----------------------------------|------------------------|
| (1) Actuator (with valves) | (4) Cruise control command switch | (7) Clutch switch (MT) |
| (2) Inhibitor switch (AT) | (5) Cruise control module | |
| (3) Cruise control main switch | (6) Stop and brake switch | |

D: SCHEMATIC



S6M0390

E: CONTROL MODULE I/O SIGNAL



G6M0015

Content	Terminal No.	Measuring conditions and I/O signals (ignition switch ON and engine idling)
Vent valve	1	<ul style="list-style-type: none"> Power supply is ON when vehicle is stopped. ON-and-OFF ("0"-and-battery voltage) operation is alternately repeated while cruise control is operating.
Safety valve	2	<ul style="list-style-type: none"> Power supply is ON when vehicle is stopped. ON-and-OFF ("0"-and-battery voltage) operation is alternately repeated while cruise control is operating.
Ignition switch	3	<ul style="list-style-type: none"> Battery voltage is present when ignition switch is turned ON. "0" volt is present when ignition switch is turned OFF.
Cruise control main switch	4	<ul style="list-style-type: none"> Battery voltage is present when main power is turned ON. "0" volt is present when main power is turned OFF.
Power supply to vacuum valve, vent valve, safety valve and indicator light	5	<ul style="list-style-type: none"> Battery voltage is present when main power is turned ON. "0" volt is present when main power is turned OFF.
SET/COAST switch	6	<ul style="list-style-type: none"> Battery voltage is present when command switch is turned to SET/COAST position. "0" volt is present when command switch is released.
RESUME/ACCEL switch	7	<ul style="list-style-type: none"> Battery voltage is present when command switch is turned to RESUME/ACCEL position. "0" volt is present when command switch is released.
Brake switch	8	<p>Set select lever to any position other than "P" or "N" position (AT) / leave clutch pedal released (MT), while cruise control main switch is turned ON. Then check that;</p> <ul style="list-style-type: none"> Battery voltage is present when brake pedal is released. "0" volt is present when brake pedal is depressed, or Battery voltage is present when clutch pedal is released (MT). "0" volt is present when clutch pedal is depressed (MT). Battery voltage is present when select lever is in any position other than "P" or "N" position (AT). "0" volt is present when select lever is set to "P" or "N" position (AT).
Clutch switch (MT)/ Inhibitor switch (AT)	9	<ul style="list-style-type: none"> Battery voltage is present when clutch pedal is released (MT). "0" volt is present when clutch pedal is depressed (MT). Battery voltage is present when select lever is in any position other than "P" or "N" position (AT). "0" volt is present when select lever is set to "P" or "N" position (AT).
Vacuum valve	11	<ul style="list-style-type: none"> Power supply is ON when vehicle is stopped. ON-and-OFF ("0"-and-battery voltage) operation is alternately repeated while cruise control is operating.
Set signal to transmission control module (AT)	12	<ul style="list-style-type: none"> TCM emits a ground-level signal while driving vehicle at least 40 km/h (25 MPH) with SET switch ON.
Ground	13	—
Check connector/ OBD-II service connector	14	—
Check connector/ OBD-II service connector	15	—

Content	Terminal No.	Measuring conditions and I/O signals (ignition switch ON and engine idling)
Vehicle speed sensor (MT) Automatic transmission control module (AT)	18	Lift-up the vehicle until all four wheels are raised off ground, and then rotate any wheel manually. Approx. 5 and 0 volt pulse signals are alternately input to cruise control module.
Stop light switch	19	Turn ignition switch to OFF. Then check that; <ul style="list-style-type: none"> ● Battery voltage is present when brake pedal is depressed. ● "0" volt is present when brake pedal is released.
Ground	20	—
NOTE: Voltage at terminals 1, 2, 11 and 12 cannot be checked unless vehicle is driving by cruise control operation.		

F: DIAGNOSTICS CHART FOR ON-BOARD DIAGNOSIS SYSTEM

1. BASIC DIAGNOSTIC PROCEDURE

3F11 : CHECK CRUISE CONTROL MAIN SWITCH.

- 1) Trouble occurs.
- 2) Perform pre-inspection. <Ref. to 6-2 [T3B0].>
- 3) Check cruise control main switch.

CHECK : *Does cruise control main switch turn ON?*

YES : Go to step 3F12.

NO : Go to "Diagnostics Chart for Power Line". <Ref. to 6-2 [T3G0].>

3F12 : CHECK CRUISE SPEED IS SET.

CHECK : *Does cruise speed properly set while driving at minimum of 40 km/h (25 MPH)?*

YES : Go to step 3F13.

NO : Go to "Diagnostics Chart with Trouble Code". <Ref. to 6-2 [T3H0].>

3F13 : CHECK CRUISE CONTROL IS RELEASED.

CHECK : *Does cruise control properly release during operation?*

YES : Go to step 3F14.

NO : Go to "Diagnostics Chart with Trouble Code". <Ref. to 6-2 [T3H0].>

3F14 : CHECK CRUISE SPEED IS HELD WITHIN SET SPEED.

CHECK : *Does cruise speed hold within set speed ± 3 km/h (2 MPH)?*

YES : Go to step 3F15.

NO : Go to pre-inspection of actuator. <Ref. to 6-2 [T3B4].>

3F15 : CHECK RESUME/ACCEL SWITCH.

CHECK : *Does RESUME/ACCEL switch function properly?*

YES : Go to step 3F16.

NO : Go to "Diagnostics Chart with Trouble Code". <Ref. to 6-2 [T3H0].>

3F16 : CHECK SET/COAST SWITCH.

CHECK : *Does SET/COAST switch function properly?*

YES : Go to step 3F17.

NO : Go to "Diagnostics Chart with Trouble Code". <Ref. to 6-2 [T3H0].>

3F17 : CHECK CANCEL SWITCH.

CHECK : *Does CANCEL switch function properly?*

YES : Go to step 3F18.

NO : Go to "Diagnostics Chart with Trouble Code". <Ref. to 6-2 [T3H0].>

3F18 : CHECK CRUISE SPEED IS RELEASED.

CHECK : *Does cruise speed release when brake pedal is depressed?*

YES : Go to step 3F19.

NO : Go to "Diagnostics Chart with Trouble Code". <Ref. to 6-2 [T3H0].>

3F19 : CHECK CRUISE SPEED IS RELEASED.

CHECK : *Does cruise speed release when clutch pedal is depressed?*

YES : Cruise control system is in correct order.

NO : Go to "Diagnostics Chart with Trouble Code". <Ref. to 6-2 [T3H0].>

2. ON-BOARD DIAGNOSIS WITH SELECT MONITOR

● General

The on-board diagnosis function of the cruise control system uses an external select monitor.

The on-board diagnosis function operates in two categories, which are used depending on the type of problems;

NOTE:

Select monitor part No.:

<Ref. to 1-6 [G1100].>

- 1) Cruise cancel conditions diagnosis
 - (1) This category of diagnosis requires actual vehicle driving in order to determine the cause, (as when cruise speed is cancelled during driving although cruise cancel condition is not entered).
 - (2) Cruise control module memory stores the cancel condition (Code No.) which occurred during driving. When there are plural cancel conditions (Code No.), they are shown on the select monitor.

CAUTION:

- **The cruise control memory stores not only the cruise “cancel” which occurred (although “cancel” operation is not entered by the driver), but also the “cancel” condition input by the driver.**
- **The content of memory is cleared when ignition switch or cruise main switch is turned OFF.**

2) Real-time diagnosis

The real-time diagnosis function is used to determine whether or not the input signal system is in good order, according to signal emitted from switches, sensors, etc.

- (1) Vehicle cannot be driven at cruise speed because problems occurs in the cruise control system or its associated circuits.
- (2) Monitor the signal conditions from switches and sensors.

● Cruise Cancel Conditions Diagnosis

- 1) Connect select monitor.
- 2) Start the engine and turn cruise control main switch to ON.
- 3) Set select monitor in “All System Diagnosis” mode.

NOTE:

The diagnostic code is also shown in the “Each System Check” mode. This mode is called up on the “Cruise Control Diagnosis” screen by selecting the item “Cancel Code(s) Display”.

- 4) Drive vehicle at least 40 km/h (25 MPH) with cruise speed set.

- 5) If cruise speed is canceled itself (without doing any cancel operations), a diagnostic code will appear on select monitor display.

CAUTION:

- **A diagnostic code will also appear when cruise cancel is effected by driver. Do not confuse.**
- **Have a co-worker ride in vehicle to assist in diagnosis during driving.**

NOTE:

Diagnostic code will be cleared by turning ignition switch or cruise control main switch to OFF.

● Real-Time Diagnosis

- 1) Connect select monitor.
- 2) Turn ignition switch and cruise control main switch to ON.
- 3) Select the “Current Data Display & Save” mode on the select monitor “Cruise Control Diagnosis” screen.
- 4) Ensure that normal indication is displayed when controls are operated as indicated below:
 - Depress/release the brake pedal. (Stop light switch and brake switch turn ON.)
 - Turn ON the “SET/COAST” switch.
 - Turn ON the “RESUME/ACCEL” switch.
 - Depress/release the clutch pedal. (MT)
 - Set the select lever to P or N. (AT)

G: DIAGNOSTICS CHART FOR POWER LINE

1. BASIC DIAGNOSTICS PROCEDURE

3G11 : DRIVE AT CRUISE SPEED.

- CHECK** : *Can cruise speed be set?*
- YES** : Go to "CHECK INDICATOR AND CIRCUIT IN CRUISE CONTROL MAIN SWITCH". <Ref. to 6-2 [T3G2].>
- NO** : Go to "CHECK CRUISE CONTROL MAIN SWITCH". <Ref. to 6-2 [T3G3].>

