# **ONSTAR (R) (DIAGNOSTICS)**

# OS

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# 1. Basic Diagnostic Procedure

# A: PROCEDURE

NOTE:

To check harness for broken wires or short circuits, shake it while holding it or the connector.

	Step	Check	Yes	No
1	<ul> <li>CHECK PRE-INSPECTION.</li> <li>1) Before performing diagnosis, inspect unit which might influence OnStar (R) problem.</li> <li><ref. general<br="" inspection,="" os-3,="" to="">Description.&gt;</ref.></li> </ul>	Is unit that might influence the problem normal?	Go to step 2.	Repair or replace each unit.
2	<ul> <li>CHECK OnStar (R) LED.</li> <li>1) Make sure the red LED of OnStar (R) comes on when ignition switch is ON?</li> </ul>	Does the red LED come on?	Go to step 3.	Go to step 4.
3	<ul> <li>CHECK INDICATION OF DIAGNOSTIC TROUBLE CODE (DTC).</li> <li>1) Calling up the diagnostic trouble code (DTC). <ref. operation,<br="" os-10,="" to="">Read Diagnostic Trouble Code (DTC).&gt;</ref.></li> <li>2) Record all DTCs. Confirm the meaning of DTC using the list of DTC. <ref. diag-<br="" list="" list,="" of="" os-17,="" to="">nostic Trouble Code (DTC).&gt;</ref.></li> <li>3) Proceed with the diagnosis corresponding to the diagnostic trouble code (DTC). <ref. to OS-18, Diagnostics Chart with Trouble Code.&gt; Confirm repair by activating system.</ref. </li> </ul>	Is repair work completed?	System is OK.	Go to step 1.
4	PERFORM DIAGNOSIS ACCORDING TO THE SYMPTOM. Perform diagnostic procedure according to the symptom. <ref. diagnosis="" each<br="" for="" os-33,="" to="">Symptom.&gt; Confirm repair by activating system.</ref.>	Is repair work completed?	System is OK.	Go to step 1.

#### 2. General Description

#### A: CAUTION

When the inspection procedure must be performed pressing each OnStar (R) button, call the OnStar (R) call center first.

When VIU and VCU are replaced, contact to the OnStar (R) call center to ask for set-up.

#### **B: INSPECTION**

Before performing diagnostics, check the following items which might affect OnStar (R) problems.

#### 1. BATTERY

Measure the battery voltage and specific gravity of electrolyte.

Standard voltage: 12 V or more

Specific gravity: Above 1.260

#### 2. AIRBAG

Inspect that airbag system is normal. <Ref. to AB-2, Basic Diagnostic Procedure.>

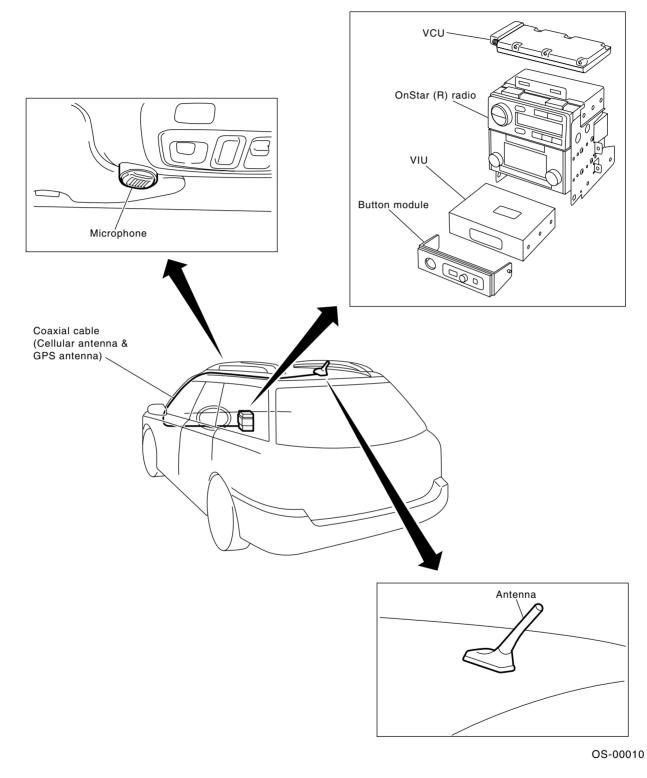
#### C: PREPARATION TOOL

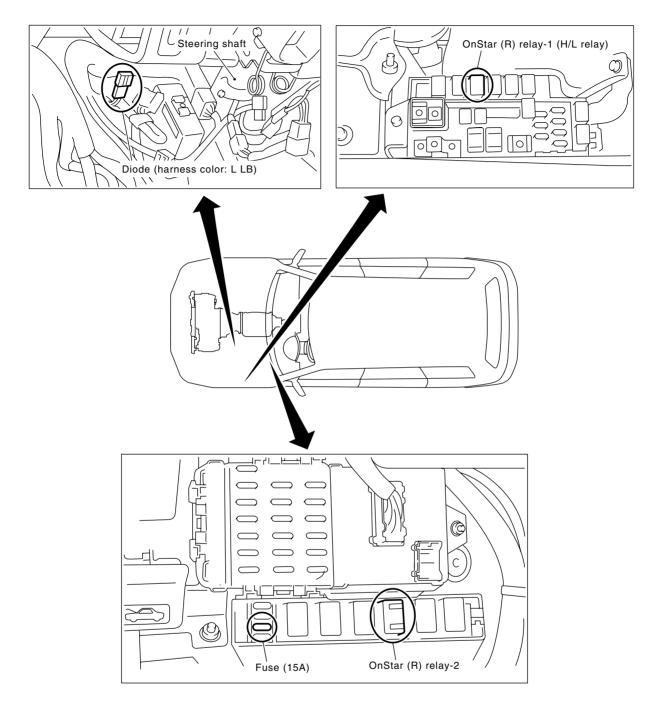
#### 1. GENERAL PURPOSE TOOLS

TOOL NAME	REMARKS
Circuit Tester	Used for measuring resistance, voltage and ampere.

# 3. Electrical Components Location

#### A: LOCATION

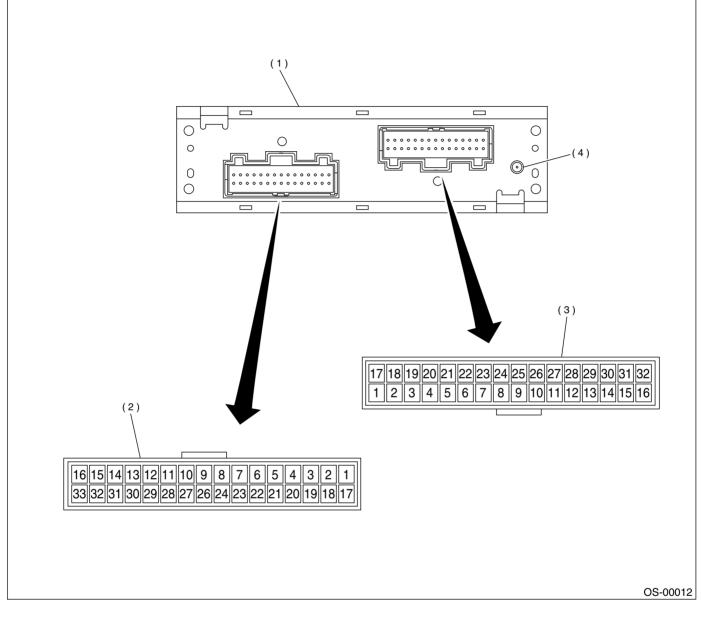




OS-00011

# 4. Control Module I/O Signal

#### A: ELECTRICAL SPECIFICATION



(1) VIU

- (3) Connect to i72 (Red) connector
- (4) GPS antenna connector

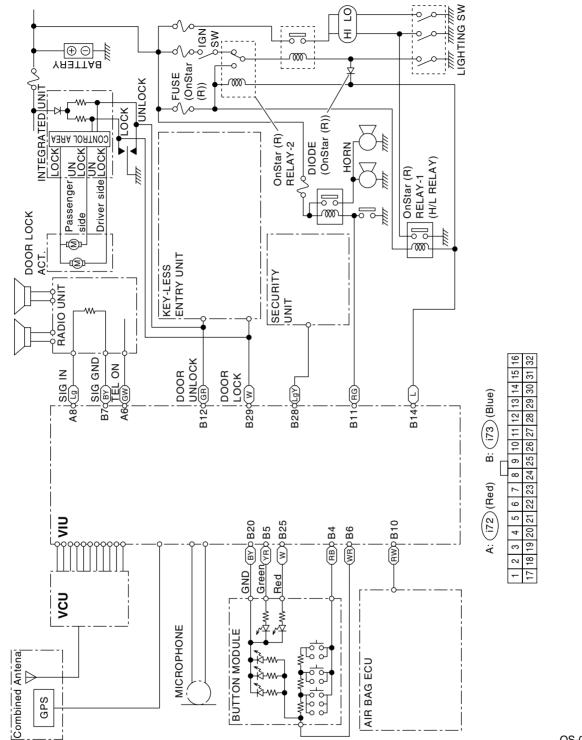
(2) Connect to i73 (Blue) connector

#### ONSTAR (R) (DIAGNOSTICS)

#### **CONTROL MODULE I/O SIGNAL**

	Contents	Connector No.	Terminal No.	Input/Output signal
	Power	i73	16	9 — 16 V
	Power	i73	32	9 — 16 V
	GND	i73	1	0 V
Power sup-	GND	i73	17	0 V
ply	ACC	i73	27	OnStar (R) activates, when the value is greater than 5.5 V
	IGN	i73	22	OnStar (R) activates, when the value is greater than 5.5 V
	Audio ground	i72	10	0 V
	Audio signal	i72	11	4.5 V when switch is ON
	Audio signal	i72	12	Battery voltage when switch is ON
	Microphone GND	i72	13	0 V when switch is ON
VCU I/O	Microphone input siganal	i72	14	Signal
	Power	i72	16	Battery voltage when switch is ON
	3 wire signal data bus	i72	27	Signal
	3 wire signal data bus	i72	28	Signal
	3 wire signal data bus	i72	29	Signal
	Door unlock signal	i73	12	At actuation of door unlock Battery voltage
	Door lock signal	i73	29	At actuation of door lock Battery voltage
Vehicle discrete	Horn signal	i73	11	0V at actuation of horn Battery voltage at no actuation of horn
interface	Security signal	i73	28	Signal (5 V)
	Headlight signal	i73	14	0V at actuation of headlight Battery voltage at no actuation of headlight
	Low reference of transceiver	i72	30	0 V
	IGN signal	i72	31	Battery voltage when switch is ON
	Mike signal & power supply	i72	25	Signal
	Mike return	i72	26	0 V
User inter-	Key pad signal	i73	4	2.14V at pressing emergency button 1.27V at pressing OnStar (R) button 1.27V at pressing call answer/end button
face	LED Green	i73	5	3V when LED illuminates
	LED Red	i73	25	2.5V when LED illuminates
	Key pad low reference	i73	20	0 V
	Key pad power supply	i73	6	Battery voltage
Audio out-	Audio	i72	8	Signal
put inter-	Audio GND	i73	7	0 V
face	TEL ON signal	i72	6	Battery voltage when switch is ON

#### **B: SCHEMATIC**



OS-00013

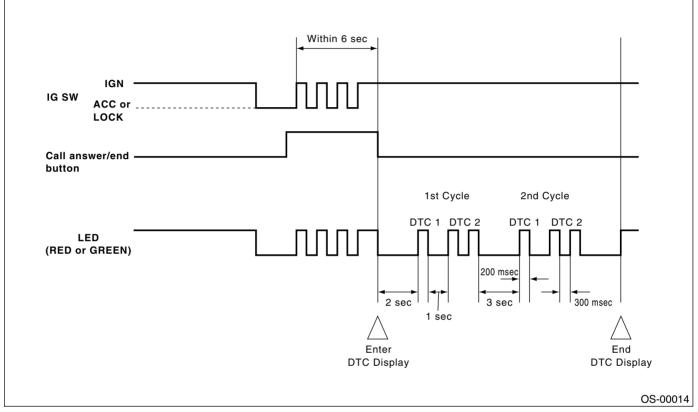
ONSTAR (R) (DIAGNOSTICS)

### 5. Read Diagnostic Trouble Code (DTC)

#### A: OPERATION

- 1) Turn ignition switch to OFF.
- 2) Perform the following job steps within 6 seconds.
- 3) Change the ignition switch from ON to OFF 3 times with pressing call answer/end button.
- 4) Turn ignition to ON at the 4th switching action.

