

VEHICLE DYNAMICS CONTROL (VDC)

VDC

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General Description

VEHICLE DYNAMICS CONTROL (VDC)

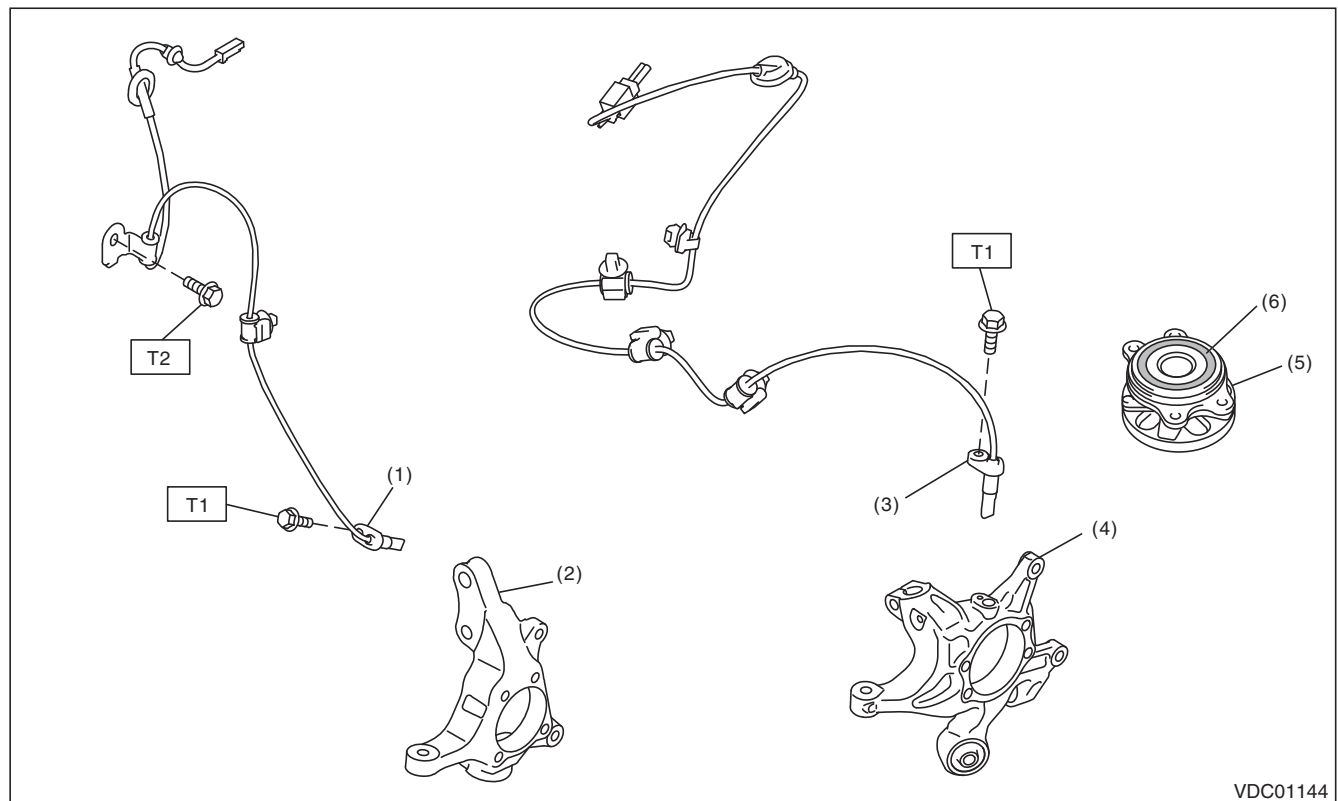
1. General Description

A: SPECIFICATION

Item				Specification or identification
ABS wheel speed sensor	ABS wheel speed sensor gap (for reference)	Front		0.77 — 1.43 mm (0.030 — 0.056 in)
		Rear		0.44 — 1.76 mm (0.017 — 0.069 in)
	Identifications of harness (symbol)	Front	RH	Z1
			LH	Z2
		Rear	RH	Z5
			LH	Z6
VDCCM&H/U identification	Models without EyeSight	MT model		B2
		CVT model	Model without X mode	B1
			Model with X mode	B3 or B9
	Models with EyeSight			B7

B: COMPONENT

1. ABS WHEEL SPEED SENSOR



- | | |
|----------------------------------|------------------------------|
| (1) Front ABS wheel speed sensor | (4) Housing ASSY - rear axle |
| (2) Housing ASSY - front axle | (5) Hub unit COMPL |
| (3) Rear ABS wheel speed sensor | (6) Magnetic encoder |

Tightening torque: N·m (kgf·m, ft·lb)

T1: 7.5 (0.76, 5.5)

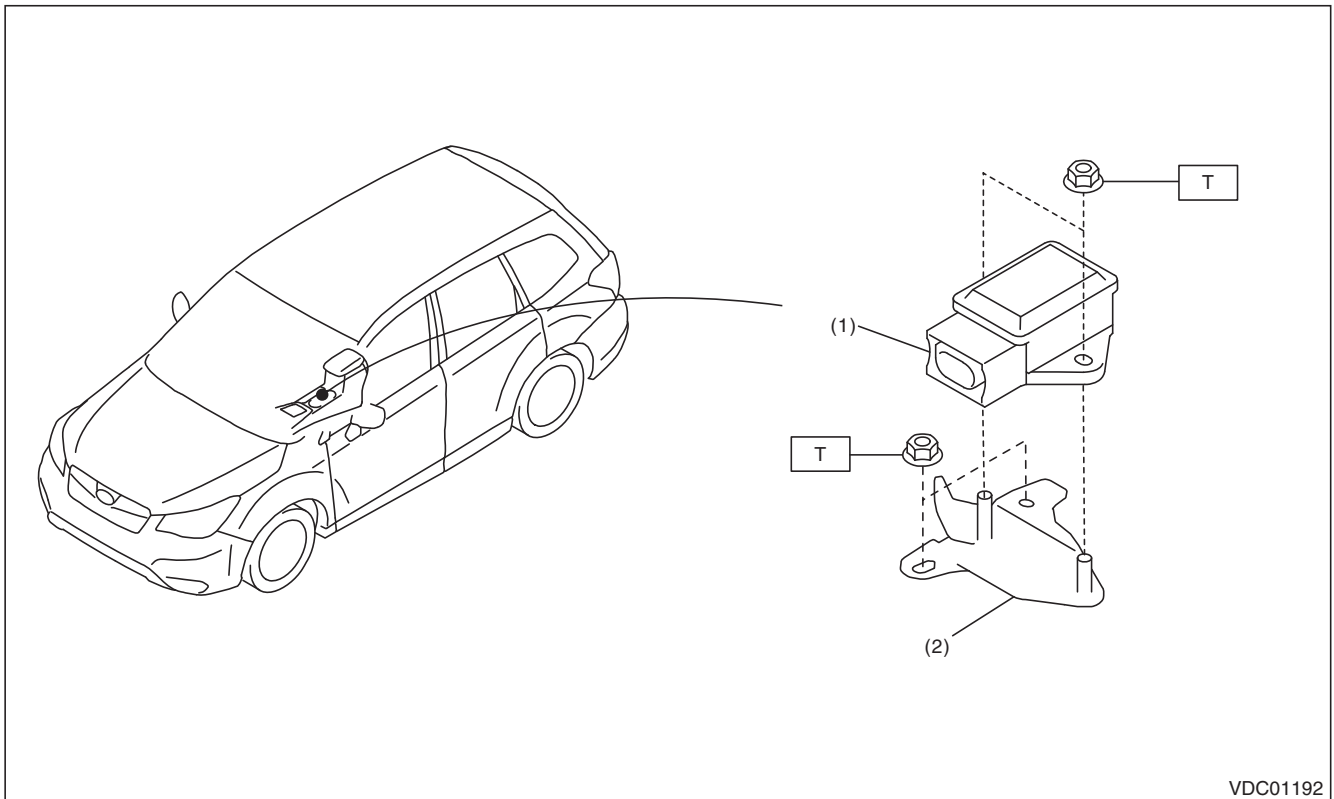
T2: 33 (3.36, 24.3)

General Description

VEHICLE DYNAMICS CONTROL (VDC)

2. YAW RATE & G SENSOR

Models with EyeSight only



VDC01192

(1) Yaw rate & G sensor

(2) Bracket

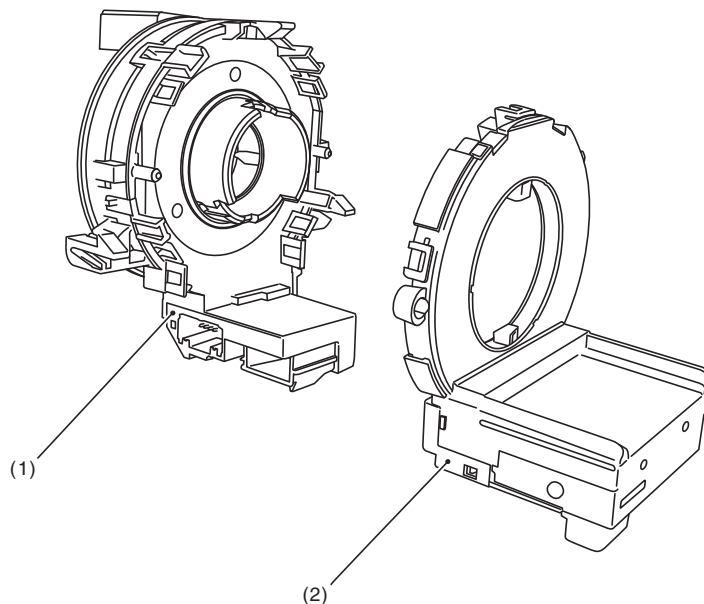
Tightening torque: N·m (kgf-m, ft-lb)

T: 7.5 (0.76, 5.5)

General Description

VEHICLE DYNAMICS CONTROL (VDC)

3. STEERING ANGLE SENSOR



VDC00986

(1) Steering roll connector

(2) Steering angle sensor

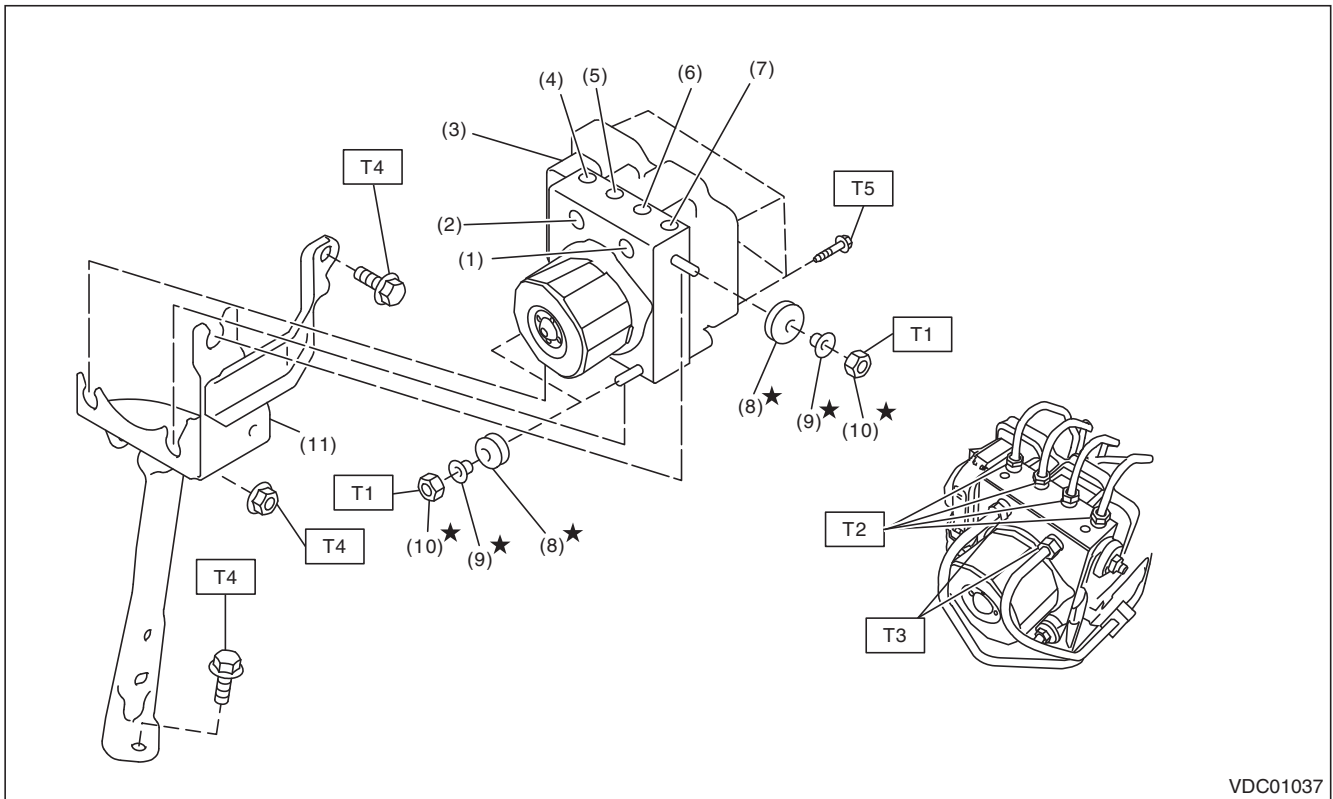


General Description

VEHICLE DYNAMICS CONTROL (VDC)

4. VDC CONTROL MODULE & HYDRAULIC CONTROL UNIT (VDCCM&H/U)

- Models without EyeSight



- | | |
|---|-------------------------------|
| (1) Primary inlet | (7) Rear LH outlet |
| (2) Secondary inlet | (8) Damper - hydraulic unit |
| (3) VDC control module and hydraulic control unit (VDCCM&H/U) | (9) Spacer |
| (4) Rear RH outlet | (10) Nut |
| (5) Front LH outlet | (11) Bracket - hydraulic unit |
| (6) Front RH outlet | |

Tightening torque: N·m (kgf-m, ft-lb)

T1: 7.5 (0.76, 5.5)

T2: 15 (1.53, 11.1)

T3: 19 (1.94, 14.0)

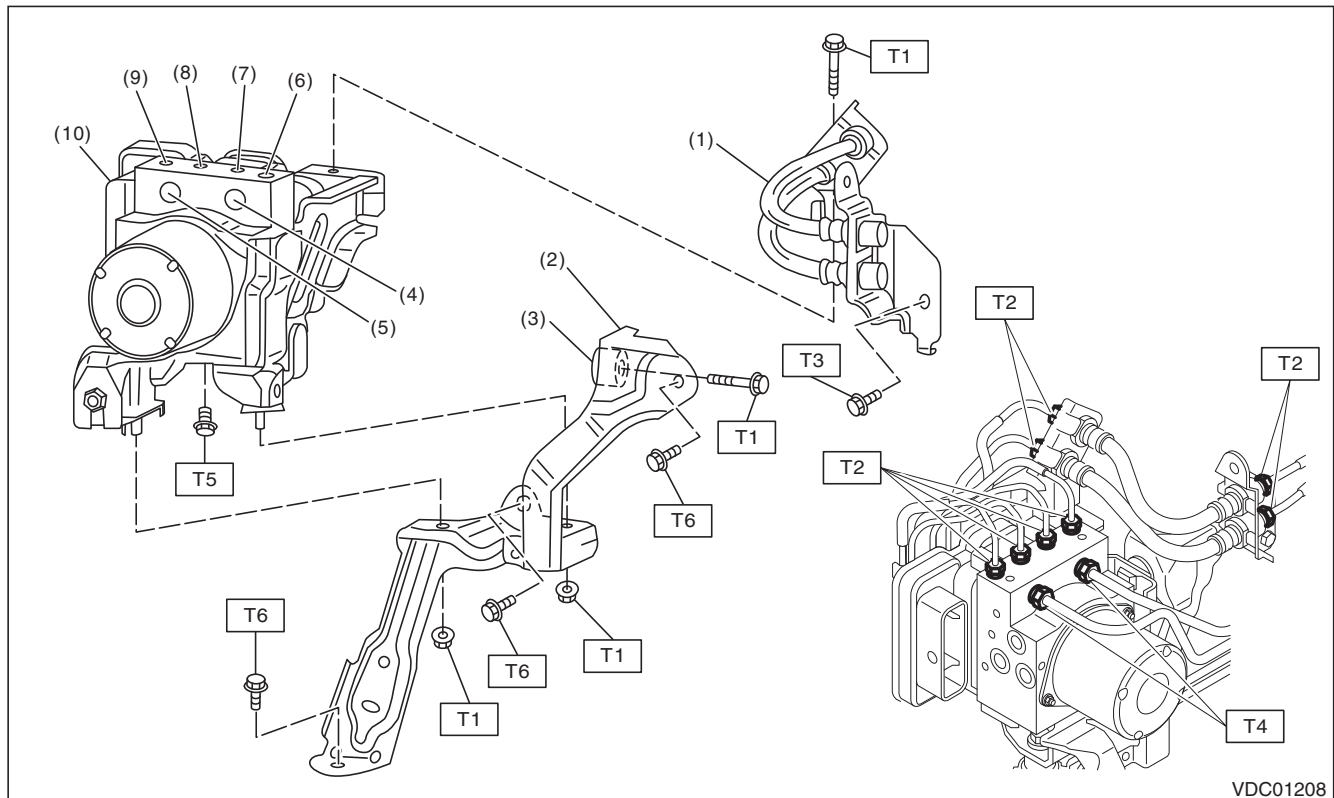
T4: 33 (3.36, 24.3)

T5: <Ref. to VDC-20, REPLACEMENT, VDC Control Module and Hydraulic Control Unit (VDCCM&H/U).>

General Description

VEHICLE DYNAMICS CONTROL (VDC)

• Models with EyeSight



- | | |
|------------------------------|--|
| (1) Hose ASSY | (8) Front LH outlet |
| (2) Bracket - hydraulic unit | (9) Rear RH outlet |
| (3) Damper - hydraulic unit | (10) VDC control module and hydraulic control unit (VDCCM&H/U) |
| (4) Primary inlet | |
| (5) Secondary inlet | |
| (6) Rear LH outlet | |
| (7) Front RH outlet | |

Tightening torque: N·m (kgf-m, ft-lb)

T1: 7.5 (0.76, 5.5)

T2: 15 (1.53, 11.1)

T3: 18 (1.84, 13.3)

T4: 19 (1.94, 14.0)

T5: 27 (2.75, 19.9)

T6: 33 (3.36, 24.3)

C: CAUTION

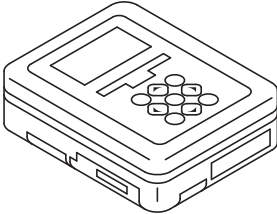
- Wear appropriate work clothing, including a helmet, protective goggles and protective shoes when performing any work.
- Remove contamination including dirt and corrosion before removal, installation or disassembly.
- Keep the disassembled parts in order and protect them from dust and dirt.
- Before disconnecting connectors of sensors or units, be sure to disconnect the ground cable from battery.
- Before removal, installation or disassembly, be sure to clarify the failure. Avoid unnecessary removal, installation, disassembly and replacement.
- Vehicle components are extremely hot after driving. Be wary of receiving burns from heated parts.
- Be sure to tighten fasteners including bolts and nuts to the specified torque.
- Place shop jacks or rigid racks at the specified points.
- When removing, installing or replacing the VDCCM&H/U, VDCCM&H/U bracket, steering wheel or steering angle sensor, perform "VDC sensor midpoint setting mode" of the VDC. <Ref. to VDC-23, ADJUSTMENT, VDC Control Module and Hydraulic Control Unit (VDCCM&H/U).>

General Description

VEHICLE DYNAMICS CONTROL (VDC)

D: PREPARATION TOOL

1. SPECIAL TOOL

ILLUSTRATION	TOOL NUMBER	DESCRIPTION	REMARKS
 ST1B022XU0	1B022XU0	SUBARU SELECT MONITOR III KIT	Used for setting of each function and trouble-shooting for electrical system.

2. GENERAL TOOL

TOOL NAME	REMARKS
Circuit tester	Used for measuring resistance and voltage.
Pressure gauge	Used for measuring oil pressure.
Oscilloscope	Used for measuring the sensor.
Steering wheel puller	Used for removing the steering wheel.

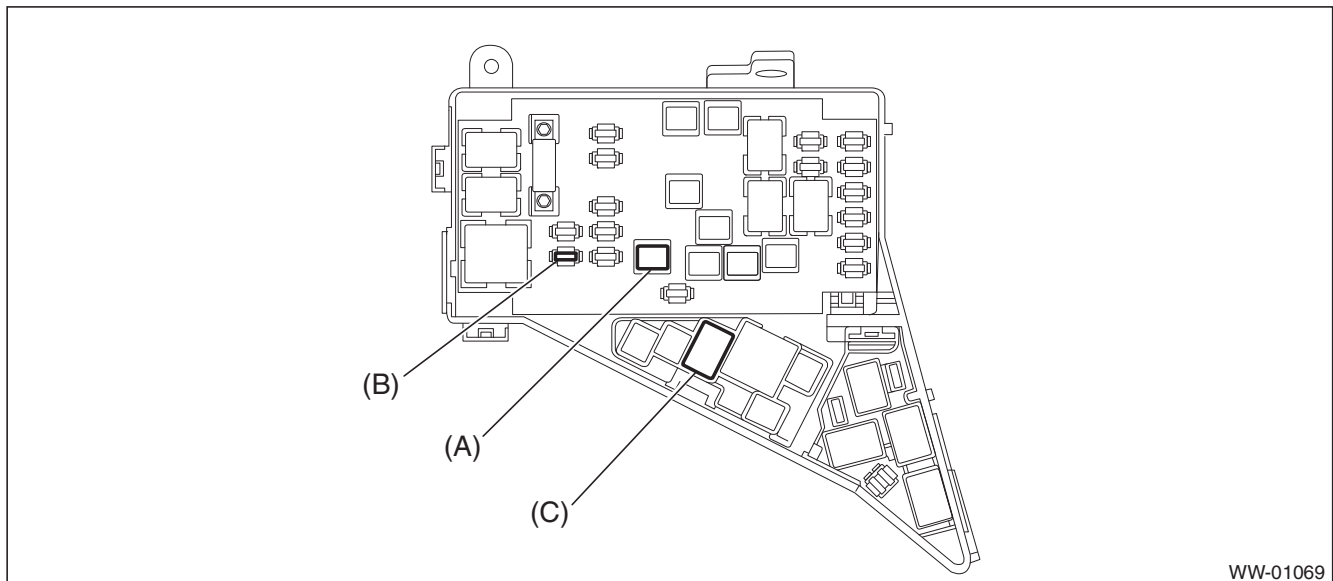


Relay and Fuse

VEHICLE DYNAMICS CONTROL (VDC)

2. Relay and Fuse

A: LOCATION



Main fuse box	Fuse 50A (VDC CM&H/U)	(A)
	Fuse 30A (VDC CM&H/U)	(B)
	Brake light relay	(C)

NOTE:

For other related fuses, refer to the wiring diagram. <Ref. to WI-24, Power Supply Circuit.>

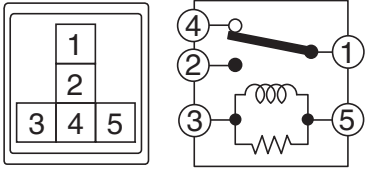
B: INSPECTION

1. CHECK FUSE

- 1) Remove the fuse and inspect visually.
- 2) If the fuse is blown out, replace the fuse.

2. CHECK RELAY

- 1) Check the resistance between relay terminals.

Terminal No.	Inspection conditions	Standard	Circuit
1 — 2	Always	1 M Ω or more	
1 — 4	Always	Less than 1 Ω	
1 — 2	Apply battery voltage between terminals 3 and 5.	Less than 1 Ω	

- 2) Replace the relay if the inspection result is not within the standard value.

Vehicle Dynamics Control System

VEHICLE DYNAMICS CONTROL (VDC)

3. Vehicle Dynamics Control System

A: WIRING DIAGRAM

Refer to "Vehicle Dynamics Control System" in the wiring diagram. <Ref. to WI-418, WIRING DIAGRAM, Vehicle Dynamics Control System.>

B: ELECTRICAL SPECIFICATION

Refer to the Control Module I/O Signal of the "Vehicle Dynamics Control System (VDC) (DIAGNOSTICS)". <Ref. to VDC(diag)-12, ELECTRICAL SPECIFICATION, Control Module I/O Signal.>

C: INSPECTION

Refer to the "Vehicle Dynamics Control System (VDC) (DIAGNOSTICS)". <Ref. to VDC(diag)-105, INSPECTION, General Diagnostic Table.>

D: NOTE

For operation procedures of each component of the vehicle dynamics control system, refer to the respective section.

- VDC control module & hydraulic control unit (VDCCM&H/U): <Ref. to VDC-10, VDC Control Module and Hydraulic Control Unit (VDCCM&H/U).>
- Yaw rate & G sensor: <Ref. to VDC-31, Yaw Rate and G Sensor.>
- Steering angle sensor: <Ref. to VDC-33, Steering Angle Sensor.>
- Front ABS wheel speed sensor: <Ref. to VDC-37, Front ABS Wheel Speed Sensor.>
- Rear ABS wheel speed sensor: <Ref. to VDC-40, Rear ABS Wheel Speed Sensor.>
- Front magnetic encoder: <Ref. to VDC-44, Front Magnetic Encoder.>
- Rear magnetic encoder: <Ref. to VDC-45, Rear Magnetic Encoder.>
- VDC OFF switch: <Ref. to VDC-46, VDC OFF Switch.>



VDC Control Module and Hydraulic Control Unit (VDCCM&H/U)

VEHICLE DYNAMICS CONTROL (VDC)

4. VDC Control Module and Hydraulic Control Unit (VDCCM&H/U)

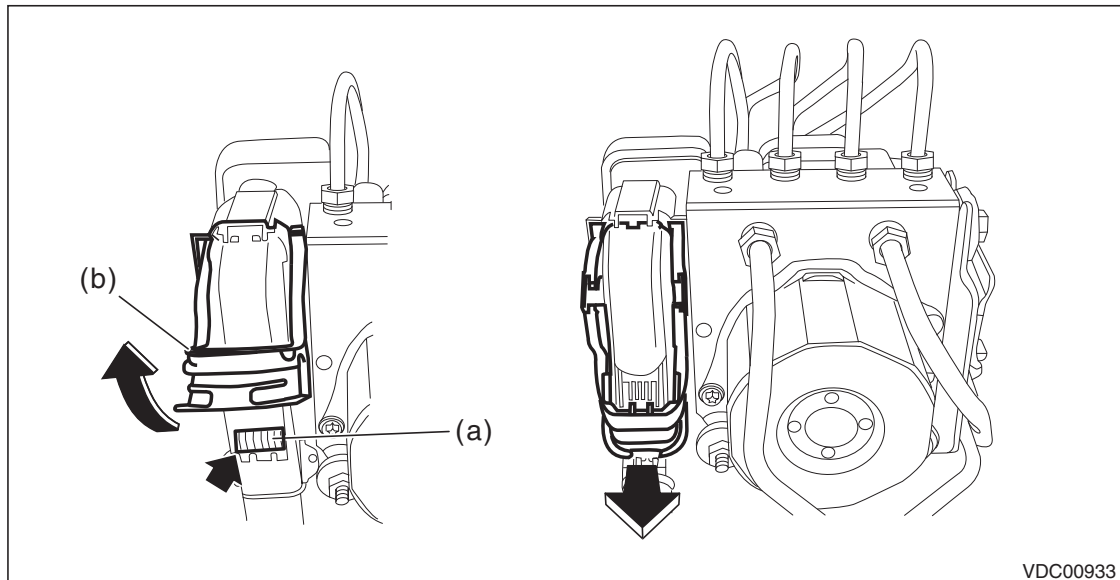
A: REMOVAL

1. MODELS WITHOUT EyeSight

- 1) Disconnect the ground cable from battery.
- 2) Remove the engine control module (ECM). (Turbo model) <Ref. to FU(H4DOTC)-134, REMOVAL, Engine Control Module (ECM).>
- 3) Remove the intake duct. (Turbo model) <Ref. to IN(H4DOTC)-20, REMOVAL, Intake Duct.>
- 4) Remove the air intake boot. (Non-turbo model) <Ref. to IN(H4DO)-11, REMOVAL, Air Intake Boot.>
- 5) Remove the VDC control module & hydraulic control unit (VDCCM&H/U).
 - (1) Remove any dirt from around the VDCCM&H/U.
 - (2) Pull up the lock lever (b) while pressing the lock button (a) and disconnect the VDCCM&H/U connector.

CAUTION:

Do not pull on the harness when disconnecting the connector.



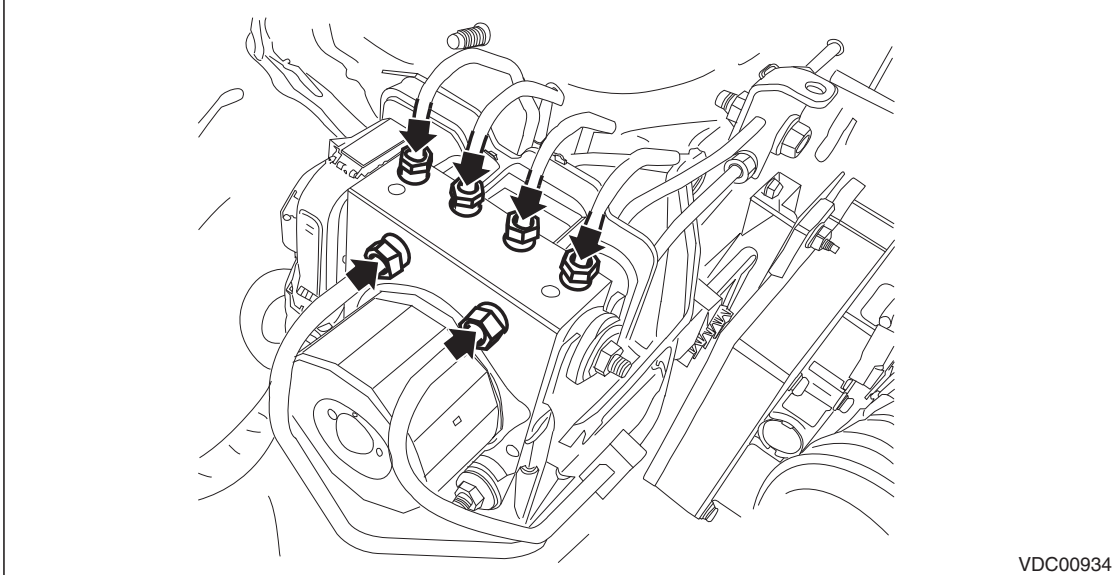
VDC Control Module and Hydraulic Control Unit (VDCCM&H/U)

VEHICLE DYNAMICS CONTROL (VDC)

(3) Using a flare nut wrench, disconnect each brake pipe from VDCCM&H/U.

CAUTION:

- Wrap the brake pipe with a vinyl bag so as not to spill the brake fluid on the painted surface of the vehicle body.
- If brake fluid is spilled on the painted surface of the vehicle body, wash it off immediately with water and wipe clean.