2. CHECK INDICATOR AND CIRCUIT IN CRUISE CONTROL MAIN SWITCH

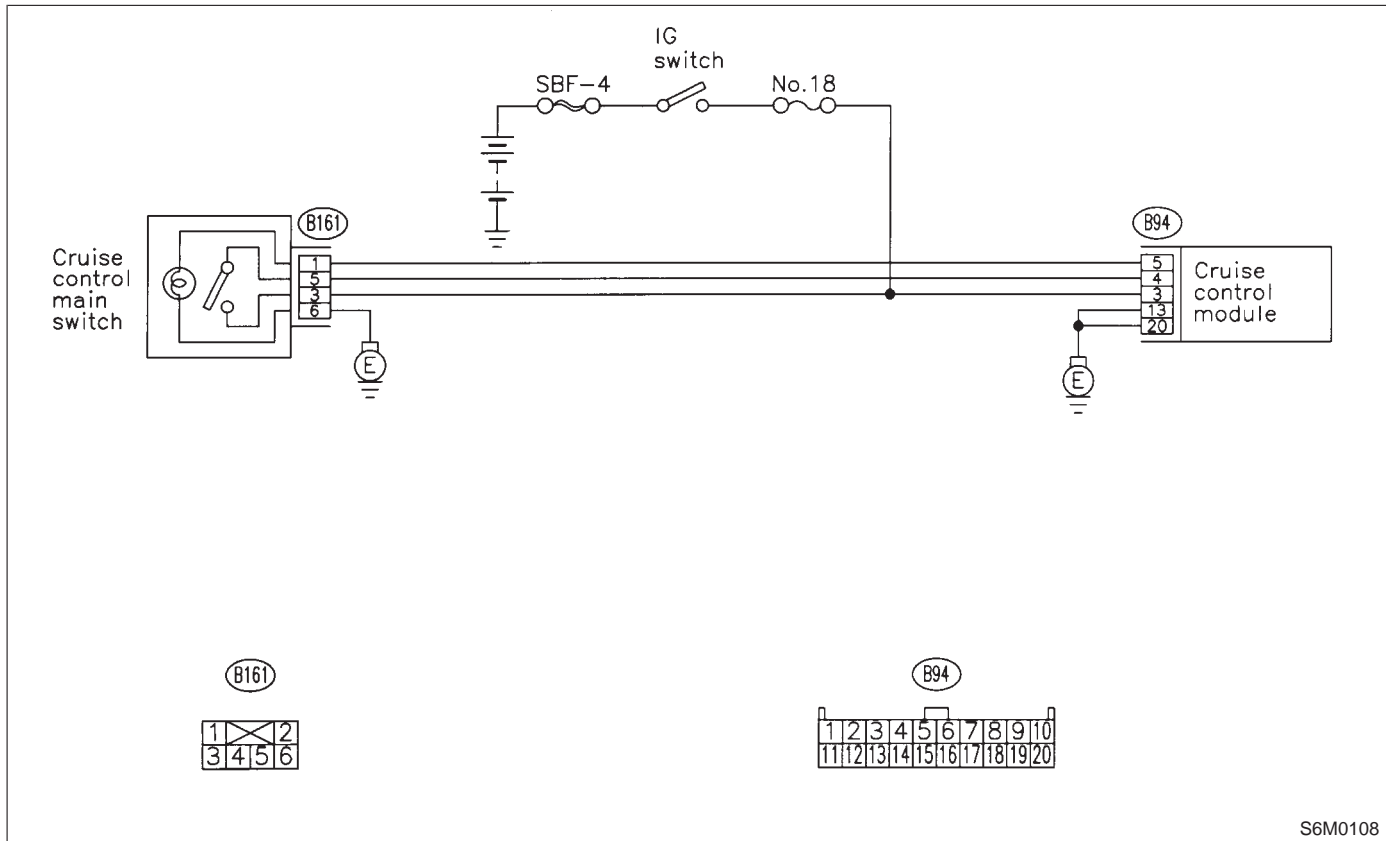
DIAGNOSIS:

- Bulb failure or open harness of the indicator circuit in the cruise control main switch.

TROUBLE SYMPTOM:

- Cruise control can be set, normally indicator does not come on. (When main switch is pressed.)

WIRING DIAGRAM:



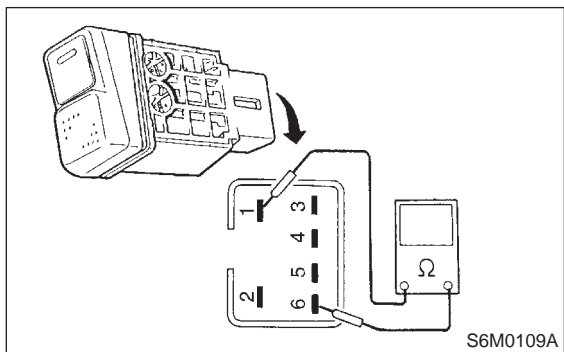
S6M0108

3G21 : CHECK CRUISE CONTROL MAIN SWITCH.

- 1) Remove cruise control main switch.
- 2) Measure resistance between cruise control main switch terminals.

Terminals

No. 1 — No. 6:



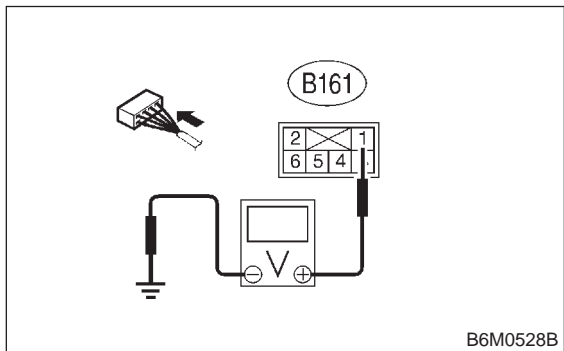
- CHECK** : *Is resistance between 10 and 80 Ω?*
- YES** : Go to step **3G22**.
- NO** : Replace switch illumination bulb. <Ref. to 6-2 [W12B2].>

3G22 : CHECK CIRCUIT BETWEEN CRUISE CONTROL MODULE AND CRUISE CONTROL MAIN SWITCH INDICATOR LIGHT.

- 1) Turn the ignition switch to ON.
- 2) Turn cruise control main switch to ON.
- 3) Measure voltage between cruise control main switch connector and the chassis ground.

Connector & terminal

(B161) No. 1 (+) — Chassis ground (-):



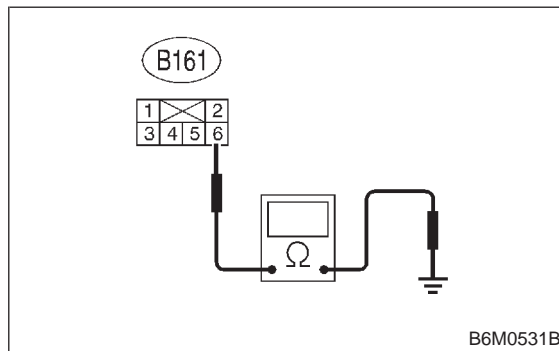
- CHECK** : *Is voltage more than 10 V?*
- YES** : Go to step **3G23**.
- NO** : Repair or replace wiring harness.

3G23 : CHECK CIRCUIT BETWEEN CRUISE CONTROL MODULE AND CRUISE CONTROL MAIN SWITCH INDICATOR LIGHT.

- 1) Turn the ignition switch and cruise control main switch to OFF.
- 2) Remove the connector from the cruise control main switch.
- 3) Measure resistance of ground circuit between the cruise control main switch connector and chassis ground.

Connector & terminal

(B161) No. 6 (+) — Chassis ground (-):



- CHECK** : *Is resistance less than 10 Ω?*
- YES** : Replace cruise control module. <Ref. to 6-2 [W12B4].>
- NO** : Repair or replace wiring harness.

3. CHECK CRUISE CONTROL MAIN SWITCH

DIAGNOSIS:

- Faulty cruise control main switch, or open harness.

TROUBLE SYMPTOM:

- Cruise control main switch is not turned ON and cruise control cannot be set.

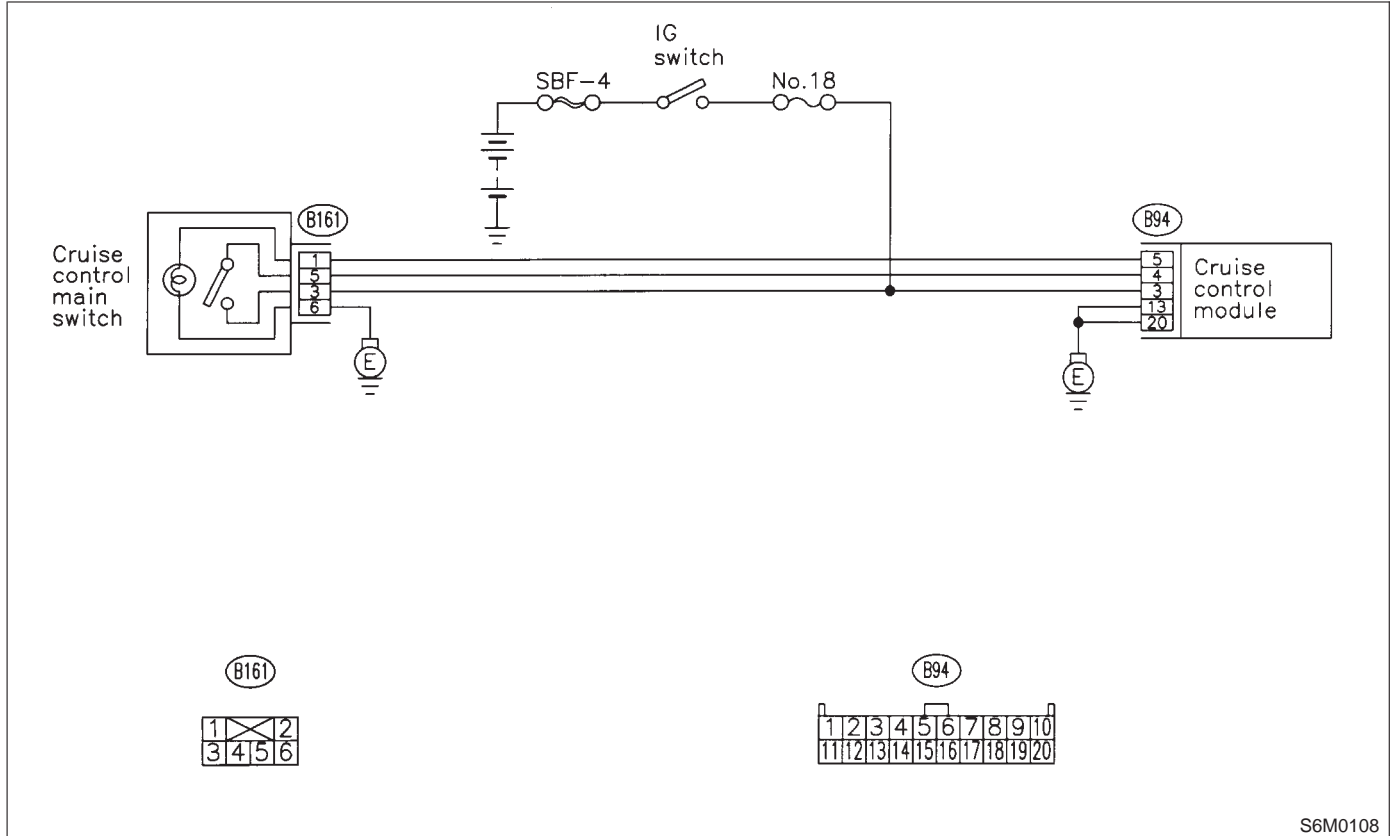
NOTE:

When the main relay (built-in cruise control module) operates, the main switch circuit is in normal condition.

The main relay operation can be checked by hearing the operation sounds.

This operation sounds will be heard when ignition switch and cruise control main switch is turned to ON.

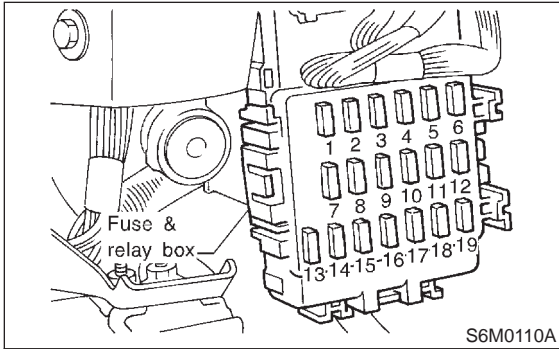
WIRING DIAGRAM:



S6M0108

3G31 : CHECK FUSE.

Check fuse No. 18.



- CHECK** : *Is fuse No. 18 blown?*
- YES** : Replace fuse No. 18. Go to step **3G32**.
- NO** : Go to step **3G32**.

3G32 : CHECK POWER SUPPLY.

- 1) Turn ignition switch to ON.
- 2) Measure voltage between fuse & relay box connector and chassis ground.

Connector & terminal

(B152) No. 5 (+) — Chassis ground (-):

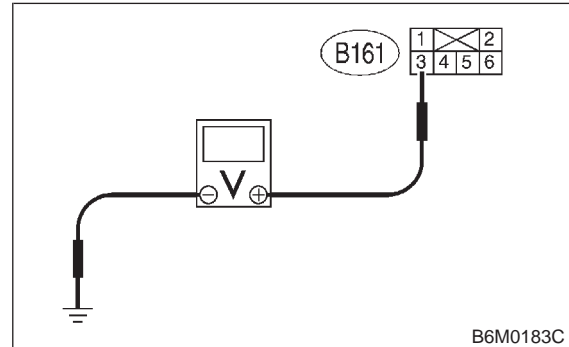
- CHECK** : *Is voltage more than 10 V?*
- YES** : Go to step **3G33**.
- NO** : Replace fuse No. 18. When fuse No. 18 is blown again, repair shorted parts of circuit.

