

Subaru Select Monitor

VEHICLE DYNAMICS CONTROL (VDC) (DIAGNOSTICS)

6. Subaru Select Monitor

A: OPERATION

CAUTION:

When the Subaru Select Monitor is communicating (except when displaying the data), the ABS warning light flashes and VDC warning light illuminates in the combination meter. Do not communicate with the Subaru Select Monitor while driving, because the ABS and VDC functions are disabled. Carefully drive the vehicle, when you have to communicate with the Subaru Select Monitor. When the data is displayed by the {Current Data Display & Save} menu, both the ABS and VDC warning lights are turned off and ABS and VDC functions are enabled.

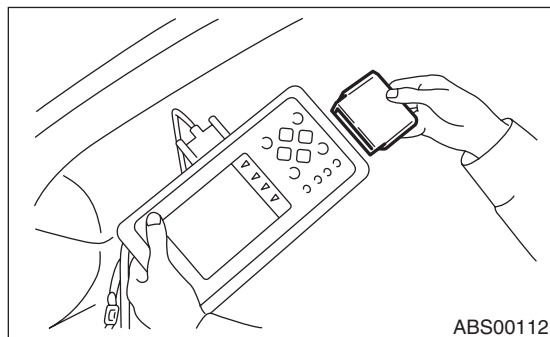
1. READ DIAGNOSTIC TROUBLE CODE (DTC)

1) Prepare the Subaru Select Monitor kit. <Ref. to VDC(diag)-10, SPECIAL TOOL, PREPARATION TOOL, General Description.>



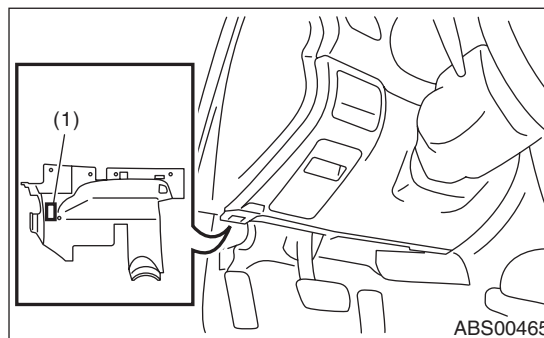
2) Connect the diagnosis cable to the Subaru Select Monitor.

3) Insert the cartridge to the Subaru Select Monitor. <Ref. to VDC(diag)-10, SPECIAL TOOL, PREPARATION TOOL, General Description.>



4) Connect the Subaru Select Monitor to the data link connector.

(1) Data link connector is located in the lower portion of instrument panel (on the driver's side).



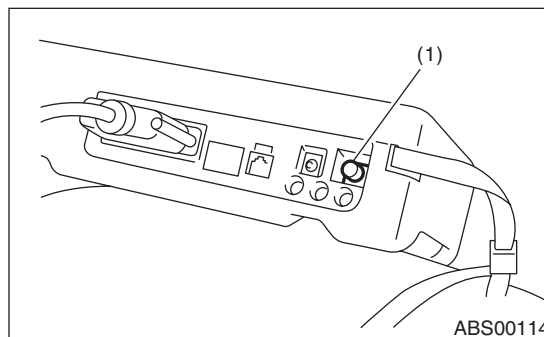
(1) Data link connector

(2) Connect the diagnosis cable to the data link connector.

CAUTION:

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

5) Turn the ignition switch to ON (engine OFF) and turn the Subaru Select Monitor switch to ON.



(1) Power switch

6) On the «Main Menu» display screen, select the {Each System Check} and press the [YES] key.

7) On the «System Selection Menu» display screen, select the {Brake Control} and press the [YES] key.

8) Press the [YES] key after the {VDC AWD AT} is displayed.

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9) On the «VDC Diagnosis» screen, select the {Diagnostic Code(s) Display}, and then press the [YES] key.

NOTE:

- For details concerning operation procedures, refer to the “SUBARU SELECT MONITOR OPERATION MANUAL”.
- For details concerning DTCs, refer to “List of Diagnostic Trouble Code (DTC)”. <Ref. to VDC(diag)-36, List of Diagnostic Trouble Code (DTC).>
- DTCs are displayed up to three in detected order.
- If a particular DTC is not stored in memory properly at the occurrence of problem (due to a drop in VDCCM&H/U power supply etc.), the DTC suffixed with a question mark “?” is displayed on Subaru Select Monitor display screen. This shows it may be an unreliable reading.

10) If VDC and Subaru Select Monitor cannot communicate, check the communication circuit. <Ref. to VDC(diag)-21, COMMUNICATION FOR INITIALIZING IMPOSSIBLE, INSPECTION, Subaru Select Monitor.>

Display	Contents to be monitored
Current	The current DTC is displayed on Subaru Select Monitor display screen.
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.
Third previous	The third latest DTC in previous problems is displayed on Subaru Select Monitor display screen.