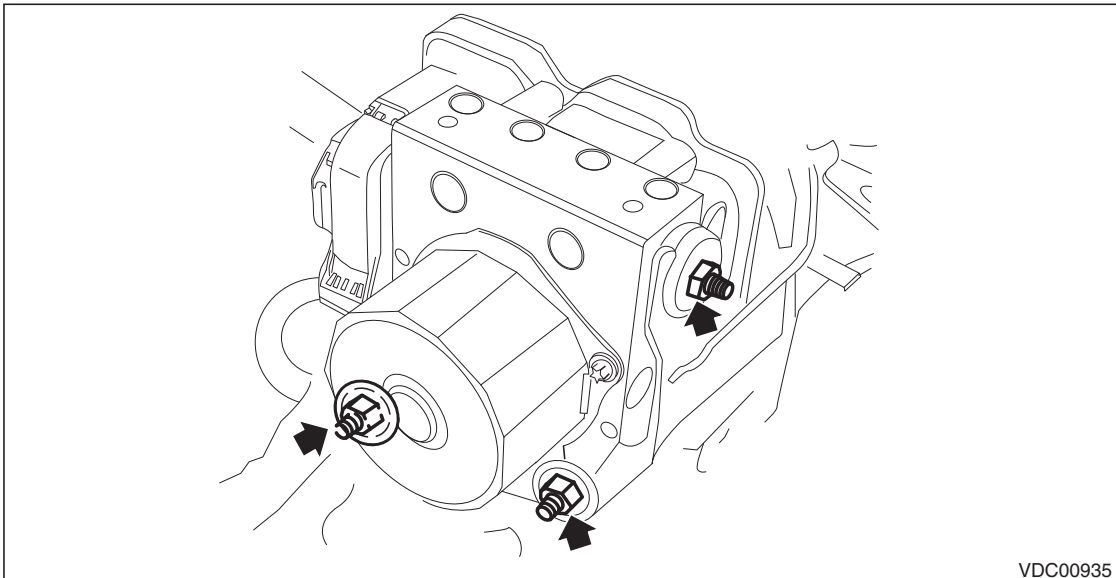


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(4) Remove the nuts and remove the VDCCM&H/U from the bracket - hydraulic unit.

CAUTION:

- Do not drop or bump the VDCCM&H/U.
- Do not turn the VDCCM&H/U upside down or place it sideways for storage.
- Be careful not to let foreign matter enter the VDCCM&H/U.
- Be careful that no water and fluid enter the connectors.



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VDC Control Module and Hydraulic Control Unit (VDCCM&H/U)

VEHICLE DYNAMICS CONTROL (VDC)

2. MODELS WITH EyeSight

CAUTION:

- Avoid unnecessary removal of parts in order to prevent fluid leakage.
- When the VDCCM&H/U components are removed, be sure to perform the installation according to the installation procedures. <Ref. to VDC-14, INSTALLATION, VDC Control Module and Hydraulic Control Unit (VDCCM&H/U).>

- 1) Disconnect the ground cable from battery.
- 2) Remove the engine control module (ECM). (Turbo model) <Ref. to FU(H4DOTC)-134, REMOVAL, Engine Control Module (ECM).>
- 3) Remove the intake duct. (Turbo model) <Ref. to IN(H4DOTC)-20, REMOVAL, Intake Duct.>
- 4) Remove the air intake boot. (Non-turbo model) <Ref. to IN(H4DO)-11, REMOVAL, Air Intake Boot.>
- 5) Remove the VDC control module & hydraulic control unit (VDCCM&H/U).

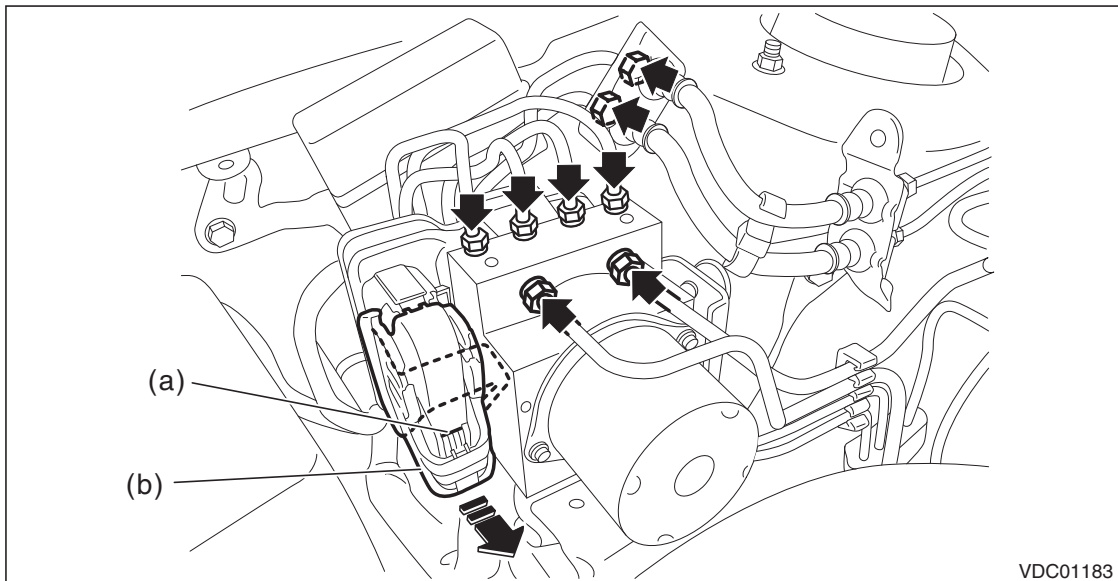
(1) Remove any dirt from around the VDCCM&H/U.

(2) Pull up the lock lever (b) while pressing the lock button (a) and disconnect the VDCCM&H/U connector.

(3) Using a flare nut wrench, disconnect each brake pipe from VDCCM&H/U.

CAUTION:

- Do not pull on the harness when disconnecting the connector.
- Wrap the brake pipe with a vinyl bag so as not to spill the brake fluid on the painted surface of the vehicle body.
- If brake fluid is spilled on the painted surface of the vehicle body, wash it off immediately with water and wipe clean.

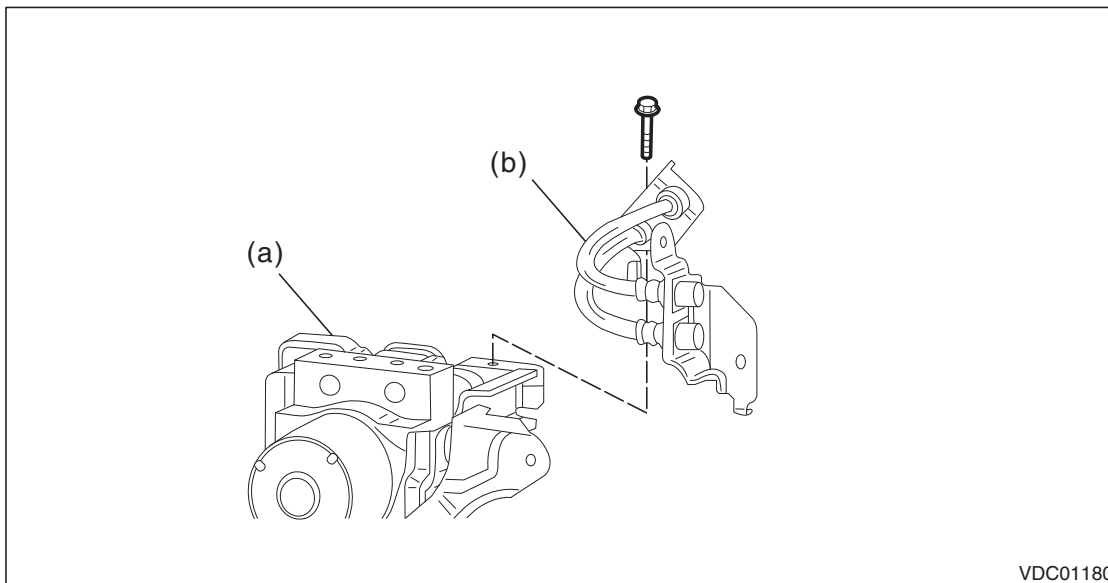


VDC Control Module and Hydraulic Control Unit (VDCCM&H/U)

VEHICLE DYNAMICS CONTROL (VDC)

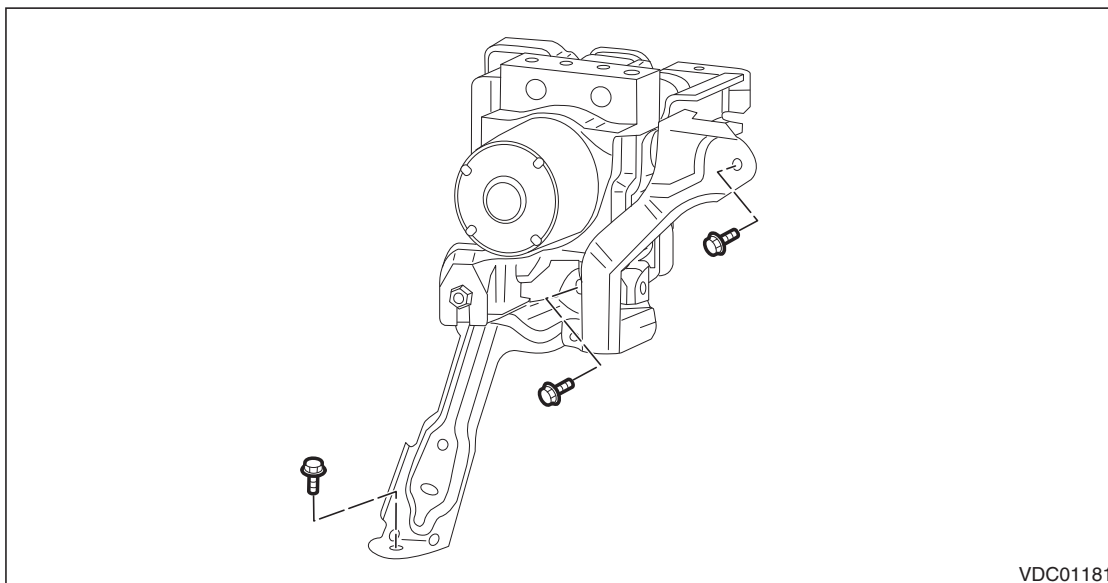
6) Remove the bracket - hydraulic unit and VDCCM&H/U.

(1) Remove the bolts, and remove the hose assembly (b) from the bracket - hydraulic unit (a).



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(2) Remove the bolts and remove the bracket - hydraulic unit and VDCCM&H/U from the vehicle.

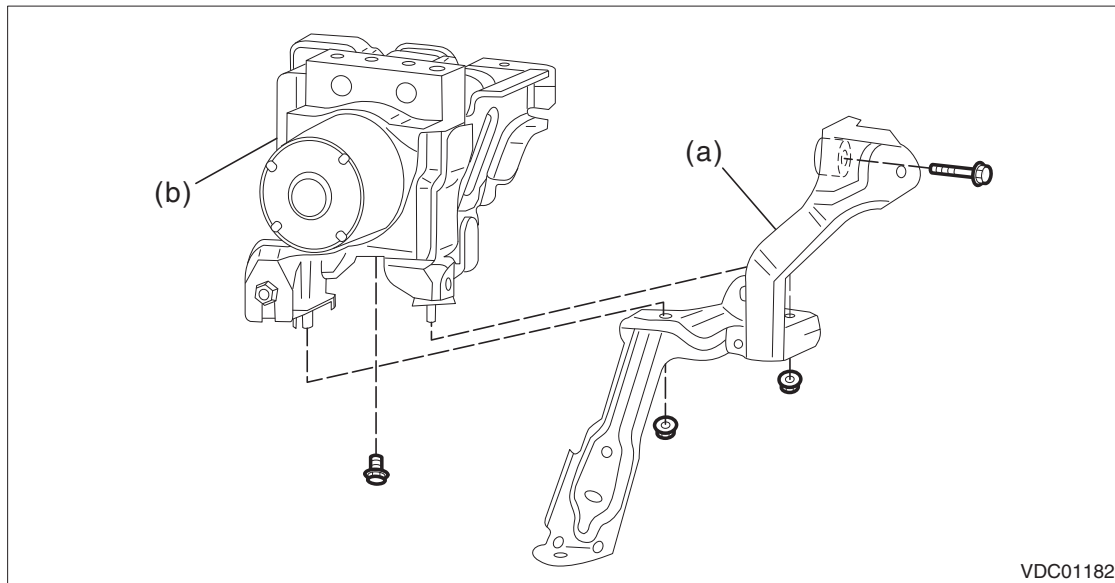


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VDC Control Module and Hydraulic Control Unit (VDCCM&H/U)

VEHICLE DYNAMICS CONTROL (VDC)

- (3) Remove the bolts and nuts and remove the VDCCM&H/U (b) from the bracket - hydraulic unit (a).



CAUTION:

- Do not drop or bump the VDCCM&H/U.
- Do not turn the VDCCM&H/U upside down or place it sideways for storage.
- Be careful not to let foreign matter enter the VDCCM&H/U.
- Be careful that no water and fluid enter the connectors.

B: INSTALLATION

CAUTION:

- When installing the VDCCM&H/U to the bracket - hydraulic unit, make sure that there is no oil adhered to the bolts and the threads of VDCCM&H/U. If the oil is adhered, degrease it carefully before tightening.
- Connect the VDCCM&H/U connector securely.
- When installing the VDCCM&H/U, replace the damper - hydraulic unit, spacer and nut with new parts. (Models without EyeSight)

- 1) Install each part in the reverse order of removal.

Tightening torque:

Refer to "COMPONENT" of "General Description". <Ref. to VDC-5, VDC CONTROL MODULE & HYDRAULIC CONTROL UNIT (VDCCM&H/U), COMPONENT, General Description.>

- 2) Bleed air from the brake system. <Ref. to BR-61, Air Bleeding.>
3) Perform parameter confirmation, selection, and registration.

NOTE:

- When the VDCCM&H/U is replaced with a new part, be sure to perform the selection · registration operation.
- Be sure to use the Subaru Select Monitor for the selection and registration of parameter.
- When the registration has not been performed, the DTC code "Parameter selection error" is detected together with the ABS/EBD/VDC warning light illumination.

(1) Check that the applied model and grade of the relevant vehicle are included. <Ref. to VDC(diag)-18, PARAMETER CHECK, OPERATION, Subaru Select Monitor.>

(2) On {Confirm on parameter} display, enter the applied model of the relevant vehicle and check if it is correct. If the information is not correct, perform parameter selection and registration. <Ref. to VDC(diag)-18, PARAMETER SELECTION, OPERATION, Subaru Select Monitor.>

- 4) Adjust the steering angle sensor. <Ref. to VDC-23, ADJUSTMENT, VDC Control Module and Hydraulic Control Unit (VDCCM&H/U).>

VDC Control Module and Hydraulic Control Unit (VDCCM&H/U)

VEHICLE DYNAMICS CONTROL (VDC)

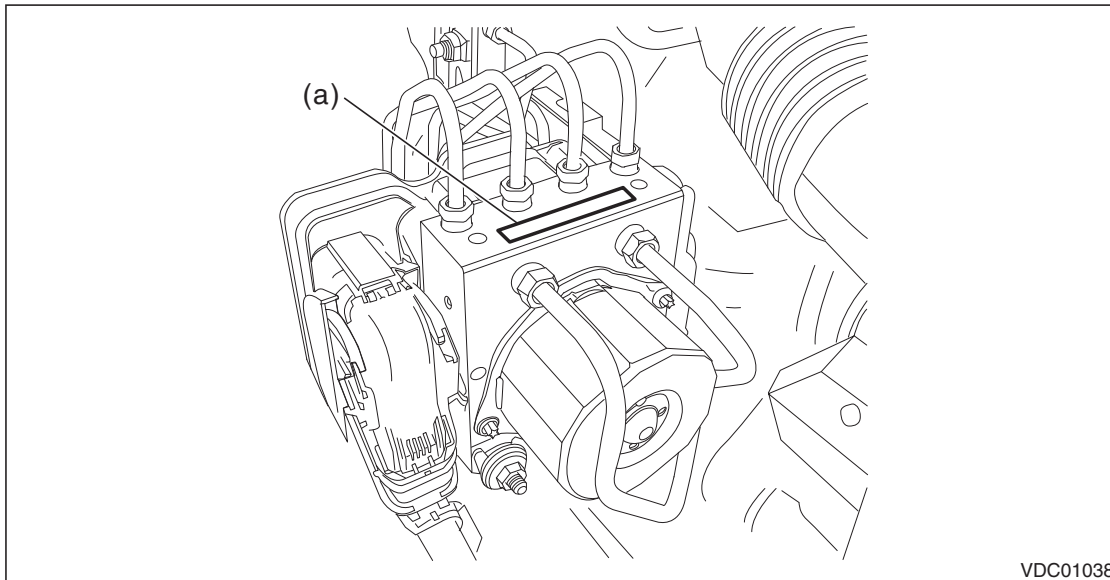
C: INSPECTION

1) Check the identification (a) of the VDC control module & hydraulic control unit (VDCCM&H/U).

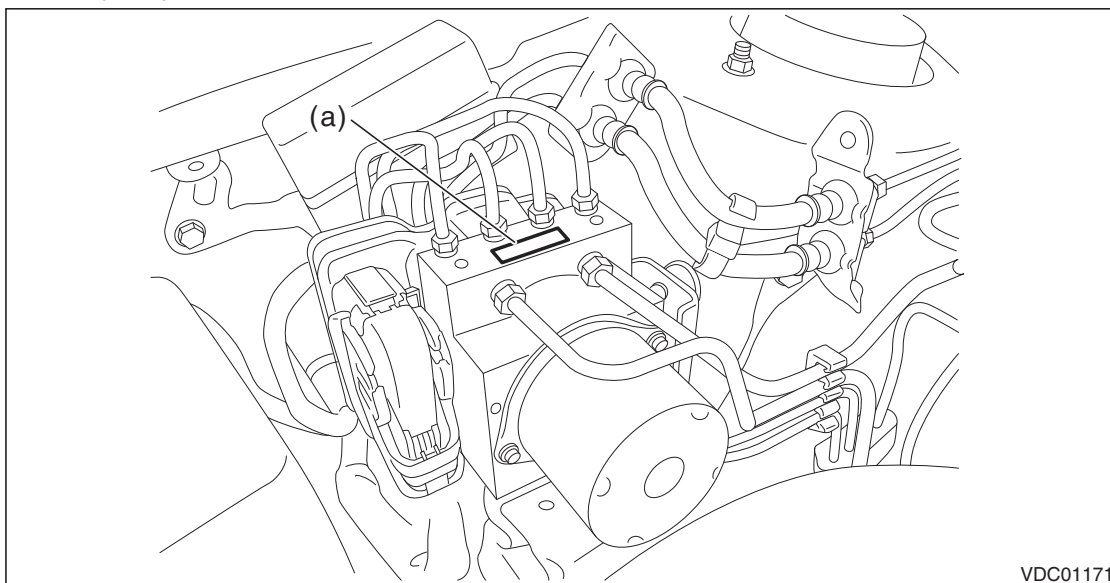
NOTE:

For the identification, refer to "SPECIFICATION" in "General Description". <Ref. to VDC-2, SPECIFICATION, General Description.>

- Models without EyeSight



- Models with EyeSight



2) Check the condition of connection and settlement of connector, and correct or replace if defective.

VDC Control Module and Hydraulic Control Unit (VDCCM&H/U)

VEHICLE DYNAMICS CONTROL (VDC)

1. CHECKING THE HYDRAULIC UNIT ABS OPERATION BY PRESSURE GAUGE

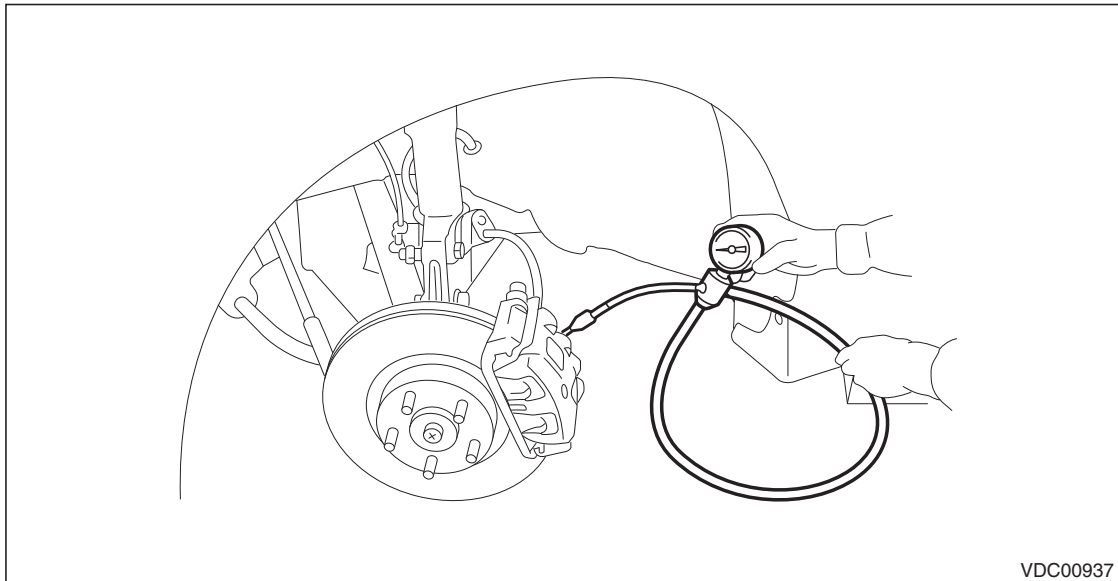
- 1) Lift up the vehicle, and then remove the wheel.
- 2) Remove the bleeder - screws from the FL and FR caliper bodies.
- 3) Connect two pressure gauges to FL and FR caliper bodies.

CAUTION:

- Use a pressure gauge used exclusively for brake fluid measurement.
- Do not use the pressure gauge used for the measurement of transmission oil. Doing so will cause the piston seal to expand and deform.

NOTE:

Wrap sealing tape around the pressure gauge.



- 4) Bleed air from the pressure gauges and the FL and FR caliper bodies.
- 5) Perform ABS sequence control. <Ref. to VDC-24, ABS Sequence Control.>

NOTE:

When the hydraulic unit begins to work, first the FL side performs decompression, hold and compression, and then the FR side performs decompression, hold and compression.

- 6) Read values indicated on the pressure gauge and check if the fluctuation of the values between decompression and compression meets the standard values. Depress the brake pedal and check that the kick-back is normal, and tightness is normal.

Inspection conditions	Front wheel	Rear wheel
Initial value	3,500 kPa (36 kgf/cm ² , 511 psi)	3,500 kPa (36 kgf/cm ² , 511 psi)
When depressurized	500 kPa (5 kgf/cm ² , 73 psi) or less	500 kPa (5 kgf/cm ² , 73 psi) or less
When pressurized	3,500 kPa (36 kgf/cm ² , 511 psi) or more	3,500 kPa (36 kgf/cm ² , 511 psi) or more

- 7) Disconnect the pressure gauges from FL and FR caliper bodies.
- 8) Install the bleeder - screws of the FL and FR caliper bodies.
- 9) Remove the bleeder - screws from the RL and RR caliper bodies.
- 10) Connect two pressure gauges to RL and RR caliper bodies.
- 11) Bleed air from RL and RR caliper bodies, and pressure gauge.

VDC Control Module and Hydraulic Control Unit (VDCCM&H/U)

VEHICLE DYNAMICS CONTROL (VDC)

12) Perform ABS sequence control. <Ref. to VDC-24, ABS Sequence Control.>

NOTE:

When the hydraulic unit begins to work, first the RR side performs decompression, hold and compression, and then the RL side performs decompression, hold and compression.

13) Read values indicated on the pressure gauge and check if the fluctuation of the values between decompression and compression meets specification. Depress the brake pedal and check that the kick-back is normal, and tightness is normal.

14) Disconnect the pressure gauge from the RL and RR caliper bodies.

15) Install the bleeder - screws of the RL and RR caliper bodies.

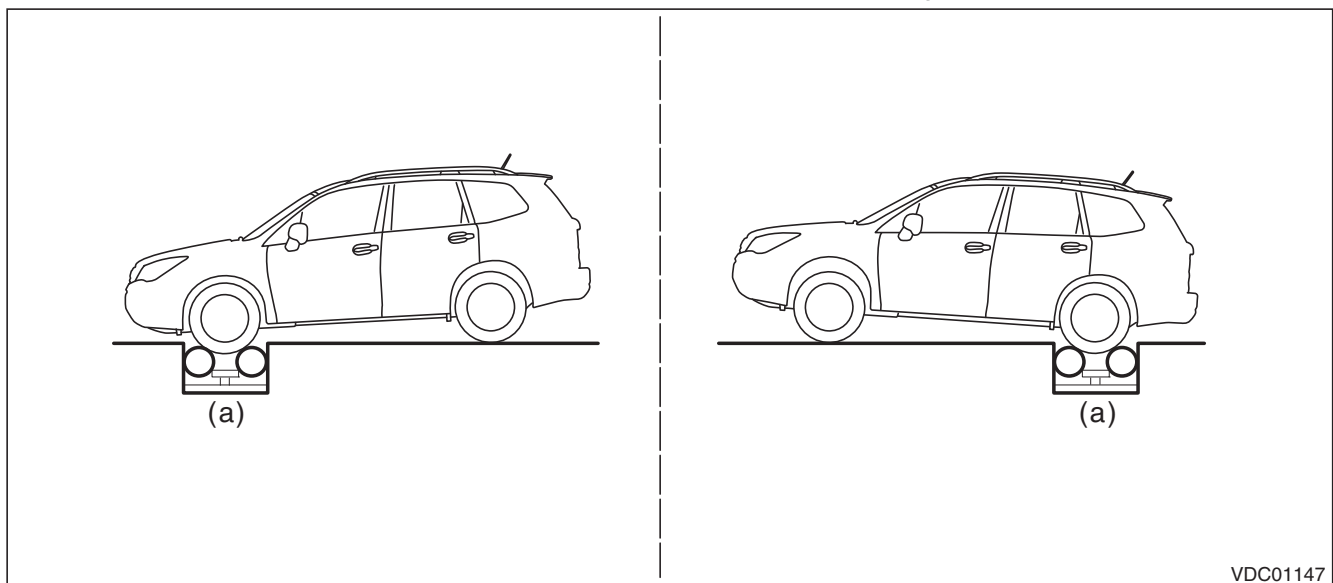
16) Bleed air from the brake system. <Ref. to BR-61, Air Bleeding.>

2. CHECKING THE HYDRAULIC UNIT ABS OPERATION WITH THE BRAKE TESTER

1) Set wheels other than the one to measure on free rollers.

2) Prepare for the ABS sequence control operation. <Ref. to VDC-24, ABS Sequence Control.>

3) Set the front wheels or rear wheels on the brake tester (a) and set the gear to neutral.



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4) Operate the brake tester.

5) Perform ABS sequence control. <Ref. to VDC-24, ABS Sequence Control.>

6) When the hydraulic unit begins to work, check the following work sequence.

(1) The FL wheel performs decompression, hold and compression in sequence, and subsequently the FR wheel repeats the cycle.

(2) The RR wheel performs decompression, hold and compression in sequence, and subsequently the RL wheel repeats the cycle.

7) Read values indicated on the pressure gauge and check if the fluctuation of the values between decompression and compression meets specification.

Inspection conditions	Front wheel	Rear wheel
Initial value	1,000 N (102 kgf, 225 lb)	1,000 N (102 kgf, 225 lb)
When depressurized	500 N (51 kgf, 112 lb) or less	500 N (51 kgf, 112 lb) or less
When pressurized	1,000 N (102 kgf, 225 lb) or more	1,000 N (102 kgf, 225 lb) or more

8) After the inspection, depress the brake pedal and check that it is not abnormally hard, and tightness is normal.

VDC Control Module and Hydraulic Control Unit (VDCCM&H/U)

VEHICLE DYNAMICS CONTROL (VDC)

3. CHECKING THE HYDRAULIC UNIT VDC OPERATION USING A PRESSURE GAUGE

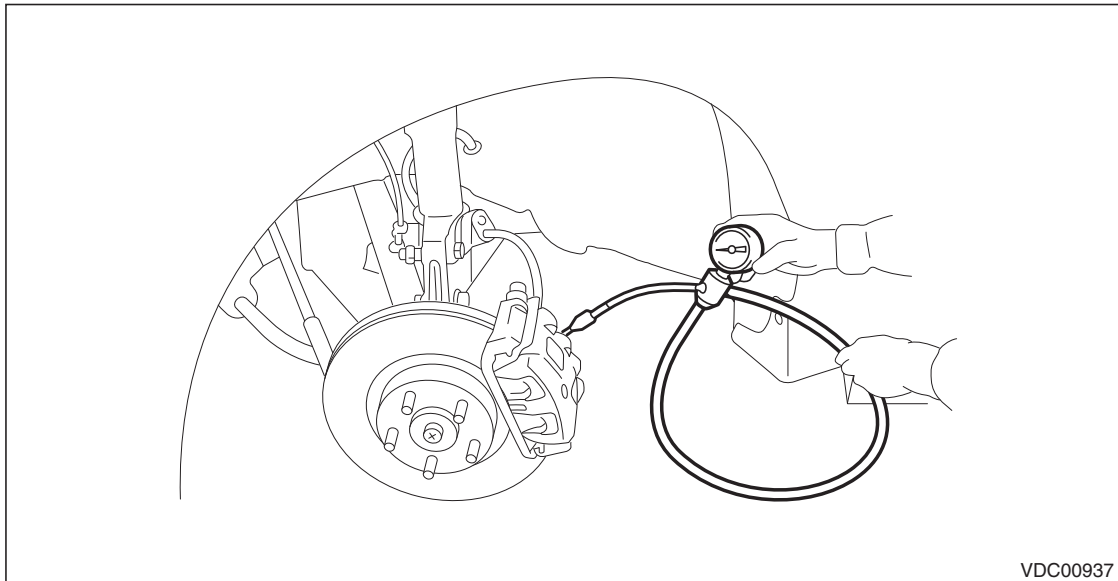
- 1) Lift up the vehicle, and then remove the wheel.
- 2) Remove the bleeder - screws from the FL and FR caliper bodies.
- 3) Connect two pressure gauges to FL and FR caliper bodies.

CAUTION:

- Use a pressure gauge used exclusively for brake fluid measurement.
- Do not use a pressure gauge used for the measuring transmission oil pressure, as the piston seal may expand and deform.

NOTE:

Wrap sealing tape around the pressure gauge.



- 4) Bleed air from the pressure gauge.
- 5) Perform VDC sequence control. <Ref. to VDC-27, VDC Sequence Control.>

NOTE:

When the hydraulic unit begins to work, first the FL side performs compression, hold, and decompression, and then the FR side performs compression, hold, and decompression.

- 6) Read values indicated on the pressure gauge and check if the fluctuation of the values between decompression and compression meets specification. Depress the brake pedal and check that it is not abnormally hard, and tightness is normal.

Inspection conditions	Front wheel	Rear wheel
When pressurized	3,000 kPa (31 kgf/cm ² , 441 psi) or more	3,000 kPa (31 kgf/cm ² , 441 psi) or more
When depressurized	500 kPa (5 kgf/cm ² , 73 psi) or less	500 kPa (5 kgf/cm ² , 73 psi) or less

- 7) Disconnect the pressure gauges from FL and FR caliper bodies.
- 8) Install the bleeder - screws of the FL and FR caliper bodies.
- 9) Remove the bleeder - screws from the RL and RR caliper bodies.
- 10) Connect two pressure gauges to RL and RR caliper bodies.
- 11) Bleed air from RL and RR caliper bodies, and pressure gauge.
- 12) Perform VDC sequence control. <Ref. to VDC-27, VDC Sequence Control.>

NOTE:

When the hydraulic unit begins to work, first the RR side performs compression, hold, and decompression, and then the RL side performs compression, hold, and decompression.