3G33 : CHECK CRUISE CONTROL MAIN SWITCH.

- 1) Turn ignition switch to OFF.
- 2) Remove cruise control main switch and disconnect connector.
- 3) Turn ignition switch to ON.
- 4) Measure voltage between cruise control main switch connector and chassis ground.

Connector & terminal

(B161) No. 3 (+) — Chassis ground (-):



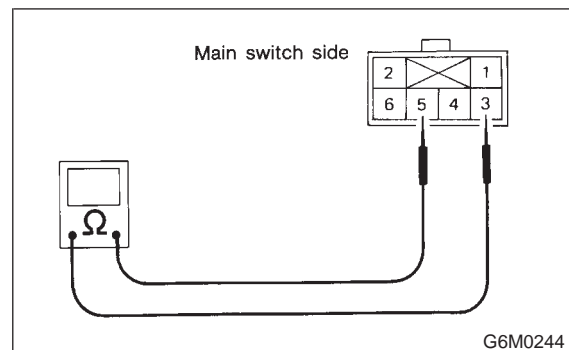
- CHECK** : *Is voltage more than 10 V?*
- YES** : Go to step **3G34**.
- NO** : Replace cruise control main switch. <Ref. to 6-2 [W12B2].>

3G34 : CHECK CRUISE CONTROL MAIN SWITCH.

Measure resistance between cruise control main switch terminals.

Terminals

No. 3 — No. 5:



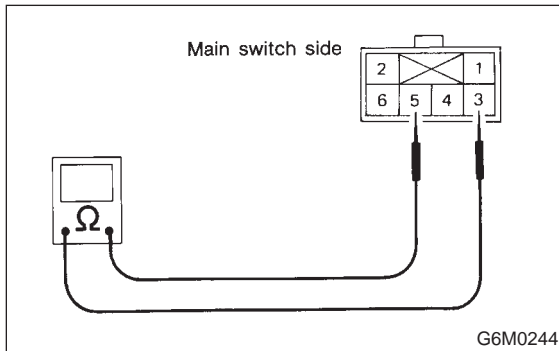
- CHECK** : *Is resistance less than 10 Ω? (When switch is ON.)*
- YES** : Go to step **3G35**.
- NO** : Replace cruise control main switch. <Ref. to 6-2 [W12B2].>

3G35 : CHECK CRUISE CONTROL MAIN SWITCH.

Measure resistance between cruise control main switch terminals.

Terminals

No. 3 — No. 5:



CHECK : Is resistance less than 1 MΩ? (When switch is OFF.)

YES : Go to step 3G36.

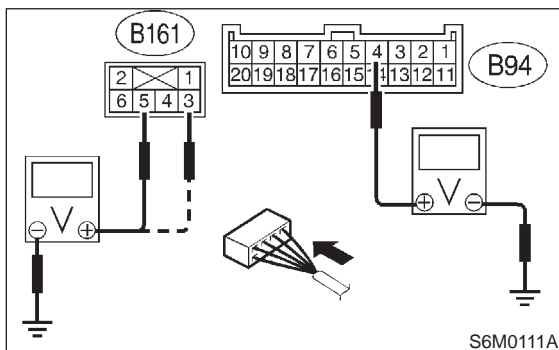
NO : Replace cruise control main switch. <Ref. to 6-2 [W12B2].>

3G36 : CHECK HARNESS BETWEEN CRUISE CONTROL MAIN SWITCH CONNECTOR AND CHASSIS GROUND.

- 1) Connect connector.
- 2) Turn ignition switch to ON.
- 3) Turn cruise control main switch to ON.
- 4) Measure voltage between terminal of cruise control main switch and chassis ground.

Connector & terminal

(B161) No. 3 (+) — Chassis ground (-):



CHECK : Is voltage more than 10 V?

YES : Go to step 3G37.

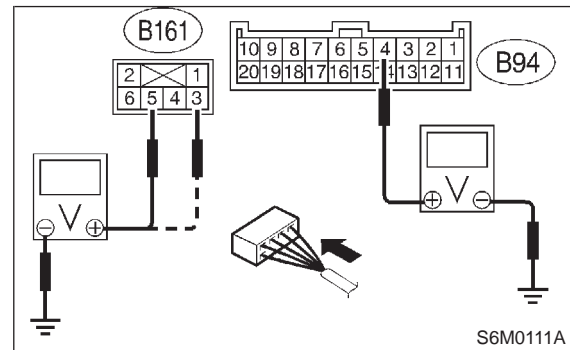
NO : Repair or replace wiring harness.

3G37 : CHECK HARNESS BETWEEN CRUISE CONTROL MAIN SWITCH CONNECTOR AND CHASSIS GROUND.

Measure voltage between terminal of cruise control main switch chassis ground.

Connector & terminal

(B161) No. 5 (+) — Chassis ground (-):



CHECK : Is voltage more than 10 V?

YES : Go to step 3G38.

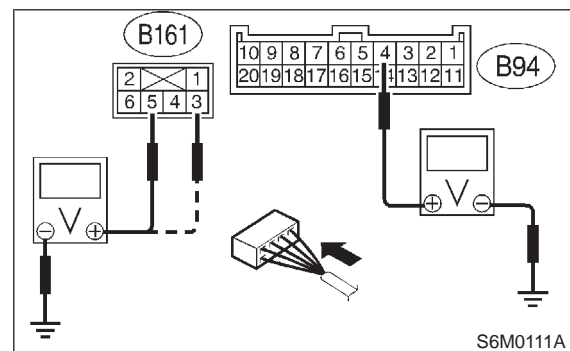
NO : Repair or replace wiring harness.

3G38 : CHECK HARNESS BETWEEN CRUISE CONTROL MODULE CONNECTOR AND CHASSIS GROUND.

Measure voltage between terminal of cruise control module and chassis ground.

Connector & terminal

(B94) No. 4 (+) — Chassis ground (-):



CHECK : Is voltage more than 10 V?

YES : Replace cruise control module. <Ref. to 6-2 [W12B4].>

NO : Repair or replace wiring harness.

NOTE:

Depress cruise control main switch with fingers while measuring voltage between (B161) No. 5 and chassis ground.

H: DIAGNOSTICS CHART WITH DIAGNOSTIC CODE**1. DIAGNOSTIC CODE LIST**

Diagnostic code	Item	Contents of diagnosis	Index No.
11	BRAKE SW/STOP SW	Input signals from brake switch "OFF", stop light switch "ON" (Brake pedal is depressed.)	<Ref. to 6-2 [T3H2].>
12	CLUTCH SW/INHIBITOR SW	Input signals from clutch switch "OFF" (MT), or inhibitor switch "P or N" (AT) [Clutch pedal is depressed (MT), or select lever is set to P or N position (AT).]	<Ref. to 6-2 [T3H3].>
13	LOW SPEED LIMIT	Low-speed control limiter	<Ref. to 6-2 [T3H4].>
14	CANCEL SW	Input signal from cancel switch (faulty SET/COAST switch or RESUME/ACCEL switch)	<Ref. to 6-2 [T3H5].>
21	VACUUM VALVE	Faulty vacuum valve or valve drive system	<Ref. to 6-2 [T3H6].>
22	VENT 2 VALVE	Faulty vent 2 valve or valve drive system	<Ref. to 6-2 [T3H6].>
23	VENT 1 VALVE	Faulty vent 1 valve or valve drive system	<Ref. to 6-2 [T3H6].>
24	SPEED SENSOR	Faulty vehicle speed sensor (MT) or transmission control module (AT)	<Ref. to 6-2 [T3H4].>
25	CONTROL MODULE	Faulty CPU RAM included in cruise control module	<Ref. to 6-2 [T3H7].>

2. DIAGNOSTIC CODE 11 (BRAKE SWITCH, STOP LIGHT SWITCH)

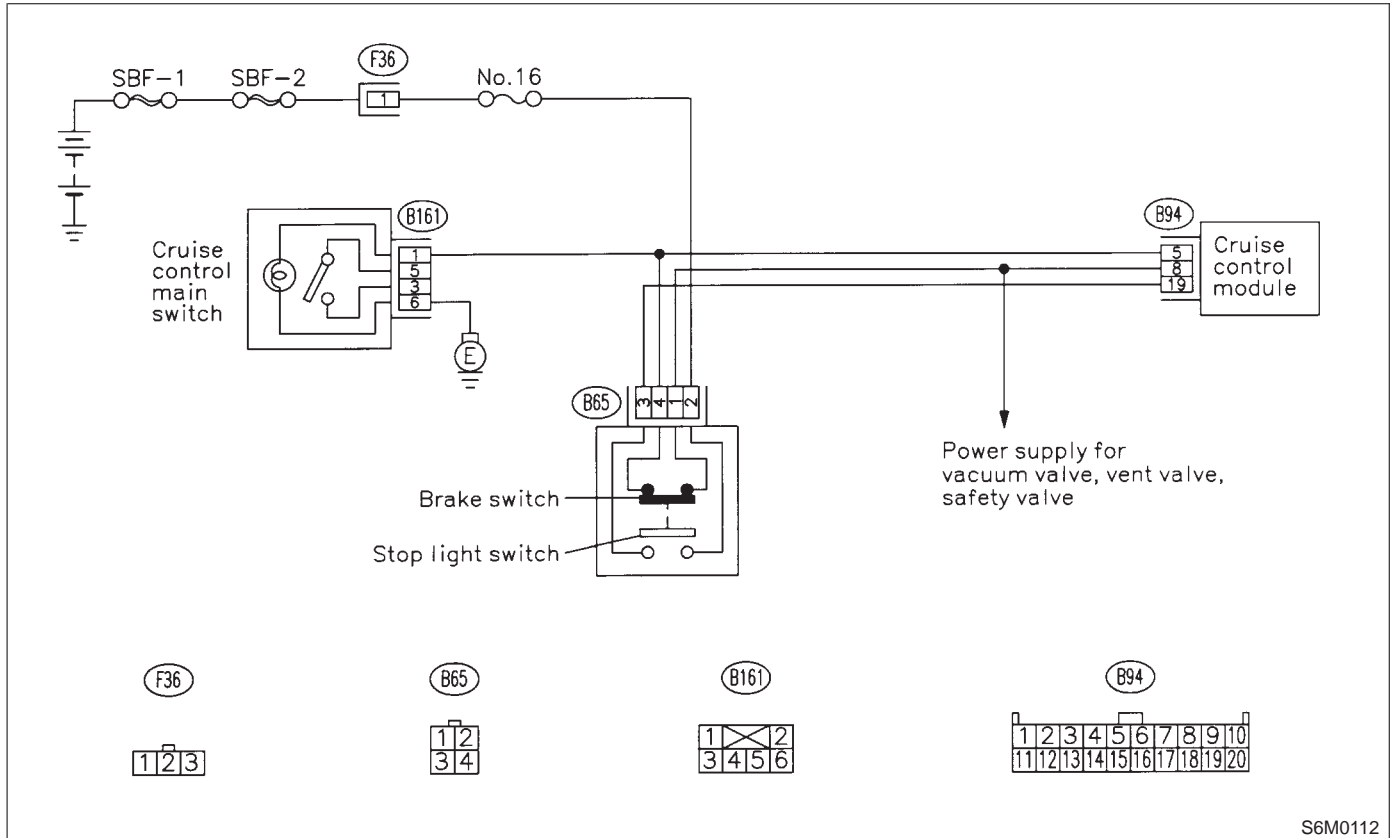
DIAGNOSIS:

- Failure or disconnection of the stop light switch and brake switch.

