

# Subaru Select Monitor

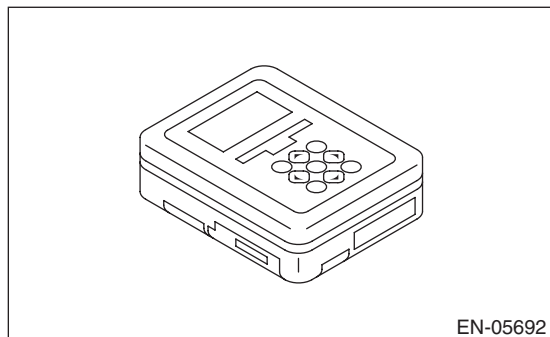
VEHICLE DYNAMICS CONTROL (VDC) (DIAGNOSTICS)

## 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.

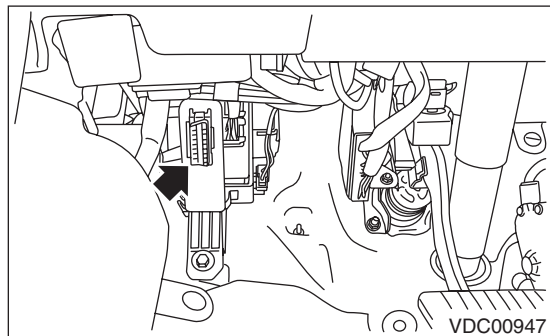
3) Connect the USB cable to SDI (Subaru Diagnosis Interface) and USB port on the personal computer (dedicated port for the Subaru Select Monitor).

#### 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).



#### CAUTION:

**Do not connect 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)-20, COMMUNICATION FOR INITIALIZING IMPOSSIBLE, INSPECTION, Subaru Select Monitor.>

9) Record the DTC and data.

# Subaru Select Monitor

## VEHICLE DYNAMICS CONTROL (VDC) (DIAGNOSTICS)

### 2. READ CURRENT DATA

- 1) On «Main Menu» display, select {Each System Check}.
  - 2) On «System Selection Menu» display, select {Brake Control System}.
  - 3) When {VDC} is displayed, select the [OK] button.
  - 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      |
| 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              |
| Longitudinal G Sensor    | Vehicle longitudinal acceleration detected by longitudinal G sensor is displayed. | m/s <sup>2</sup> |
| Lateral G Sensor         | Vehicle lateral acceleration detected by lateral G sensor is displayed.           | m/s <sup>2</sup> |
| Voltage of IGN           | Voltage supplied to VDCCM&H/U is displayed.                                       | V                |
| M. Relay monitor Voltage | Voltage applied to the motor relay is displayed.                                  | V                |
| Motor Relay Signal       | Motor relay operation signal is displayed.                                        | ON or OFF        |
| Valve Relay Signal       | Valve relay operation signal is displayed.                                        | ON or OFF        |
| EBD Warning Light        | ON operation of the EBD warning light is displayed.                               | ON or OFF        |
| ABS Warning Lamp         | ON operation of the ABS warning light is displayed.                               | ON or OFF        |
| VDC Warning Lamp         | ON operation of the VDC warning light is displayed.                               | ON or OFF        |
| EBD Control Flag         | EBD operation condition is displayed.                                             | ON or OFF        |
| ABS Control Flag         | ABS operation condition is displayed.                                             | ON or OFF        |
| TCS Control Flag         | TCS operation condition is displayed.                                             | ON or OFF        |
| VDC Control Flag         | VDC operation condition is displayed.                                             | ON or OFF        |
| E/G Control Stop Flag    | Engine control command signal is displayed.                                       | 1 or 0           |
| VDC-OFF Light            | ON/OFF condition of VDC OFF indicator light is displayed.                         | ON or OFF        |
| OFF SW Signal            | Operation condition of VDC OFF switch is displayed.                               | ON or OFF        |
| Brake Light Switch       | Brake ON/OFF is displayed.                                                        | ON or OFF        |
| Clutch Switch            | Clutch ON/OFF is displayed. (For MT model only. Fixed to OFF on AT model.)        | ON or OFF        |
| Reverse Signal           | Reverse gear ON/OFF is displayed. (For MT model only. Fixed to OFF on AT model.)  | ON or OFF        |

#### NOTE:

For detailed operation procedures, refer to “PC application help for Subaru Select Monitor”.