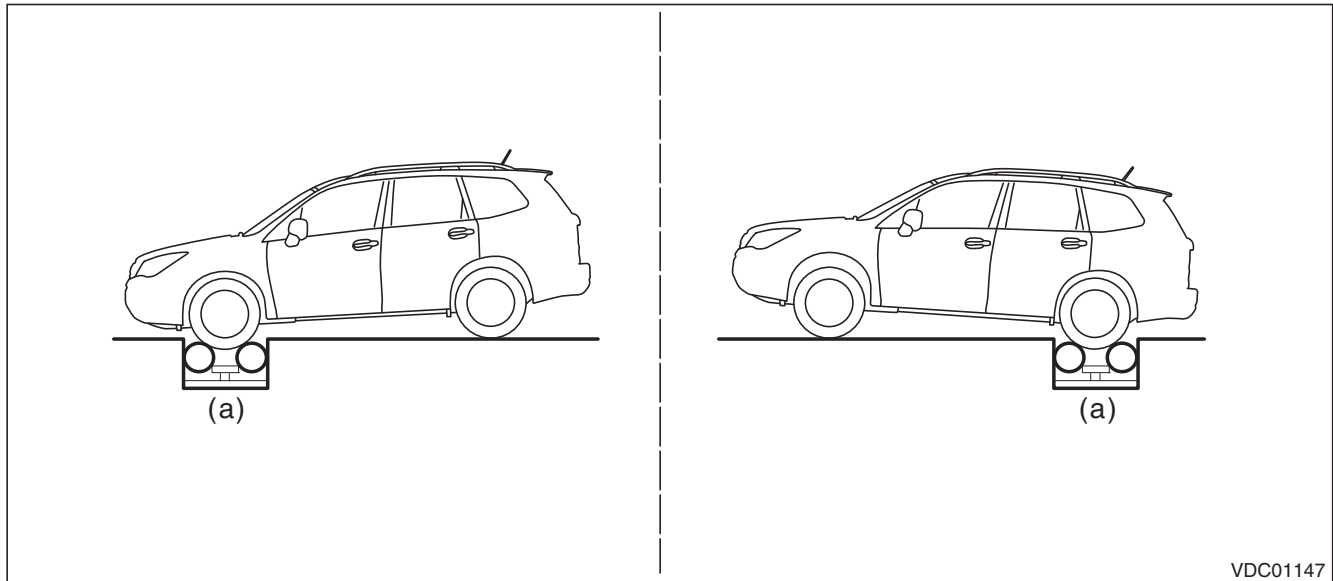
VDC Control Module and Hydraulic Control Unit (VDCCM&H/U)

VEHICLE DYNAMICS CONTROL (VDC)

- 13) Read the values indicated on the pressure gauges and check if it is within specification. Depress the brake pedal and check that it is not abnormally hard, and tightness is normal.
- 14) Disconnect the pressure gauge from the RL and RR caliper bodies.
- 15) Install the bleeder - screws of the RL and RR caliper bodies.
- 16) Bleed air from the brake system. <Ref. to BR-61, Air Bleeding.>

4. CHECK HYDRAULIC UNIT VDC OPERATION WITH BRAKE TESTER

- 1) Set wheels other than the one to measure on free rollers.
- 2) Prepare to operate the VDC sequence control. <Ref. to VDC-27, VDC Sequence Control.>
- 3) Set the front wheels or rear wheels on the brake tester (a) and set the gear to neutral.



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- 4) Operate the brake tester.
- 5) Perform VDC sequence control. <Ref. to VDC-27, VDC Sequence Control.>
- 6) When the hydraulic unit begins to work, check the following work sequence.
 - (1) The FL wheel performs compression, hold and decompression in sequence, and subsequently the FR wheel repeats the cycle.
 - (2) The RR wheel performs compression, hold and decompression in sequence, and subsequently the RL wheel repeats the cycle.
- 7) Read values indicated on the brake tester and check if the fluctuation of the values between decompression and compression meets specification.

Inspection conditions	Front wheel	Rear wheel
When pressurized	2,000 N (204 kgf, 450 lbf) or more	2,000 N (204 kgf, 450 lbf) or more
When depressurized	500 N (51 kgf, 112 lbf) or less	500 N (51 kgf, 112 lbf) or less

- 8) After the inspection, depress the brake pedal and check that it is not abnormally hard, and tightness is normal.

VDC Control Module and Hydraulic Control Unit (VDCCM&H/U)

VEHICLE DYNAMICS CONTROL (VDC)

D: REPLACEMENT

CAUTION:

- Because the pressure sensor built into the H/U is easily damaged by static electricity, start the operation after performing static electricity measures.
- Be careful not to touch the sensors in the H/U to prevent damage.
- Because the seal of the VDCCM cannot be replaced, do not pull or peel it by lifting it up.
- Because the screw of the H/U will become slightly worn in every replacement procedure, 5 times is the maximum number of times for replacement. If a problem is found such as not being able to torque the screw to specifications even before 5 replacement operations are performed, replace the H/U body.
- When installing the VDCCM, always use new screws.
- When the sealing surface of the VDCCM or H/U is dirty or damaged and it cannot be cleaned or repaired, replace with a new part.

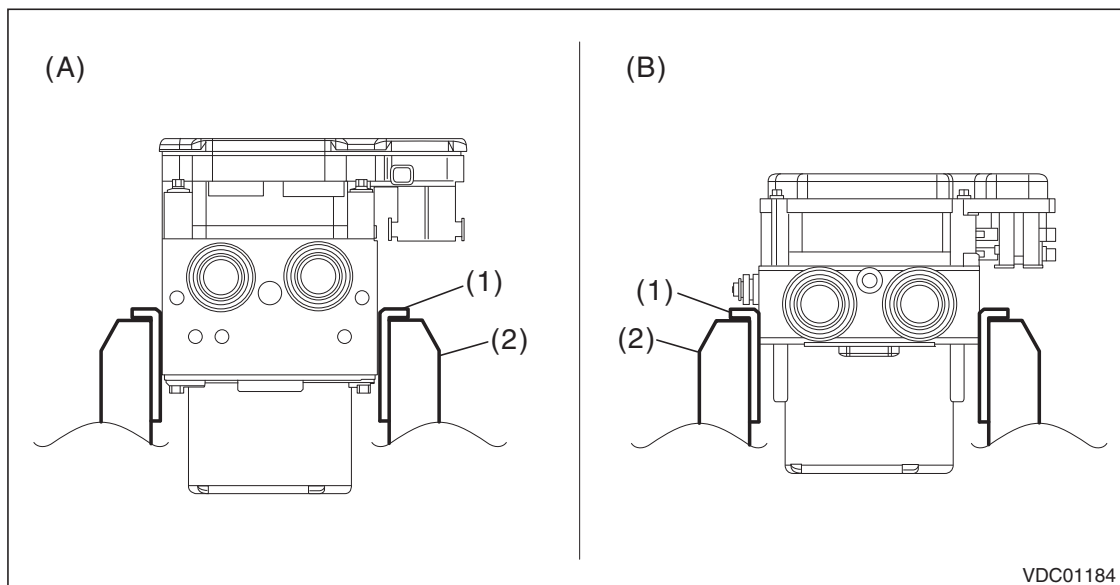
1) Remove the VDCCM&H/U. <Ref. to VDC-10, REMOVAL, VDC Control Module and Hydraulic Control Unit (VDCCM&H/U).>

2) To prevent entry of foreign objects and brake fluid leakage, plug the oil pressure port of the VDCCM&H/U using a screw plug, etc.

3) Set the pump motor section of the removed VDCCM&H/U face down on a vise.

NOTE:

Before securing a part on a vise, place cushioning material such as wood blocks, aluminum plate, or cloth between the part and the vise.



VDC01184

(A) Models with EyeSight

(B) Models without EyeSight

(1) Aluminum plate, etc.

(2) Vise

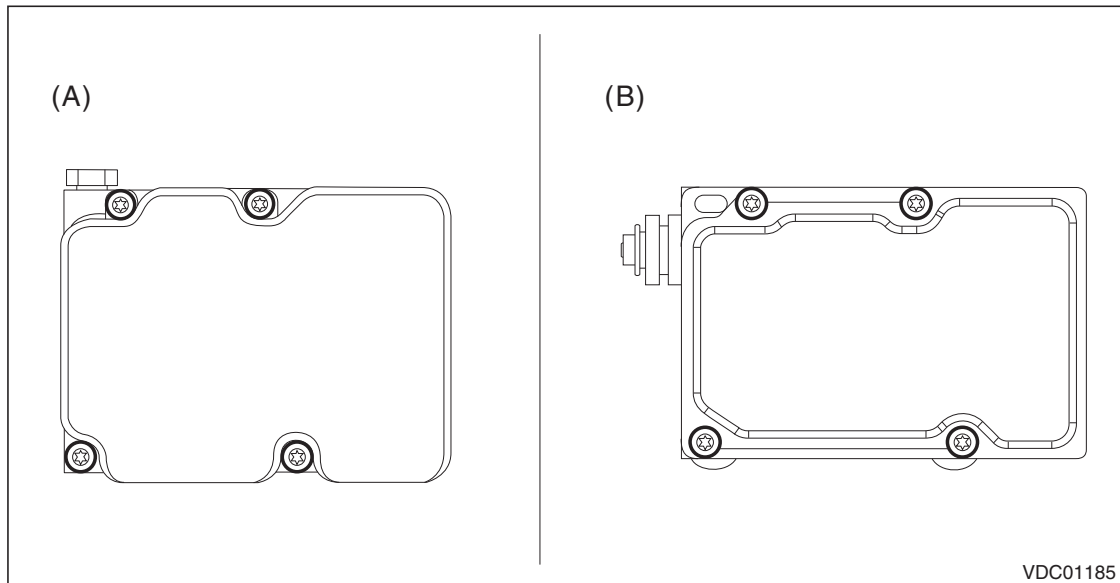
VDC Control Module and Hydraulic Control Unit (VDCCM&H/U)

VEHICLE DYNAMICS CONTROL (VDC)

4) Using TORX® bit E5, remove the four screws of VDCCM.

CAUTION:

Do not re-use the screws.



(A) Models with EyeSight

(B) Models without EyeSight

5) Slowly pull out the VDCCM upward from the H/U.

NOTE:

To prevent damaging of coil section, remove the VDCCM straight up from H/U without twisting.

6) Make sure there is no dirt or damage on the sealing surface of the H/U.

CAUTION:

- Do not clean the VDCCM&H/U by applying compressed air.
- Even if damage is found on the H/U seal, do not attempt repair by filing or with a metal scraper. To remove the seal residue, always use a plastic scraper. Do not use chemical such as paint thinner, etc., to clean.

7) Position the coil of the new VDCCM to align with the H/U valve.

8) To prevent deformation of the VDCCM housing cover, hold the corner of VDCCM and install it to the H/U without tilting.

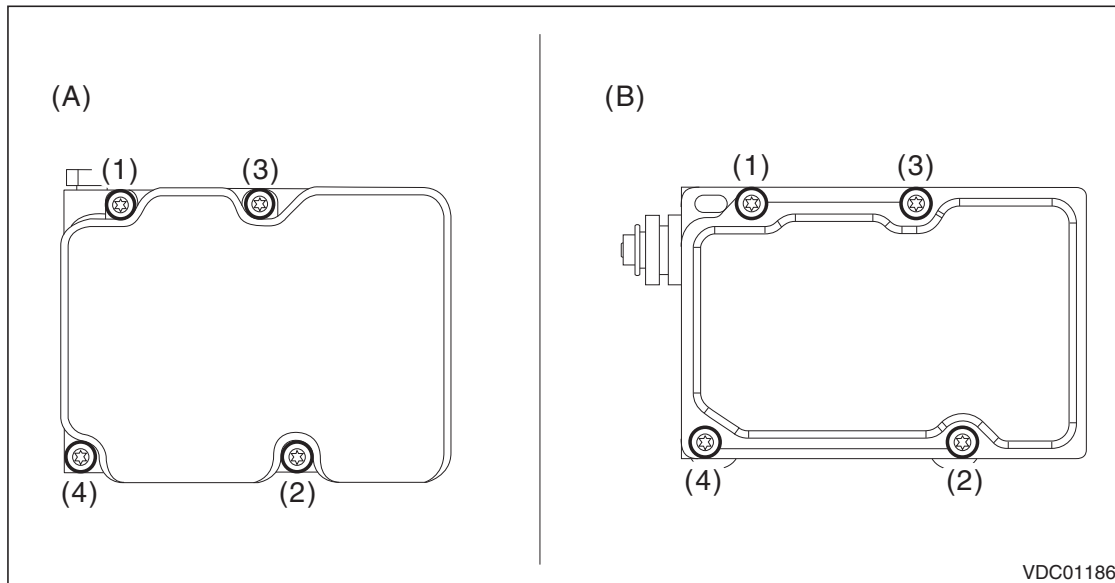
VDC Control Module and Hydraulic Control Unit (VDCCM&H/U)

VEHICLE DYNAMICS CONTROL (VDC)

9) Using a TORX® bit E5, attach/tighten new screws in the order of (1) through (4).

CAUTION:

Always use new screws.



(A) Models with EyeSight

(B) Models without EyeSight

Tightening torque:

1.5 N·m (0.15 kgf-m, 1.1 ft-lb)

10) Check that there is no foreign matter in mating surface between the VDCCM&H/U.

11) Using a TORX® bit E5, tighten the screws in the order of (1) through (4) again.

Tightening torque:

3 N·m (0.31 kgf-m, 2.2 ft-lb)

12) Check that there is no gap in the mating surface between VDCCM&H/U.

13) Install the VDCCM&H/U to the vehicle.

CAUTION:

When installing the VDCCM&H/U, replace the damper - hydraulic unit, spacer and nut with new parts. (Models without EyeSight)

14) Bleed air from the brake system. <Ref. to BR-61, PROCEDURE, Air Bleeding.>

15) Perform the selection and registration operation of parameter. <Ref. to VDC(diag)-18, PARAMETER SELECTION, OPERATION, Subaru Select Monitor.>

NOTE:

- After replacing the VDCCM, be sure to perform the selection · registration operation of parameter.
- For the selection and registration of parameter, the Subaru Select Monitor is required.
- When the registration has not been performed, the DTC code “Parameter selection error” is detected together with the ABS/EBD/VDC warning light illumination.

16) Check the parameter to confirm that the applied models and grades of the relevant vehicle are included. <Ref. to VDC(diag)-18, PARAMETER CHECK, OPERATION, Subaru Select Monitor.>

17) If the applied models and grades of the relevant vehicle are not included, perform the selection · registration operation of parameter with the {Confirm on parameter} screen again. <Ref. to VDC(diag)-18, PARAMETER SELECTION, OPERATION, Subaru Select Monitor.>

18) Execute Clear Memory after parameter selection and registration operations because the DTC for “Parameter selection error” is memorized.

E: ADJUSTMENT

1. VDC SENSOR MIDPOINT SETTING MODE

After installing, replacing or adjusting the following parts, perform the VDC sensor midpoint setting mode.

- Steering angle sensor
 - Steering wheel
 - Suspension parts
 - Wheel alignment
 - VDCCM&H/U
 - VDCCM&H/U bracket
- 1) Park the vehicle on a level surface, and set the steering wheel to the neutral position.
 - 2) Connect the Subaru Select Monitor to data link connector.
 - (1) Run the "PC application for Subaru Select Monitor".
 - (2) On «Main Menu» display, select {Each System Check}.
 - (3) Select {Brake Control System}. When {VDC} is displayed, select the [OK] button.
 - (4) From {Current Data Display & Save}, select {Steer Angle Sensor Op}, {Longitudinal G Sensor} and {Lateral G sensor Output}.
 - 3) Check that the steering angle sensor output value is between -10 and 10 deg.
 - 4) Check that output values for the longitudinal G sensor and lateral G sensor are $-2 \text{ — } 2 \text{ m/s}^2$.
 - 5) From {Work Support}, select {VSC(VDC) Centering Mode}, and perform the setting according to the procedure displayed on the Subaru Select Monitor Screen.
 - 6) Drive the vehicle for 10 minutes, and check that there is no system malfunction or the warning light illumination while driving.
 - 7) Make sure that the DTC is not stored.



ABS Sequence Control

VEHICLE DYNAMICS CONTROL (VDC)

5. ABS Sequence Control

A: OPERATION

- 1) While the ABS sequence control is being performed, the operation of the hydraulic unit can be checked using the brake tester or pressure gauge after the hydraulic unit solenoid valve operation.
- 2) ABS sequence control can be started by the Subaru Select Monitor.

1. ABS SEQUENCE CONTROL WITH SUBARU SELECT MONITOR

CAUTION:

For models with EyeSight, performing the sequence control may cause the EyeSight warning light to illuminate. If the sequence control is performed, refer to "Basic Diagnostic Procedure" of "EyeSight (DIAGNOSTICS)" and check DTCs and then clear memory. <Ref. to ES(diag)-2, Basic Diagnostic Procedure.>

NOTE:

In the event of any trouble, the ABS sequence control will not operate.

- 1) Connect the Subaru Select Monitor to data link connector.
 - (1) Run the "PC application for Subaru Select Monitor".
 - (2) On «Main Menu» display, select {Each System Check}.
 - (3) Select {Brake Control System}. When {VDC} is displayed, select the [OK] button.
 - (4) Select the {Function Check Sequence} from {Work Support}.
 - (5) Select the {ABS Sequence Control Mode} from {Function Check Sequence}.
- 2) Follow the procedures displayed in the Subaru Select Monitor to execute the following.
 - (1) When using a brake tester, depress the brake pedal with a force of 100 N (10.2 kgf, 22.5 lbf).
 - (2) When using a pressure gauge, press the brake pedal so that the pressure gauge indicates 3,500 kPa (36 kgf/cm², 511 psi).
- 3) The brake system being operated is displayed on the Subaru Select Monitor.

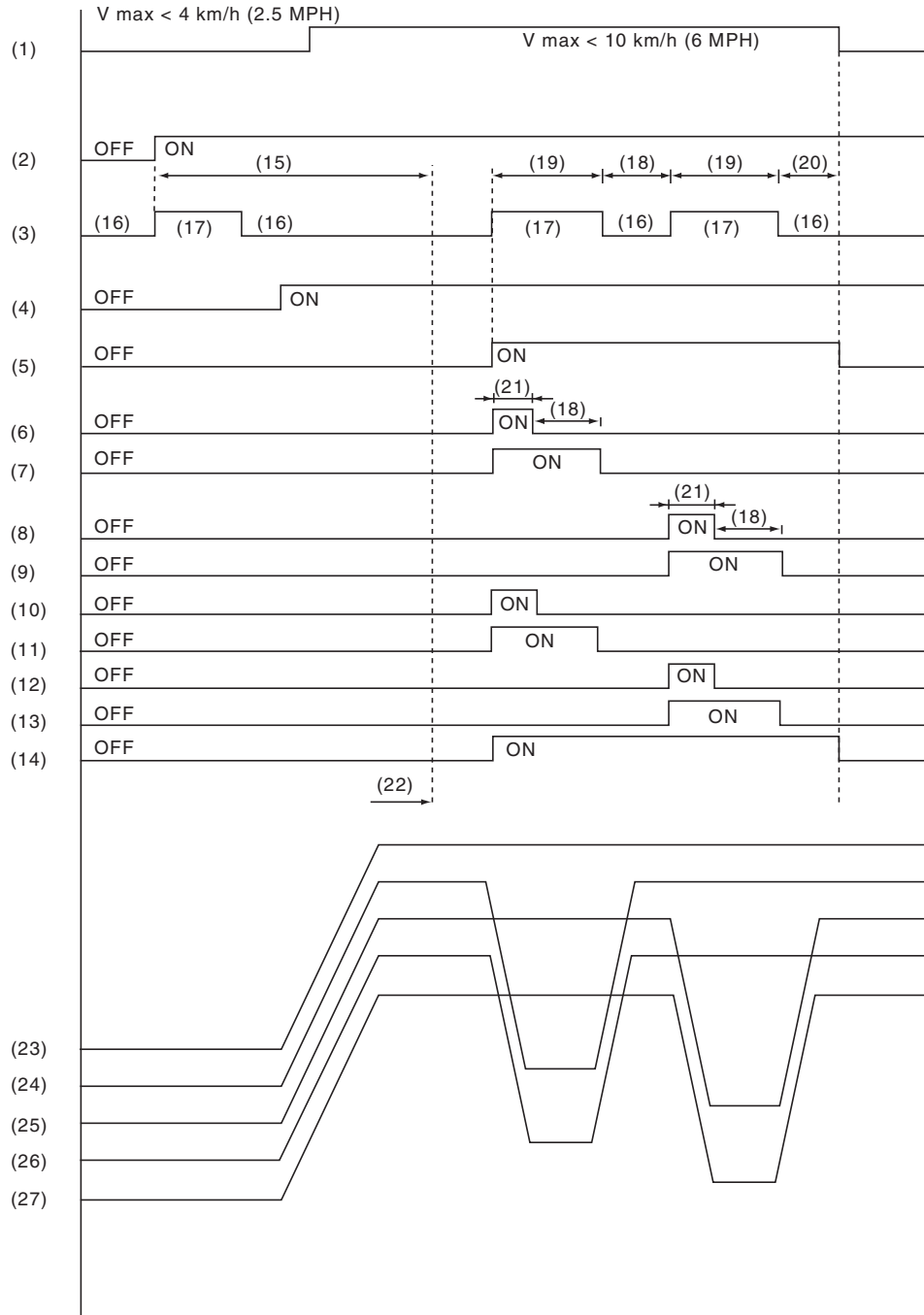
ABS Sequence Control

VEHICLE DYNAMICS CONTROL (VDC)

2. CONDITIONS FOR ABS SEQUENCE CONTROL

NOTE:

The control operation starts at point A.



VDC00988

ABS Sequence Control

VEHICLE DYNAMICS CONTROL (VDC)

- | | | |
|-----------------------------|-----------------------------|---------------------------------|
| (1) All wheel speed | (11) RR compression valve | (20) 0.6 seconds |
| (2) Ignition key | (12) RL decompression valve | (21) 0.4 seconds |
| (3) ABS warning light | (13) RL compression valve | (22) Point A |
| (4) Switch - stop light | (14) Pump motor | (23) Master cylinder pressure |
| (5) Valve relay | (15) A few seconds | (24) FL wheel cylinder pressure |
| (6) FL decompression valve | (16) Light OFF | (25) FR wheel cylinder pressure |
| (7) FL compression valve | (17) Light ON | (26) RR wheel cylinder pressure |
| (8) FR decompression valve | (18) 1.0 second | (27) RL wheel cylinder pressure |
| (9) FR compression valve | (19) 1.4 seconds | |
| (10) RR decompression valve | | |

B: SPECIFICATION

1. CONDITIONS FOR COMPLETION OF ABS SEQUENCE CONTROL

When the following conditions develop, the ABS sequence control stops and ABS operation is returned to the normal control mode.

- When the speed of at least one wheel reaches 10 km/h (6 MPH).
- When the brake pedal is released during ABS sequence control and the switch - stop light becomes OFF.
- After completion of ABS sequence control.
- When a malfunction is detected.



6. VDC Sequence Control

A: OPERATION

- 1) While the VDC sequence control is performed, the operation of the hydraulic unit can be checked using the brake tester or pressure gauge after the hydraulic unit solenoid valve is operated.
- 2) VDC sequence control can be started by Subaru Select Monitor.

1. VDC SEQUENCE CONTROL WITH SUBARU SELECT MONITOR

CAUTION:

For models with EyeSight, performing the sequence control may cause the EyeSight warning light to illuminate. If the sequence control is performed, refer to "Basic Diagnostic Procedure" of "EyeSight (DIAGNOSTICS)" and check DTCs and then clear memory. <Ref. to ES(diag)-2, Basic Diagnostic Procedure.>

NOTE:

In the event of any trouble, sequence control will not operate.

- 1) Connect the Subaru Select Monitor to data link connector.
 - (1) Run the "PC application for Subaru Select Monitor".
 - (2) On «Main Menu» display, select {Each System Check}.
 - (3) Select {Brake Control System}. When {VDC} is displayed, select the [OK] button.
 - (4) Select the {Function Check Sequence} from {Work Support}.
 - (5) Select the {VDC Function Check Mode} from {Function Check Sequence}.
- 2) Operate according to the procedures displayed in the Subaru Select Monitor.
- 3) The brake system being operated is displayed on the Subaru Select Monitor.

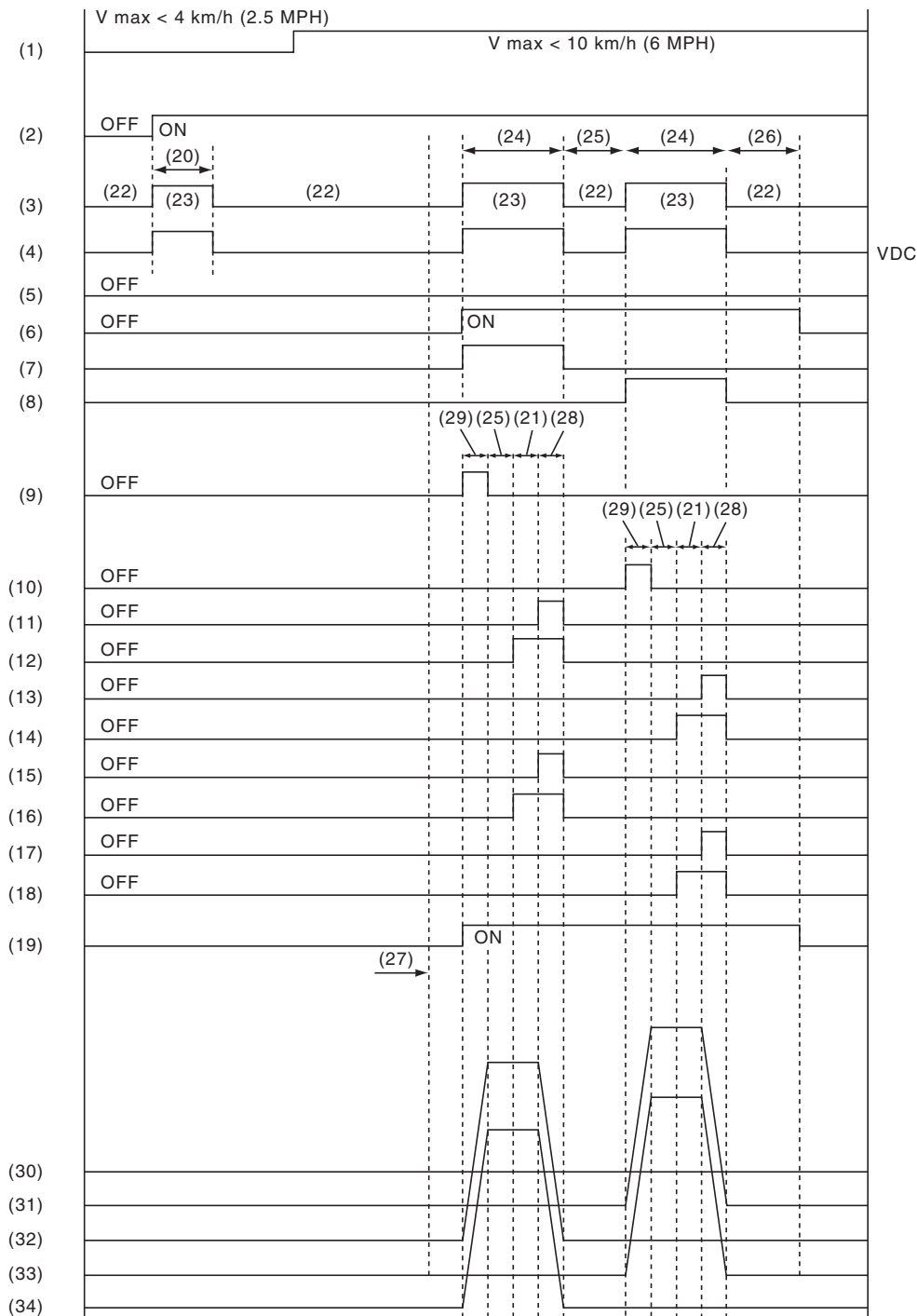
VDC Sequence Control

VEHICLE DYNAMICS CONTROL (VDC)

2. CONDITIONS FOR VDC SEQUENCE CONTROL

NOTE:

The control operation starts at point A.



VDC00989



VDC Sequence Control

VEHICLE DYNAMICS CONTROL (VDC)

(1) All wheel speed	(13) FR decompression valve	(25) 1 second
(2) Ignition key	(14) FR compression valve	(26) 1.6 seconds
(3) ABS warning light	(15) RR decompression valve	(27) Point A
(4) VDC warning light	(16) RR compression valve	(28) 0.4 seconds
(5) Switch - stop light	(17) RL decompression valve	(29) 0.8 seconds
(6) Valve relay	(18) RL compression valve	(30) Master cylinder pressure
(7) VDC switching valve 1 FL	(19) Pump motor	(31) FR wheel cylinder pressure
(8) VDC switching valve 1 FR	(20) A few seconds	(32) FL wheel cylinder pressure
(9) VDC switching valve 2 FL	(21) 1.2 seconds	(33) RL wheel cylinder pressure
(10) VDC switching valve 2 FR	(22) Light OFF	(34) RR wheel cylinder pressure
(11) FL decompression valve	(23) Light ON	
(12) FL compression valve	(24) 3.4 seconds	

B: SPECIFICATION

1. CONDITIONS FOR COMPLETION OF VDC SEQUENCE CONTROL

When the following conditions develop, the VDC sequence control stops and VDC operation is returned to the normal control mode.

- When the speed of at least one wheel reaches 10 km/h (6 MPH).
- After completion of VDC sequence control.
- When a malfunction is detected.



Brake Lamp Relay

VEHICLE DYNAMICS CONTROL (VDC)

7. Brake Lamp Relay

A: REMOVAL

Remove the brake light relay from the main fuse box.

NOTE:

Refer to "LOCATION" of "Relay and Fuse". <Ref. to VDC-8, LOCATION, Relay and Fuse.>

B: INSTALLATION

Install each part in the reverse order of removal.

C: INSPECTION

Refer to "INSPECTION" of "Relay and Fuse". <Ref. to VDC-8, CHECK RELAY, INSPECTION, Relay and Fuse.>

D: OPERATION

1. BRAKE LAMP LIGHTING OPERATION MODE BY SUBARU SELECT MONITOR

CAUTION:

For models with EyeSight, performing brake lamp relay compulsory operation may cause the EyeSight warning light to illuminate. If the brake lamp relay compulsory operation is performed, refer to "Basic Diagnostic Procedure" of "EyeSight (DIAGNOSTICS)" and check DTCs and then clear memory. <Ref. to ES(diag)-2, Basic Diagnostic Procedure.>

NOTE:

In the event of any trouble, brake lamp lighting operation mode will not function.

- 1) Connect the Subaru Select Monitor to data link connector.
 - (1) Run the "PC application for Subaru Select Monitor".
 - (2) On «Main Menu» display, select {Each System Check}.
 - (3) Select {Brake Control System}. When {VDC} is displayed, select the [OK] button.
 - (4) Select the {Function Check Sequence} from {Work Support}.
 - (5) Select the {Brake Lamp Lighting Operation} from {Function Check Sequence}.
- 2) Operate according to the procedures displayed in the Subaru Select Monitor.

E: SPECIFICATION

1. CONDITIONS TO COMPLETE BRAKE LAMP LIGHTING OPERATION MODE

When the following conditions develop, the brake lamp lighting operation mode stops and the normal control mode is restored.

- When the speed of at least one wheel reaches 10 km/h (6 MPH).
- When brake lamp lighting operation mode ends.
- When a malfunction is detected.