5) When the call answer/end button is released, LED will blink to indicate DTC.



NOTE:

- Current DTC will be indicated by the red LED.
- Former DTC will be indicated by the green LED.
- Current DTC will be indicated first, and then former DTC will be indicated.
- DTC will be displayed in order of numerical sequence from smallest.
- DTC will be indicated in 2 times.

# 6. Output Mode

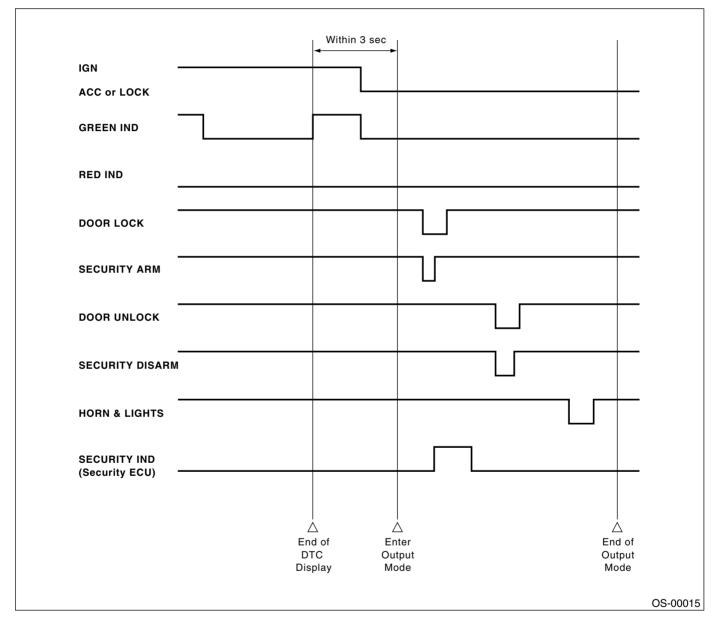
#### A: OPERATION

#### NOTE:

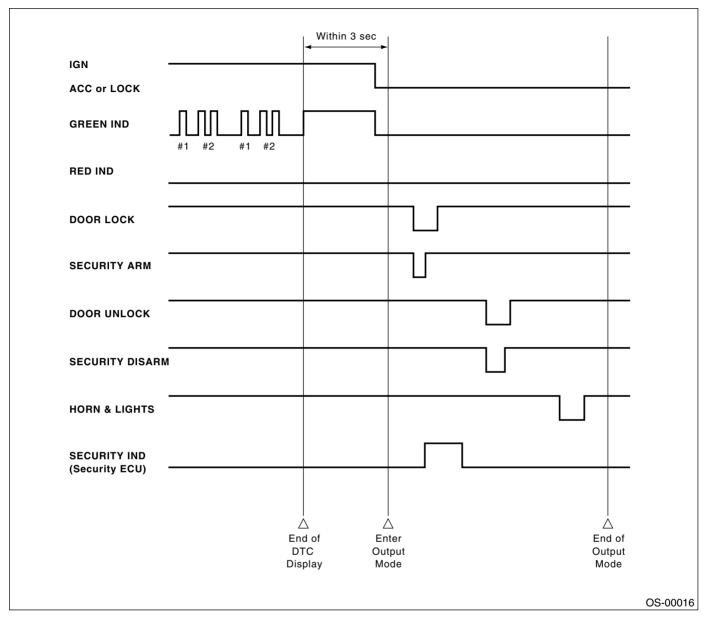
Output mode activates lock and unlock of door, security, horn and headlight.

1) Within 3 seconds after reading DTC, turn the ignition to OFF.

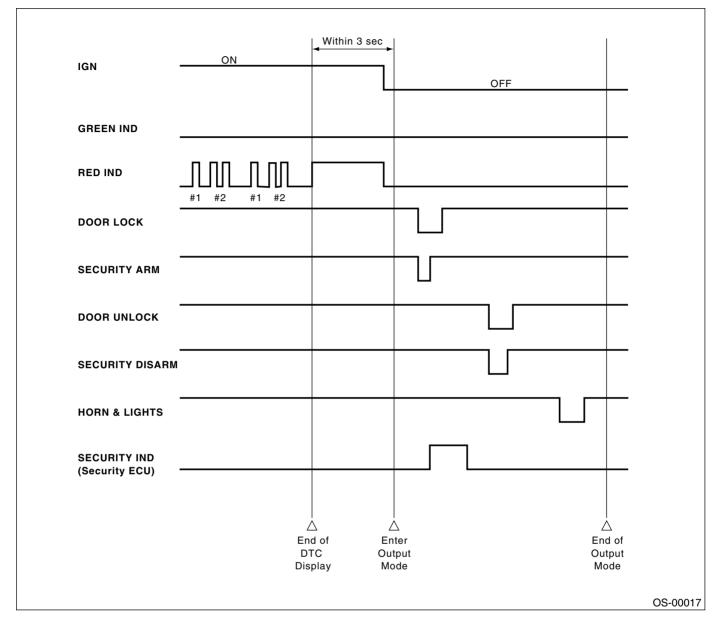
• When no DTC is stored



#### • When DTC of former trouble is stored



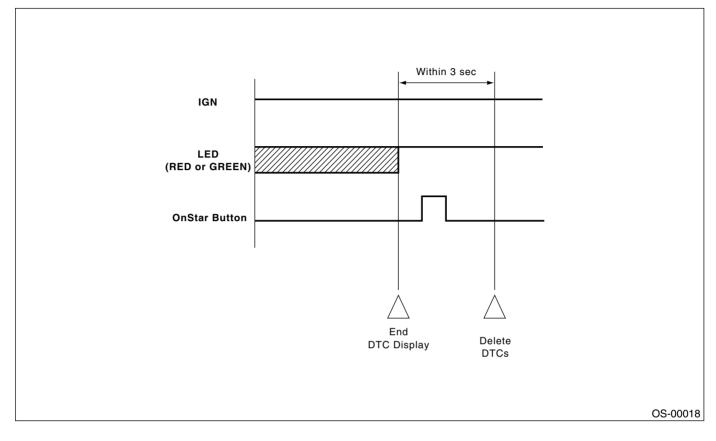
• When DTC of current trouble is stored



#### 7. Clear Memory Mode

#### A: OPERATION

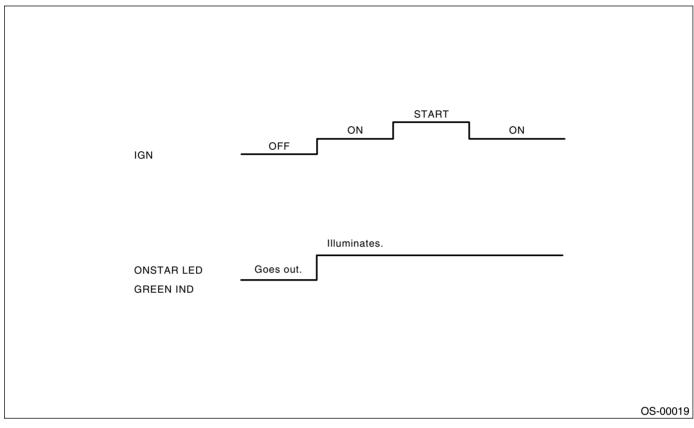
1) Within 3 seconds after reading DTC, turn the OnStar (R) button On and OFF.



#### 8. OnStar (R) LED Illumination Pattern

#### A: INSPECTION

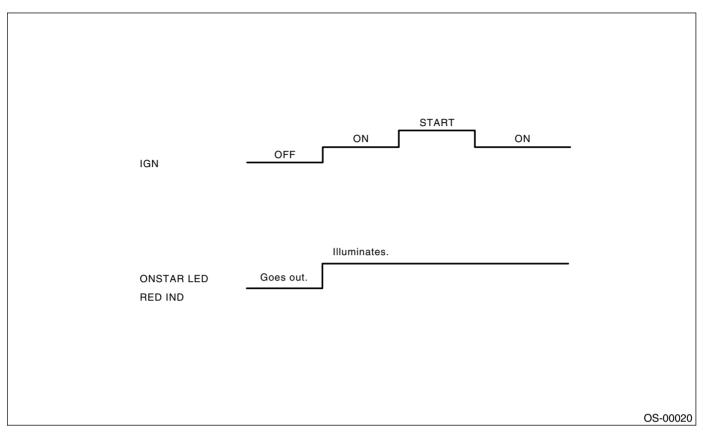
#### 1. LED ILLUMINATES GREEN.



1) There is some trouble in electrical system, when OnStar (R) LED does not come on. 2) Repair OnStar (R) LED circuit or diagnostic circuit, when OnStar (R) LED remains always OFF. <Ref. to OS-48, OnStar (R) LED DOES NOT OPERATE., Diagnosis for Each Symptom.>

#### **ONSTAR (R) LED ILLUMINATION PATTERN**

#### 2. LED ILLUMINATES RED.



When OnStar (R) LED illuminates in red, it means some trouble exist in OnStar (R) system. In such a case, read DTC and repair. <Ref. to OS-10, OPERATION, Read Diagnostic Trouble Code (DTC).>

#### 9. List of Diagnostic Trouble Code (DTC)

#### A: LIST

DTC No.	Content of diagnosis	LED indicator pattern	Index No.
0	EEPROM checksum error	No flash	<ref. 0="" checksum="" dtc="" eeprom="" error="" os-18,="" to="" —="" —,<br="">Diagnostics Chart with Trouble Code.&gt;</ref.>
1	GPS signal error	1 flash	<ref. 1="" diagnos-<br="" dtc="" error="" gps="" os-20,="" signal="" to="" —="" —,="">tics Chart with Trouble Code.&gt;</ref.>
2	Loss of VCU communica- tion with VIU	2 flashes	<ref. 2="" communication<br="" dtc="" loss="" of="" os-22,="" to="" vcu="" —="">WITH VIU —, Diagnostics Chart with Trouble Code.&gt;</ref.>
3	SRS Signal fault	3 flashes	<ref. 3="" diagnos-<br="" dtc="" fault="" os-26,="" signal="" srs="" to="" —="" —,="">tics Chart with Trouble Code.&gt;</ref.>
4	Fault communication between GPS and micro- processor	4 flashes	<ref. 4="" com-<br="" dtc="" gps="" micro-processor="" os-28,="" to="" —="">MUNICATION FAULT —, Diagnostics Chart with Trouble Code.&gt;</ref.>
5	Button assembly malfunc- tion	5 flashes	<ref. 5="" assembly="" button="" dtc="" malfunc-<br="" os-30,="" to="" —="">TION —, Diagnostics Chart with Trouble Code.&gt;</ref.>

#### CAUTION:

When DTC 4, which deactivates button module, VIU will not enter to DTC display mode.

# 10.Diagnostics Chart with Trouble Code A: DTC 0 — EEPROM CHECKSUM ERROR —

DIAGNOSIS: Trouble of EEPROM Checksum SYMPTOM:

Red LED illuminates

• OnStar (R) does not operate.

	Step	Check	Yes	No
1	DTC 5 Check button assembly for malfunc- tion. <ref. 5="" assem-<br="" button="" dtc="" os-30,="" to="" —="">BLY MALFUNCTION —, Diagnostics Chart with Trouble Code.&gt; Run the system and confirm the result of repair.</ref.>	Was the trouble repaired?	System is OK.	REFERENCE: Perform OnStar (R) setup proce- dure. Replace VIU. <ref. os-4,="" to="" ve-<br="">hicle Interface Unit VIU.&gt;</ref.>

MEMO:

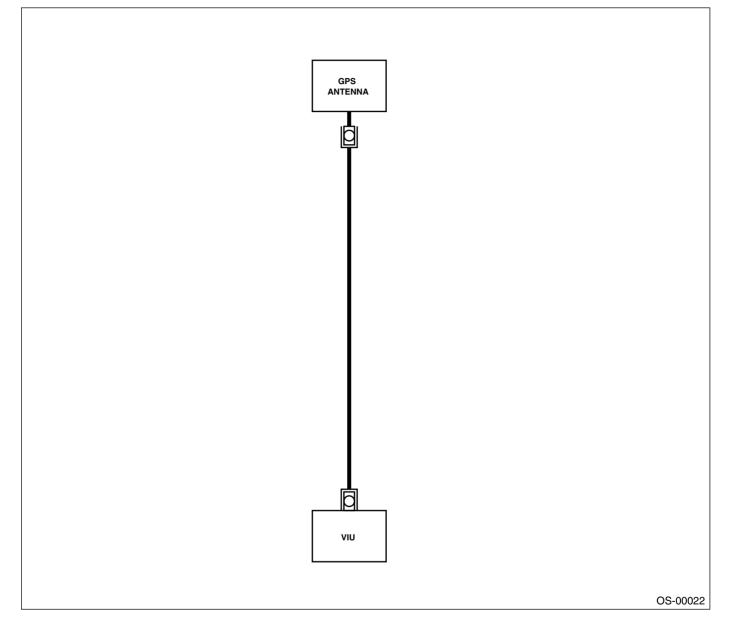
ONSTAR (R) (DIAGNOSTICS)

#### B: DTC 1 — GPS SIGNAL ERROR —

DIAGNOSIS: Trouble of GPS Signal

SYMPTOM:

- Red LED illuminates
- OnStar (R) does not operate.