# Subaru Select Monitor

## VEHICLE DYNAMICS CONTROL (VDC) (DIAGNOSTICS)

### 3. FUNCTION CHECK

| Display                          | Contents of display                                                                                           | Index No.                                                                                                                  |
|----------------------------------|---------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------|
| ABS Sequence Control Mode        | Operate the valve and pump motor continuously to perform the ABS sequence control.                            | <Ref. to VDC-20, ABS Sequence Control.>                                                                                    |
| VDC Function Check Mode          | Operate the valve and pump motor continuously to perform the VDC sequence control.                            | <Ref. to VDC-23, VDC Sequence Control.>                                                                                    |
| VDC sensor midpoint setting mode | Set the steering angle sensor neutral position, and the lateral G sensor and longitudinal G sensor "0" point. | <Ref. to VDC-19, VDC SENSOR MIDPOINT SETTING MODE, ADJUSTMENT, VDC Control Module and Hydraulic Control Unit (VDCCM&H/U).> |

### 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.
- 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 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.                         |
| 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.                      |
| Pressure Sensor       | Brake fluid pressure detected by pressure sensor is displayed.                       |
| Longitudinal G Sensor | Vehicle longitudinal acceleration detected by longitudinal G sensor is displayed.    |
| Lateral G Sensor      | Vehicle lateral acceleration detected by lateral G sensor is displayed.              |
| Voltage of IGN        | Voltage supplied to VDC control module is displayed.                                 |

| Display                     | Contents to be displayed                                                             |
|-----------------------------|--------------------------------------------------------------------------------------|
| Acceleration Pedal Position | Accelerator pedal opening angle is displayed.                                        |
| Engine Speed                | Engine speed on malfunction occurrence is displayed.                                 |
| Steering angle flag         | Whether the absolute angle of the steering angle sensor was determined is displayed. |
| EBD Control Flag            | EBD control condition is displayed.                                                  |
| ABS Control Flag            | ABS control condition 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.                                          |
| OFF Switch Detection        | ON/OFF condition of the VDC operated by the driver is displayed.                     |
| Brake Light Switch          | Brake ON/OFF is displayed.                                                           |
| Clutch Switch               | Clutch ON/OFF is displayed. (For MT model only. Fixed to OFF on AT model.)           |
| Reverse Signal              | Reverse gear ON/OFF is displayed. (For MT model only. Fixed to OFF on AT model.)     |

### 5. PARAMETER SELECTION

#### CAUTION:

- **Subaru Select Monitor is required for parameter selection.**
- **This function can be used for the replacement part of VDCCM&H/U.**

#### NOTE:

- When the VDCCM&H/U is replaced with a replacement part, be sure to perform the parameter selection/registration to the VDCCM&H/U using this function.
  - To confirm the applied model, refer to the “model number plate” attached on the vehicle. <Ref. to ID-2, IDENTIFICATION, Identification.>
  - When the applied model is entered wrong, re-entry is possible.
  - When the registration has not been performed, the DTC code “Parameter” is detected together with the ABS/EBD/VDC warning light illumination.
- 1) Connect the Subaru Select Monitor.
  - 2) On «Main Menu» display, select {Each System Check}.
  - 3) On «System Selection Menu» display, select {Brake Control System}.
  - 4) When {VDC} is displayed, select the [OK] button.
  - 5) On «Brake Control Diagnosis» display, select {Work Support}.
  - 6) On «Work Support» display, select {Select Parameter}.
  - 7) Check the applied model and option code indicated in the “Model number plate”. <Ref. to ID-2, IDENTIFICATION, Identification.>
  - 8) Enter the applied model of 7-digit alphanumeric characters and press the [Enter] key.
  - 9) When the option code input screen appears after entering the applied model, enter the option code consisting of 4-digit alphanumeric characters, and press the [Enter] key. When the option code is 3 digits, add “0” (zero) in front and enter the code as 4 digits.
  - 10) When the confirmation screen indicating the vehicle information appears, check that the correct applied model and grade are displayed and click the [OK] button.