Yaw Rate and G Sensor

VEHICLE DYNAMICS CONTROL (VDC)

8. Yaw Rate and G Sensor

A: NOTE

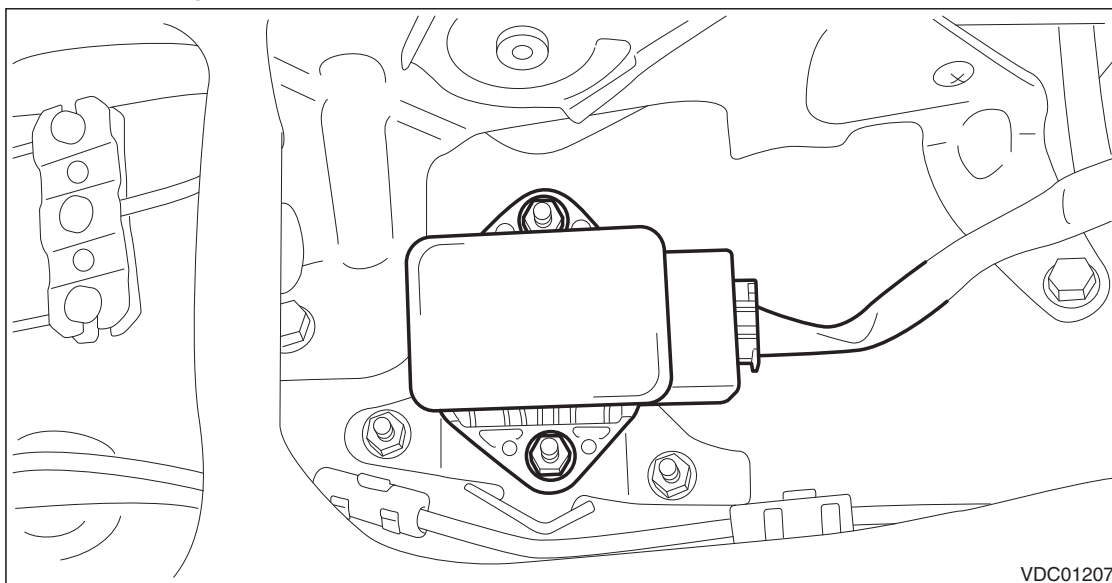
For models without EyeSight, yaw rate & longitudinal G and lateral G sensors are integrated with the VDC control module & hydraulic control unit (VDCCM&H/U).

B: REMOVAL

- 1) Disconnect the ground cable from battery.
- 2) Remove the console box. <Ref. to EI-65, REMOVAL, Console Box.>
- 3) Disconnect the connector from yaw rate & G sensor.
- 4) Remove the nut and remove the yaw rate & G sensor.

CAUTION:

Do not drop or hit the yaw rate & G sensor.



C: INSTALLATION

Install each part in the reverse order of removal.

Tightening torque:

Yaw rate & G sensor: 7.5 & (0.76 kgf-m, 5.5 ft-lb)

Console box assembly: 6.5 N-m (0.66 kgf-m, 4.8 ft-lb)

CAUTION:

After completion of installation, set the following two positions.

- Positioning to the center of steering angle sensor
- Positioning the yaw rate & G sensors to zero

The above procedure is required for the VDCCM&H/U to identify the vehicle position afterward. For the setting procedures of the 2 steps above, refer to "Adjustment" in "VDC Control Module and Hydraulic Control Unit (VDCCM&H/U)". <Ref. to VDC-23, ADJUSTMENT, VDC Control Module and Hydraulic Control Unit (VDCCM&H/U).>

Yaw Rate and G Sensor

VEHICLE DYNAMICS CONTROL (VDC)

D: INSPECTION

1. YAW RATE & LONGITUDINAL G AND LATERAL G SENSORS SIGNAL (MODELS WITHOUT EyeSight)

Step	Check	Yes	No
1 CHECK YAW RATE & G SENSOR. 1) Check the installation condition of the VDC control module & hydraulic control module (VDCCM&H/U). 2) Select "Current Data Display & Save" on the Subaru Select Monitor. 3) Read the output of yaw rate & G sensor.	When the vehicle is placed horizontally, are the displayed values $-1.5 \text{ — } 1.5 \text{ m/s}^2$ for longitudinal G and lateral G sensor, and $-4 \text{ — } 4 \text{ deg/s}$ for yaw rate sensor?	Go to step 2.	Replace the VDC control module & hydraulic control unit (VDCCM&H/U).
2 PERFORM DRIVING TEST. Drive for approximately 10 minutes, and check that there is no system malfunction or the warning light illumination while driving.	Is there any abnormal movement or the warning light illumination while driving?	Perform the diagnosis according to DTCs for the VDC system. <Ref. to VDC(diag)-36, List of Diagnostic Trouble Code (DTC).>	G sensor is normal.

2. YAW RATE & G SENSOR SIGNAL (MODELS WITH EyeSight)

Step	Check	Yes	No
1 CHECK YAW RATE & G SENSOR. 1) Turn the ignition switch to OFF. 2) Connect the Subaru Select Monitor connector to the data link connector. 3) Turn the ignition switch to ON. 4) Set the Subaru Select Monitor connector to the "Brake Control System" mode. 5) Select "Current Data Display & Save". 6) Read the output of yaw rate & G sensor.	Are the indicated values when the vehicle is placed horizontally, Lateral G sensor: $-1.5 \text{ — } 1.5 \text{ m/s}^2$, Yaw rate sensor: $-4 \text{ — } 4 \text{ deg/s}$?	Go to step 2.	Repair the harness connector between yaw rate & G sensor and VDCCM&H/U. Or replace yaw rate & G sensor.
2 CHECK G SENSOR. 1) Remove the console box. 2) Remove the yaw rate & G sensor from vehicle without disconnecting the connector. 3) Read the display of Subaru Select Monitor. NOTE: When the yaw rate & G sensor is moved with its power supply on, DTC of yaw rate & G sensor may be recorded.	Is the value $6.8 \text{ — } 12.8 \text{ m/s}^2$ when the yaw rate & G sensor is inclined 90° to the right?	Go to step 3.	Repair the harness connector between yaw rate & G sensor and VDCCM&H/U. Or replace yaw rate & G sensor.
3 CHECK G SENSOR. Read the display of Subaru Select Monitor. NOTE: When the yaw rate & G sensor is moved with its power supply on, DTC of yaw rate & G sensor may be recorded.	Is the value $-6.8 \text{ — } -12.8 \text{ m/s}^2$ when the yaw rate & G sensor is inclined 90° to the left?	Yaw rate & G sensors are normal.	Repair the harness connector between yaw rate & G sensor and VDCCM&H/U. Or replace yaw rate & G sensor.

Steering Angle Sensor

VEHICLE DYNAMICS CONTROL (VDC)

9. Steering Angle Sensor

A: REPLACEMENT

CAUTION:

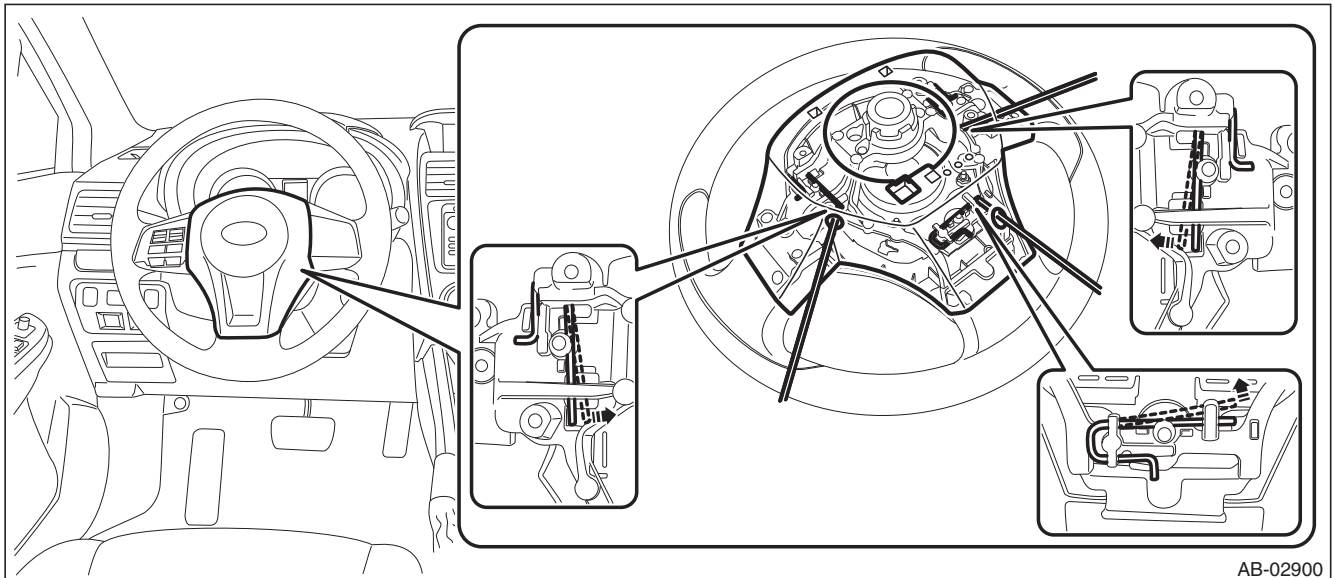
If the steering wheel and steering angle sensor are removed, perform “VDC sensor midpoint setting mode” of the VDC. <Ref. to VDC-23, ADJUSTMENT, VDC Control Module and Hydraulic Control Unit (VDCCM&H/U).>

- 1) Position the front wheels straight ahead. (After moving a vehicle 5 m (16 ft) or more with front wheels positioned straight ahead, make sure that the vehicle moves straight ahead.)
- 2) Turn the ignition switch to OFF.
- 3) Disconnect the ground cable from battery and wait for at least 60 seconds before starting work.
- 4) Remove the driver's airbag module.

CAUTION:

Before performing service on the airbag module, always refer to “CAUTION” of “General Description” in “AIRBAG SYSTEM” section. <Ref. to AB-9, CAUTION, General Description.>

- (1) Using a hexagon wrench etc. wrapped by protective tape, insert the snap pins and release the locks (3 locations).

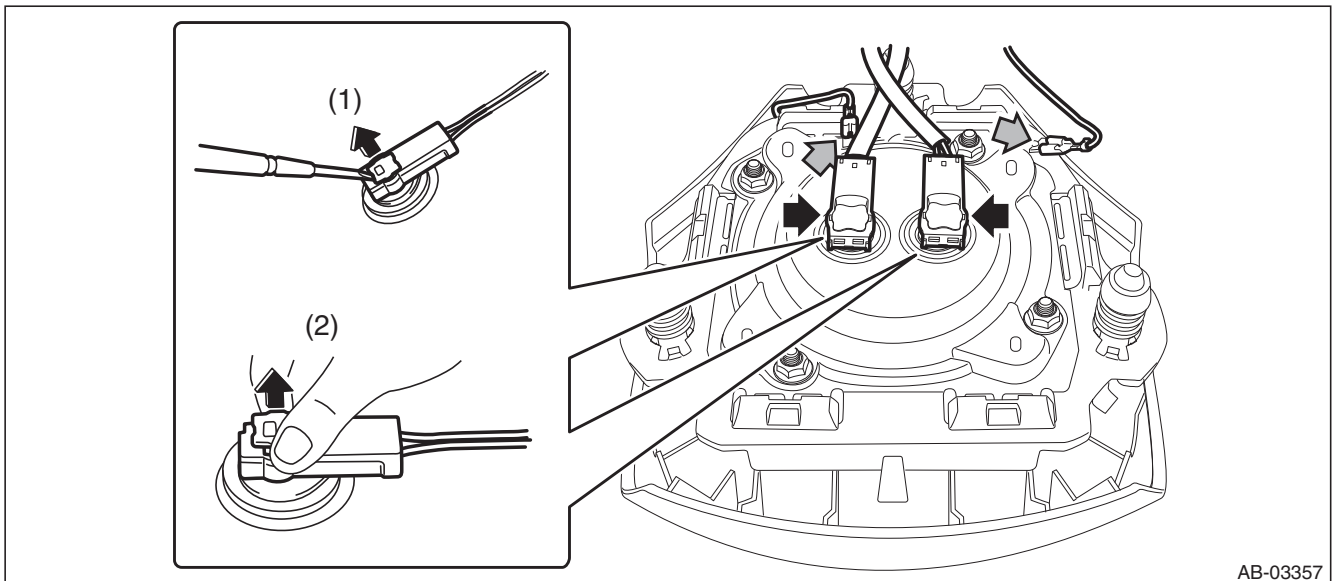


AB-02900

Steering Angle Sensor

VEHICLE DYNAMICS CONTROL (VDC)

(2) Disconnect the horn harness and airbag connector, and remove the airbag module. <Ref. to AB-21, DRIVER'S AIRBAG MODULE, KNEE AIRBAG MODULE, CURTAIN AIRBAG MODULE AND PRETENSIONER, PROCEDURE, Airbag Connector.>



AB-03357

5) Remove the steering wheel.

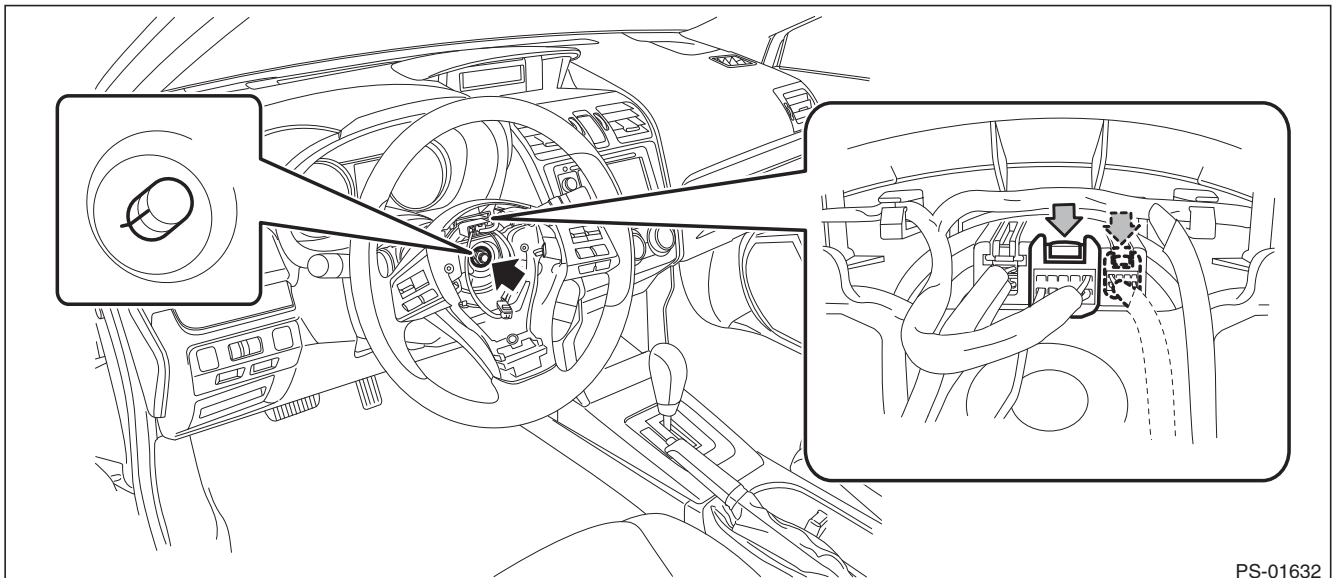
CAUTION:

- Always use the steering wheel puller for removal to avoid deforming the steering wheel.
- If the steering wheel has been removed, make sure that the steering roll connector is not turned from the original position.

Preparation tool:

Steering wheel puller

- (1) Disconnect the connector and remove the nut.
- (2) Put alignment marks and remove the steering wheel.



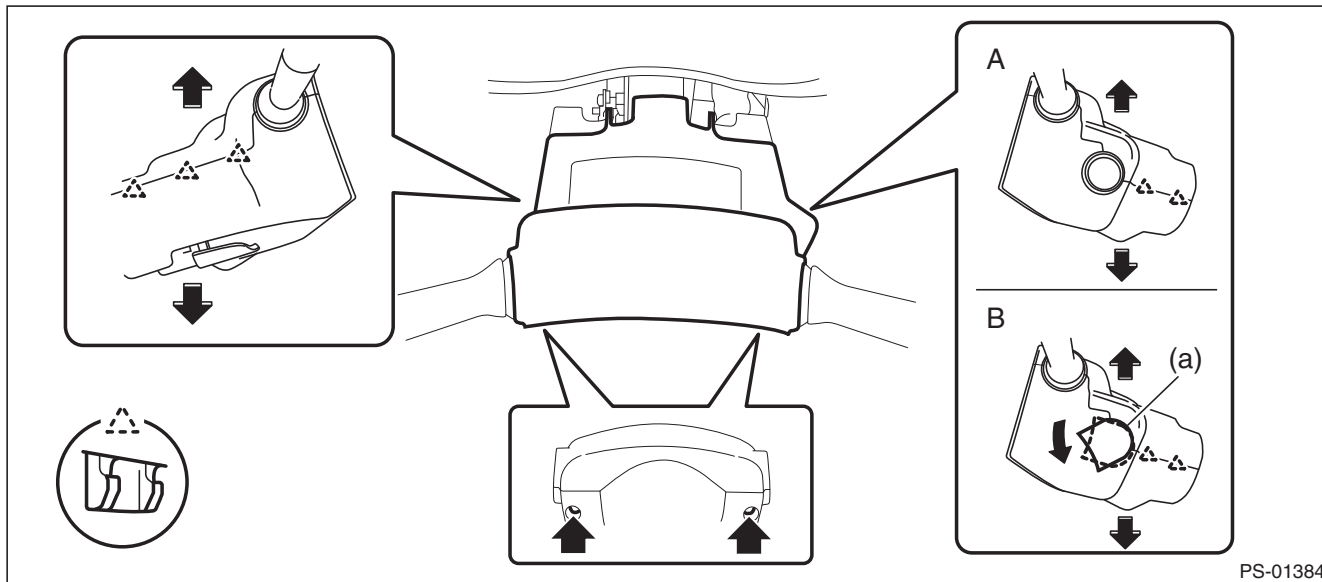
PS-01632

Steering Angle Sensor

VEHICLE DYNAMICS CONTROL (VDC)

6) Remove the cover assembly - column.

- (1) Release the screws and claws.
- (2) Remove the cap - key cylinder (a). (Model with keyless access)
- (3) Remove the cover assembly - column UPR and the cover assembly - column LWR.



A Models without keyless access

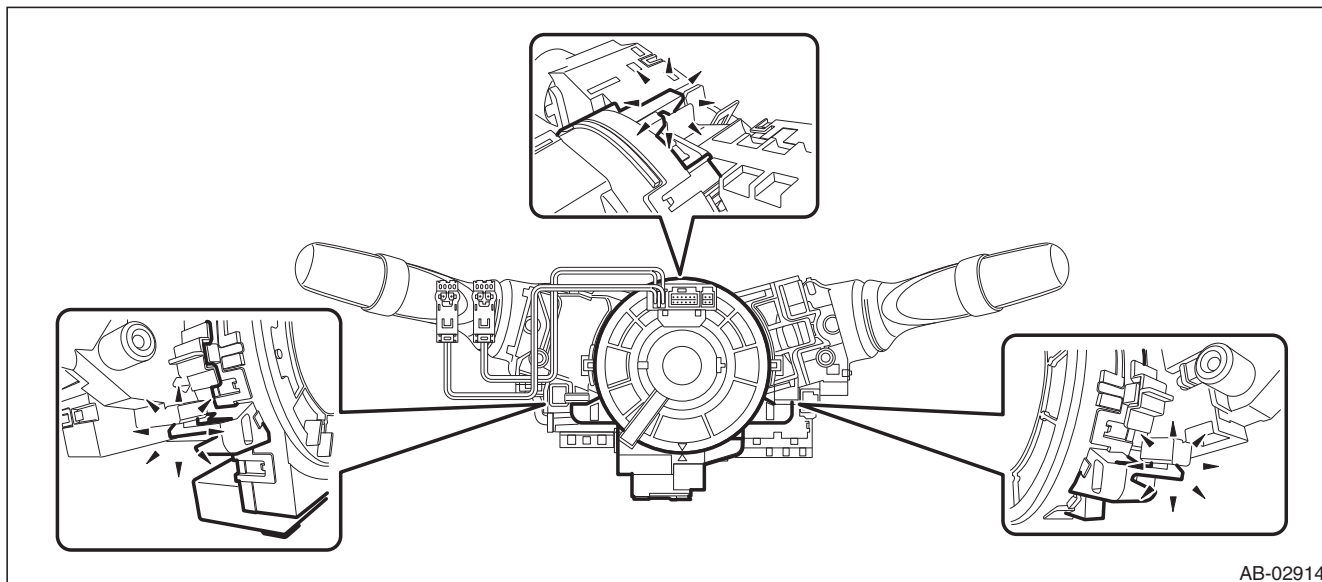
B Models with keyless access

7) Remove the steering roll connector.

CAUTION:

Make sure that the steering roll connector is not turned from the original position.

- (1) Disconnect the connector under the steering roll connector.
- (2) Release the claws and remove the steering roll connector.

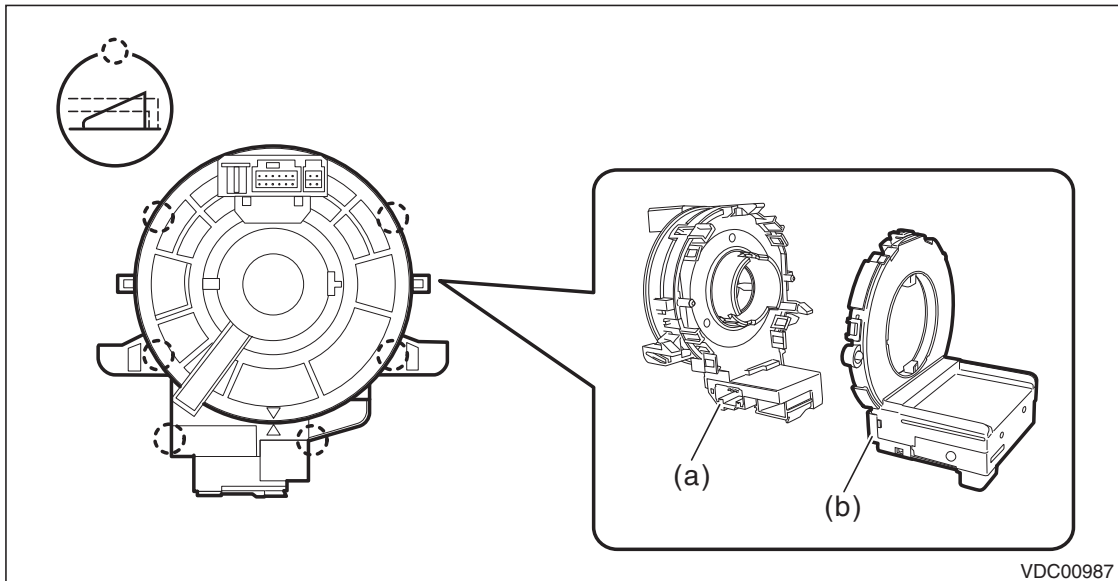


Steering Angle Sensor

VEHICLE DYNAMICS CONTROL (VDC)

8) Remove the steering angle sensor.

(1) Release the claws and remove the steering angle sensor (b) from the steering roll connector (a).

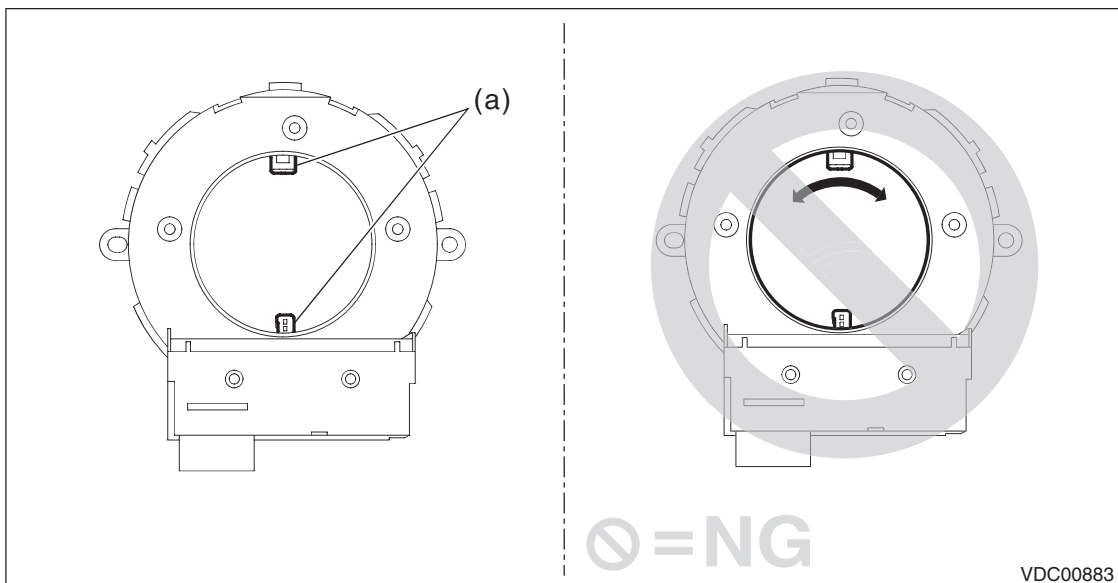


9) Install the steering angle sensor.

(1) Apply grease to the protrusion (a) of the new steering angle sensor.

CAUTION:

Do not rotate the steering angle sensor protrusion.



(2) Align the center of steering roll connector. <Ref. to AB-101, INSTALLATION, Roll Connector.>

(3) Align the position of the protrusion and install the steering angle sensor to the steering roll connector.

10) Install each part in the reverse order of removal.

Tightening torque:

Steering wheel: 39 N·m (3.98 kgf-m, 28.8 ft-lb)

Clearance:

Between cover assembly - column and steering wheel: 4 — 6 mm (0.16 — 0.24 in)

11) After installation, perform the neutral position setting of the steering angle sensor. <Ref. to VDC-23, VDC SENSOR MIDPOINT SETTING MODE, ADJUSTMENT, VDC Control Module and Hydraulic Control Unit (VDCCM&H/U).>

Front ABS Wheel Speed Sensor

VEHICLE DYNAMICS CONTROL (VDC)

10. Front ABS Wheel Speed Sensor

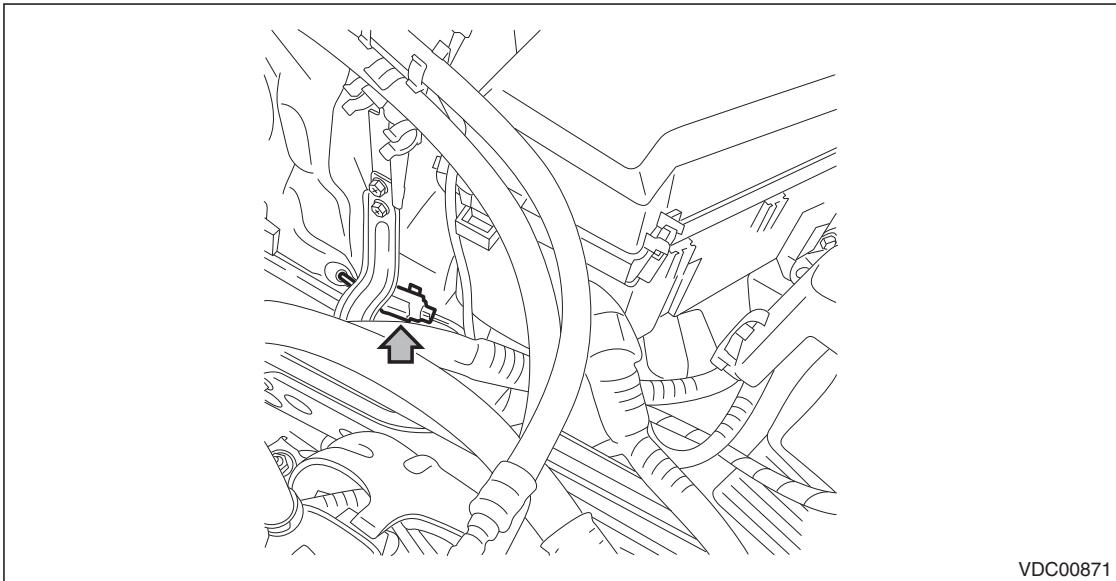
A: REMOVAL

- 1) Disconnect the ground cable from battery.
- 2) Lift up the vehicle, and then remove the front wheels.
- 3) Remove the front ABS wheel speed sensor.

CAUTION:

- Be careful not to damage the sensor.
- Do not apply excessive force to the sensor harness.
- Leave the sensor harness clamp on the vehicle side.

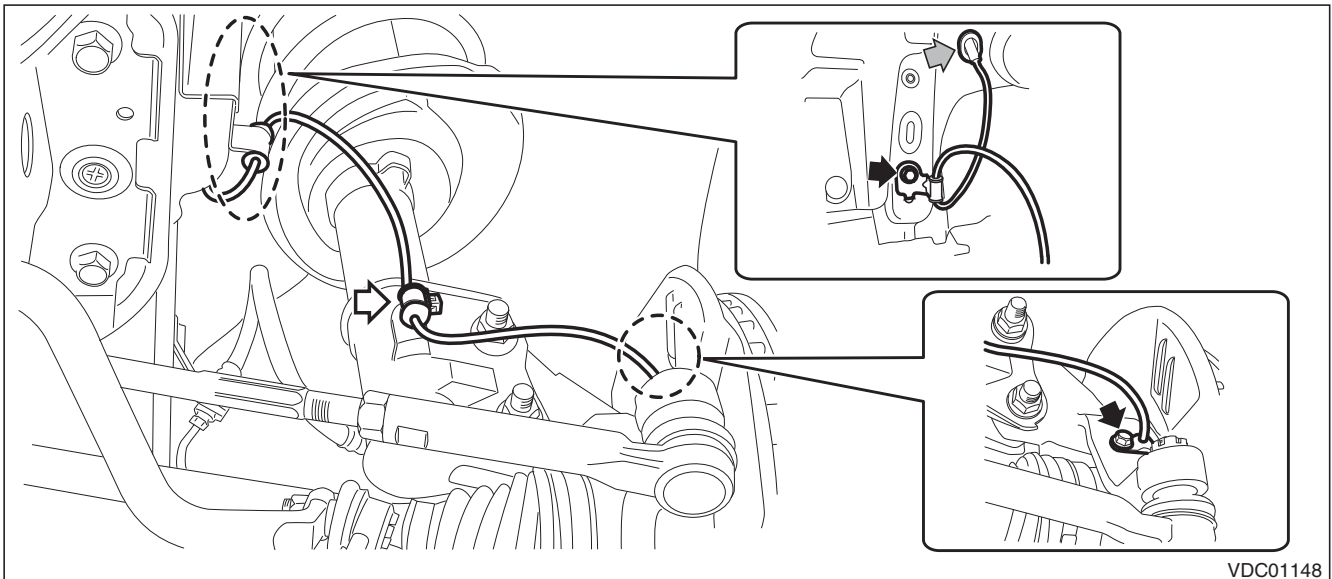
- (1) Disconnect the connector of the front ABS wheel speed sensor in the engine compartment.



VDC00871

- (2) Remove each harness clip and grommet.

- (3) Remove the bolts, and remove the front ABS wheel speed sensor from the housing assembly - front axle.



VDC01148

Front ABS Wheel Speed Sensor

VEHICLE DYNAMICS CONTROL (VDC)

B: INSTALLATION

CAUTION:

- Be careful not to damage the sensor.
- Do not apply excessive force to the sensor harness.

Install each part in the reverse order of removal.

NOTE:

- Check the identification (mark) on the harness to make sure there is no warpage. <Ref. to VDC-2, SPECIFICATION, General Description.>
- Check if the harness is not pulled and does not come in contact with the suspension or body while operating the steering.