TROUBLE SYMPTOM:

- Cruise control cannot be set.

WIRING DIAGRAM:



S6M0112

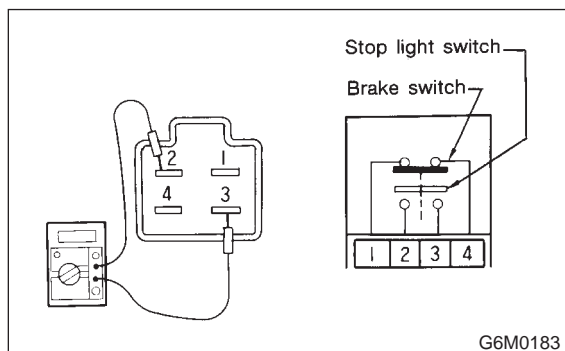
3H21 : CHECK BRAKE SWITCH.

- 1) Turn ignition switch to ON.
- 2) Turn cruise control main switch to ON.
- 3) Apply parking brake securely.
- 4) Set select monitor in "Current Data Display & Save" mode.
- 5) Depress the brake pedal and check signals for proper operation.

(1) The Stop Light Switch shown on the display turns from "OFF" to "ON".

(2) The Brake Switch shown on the display turns from "OFF" to "ON".

- 6) Release the brake pedal.
- 7) Remove connector of stop and brake switch.
- 8) Check circuit between brake switch terminal.

Terminals**No. 1 — No. 4: (Brake switch)**

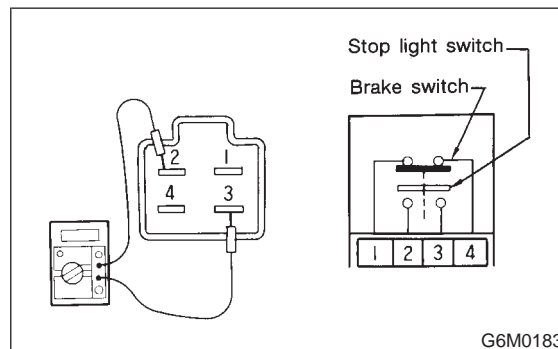
CHECK : *Is resistance less than 1 Ω? (When brake pedal is released.)*

YES : Go to step 3H22.

NO : Replace brake and stop light switch. <Ref. to 4-5 [C100].>

3H22 : CHECK BRAKE SWITCH.

Check circuit between brake switch terminal.

Terminals**No. 1 — No. 4: (Brake switch)**

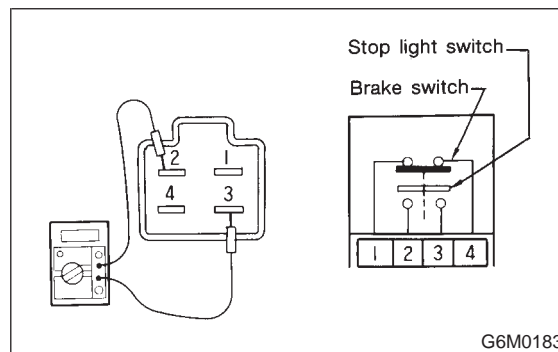
CHECK : *Is resistance more than 1 MΩ? (When brake pedal is depressed.)*

YES : Go to step 3H23.

NO : Replace brake and stop light switch. <Ref. to 4-5 [C100].>

3H23 : CHECK STOP LIGHT SWITCH.

Check circuit between stop light switch terminal.

Terminals**No. 2 — No. 3: (Stop light switch)**

CHECK : *Is resistance more than 1 MΩ? (When brake pedal is released.)*

YES : Go to step 3H24.

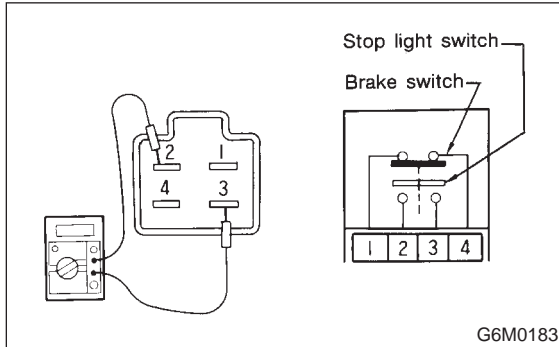
NO : Replace brake and stop light switch. <Ref. to 4-5 [C100].>

3H24 : CHECK STOP LIGHT SWITCH.

Check circuit between stop light switch terminal.

Terminals

No. 2 — No. 3: (Stop light switch)



- CHECK** : **Is resistance less than 1 Ω ? (When brake pedal is depressed.)**
- YES** : Replace cruise control module. <Ref. to 6-2 [W12B4].>
- NO** : Replace brake and stop light switch. <Ref. to 4-5 [C100].>

MEMO:

3. DIAGNOSTIC CODE 12 (CLUTCH SWITCH, INHIBITOR SWITCH)

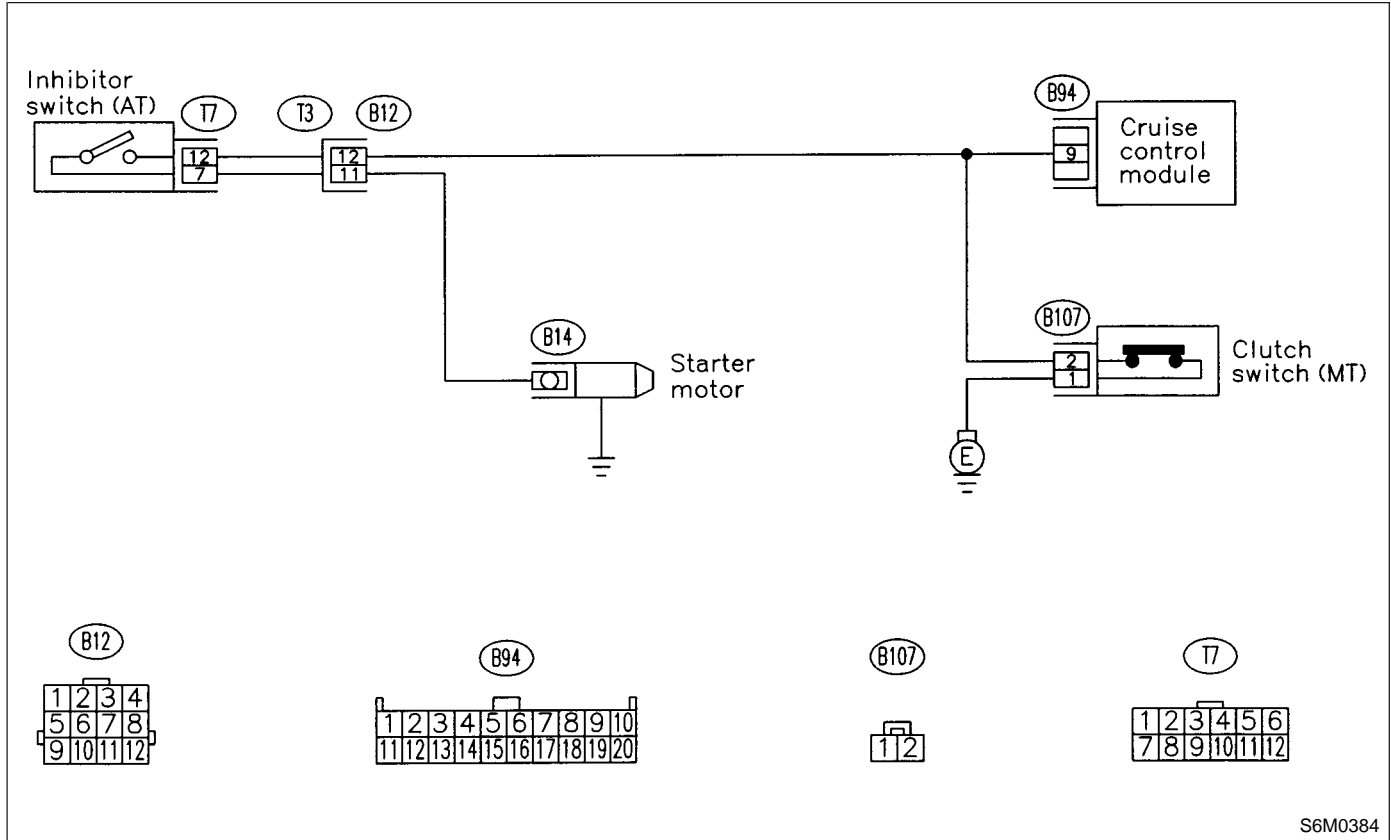
DIAGNOSIS:

- Failure or disconnection of the clutch switch. (MT)
- Failure or disconnection of the inhibitor switch. (AT)

TROUBLE SYMPTOM:

- Cruise control cannot be set.

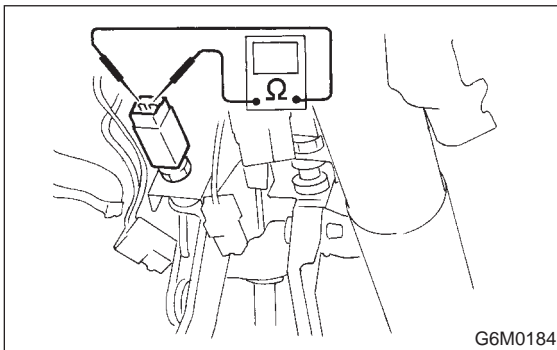
WIRING DIAGRAM:



S6M0384

3H31 : CHECK CLUTCH SWITCH. (MT)

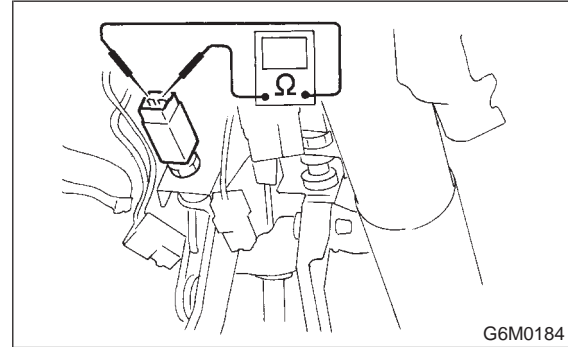
- 1) Turn ignition switch to ON.
- 2) Turn cruise control main switch to ON.
- 3) Apply parking brake securely.
- 4) Set select monitor in "Current Data Display & Save" mode.
- 5) Depress the clutch pedal and check signal for proper operation. (MT)
The Clutch/Inhibitor Switch shown on the display turns from "ON" to "OFF".
- 6) Disconnect connector of clutch switch.
- 7) Check continuity of the clutch switch.

Terminals**No. 1 — No. 2:**

- CHECK** : *Is resistance less than 10 Ω? (When clutch pedal is released.)*
- YES** : Go to step **3H32**.
- NO** : Replace clutch switch. <Ref. to 4-5 [C100].>

3H32 : CHECK CLUTCH SWITCH. (MT)

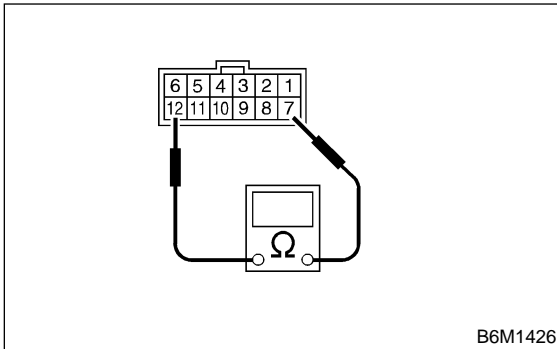
Check continuity of the clutch switch.