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2. READ CURRENT DATA

- 1) On the «Main Menu» display screen, select the {Each System Check} and press the [YES] key.
 - 2) On the «System Selection Menu» display screen, select the {Brake Control} and press the [YES] key.
 - 3) Press the [YES] key after {VDC AWD AT} is displayed.
 - 4) On the «Brake Control Diagnosis» display screen, select the {Current Data Display/Save}, and then press the [YES] key.
 - 5) On the «Display Menu» screen, select the data display method and press the [YES] key.
 - 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 monitored	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
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
Lateral G Sensor	Vehicle lateral acceleration detected by lateral G sensor is displayed.	m/s (m/s ²)
IG power supply voltage	Voltage supplied to VDCCM&H/U is displayed.	V
EAM signal	Engine control command signal is displayed.	1 or 0
TCS Operation Light	TCS operation condition is displayed.	ON or OFF
VDC Operation Light	VDC operation condition is displayed.	ON or OFF
VDC OFF Light	ON/OFF condition of VDC OFF indicator light is displayed.	ON or OFF
EBD Warning Light	ON operation of the EBD warning light is displayed.	ON or OFF
ABS Warning Light	ON operation of the ABS warning light is displayed.	ON or OFF
VDC Warning Light	ON operation of the VDC warning light is displayed.	ON or OFF
VDC OK B Signal	Malfunction of VDC sensor (except for vehicle speed sensor) is displayed.	1 or 0
Valve Relay Signal	Valve relay operation signal 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
PATA Signal	Operation condition of VDC OFF switch is displayed.	ON or OFF
BLS Signal	Brake ON/OFF is displayed.	ON or OFF
Gear position	Present gear position is displayed.	—
Engine Speed	Present engine speed is displayed.	rpm
Acceleration opening angle signal	Acceleration opening is displayed.	%

NOTE:

For details concerning operation procedures, refer to the “SUBARU SELECT MONITOR OPERATION MANUAL”.

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3. CLEAR MEMORY MODE

- 1) On the «Main Menu» display screen, select the {2. Each System Check} and press the [YES] key.
- 2) On the «System Selection Menu» display screen, select the {Brake Control} and press the [YES] key.
- 3) Press the [YES] key after {VDC AWD AT} is displayed.
- 4) On the «Brake Control Diagnosis» display screen, select the {Clear Memory} and press the [YES] key.

Display	Contents to be monitored
Clear memory?	DTC deleting function

- 5) When “Done” and “Turn ignition switch OFF” are shown on the display screen, turn the Subaru Select Monitor and ignition switch to OFF.

NOTE:

For details concerning operation procedures, refer to the “SUBARU SELECT MONITOR OPERATION MANUAL”.

4. ABS SEQUENCE CONTROL

Display	Contents to be monitored	Reference target
ABS sequence control	Operate the valve and pump motor continuously to perform the ABS sequence control.	<Ref. to ABS-10, ABS Sequence Control.>
VDC confirmation mode	Operate the valve and pump motor continuously to perform the VDC sequence control.	<Ref. to VDC-11, VDC Sequence Control.>

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.
- If a freeze frame data is not properly stored in memory (due to a drop in VDCCM power supply, etc.), a DTC suffixed with a question mark “?” appears on the Subaru Select Monitor display. This shows it may be an unreliable reading.

Display	Contents to be monitored
Steering angle sensor	Steering angle detected by steering angle sensor is displayed.
Yaw rate sensor	Vehicle angular speed detected by yaw rate sensor is displayed.
Lateral G Sensor	Vehicle lateral acceleration detected by lateral G sensor is displayed.
Pressure Sensor	Brake fluid pressure detected by pressure sensor is displayed.
Vehicle Speed	Vehicle speed calculated by VDC control module 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.
Required Torque	Engine required torque is displayed.
Current Torque	Current engine torque on malfunction occurrence is displayed.
Target Torque	Engine target torque is displayed.
Acceleration opening angle signal	Acceleration opening is displayed.
Engine Speed	Engine speed on malfunction occurrence is displayed.
Gear position	Gear position on malfunction occurrence is displayed.
IG power supply voltage	Voltage supplied to VDC control module is displayed.
Absolute angle recognition flag	Whether the absolute angle was determined is displayed.
Decreasing Required Torque	Whether the torque decrease is required to engine is displayed.
EAM signal	Engine control command signal is displayed.
VDC O Control Flag	VDC oversteer control condition is displayed.
VDC U Control Flag	VDC understeer control condition is displayed.
BMR control flag	Brake control condition is displayed.
AMR control flag	Engine control condition is displayed.
ABS Control Flag	ABS control condition is displayed.
VDC OFF Light	ON/OFF condition of VDC OFF indicator light is displayed.
Valve Relay Signal	Valve relay operation signal is displayed.
Motor Relay Monitor	Motor relay monitor signal is displayed.
BLS Signal	Brake ON/OFF is displayed.