#### DIAGNOSTICS CHART WITH TROUBLE CODE

		1		
	Step	Check	Yes	No
1	<ul> <li>CHECK HARNESS.</li> <li>1) Turn ignition switch to OFF.</li> <li>2) Disconnect GPS antenna connector from VIU.</li> <li>3) Disconnect connector from GPS antenna.</li> <li>4) Measure resistance between GPS antenna cables.</li> </ul>	Is the measured value less than the 0.5 $\Omega$ ?	Go to step 2.	Repair open har- ness.
2	CHECK HARNESS. Measure resistance of GPS antenna cable.	Is the measured value more than 1 $M\Omega$ ?	Go to step 3.	Repair ground short of GPS antenna cable.
3	CHECK HARNESS. Turn ignition switch to ON. Measure voltage between GPS antenna cable and chassis ground. Does the measured value exceed the specified value?	Is the measured value less than 1 V?	Go to step 4.	Repair battery short of GPS antenna cable.
4	<ul> <li>CHECK GPS ANTENNA.</li> <li>1) Replace GPS antenna. <ref. os-8,<br="" to="">Antenna.&gt;</ref.></li> <li>2) Run the system and confirm the result of repair.</li> </ul>	Was the trouble repaired?	System is OK.	REFERENCE: Perform OnStar (R) setup proce- dure. Replace VIU. <ref. os-4,<br="" to="">Vehicle Interface Unit VIU.&gt;</ref.>

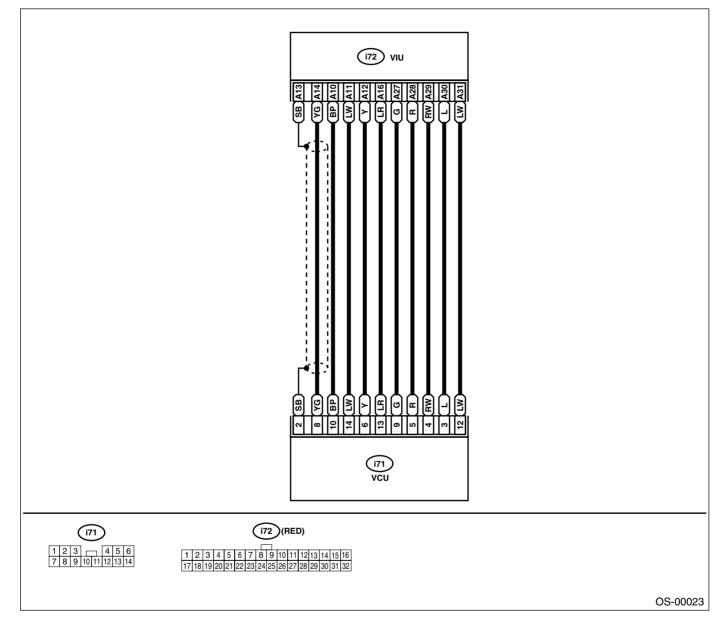
ONSTAR (R) (DIAGNOSTICS)

# C: DTC 2 - LOSS OF VCU COMMUNICATION WITH VIU -

DIAGNOSIS:

Communication error between VIU and VCU SYMPTOM:

- Red LED illuminates
- OnStar (R) does not operate.



#### DIAGNOSTICS CHART WITH TROUBLE CODE

Step	Check	Yes	No
1 CHECK HARNESS.	Is the measured value less	Go to step 2.	Repair open har-
1) Turn ignition switch to OFF.	than 0.5 $\Omega$ ?		ness.
2) Disconnect VIU connector.			11000.
3) Disconnect VCU connector.			
4) Measure resistance between VIU connec-			
tor and VCU connector.			
Connector & Terminal			
(i72) No. 10 — (i71) No. 10:			
( <i>i72</i> ) No. 10 — ( <i>i71</i> ) No. 10. ( <i>i72</i> ) No. 11 — ( <i>i71</i> ) No. 14:			
(i72) No. $11 - (i71)$ No. $14$ . (i72) No. $12 - (i71)$ No. $6$ :			
(172) No. $12 - (171)$ No. 6. (172) No. $13 - (171)$ No. 2:			
( <i>i72</i> ) No. 13 — ( <i>i71</i> ) No. 2. ( <i>i72</i> ) No. 14 — ( <i>i71</i> ) No. 8:			
( <i>i</i> 72) No. 16 — ( <i>i</i> 71) No. 13:			
( <i>i</i> 72) No. 27 — ( <i>i</i> 71) No. 9:			
( <i>i</i> 72) No. 28 — ( <i>i</i> 71) No. 5:			
( <i>i</i> 72) No. 29 — ( <i>i</i> 71) No. 4: ( <i>i</i> 72) No. 20 — ( <i>i</i> 71) No. 2:			
(i72) No. 30 — (i71) No. 3:			
(i72) No. 31 — (i71) No. 12:			-
2 CHECK HARNESS.	Is the measured value more	Go to step 3.	Repair ground
Measure resistance between VIU connector	than 1 MΩ?		short of harness.
and chassis ground.			
Connector & Terminal			
(i72) No. 10 — Chassis ground:			
(i72) No. 11 — Chassis ground:			
(i72) No. 12 — Chassis ground:			
(i72) No. 13 — Chassis ground:			
(i72) No. 14 — Chassis ground:			
(i72) No. 16 — Chassis ground:			
(i72) No. 27 — Chassis ground:			
(i72) No. 28 — Chassis ground:			
(i72) No. 29 — Chassis ground:			
(i72) No. 30 — Chassis ground:			
(i72) No. 31 — Chassis ground:			
3 CHECK HARNESS.	Is the measured value less	Go to step 4.	Repair battery
<ol> <li>Turn ignition switch to ON.</li> </ol>	than 1 V?		short of harness.
<ol><li>Measure voltage between VIU connector</li></ol>			
and chassis ground.			
Connector & Terminal			
(i72) No. 10 (+) — Chassis ground (–):			
(i72) No. 11 (+) — Chassis ground (–):			
(i72) No. 12 (+) — Chassis ground (–):			
(i72) No. 13 (+) — Chassis ground (–):			
(i72) No. 14 (+) — Chassis ground (–):			
(i72) No. 16 (+) — Chassis ground (–):			
(i72) No. 27 (+) — Chassis ground (–):			
(i72) No. 28 (+) — Chassis ground (–):			
(i72) No. 29 (+) — Chassis ground (–):			
(i72) No. 30 (+) — Chassis ground (–):			
(i72) No. 31 (+) — Chassis ground (–):			
4 CHECK VOLTAGE OF POWER SUPPLY.	Is the measured value 0 V?	Go to step 5.	Go to step 11.
1) Turn ignition switch to OFF.			· · ·
2) Connect connector of VIU and VCU.			
3) Turn the ignition switch to ON.			
4) Measure voltage between VIU connector			
and chassis ground.			
Connector & Terminal			
(i72) No. 10 (+) — Chassis ground (–):			
	1		

#### DIAGNOSTICS CHART WITH TROUBLE CODE

ONSTAR (R) (DIAGNOSTICS)

	Step	Check	Yes	No
5	CHECK VOLTAGE OF POWER SUPPLY. Measure voltage between VIU connector and chassis ground. Connector & Terminal (i72) No. 11 (+) — Chassis ground (-):	Is the measured value 3.0 to 5.0 V?	Go to step <b>6</b> .	Go to step 11.
6	CHECK VOLTAGE OF POWER SUPPLY. Measure voltage between VIU connector and chassis ground. Connector & Terminal (i72) No. 12 (+) — Chassis ground (-):	Is the measured value 9 to 16 V?	Go to step 7.	Go to step 11.
7	CHECK VOLTAGE OF POWER SUPPLY. Measure voltage between VIU connector and chassis ground. Connector & Terminal (i72) No. 16 (+) — Chassis ground (-):	Is the measured value 9 to 16 V?	Go to step 8.	Go to step 11.
8	CHECK VOLTAGE OF POWER SUPPLY. Measure voltage between VIU connector and chassis ground. Connector & Terminal (i72) No. 31 (+) — Chassis ground (-):	Is the measured value 9 to 16 V?	Go to step <b>9</b> .	Go to step 11.
9	CHECK VCU HARNESS CONNECTOR. Check if there is any poor contact in VCU har- ness connector.	Is there any poor contact in connector?	Go to step 10.	Repair poor con- tact in connector.
10	CHECK VCU. IMPORTANT Perform OnStar (R) setup procedure. Replace VCU. <ref. commu-<br="" os-5,="" to="" vehicle="">nication Unit VCU.&gt;</ref.>	Was the trouble repaired?	System is OK.	Go to step 11.
11	CHECK VIU HARNESS CONNECTOR. Check if there is any poor contact in VIU har- ness connector.	Is there any poor contact in connector?	Go to step 12.	Repair poor con- tact in connector.
12	CHECK VIU. IMPORTANT Perform OnStar (R) setup procedure. Replace VIU. <ref. interface<br="" os-4,="" to="" vehicle="">Unit VIU.&gt;</ref.>	Was the trouble repaired?	System is OK.	Go to step 1.

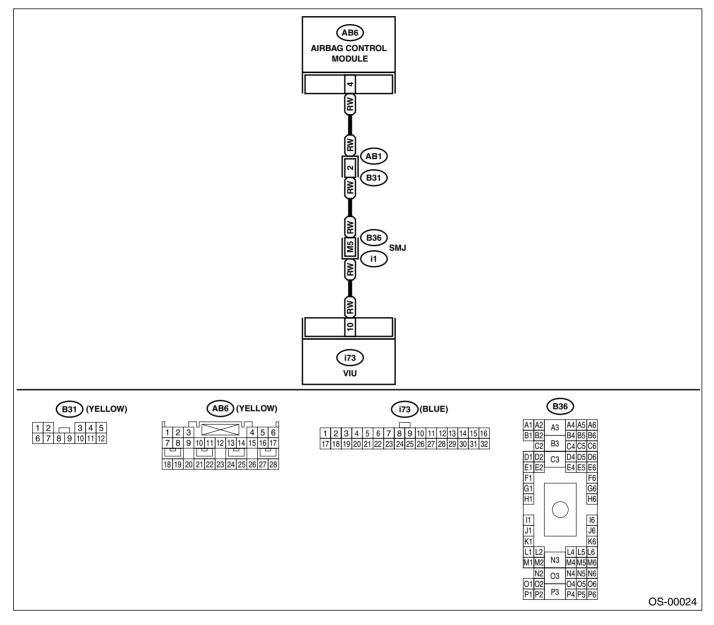
MEMO:

#### D: DTC 3 — SRS SIGNAL FAULT —

DIAGNOSIS:

Communication error between VIU and SRS. SYMPTOM:

- Red LED illuminates
- OnStar (R) does not operate.



