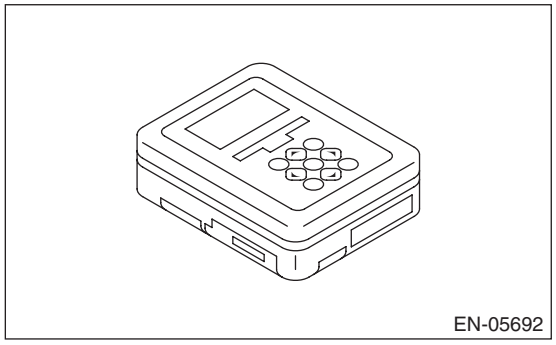
6. Subaru Select Monitor

A: OPERATION

1. READ DIAGNOSTIC TROUBLE CODE (DTC)

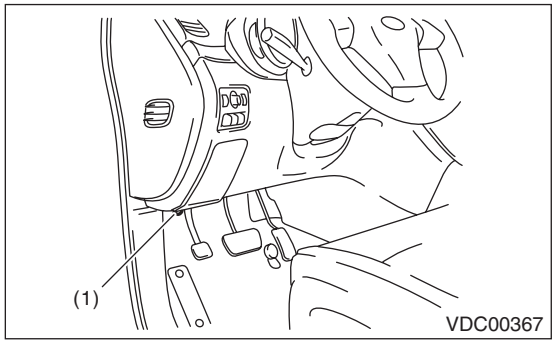
1) Prepare the Subaru Select Monitor kit. <Ref. to VDC(diag)-9, SPECIAL TOOL, PREPARATION TOOL, General Description.>



2) Prepare PC with Subaru Select Monitor installed.
3) Connect USB cable to SDI (Subaru Diagnostic Interface) and PC USB port (Subaru Select Monitor dedicated port).

NOTE:
Subaru Select Monitor dedicated port indicates USB port used when installing Subaru Select Monitor.

4) Connect the diagnosis cable to the SDI.
5) Connect the SDI to the data link connector located in the lower portion of the instrument panel (on the driver's side).



CAUTION:
Do not connect the scan tools except for Subaru Select Monitor.

6) Start a PC.
7) Turn the ignition switch to ON (engine OFF), and run the "PC application for Subaru Select Monitor".
8) On the «Main Menu» display screen, select {Each System Check}.
9) On the «System Selection Menu», select the {Brake Control System}.
10) Click the [OK] button after the {VDC} is displayed.
11) On the «Brake Control Diagnosis» display screen, select the {Diagnostic Code(s) Display}.
12) Record the DTC and data.

NOTE:
• For detailed operation procedure, refer to the "PC application help for Subaru Select Monitor".
• For details concerning DTCs, refer to "List of Diagnostic Trouble Code (DTC)". <Ref. to VDC(diag)-48, List of Diagnostic Trouble Code (DTC).>
• DTCs are displayed up to three in detected order.

13) If VDC and Subaru Select Monitor cannot communicate, check the communication circuit. <Ref. to VDC(diag)-23, COMMUNICATION FOR INITIALIZING IMPOSSIBLE, INSPECTION, Subaru Select Monitor.>

Display	Contents to be displayed
(Latest)	Indicate the latest malfunction DTC on the Subaru Select Monitor display.
(Old)	The latest DTC in previous troubles is displayed on Subaru Select Monitor display screen.
(Older)	The second latest DTC in previous troubles is displayed on Subaru Select Monitor display screen.

2. READ CURRENT DATA

1) On the «Main Menu» display screen, select the {Each System Check}.
2) On the «System Selection Menu», select the {Brake Control System}.
3) Click the [OK] button after the {VDC} is displayed.
4) On the «Brake Control Diagnosis» screen, select {Current Data Display & Save}.
5) On the «Data Display Menu», select the data display method.
6) Using a scroll key, scroll the display screen up or down until necessary data is shown.