#### NOTE:

- When the displayed applied model and grade are different from those of the vehicle, perform registration operations again after clicking the [OK] button.
- 11) Execute the Clear Memory Mode after parameter selection and registration operations because the DTC for “Parameter selection error” is memorized. <Ref. to VDC(diag)-24, Clear Memory Mode.>

### 6. PARAMETER CHECK

#### NOTE:

The parameter data registered in the VDCCM is shown on the display.

- 1) Connect the Subaru Select Monitor.
- 2) On «Main Menu» display, select {Each System Check}.
- 3) On «System Selection Menu» display, select {Brake Control System}.
- 4) When {VDC} is displayed, select the [OK] button.
- 5) On «Brake Control Diagnosis» display, select {Work Support}.
- 6) On «Work Support» display, select {Confirm on parameter}.
- 7) On the {Confirm on parameter} display screen, check that the applied model and grade of the target vehicle are included, and click the [OK] button.
- 8) If the applied model and grade of the target vehicle are not included on the {Confirm on parameter} display screen, perform “parameter selection and registration”. <Ref. to VDC(diag)-19, PARAMETER SELECTION, OPERATION, Subaru Select Monitor.>

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VEHICLE DYNAMICS CONTROL (VDC) (DIAGNOSTICS)

## B: INSPECTION

### 1. COMMUNICATION FOR INITIALIZING IMPOSSIBLE

#### DETECTING CONDITION:

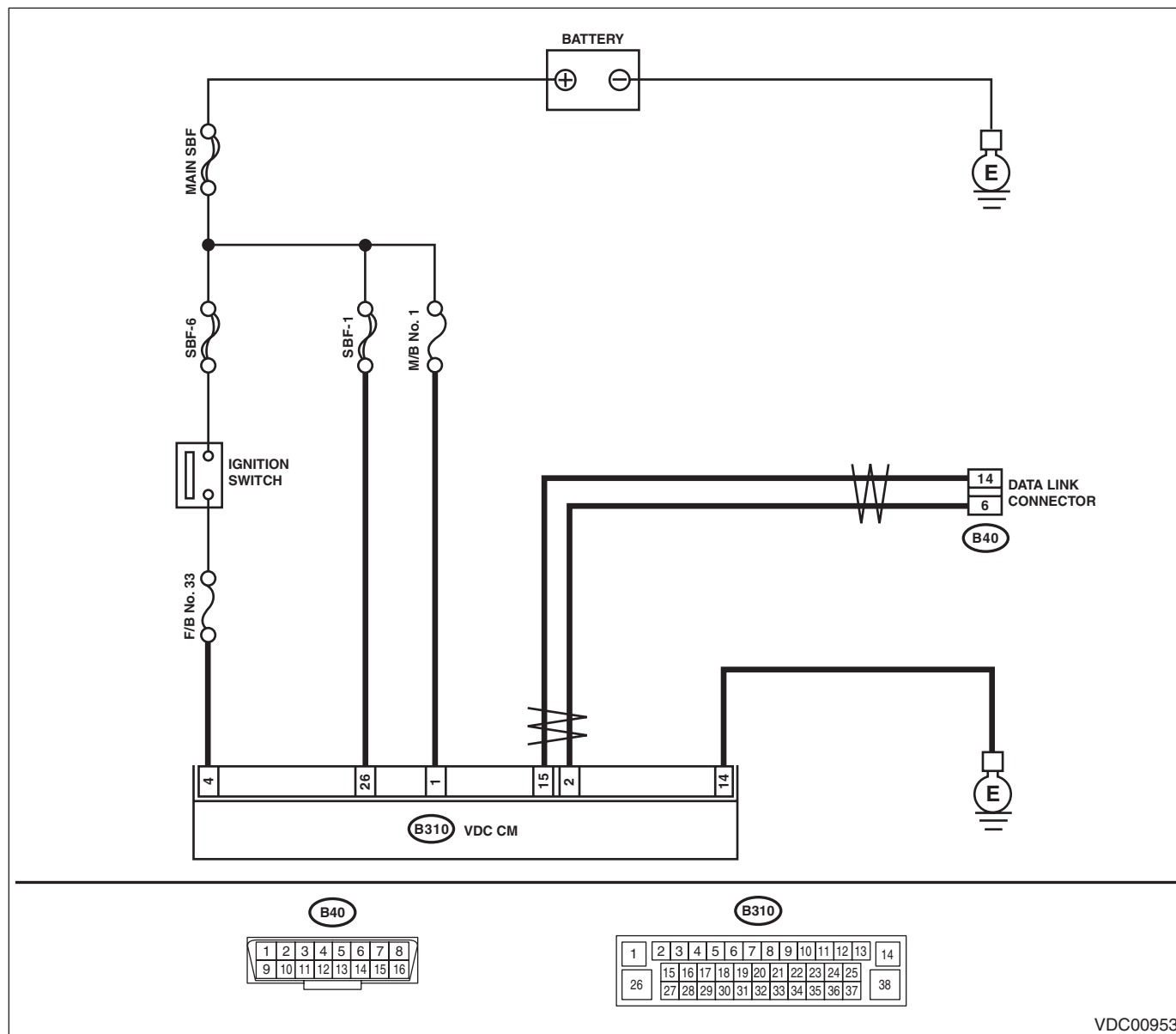
Defective harness connector

#### TROUBLE SYMPTOM:

Communication is impossible between VDC and Subaru Select Monitor.

#### WIRING DIAGRAM:

Vehicle Dynamics Control System <Ref. to WI-152, Vehicle Dynamics Control System.>



VDC00953

| Step                                                                                                 | Check                        | Yes           | No                                                                               |
|------------------------------------------------------------------------------------------------------|------------------------------|---------------|----------------------------------------------------------------------------------|
| 1<br><b>CHECK IGNITION SWITCH.</b>                                                                   | Is the ignition switch ON?   | Go to step 2. | Turn the ignition switch to ON, and select VDC mode using Subaru Select Monitor. |
| 2<br><b>CHECK BATTERY.</b><br>1) Turn the ignition switch to OFF.<br>2) Measure the battery voltage. | Is the voltage 11 V or more? | Go to step 3. | Charge or replace the battery.                                                   |

# Subaru Select Monitor

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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 5.                                                                                      |
| 4    | CHECK INSTALLATION OF VDCCM&H/U CONNECTOR.<br>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 5.                                                                                                         | Insert VDCCM&H/U connector into VDCCM&H/U.                                                         |