#### DIAGNOSTICS CHART WITH TROUBLE CODE

	Step	Check	Yes	No
1	<ul> <li>CHECK HARNESS.</li> <li>1) Turn ignition switch to OFF.</li> <li>2) Disconnect VIU connector.</li> <li>3) Disconnect SRS connector.</li> <li>4) Measure resistance between VIU connector and SRS connector.</li> <li><i>Connector &amp; Terminal</i> (<i>i73</i>) No. 10 — (AB6) No. 4:</li> </ul>	Is the measured value less than the 0.5 $\Omega$ ?	Go to step 2.	Repair open har- ness.
2	CHECK HARNESS. Measure resistance between VIU connector and chassis ground. <i>Connector &amp; Terminal</i> ( <i>i73</i> ) No. 10 — Chassis ground:	Is the measured value more than 1 MΩ?	Go to step 3.	Repair ground short of harness.
3	<ul> <li>CHECK HARNESS.</li> <li>1) Turn ignition switch to ON.</li> <li>2) Measure voltage between VIU connector and chassis ground.</li> <li>Connector &amp; Terminal (i73) No. 10 (+) — Chassis ground (-):</li> </ul>	Is the measured value less than 1 V?	Go to step 4.	Repair battery short of harness.
4	<ul> <li>CHECK VOLTAGE OF POWER SUPPLY.</li> <li>1) Turn ignition switch to OFF.</li> <li>2) Connect VIU connector.</li> <li>3) Turn the ignition switch to ON.</li> <li>4) Measure resistance between SRS connector and chassis ground.</li> <li>Connector &amp; Terminal <ul> <li>(AB6) No. 4 (+) — Chassis ground (-):</li> </ul> </li> </ul>	Is the measured value 9 to 16 V?	Go to step 5.	Go to step <b>6</b> .
5	<ul> <li>CHECK AIRBAG CONTROL MODULE.</li> <li>1) Replace airbag control module. <ref. ab-18,="" airbag="" control="" module.="" to=""></ref.></li> <li>2) Run the system and confirm the result of repair.</li> </ul>	Was the trouble repaired?	System is OK.	Go to step <b>6</b> .
6	<ul> <li>CHECK VIU.</li> <li>REFERENCE:</li> <li>Perform OnStar (R) setup procedure.</li> <li>1) Replace VIU. <ref. interface="" os-4,="" to="" unit="" vehicle="" viu.=""></ref.></li> <li>2) Run the system and confirm the result of repair.</li> </ul>	Was the trouble repaired?	System is OK.	Go to step 1.

#### E: DTC 4 — GPS MICRO-PROCESSOR COMMUNICATION FAULT —

DIAGNOSIS:

Trouble of GPS micro-processor in VIU SYMPTOM:

- Red LED illuminates
- OnStar (R) does not operate.

Step	Check	Yes	No
<ol> <li>CHECK VIU. REFERENCE: Perform OnStar (R) setup procedure.</li> <li>1) Replace VIU. <ref. inter<br="" os-4,="" to="" vehicle="">face Unit VIU.&gt;</ref.></li> <li>2) Run the system and confirm the result of repair.</li> </ol>	Was the trouble repaired?	System is OK.	Repair trouble.

MEMO:

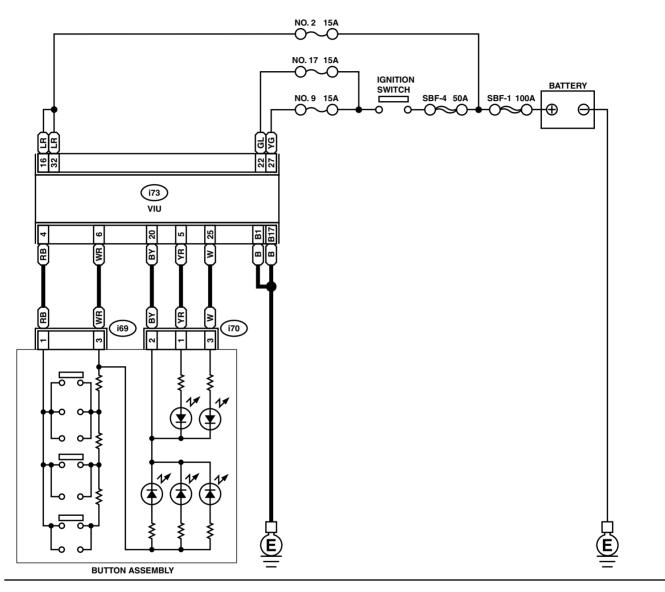
ONSTAR (R) (DIAGNOSTICS)

#### F: DTC 5 — BUTTON ASSEMBLY MALFUNCTION —

DIAGNOSIS:

Communication error of button assembly SYMPTOM:

- Red LED illuminates
- OnStar (R) does not operate.