Tightening torque:

Front ABS wheel speed sensor: 7.5 N·m (0.76 kgf-m, 5.5 ft-lb)

Front ABS wheel speed sensor bracket: 33 N·m (3.36 kgf-m, 24.3 ft-lb)

Front wheel: 120 N·m (12.24 kgf-m, 88.5 ft-lb)

C: INSPECTION

1. CHECK WITH SUBARU SELECT MONITOR

- 1) Connect the Subaru Select Monitor to data link connector.
 - (1) Run the "PC application for Subaru Select Monitor".
 - (2) On «Main Menu» display, select {Each System Check}.
 - (3) Select {Brake Control System}. When {VDC} is displayed, select the [OK] button.
 - (4) From {Current Data Display & Save}, select {FR Wheel Speed} and {FL Wheel Speed}.
- 2) Check if the speed indicated on the display changes in the same manner as the speedometer reading during acceleration/deceleration when the steering wheel is in the straight-ahead position.
- 3) If the speed indicated on the display does not change in the inspection, check the ABS wheel speed sensor. <Ref. to VDC-39, CHECK ABS WHEEL SPEED SENSOR UNIT, INSPECTION, Front ABS Wheel Speed Sensor.>



Front ABS Wheel Speed Sensor

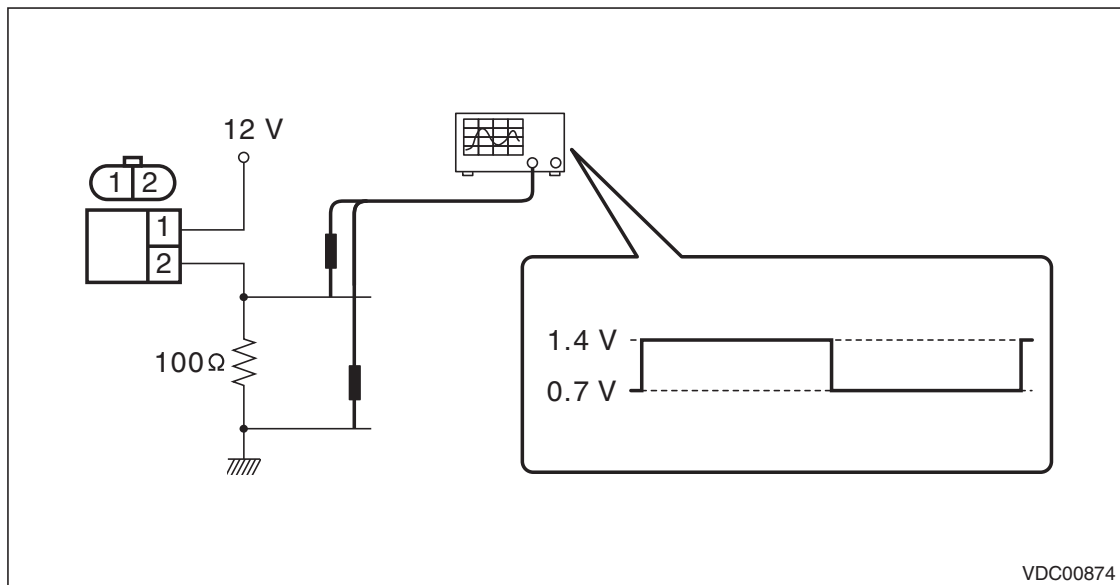
VEHICLE DYNAMICS CONTROL (VDC)

2. CHECK ABS WHEEL SPEED SENSOR UNIT

- 1) Visually check the tip of the ABS wheel speed sensor for foreign particles or damage. If necessary, clean the tip or replace the ABS wheel speed sensor.
- 2) Disconnect the ABS wheel speed sensor connector.
- 3) Check the ABS wheel speed sensor cable for discontinuity. If defective, replace the ABS wheel speed sensor.
- 4) Connect a 12 V power supply to No. 1 terminal of ABS wheel speed sensor connector, then attach resistance to the No. 2 terminal. Rotate the wheel at about 2.75 km/h (2 MPH), and measure the voltage using an oscilloscope.

Standard value of output voltage:

0.7 — 1.4 V



- 5) Replace the ABS wheel speed sensor if the inspection result is not within the standard value.

Rear ABS Wheel Speed Sensor

VEHICLE DYNAMICS CONTROL (VDC)

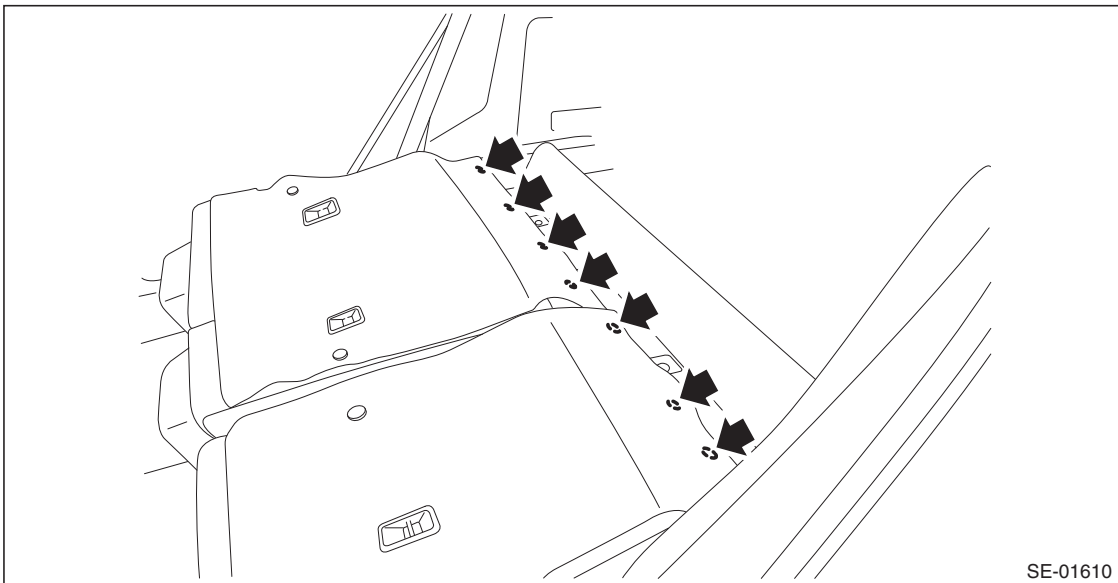
11. Rear ABS Wheel Speed Sensor

A: REMOVAL

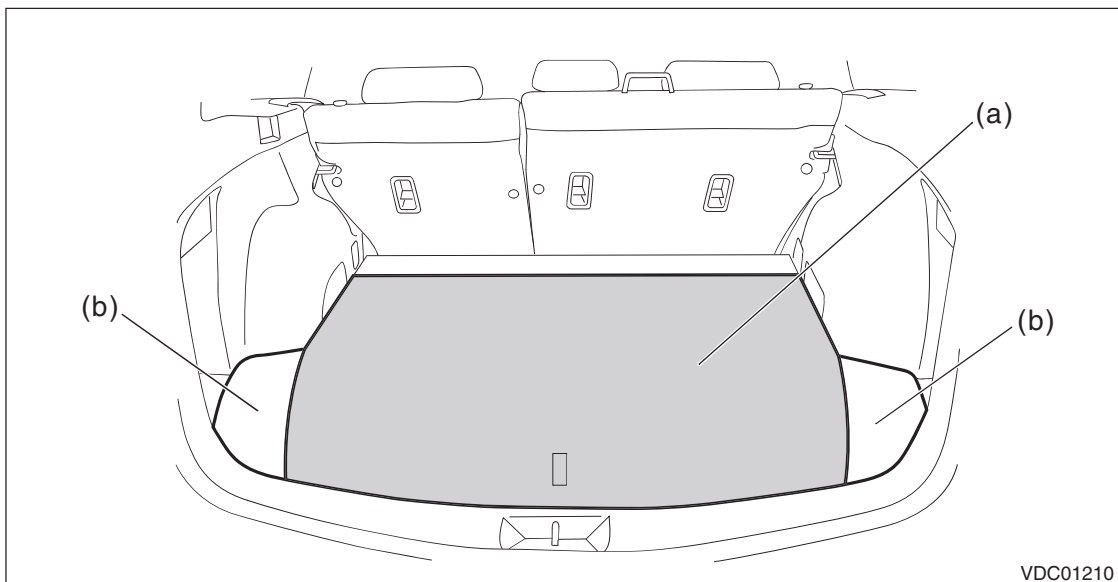
CAUTION:

- Be careful not to damage the sensor.
- Do not apply excessive force to the sensor harness.
- Leave the sensor harness clamp on the vehicle side.

- 1) Disconnect the ground cable from battery.
- 2) Lift up the vehicle, and then remove the rear wheels.
- 3) Tilt the backrest assembly of the rear seat forward.
- 4) Remove the clips located at the bottom of the cover COMPL - rear backrest LH and RH of the rear seat back.



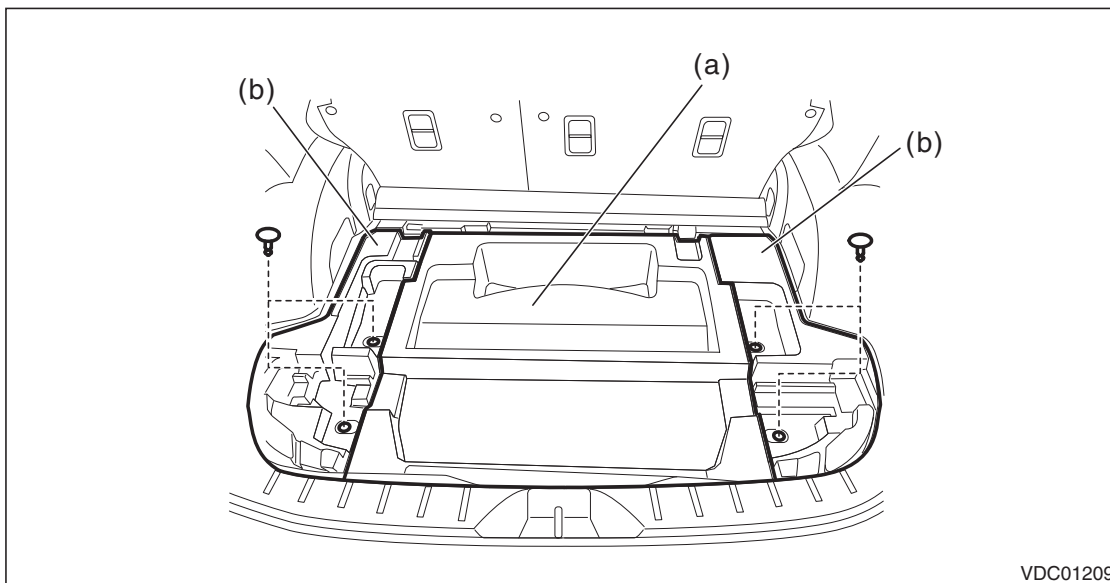
- 5) Remove the mat - rear floor CTR (a) and the mats - rear floor (b) of right and left sides.



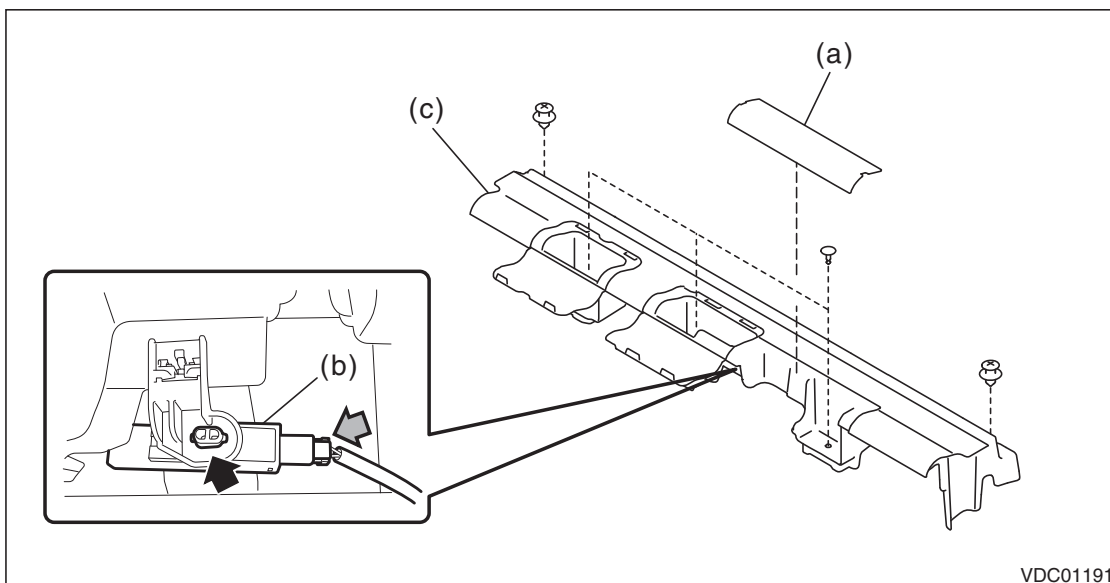
Rear ABS Wheel Speed Sensor

VEHICLE DYNAMICS CONTROL (VDC)

- 6) Remove the clips and remove the cover - trunk (a) and right and left spacers - rear front side (b).



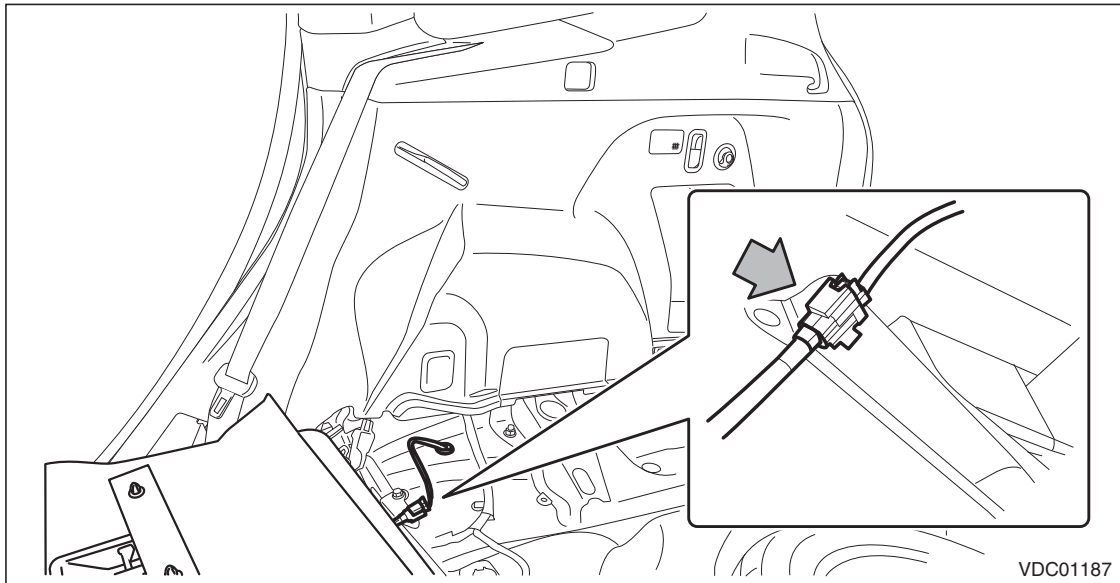
- 7) Remove the spacer - rear floor front.
- (1) Remove the spacer - rear floor front center (a).
 - (2) Disconnect the connector and remove the rear antenna assembly - interior (b).
 - (3) Remove the clips and spacer - rear floor front (c).



Rear ABS Wheel Speed Sensor

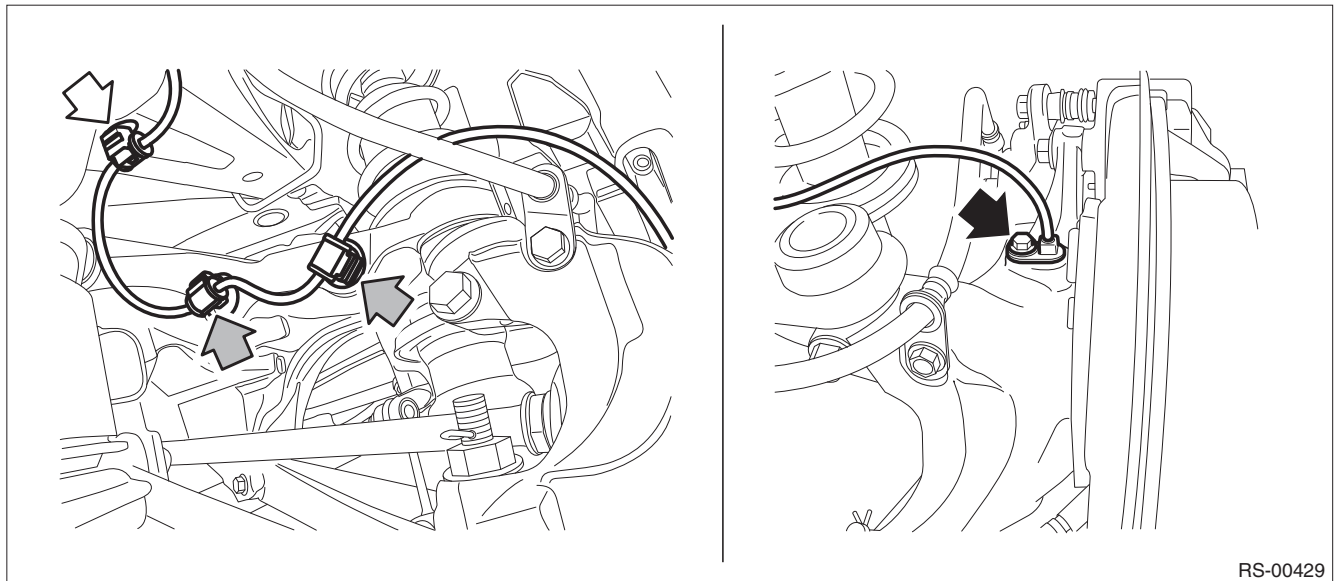
VEHICLE DYNAMICS CONTROL (VDC)

8) Disconnect the connector of the rear ABS wheel speed sensor.



9) Remove the grommet from the rear wheel housing, and pull out the connector of the rear ABS wheel speed sensor.

10) Remove the harness clip and bolt, and remove the rear ABS wheel speed sensor.



B: INSTALLATION

CAUTION:

- Be careful not to damage the sensor.
- Do not apply excessive force to the sensor harness.

1) Install each part in the reverse order of removal.

2) Route the rear ABS wheel speed sensor cable to the upper arm assembly.

NOTE:

Check the identification (mark) on the harness to make sure there is no warpage. <Ref. to VDC-2, SPECIFICATION, General Description.>

Tightening torque:

Rear ABS wheel speed sensor: 7.5 N·m (0.76 kgf-m, 5.5 ft-lb)

Rear wheel: 120 N·m (12.24 kgf-m, 88.5 ft-lb)

Rear ABS Wheel Speed Sensor

VEHICLE DYNAMICS CONTROL (VDC)

C: INSPECTION

1. ABS WHEEL SPEED SENSOR

For inspection of rear ABS wheel speed sensor, refer to inspection of front ABS wheel speed sensor. <Ref. to VDC-39, CHECK ABS WHEEL SPEED SENSOR UNIT, INSPECTION, Front ABS Wheel Speed Sensor.>

Front Magnetic Encoder

VEHICLE DYNAMICS CONTROL (VDC)

12.Front Magnetic Encoder

A: REMOVAL

Refer to "Front Hub Unit Bearing" for removal, because the front magnetic encoder is integrated with the hub unit COMPL - front axle. <Ref. to DS-26, REMOVAL, Front Hub Unit Bearing.>

B: INSTALLATION

Refer to "Front Hub Unit Bearing" for installation, because the front magnetic encoder is integrated with the hub unit COMPL - front axle. <Ref. to DS-29, INSTALLATION, Front Hub Unit Bearing.>

C: INSPECTION

Visually check the magnetic encoder for any damage. If necessary, replace with a new hub unit COMPL - front axle.

NOTE:

Because the magnetic encoder is integrated with hub unit COMPL, replace the hub unit COMPL with a new part if there is any defect found on the magnetic encoder.

Rear Magnetic Encoder

VEHICLE DYNAMICS CONTROL (VDC)

13.Rear Magnetic Encoder

A: REMOVAL

Refer to "Rear Hub Unit Bearing" for removal, because the rear magnetic encoder is integrated with the hub unit COMPL - rear axle. <Ref. to DS-45, REMOVAL, Rear Hub Unit Bearing.>

B: INSTALLATION

Refer to "Rear Hub Unit Bearing" for installation, because the rear magnetic encoder is integrated with the hub unit COMPL - rear axle. <Ref. to DS-49, INSTALLATION, Rear Hub Unit Bearing.>

C: INSPECTION

Visually check the magnetic encoder parts for any damage. If necessary, replace with a new hub unit COMPL - rear axle.

NOTE:

Because the magnetic encoder is integrated with hub unit COMPL, replace the hub unit COMPL with a new part if there is any defect found on the magnetic encoder.

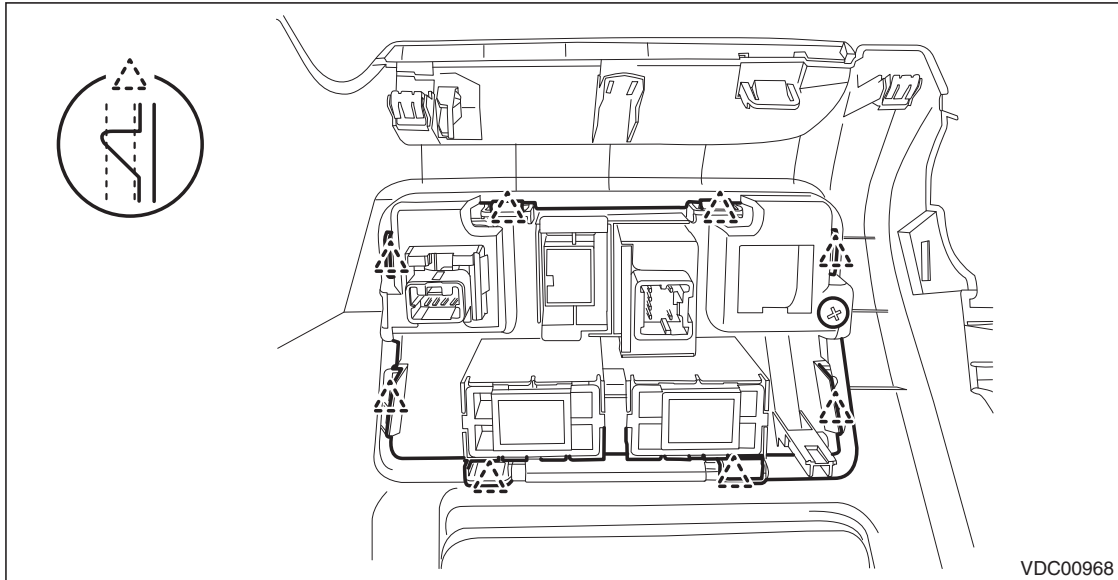
VDC OFF Switch

VEHICLE DYNAMICS CONTROL (VDC)

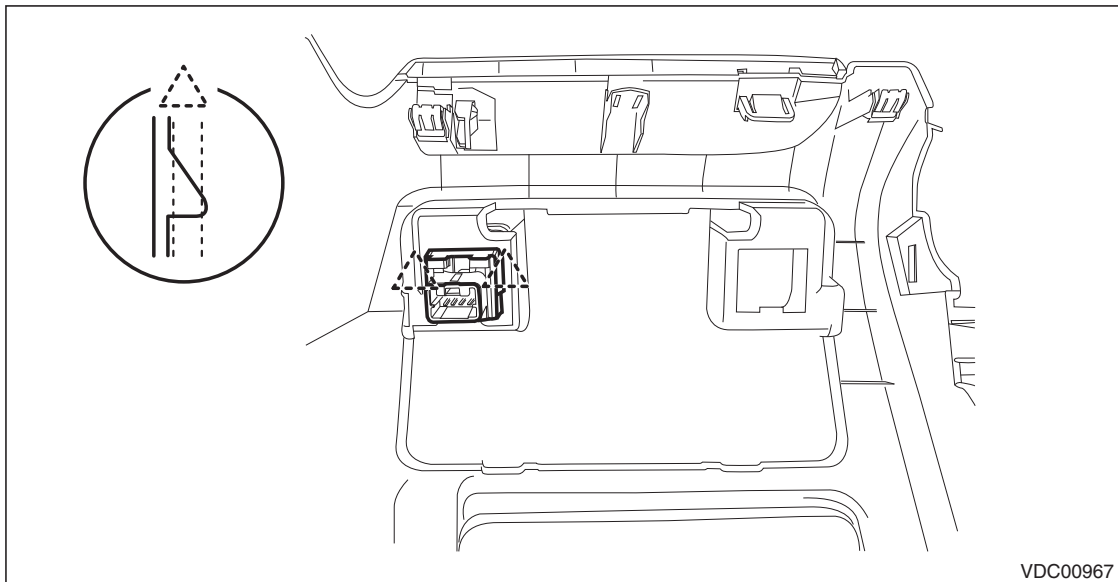
14.VDC OFF Switch

A: REMOVAL

- 1) Disconnect the ground cable from battery.
- 2) Remove the cover assembly - instrument panel LWR driver. <Ref. to EI-59, REMOVAL, Instrument Panel Lower Cover.>
- 3) Remove the screws and release the claws, then detach the cover. (Model without power rear gate)



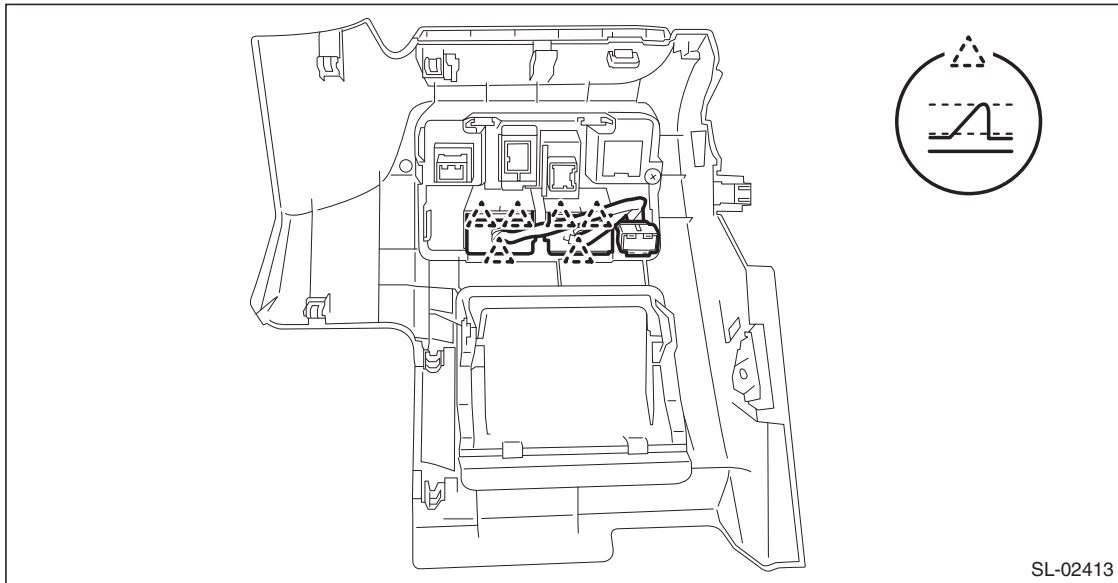
- 4) Release the claws and remove the VDC OFF switch.
- Model without power rear gate



VDC OFF Switch

VEHICLE DYNAMICS CONTROL (VDC)

- Model with power rear gate



B: INSTALLATION

Install each part in the reverse order of removal.

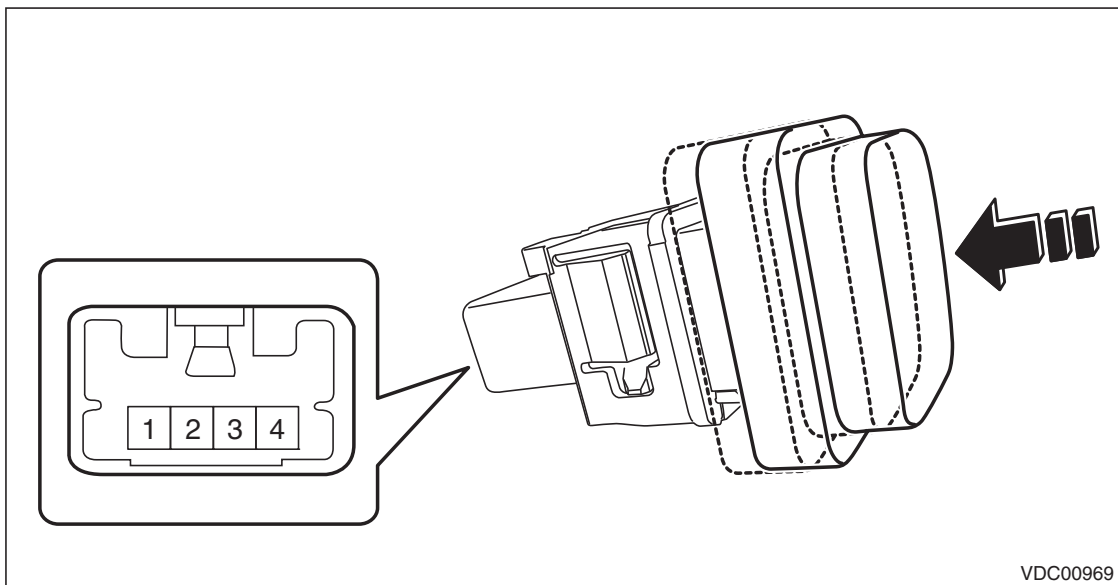
C: INSPECTION

- 1) Disconnect the VDC OFF switch connector.
- 2) Check the resistance between the VDC OFF switch terminals.

Preparation tool:

Circuit tester

- Model without power rear gate

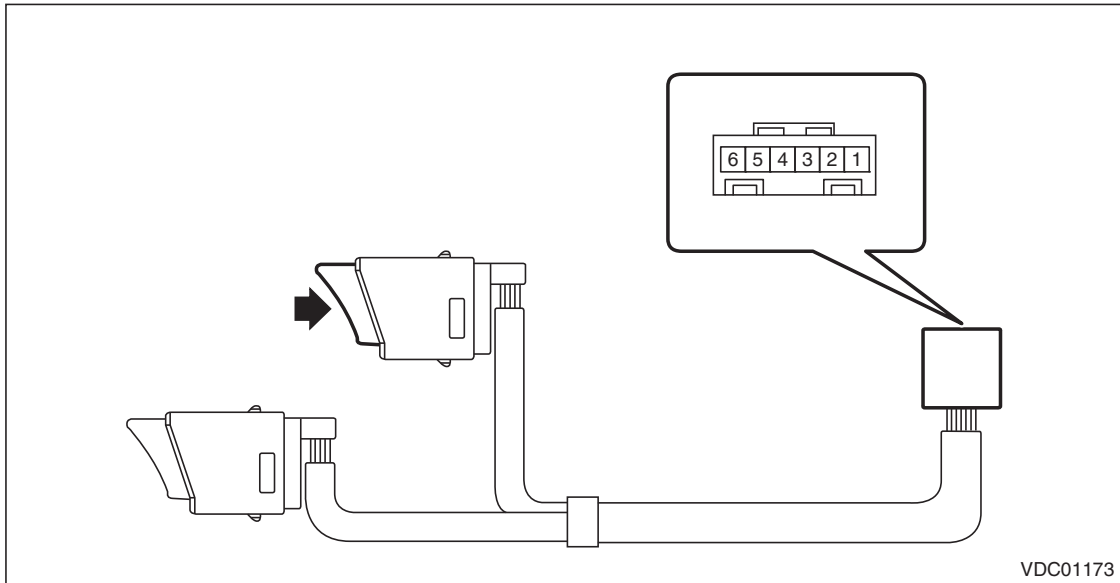


Terminal No.	Inspection conditions	Standard
2 — 3	Switch OFF	1 M Ω or more
	Switch ON	Less than 1 Ω

VDC OFF Switch

VEHICLE DYNAMICS CONTROL (VDC)

- Model with power rear gate



Terminal No.	Inspection conditions	Standard
1 — 2	Switch OFF	1 M Ω or more
	Switch ON	Less than 1 Ω

3) Replace the VDC OFF switch if the inspection result is not within the standard value.



VEHICLE DYNAMICS CONTROL (VDC) (DIAGNOSTICS)

VDC(diag)

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6. Subaru Select Monitor	16
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13. General Diagnostic Table	105

Basic Diagnostic Procedure

VEHICLE DYNAMICS CONTROL (VDC) (DIAGNOSTICS)

1. Basic Diagnostic Procedure

A: PROCEDURE

CAUTION:

Remove foreign matter (dust, water, oil etc.) from the VDCCM&H/U connector during removal and installation.