| 5    | CHECK LAN SYSTEM.<br>Perform the diagnosis for LAN system. <Ref. to LAN(diag)-2, Basic Diagnostic Procedure.>                                                                                                                                                                                                                                                         | Is there any fault in LAN system?                                                             | Perform the diagnosis according to DTC for LAN system. <Ref. to LAN(diag)-51, List of Diagnostic Trouble Code (DTC).> | Go to step 6.                                                                                      |
| 6    | CHECK SUBARU SELECT MONITOR COMMUNICATION.<br>1) Turn the ignition switch to ON.<br>2) Check whether communication to VDC system can be executed normally.                                                                                                                                                                                                            | Is the system name displayed on Subaru Select Monitor?                                        | Check the DTC in VDC system. <Ref. to VDC(diag)-22, Read Diagnostic Trouble Code (DTC).>                              | Go to step 7.                                                                                      |
| 7    | CHECK POWER SUPPLY CIRCUIT.<br>1) Turn the ignition switch to ON. (engine OFF)<br>2) Measure the ignition power supply voltage between VDCCM&H/U connector and chassis ground.<br><b>Connector &amp; terminal</b><br><b>(B310) No. 4 (+) — Chassis ground (-):</b><br><b>(B310) No. 1 (+) — Chassis ground (-):</b><br><b>(B310) No. 26 (+) — Chassis ground (-):</b> | Is the voltage 10 — 15 V?                                                                     | Go to step 8.                                                                                                         | Repair open circuit in harness between VDCCM&H/U and battery.                                      |
| 8    | CHECK HARNESS CONNECTOR BETWEEN VDCCM&H/U AND CHASSIS GROUND.<br>1) Turn the ignition switch to OFF.<br>2) Disconnect the connector from the VDCCM&H/U.<br>3) Measure the resistance of harness between VDCCM&H/U connector and chassis ground.<br><b>Connector &amp; terminal</b><br><b>(B310) No. 14 — Chassis ground:</b>                                          | Is the resistance less than 10 Ω?                                                             | Go to step 9.                                                                                                         | Repair the open circuit of VDCCM&H/U ground circuit and poor contact of connector.                 |
| 9    | 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-9, VDC Control Module and Hydraulic Control Unit (VDCCM&H/U).> |