#### DIAGNOSTICS CHART WITH TROUBLE CODE

<ul> <li>2) Disconnect</li> <li>3) Disconnect</li> <li>4) Measure retor and butt</li> <li>Connector &amp; (i73) No. 4</li> <li>(i73) No. 4</li> </ul>	n switch to OFF. VIU connector. button assembly connector. isistance between VIU connec- ion assembly connector. <b>a Terminal</b> <b>4</b> — ( <i>i69</i> ) No. 1: <b>5</b> — ( <i>i70</i> ) No. 2: <b>5</b> — ( <i>i70</i> ) No. 2: <b>5</b> — ( <i>i70</i> ) No. 3: <b>IESS.</b> tance between VIU connector ound. <b>a Terminal</b> <b>4</b> — Chassis ground: <b>5</b> — Chassis ground: <b>25</b> — Chassis ground: <b>26</b> — Chassis ground: <b>27</b> — Chassis ground: <b>28</b> — Chassis ground: <b>29</b> — Chassis ground: <b>3</b> — Chassis ground: <b>4</b> (+) — Chassis ground (-): <b>5</b> (+) — Chassis ground (-):	Is the measured value less than 0.5 Ω? Is the measured value more than 1 MΩ? Is the measured value less than 1 V?	Go to step 2. Go to step 2.	Repair open har- ness. Repair ground short of harness. Repair battery short of harness.
<ul> <li>2) Disconnect</li> <li>3) Disconnect</li> <li>4) Measure retor and butt</li> <li>Connector &amp; (i73) No. 4</li> <li>(i73) No. 4</li> </ul>	VIU connector. button assembly connector. isistance between VIU connec- ion assembly connector. <b>a Terminal</b> <b>4</b> — ( <i>i69</i> ) No. 1: <b>5</b> — ( <i>i70</i> ) No. 2: <b>5</b> — ( <i>i70</i> ) No. 2: <b>5</b> — ( <i>i70</i> ) No. 3: <b>IESS.</b> tance between VIU connector ound. <b>a Terminal</b> <b>4</b> — Chassis ground: <b>5</b> — Chassis ground: <b>5</b> — Chassis ground: <b>5</b> — Chassis ground: <b>1ESS.</b> nition switch to ON. oltage between VIU connector is ground. <b>a Terminal</b> <b>4</b> (+) — Chassis ground (-): <b>5</b> (+) — Chassis ground (-):	Is the measured value more than 1 MΩ? Is the measured value less		Repair ground short of harness.
<ul> <li>3) Disconnect</li> <li>4) Measure retor and butt</li> <li>Connector &amp;</li> <li>(i73) No. 4</li> <li>(i73) No. 2</li> <li>CHECK HARN</li> <li>Measure resist</li> <li>and chassis gr</li> <li>Connector &amp;</li> <li>(i73) No. 2</li> </ul>	button assembly connector. sistance between VIU connec- on assembly connector. <b>a Terminal</b> <b>4</b> — ( <i>i69</i> ) No. 1: <b>5</b> — ( <i>i70</i> ) No. 2: <b>5</b> — ( <i>i70</i> ) No. 2: <b>5</b> — ( <i>i70</i> ) No. 3: <b>IESS.</b> tance between VIU connector ound. <b>a Terminal</b> <b>4</b> — Chassis ground: <b>5</b> — Chassis ground: <b>5</b> — Chassis ground: <b>5</b> — Chassis ground: <b>5</b> — Chassis ground: <b>1 ESS.</b> nition switch to ON. oltage between VIU connector s ground. <b>a Terminal</b> <b>4</b> — Chassis ground: <b>5</b> — Chassi	than 1 MΩ? Is the measured value less		short of harness.
tor and butt Connector & (i73) No. 4 (i73) No. 2 (i73) No. 2 (i73) No. 2 (i73) No. 2 (i73) No. 2 2 CHECK HARM Measure resist and chassis gr Connector & (i73) No. 4 (i73) No. 2 (i73) No.	ton assembly connector. <b>a</b> Terminal 4 - (i69) No. 1: 5 - (i69) No. 2: 5 - (i70) No. 2: 5 - (i70) No. 1: 25 - (i70) No. 3: <b>IESS.</b> tance between VIU connector ound. <b>a</b> Terminal 4 - Chassis ground: 5 - Chassis ground: 20 - Chassis ground: 25 - Chassis ground: 15 - Chassis ground:	than 1 MΩ? Is the measured value less		short of harness.
Connector & (i73) No. 4 (i73) No. 2 (i73) No. 2 (i73) No. 2 (i73) No. 2 2 CHECK HARM Measure resist and chassis gr Connector & (i73) No. 4 (i73) No. 2 (i73) No. 2 (i73) No. 2 (i73) No. 2 (i73) No. 4 (i73) No. 4 (i73) No. 4 (i73) No. 4 (i73) No. 4 (i73) No. 2 (i73) No. 2	a Terminal         4 — (i69) No. 1:         5 — (i69) No. 3:         20 — (i70) No. 2:         5 — (i70) No. 1:         25 — (i70) No. 3:         IESS.         tance between VIU connector         ound.         4 — Chassis ground:         5 — Chassis ground:         20 — Chassis ground:         20 — Chassis ground:         20 — Chassis ground:         25 — Chassis ground:         26 — Chassis ground:         27 — Chassis ground:         28 — Chassis ground:         29 — Chassis ground:         20 — Chassis ground:         25 — Chassis ground:         26 — Chassis ground:         27 — Chassis ground:         28 — Chassis ground:         29 — Chassis ground:         20 — Chassis ground:         21 — Chassis ground:         22 — Chassis ground (-):         3 (+) — Chassis ground (-):         3 (+) — Chassis ground (-):	than 1 MΩ? Is the measured value less		short of harness.
(i73) No. 4 (i73) No. 4 (i73) No. 2 (i73) No. 2 (i73) No. 2 (i73) No. 2 2 CHECK HARM Measure resist and chassis gr <i>Connector &amp;</i> (i73) No. 4 (i73) No. 4 (i73) No. 2 (i73) No. 2 3 CHECK HARM 1) Turn the igr 2) Measure vo and chassis <i>Connector &amp;</i> (i73) No. 4 (i73) No. 4	$\begin{array}{l} 4 - (i69) \text{ No. 1:} \\ 5 - (i69) \text{ No. 3:} \\ 20 - (i70) \text{ No. 2:} \\ 5 - (i70) \text{ No. 1:} \\ 25 - (i70) \text{ No. 3:} \\ \hline 1 \text{ IESS.} \\ \hline 1 \text{ tance between VIU connector} \\ \hline 0 \text{ ound.} \\ \hline 3 \text{ Terminal} \\ \hline 4 - Chassis ground: \\ \hline 5 - Chassis ground: \\ \hline 5 - Chassis ground: \\ \hline 20 - Chassis ground: \\ \hline 25 - Chassis ground: \\ \hline 25 - Chassis ground: \\ \hline 1 \text{ IESS.} \\ \hline 1 \text{ nition switch to ON.} \\ \hline 1 \text{ less.} \\ \hline 1 \text{ nition switch to ON.} \\ \hline 1 \text{ less.} \\ \hline 1 \text{ sground.} \\ \hline 3 \text{ Terminal} \\ \hline 4 (+) - Chassis ground (-): \\ \hline 5 (+) - Chassis ground (-): \\ \hline 5 (+) - Chassis ground (-): \\ \hline \end{array}$	than 1 MΩ? Is the measured value less		short of harness.
(i73) No. 6 (i73) No. 2 (i73) No. 2 (i73) No. 2 (i73) No. 2 2 CHECK HARM Measure resist and chassis gr <i>Connector &amp;</i> (i73) No. 4 (i73) No. 2 (i73) No. 2 (i73) No. 2 (i73) No. 2 (i73) No. 4 (i73) No. 4 (i73) No. 4 (i73) No. 2 (i73) No. 2	<ul> <li>6 — (i69) No. 3:</li> <li>20 — (i70) No. 2:</li> <li>5 — (i70) No. 1:</li> <li>25 — (i70) No. 3:</li> <li>IESS.</li> <li>tance between VIU connector ound.</li> <li>a Terminal</li> <li>4 — Chassis ground:</li> <li>6 — Chassis ground:</li> <li>20 — Chassis ground:</li> <li>20 — Chassis ground:</li> <li>25 — Chassis ground:</li> <li>25 — Chassis ground:</li> <li>25 — Chassis ground:</li> <li>26 — Chassis ground:</li> <li>27 — Chassis ground:</li> <li>28 — Chassis ground:</li> <li>29 — Chassis ground:</li> <li>20 — Chassis ground:</li> <li>20 — Chassis ground:</li> <li>21 — Chassis ground:</li> <li>22 — Chassis ground:</li> <li>23 — Chassis ground:</li> <li>24 (+) — Chassis ground (-):</li> <li>25 (+) — Chassis ground (-):</li> </ul>	than 1 MΩ? Is the measured value less		short of harness.
(i73) No. 2 (i73) No. 2 (i73) No. 2 (i73) No. 2 2 CHECK HARM Measure resist and chassis gr <i>Connector &amp;</i> (i73) No. 4 (i73) No. 2 (i73) No. 2 (i73) No. 2 (i73) No. 2 (i73) No. 4 (i73) No. 4 (i73) No. 4 (i73) No. 4 (i73) No. 2 (i73) No. 2	20 — (i70) No. 2: 5 — (i70) No. 1: 25 — (i70) No. 3: IESS. tance between VIU connector ound. 4 — Chassis ground: 5 — Chassis ground: 20 — Chassis ground: 20 — Chassis ground: 25 — Chassis ground: 25 — Chassis ground: 25 — Chassis ground: 25 — Chassis ground: 26 — Chassis ground: 27 — Chassis ground: 28 — Chassis ground: 29 — Chassis ground: 20 — Chassis ground (-): 20 — Chassis ground (-): 20 — Chassis ground (-): 20 — Chassis ground (-):	than 1 MΩ? Is the measured value less		short of harness.
(i73) No. 4 (i73) No. 2 2 CHECK HARN Measure resist and chassis gr <i>Connector &amp;</i> (i73) No. 4 (i73) No. 4 (i73) No. 2 (i73) No. 2 (i73) No. 2 (i73) No. 4 (i73) No. 4 (i73) No. 4 (i73) No. 4 (i73) No. 4 (i73) No. 4 (i73) No. 2 (i73) No. 2 (i73) No. 2 (i73) No. 2 (i73) No. 2 (i73) No. 2	<ul> <li>5 — (i70) No. 1:</li> <li>25 — (i70) No. 3:</li> <li>IESS.</li> <li>tance between VIU connector ound.</li> <li>a Terminal</li> <li>4 — Chassis ground:</li> <li>6 — Chassis ground:</li> <li>20 — Chassis ground:</li> <li>25 — Chassis ground:</li> <li>25 — Chassis ground:</li> <li>26 — Chassis ground:</li> <li>27 — Chassis ground:</li> <li>28 Terminal</li> <li>29 — Chassis ground:</li> <li>29 — Chassis ground:</li> <li>20 — Chassis ground:</li> <li>20 — Chassis ground:</li> <li>21 — Chassis ground:</li> <li>22 — Chassis ground:</li> <li>23 — Chassis ground:</li> <li>24 — Chassis ground (-):</li> <li>25 (+) — Chassis ground (-):</li> </ul>	than 1 MΩ? Is the measured value less		short of harness.
(i73) No. 2 2 CHECK HARN Measure resist and chassis gr <i>Connector &amp;</i> (i73) No. 4 (i73) No. 4 (i73) No. 2 (i73) No. 2 (i73) No. 2 (i73) No. 2 (i73) No. 4 (i73) No. 4 (i73) No. 4 (i73) No. 4 (i73) No. 4 (i73) No. 2 (i73) No.	<ul> <li>25 — (i70) No. 3:</li> <li>IESS.</li> <li>tance between VIU connector ound.</li> <li>a Terminal</li> <li>4 — Chassis ground:</li> <li>5 — Chassis ground:</li> <li>20 — Chassis ground:</li> <li>25 — Chassis ground:</li> <li>25 — Chassis ground:</li> <li>25 — Chassis ground:</li> <li>26 — Chassis ground:</li> <li>27 — Chassis ground:</li> <li>28 — Chassis ground:</li> <li>29 — Chassis ground:</li> <li>29 — Chassis ground:</li> <li>20 — Chassis ground:</li> <li>20 — Chassis ground:</li> <li>21 — Chassis ground:</li> <li>22 — Chassis ground:</li> <li>23 — Chassis ground:</li> <li>24 (+) — Chassis ground (-):</li> <li>25 (+) — Chassis ground (-):</li> </ul>	than 1 MΩ? Is the measured value less		short of harness.
2         CHECK HARN Measure resist and chassis gr <i>Connector &amp;</i> ( <i>i73</i> ) No. 4 ( <i>i73</i> ) No. 4 ( <i>i73</i> ) No. 2 ( <i>i73</i> ) No. 2 ( <i>i73</i> ) No. 2 ( <i>i73</i> ) No. 2 3           3         CHECK HARN ( <i>i73</i> ) No. 2 ( <i>i73</i> ) No. 4 ( <i>i73</i> ) No. 4 ( <i>i73</i> ) No. 4 ( <i>i73</i> ) No. 2 ( <i>i73</i> ) No. 2 ( <i>i73</i> ) No. 2 ( <i>i73</i> ) No. 2 ( <i>i73</i> ) No. 2           4         CHECK VOLT	IESS. ance between VIU connector ound. Terminal 4 — Chassis ground: 5 — Chassis ground: 20 — Chassis ground: 25 — Chassis ground: 26 — Chassis ground (-): 27 — Chassis ground (-): 28 (+) — Chassis ground (-): 29 (+) — Chassis ground (-): 29 (+) — Chassis ground (-): 29 (+) — Chassis ground (-): 20 (-):	than 1 MΩ? Is the measured value less		short of harness.
Measure resist and chassis gr <i>Connector &amp;</i> ( <i>i73</i> ) No. 4 ( <i>i73</i> ) No. 2 ( <i>i73</i> ) No. 2 ( <i>i73</i> ) No. 2 ( <i>i73</i> ) No. 2 ( <i>i73</i> ) No. 2 3 CHECK HARM 1) Turn the igr 2) Measure vo and chassis <i>Connector &amp;</i> ( <i>i73</i> ) No. 4 ( <i>i73</i> ) No. 2 ( <i>i73</i> ) No. 2 ( <i>i73</i> ) No. 2 ( <i>i73</i> ) No. 2 ( <i>i73</i> ) No. 2	ance between VIU connector ound. <b>a Terminal</b> <b>4 — Chassis ground:</b> <b>5 — Chassis ground:</b> <b>1 ESS.</b> nition switch to ON. Ditage between VIU connector is ground. <b>a Terminal</b> <b>4 (+) — Chassis ground (-):</b> <b>5 (+) — Chassis ground (-):</b>	than 1 MΩ? Is the measured value less		short of harness.
and chassis gr <i>Connector &amp;</i> ( <i>i</i> 73) No. 4 ( <i>i</i> 73) No. 2 ( <i>i</i> 73) No. 2 ( <i>i</i> 73) No. 2 ( <i>i</i> 73) No. 2 ( <i>i</i> 73) No. 2 3 CHECK HARM 1) Turn the igr 2) Measure vo and chassis <i>Connector &amp;</i> ( <i>i</i> 73) No. 4 ( <i>i</i> 73) No. 2 ( <i>i</i> 73	ound. <b>a</b> Terminal <b>4</b> — Chassis ground: <b>5</b> — Chassis ground: <b>5</b> — Chassis ground: <b>5</b> — Chassis ground: <b>25</b> — Chassis ground: <b>1ESS.</b> Inition switch to ON. Ditage between VIU connector <b>s</b> ground. <b>a</b> Terminal <b>4</b> (+) — Chassis ground (-): <b>5</b> (+) — Chassis ground (-):	Is the measured value less	Go to step <b>4</b> .	Repair battery
Connector & (i73) No. 4 (i73) No. 4 (i73) No. 2 (i73) No. 2 (i73) No. 2 3 CHECK HARM 1) Turn the igr 2) Measure vo and chassis Connector & (i73) No. 4 (i73) No. 2 (i73) (i73) No. 2 (i73) No. 2 (i73) No. 2 (i73) No. 2 (i73)	<ul> <li>Terminal</li> <li>4 — Chassis ground:</li> <li>5 — Chassis ground:</li> <li>20 — Chassis ground:</li> <li>25 — Chassis ground:</li> <li>25 — Chassis ground:</li> <li>25 — Chassis ground:</li> <li>26 — Chassis ground:</li> <li>27 — Chassis ground:</li> <li>28 — Chassis ground (-):</li> <li>29 — Chassis ground (-):</li> <li>29 (+) — Chassis ground (-):</li> </ul>		Go to step 4.	
(i73) No. 4 (i73) No. 4 (i73) No. 2 (i73) No. 2 (i73) No. 2 3 CHECK HARM 1) Turn the igr 2) Measure vo and chassis <i>Connector &amp;</i> (i73) No. 4 (i73) No. 4 (i73) No. 5 (i73) No. 2 (i73) No. 2 (i73) No. 2	<ul> <li>4 — Chassis ground:</li> <li>5 — Chassis ground:</li> <li>20 — Chassis ground:</li> <li>5 — Chassis ground:</li> <li>25 — Chassis ground:</li> <li>IESS.</li> <li>nition switch to ON.</li> <li>bltage between VIU connector</li> <li>s ground.</li> <li>a Terminal</li> <li>4 (+) — Chassis ground (-):</li> <li>5 (+) — Chassis ground (-):</li> </ul>		Go to step 4.	
(i73) No. 6 (i73) No. 2 (i73) No. 2 (i73) No. 2 3 CHECK HARM 1) Turn the igr 2) Measure vo and chassis <i>Connector &amp;</i> (i73) No. 4 (i73) No. 2 (i73) No. 2 (i73) No. 2 (i73) No. 2	<ul> <li>6 — Chassis ground:</li> <li>20 — Chassis ground:</li> <li>5 — Chassis ground:</li> <li>25 — Chassis ground:</li> <li>25 — Chassis ground:</li> <li>25 — Chassis ground:</li> <li>26 — Chassis ground:</li> <li>27 — Chassis ground (-):</li> <li>26 (+) — Chassis ground (-):</li> </ul>		Go to step 4.	
(i73) No. 2 (i73) No. 2 (i73) No. 2 3 CHECK HARN 1) Turn the igr 2) Measure vo and chassis Connector & (i73) No. 4 (i73) No. 2 (i73) No. 2 (i73) No. 2 (i73) No. 2 (i73) No. 2	<ul> <li>20 — Chassis ground:</li> <li>5 — Chassis ground:</li> <li>25 — Chassis ground:</li> <li>25 — Chassis ground:</li> <li>26 — Chassis ground:</li> <li>27 — Chassis ground (-):</li> <li>26 (+) — Chassis ground (-):</li> </ul>		Go to step 4.	
(i73) No. 2 3 CHECK HARM 1) Turn the igr 2) Measure vo and chassis <i>Connector &amp;</i> (i73) No. 4 (i73) No. 2 (i73) No.	25 — Chassis ground: IESS. hition switch to ON. bltage between VIU connector s ground. 2 Terminal 4 (+) — Chassis ground (-): 5 (+) — Chassis ground (-):		Go to step 4.	
3         CHECK HARN           1)         Turn the igr           2)         Measure vc           and chassis         Connector &           (i73)         No. 4	IESS.         nition switch to ON.         bltage between VIU connector         s ground.         & Terminal         4 (+) — Chassis ground (-):         6 (+) — Chassis ground (-):		Go to step 4.	
1) Turn the igr 2) Measure vo and chassis <i>Connector &amp;</i> ( <i>i73</i> ) No. 4 ( <i>i73</i> ) No. 2 ( <i>i73</i> ) No. 2 ( <i>i73</i> ) No. 2 ( <i>i73</i> ) No. 2 ( <i>i73</i> ) No. 2	hition switch to ON. bltage between VIU connector s ground. <b>a Terminal</b> <b>4 (+) — Chassis ground (-):</b> <b>5 (+) — Chassis ground (-):</b>		Go to step <b>4</b> .	
2) Measure vo and chassis <i>Connector &amp;</i> ( <i>i73</i> ) No. 4 ( <i>i73</i> ) No. 2 ( <i>i73</i> ) No. 2 ( <i>i73</i> ) No. 2 ( <i>i73</i> ) No. 2 ( <i>i73</i> ) No. 2	bltage between VIU connector s ground. & Terminal 4 (+) — Chassis ground (–): 5 (+) — Chassis ground (–):	than 1 V?		short of harness.
and chassis <i>Connector &amp;</i> (i73) No. 4 (i73) No. 2 (i73) No. 2 (i73) No. 2 (i73) No. 2 (i73) No. 2 (i73) No. 2	s ground. 2 Terminal 4 (+) — Chassis ground (–): 6 (+) — Chassis ground (–):			
Connector & (i73) No. 4 (i73) No. 2 (i73) No. 2 (i73) No. 2 (i73) No. 2 4 CHECK VOLT	λ Terminal 4 (+) — Chassis ground (–): 6 (+) — Chassis ground (–):			
(i73) No. 4 (i73) No. 4 (i73) No. 2 (i73) No. 5 (i73) No. 2 (i73) No. 2 4 CHECK VOLT	4 (+) — Chassis ground (–): 6 (+)  — Chassis ground (–):			
(i73) No. 6 (i73) No. 2 (i73) No. 2 (i73) No. 2 (i73) No. 2 4 CHECK VOLT	6 (+) — Chassis ground (–):			
(i73) No. 2 (i73) No. 2 (i73) No. 2 4 CHECK VOLT				
(i73) No. 5 (i73) No. 2 4 CHECK VOLT	20 (+) — Chassis ground (–):			
( <i>i73</i> ) No. 2 4 CHECK VOLT	5 (+) — Chassis ground (–):			
4 CHECK VOLT	25 (+) — Chassis ground (–):			
1) Turn ignition	AGE OF POWER SUPPLY.	Is the measured value within	Go to step 5.	REFERENCE:
	n switch to OFF.	the 10 to 13 V?		Perform OnStar
<ol><li>Connect VI</li></ol>				(R) setup proce-
	nition switch to ON.			dure.
	bltage between button assembly			Replace VIU.
	and chassis ground.			<ref. os-4,<="" td="" to=""></ref.>
Connector &	3 (+) — Chassis ground (–):			Vehicle Interface Unit VIU.>
	GENCY BUTTON.	le the measured value 1.5 KO	Co to oton 6	Replace button
	ance between terminals of but-	Is the measured value 1.5 K $\Omega$ by pressing emergency but-	Go to step 6.	assembly. <ref. td="" to<=""></ref.>
ton assembly.	ance between terminals of but-	ton?		OS-6, Button
Terminal				Assembly.>
No. 1 — N	lo. 3:			
6 OnStar (R) CH	IECK BUTTON.	Is the measured value 3.0 K $\Omega$	Go to step 7.	Replace button
	ance between terminals of but-	by pressing OnStar (R) button?		assembly. <ref. td="" to<=""></ref.>
ton assembly.				OS-6, Button
Terminal				Assembly.>
No. 1 — N			<u> </u>	
	ANSWER/END BUTTON.		Go to step 8.	Replace button
	ance between terminals of but-	by pressing call answer/end		assembly. <ref. td="" to<=""></ref.>
ton assembly.		button?		OS-6, Button
Terminal	10. 2:			Assembly.>
No. 1 — N				
8 System check	c n and confirm the result of	Was the trouble repaired?	System is OK.	Go to step 9.
Run the system repair.				