Terminals**No. 1 — No. 2:**

- CHECK** : *Is resistance more than 1 MΩ? (When clutch pedal is depressed.)*
- YES** : Replace cruise control module. <Ref. to 6-2 [W12B4].>
- NO** : Replace clutch switch. <Ref. to 4-5 [C100].>

3H33 : CHECK INHIBITOR SWITCH. (AT)

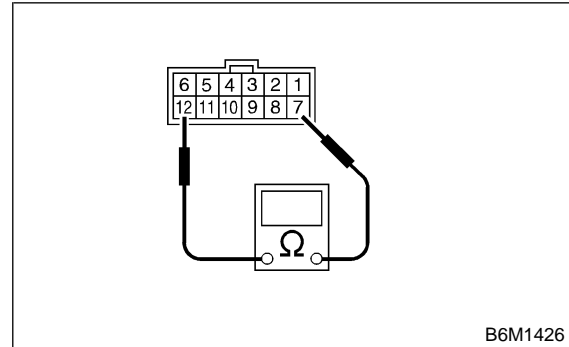
- 1) Turn ignition switch to ON.
- 2) Turn cruise control main switch to ON.
- 3) Apply parking brake securely.
- 4) Set select monitor in "Current Data Display & Save" mode.
- 5) Set the select lever from P or N position to D position and check signal for proper operation. The Clutch/Inhibitor Switch shown on the display turns from "ON" to "OFF".
- 6) Set the select lever to P or N position.
- 7) Disconnect connector of inhibitor switch.
- 8) Check continuity of the inhibitor switch.

Terminals**No. 7 — No. 12:**

- CHECK** : **Is resistance less than 10 Ω? (When select lever is in P or N.)**
- YES** : Go to step **3H34**.
- NO** : Replace inhibitor switch. <Ref. to 3-2 [W200].> Repair inhibitor switch wiring harness.

3H34 : CHECK INHIBITOR SWITCH. (AT)

Check continuity of the inhibitor switch.

Terminals**No. 7 — No. 12:**

- CHECK** : **Is resistance more than 1 MΩ? (When select lever is not in P or N.)**
- YES** : Replace cruise control module. <Ref. to 6-2 [W12B4].>
- NO** : Replace inhibitor switch. <Ref. to 3-2 [W200].> Repair inhibitor switch wiring harness.

MEMO:

4. DIAGNOSTIC CODE 13 AND 24 (SPEED SENSOR SYSTEM)

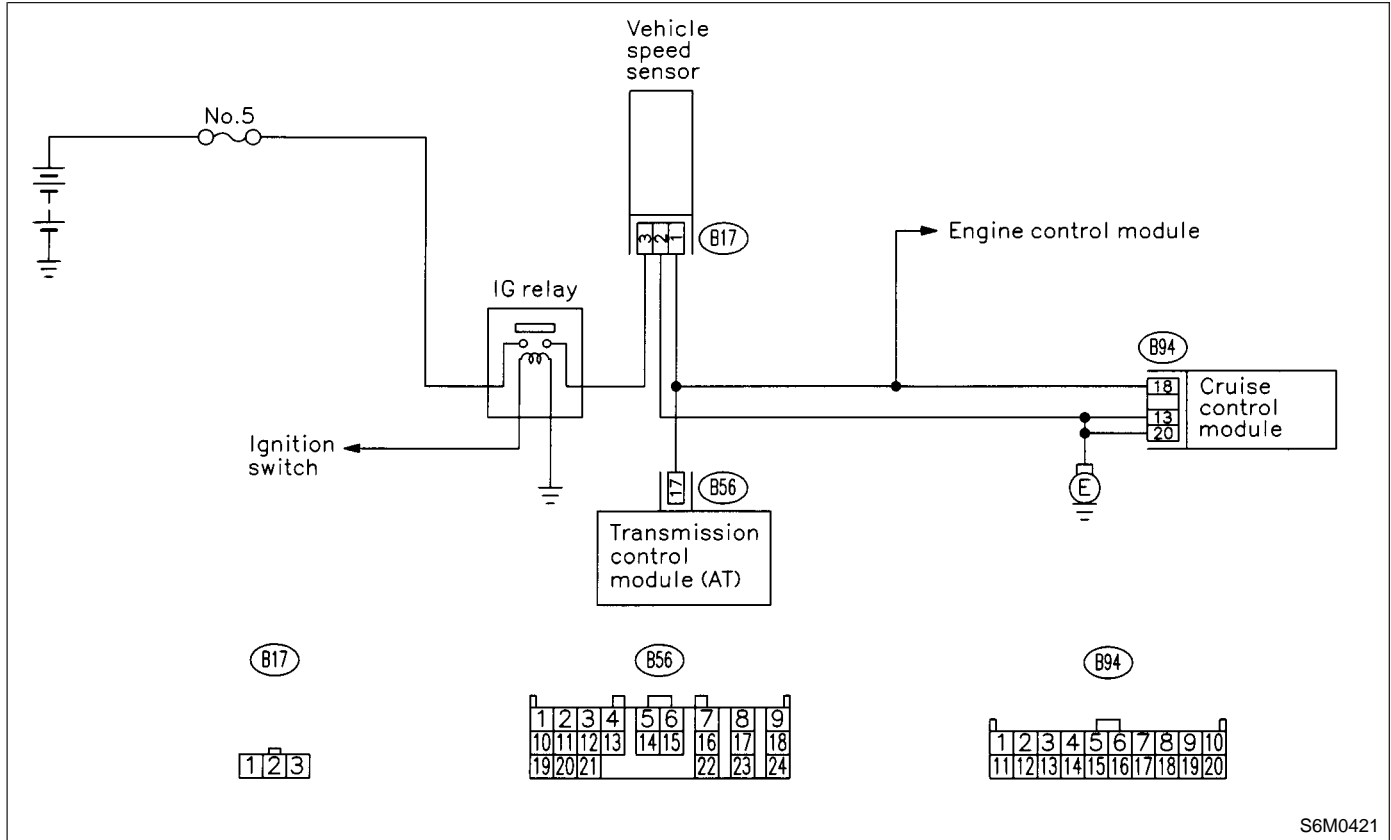
DIAGNOSIS:

- Disconnection or short circuit of vehicle speed sensor (MT model) or transmission control module (AT model).

TROUBLE SYMPTOM:

- Cruise control cannot be set. (Cancelled immediately.)

WIRING DIAGRAM:



S6M0421

3H41 : CHECK TRANSMISSION TYPE.

CHECK : *Is the transmission type MT?*

YES : Go to step 3H42.

NO : Go to step 3H46.

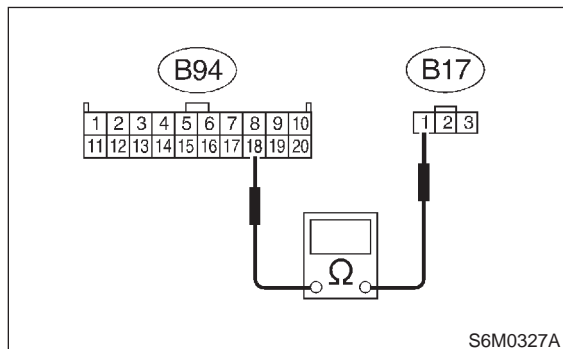
3H42 : CHECK HARNESS CONNECTOR BETWEEN CRUISE CONTROL MODULE AND VEHICLE SPEED SENSOR.

1) Disconnect connector from vehicle speed sensor and cruise control module.

2) Measure resistance of harness connector between vehicle speed sensor and cruise control module.

Connector & terminal

(B17) No. 1 — (B94) No. 18:



CHECK : *Is the resistance less than 10 Ω?*

YES : Go to step 3H43.

NO : Repair wiring harness.

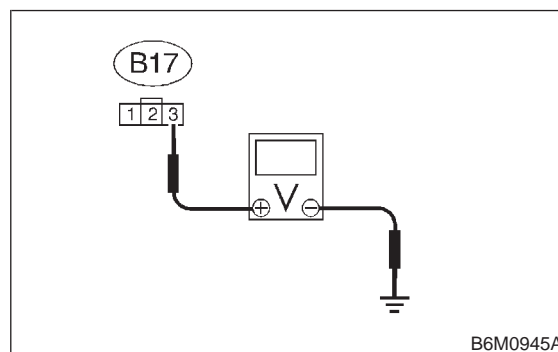
3H43 : CHECK HARNESS CONNECTOR BETWEEN BATTERY AND VEHICLE SPEED SENSOR.

1) Turn ignition switch to ON.

2) Measure voltage between vehicle speed sensor connector (B17) and chassis ground.

Connector & terminal

(B17) No. 3 (+) — Chassis ground (-):



CHECK : *Is the voltage more than 10 V?*

YES : Go to step 3H44.

NO : Repair harness connector between battery and vehicle speed sensor.

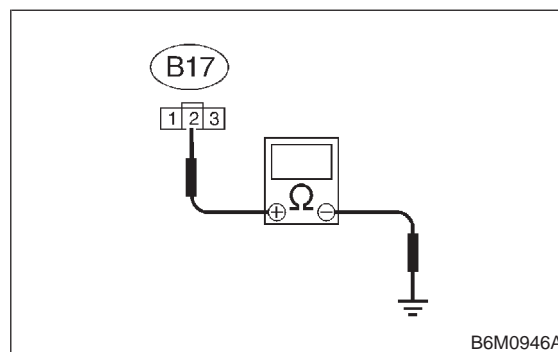
3H44 : CHECK HARNESS CONNECTOR BETWEEN VEHICLE SPEED SENSOR AND ENGINE GROUND.

1) Turn ignition switch to OFF.

2) Measure resistance between vehicle speed sensor connector (B17) and engine ground.

Connector & terminal

(B17) No. 2 (+) — Engine ground (-):



CHECK : *Is the resistance less than 10 Ω?*

YES : Go to step 3H45.

NO : Repair harness connector between vehicle speed sensor and engine ground.

3H45 : CHECK VEHICLE SPEED SENSOR.

- 1) Connect connector to vehicle speed sensor.
- 2) Set the vehicle on free roller, or lift-up the vehicle and support with safety stands.

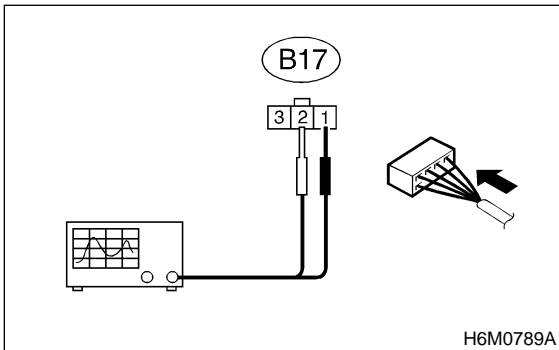
WARNING:

Be careful not to be caught up by the running wheels.

- 3) Set oscilloscope to vehicle speed sensor connector terminals.

Positive probe; (B17) No. 1

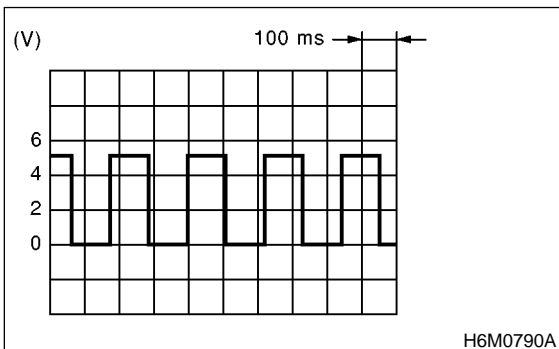
Earth lead; (B17) No. 2



H6M0789A

- 4) Drive the vehicle at speed greater than 20 km/h (12 MPH).

