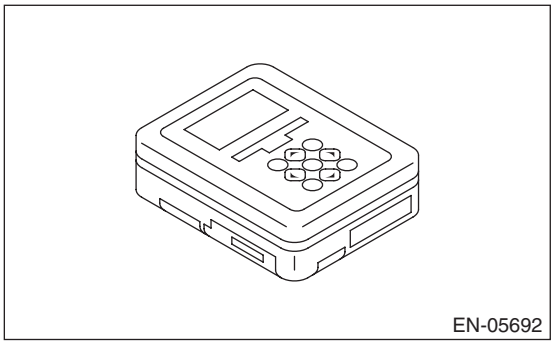
6. Subaru Select Monitor

A: OPERATION

1. HOW TO USE SUBARU SELECT MONITOR

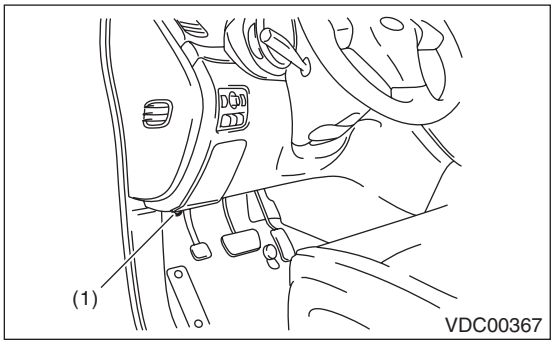
1) Prepare the Subaru Select Monitor kit. <Ref. to VDC(diag)-9, SPECIAL TOOL, PREPARATION TOOL, General Description.>



2) Prepare PC with Subaru Select Monitor installed.
3) Connect the USB cable to SDI (Subaru Diagnosis Interface) and USB port on the personal computer (dedicated port for the Subaru Select Monitor).

NOTE:
The dedicated port for the Subaru Select Monitor means the USB port which was used to install the Subaru Select Monitor.

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



(1) Data link connector

CAUTION:
Do not connect the scan tools other than the Subaru Select Monitor.

6) Start the PC.
7) Turn the ignition switch to ON (engine OFF) and run the "PC application for Subaru Select Monitor".

NOTE:
For detailed operation procedures, refer to "PC application help for Subaru Select Monitor".

8) If VDC and Subaru Select Monitor cannot communicate, check the communication circuit. <Ref. to VDC(diag)-19, COMMUNICATION FOR INITIALIZING IMPOSSIBLE, INSPECTION, Subaru Select Monitor.>
9) Record the DTC and data.

2. READ CURRENT DATA

1) On «Main Menu» display, select {Each System Check}.
2) On «System Selection Menu» display, select {Brake Control System}.
3) Click the [OK] button after {VDC} is displayed.
4) On «Brake Control Diagnosis» display, select {Current Data Display & Save}.
5) On «Data Display Menu» display, select the data display method.
6) Using the 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 longitudinal 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
IG power supply 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 operation signal is displayed.	ON or OFF

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

3. FUNCTION CHECK

Display	Contents to be displayed	Reference
ABS Sequence Control Mode	Operate the valve and pump motor continuously to perform the ABS sequence control.	<Ref. to VDC-12, ABS Sequence Control.>
VDC Check Mode	Operate the valve and pump motor continuously to perform the VDC sequence control.	<Ref. to VDC-15, VDC Sequence Control.>
Set up mode for Neutral of Steering Angle Sensor & Lateral G Sensor 0 point	Set the steering angle sensor neutral position and the yaw rate & G sensor “0” point.	<Ref. to VDC-19, Steering Angle Sensor.>