#### DIAGNOSTICS CHART WITH TROUBLE CODE

ONSTAR (R) (DIAGNOSTICS)

	Step	Check	Yes	No
9	<ul> <li>CHECK BUTTON ASSEMBLY.</li> <li>1) Replace button assembly. <ref. os-6,<br="" to="">Button Assembly.&gt;</ref.></li> <li>2) Run the system and confirm the result of repair.</li> </ul>	Was the trouble repaired?	System is OK.	Go to step 10.
10	<ul> <li>CHECK VIU. REFERENCE: Perform OnStar (R) setup procedure.</li> <li>1) Replace VIU. <ref. interface="" os-4,="" to="" unit="" vehicle="" viu.=""></ref.></li> <li>2) Run the system and confirm the result of repair.</li> </ul>	Was the trouble repaired?	System is OK.	Go to step 1.

# 11. Diagnosis for Each Symptom

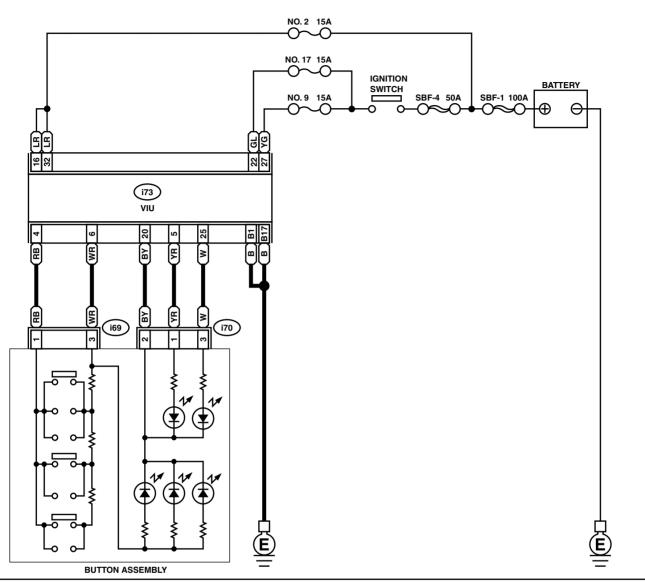
#### A: LIST

Content of diagnosis	Index No.		
One or more OnStar (R) buttons do not operate.	<ref. (r)="" buttons="" do="" more="" not="" one="" onstar="" oper-<="" or="" os-34,="" td="" to=""></ref.>		
	ATE., Diagnosis for Each Symptom.>		
Contact to OnStar (R) call center is impossible.	<ref. (r)="" call="" center="" contact="" impossi-<="" is="" onstar="" os-38,="" td="" to=""></ref.>		
	BLE., Diagnosis for Each Symptom.>		
OnStar (R) call center cannot setup OnStar (R) system.	<ref. (r)="" call="" cannot="" center="" diagnosis="" each="" for="" onstar="" os-42,="" setup="" symptom.="" system.,="" to=""></ref.>		
OnStar (R) audio does not operate.	<ref. (r)="" audio="" diagnosis="" does="" each="" for="" not="" onstar="" operate.,="" os-44,="" symptom.="" to=""></ref.>		
OnStar (R) button LED does not operate.	<ref. (r)="" diagnosis="" does="" each="" for="" led="" not="" onstar="" operate.,="" os-48,="" symptom.="" to=""></ref.>		

ONSTAR (R) (DIAGNOSTICS)

#### **B: ONE OR MORE ONSTAR (R) BUTTONS DO NOT OPERATE.**

DEFINITION: OnStar (R) does not operate by pressing button.





OS-00025

#### DIAGNOSIS FOR EACH SYMPTOM

	Step	Check	Yes	No
1	<ul> <li>CHECK BUTTON ASSEMBLY.</li> <li>IMPORTANT</li> <li>Before pressing button, call OnStar (R) call center to notify the inspection.</li> <li>1) Turn ignition switch to ON (do not let the engine run).</li> <li>2) Press each OnStar (R) button.</li> </ul>	Does the LED illuminate in green?	Go to step 3.	Go to step 2.
2	CHECK BUTTON.	Does any button malfunction intermittently?	Go to step 7.	Poor contact of connection/Repair poor contact.
3	<ol> <li>CHECK HARNESS.</li> <li>1) Turn ignition switch to OFF.</li> <li>2) Disconnect VIU connector.</li> <li>3) Disconnect button assembly connector.</li> <li>4) Measure resistance between VIU connector and button assembly connector.</li> <li>Connector &amp; Terminal         <ul> <li>(i73) No. 4 — (i69) No. 1:</li> <li>(i73) No. 6 — (i69) No. 3:</li> </ul> </li> </ol>	Is the measured value less than 0.5 Ω?	Go to step 4.	Repair open har- ness.
4	CHECK HARNESS. Measure resistance between VIU connector and chassis ground. <i>Connector &amp; Terminal</i> ( <i>i</i> 73) No. 4 (+) — Chassis ground (–): ( <i>i</i> 73) No. 6 (+) — Chassis ground (–):	Is the measured value more than 1 MΩ?	Go to step 5.	Repair ground short of harness.
5	<ol> <li>CHECK HARNESS.</li> <li>1) Turn the ignition switch to ON.</li> <li>2) Measure voltage between VIU connector and chassis ground.</li> <li>Connector &amp; Terminal         <ul> <li>(i73) No. 4 (+) — Chassis ground (-):</li> <li>(i73) No. 6 (+) — Chassis ground (-):</li> </ul> </li> </ol>	Is the measured value less than 1 V?	Go to step 6.	Repair battery short of harness.
6	<ol> <li>CHECK VOLTAGE OF POWER SUPPLY.</li> <li>1) Turn ignition switch to OFF.</li> <li>2) Connect VIU connector.</li> <li>3) Turn the ignition switch to ON.</li> <li>4) Measure voltage between button assembly connector and chassis ground.</li> <li>Connector &amp; Terminal         <ul> <li>(i69) No. 3 (+) — Chassis ground (-):</li> </ul> </li> </ol>	Is the measured value within 9 to 16 V?	Go to step 7.	REFERENCE: Perform OnStar (R) setup proce- dure. Replace VIU. <ref. os-4,<br="" to="">Vehicle Interface Unit VIU.&gt;</ref.>
7	CHECK EMERGENCY BUTTON. Measure resistance between terminals of but- ton assembly. <i>Terminal</i> <i>No. 1 —No. 3:</i>	Is the measured value 3.0 KΩ by pressing emergency but- ton?	Go to step 8.	Replace button assembly. <ref. to<br="">OS-6, Button Assembly.&gt;</ref.>
8	CHECK OnStar (R) BUTTON. Measure resistance between terminals of but- ton assembly. <i>Terminal</i> <i>No. 1 — No. 3:</i>	Is the measured value 13.0 K $\Omega$ by pressing OnStar (R) button?	Go to step 9.	Replace button assembly. <ref. to<br="">OS-6, Button Assembly.&gt;</ref.>
9	CHECK CALL ANSWER/END BUTTON. Measure resistance between terminals of but- ton assembly. <i>Terminal</i> <i>No. 1 — No. 3:</i>	Is the measured value 470 Ω by pressing call answer/end button?	Go to step <b>10</b> .	Replace button assembly. <ref. to<br="">OS-6, Button Assembly.&gt;</ref.>
10	CHECK POOR CONNECTION OF BUTTON ASSEMBL. Check, if there is any poor contact in harness connector of button assembly.	Was the condition confirmed or repaired?	Go to step <b>12</b> .	Go to step 11.

#### DIAGNOSIS FOR EACH SYMPTOM

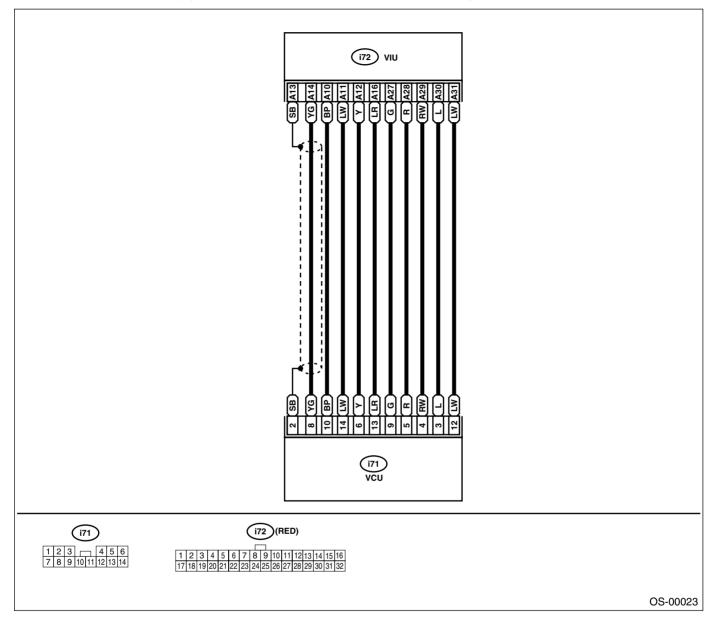
ONSTAR (R) (DIAGNOSTICS)

	Step	Check	Yes	No
11	CHECK IF THERE IS ANY POOR CONTACT IN VIU HARNESS CONNECTOR.	Was the condition confirmed or repaired?	Go to step 12.	Go to step 13.
12	CHECK SYSTEM. Run the system and confirm the result of repair.	Was the trouble repaired?	System is OK.	Go to step 13.
13	<ul> <li>CHECK BUTTON ASSEMBLY.</li> <li>1) Replace button assembly. <ref. os-6,<br="" to="">Button Assembly.&gt;</ref.></li> <li>2) Run the system and confirm the result of repair.</li> </ul>	Was the trouble repaired?	System is OK.	Go to step 14.
14	<ul> <li>CHECK VIU.</li> <li>REFERENCE:</li> <li>Perform OnStar (R) setup procedure.</li> <li>1) Replace VIU. <ref. interface="" os-4,="" to="" unit="" vehicle="" viu.=""></ref.></li> <li>2) Run the system and confirm the result of repair.</li> </ul>	Was the trouble repaired?	System is OK.	Go to step 1.