- 5) Measure signal voltage indicated on oscilloscope.



H6M0790A

CHECK : *Is the voltage more than 5 V?*

YES : Replace cruise control module. <Ref. to 6-2 [W12B4].>

NO : Replace vehicle speed sensor. <Ref. to 6-2 [W1400].>

3H46 : CHECK HARNESS CONNECTOR BETWEEN CRUISE CONTROL MODULE AND AUTOMATIC TRANSMISSION CONTROL MODULE.

- 1) Disconnect connector from automatic transmission control module and cruise control module.

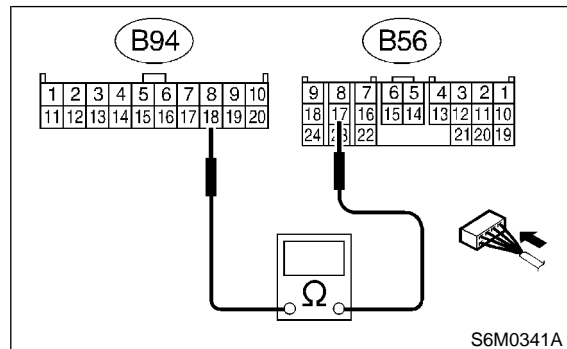
- 2) Measure resistance between cruise control module connector and automatic transmission control module connector.

CAUTION:

To measure the voltage and/or resistance, use a tapered pin with a diameter of less than 0.64 mm (0.025 in). Do not insert the pin more than 5 mm (0.20 in).

Connector & terminal

(B94) No. 18 — (B56) No. 17:



S6M0341A

CHECK : *Is the resistance less than 10 Ω?*

YES : Go to step 3H47.

NO : Repair harness connector between cruise control module and automatic transmission control module.

3H47 : CHECK AUTOMATIC TRANSMISSION CONTROL MODULE.

- 1) Connect connector to automatic transmission control module.
- 2) Set the vehicle on free roller, or lift-up the vehicle and support with safety stands.

WARNING:

Be careful not to be caught by the running wheels.

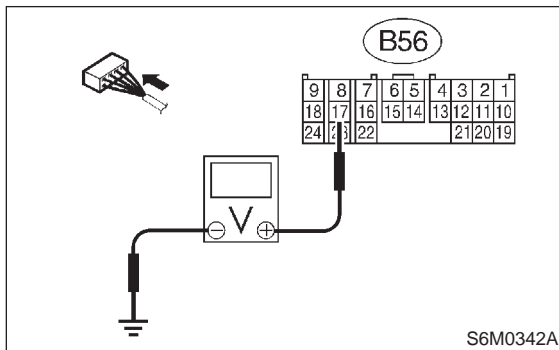
- 3) Drive the vehicle faster than 10 km/h (6 MPH).
- 4) Measure voltage between automatic transmission control module connector (B56) and chassis ground.

CAUTION:

To measure the voltage and/or resistance, use a tapered pin with a diameter of less than 0.64 mm (0.025 in). Do not insert the pin more than 5 mm (0.20 in).

Connector & terminal

(B56) No. 17 (+) — Chassis ground (-):



- CHECK** : *Is the voltage less than 1 V ←→ more than 4 V?*
- YES** : Replace cruise control module. <Ref. to 6-2 [W12B4].>
- NO** : Replace automatic transmission control module. <Ref. to 3-2 [W2200].>

5. DIAGNOSTIC CODE 14 (SET/COAST SWITCH, RESUME/ACCEL SWITCH, CANCEL SWITCH)

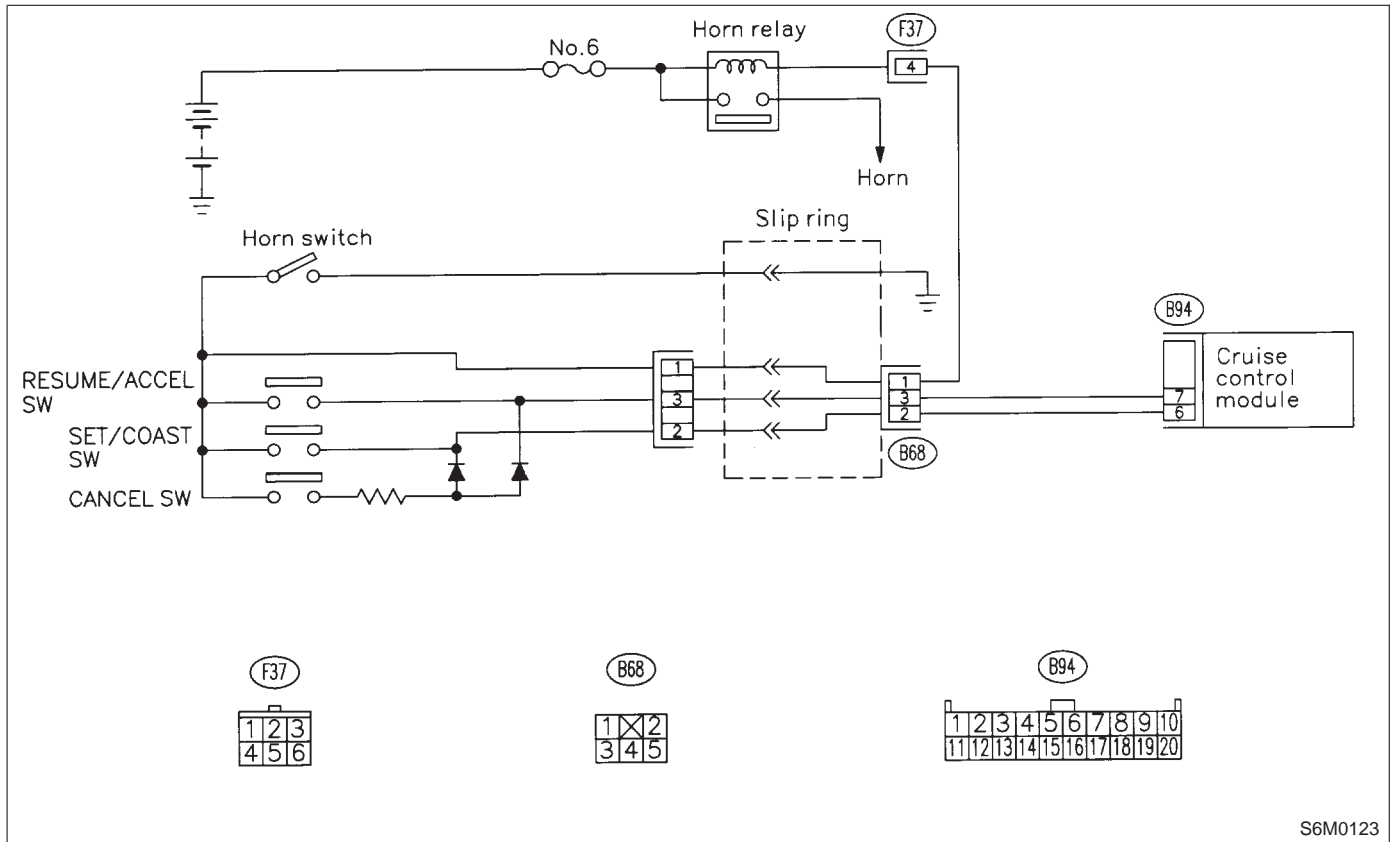
DIAGNOSIS:

- Short circuit inside the SET SW and RESUME SW.

TROUBLE SYMPTOM:

- Cruise control cannot be set. (Cancelled immediately.)

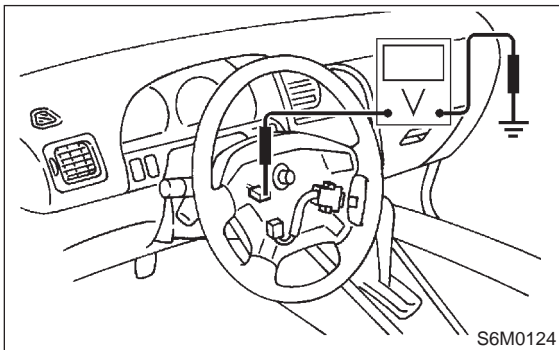
WIRING DIAGRAM:



S6M0123

3H51 : CHECK POWER SUPPLY.

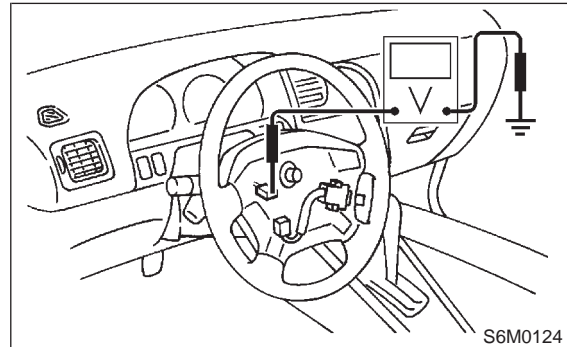
- 1) Turn ignition switch to ON.
- 2) Turn cruise control main switch to ON.
- 3) Set select monitor in "Current Data Display & Save" mode.
- 4) Check signals for proper operation.
 - (1) When pushing the SET/COAST switch:
The SET/COAST switch shown on the display turns from "OFF" to "ON".
 - (2) When pushing the RESUME/ACCEL switch:
The RESUME/ACCEL switch shown on the display turns from "OFF" to "ON".
- 5) Turn ignition switch to OFF.
- 6) Disconnect connector from cruise control command switch.
- 7) Turn ignition switch to ON.
- 8) Measure voltage between cruise control command switch connector and chassis ground.

Terminals**No. 1 (+) — Chassis ground (-):**

- CHECK** : **Is voltage more than 10 V?**
- YES** : Go to step 3H52.
- NO** : Repair or replace wiring harness between fuse & relay box and cruise control command switch. <Ref. to 6-2 [W12B3].>

3H52 : CHECK CRUISE CONTROL COMMAND SWITCH.

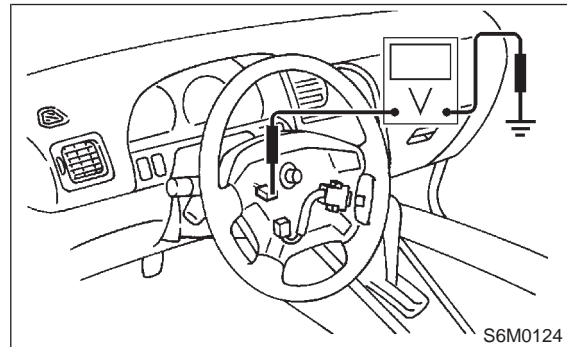
- 1) Turn ignition switch to OFF.
- 2) Connect connector of cruise control command switch.
- 3) Turn ignition switch to ON.
- 4) Measure voltage between cruise control command switch connector and chassis ground.

Terminals**No. 2 (+) — Chassis ground (-):**

- CHECK** : **Is voltage more than 10 V? (When SET/COAST switch is ON.)**
- YES** : Go to step 3H53.
- NO** : Replace cruise control command switch. <Ref. to 6-2 [W12B3].>

3H53 : CHECK CRUISE CONTROL COMMAND SWITCH.

Measure voltage between cruise control command switch connector and chassis ground.