NOTE:

- To check the harness for open or short circuits, shake problem spot or connector.
- Refer to "Check List for Interview". <Ref. to VDC(diag)-4, Check List for Interview.>

Step	Check	Yes	No
1 CHECK PRE-INSPECTION. 1) Ask the customer when and how the trouble occurred using the interview check list. <Ref. to VDC(diag)-4, Check List for Interview.> 2) Before performing diagnostics, check the component which might affect VDC problems. <Ref. to VDC(diag)-8, INSPECTION, General Description.>	Is the component that might influence the VDC problem normal?	Go to step 2.	Repair or replace each component.
2 CHECK INDICATION OF DTC. 1) Turn the ignition switch to OFF. 2) Connect the Subaru Select Monitor to data link connector. 3) Turn the ignition switch to ON and run the Subaru Select Monitor. 4) Read the DTC using the Subaru Select Monitor. <Ref. to VDC(diag)-21, OPERATION, Read Diagnostic Trouble Code (DTC).> NOTE: If the communication function of the Subaru Select Monitor cannot be executed properly, check the communication circuit. <Ref. to VDC(diag)-19, COMMUNICATION FOR INITIALIZING IMPOSSIBLE, INSPECTION, Subaru Select Monitor.>	Is DTC displayed on Subaru Select Monitor?	Record the DTC, time stamp and freeze frame data. Go to step 4. NOTE: • For the time stamp, refer to LAN section. <Ref. to LAN(diag)-6, TIME STAMP, CAUTION, General Description.> • Depending on DTCs, time stamp may not be stored.	Go to step 3.
3 PERFORM GENERAL DIAGNOSTICS. 1) Perform the inspection by referring to "General Diagnostic Table". <Ref. to VDC(diag)-105, INSPECTION, General Diagnostic Table.> 2) Perform the Clear Memory Mode. <Ref. to VDC(diag)-23, OPERATION, Clear Memory Mode.> 3) Perform the Inspection Mode. <Ref. to VDC(diag)-22, PROCEDURE, Inspection Mode.> 4) Read the DTC. <Ref. to VDC(diag)-21, OPERATION, Read Diagnostic Trouble Code (DTC).> 5) Check the DTC is not displayed.	Do the VDC warning light & VDC indicator light, VDC OFF indicator light and ABS warning light go off after starting the engine?	Finish the diagnosis.	Check the combination meter circuit. <Ref. to VDC(diag)-28, ABS WARNING LIGHT DOES NOT GO OFF, Warning Light Illumination Pattern.> <Ref. to VDC(diag)-29, VDC WARNING LIGHT AND VDC INDICATOR LIGHT DO NOT GO OFF, Warning Light Illumination Pattern.> <Ref. to VDC(diag)-30, VDC OFF INDICATOR LIGHT DOES NOT GO OFF, Warning Light Illumination Pattern.>

Basic Diagnostic Procedure

VEHICLE DYNAMICS CONTROL (VDC) (DIAGNOSTICS)

Step	Check	Yes	No
4 PERFORM DIAGNOSIS. 1) Refer to "List of Diagnostic Trouble Code (DTC)". NOTE: For the DTC list, refer to "List of Diagnostic Trouble Code (DTC)". <Ref. to VDC(diag)-36, LIST, List of Diagnostic Trouble Code (DTC).> 2) Correct the cause of trouble. 3) Perform the Clear Memory Mode. <Ref. to VDC(diag)-23, OPERATION, Clear Memory Mode.> 4) Perform the Inspection Mode. <Ref. to VDC(diag)-22, PROCEDURE, Inspection Mode.> 5) Read the DTC. <Ref. to VDC(diag)-21, OPERATION, Read Diagnostic Trouble Code (DTC).>	Is DTC displayed?	Repeat step 4 until DTC is not shown.	Finish the diagnosis.



Check List for Interview

VEHICLE DYNAMICS CONTROL (VDC) (DIAGNOSTICS)

2. Check List for Interview

A: CHECK

Check the following item about the vehicle's state.

1. STATE OF ABS WARNING LIGHT

ABS warning light illuminates.	☐ Always ☐ Sometimes ☐ Only once ☐ Does not come on • When/How long does it illuminate?		
Ignition key position	☐ LOCK ☐ ACC ☐ ON (before starting engine) ☐ START ☐ ON (after starting engine, engine is running) ☐ ON (after starting engine, engine is at a standstill)		
Timing	☐ Immediately after turning the ignition switch to ON ☐ Immediately after turning the ignition switch to START		
	☐ While accelerating	—	km/h
		—	MPH
	☐ While driving at a constant speed	km/h	MPH
	☐ While decelerating	—	km/h
		—	MPH
	☐ When turning to the right	Steering angle:	deg
		Steering time:	Sec.
	☐ When turning to the left	Steering angle:	deg
		Steering time:	Sec.
	☐ When other electrical parts are operating		
	• Part name: • Operating condition:		

Check List for Interview

VEHICLE DYNAMICS CONTROL (VDC) (DIAGNOSTICS)

2. STATE OF VDC WARNING LIGHT & VDC INDICATOR LIGHT

VDC warning light & VDC indicator light illuminates.	☐ Always ☐ Sometimes ☐ Only once ☐ Does not illuminate • When/How long does it illuminate?		
Ignition key position	☐ LOCK ☐ ACC ☐ ON (before starting engine) ☐ START ☐ ON (after starting engine, engine is running) ☐ ON (after starting engine, engine is at a standstill)		
Timing	☐ Immediately after turning the ignition switch to ON ☐ Immediately after turning the ignition switch to START		
	☐ While accelerating	—	km/h
		—	MPH
	☐ While driving at a constant speed	km/h	MPH
	☐ While decelerating	—	km/h
		—	MPH
	☐ When turning to the right	Steering angle:	deg
		Steering time:	Sec.
	☐ When turning to the left	Steering angle:	deg
		Steering time:	Sec.
	☐ When other electrical parts are operating		
	• Part name: • Operating condition:		

3. STATE OF VDC OFF INDICATOR LIGHT

VDC OFF indicator light illuminates.	☐ Always ☐ Sometimes ☐ Only once ☐ Does not illuminate • When/How long does it illuminate?		
Ignition key position	☐ LOCK ☐ ACC ☐ ON (before starting engine) ☐ START ☐ ON (after starting engine, engine is running) ☐ ON (after starting engine, engine is at a standstill)		
Timing	☐ Immediately after turning the ignition switch to ON ☐ Immediately after turning the ignition switch to START		
	☐ While accelerating	—	km/h
		—	MPH
	☐ While driving at a constant speed	km/h	MPH
	☐ While decelerating	—	km/h
		—	MPH
	☐ When turning to the right	Steering angle:	deg
		Steering time:	Sec.
	☐ When turning to the left	Steering angle:	deg
		Steering time:	Sec.
	☐ When other electrical parts are operating		
	• Part name: • Operating condition:		



Check List for Interview

VEHICLE DYNAMICS CONTROL (VDC) (DIAGNOSTICS)

4. CONDITIONS UNDER WHICH TROUBLE OCCURS

Environment	a) Weather	☐ Fine ☐ Cloudy ☐ Rainy ☐ Snowy ☐ Others:
	b) Ambient temperature	°C (°F)
	c) Road	☐ Inner city ☐ Suburbs ☐ Highway ☐ Local street ☐ Uphill ☐ Downhill ☐ Paved road ☐ Gravel road ☐ Muddy road ☐ Sandy place ☐ Straight road ☐ Sharp curve ☐ Gentle curve ☐ S-curve ☐ Road with a slope on both sides ☐ Others:
	d) Road surface	☐ Dry ☐ Wet ☐ Covered with fresh snow ☐ Covered with hardened snow ☐ Frozen slope ☐ Others:

Check List for Interview

VEHICLE DYNAMICS CONTROL (VDC) (DIAGNOSTICS)

Condition	a) Brakes	Deceleration: G	
		☐ continuous / ☐ intermittent	
	b) Accelerator	Acceleration: G	
		☐ continuous / ☐ intermittent	
	c) Vehicle speed	km/h	MPH
		☐ Advancing ☐ When accelerating ☐ When decelerating ☐ At low speed ☐ When turning ☐ Others:	
	d) Tire inflation pressure	Front RH tire:	kPa
		Front LH tire:	kPa
		Rear RH tire:	kPa
		Rear LH tire:	kPa
	e) Degree of wear	Front RH tire:	mm (in)
		Front LH tire:	mm (in)
		Rear RH tire:	mm (in)
		Rear LH tire:	mm (in)
	f) Steering wheel	☐ Sharp turning ☐ Gentle turning ☐ Straight forward motion ☐ Gentle return ☐ Sharp return	
g) Tire/Wheel size	☐ Specified size ☐ Except specification ()		
h) Tire variation	☐ Summer tire ☐ Studless tire (Brand:)		
i) Tire chain is attached:	☐ Yes / ☐ No		
j) Using T-type tires:	☐ Yes / ☐ No		
k) Condition of suspension alignment:			
l) Load condition:			
m) Repaired parts are used:	☐ Yes / ☐ No		
• Content:			
n) Others:			

General Description

VEHICLE DYNAMICS CONTROL (VDC) (DIAGNOSTICS)

3. General Description

A: CAUTION

1. SUPPLEMENTAL RESTRAINT SYSTEM "AIRBAG"

Airbag system wiring harness is routed near the ABS wheel speed sensor and VDCCM&H/U.

CAUTION:

- Do not use the electrical test equipment on the airbag system wiring harnesses and connector circuits.
- Be careful not to damage the airbag system wiring harness when servicing the ABS wheel speed sensor and VDCCM&H/U.

B: INSPECTION

Before performing diagnosis, check the following items which might affect VDC problems.

1. BATTERY

Measure the battery voltage and check electrolyte.

Standard voltage:

12 V or more

Specific gravity:

1.260 or more

2. GROUND

Check the installation of the ground bolt for VDC.

3. BRAKE FLUID

- 1) Check the brake fluid level.
- 2) Check the brake fluid for leaks.

4. HYDRAULIC UNIT

Check the hydraulic unit.

- When using the brake tester <Ref. to VDC-17, CHECKING THE HYDRAULIC UNIT ABS OPERATION WITH THE BRAKE TESTER, INSPECTION, VDC Control Module and Hydraulic Control Unit (VDCCM&H/U).>
- When not using the brake tester <Ref. to VDC-16, CHECKING THE HYDRAULIC UNIT ABS OPERATION BY PRESSURE GAUGE, INSPECTION, VDC Control Module and Hydraulic Control Unit (VDCCM&H/U).>

5. BRAKE DRAG

Check for brake drag.

6. BRAKE PAD AND ROTOR

Check the brake pad and rotor.

- Front <Ref. to BR-18, INSPECTION, Front Brake Pad.> <Ref. to BR-20, INSPECTION, Front Disc Rotor.>
- Rear <Ref. to BR-32, INSPECTION, Rear Brake Pad.> <Ref. to BR-35, INSPECTION, Rear Disc Rotor.>

7. TIRE

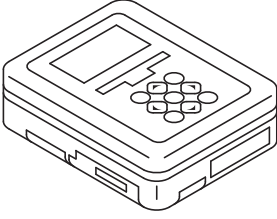
Check the tire specifications, tire wear and air pressure. <Ref. to WT-2, SPECIFICATION, General Description.>

General Description

VEHICLE DYNAMICS CONTROL (VDC) (DIAGNOSTICS)

C: PREPARATION TOOL

1. SPECIAL TOOL

ILLUSTRATION	TOOL NUMBER	DESCRIPTION	REMARKS
 ST1B022XU0	1B022XU0	SUBARU SELECT MONITOR III KIT	Used for troubleshooting the electrical system.

2. GENERAL TOOL

TOOL NAME	REMARKS
Circuit tester	Used for measuring resistance, voltage and current.
Oscilloscope	Used for measuring the sensor.

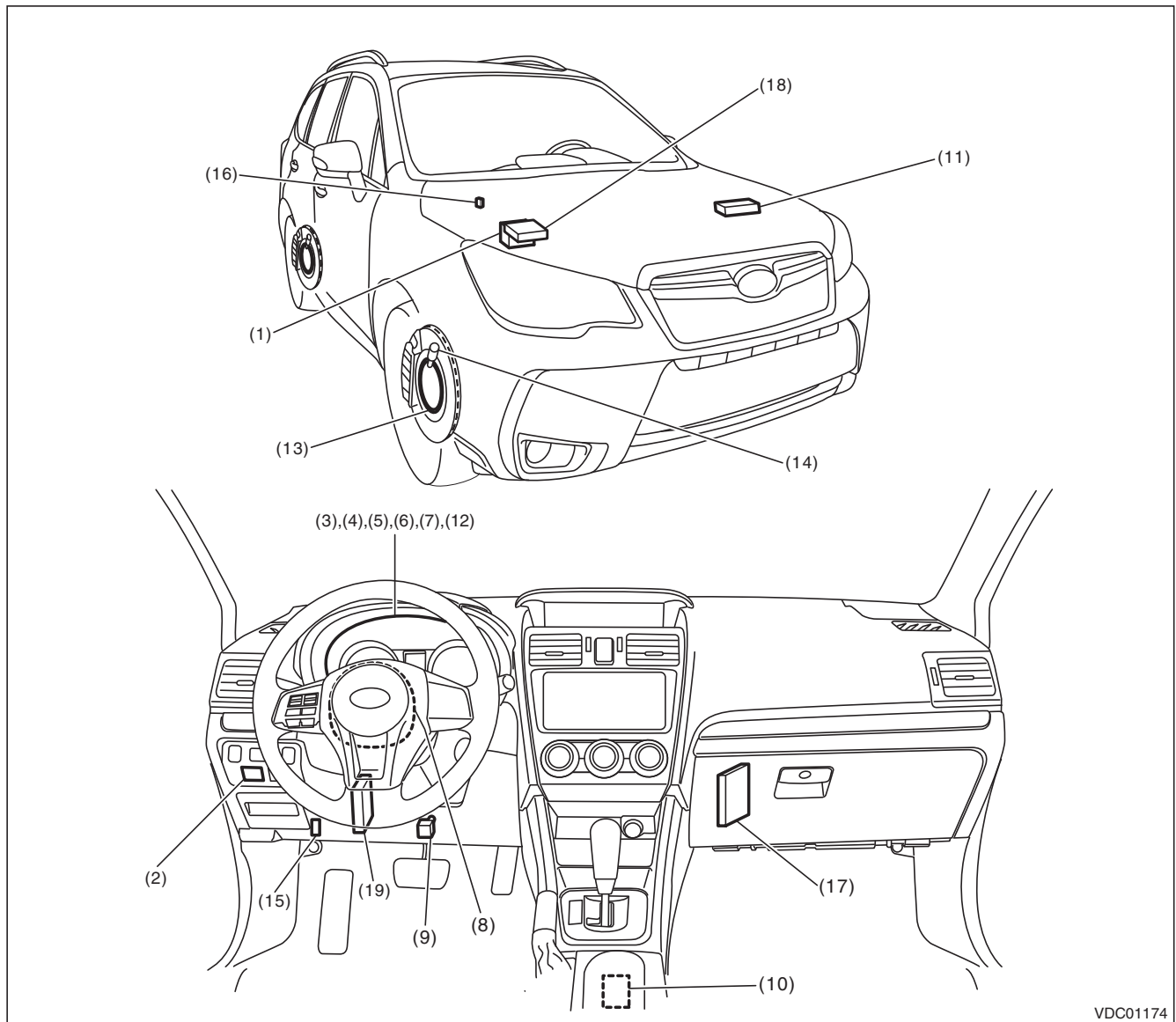


Electrical Component Location

VEHICLE DYNAMICS CONTROL (VDC) (DIAGNOSTICS)

4. Electrical Component Location

A: LOCATION

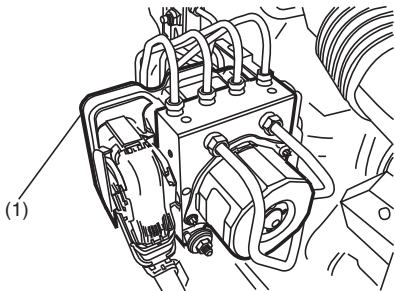


- | | | |
|---|--|--|
| (1) VDC control module and hydraulic control unit (VDCCM&H/U) | (8) Steering angle sensor | (14) ABS wheel speed sensor |
| (2) VDC OFF switch | (9) Stop light and brake switch | (15) Data link connector |
| (3) ABS warning light | (10) Yaw rate & G sensor (model with EyeSight) | (16) Two-way connector |
| (4) Brake warning light (EBD warning light) | (11) Brake light relay (model with X mode and model with EyeSight) | (17) Engine control module (ECM) (non-turbo model) |
| (5) VDC warning light & VDC indicator light | (12) Hill descent control indicator light (model with X mode) | (18) Engine control module (ECM) (turbo model) |
| (6) VDC OFF indicator light | (13) Magnetic encoder | (19) Transmission control module (TCM) |
| (7) Hill start assist warning light | | |

Electrical Component Location

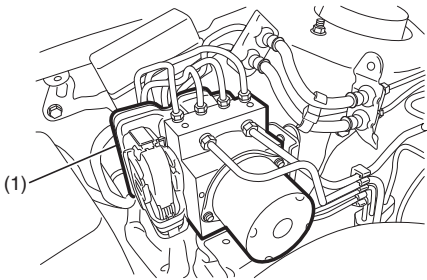
VEHICLE DYNAMICS CONTROL (VDC) (DIAGNOSTICS)

• Models without EyeSight

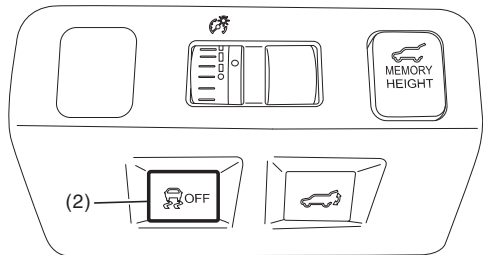


VDC00948

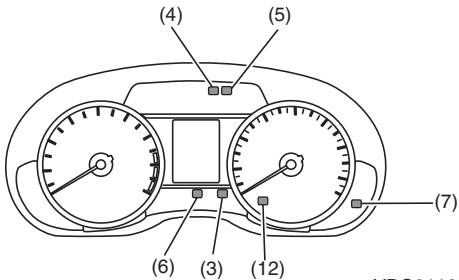
• Models with EyeSight



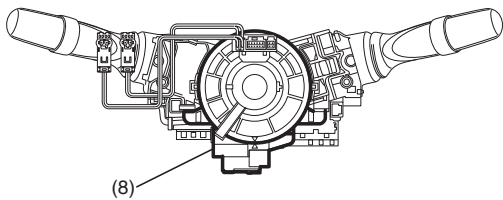
VDC01190



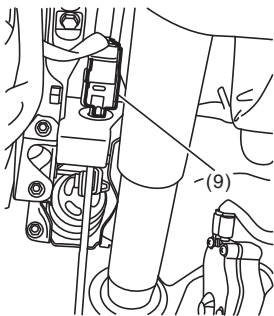
VDC01175



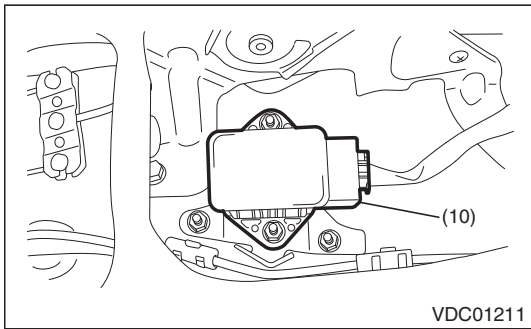
VDC01165



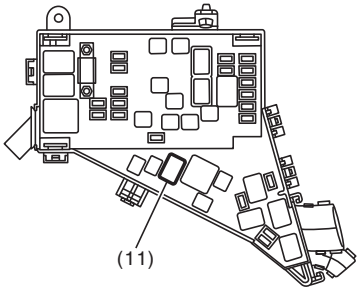
VDC00952



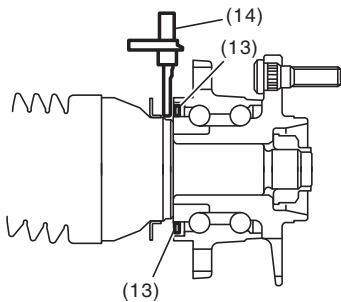
VDC01194



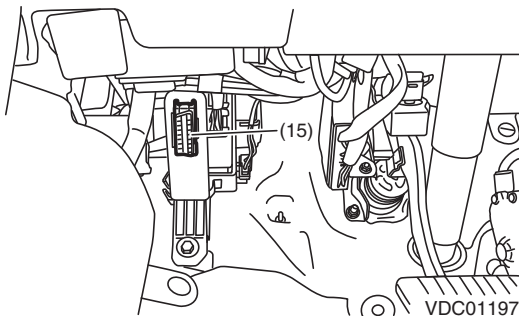
VDC01211



VDC01162



VDC01195



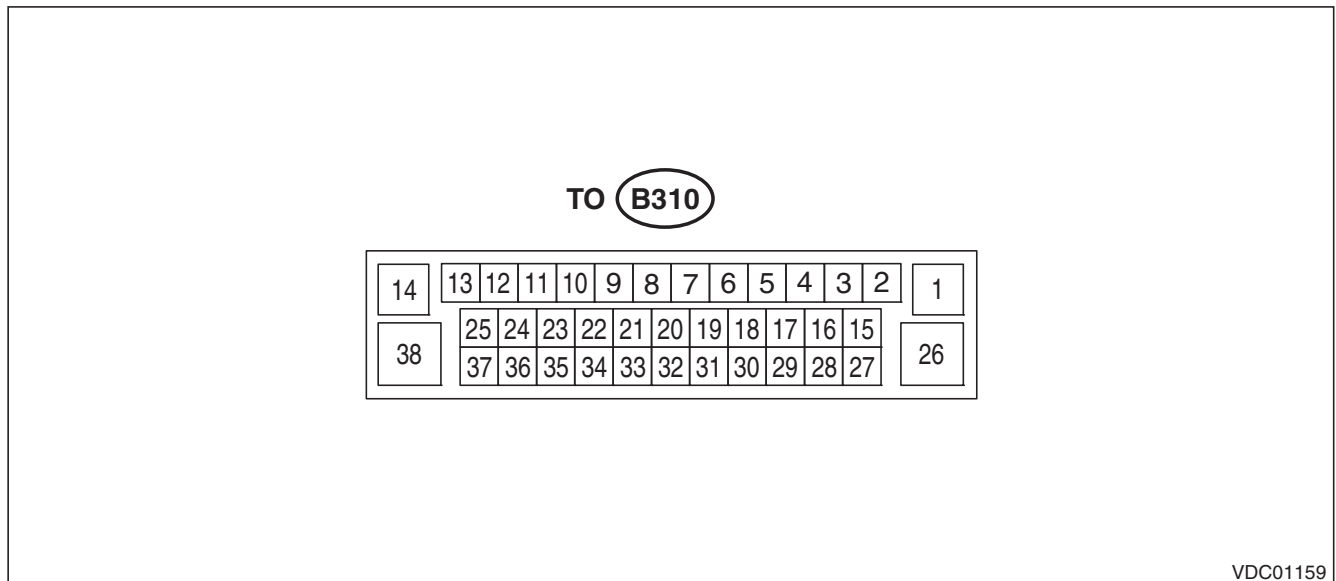
VDC01197

Control Module I/O Signal

VEHICLE DYNAMICS CONTROL (VDC) (DIAGNOSTICS)

5. Control Module I/O Signal

A: ELECTRICAL SPECIFICATION



NOTE:

- Terminal numbers in VDCCM&H/U connector are shown in the figure.
- When the connector is removed from the VDCCM&H/U, the brake warning light (EBD warning light), ABS warning light, VDC warning light & VDC indicator light, VDC OFF indicator light, and the hill start assist warning light illuminate.



Control Module I/O Signal

VEHICLE DYNAMICS CONTROL (VDC) (DIAGNOSTICS)

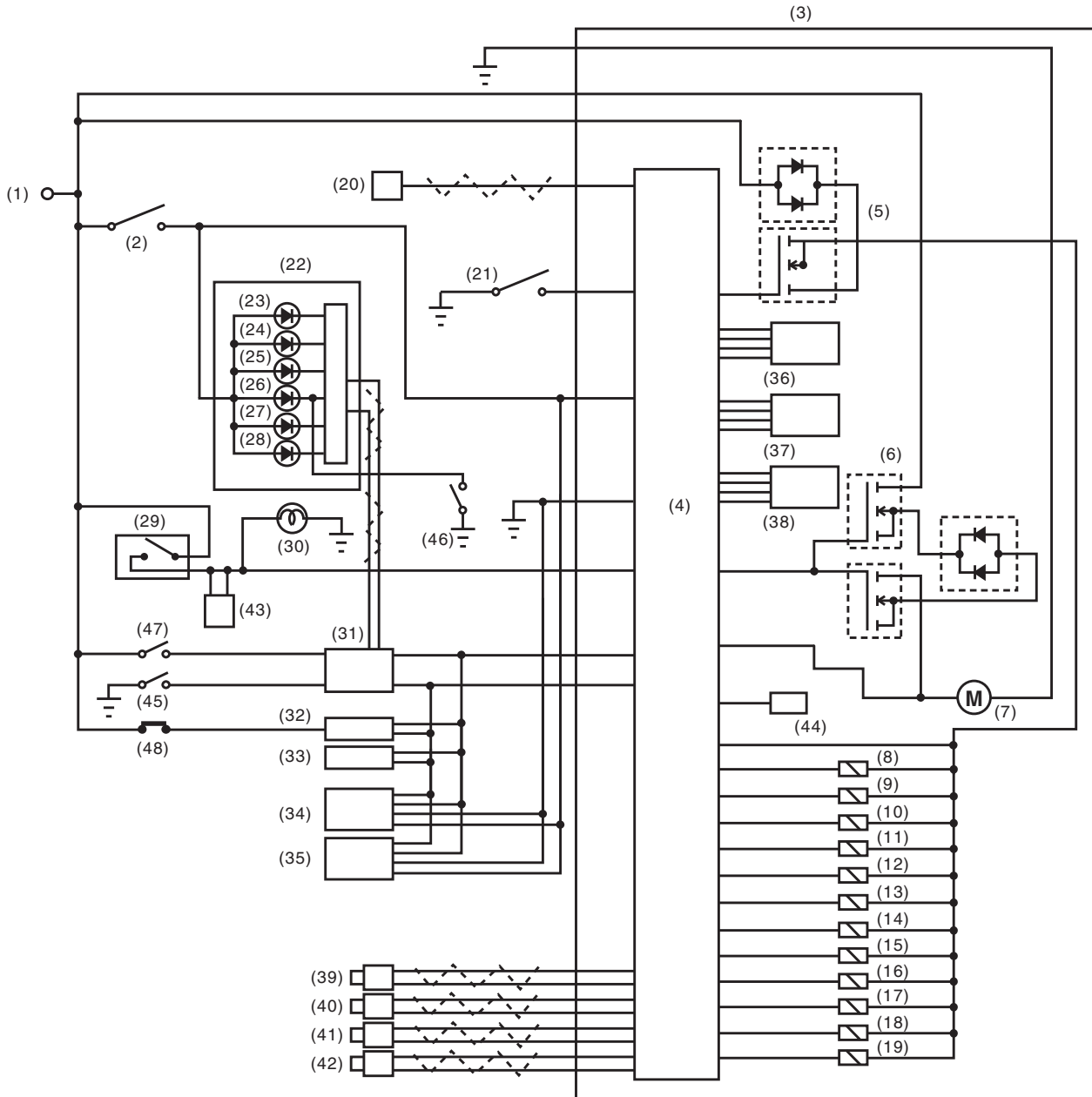
Content			Terminal No. (+) — (–)	Input/Output signal
				Measured value and measuring conditions
Power supply			4 — 14	10 — 15 V when the ignition switch is ON.
ABS wheel speed sensor	Front LH wheel	Power supply	20 — 14	0 — 18 V
		Signal	8	7 — 14 mA: Rectangle waveform
	Front RH wheel	Power supply	17 — 14	0 — 18 V
		Signal	29	7 — 14 mA: Rectangle waveform
	Rear LH wheel	Power supply	7 — 14	0 — 18 V
		Signal	19	7 — 14 mA: Rectangle waveform
	Rear RH wheel	Power supply	18 — 14	0 — 18 V
		Signal	5	7 — 14 mA: Rectangle waveform
CAN communication line (H)			2	2.75 — 4.5 V pulse signal
CAN communication line (L)			15	0.5 — 2.25 V pulse signal
Valve relay power supply			1 — 14	10 — 15 V when the ignition switch is ON.
Motor relay power supply			26 — 38	10 — 15 V when the ignition switch is ON.
Brake light relay power supply (model with X MODE and model with EyeSight)			28 — 14	10 — 15 V when the ignition switch is ON.
Stop light switch			6 — 14	1.5 V or less when the stop light is OFF; otherwise, 10 — 15 V when the stop light is ON.
Vehicle speed output signal			27	0 ↔ 12 V pulse
VDC OFF switch			37 — 14	1 Ω or less when the OFF switch is “ON”; 1 MΩ or more when the switch is “OFF”.
Ground			14	—
Ground			38	—



Control Module I/O Signal

VEHICLE DYNAMICS CONTROL (VDC) (DIAGNOSTICS)

B: WIRING DIAGRAM



VDC01160

Control Module I/O Signal

VEHICLE DYNAMICS CONTROL (VDC) (DIAGNOSTICS)

(1) Battery	(17) Primary suction solenoid valve	(33) Transmission control module (TCM) (AT model)
(2) Ignition switch	(18) Secondary cut solenoid valve	(34) Steering angle sensor
(3) VDC control module and hydraulic control unit (VDCCM&H/U)	(19) Secondary suction solenoid valve	(35) Yaw rate & G sensor (model with EyeSight)
(4) VDC control module	(20) Data link connector	(36) Pressure sensor
(5) Valve relay	(21) VDC OFF switch	(37) Pressure sensor (model with EyeSight)
(6) Motor relay	(22) Combination meter	(38) Pressure sensor (model with EyeSight)
(7) Motor	(23) VDC OFF indicator light	(39) Front ABS wheel speed sensor LH
(8) Front inlet solenoid valve LH	(24) VDC warning light & VDC indicator light	(40) Front ABS wheel speed sensor RH
(9) Front outlet solenoid valve LH	(25) ABS warning light	(41) Rear ABS wheel speed sensor LH
(10) Front inlet solenoid valve RH	(26) Brake warning light (EBD warning light)	(42) Rear ABS wheel speed sensor RH
(11) Front outlet solenoid valve RH	(27) Hill start assist warning light	(43) Brake light relay (model with X MODE and model with EyeSight)
(12) Rear inlet solenoid valve LH	(28) Hill descent control indicator light (model with X MODE)	(44) Yaw rate & G sensor (models without EyeSight)
(13) Rear outlet solenoid valve LH	(29) Stop light switch	(45) Parking brake switch
(14) Rear inlet solenoid valve RH	(30) Stop light	(46) Brake fluid level switch
(15) Rear outlet solenoid valve RH	(31) Body integrated unit	(47) Back-up light switch (MT model)
(16) Primary cut solenoid valve	(32) Engine control module (ECM)	(48) Clutch switch (MT model)



Subaru Select Monitor

VEHICLE DYNAMICS CONTROL (VDC) (DIAGNOSTICS)

6. Subaru Select Monitor

A: OPERATION

1. HOW TO USE THE SUBARU SELECT MONITOR

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

2. READ CURRENT DATA

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

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 ²
Lateral G Sensor	Vehicle lateral acceleration detected by lateral G sensor is displayed.	m/s ²
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
FL wheel cylinder pressure sensor output	FL wheel cylinder brake fluid pressure detected by pressure sensor is displayed.	bar
FR wheel cylinder pressure sensor output	FR wheel cylinder brake fluid pressure detected by pressure sensor is displayed.	bar
Motor Relay Signal	Motor relay driving signal is displayed.	ON or OFF
Valve Relay Signal	Valve relay driving 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
Stop-lamp relay drive signal	Brake light relay driving signal is displayed.	ON or OFF
X Mode	The status of X MODE is displayed.	ON or OFF
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. For AT model: OFF fixed)	ON or OFF
Reverse Signal	Reverse gear ON/OFF is displayed. (For MT model only. For AT model: OFF fixed)	ON or OFF

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-24, ABS Sequence Control.>
VDC Check Mode	Operate the valve and pump motor continuously to perform the VDC sequence control.	<Ref. to VDC-27, VDC Sequence Control.>
VSC(VDC) Centering Mode	Set the steering angle sensor neutral position, and the lateral G sensor and longitudinal G sensor "0" point.	<Ref. to VDC-23, VDC SENSOR MIDPOINT SETTING MODE, ADJUSTMENT, VDC Control Module and Hydraulic Control Unit (VDCCM&H/U).>
Brake Lamp Lighting Operation Mode	Activate the brake light relay to illuminate the brake light.	<Ref. to VDC-30, BRAKE LAMP LIGHTING OPERATION MODE BY SUBARU SELECT MONITOR, OPERATION, Brake Lamp Relay.>

4. READ FREEZE FRAME DATA

NOTE:

- Freeze frame data stored at the time of trouble occurrence is shown on the display.
- Each time a trouble occurs, the latest information is stored in the freeze frame data in memory.