MEMO:

#### C: CONTACT TO ONSTAR (R) CALL CENTER IS IMPOSSIBLE.

DEFINITION: When OnStar (R) call button is pressed, audio prompt "Connected to OnStar (R)" or "Impossible to connect to OnStar (R)" will be announced and connection is not performed.



	04	Ohaala	N	Na
_	Step	Check	Yes	No
1	CHECK FOR CONNECTION TO OnStar (R) Call Center.	Is connection to OnStar (R) call center completed?	Repair temporary poor connection of	Go to step 2.
	<ol> <li>Turn ignition to ON (do not let the engine run).</li> <li>Press OnStar (R) button.</li> </ol>		wiring.	
0			Cata star 2	Cata star C
2	<ul> <li>CHECK OnStar (R) SERIAL DATA RETURN CIRCUIT.</li> <li>1) Turn ignition switch to OFF.</li> <li>2) Disconnect connection from vehicle communication unit (VCU).</li> <li>3) Turn ignition switch to ON (do not let the engine run).</li> <li>4) Measure resistance between OnStar (R) serial data return circuit and ground.</li> <li>Connector &amp; Terminal <ul> <li>(i71) No. 9 (+) — Chassis ground (-):</li> </ul> </li> </ul>	Is the measured value approx. 5 V?	Go to step 3.	Go to step 6.
2	CHECK OnStar (R) SERIAL DATA (-) CIR-	Is the measured value approx	Go to stop 4	Go to stop <b>0</b>
3	CHECK ONStar (R) SERIAL DATA (-) CIR- CUIT. Measure voltage between OnStar (R) serial data (-) circuit and ground. <i>Connector &amp; Terminal</i> ( <i>i71</i> ) No. 5 (+) — Chassis ground (-):	Is the measured value approx. 0.17 V?	Go to step 4.	Go to step 9.
4	CHECK CIRCUIT BETWEEN OnStar (R) SE-	Is the measured value approx.	Go to step 5.	Go to step 15.
	RIAL DATA (-) CIRCUIT AND TRANSCEIV- ER LOW REFEFERENCE CIRCUIT. Measure voltage between OnStar (R) serial data (-) circuit and transceiver low reference circuit. Connector & Terminal ( <i>i71</i> ) No. 5 (+) ( <i>i71</i> ) No. 3 (-):	5 V?		
5	CHECK OnStar (R) SERIAL DATA (+) CIR- CUIT. Measure voltage between OnStar (R) serial data (+) circuit and ground. Connector & Terminal (i71) No. 4 (+) — Chassis ground (-):	Is the measured value approx. 0.17 V?	Go to step 18.	Go to step <b>12.</b>
6	<ul> <li>CHECK SERIAL DATA RETURN HARNESS.</li> <li>1) Turn ignition switch to OFF.</li> <li>2) Disconnect VIU connector.</li> <li>3) Disconnect VCU connector.</li> <li>4) Measure resistance between VIU connector and VCU connector.</li> <li>Connector &amp; Terminal <ul> <li>(i72) No. 27 — (i71) No. 9:</li> </ul> </li> </ul>	Is the measured value less than the 0.5 $\Omega?$	Go to step 7.	Repair open har- ness.
7	CHECK SERIAL DATA RETURN HARNESS. Measure resistance between VIU connector and chassis ground. Connector & Terminal (i72) No. 27 — Chassis ground:	Is the measured value more than 1 MΩ?	Go to step 8.	Repair ground short of harness.
8	<ul> <li>CHECK SERIAL DATA RETURN HARNESS.</li> <li>1) Turn the ignition switch to ON.</li> <li>2) Measure voltage between VIU connector and chassis ground.</li> <li>Connector &amp; Terminal         <ul> <li>(i72) No. 27 (+) — Chassis ground (-):</li> </ul> </li> </ul>	Is the measured value less than 1 V?	Go to step <b>19.</b>	Repair battery short of harness.

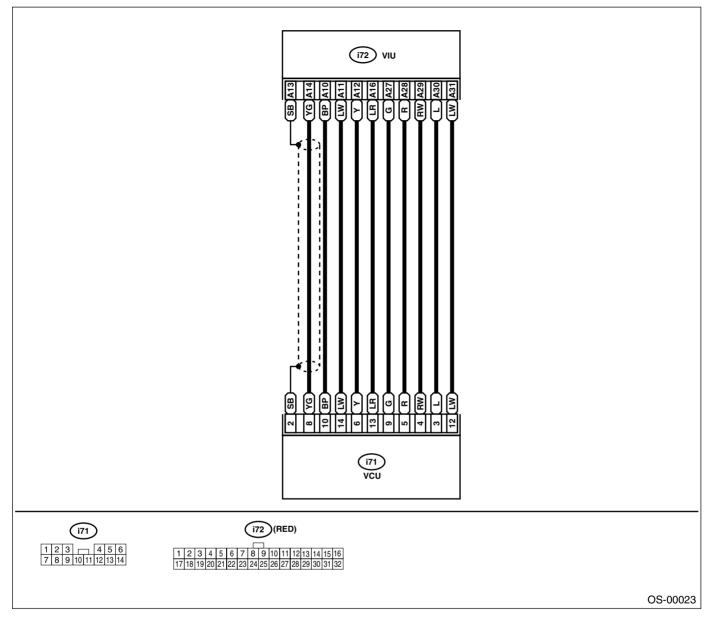
ONSTAR (R) (DIAGNOSTICS)

	Step	Check	Yes	No
9	CHECK HARNESS (–).	Is the measured value less	Go to step 10.	Repair open har-
	<ol> <li>Turn ignition switch to OFF.</li> </ol>	than 0.5 Ω?		ness.
	2) Disconnect VIU connector.			
	3) Disconnect VCU connector.			
	4) Measure resistance between VIU connec-			
	, tor and VCU connector.			
	Connector & Terminal			
	(i72) No. 28 — (i71) No. 5:			
10	CHECK HARNESS (–).	Is the measured value more	Go to step 11.	Repair ground
	Measure resistance between VIU connector	than 1 MΩ?		short of harness.
	and chassis ground.			
	Connector & Terminal			
	(i72) No. 28 — Chassis ground:			
11	CHECK HARNESS (–).	Is the measurede value less	Go to step 19.	Repair battery
l	<ol> <li>Turn the ignition switch to ON.</li> </ol>	than 1 V?		short of harness.
l	<ol><li>Measure voltage between VIU connector</li></ol>			
	and chassis ground.			
	Connector & Terminal			
	(i72) No. 28 (+) — Chassis ground (–):			
12	CHECK SERIAL DATA (+) HARNESS.	Is the measured value less	Go to step 13.	Repair open har-
l	<ol> <li>Turn ignition switch to OFF.</li> </ol>	than 0.5 Ω?		ness.
	<ol><li>Disconnect VIU connector.</li></ol>			
	<ol><li>Disconnect VCU connector.</li></ol>			
	4) Measure resistance between VIU connec-			
	tor and VCU connector.			
	Connector & Terminal			
	(i72) No. 29 — (i71) No. 4:			
13	CHECK SERIAL DATA (+) HARNESS.	Is the measured value more	Go to step 14.	Repair ground
	Measure resistance between VIU connector	than 1 MΩ?		short of harness.
	and chassis ground.			
	Connector & Terminal			
	(i72) No. 29 — Chassis ground:			
14	CHECK SERIAL DATA (+) HARNESS.	Is the measurede value less	Go to step 19.	Repair battery
	<ol> <li>Turn the ignition switch to ON.</li> </ol>	than 1 V?		short of harness.
	<ol><li>Measure voltage between VIU connector</li></ol>			
	and chassis ground.			
	Connector & Terminal			
	(i72) No. 29 (+) — Chassis ground (–):			
15	CHECK TRANSCEIVER LOW REFERENCE	Is the measured value less	Go to step 16.	Repair open har-
	HARNESS.	than 0.5 Ω?		ness.
	<ol> <li>Turn ignition switch to OFF.</li> </ol>			
	<ol><li>Disconnect VIU connector.</li></ol>			
	<ol><li>Disconnect VCU connector.</li></ol>			
	4) Measure resistance between VIU connec-			
	tor and VCU connector.			
	Connector & Terminal			
	(i72) No. 30 — (i71) No. 3:			
16	CHECK TRANSCEIVER LOW REFERENCE	Is the measured value more	Go to step 17.	Repair ground
	HARNESS.	than 1 MΩ?		short of harness.
	Measure resistance between VIU connector			
	and chassis ground.			
	Connector & Terminal			
	(i72) No. 30 — Chassis ground:			

	Step	Check	Yes	No
17	<ul> <li>CHECK TRANSEAVER LOW REFERENCE HARNESS.</li> <li>1) Turn ignition switch to ON.</li> <li>2) Measure voltage between VIU connector and chassis ground.</li> <li>Connector &amp; Terminal (i72) No. 30 (+) — Chassis ground (-):</li> </ul>	Is the measurede value less than 1 V?	Go to step 19.	Repair battery short of harness.
18	CHECK VCU HARNESS CONNECTOR. Check if there is any poor contact in VCU har- ness connector.	Is there any poor contact in connector?	Go to step 20.	Repair poor con- tact in connector.
19	CHECK VIU HARNESS CONNECTOR. Check if there is any poor contact in VIU har- ness connector.	Is there any poor contact in connector?	Go to step 21.	Repair poor con- tact in connector.
20	CHECK VCU. IMPORTANT Perform OnStar (R) setup procedure. Replace VCU. <ref. commu-<br="" os-5,="" to="" vehicle="">nication Unit VCU.&gt;</ref.>		Go to step 22.	
21	CHECK VIU. IMPORTANT Perform OnStar (R) setup procedure. Replace VIU. <ref. interface<br="" os-4,="" to="" vehicle="">Unit VIU.&gt;</ref.>		Go to step 22.	
22	<b>CHECK SYSTEM.</b> Run the system and confirm the result of repair.	Was the trouble repaired?	System is OK.	Go to step 1.

# D: ONSTAR (R) CALL CENTER CANNOT SETUP ONSTAR (R) SYSTEM.

DEFINITION: OnStar (R) Operator notifies to receiver that the required setup of the OnStar (R) system is impossible.