- A list of the support data is shown in the following table.

Display	Contents to be displayed	Unit of measure
FR Wheel Speed	Wheel speed detected by front ABS wheel speed sensor RH is displayed.	km/h or MPH
FL Wheel Speed	Wheel speed detected by front ABS wheel speed sensor LH is displayed.	km/h or MPH
RR Wheel Speed	Wheel speed detected by rear ABS wheel speed sensor RH is displayed.	km/h or MPH
RL Wheel Speed	Wheel speed detected by rear ABS wheel speed sensor LH is displayed.	km/h or MPH
Longitudinal G Sensor	Vehicle front/rear acceleration detected by G sensor is displayed.	m/s^2
Lateral G Sensor	Vehicle lateral acceleration detected by G sensor is displayed.	m/s^2
ABS_CM Power Voltage	Voltage supplied to VDCCM&H/U is displayed.	V
Steering Angle Sensor	Steering angle detected by steering angle sensor is displayed.	deg
Yaw Rate Sensor	Vehicle angular speed detected by yaw rate sensor is displayed.	deg/s
Pressure Sensor	Brake fluid pressure detected by pressure sensor is displayed.	bar
ABS Control Flag	ABS control condition is displayed.	ON or OFF
EBD Control Flag	EBD control condition is displayed.	ON or OFF
Brake Switch	Brake ON/OFF is displayed.	ON or OFF
ABS Warning Light	ON operation of the ABS warning light is displayed.	ON or OFF
EBD Warning Light	ON operation of the EBD warning light is displayed.	ON or OFF
Motor Relay Signal	Motor relay operation signal is displayed.	ON or OFF
Motor Relay Monitor	Motor relay monitor signal is displayed.	ON or OFF
TCS Control Flag	TCS control condition is displayed.	ON or OFF
Valve Relay Signal	Valve relay operation signal is displayed.	ON or OFF
VDC Control Flag	VDC control condition is displayed.	ON or OFF
VDC Warning Light	ON operation of the VDC warning light is displayed.	ON or OFF
OFF Lamp	ON/OFF condition of TCS OFF indicator light is displayed.	ON or OFF
E/G Control Stop Flag	Engine control command signal is displayed.	1 or 0
OFF SW Signal	Operation condition of TCS OFF switch is displayed.	ON or OFF
Fail Safe Relay Signal	Motor fail safe relay drive signal is displayed.	ON or OFF

NOTE:
For details concerning the operation procedure, refer to the “PC application help for Subaru Select Monitor”.

3. CLEAR MEMORY MODE

1) On the «Main Menu» display screen, select the {Each System Check}.
2) On the «System Selection Menu», select the {Brake Control System}.
3) Click the [OK] button after the {VDC} is displayed.
4) On the «Brake Control Diagnosis» display screen, select the {Clear Memory}.
5) When the “Clear Memory?” is shown on the screen, click the [YES] button.
6) When “Done” and “Turn Ignition Switch OFF” are shown on the display screen, turn the ignition switch to OFF.

NOTE:
For details concerning the operation procedure, refer to the “PC application help for Subaru Select Monitor”.

4. FUNCTION CHECK

Display	Contents to be displayed	Reference target
ABS Sequence Control Mode	Operate the valve and pump motor continuously to perform the ABS sequence control.	<Ref. to VDC-17, ABS Sequence Control.>
VDC Check Mode	Operate the valve and pump motor continuously to perform the VDC sequence control.	<Ref. to VDC-20, VDC Sequence Control.>
Set mode Str.A.Sen.N& Lat.GSen.0p	Set the steering angle sensor neutral position and the yaw rate & G sensor “0” point.	<Ref. to VDC-25, Steering Angle Sensor.>

5. FREEZE FRAME DATA

NOTE:
• Data stored at the time of trouble occurrence is shown on display.
• Each time trouble occurs, the latest information is stored in the freeze frame data in memory.