Display	Contents to be displayed	Unit of measure
Classification	Recorded trouble code is displayed.	—
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
Vehicle Speed	Vehicle speed calculated by VDC control module 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 ²
Lateral G Sensor	Vehicle lateral acceleration detected by lateral G sensor is displayed.	m/s ²
Voltage of IGN	Voltage supplied to VDC control module is displayed.	V
Accelerator Pedal Position	Accelerator pedal opening angle is displayed.	%
Engine Speed	Engine speed on malfunction occurrence is displayed.	rpm
FL wheel cylinder pressure sensor output	FL wheel cylinder brake fluid pressure detected by pressure sensor is displayed.	bar
FR wheel cylinder pressure sensor output	FR wheel cylinder brake fluid pressure detected by pressure sensor is displayed.	bar
Steering angle flag	Whether the absolute angle of the steering angle sensor was determined is displayed.	Recognized or No recognition
EBD Control Flag	EBD control condition is displayed.	ON or OFF
ABS Control Flag	ABS control condition is displayed.	ON or OFF
TCS Control Flag	TCS control condition is displayed.	ON or OFF
VDC Control Flag	VDC control condition is displayed.	ON or OFF
E/G Control Stop Flag	Engine control command signal is displayed.	1 or 0
X Mode	The status of X MODE is displayed.	ON or OFF
OFF Switch Detection	ON/OFF condition of the VDC operated by the driver 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. For AT model: OFF fixed)	ON or OFF
Reverse Signal	Reverse gear ON/OFF is displayed. (For MT model only. For AT model: OFF fixed)	ON or OFF

Subaru Select Monitor

VEHICLE DYNAMICS CONTROL (VDC) (DIAGNOSTICS)

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 check the applied model, refer to the "Model number plate" attached to the vehicle. <Ref. to ID-2, IDENTIFICATION, Identification.>
- If you entered a wrong applied model, you can re-write it.
- 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 on 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)-23, 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)-18, PARAMETER SELECTION, OPERATION, Subaru Select Monitor.>



Subaru Select Monitor

VEHICLE DYNAMICS CONTROL (VDC) (DIAGNOSTICS)

Step	Check	Yes	No
6 CHECK SUBARU SELECT MONITOR COMMUNICATION. 1) Turn the ignition switch to ON. 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)-21, Read Diagnostic Trouble Code (DTC).>	Go to step 7.
7 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. 4 (+) — Chassis ground (-): (B310) No. 1 (+) — Chassis ground (-): (B310) No. 26 (+) — Chassis ground (-):	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. 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. 14 — Chassis ground:	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-10, VDC Control Module and Hydraulic Control Unit (VDCCM&H/U).>

Read Diagnostic Trouble Code (DTC)

VEHICLE DYNAMICS CONTROL (VDC) (DIAGNOSTICS)

7. Read Diagnostic Trouble Code (DTC)

A: OPERATION

- For detailed operation procedures, refer to “PC application help for Subaru Select Monitor”.
- For details concerning DTCs, refer to “List of Diagnostic Trouble Code (DTC)”. <Ref. to VDC(diag)-36, List of Diagnostic Trouble Code (DTC).>

Inspection Mode

VEHICLE DYNAMICS CONTROL (VDC) (DIAGNOSTICS)

8. Inspection Mode

A: PROCEDURE

Reproduce the malfunction occurrence condition as much as possible.

Drive the vehicle at least ten minutes.

NOTE:

Make sure the vehicle is not dragged to one side under usual driving condition.

Clear Memory Mode

VEHICLE DYNAMICS CONTROL (VDC) (DIAGNOSTICS)

9. Clear Memory Mode

A: OPERATION

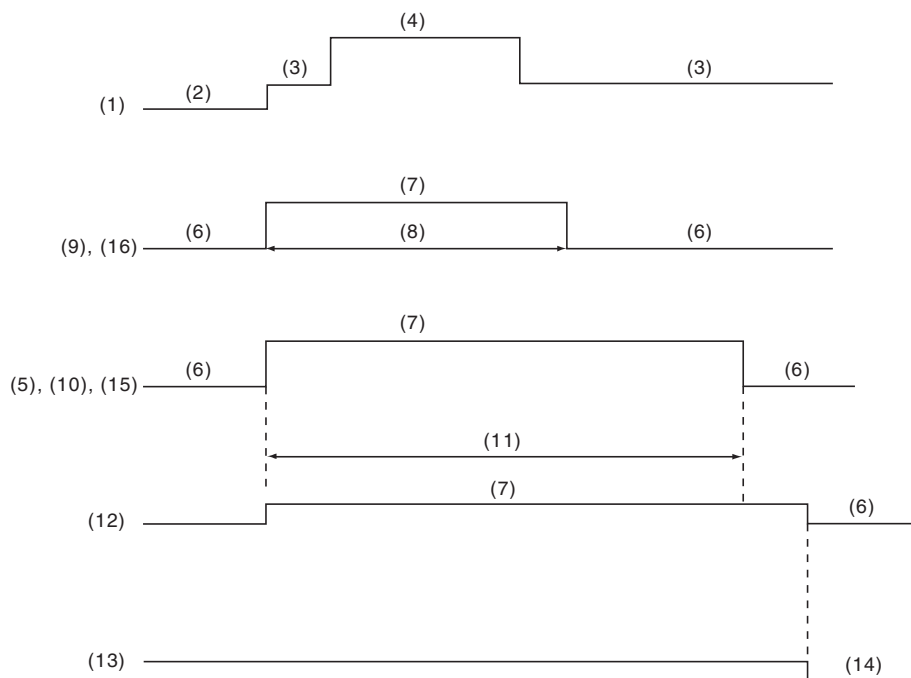
For detailed operation procedures, refer to “PC application help for Subaru Select Monitor”.

Warning Light Illumination Pattern

VEHICLE DYNAMICS CONTROL (VDC) (DIAGNOSTICS)

10.Warning Light Illumination Pattern

A: INSPECTION



VDC01146

- | | | |
|-----------------------|--|---|
| (1) Ignition switch | (7) Light ON | (13) Parking brake |
| (2) OFF | (8) 2 seconds | (14) Released |
| (3) ON | (9) VDC OFF indicator light | (15) Hill start assist warning light |
| (4) Engine start | (10) VDC warning light & VDC indicator light | (16) Hill descent control indicator light |
| (5) ABS warning light | (11) 2 seconds or more | |
| (6) Light OFF | (12) Brake warning light (EBD warning light) | |

NOTE:

Hill start assist warning light always illuminates when the hill start assist is in the OFF mode.

Warning Light Illumination Pattern

VEHICLE DYNAMICS CONTROL (VDC) (DIAGNOSTICS)

- 1) When warning lights or indicator lights do not illuminate in accordance with this illumination pattern, there must be an electrical malfunction.
- 2) When the warning lights or indicator lights remain constantly OFF, check the combination meter circuit.
<Ref. to VDC(diag)-26, EBD WARNING LIGHT, ABS WARNING, VDC OFF INDICATOR LIGHT, VDC WARNING LIGHT AND VDC INDICATOR LIGHT DO NOT COME ON, Warning Light Illumination Pattern.>
<Ref. to VDC(diag)-27, HILL START ASSIST WARNING LIGHT, Hill DESCENT CONTROL INDICATOR LIGHT DOES NOT COME ON, Warning Light Illumination Pattern.>
- 3) When the ABS warning light, VDC OFF indicator light, VDC warning light & VDC indicator light, and hill start assist warning light do not go off, check the combination meter circuit or CAN communication circuit.
<Ref. to VDC(diag)-28, ABS WARNING LIGHT DOES NOT GO OFF, Warning Light Illumination Pattern.>
<Ref. to VDC(diag)-30, VDC OFF INDICATOR LIGHT DOES NOT GO OFF, Warning Light Illumination Pattern.> <Ref. to VDC(diag)-29, VDC WARNING LIGHT AND VDC INDICATOR LIGHT DO NOT GO OFF, Warning Light Illumination Pattern.> <Ref. to VDC(diag)-32, HILL START ASSIST WARNING LIGHT, Hill DESCENT CONTROL INDICATOR LIGHT DOES NOT GO OFF, Warning Light Illumination Pattern.>

NOTE:

- Even though the ABS warning light, and the VDC warning light & VDC indicator light do not go off in 2 seconds after illuminating, the ABS and VDC functions are normal if the warning lights go off while the vehicle is driven at approximately 38 km/h (23 MPH). However, while these lights are on, the functions with their warning lights illuminated do not operate.
- It may take several minutes before the VDC warning light & VDC indicator light goes off, if the vehicle is parked under low temperature for a specified time. This is not defective because it is resulted from low engine coolant temperature. Perform the Clear Memory Mode because DTC may be recorded at this time. <Ref. to VDC(diag)-23, Clear Memory Mode.>
- With the vehicle jack-up/lift-up or set on free rollers, when the wheels lock or spin after starting the engine, ABS warning light, and VDC warning light & VDC indicator light may illuminate because VDCCM&H/U detects the abnormal conditions from ABS wheel speed sensor or longitudinal G sensor. In this case, this is not a malfunction. Perform the Clear Memory Mode. <Ref. to VDC(diag)-23, Clear Memory Mode.>



Warning Light Illumination Pattern

VEHICLE DYNAMICS CONTROL (VDC) (DIAGNOSTICS)

B: EBD WARNING LIGHT, ABS WARNING, VDC OFF INDICATOR LIGHT, VDC WARNING LIGHT AND VDC INDICATOR LIGHT DO NOT COME ON

DETECTING CONDITION:

Defective combination meter

TROUBLE SYMPTOM:

When the ignition switch is turned to ON (engine OFF), EBD warning light, ABS warning light, VDC OFF indicator light, and VDC warning light & VDC indicator light do not illuminate.

NOTE:

When pressing the VDC OFF switch for 30 seconds or more, the VDC OFF indicator light goes off and cannot operate any more. When turning the ignition switch from OFF to ON, the OFF operation enabled status is restored.

Step	Check	Yes	No
1 CHECK OTHER INDICATOR LIGHT. Turn the ignition switch to ON.	Does other indicator light illuminate soon after "ON"?	Go to step 2.	Check the combination meter. <Ref. to IDI-7, SELF-DIAGNOSIS DISPLAY MODE, OPERATION, Combination Meter System.>
2 CHECK VDCCM. When the engine does not start, display the current data of VDCCM using Subaru Select Monitor.	Immediately after the ignition switch is turned to ON, is the «EBD Warning Light» ON?	Go to step 3.	Replace the VDCCM only. <Ref. to VDC-20, REPLACEMENT, VDC Control Module and Hydraulic Control Unit (VDCCM&H/U).>
3 CHECK VDCCM. When the engine does not start, display the current data of VDCCM using Subaru Select Monitor.	Immediately after the ignition switch is turned to ON, is the «ABS Warning Lamp» ON?	Go to step 4.	Replace the VDCCM only. <Ref. to VDC-20, REPLACEMENT, VDC Control Module and Hydraulic Control Unit (VDCCM&H/U).>
4 CHECK VDCCM. When the engine does not start, display the current data of VDCCM using Subaru Select Monitor.	Immediately after the ignition switch is turned to ON, is the «VDC Warning Lamp» ON?	Check the combination meter. <Ref. to IDI-7, SELF-DIAGNOSIS DISPLAY MODE, OPERATION, Combination Meter System.>	Replace the VDCCM only. <Ref. to VDC-20, REPLACEMENT, VDC Control Module and Hydraulic Control Unit (VDCCM&H/U).>



Warning Light Illumination Pattern

VEHICLE DYNAMICS CONTROL (VDC) (DIAGNOSTICS)

C: HILL START ASSIST WARNING LIGHT, Hill DESCENT CONTROL INDICATOR LIGHT DOES NOT COME ON

DETECTING CONDITION:

Defective combination meter

TROUBLE SYMPTOM:

When the ignition switch is turned to ON (engine OFF), hill start assist warning light and hill descent control indicator light do not illuminate.

Step	Check	Yes	No
1 CHECK OTHER INDICATOR LIGHT. Turn the ignition switch to ON. (engine OFF)	Do other indicator lights illuminate?	Go to step 2.	Check the combination meter. <Ref. to IDI-7, SELF-DIAGNOSIS DISPLAY MODE, OPERATION, Combination Meter System.>
2 READ DTC. Read the DTC. <Ref. to VDC(diag)-21, Read Diagnostic Trouble Code (DTC).>	Is DTC displayed?	Perform the diagnosis according to DTC. <Ref. to VDC(diag)-36, List of Diagnostic Trouble Code (DTC).>	Go to step 3.
3 CHECK LAN SYSTEM. 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)-99, List of Diagnostic Trouble Code (DTC).>	Go to step 4.
4 CHECK COMBINATION METER. Check the combination meter. <Ref. to IDI-7, SELF-DIAGNOSIS DISPLAY MODE, OPERATION, Combination Meter System.>	Is combination meter OK?	Replace the VDCCM only. <Ref. to VDC-20, REPLACEMENT, VDC Control Module and Hydraulic Control Unit (VDCCM&H/U).>	Replace the combination meter. <Ref. to IDI-18, Combination Meter.>

Warning Light Illumination Pattern

VEHICLE DYNAMICS CONTROL (VDC) (DIAGNOSTICS)

D: ABS WARNING LIGHT DOES NOT GO OFF

DETECTING CONDITION:

- Defective combination meter
- Defective engine
- Defective CAN communication

TROUBLE SYMPTOM:

When starting the engine, the ABS warning light is kept on.

Step	Check	Yes	No
1 READ DTC. Read the DTC. <Ref. to VDC(diag)-21, Read Diagnostic Trouble Code (DTC).>	Is DTC displayed?	Perform the diagnosis according to DTC. <Ref. to VDC(diag)-36, List of Diagnostic Trouble Code (DTC).>	Go to step 2.
2 CHECK VDCCM. Display the current data of VDCCM using Subaru Select Monitor.	Is the «ABS Warning Lamp» ON?	Go to step 3.	Go to step 4.
3 READ DTC. Read the DTC after driving the vehicle at 40 km/h (25 MPH) or more.	Is DTC displayed?	Perform the diagnosis according to DTC. <Ref. to VDC(diag)-36, List of Diagnostic Trouble Code (DTC).>	Go to step 4.
4 CHECK LAN SYSTEM. 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)-99, List of Diagnostic Trouble Code (DTC).>	Go to step 5.
5 CHECK COMBINATION METER. Check the combination meter. <Ref. to IDI-7, SELF-DIAGNOSIS DISPLAY MODE, OPERATION, Combination Meter System.>	Is combination meter OK?	Replace the VDCCM only. <Ref. to VDC-20, REPLACEMENT, VDC Control Module and Hydraulic Control Unit (VDCCM&H/U).>	Replace the combination meter. <Ref. to IDI-18, REMOVAL, Combination Meter.>

Warning Light Illumination Pattern

VEHICLE DYNAMICS CONTROL (VDC) (DIAGNOSTICS)

E: VDC WARNING LIGHT AND VDC INDICATOR LIGHT DO NOT GO OFF

DETECTING CONDITION:

- Defective combination meter
- Defective engine
- Defective CAN communication

TROUBLE SYMPTOM:

When starting the engine, the VDC warning light & VDC indicator light remains lit.

Step	Check	Yes	No
1 READ DTC. Read the DTC. <Ref. to VDC(diag)-21, Read Diagnostic Trouble Code (DTC).>	Is DTC displayed?	Perform the diagnosis according to DTC. <Ref. to VDC(diag)-36, List of Diagnostic Trouble Code (DTC).>	Go to step 2.
2 CHECK VDCCM. Display the current data of VDCCM using Subaru Select Monitor.	Is the «VDC Warning Lamp» ON?	Go to step 3.	Go to step 4.
3 READ DTC. Read the DTC after driving the vehicle at 40 km/h (25 MPH) or more.	Is DTC displayed?	Perform the diagnosis according to DTC. <Ref. to VDC(diag)-36, List of Diagnostic Trouble Code (DTC).>	Go to step 4.
4 CHECK LAN SYSTEM. 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)-99, List of Diagnostic Trouble Code (DTC).>	Go to step 5.
5 CHECK COMBINATION METER. Check the combination meter. <Ref. to IDI-7, SELF-DIAGNOSIS DISPLAY MODE, OPERATION, Combination Meter System.>	Is combination meter OK?	Replace the VDCCM only. <Ref. to VDC-20, REPLACEMENT, VDC Control Module and Hydraulic Control Unit (VDCCM&H/U).>	Replace the combination meter. <Ref. to IDI-18, REMOVAL, Combination Meter.>

Warning Light Illumination Pattern

VEHICLE DYNAMICS CONTROL (VDC) (DIAGNOSTICS)

F: VDC OFF INDICATOR LIGHT DOES NOT GO OFF

DETECTING CONDITION:

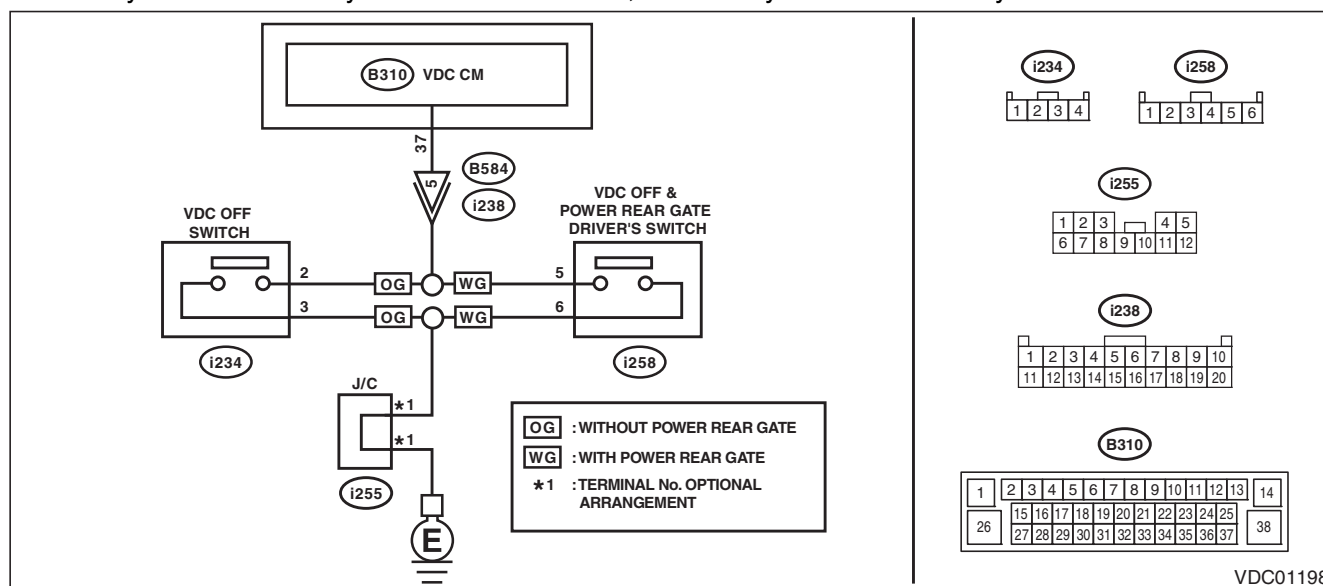
- Defective combination meter
- Defective CAN communication
- VDC OFF switch is shorted.

TROUBLE SYMPTOM:

When starting the engine, VDC OFF indicator light is kept ON.

WIRING DIAGRAM:

Vehicle dynamics control system <Ref. to WI-418, Vehicle Dynamics Control System.>



VDC01198

Step	Check	Yes	No
1 READ DTC. Read the DTC. <Ref. to VDC(diag)-21, Read Diagnostic Trouble Code (DTC).>	Is DTC displayed?	Perform the diagnosis according to DTC. <Ref. to VDC(diag)-36, List of Diagnostic Trouble Code (DTC).>	Go to step 2.
2 CHECK VDC OFF SWITCH. Remove and check VDC OFF switch. <Ref. to VDC-46, VDC OFF Switch.>	Is the VDC OFF switch normal?	Go to step 3.	Replace the VDC OFF switch.
3 CHECK VDC OFF SWITCH CIRCUIT. 1) Disconnect the connector from the VDCCM&H/U. 2) Measure the resistance between VDCCM&H/U connector and chassis ground. Connector & terminal (B310) No. 37 — Chassis ground:	Is the resistance less than 10 Ω?	Check the VDC OFF switch circuit.	Go to step 4.
4 CHECK LAN SYSTEM. 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)-99, List of Diagnostic Trouble Code (DTC).>	Go to step 5.

Warning Light Illumination Pattern

VEHICLE DYNAMICS CONTROL (VDC) (DIAGNOSTICS)

Step	Check	Yes	No
5 CHECK COMBINATION METER. Check the combination meter. <Ref. to IDI-7, SELF-DIAGNOSIS DISPLAY MODE, OPERATION, Combination Meter System.>	Is combination meter OK?	Replace the VDCCM only. <Ref. to VDC-20, REPLACEMENT, VDC Control Module and Hydraulic Control Unit (VDCCM&H/U).>	Replace the combination meter. <Ref. to IDI-18, REMOVAL, Combination Meter.>

Warning Light Illumination Pattern

VEHICLE DYNAMICS CONTROL (VDC) (DIAGNOSTICS)

G: HILL START ASSIST WARNING LIGHT, Hill DESCENT CONTROL INDICATOR LIGHT DOES NOT GO OFF

DETECTING CONDITION:

- Defective combination meter
- Defective CAN communication

TROUBLE SYMPTOM:

When starting the engine, the hill start assist warning light and the hill descent control indicator light continue to illuminate.

Step	Check	Yes	No
1 READ DTC. Read the DTC. <Ref. to VDC(diag)-21, Read Diagnostic Trouble Code (DTC).>	Is DTC displayed?	Perform the diagnosis according to DTC. <Ref. to VDC(diag)-36, List of Diagnostic Trouble Code (DTC).>	Go to step 2.
2 CHECK LAN SYSTEM. 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)-99, List of Diagnostic Trouble Code (DTC).>	Go to step 3.
3 CHECK COMBINATION METER. Check the combination meter. <Ref. to IDI-7, SELF-DIAGNOSIS DISPLAY MODE, OPERATION, Combination Meter System.>	Is combination meter OK?	Replace the VDCCM only. <Ref. to VDC-20, REPLACEMENT, VDC Control Module and Hydraulic Control Unit (VDCCM&H/U).>	Replace the combination meter. <Ref. to IDI-18, REMOVAL, Combination Meter.>



Warning Light Illumination Pattern

VEHICLE DYNAMICS CONTROL (VDC) (DIAGNOSTICS)

H: BRAKE WARNING LIGHT DOES NOT GO OFF

DETECTING CONDITION:

- Brake warning light circuit is shorted.
- Defective sensor/connector
- Defective CAN communication

TROUBLE SYMPTOM:

After starting the engine, the brake warning light remains lit though the parking lever is released.

Warning Light Illumination Pattern

VEHICLE DYNAMICS CONTROL (VDC) (DIAGNOSTICS)

Step	Check	Yes	No
2 READ DTC. Read the DTC. <Ref. to VDC(diag)-21, Read Diagnostic Trouble Code (DTC).>	Is DTC displayed?	Perform the diagnosis according to DTC. <Ref. to VDC(diag)-36, List of Diagnostic Trouble Code (DTC).>	Go to step 3.
3 CHECK BRAKE FLUID AMOUNT. Check the amount of brake fluid in the reservoir tank of master cylinder.	Does the level of the brake fluid amount fall between the lines of "MAX" and "MIN"?	Go to step 4.	Replenish brake fluid to the specified value.
4 CHECK BRAKE FLUID LEVEL SWITCH. 1) Turn the ignition switch to OFF. 2) Disconnect the level switch connector (B16) from master cylinder. 3) Measure the resistance of master cylinder terminals. Terminals No. 1 — No. 2:	Is the resistance 1 MΩ or more?	Go to step 5.	Replace the master cylinder. <Ref. to BR-44, Master Cylinder.>
5 CHECK GROUND SHORT OF HARNESS. 1) Disconnect the connector (i10) from combination meter. 2) Measure the resistance between combination meter connector and chassis ground. Connector & terminal (i10) No. 23 — Chassis ground:	Is the resistance 1 MΩ or more?	Go to step 6.	Repair the harness between combination meter and brake fluid level switch.
6 CHECK PARKING BRAKE SWITCH. 1) Disconnect the connector (R4) from parking brake switch. 2) Release the parking brake. 3) Measure the resistance between parking brake switch terminal and chassis ground.	Is the resistance 1 MΩ or more?	Go to step 7.	Replace the parking brake switch.
7 CHECK GROUND SHORT OF HARNESS. 1) Disconnect the connector (i84) from body integrated unit. 2) Measure the resistance between body integrated unit connector and chassis ground. Connector & terminal (i84) No. 32 — Chassis ground:	Is the resistance 1 MΩ or more?	Go to step 8.	Repair the harness between body integrated unit and parking brake switch.
8 CHECK POOR CONTACT OF CONNECTOR. Check for poor contact of all connectors.	Is there poor contact?	Repair the connector.	Go to step 9.
9 CHECK LAN SYSTEM. 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)-99, List of Diagnostic Trouble Code (DTC).>	Go to step 10.
10 CHECK COMBINATION METER. Check the combination meter. <Ref. to IDI-7, SELF-DIAGNOSIS DISPLAY MODE, OPERATION, Combination Meter System.>	Is combination meter OK?	Replace the VDCCM only. <Ref. to VDC-20, REPLACEMENT, VDC Control Module and Hydraulic Control Unit (VDCCM&H/U).>	Replace the combination meter. <Ref. to IDI-18, Combination Meter.>

List of Diagnostic Trouble Code (DTC)

VEHICLE DYNAMICS CONTROL (VDC) (DIAGNOSTICS)

11.List of Diagnostic Trouble Code (DTC)

A: LIST

DTC	Item	Content of diagnosis	Reference
C1211	FR Wheel Speed Sensor System Wire Break/Excessive Input	Open/high input of front ABS wheel speed sensor RH	<Ref. to VDC(diag)-40, DTC C1211 FR WHEEL SPEED SENSOR SYSTEM WIRE BREAK/EXCESSIVE INPUT, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>
C1212	FR Wheel Speed Sensor System	Front ABS wheel speed sensor RH signal malfunction	<Ref. to VDC(diag)-43, DTC C1212 FR WHEEL SPEED SENSOR SYSTEM, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>
C1221	FL Wheel Speed Sensor System Wire Break/Excessive Input	Open/high input of front ABS wheel speed sensor LH	<Ref. to VDC(diag)-40, DTC C1221 FL WHEEL SPEED SENSOR SYSTEM WIRE BREAK/EXCESSIVE INPUT, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>
C1222	FL Wheel Speed Sensor System	Front ABS wheel speed sensor LH signal malfunction	<Ref. to VDC(diag)-43, DTC C1222 FL WHEEL SPEED SENSOR SYSTEM, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>
C1231	RR Wheel Speed Sensor System Wire Break/Excessive Input	Open/high input of rear ABS wheel speed sensor RH	<Ref. to VDC(diag)-40, DTC C1231 RR WHEEL SPEED SENSOR SYSTEM WIRE BREAK/EXCESSIVE INPUT, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>
C1232	RR Wheel Speed Sensor System	Rear ABS wheel speed sensor RH signal malfunction	<Ref. to VDC(diag)-43, DTC C1232 RR WHEEL SPEED SENSOR SYSTEM, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>
C1241	RL Wheel Speed Sensor System Wire Break/Excessive Input	Open/high input of rear ABS wheel speed sensor LH	<Ref. to VDC(diag)-41, DTC C1241 RL WHEEL SPEED SENSOR SYSTEM WIRE BREAK/EXCESSIVE INPUT, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>
C1242	RL Wheel Speed Sensor System	Rear ABS wheel speed sensor LH signal malfunction	<Ref. to VDC(diag)-44, DTC C1242 RL WHEEL SPEED SENSOR SYSTEM, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>
C1251	Wheel Speed Sensor System	Wheel speed sensor malfunction	<Ref. to VDC(diag)-45, DTC C1251 WHEEL SPEED SENSOR SYSTEM, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>
C1252	Wheel Speed Sensor Signal of One of The Wheels	ABS wheel speed sensor signal malfunction in one of four wheels	<Ref. to VDC(diag)-46, DTC C1252 WHEEL SPEED SENSOR SIGNAL OF ONE OF THE WHEELS, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>
C1311	FR Inlet Solenoid Valve System	Front inlet solenoid valve RH malfunction in VDCCM&H/U	<Ref. to VDC(diag)-47, DTC C1311 FR INLET SOLENOID VALVE SYSTEM, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>
C1312	FR Outlet Solenoid Valve System	Front outlet solenoid valve RH malfunction in VDCCM&H/U	<Ref. to VDC(diag)-47, DTC C1312 FR OUTLET SOLENOID VALVE SYSTEM, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>
C1321	FL Inlet Solenoid Valve System	Front inlet solenoid valve LH malfunction in VDCCM&H/U	<Ref. to VDC(diag)-47, DTC C1321 FL INLET SOLENOID VALVE SYSTEM, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>
C1322	FL Outlet Solenoid Valve System	Front outlet solenoid valve LH malfunction in VDCCM&H/U	<Ref. to VDC(diag)-47, DTC C1322 FL OUTLET SOLENOID VALVE SYSTEM, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>
C1331	RR Inlet Solenoid Valve System	Rear inlet solenoid valve RH malfunction in VDCCM&H/U	<Ref. to VDC(diag)-47, DTC C1331 RR INLET SOLENOID VALVE SYSTEM, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>
C1332	RR Outlet Solenoid Valve System	Rear outlet solenoid valve RH malfunction in VDCCM&H/U	<Ref. to VDC(diag)-47, DTC C1332 RR OUTLET SOLENOID VALVE SYSTEM, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

List of Diagnostic Trouble Code (DTC)

VEHICLE DYNAMICS CONTROL (VDC) (DIAGNOSTICS)