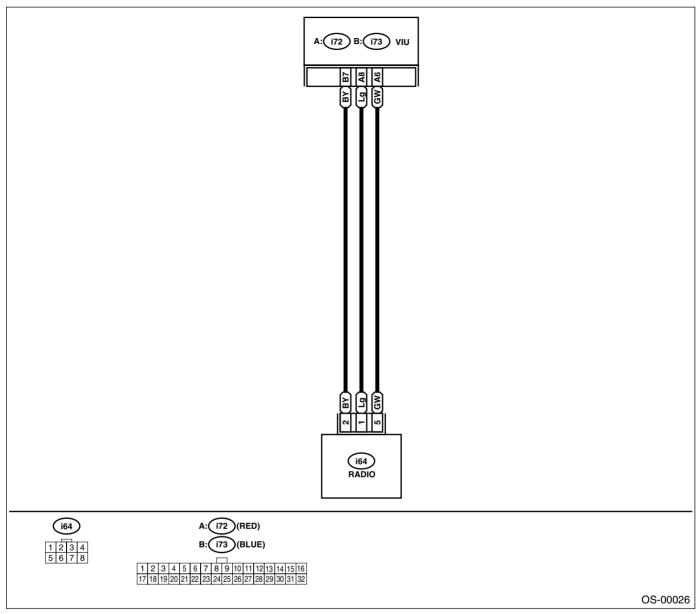


	Step	Check	Yes	No
2	<ul> <li>CHECK IGNITION ON SIGNAL CIRCUIT.         <ol> <li>Turn ignition switch to OFF.</li> <li>Disconnect connection from VCU.</li> <li>Turn ignition switch to ON (do not let the engine run).</li> </ol> </li> <li>Measure voltage between ignition ON signal circuit and ground.         <ol> <li>Connector &amp; Terminal (i72) No. 31 (+) — Chassis ground (-):</li> <li>CHECK IGNITION ON SIGNAL HARNESS.</li> <li>Turn ignition switch to OFF.</li> <li>Disconnect VIU connector.</li> <li>Disconnect VCU connector.</li> </ol> </li> </ul>	Is the measured value 9 to 16 V? Is the measured value less than 0.5 $\Omega$ ?	Go to step <b>4</b> . Go to step <b>3</b> .	Go to step <b>2</b> . Repair open har- ness.
	<ul> <li>4) Measure resistance between VIU connector and VCU connector.</li> <li><i>Connector &amp; Terminal</i> (<i>i72</i>) No. 31 — (<i>i71</i>) No. 12:</li> </ul>			
3	CHECK IGNITION ON SIGNAL HARNESS. Measure resistance between VIU connector and chassis ground. Connector & Terminal (i72) No. 31 — Chassis ground:	Is the measured value more than 1 M $\Omega$ ?	Go to step 5.	Repair ground short of harness.
4	CHECK VCU HARNESS CONNECTOR. Check if there is any poor contact in VCU har- ness connector.	Is there any poor contact in connector?	Go to step <b>6.</b>	Repair poor con- tact in connector.
5	CHECK VIU HARNESS CONNECTOR. Check if there is any poor contact in VIU har- ness connector.	Is there any poor contact in connector?	Go to step 7.	Repair poor con- tact in connector.
6	CHECK VCU. IMPORTANT Perform OnStar (R) setup procedure. Replace VCU. <ref. commu-<br="" os-5,="" to="" vehicle="">nication Unit VCU.&gt;</ref.>		Go to step 8.	_
7	CHECK VIU. IMPORTANT Perform OnStar (R) setup procedure. Replace VIU. <ref. interface<br="" os-4,="" to="" vehicle="">Unit VIU.&gt;</ref.>		Go to step 8.	_
8	<b>CHECK SYSTEM.</b> Run the system and confirm the result of repair.	Was the trouble repaired?	System is OK.	Go to step 1.

ONSTAR (R) (DIAGNOSTICS)

#### E: ONSTAR (R) AUDIO DOES NOT OPERATE.

DEFINITION: Audio system display does not change into "Call", even if all buttons are pressed.



	Step	Check	Yes	No
1	<ul> <li>CHECK LED.</li> <li>IMPORTANT</li> <li>Before pressing button, call OnStar (R) call center to notify the inspection.</li> <li>1) Turn ignition to ON (do not let the engine run).</li> </ul>	Does LED illuminate, when all of buttons are pressed one to another?	Go to step 2.	Perform inspec- tion of One or more OnStar (R) button does not operate. <ref. to<br="">OS-34, ONE OR MORE OnStar (R) BUTTONS DO NOT OPERATE., Diagnosis for Each Symptom.&gt;</ref.>
2	<ol> <li>CHECK AUDIO SYSTEM</li> <li>1) Turn ignition to ON (do not let the engine run).</li> <li>2) Turn radio ON.</li> <li>3) Set the volume to comfortable level.</li> <li>4) Activate all bottons</li> </ol>	Does the audio system display "Call"?	Go to step 11.	Go to step <b>3</b> .
3	<ol> <li>CHECK HARNESS.</li> <li>1) Turn ignition switch to OFF.</li> <li>2) Disconnect VIU connector.</li> <li>3) Disconnect audio connector.</li> <li>4) Measure resistance between VIU connector and audio connector.</li> <li>Connector &amp; Terminal         <ul> <li>(i72) No. 6 — (i69) No. 5:</li> <li>(i72) No. 8 — (i69) No. 1:</li> <li>(i73) No. 7 — (i69) No. 2:</li> </ul> </li> </ol>	Is the measured value less than 0.5 Ω?	Go to step 4.	Repair open har- ness.
4	CHECK HARNESS. Measure resistance between VIU connector and chassis ground. Connector & Terminal (i72) No. 6 — Chassis ground: (i72) No. 8 — Chassis ground: (i73) No. 7 — Chassis ground:	Is the measured value more than 1 MΩ?	Go to step <b>5</b> .	Repair ground short of harness.
5	<ol> <li>CHECK HARNESS.</li> <li>1) Turn the ignition switch to ON.</li> <li>2) Measure voltage between VIU connector and chassis ground.</li> <li>Connector &amp; Terminal         <ul> <li>(i72) No. 6 (+) — Chassis ground (-):</li> <li>(i72) No. 8 (+) — Chassis ground (-):</li> <li>(i73) No. 7 (+) — Chassis ground (-):</li> </ul> </li> </ol>	Is the measurede value less than 1 V?	Go to step <b>6</b> .	Repair battery short of harness.
6	CHECK VIU HARNESS CONNECTOR. Check if there is any poor contact in VIU har- ness connector.	Is there any poor contact in connector?	Go to step 7.	Repair connector.
7	CHECK VIU. IMPORTANT Perform OnStar (R) setup procedure. Replace vehicle interface unit (VIU). <ref. to<br="">OS-4, Vehicle Interface Unit VIU.&gt;</ref.>		Go to step <b>8.</b>	-
8	<b>CHECK SYSTEM.</b> Run the system and confirm the result of repair.	Was the trouble repaired?	System is OK.	Go to step 8.
9	CHECK AUDIO HARNESS CONNECTOR. Check if there is any poor contact in audio har- ness connector.	Is there any poor contact in connector?	Go to step 9.	Repair connector.
10	CHECK AUDIO. Replace audio. <ref. et-3,="" radio="" system.="" to=""></ref.>		Go to step 11.	—

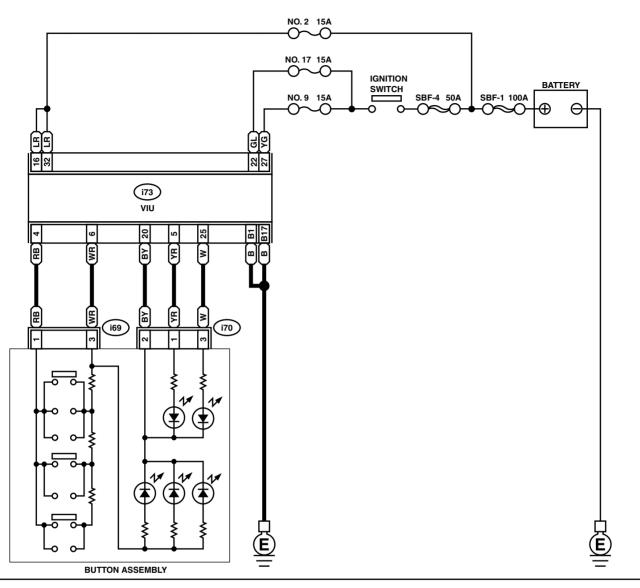
#### ONSTAR (R) (DIAGNOSTICS)

	Step	Check	Yes	No
11	<b>CHECK SYSTEM.</b> Run the system and confirm the result of repair.	Was the trouble repaired?	System is OK.	Go to step 1.

MEMO:

#### F: ONSTAR (R) LED DOES NOT OPERATE.

DEFINITION: When ignition switch is turned to ON, OnStar (R) green LED does not illuminate.





OS-00025

	Step	Check	Yes	No
1	CHECK LED SIGNAL.	Is the measured value within 7	Go to step 10.	Go to step 2.
	<ol> <li>Turn ignition switch to OFF.</li> <li>Disconnect connection from button assem-</li> </ol>	to 9 V?		
	bly connector.			
	3) Turn ignition switch to ON (do not let the			
	engine run).			
	<ul><li>4) Measure voltage of key pad green LED sig-</li></ul>			
	nal circuit.			
	Connector & Terminal			
	(i73) No. 5 (+) — Chassis ground:			
	(i73) No. 25 (+) — Chassis ground (–):			
2	CHECK HARNESS.	Is the measured value less	Go to step 2.	Repair open har-
	<ol> <li>Turn ignition switch to OFF.</li> </ol>	than 0.5 Ω?		ness.
	<ol><li>Disconnect VIU connector.</li></ol>			
	<ol><li>Disconnect button assembly connector.</li></ol>			
	4) Measure resistance between VIU connec-			
	tor and button assembly connector.			
	Connector & Terminal			
	(i73) No. 5 — (i70) No. 1: (i73) No. 20 (i70) No. 2:			
	(i73) No. 20 — (i70) No. 2: (i73) No. 25 — (i70) No. 3:			
3	CHECK HARNESS.	Is the measured value more	Go to stop 4	Repair ground
3	Measure resistance between VIU connector	than 1 M $\Omega$ ?	Go to step 4.	short of harness.
	and chassis ground.			
	Connector & Terminal			
	(i73) No. 5 — Chassis ground:			
	(i73) No. 20 — Chassis ground:			
	(i73) No. 25 — Chassis ground:			
4	CHECK LED SIGNAL HARNESS.	Is the measurede value less	Go to step 5.	Repair battery
	<ol> <li>Turn the ignition switch to ON.</li> </ol>	than 1 V	•	short of harness.
	<ol><li>Measure voltage between VIU connector</li></ol>			Replace button
	and chassis ground.			assembly. <ref. td="" to<=""></ref.>
	Connector & Terminal			OS-6, Button
	(i73) No. 5 (+) — Chassis ground (–):			Assembly.>
	(i73) No. 25 (+) — Chassis ground (–):			
5	CHECK VIU POWER SUPPLY.	Is the measured value more	Go to step 6.	Check fuse or
	<ol> <li>Turn the ignition switch to ON.</li> <li>Measure voltage between VIU connector</li> </ol>	than 9 V?		repair open circuit
	and chassis ground.			in harness.
	Connector & Terminal			
	(i73) No. 16 (+) — Chassis ground (–):			
	(i73) No. 32 (+) — Chassis ground (-):			
	(i73) No. 22 (+) — Chassis ground (–)			
	(i73) No. 27 (+) — Chassis ground (–):			
6	CHECK VIU GROUND.	Is the measured value less	Go to step 7.	Repair open circuit
	<ol> <li>Turn ignition switch to OFF.</li> </ol>	than 0.5 Ω?		in harness.
	2) Measure resistance between VIU connec-			
	tor and chassis ground.			
	Connector & Terminal			
	(i73) No. 1 — Chassis ground: (i73) No. 7 — Chassis ground:			
7	(i73) No. 7 — Chassis ground: CHECK BUTTON ASSEMBLY HARNESS	lo thoro only near acretant in	Co to stan 8	Popoir poor cor
7	CHECK BUITON ASSEMBLY HARNESS CONNECTOR.	Is there any poor contact in connector?	Go to step 8.	Repair poor con- tact in connector.
	CONNECTOR. Check if there is any poor contact in button			lact in connector.
	assembly connector.			
8	CHECK BUTTON ASSEMBLY.	Is repair work completed?	Go to step <b>9.</b>	
	Replace button assembly. <ref. but-<="" os-6,="" td="" to=""><td></td><td></td><td></td></ref.>			
	ton Assembly.>			

ONSTAR (R) (DIAGNOSTICS)

	Step	Check	Yes	No
9	<b>CHECK SYSTEM.</b> Run the system and confirm the result of repair.	Was the trouble repaired?	System is OK.	Go to step 8.
10	CHECK VIU HARNESS CONNECTOR. Check if there is any poor contact in VIU har- ness connector.	Is there any poor contact in connector?	Go to step 11.	Repair poor con- tact in connector.
11	CHECK VCU. IMPORTANT Perform setup procedure of OnStar (R). Replace vehicle interface unit (VIU). <ref. td="" to<=""><td></td><td>Go to step 12.</td><td></td></ref.>		Go to step 12.	
	OS-4, Vehicle Interface Unit VIU.>			
12	<b>CHECK SYSTEM.</b> Run the system and confirm the result of repair.	Was the trouble repaired?	System is OK.	Go to step 1.