Display	Contents to be displayed
IG counter	Number of times ignition switch turned to ON is displayed.
diagnostic trouble code	The recorded failure code is displayed.
FR Wheel Speed	Wheel speed detected by front ABS wheel speed sensor RH is displayed in km/h or MPH.
FL Wheel Speed	Wheel speed detected by front ABS wheel speed sensor LH is displayed in km/h or MPH.
RR Wheel Speed	Wheel speed detected by rear ABS wheel speed sensor RH is displayed in km/h or MPH.
RL Wheel Speed	Wheel speed detected by rear ABS wheel speed sensor LH is displayed in km/h or MPH.
Vehicle Speed	Vehicle speed calculated by VDC control module is displayed.
G Sensor First Axis (GL1)	The sensor value for a 45° angle crossed 2 axis G sensor is displayed.
G Sensor Sec Axis (GL2)	
Yaw Rate Sensor Output	Vehicle angular speed detected by yaw rate sensor is displayed.
ABS_CM Power Voltage	Voltage supplied to VDC control module is displayed.
Steering Angle Sensor malfunction	Steering angle detected by steering angle sensor is displayed.
Pressure Sensor Output	Brake fluid pressure detected by pressure sensor is displayed.
Engine Speed	Engine speed on malfunction occurrence is displayed.
Accel. Opening Angle	Acceleration opening is displayed.
Gear Position	Gear position on malfunction occurrence is displayed.
Steering Angle Sens Code	The recorded steering angle sensor failure code is displayed.
ABS Control Flag	ABS control condition is displayed.
EBD Control Flag	EBD control condition is displayed.
Brake Switch	Brake ON/OFF is displayed.
TCS Control Flag	TCS control condition is displayed.
VDC Control Flag	VDC control condition is displayed.
E/G Control Stop Flag	Engine control command signal is displayed.
Steering angle flag	Whether the absolute angle was determined is displayed.
OFF SW Signal	Operation condition of TCS OFF switch is displayed.