4. FREEZE FRAME DATA

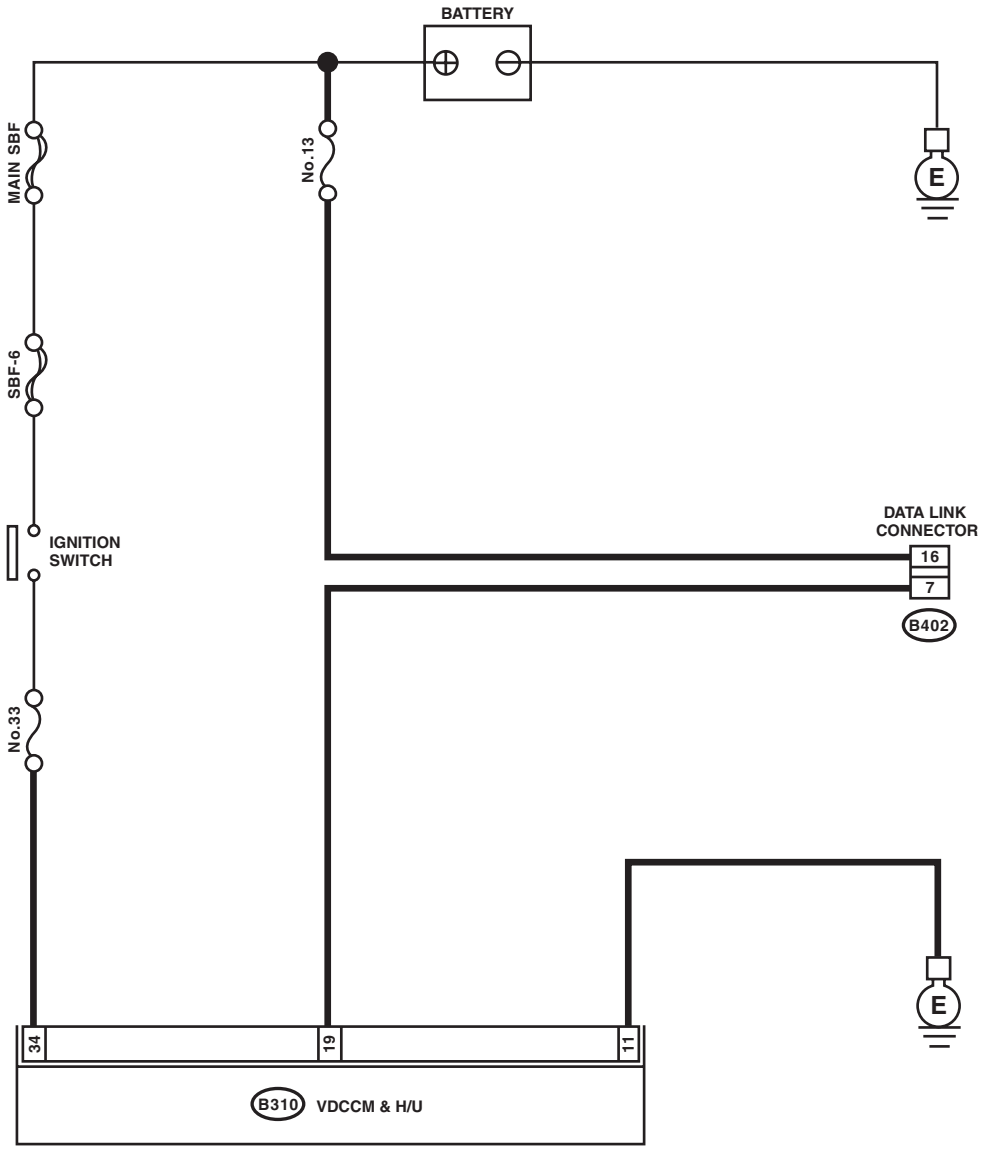
NOTE:
• Data stored at the time of trouble occurrence is shown on display.
• Each time a trouble occurs, the latest information is stored in the freeze frame data in memory.

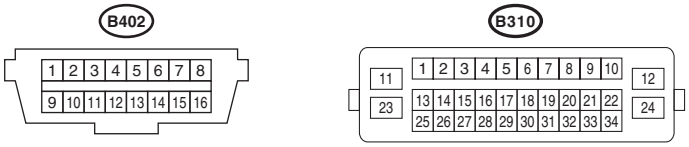
Display	Contents to be displayed
IG counter	Number of ignition switch ON is displayed.
Trouble Code	Recorded trouble code is displayed.
FR Wheel Speed	Wheel speed detected by front ABS wheel speed sensor RH is displayed in km/h or MPH.
FL Wheel Speed	Wheel speed detected by front ABS wheel speed sensor 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.
IG power supply voltage	Voltage supplied to VDC control module is displayed.
Steering Angle Sensor Op	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	Recorded trouble code of steering angle sensor 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.
WIRING DIAGRAM:





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	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 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 systems can be executed normally.	Is the system name 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.	Is the system name 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 connectors from 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 HARNESS CONNECTOR BETWEEN VDCCM&H/U AND DATA LINK CONNECTOR.** 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 1 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 10 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 of 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).>