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B: INSPECTION

1. COMMUNICATION FOR INITIALIZING IMPOSSIBLE

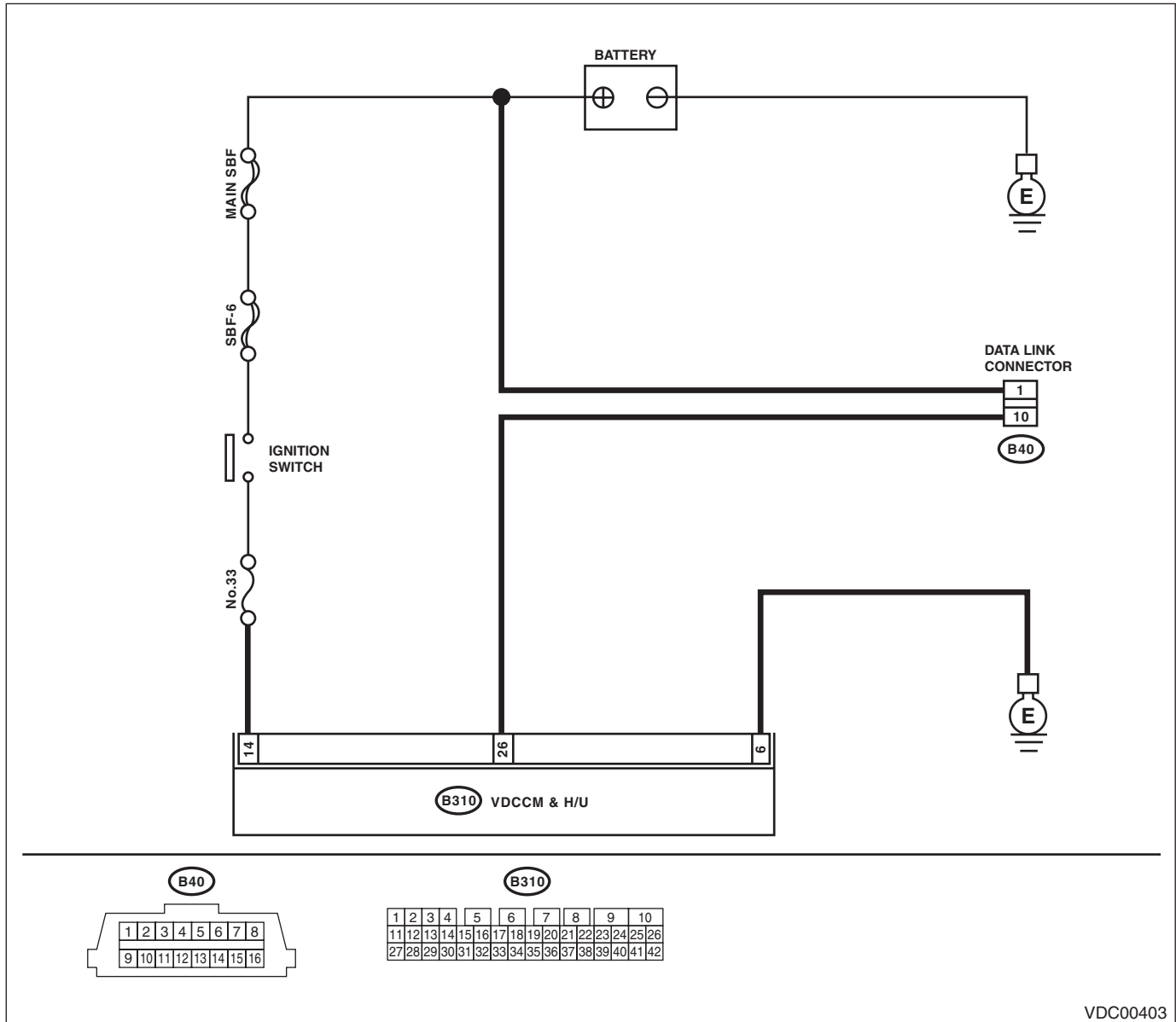
DETECTING CONDITION:

Defective harness connector

TROUBLE SYMPTOM:

Communication is impossible between VDC and Subaru Select Monitor.

WIRING DIAGRAM:



Step	Check	Yes	No
1	CHECK IGNITION SWITCH.	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.	Go to step 3.	Charge or replace the battery.

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Step	Check	Yes	No	
3	CHECK BATTERY TERMINAL.	Is there poor contact at 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 systems can be executed normally.	Are the system name and model year displayed on Subaru Select Monitor?	Replace the VDCCM&H/U. <Ref. to VDC-7, 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 (B40) No. 10 — Chassis ground:	Is the resistance more than 1 M Ω ?	Go to step 7.	Repair the harness and connector between each control module and data link connector.
7	CHECK THE 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 (B40) No. 10 (+) — 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 THE 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. 26 — (B40) No. 10:	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. 14 (+) — Chassis ground (-):	Is the voltage 10 — 15 V?	Go to step 11.	Repair open circuit in harness between VDCCM&H/U and battery.

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Step	Check	Yes	No
11 CHECK THE 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. 6 — Chassis ground:	Is the resistance less than 0.5 Ω ?	Go to step 12 .	Repair the open circuit in harness between VDCCM&H/U and inhibitor side connector, and poor contact of coupling connector.
12 CHECK POOR CONTACT IN 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-7, VDC Control Module and Hydraulic Control Unit (VDCCM&H/U).>