B: INSPECTION

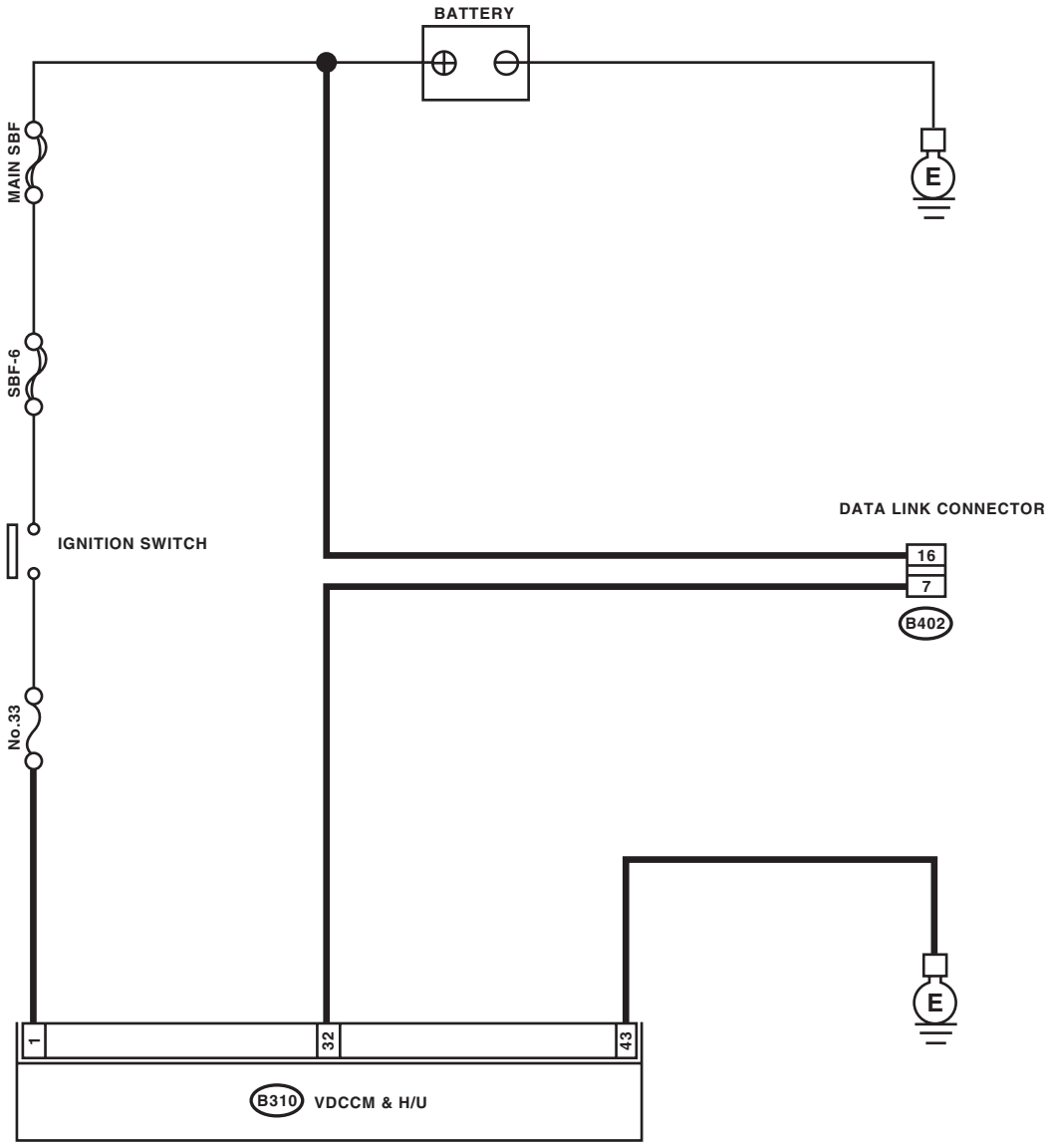
1. COMMUNICATION FOR INITIALIZING IMPOSSIBLE

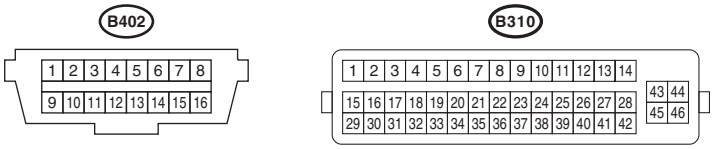
DETECTING CONDITION:
Defective harness connector

TROUBLE SYMPTOM:
Communication is impossible between VDC and Subaru Select Monitor.

- **VDC control module identification mark W2**

WIRING DIAGRAM:





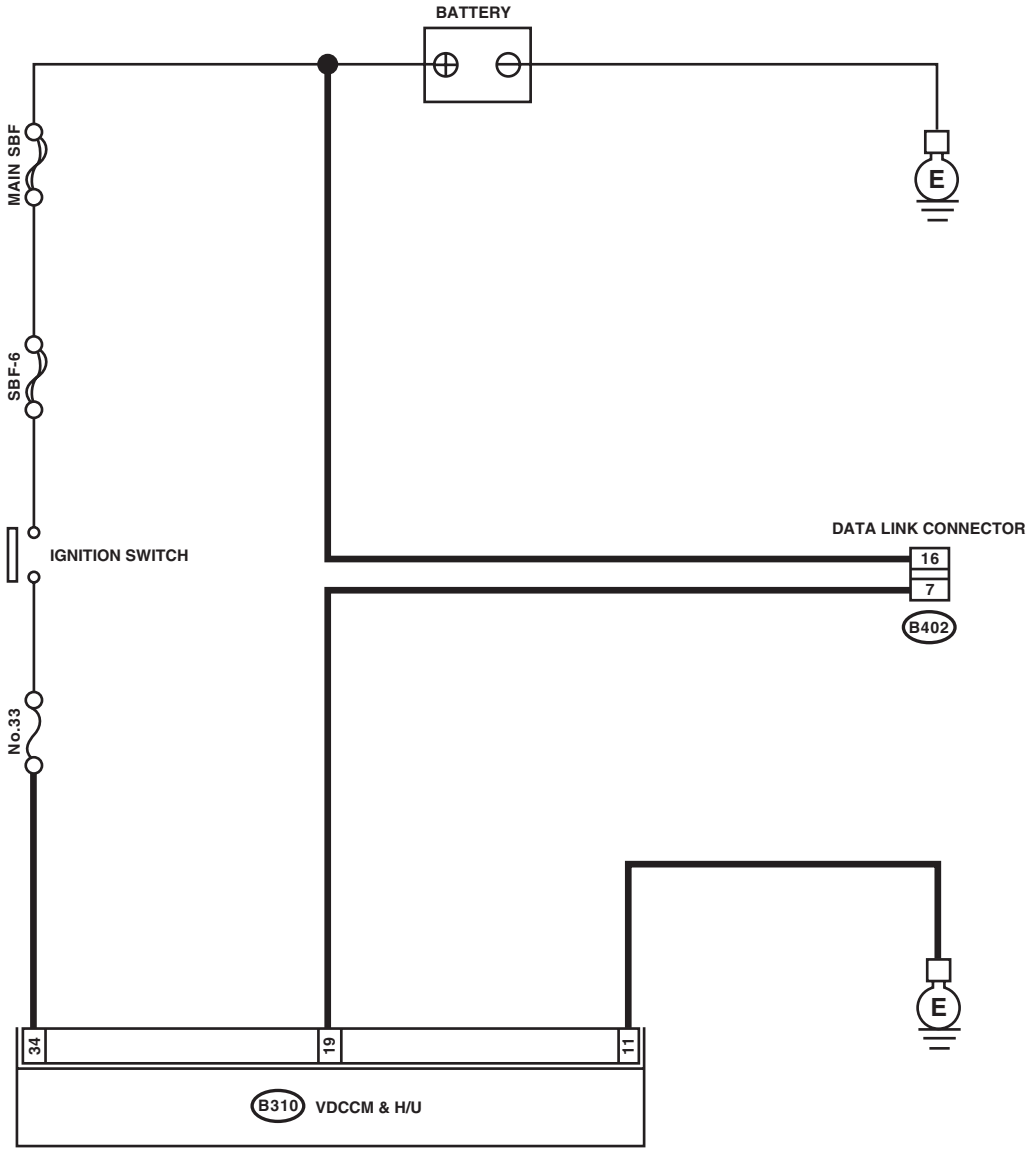
VDC00446

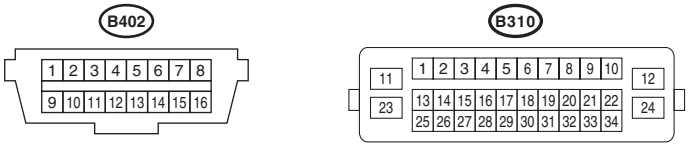
	Step	Check	Yes	No
1	**CHECK IGNITION SWITCH.**	Is the ignition switch ON?	Go to step **2**.	Turn the ignition switch to ON, and select VDC mode using Subaru Select Monitor.
2	**CHECK BATTERY.** 1) Turn the ignition switch to OFF. 2) Measure the battery voltage.	Is the voltage 11 V or more?	Go to step **3**.	Charge or replace the battery.
3	**CHECK BATTERY TERMINAL.**	Is there poor contact at the battery terminal?	Repair or tighten the battery terminal.	Go to step **4**.
4	**CHECK SUBARU SELECT MONITOR COMMUNICATION.** 1) Turn the ignition switch to ON. 2) Using the Subaru Select Monitor, check whether communication to other system can be executed normally.	Are the system name and model year displayed on Subaru Select Monitor?	Go to step **8**.	Go to step **5**.
5	**CHECK SUBARU SELECT MONITOR COMMUNICATION.** 1) Turn the ignition switch to OFF. 2) Disconnect the VDCCM&H/U connector. 3) Turn the ignition switch to ON. 4) Check whether communication to other system can be executed normally.	Are the system name and model year displayed on Subaru Select Monitor?	Replace the VDCCM&H/U. <Ref. to VDC-10, VDC Control Module and Hydraulic Control Unit (VDCCM&H/U).>	Go to step **6**.
6	**CHECK HARNESS CONNECTOR BETWEEN EACH CONTROL MODULE AND DATA LINK CONNECTOR.** 1) Turn the ignition switch to OFF. 2) Disconnect the VDCCM&H/U, ECM and TCM. 3) Measure the resistance between data link connector and chassis ground. ***Connector & terminal*** ***(B402) No. 7 — Chassis ground:***	Is the resistance 1 MΩ or more?	Go to step **7**.	Repair the harness and connector between each control module and data link connector.