Terminals**No. 3 (+) — Chassis ground (-):**

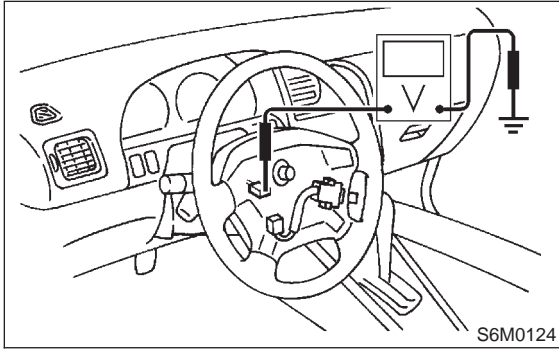
- CHECK** : **Is voltage more than 10 V? (When RESUME/ACCEL switch is ON.)**
- YES** : Go to step 3H54.
- NO** : Replace cruise control command switch. <Ref. to 6-2 [W12B3].>

3H54 : CHECK CRUISE CONTROL COMMAND SWITCH.

Measure voltage between cruise control command switch connector and chassis ground.

Terminals

No. 2 (+) — Chassis ground (-):



CHECK : *Is voltage more than 10 V? (When CANCEL switch is ON.)*

YES : Go to step 3H55.

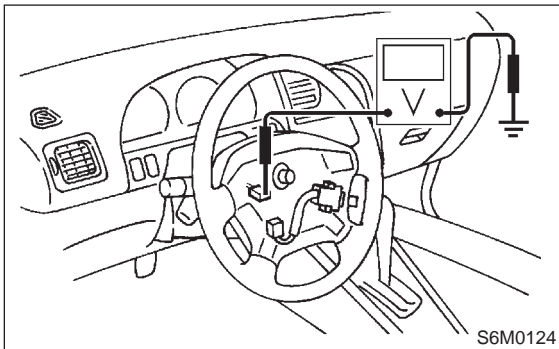
NO : Replace cruise control command switch. <Ref. to 6-2 [W12B3].>

3H55 : CHECK CRUISE CONTROL COMMAND SWITCH.

Measure voltage between cruise control command switch connector and chassis ground.

Terminals

No. 3 (+) — Chassis ground (-):



CHECK : *Is voltage more than 10 V? (When CANCEL switch is ON.)*

YES : Go to step 3H56.

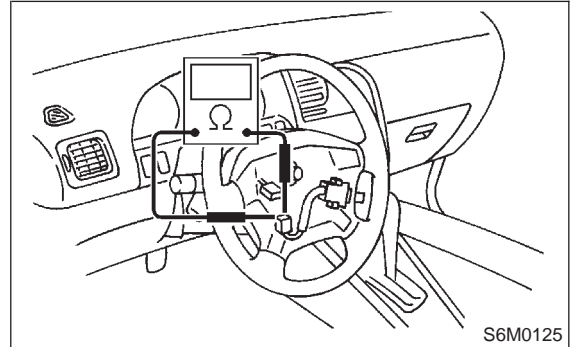
NO : Replace cruise control command switch. <Ref. to 6-2 [W12B3].>

3H56 : CHECK CRUISE CONTROL COMMAND SWITCH.

- 1) Turn ignition switch to OFF.
- 2) Disconnect connector from cruise control command switch.
- 3) Measure resistance between terminals of cruise control command switch connector (switch side) to check the switch operation.

Terminals

No. 1 — No. 2:



CHECK : *Is resistance less than 10 Ω? (When SET/COAST switch is ON.)*

YES : Go to step 3H57.

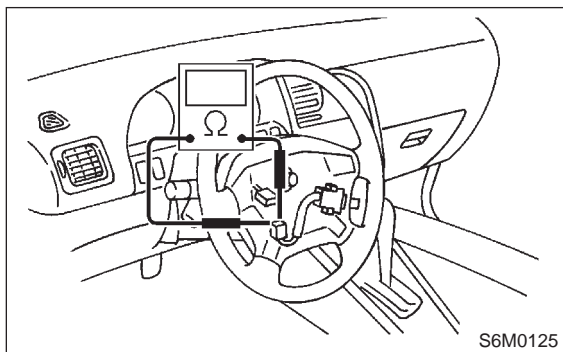
NO : Replace cruise control command switch. <Ref. to 6-2 [W12B3].>

3H57 : CHECK CRUISE CONTROL COMMAND SWITCH.

Measure resistance between terminals of cruise control command switch connector (switch side) to check the switch operation.

Terminals

No. 1 — No. 2:



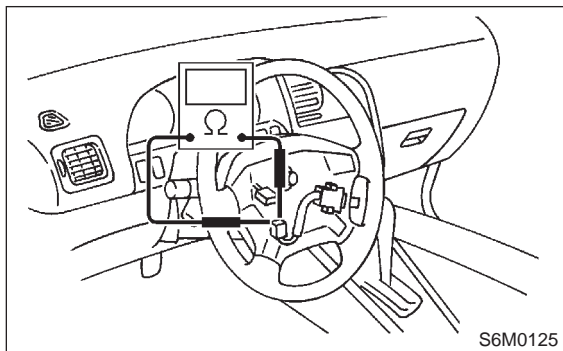
- CHECK** : *Is resistance more than 1 MΩ? (When SET/COAST switch is OFF.)*
- YES** : Go to step 3H58.
- NO** : Replace cruise control command switch. <Ref. to 6-2 [W12B3].>

3H58 : CHECK CRUISE CONTROL COMMAND SWITCH.

Measure resistance between terminals of cruise control command switch connector (switch side) to check the switch operation.

Terminals

No. 1 — No. 3:



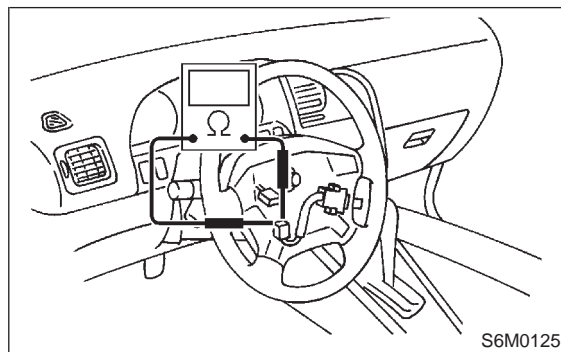
- CHECK** : *Is resistance less than 10 Ω? (When RESUME/ACCEL switch is ON.)*
- YES** : Go to step 3H59.
- NO** : Replace cruise control command switch. <Ref. to 6-2 [W12B3].>

3H59 : CHECK CRUISE CONTROL COMMAND SWITCH.

Measure resistance between terminals of cruise control command switch connector (switch side) to check the switch operation.

Terminals

No. 1 — No. 3:



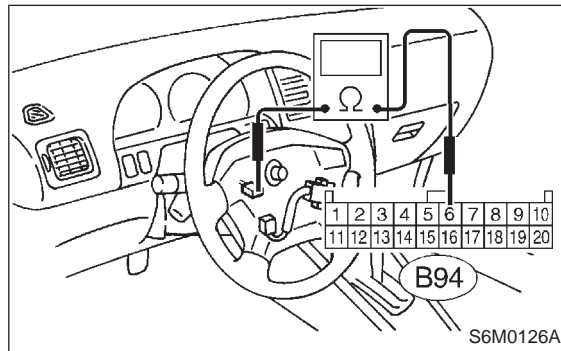
- CHECK** : *Is resistance more than 1 MΩ? (When RESUME/ACCEL switch is OFF.)*
- YES** : Go to step 3H510.
- NO** : Replace cruise control command switch. <Ref. to 6-2 [W12B3].>

3H510 : CHECK HARNESS CONNECTOR BETWEEN CRUISE CONTROL COMMAND SWITCH AND CRUISE CONTROL MODULE.

- 1) Disconnect connector from cruise control module.
- 2) Measure resistance of harness connector between cruise control command switch and cruise control module.

Connector & terminal

No. 2 (command switch) — (B94) No. 6:



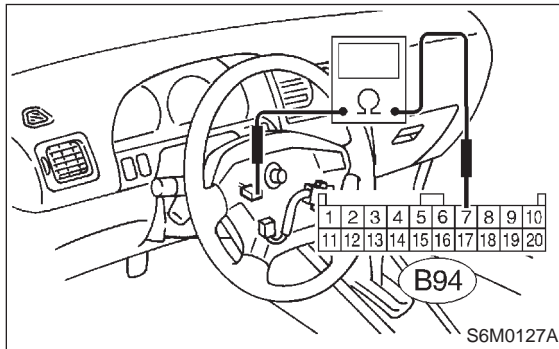
- CHECK** : *Is resistance less than 10 Ω?*
- YES** : Go to step 3H511.
- NO** : Repair or replace wiring harness.

3H511 : CHECK HARNESS CONNECTOR BETWEEN CRUISE CONTROL COMMAND SWITCH AND CRUISE CONTROL MODULE.

Measure resistance of harness connector between cruise control command switch and cruise control module.

Connector & terminal

No. 3 (command switch) — (B94) No. 7:



- CHECK** : **Is resistance less than 10 Ω?**
- YES** : Replace cruise control module. <Ref. to 6-2 [W12B4].>
- NO** : Repair or replace wiring harness.

MEMO:

6. DIAGNOSTIC CODE 21, 22 AND 23 (VACUUM VALVE, VENT 2 VALVE, VENT 1 VALVE)

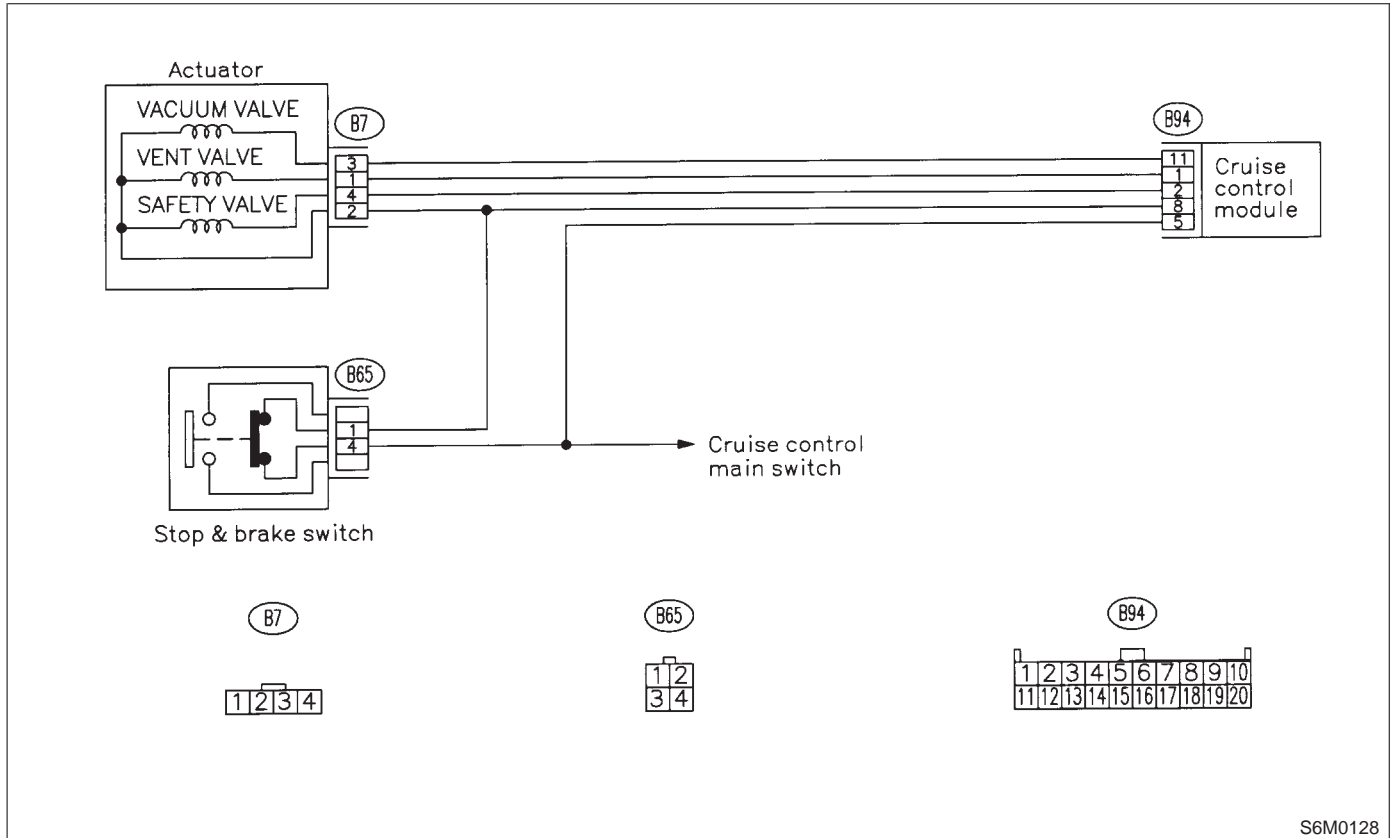
DIAGNOSIS:

- Open or poor contact of vacuum valve, vent 2 valve and vent 1 valve.

TROUBLE SYMPTOM:

- Cruise control cannot be set. (Cancels immediately.)

WIRING DIAGRAM:



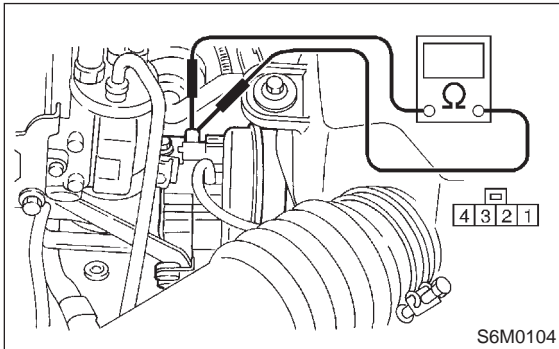
S6M0128

3H61 : MEASURE RESISTANCE OF VACUUM VALVE, VENT 2 VALVE AND VENT 1 VALVE.

- 1) Disconnect connector from actuator.
- 2) Measure resistance of vacuum valve, vent 2 valve and vent 1 valve.

Terminals

No. 2 — No. 3:



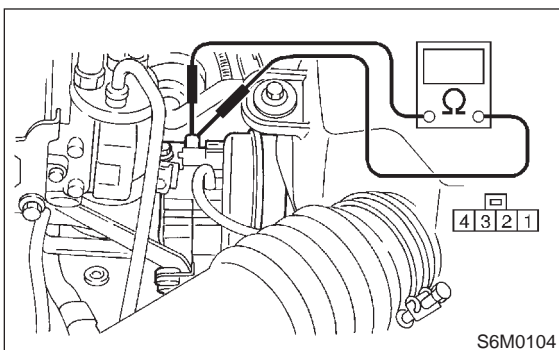
- CHECK** : *Is resistance less than 22 Ω?*
- YES** : Go to step **3H62**.
- NO** : Replace actuator. <Ref. to 6-2 [W12B1].>

3H62 : MEASURE RESISTANCE OF VACUUM VALVE, VENT 2 VALVE AND VENT 1 VALVE.

Measure resistance of vacuum valve, vent 2 valve and vent 1 valve.

Terminals

No. 2 — No. 1:



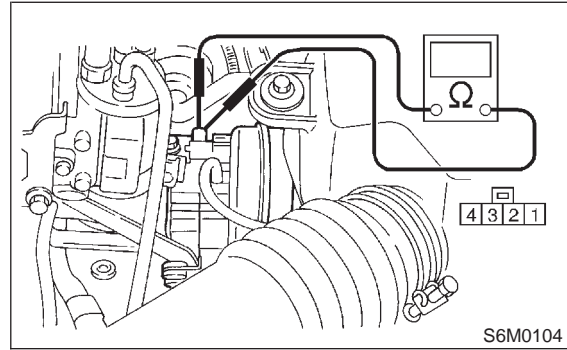
- CHECK** : *Is resistance less than 55 Ω?*
- YES** : Go to step **3H63**.
- NO** : Replace actuator. <Ref. to 6-2 [W12B1].>

3H63 : MEASURE RESISTANCE OF VACUUM VALVE, VENT 2 VALVE AND VENT 1 VALVE.

Measure resistance of vacuum valve, vent 2 valve and vent 1 valve.

Terminals

No. 2 — No. 4:



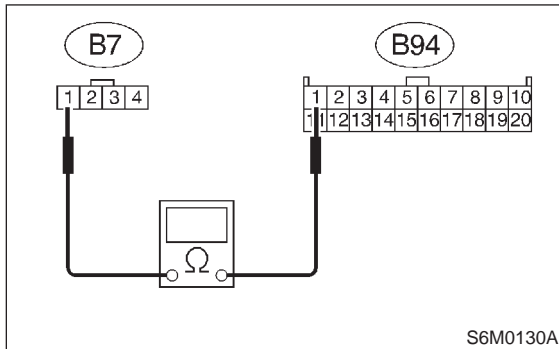
- CHECK** : *Is resistance less than 55 Ω?*
- YES** : Go to step **3H64**.
- NO** : Replace actuator. <Ref. to 6-2 [W12B1].>

3H64 : PERFORM A CIRCUIT TEST IN HARNESS BETWEEN ACTUATOR (VACUUM VALVE, VENT 2 VALVE AND VENT 1 VALVE) AND CRUISE CONTROL MODULE.

- 1) Disconnect connector from cruise control module.
- 2) Measure resistance of harness connector between cruise control module, vacuum valve, vent 2 valve and vent 1 valve.

Connector & terminal

(B7) No. 1 — (B94) No. 1:



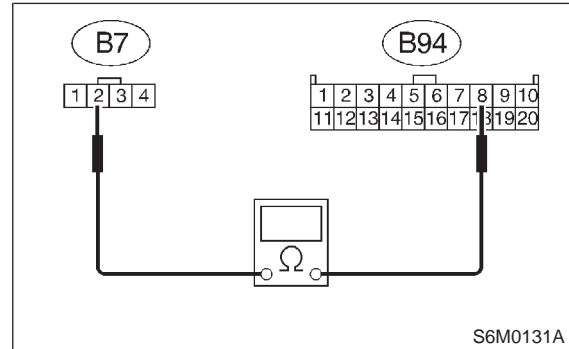
- CHECK** : Is resistance less than 10 Ω?
- YES** : Go to step 3H65.
- NO** : Repair or replace wiring harness between actuator <Ref. to 6-2 [W12B1].> and cruise control module <Ref. to 6-2 [W12B4].>.

3H65 : PERFORM A CIRCUIT TEST IN HARNESS BETWEEN ACTUATOR (VACUUM VALVE, VENT 2 VALVE AND VENT 1 VALVE) AND CRUISE CONTROL MODULE.

Measure resistance of harness connector between cruise control module, vacuum valve, vent 2 valve and vent 1 valve.

Connector & terminal

(B7) No. 2 — (B94) No. 8:



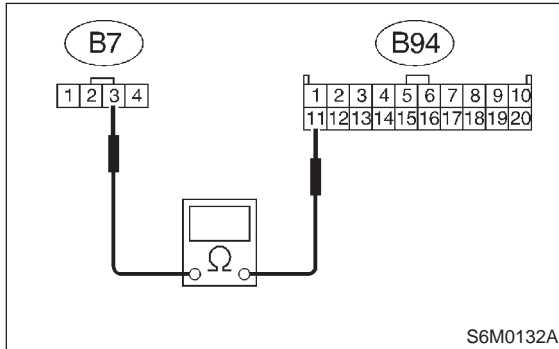
- CHECK** : Is resistance less than 10 Ω?
- YES** : Go to step 3H66.
- NO** : Repair or replace wiring harness between actuator <Ref. to 6-2 [W12B1].> and cruise control module <Ref. to 6-2 [W12B4].>.

3H66 : PERFORM A CIRCUIT TEST IN HARNESS BETWEEN ACTUATOR (VACUUM VALVE, VENT 2 VALVE AND VENT 1 VALVE) AND CRUISE CONTROL MODULE.

Measure resistance of harness connector between cruise control module, vacuum valve, vent 2 valve and vent 1 valve.

Connector & terminal

(B7) No. 3 — (B94) No. 11:



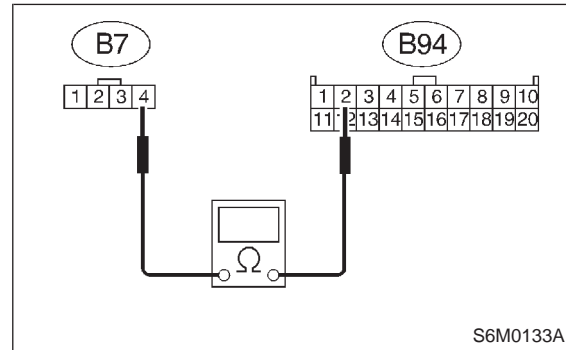
- CHECK** : **Is resistance less than 10 Ω?**
- YES** : Go to step **3H67**.
- NO** : Repair or replace wiring harness between actuator <Ref. to 6-2 [W12B1].> and cruise control module <Ref. to 6-2 [W12B4].>.

3H67 : PERFORM A CIRCUIT TEST IN HARNESS BETWEEN ACTUATOR (VACUUM VALVE, VENT 2 VALVE AND VENT 1 VALVE) AND CRUISE CONTROL MODULE.

Measure resistance of harness connector between cruise control module, vacuum valve, vent 2 valve and vent 1 valve.

Connector & terminal

(B7) No. 4 — (B94) No. 2:



- CHECK** : **Is resistance less than 10 Ω?**
- YES** : Replace cruise control module.
- NO** : Repair or replace wiring harness between actuator <Ref. to 6-2 [W12B1].> and cruise control module <Ref. to 6-2 [W12B4].>.

7. DIAGNOSTIC CODE 25 (CRUISE CONTROL MODULE BUILT-IN RELAY, CPU RAM)

DIAGNOSIS:

- Poor welding of built-in relay of cruise control module.
- Failure of built-in CPU RAM of cruise control module.

TROUBLE SYMPTOM:

- Cruise control is canceled and memorized cruise speed is also canceled.
- Once cruise control is canceled, cruise control cannot be set until the ignition switch and cruise control main switch turns OFF, and then turns ON again.

NOTE:

Check input/output signal and vehicle speed signal with select monitor. When signals are in good condition, failure is in cruise control module. (Check power supply and ground conditions of cruise control module.)

I: DIAGNOSTICS CHART WITH SELECT MONITOR

1. FUNCTION MODE

NOTE:

Select monitor part No.:
<Ref. to 1-6 [G1100].>

Select the "Cruise Control" system using the select monitor and set the "Current Data Display & Save" mode. The following parameters will then appear on the display.

- Vehicle Speed

The current vehicle speed is shown on the display.

- Stop Light Switch

When the brake pedal is depressed, the stop light switch shown on the display turns from "OFF" to "ON".

- Brake Switch

When the brake pedal is depressed, the brake switch shown on the display turns from "OFF" to "ON".

- "SET/COAST" Switch

When the cruise control command switch is placed in the "SET/COAST" position, the SET/COAST switch shown on the display turns from "OFF" to "ON".

- "RESUME/ACCEL" Switch

When the cruise control command switch is placed in the "RESUME/ACCEL" position, the RESUME/ACCEL switch shown on the display turns from "OFF" to "ON".

- Clutch/Inhibitor Switch

When the clutch pedal is depressed, the clutch/inhibitor switch shown on the display turns from "ON" to "OFF". (MT)

When the select lever is moved from the "N" or "P" position to any other position, the clutch/inhibitor switch shown on the display turns from "ON" to "OFF".