7	**CHECK VDCCM&H/U OUTPUT SIGNALS.** 1) Turn the ignition switch to ON. 2) Measure the voltage between data link connector and chassis ground. ***Connector & terminal*** ***(B402) No. 7 (+) — Chassis ground (–):***	Is the voltage less than 1 V?	Go to step **8**.	Repair the harness and connector between each control module and data link connector.
8	**CHECK HARNESS CONNECTOR BETWEEN VDCCM&H/U AND DATA LINK CONNECTOR.** Measure the resistance between VDCCM&H/U connector and data link connector. ***Connector & terminal*** ***(B310) No. 32 — (B402) No. 7:***	Is the resistance less than 0.5 Ω?	Go to step **9**.	Repair harness and connector between VDCCM&H/U and data link connector.
9	**CHECK INSTALLATION OF VDCCM&H/U CONNECTOR.** Turn the ignition switch to OFF.	Is the VDCCM&H/U connector inserted into VDCCM&H/U until the clamp locks onto it?	Go to step **10**.	Insert VDCCM&H/U connector into VDCCM&H/U.
10	**CHECK POWER SUPPLY CIRCUIT.** 1) Turn the ignition switch to ON. (engine OFF) 2) Measure the ignition power supply voltage between VDCCM&H/U connector and chassis ground. ***Connector & terminal*** ***(B310) No. 1 (+) — Chassis ground (–):***	Is the voltage 10 — 15 V?	Go to step **11**.	Repair open circuit in harness between VDCCM&H/U and battery.

	Step	Check	Yes	No
11	**CHECK HARNESS CONNECTOR BETWEEN VDCCM&H/U AND CHASSIS GROUND.** 1) Turn the ignition switch to OFF. 2) Disconnect the connector from the VDCCM&H/U. 3) Measure the resistance of harness between VDCCM&H/U connector and chassis ground. ***Connector & terminal*** ***(B310) No. 43 — Chassis ground:***	Is the resistance less than 0.5 Ω?	Go to step **12**.	Repair the open circuit of VDCCM&H/U ground harness and poor contact of connector.
12	**CHECK POOR CONTACT OF CONNECTOR.**	Is there poor contact in control module power supply, ground circuit and data link connector?	Repair the connector.	Replace the VDCCM&H/U. <Ref. to VDC-10, VDC Control Module and Hydraulic Control Unit (VDCCM&H/U).>

- **VDC control module identification mark W3**

WIRING DIAGRAM:





VDC00615

	Step	Check	Yes	No
1	**CHECK IGNITION SWITCH.**	Is the ignition switch ON?	Go to step **2**.	Turn the ignition switch to ON, and select VDC mode using Subaru Select Monitor.
2	**CHECK BATTERY.** 1) Turn the ignition switch to OFF. 2) Measure the battery voltage.	Is the voltage 11 V or more?	Go to step **3**.	Charge or replace the battery.
3	**CHECK BATTERY TERMINAL.**	Is there poor contact at the battery terminal?	Repair or tighten the battery terminal.	Go to step **4**.
4	**CHECK SUBARU SELECT MONITOR COMMUNICATION.** 1) Turn the ignition switch to ON. 2) Using the Subaru Select Monitor, check whether communication to other system can be executed normally.	Are the system name and model year displayed on Subaru Select Monitor?	Go to step **8**.	Go to step **5**.
5	**CHECK SUBARU SELECT MONITOR COMMUNICATION.** 1) Turn the ignition switch to OFF. 2) Disconnect the VDCCM&H/U connector. 3) Turn the ignition switch to ON. 4) Check whether communication to other system can be executed normally.	Are the system name and model year displayed on Subaru Select Monitor?	Replace the VDCCM&H/U. <Ref. to VDC-10, VDC Control Module and Hydraulic Control Unit (VDCCM&H/U).>	Go to step **6**.
6	**CHECK HARNESS CONNECTOR BETWEEN EACH CONTROL MODULE AND DATA LINK CONNECTOR.** 1) Turn the ignition switch to OFF. 2) Disconnect the VDCCM&H/U, ECM and TCM. 3) Measure the resistance between data link connector and chassis ground. ***Connector & terminal*** ***(B402) No. 7 — Chassis ground:***	Is the resistance 1 MΩ or more?	Go to step **7**.	Repair the harness and connector between each control module and data link connector.
7	**CHECK VDCCM&H/U OUTPUT SIGNALS.** 1) Turn the ignition switch to ON. 2) Measure the voltage between data link connector and chassis ground. ***Connector & terminal*** ***(B402) No. 7 (+) — Chassis ground (–):***	Is the voltage less than 1 V?	Go to step **8**.	Repair the harness and connector between each control module and data link connector.
8	**CHECK HARNESS CONNECTOR BETWEEN VDCCM&H/U AND DATA LINK CONNECTOR.** Measure the resistance between VDCCM&H/U connector and data link connector. ***Connector & terminal*** ***(B310) No. 19 — (B402) No. 7:***	Is the resistance less than 0.5 Ω?	Go to step **9**.	Repair harness and connector between VDCCM&H/U and data link connector.
9	**CHECK INSTALLATION OF VDCCM&H/U CONNECTOR.** Turn the ignition switch to OFF.	Is the VDCCM&H/U connector inserted into VDCCM&H/U until the clamp locks onto it?	Go to step **10**.	Insert VDCCM&H/U connector into VDCCM&H/U.
10	**CHECK POWER SUPPLY CIRCUIT.** 1) Turn the ignition switch to ON.(engine OFF) 2) Measure the ignition power supply voltage between VDCCM&H/U connector and chassis ground. ***Connector & terminal*** ***(B310) No. 34 (+) — Chassis ground (–):***	Is the voltage 10 — 15 V?	Go to step **11**.	Repair open circuit in harness between VDCCM&H/U and battery.

	Step	Check	Yes	No
11	**CHECK HARNESS CONNECTOR BETWEEN VDCCM&H/U AND CHASSIS GROUND.** 1) Turn the ignition switch to OFF. 2) Disconnect the connector from the VDCCM&H/U. 3) Measure the resistance of harness between VDCCM&H/U connector and chassis ground. ***Connector & terminal*** ***(B310) No. 11 — Chassis ground:***	Is the resistance less than 0.5 Ω?	Go to step **12**.	Repair the open circuit of VDCCM&H/U ground harness and poor contact of connector.
12	**CHECK POOR CONTACT OF CONNECTOR.**	Is there poor contact in control module power supply, ground circuit and data link connector?	Repair the connector.	Replace the VDCCM&H/U. <Ref. to VDC-10, VDC Control Module and Hydraulic Control Unit (VDCCM&H/U).>