DTC	Item	Content of diagnosis	Reference
C1341	RL Inlet Solenoid Valve System	Rear inlet solenoid valve LH malfunction in VDCCM&H/U	<Ref. to VDC(diag)-48, DTC C1341 RL INLET SOLENOID VALVE SYSTEM, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>
C1342	RL Outlet Solenoid Valve System	Rear outlet solenoid valve LH malfunction in VDCCM&H/U	<Ref. to VDC(diag)-48, DTC C1342 RL OUTLET SOLENOID VALVE SYSTEM, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>
C1351	VDC Change-Over Valve 1 (P)	Primary cut valve malfunction in VDCCM&H/U	<Ref. to VDC(diag)-48, DTC C1351 VDC CHANGE-OVER VALVE 1 (P), Diagnostic Procedure with Diagnostic Trouble Code (DTC).>
C1352	VDC Change-Over Valve 1 (S)	Secondary cut valve malfunction in VDCCM&H/U	<Ref. to VDC(diag)-48, DTC C1352 VDC CHANGE-OVER VALVE 1 (S), Diagnostic Procedure with Diagnostic Trouble Code (DTC).>
C1361	VDC Change-Over Valve 2 (P)	Primary suction valve malfunction in VDCCM&H/U	<Ref. to VDC(diag)-48, DTC C1361 VDC CHANGE-OVER VALVE 2 (P), Diagnostic Procedure with Diagnostic Trouble Code (DTC).>
C1362	VDC Change-Over Valve 2 (S)	Secondary suction valve malfunction in VDCCM&H/U	<Ref. to VDC(diag)-49, DTC C1362 VDC CHANGE-OVER VALVE 2 (S), Diagnostic Procedure with Diagnostic Trouble Code (DTC).>
C1411	ECU	VDC control module malfunction	<Ref. to VDC(diag)-51, DTC C1411 ECU, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>
C1412	Parameter	VDC control module parameter failure	<Ref. to VDC(diag)-53, DTC C1412 PARAMETER, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>
C1413	Power Supply Volt Error	Power voltage malfunction	<Ref. to VDC(diag)-54, DTC C1413 POWER SUPPLY VOLT ERROR, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>
C1421	ECM Control System	Prohibition of coordinate control for engine control module	<Ref. to VDC(diag)-56, DTC C1421 ECM CONTROL SYSTEM, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>
C1422	VDC Interruption for Engine Convenience	VDC interrupted due to some reasons of the engine	<Ref. to VDC(diag)-57, DTC C1422 VDC INTERRUPTION FOR ENGINE CONVENIENCE, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>
C1423	Different ECU Specifications	Different VDC control module specification	<Ref. to VDC(diag)-58, DTC C1423 DIFFERENT ECU SPECIFICATIONS, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>
C1424	ECM Failure	Engine control module is faulty	<Ref. to VDC(diag)-60, DTC C1424 ECM FAILURE, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>
C1431	AT Abnormal	Transmission control module is faulty	<Ref. to VDC(diag)-61, DTC C1431 AT ABNORMAL, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>
C1432	Different ECU Specifications	Different VDC control module specification	<Ref. to VDC(diag)-61, DTC C1432 DIFFERENT ECU SPECIFICATIONS, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>
C1441	EyeSight Request Pressure Abnormal	EyeSight system malfunction	<Ref. to VDC(diag)-62, DTC C1441 EyeSight REQUEST PRESSURE ABNORMAL, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>
C1511	Valve Relay	Defective valve relay	<Ref. to VDC(diag)-63, DTC C1511 VALVE RELAY, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>
C1512	Valve System	Defective valve system	<Ref. to VDC(diag)-64, DTC C1512 VALVE SYSTEM, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>
C1521	Motor Relay	Motor relay malfunction	<Ref. to VDC(diag)-65, DTC C1521 MOTOR RELAY, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>



List of Diagnostic Trouble Code (DTC)

VEHICLE DYNAMICS CONTROL (VDC) (DIAGNOSTICS)

DTC	Item	Content of diagnosis	Reference
C1531	BLS Off Fault	Stop light switch malfunction	<Ref. to VDC(diag)-68, DTC C1531 BLS OFF FAULT, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>
C1532	BLS On Fault	Stop light switch malfunction	<Ref. to VDC(diag)-72, DTC C1532 BLS ON FAULT, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>
C1541	Clutch Off Fault	Clutch signal malfunction	<Ref. to VDC(diag)-75, DTC C1541 CLUTCH OFF FAULT, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>
C1542	Clutch On Fault	Clutch signal malfunction	<Ref. to VDC(diag)-76, DTC C1542 CLUTCH ON FAULT, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>
C1561	Reverse Off Fault	Reverse signal malfunction	<Ref. to VDC(diag)-78, DTC C1561 REVERSE OFF FAULT, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>
C1562	Reverse On Fault	Reverse signal malfunction	<Ref. to VDC(diag)-79, DTC C1562 REVERSE ON FAULT, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>
C1571	Brake Lamp Relay OFF Malfunction	Brake light relay malfunction	<Ref. to VDC(diag)-81, DTC C1571 BRAKE LAMP RELAY OFF MALFUNCTION, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>
C1572	Brake Lamp Relay ON Malfunction	Brake light relay malfunction	<Ref. to VDC(diag)-83, DTC C1572 BRAKE LAMP RELAY ON MALFUNCTION, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>
C1711	Steering Angle Sensor Abnormal	Steering angle sensor malfunction	<Ref. to VDC(diag)-85, DTC C1711 STEERING ANGLE SENSOR ABNORMAL, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>
C1721	Yaw Rate Sensor Abnormal	Defective yaw rate sensor	<Ref. to VDC(diag)-88, DTC C1721 YAW RATE SENSOR ABNORMAL, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>
C1731	G Sensor Abnormal	Defective G sensor	<Ref. to VDC(diag)-93, DTC C1731 G SENSOR ABNORMAL, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>
C1732	Lateral G Sensor Abnormal	Defective lateral G sensor	<Ref. to VDC(diag)-94, DTC C1732 LATERAL G SENSOR ABNORMAL, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>
C1733	Longitudinal G Sensor Abnormal	Defective longitudinal G sensor	<Ref. to VDC(diag)-97, DTC C1733 LONGITUDINAL G SENSOR ABNORMAL, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>
C1741	Pressure Sensor	Defective pressure sensor	<Ref. to VDC(diag)-99, DTC C1741 PRESSURE SENSOR, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>
C1742	W/C Pressure Sensor	Defective pressure sensor	<Ref. to VDC(diag)-100, DTC C1742 W/C PRESSURE SENSOR, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>
C1811	System Failure	System malfunction	<Ref. to VDC(diag)-101, DTC C1811 SYSTEM FAILURE, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>
C1821	Brake Temperature Abnormal	Malfunction in VDCCM&H/U	<Ref. to VDC(diag)-103, DTC C1821 BRAKE TEMPERATURE ABNORMAL, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>
U0073	Control Module Communication Bus "A" Off	Defective CAN communication	<Ref. to VDC(diag)-103, DTC U0073 CONTROL MODULE COMMUNICATION BUS "A" OFF, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>



List of Diagnostic Trouble Code (DTC)

VEHICLE DYNAMICS CONTROL (VDC) (DIAGNOSTICS)

DTC	Item	Content of diagnosis	Reference
U0100	Lost Communication With ECM/PCM "A"	Defective CAN communication	<Ref. to VDC(diag)-103, DTC U0100 LOST COMMUNICATION WITH ECM/PCM "A", Diagnostic Procedure with Diagnostic Trouble Code (DTC).>
U0101	Lost Communication With TCM	Defective CAN communication	<Ref. to VDC(diag)-103, DTC U0101 LOST COMMUNICATION WITH TCM, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>
U0123	Lost Communication with Yaw Rate Sensor Module	Defective CAN communication	<Ref. to VDC(diag)-103, DTC U0123 LOST COMMUNICATION WITH YAW RATE SENSOR MODULE, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>
U0126	Lost Communication With Steering Angle Sensor Module	Defective CAN communication	<Ref. to VDC(diag)-103, DTC U0126 LOST COMMUNICATION WITH STEERING ANGLE SENSOR MODULE, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>
U0140	Lost Communication With Body Control Module	Defective CAN communication	<Ref. to VDC(diag)-103, DTC U0140 LOST COMMUNICATION WITH BODY CONTROL MODULE, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>
U0401	Invalid Data Received From ECM/PCM "A"	Defective CAN communication	<Ref. to VDC(diag)-103, DTC U0401 INVALID DATA RECEIVED FROM ECM/PCM "A", Diagnostic Procedure with Diagnostic Trouble Code (DTC).>
U0402	Invalid Data Received From TCM	Defective CAN communication	<Ref. to VDC(diag)-103, DTC U0402 INVALID DATA RECEIVED FROM TCM, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>
U0422	Invalid Data Received From Body Control Module	Defective CAN communication	<Ref. to VDC(diag)-104, DTC U0422 INVALID DATA RECEIVED FROM BODY CONTROL MODULE, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>
U0428	Invalid Data Received From Steering Angle Sensor Module	Defective CAN communication	<Ref. to VDC(diag)-104, DTC U0428 INVALID DATA RECEIVED FROM STEERING ANGLE SENSOR MODULE, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>
U0513	Invalid Data Received from Yaw Rate Sensor Module	Defective CAN communication	<Ref. to VDC(diag)-104, DTC U0513 INVALID DATA RECEIVED FROM YAW RATE SENSOR MODULE, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>
U1235	Lost Communication With EyeSight	Defective CAN communication	<Ref. to VDC(diag)-104, DTC U1235 LOST COMMUNICATION WITH EyeSight, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>
U1433	Invalid Data Received From EyeSight	Defective CAN communication	<Ref. to VDC(diag)-104, DTC U1433 INVALID DATA RECEIVED FROM EyeSight, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>



Diagnostic Procedure with Diagnostic Trouble Code (DTC)

VEHICLE DYNAMICS CONTROL (VDC) (DIAGNOSTICS)

12. Diagnostic Procedure with Diagnostic Trouble Code (DTC)

A: DTC C1211 FR WHEEL SPEED SENSOR SYSTEM WIRE BREAK/EXCESSIVE INPUT

NOTE:

For the diagnostic procedure, refer to "DTC C1241 RL WHEEL SPEED SENSOR SYSTEM WIRE BREAK/EXCESSIVE INPUT". <Ref. to VDC(diag)-41, DTC C1241 RL WHEEL SPEED SENSOR SYSTEM WIRE BREAK/EXCESSIVE INPUT, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

B: DTC C1221 FL WHEEL SPEED SENSOR SYSTEM WIRE BREAK/EXCESSIVE INPUT

NOTE:

For the diagnostic procedure, refer to "DTC C1241 RL WHEEL SPEED SENSOR SYSTEM WIRE BREAK/EXCESSIVE INPUT". <Ref. to VDC(diag)-41, DTC C1241 RL WHEEL SPEED SENSOR SYSTEM WIRE BREAK/EXCESSIVE INPUT, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

C: DTC C1231 RR WHEEL SPEED SENSOR SYSTEM WIRE BREAK/EXCESSIVE INPUT

NOTE:

For the diagnostic procedure, refer to "DTC C1241 RL WHEEL SPEED SENSOR SYSTEM WIRE BREAK/EXCESSIVE INPUT". <Ref. to VDC(diag)-41, DTC C1241 RL WHEEL SPEED SENSOR SYSTEM WIRE BREAK/EXCESSIVE INPUT, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>



Diagnostic Procedure with Diagnostic Trouble Code (DTC)

VEHICLE DYNAMICS CONTROL (VDC) (DIAGNOSTICS)

D: DTC C1241 RL WHEEL SPEED SENSOR SYSTEM WIRE BREAK/EXCESSIVE INPUT

DTC DETECTING CONDITION:

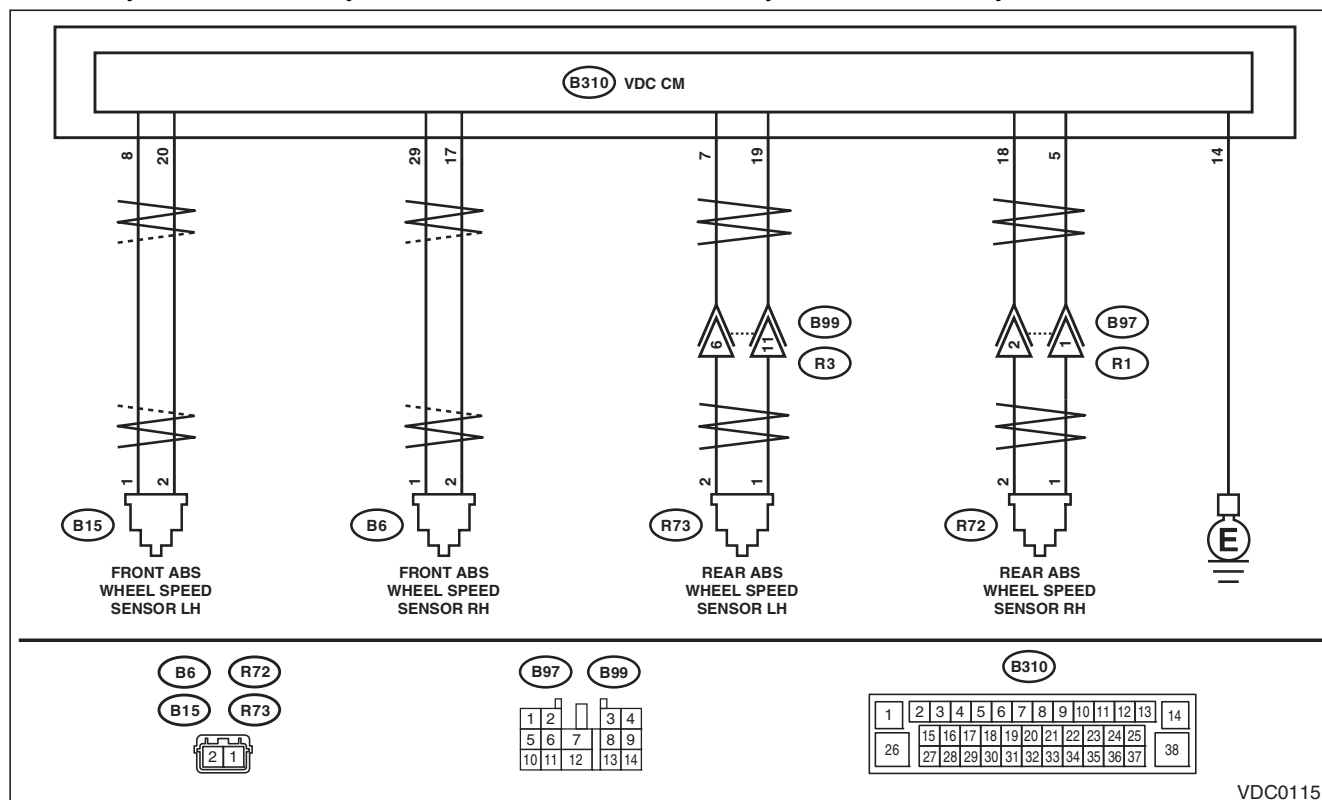
- Defective ABS wheel speed sensor (broken wire, input voltage too high)
- Defective harness connector

TROUBLE SYMPTOM:

- ABS does not operate.
- VDC does not operate.
- Hill start assist does not operate.
- Hill descent control does not operate. (Model with X MODE)
- EyeSight does not operate. (Model with EyeSight)

WIRING DIAGRAM:

Vehicle dynamics control system <Ref. to WI-418, Vehicle Dynamics Control System.>



VDC01151

Step	Check	Yes	No
1	CHECK POOR CONTACT OF CONNECTOR. Check if there is poor contact between VDCCM&H/U and ABS wheel speed sensor.	Is there poor contact? Repair the connector.	Go to step 2.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

VEHICLE DYNAMICS CONTROL (VDC) (DIAGNOSTICS)

Step	Check	Yes	No
2 CHECK HARNESS CONNECTOR BETWEEN VDCCM&H/U AND ABS WHEEL SPEED SENSOR. 1) Disconnect the connector (B310) from the VDCCM&H/U. 2) Disconnect the connector from ABS wheel speed sensor. 3) Measure the resistance between VDCCM&H/U connector and ABS wheel speed sensor connector. Connector & terminal DTC C1211 (B310) No. 29 — (B6) No. 1: (B310) No. 17 — (B6) No. 2: DTC C1221 (B310) No. 8 — (B15) No. 1: (B310) No. 20 — (B15) No. 2: DTC C1231 (B310) No. 5 — (R72) No. 1: (B310) No. 18 — (R72) No. 2: DTC C1241 (B310) No. 19 — (R73) No. 1: (B310) No. 7 — (R73) No. 2:	Is the resistance less than 1 Ω ?	Go to step 3.	Repair the harness connector between VDCCM&H/U and ABS wheel speed sensor.
3 CHECK GROUND SHORT OF HARNESS. Measure the resistance between VDCCM&H/U connector and chassis ground. Connector & terminal DTC C1211 (B310) No. 29 — Chassis ground: DTC C1221 (B310) No. 8 — Chassis ground: DTC C1231 (B310) No. 5 — Chassis ground: DTC C1241 (B310) No. 19 — Chassis ground:	Is the resistance 1 M Ω or more?	Go to step 4.	Repair the harness connector between VDCCM&H/U and ABS wheel speed sensor.
4 CHECK ABS WHEEL SPEED SENSOR POWER SUPPLY CIRCUIT. 1) Connect the VDCCM&H/U connector. 2) Connect the ABS wheel speed sensor connector. 3) Turn the ignition switch to ON. 4) Measure the voltage between ABS wheel speed sensor connector and chassis ground. Connector & terminal DTC C1211 (B6) No. 2 (+) — Chassis ground (-): DTC C1221 (B15) No. 2 (+) — Chassis ground (-): DTC C1231 (R72) No. 2 (+) — Chassis ground (-): DTC C1241 (R73) No. 2 (+) — Chassis ground (-):	Is the voltage 5 — 16 V?	Go to step 6.	Go to step 5.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

VEHICLE DYNAMICS CONTROL (VDC) (DIAGNOSTICS)

Step	Check	Yes	No
5 CHECK VDCCM&H/U POWER SUPPLY CIRCUIT. 1) Turn the ignition switch to OFF. 2) Disconnect the VDCCM&H/U connector. 3) Turn the ignition switch to ON. 4) Measure the voltage between VDCCM&H/U connector terminals. Connector & terminal (B310) No. 4 (+) — (B310) No. 14 (-): (B310) No. 1 (+) — (B310) No. 14 (-): (B310) No. 26 (+) — (B310) No. 14 (-):	Is the voltage 10 — 15 V?	Go to step 6.	Check the generator, battery and VDCCM&H/U power supply circuit.
6 CHECK ABS WHEEL SPEED SENSOR SIGNAL. 1) Install the ABS wheel speed sensor. 2) Prepare an oscilloscope. 3) Check the ABS wheel speed sensor. <Ref. to VDC-39, CHECK ABS WHEEL SPEED SENSOR UNIT, INSPECTION, Front ABS Wheel Speed Sensor.>	Is the pattern the same waveform as shown in the figure?	Go to step 7.	Replace the ABS wheel speed sensor. <Ref. to VDC-37, Front ABS Wheel Speed Sensor.>
7 CHECK VDCCM&H/U. 1) Connect all connectors. 2) Clear the memory. <Ref. to VDC(diag)-23, Clear Memory Mode.> 3) Perform the Inspection Mode. <Ref. to VDC(diag)-22, Inspection Mode.> 4) Read the DTC.	Is the same DTC displayed?	Replace the VDCCM only. <Ref. to VDC-20, REPLACEMENT, VDC Control Module and Hydraulic Control Unit (VDCCM&H/U).>	Go to step 8.
8 CHECK OTHER DTC DETECTION.	Is any other DTC displayed?	Perform the diagnosis according to DTC. <Ref. to VDC(diag)-36, List of Diagnostic Trouble Code (DTC).>	It results from a temporary noise interference.

E: DTC C1212 FR WHEEL SPEED SENSOR SYSTEM

NOTE:

For the diagnostic procedure, refer to "DTC C1242 RL WHEEL SPEED SENSOR SYSTEM". <Ref. to VDC(diag)-44, DTC C1242 RL WHEEL SPEED SENSOR SYSTEM, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

F: DTC C1222 FL WHEEL SPEED SENSOR SYSTEM

NOTE:

For the diagnostic procedure, refer to "DTC C1242 RL WHEEL SPEED SENSOR SYSTEM". <Ref. to VDC(diag)-44, DTC C1242 RL WHEEL SPEED SENSOR SYSTEM, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

G: DTC C1232 RR WHEEL SPEED SENSOR SYSTEM

NOTE:

For the diagnostic procedure, refer to "DTC C1242 RL WHEEL SPEED SENSOR SYSTEM". <Ref. to VDC(diag)-44, DTC C1242 RL WHEEL SPEED SENSOR SYSTEM, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

VEHICLE DYNAMICS CONTROL (VDC) (DIAGNOSTICS)

H: DTC C1242 RL WHEEL SPEED SENSOR SYSTEM

DTC DETECTING CONDITION:

- Defective ABS wheel speed sensor signal (noise, irregular signal, etc.)
- Defective harness connector

TROUBLE SYMPTOM:

- ABS does not operate.
- VDC does not operate.
- Hill start assist does not operate.
- Hill descent control does not operate. (Model with X MODE)
- EyeSight does not operate. (Model with EyeSight)

Step	Check	Yes	No
1	CHECK OUTPUT OF ABS WHEEL SPEED SENSOR USING SUBARU SELECT MONITOR. 1) Select "Current Data Display & Save" on the Subaru Select Monitor. 2) Read the defective ABS wheel speed sensor output.	Go to step 2.	Go to step 7.
2	CHECK POOR CONTACT OF CONNECTOR. Turn the ignition switch to OFF.	Repair the connector.	Go to step 3.
3	CHECK CAUSE OF SIGNAL NOISE. Make sure the radio wave devices and electronic components are installed correctly.	Go to step 4.	Install the radio wave devices and electronic components properly.
4	CHECK CAUSE OF SIGNAL NOISE. Check if the noise sources (such as an antenna) are installed near the sensor harness.	Install the noise sources apart from sensor harness.	Go to step 5.
5	CHECK VDCCM&H/U. 1) Connect all connectors. 2) Clear the memory. <Ref. to VDC(diag)-23, Clear Memory Mode.> 3) Perform the Inspection Mode. <Ref. to VDC(diag)-22, Inspection Mode.> 4) Read the DTC.	Replace the VDCCM only. <Ref. to VDC-20, REPLACEMENT, VDC Control Module and Hydraulic Control Unit (VDCCM&H/U).>	Go to step 6.
6	CHECK OTHER DTC DETECTION.	Is any other DTC displayed?	Perform the diagnosis according to DTC. <Ref. to VDC(diag)-36, List of Diagnostic Trouble Code (DTC).>
7	CHECK INSTALLATION OF ABS WHEEL SPEED SENSOR.	Is the ABS wheel speed sensor installation bolt tightened to 7.5 N·m (0.76 kgf-m, 5.5 ft-lb)?	Go to step 8.
8	CHECK ABS WHEEL SPEED SENSOR SIGNAL. 1) Install the ABS wheel speed sensor. 2) Prepare an oscilloscope. 3) Check the ABS wheel speed sensor. <Ref. to VDC-39, CHECK ABS WHEEL SPEED SENSOR UNIT, INSPECTION, Front ABS Wheel Speed Sensor.>	Does the oscilloscope indicate the waveform pattern like shown in the figure when the tire is slowly turned? Does the oscilloscope indication repeat the waveform pattern like shown in the figure when the tire is slowly turned in equal speed for one rotation or more?	Go to step 10.
			Tighten the ABS wheel speed sensor installation bolts.
			Go to step 9.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

VEHICLE DYNAMICS CONTROL (VDC) (DIAGNOSTICS)

Step	Check	Yes	No
9	CHECK ABS WHEEL SPEED SENSOR OR MAGNETIC ENCODER.	Are there foreign matter, breakage or damage at the tip of ABS wheel speed sensor or magnetic encoder?	Remove dirt thoroughly. Also replace the ABS wheel speed sensor or magnetic encoder as a unit with hub unit bearing if it is broken or damaged.
10	CHECK CAUSE OF SIGNAL NOISE. Make sure the radio wave devices and electronic components are installed correctly.	Are the radio wave devices and electronic components installed correctly?	Go to step 11.
11	CHECK CAUSE OF SIGNAL NOISE. Check if the noise sources (such as an antenna) are installed near the sensor harness.	Are noise sources installed?	Install the noise sources apart from sensor harness.
12	CHECK VDCCM&H/U. 1) Connect all connectors. 2) Clear the memory. <Ref. to VDC(diag)-23, Clear Memory Mode.> 3) Perform the Inspection Mode. <Ref. to VDC(diag)-22, Inspection Mode.> 4) Read the DTC.	Is the same DTC displayed?	Replace the VDCCM only. <Ref. to VDC-20, REPLACEMENT, VDC Control Module and Hydraulic Control Unit (VDCCM&H/U).>
13	CHECK OTHER DTC DETECTION.	Is any other DTC displayed?	Perform the diagnosis according to DTC. <Ref. to VDC(diag)-36, List of Diagnostic Trouble Code (DTC).> It results from a temporary noise interference. NOTE: Though the ABS warning light may remain on at this time, this is normal. Drive the vehicle at 60 km/h (37 MPH) or more in order to turn ABS warning light off. Be sure to drive the vehicle and check that the warning light goes off.

I: DTC C1251 WHEEL SPEED SENSOR SYSTEM

NOTE:

For the diagnostic procedure, refer to "DTC C1241 RL WHEEL SPEED SENSOR SYSTEM WIRE BREAK/EXCESSIVE INPUT". <Ref. to VDC(diag)-41, DTC C1241 RL WHEEL SPEED SENSOR SYSTEM WIRE BREAK/EXCESSIVE INPUT, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

VEHICLE DYNAMICS CONTROL (VDC) (DIAGNOSTICS)

J: DTC C1252 WHEEL SPEED SENSOR SIGNAL OF ONE OF THE WHEELS

DTC DETECTING CONDITION:

- Defective ABS wheel speed sensor signal (noise, irregular signal, etc.)
- Defective magnetic encoder
- When a wheel is turned freely for a long time

TROUBLE SYMPTOM:

- ABS does not operate.
- VDC does not operate.
- EBD may not operate.
- Hill start assist does not operate.
- Hill descent control does not operate. (Model with X MODE)
- EyeSight does not operate. (Model with EyeSight)

NOTE:

Brake warning light comes on as well as ABS warning light when EBD does not operate.

Step	Check	Yes	No
1 WHETHER A WHEEL TURNED FREELY OR NOT. Check if the wheels have been turned freely for one minute or more, such as when the vehicle is jacked-up, under full-lock cornering or when the wheels are not in contact with road surface.	Did the wheels turn freely?	VDC is normal. Clear the memory. NOTE: This diagnostic trouble code may sometimes occur if the wheels turn freely for a long time, for example when the vehicle is towed or jacked-up, or when steering wheel is continuously turned all the way.	Go to step 2.
2 CHECK TIRE SPECIFICATIONS. Turn the ignition switch to OFF.	Are the tire specifications correct?	Go to step 3.	Replace the tire.
3 CHECK WEAR OF TIRE.	Is the tire worn excessively?	Replace the tire.	Go to step 4.
4 CHECK TIRE INFLATION PRESSURE.	Is the tire pressure correct?	Go to step 5.	Adjust the tire pressure.
5 CHECK INSTALLATION OF ABS WHEEL SPEED SENSOR.	Are the ABS wheel speed sensor installation bolts tightened to 7.5 N·m (0.76 kgf-m, 5.5 ft-lb)? (For four wheels)	Go to step 6.	Tighten the ABS wheel speed sensor installation bolts.
6 CHECK ABS WHEEL SPEED SENSOR SIGNAL. 1) Install the ABS wheel speed sensor. 2) Prepare an oscilloscope. 3) Check the ABS wheel speed sensor. <Ref. to VDC-39, CHECK ABS WHEEL SPEED SENSOR UNIT, INSPECTION, Front ABS Wheel Speed Sensor.>	Does the oscilloscope indicate the waveform pattern like shown in the figure when the tire is slowly turned? Does the oscilloscope indication repeat the waveform pattern like shown in the figure when the tire is slowly turned in equal speed for one rotation or more? (For all four wheels)	Go to step 8.	Go to step 7.
7 CHECK ABS WHEEL SPEED SENSOR OR MAGNETIC ENCODER.	Are there foreign matter, breakage or damage at the tip of ABS wheel speed sensor or magnetic encoder? (For all four wheels)	Remove dirt thoroughly. Also replace the ABS wheel speed sensor or magnetic encoder as a unit with hub unit bearing if it is broken or damaged.	Go to step 8.



Diagnostic Procedure with Diagnostic Trouble Code (DTC)

VEHICLE DYNAMICS CONTROL (VDC) (DIAGNOSTICS)

Step	Check	Yes	No
8 CHECK VDCCM&H/U. 1) Connect all connectors. 2) Clear the memory. <Ref. to VDC(diag)-23, Clear Memory Mode.> 3) Perform the Inspection Mode. <Ref. to VDC(diag)-22, Inspection Mode.> 4) Read the DTC.	Is the same DTC displayed?	Replace the VDCCM only. <Ref. to VDC-20, REPLACEMENT, VDC Control Module and Hydraulic Control Unit (VDCCM&H/U).>	Go to step 9.
9 CHECK OTHER DTC DETECTION.	Is any other DTC displayed?	Perform the diagnosis according to DTC. <Ref. to VDC(diag)-36, List of Diagnostic Trouble Code (DTC).>	It results from a temporary noise interference.

K: DTC C1311 FR INLET SOLENOID VALVE SYSTEM

NOTE:

For the diagnostic procedure, refer to "DTC C1362 VDC CHANGE-OVER VALVE 2 (S)". <Ref. to VDC(diag)-49, DTC C1362 VDC CHANGE-OVER VALVE 2 (S), Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

L: DTC C1312 FR OUTLET SOLENOID VALVE SYSTEM

NOTE:

For the diagnostic procedure, refer to "DTC C1362 VDC CHANGE-OVER VALVE 2 (S)". <Ref. to VDC(diag)-49, DTC C1362 VDC CHANGE-OVER VALVE 2 (S), Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

M: DTC C1321 FL INLET SOLENOID VALVE SYSTEM

NOTE:

For the diagnostic procedure, refer to "DTC C1362 VDC CHANGE-OVER VALVE 2 (S)". <Ref. to VDC(diag)-49, DTC C1362 VDC CHANGE-OVER VALVE 2 (S), Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

N: DTC C1322 FL OUTLET SOLENOID VALVE SYSTEM

NOTE:

For the diagnostic procedure, refer to "DTC C1362 VDC CHANGE-OVER VALVE 2 (S)". <Ref. to VDC(diag)-49, DTC C1362 VDC CHANGE-OVER VALVE 2 (S), Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

O: DTC C1331 RR INLET SOLENOID VALVE SYSTEM

NOTE:

For the diagnostic procedure, refer to "DTC C1362 VDC CHANGE-OVER VALVE 2 (S)". <Ref. to VDC(diag)-49, DTC C1362 VDC CHANGE-OVER VALVE 2 (S), Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

P: DTC C1332 RR OUTLET SOLENOID VALVE SYSTEM

NOTE:

For the diagnostic procedure, refer to "DTC C1362 VDC CHANGE-OVER VALVE 2 (S)". <Ref. to VDC(diag)-49, DTC C1362 VDC CHANGE-OVER VALVE 2 (S), Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

VEHICLE DYNAMICS CONTROL (VDC) (DIAGNOSTICS)

Q: DTC C1341 RL INLET SOLENOID VALVE SYSTEM

NOTE:

For the diagnostic procedure, refer to "DTC C1362 VDC CHANGE-OVER VALVE 2 (S)". <Ref. to VDC(diag)-49, DTC C1362 VDC CHANGE-OVER VALVE 2 (S), Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

R: DTC C1342 RL OUTLET SOLENOID VALVE SYSTEM

NOTE:

For the diagnostic procedure, refer to "DTC C1362 VDC CHANGE-OVER VALVE 2 (S)". <Ref. to VDC(diag)-49, DTC C1362 VDC CHANGE-OVER VALVE 2 (S), Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

S: DTC C1351 VDC CHANGE-OVER VALVE 1 (P)

NOTE:

For the diagnostic procedure, refer to "DTC C1362 VDC CHANGE-OVER VALVE 2 (S)". <Ref. to VDC(diag)-49, DTC C1362 VDC CHANGE-OVER VALVE 2 (S), Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

T: DTC C1352 VDC CHANGE-OVER VALVE 1 (S)

NOTE:

For the diagnostic procedure, refer to "DTC C1362 VDC CHANGE-OVER VALVE 2 (S)". <Ref. to VDC(diag)-49, DTC C1362 VDC CHANGE-OVER VALVE 2 (S), Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

U: DTC C1361 VDC CHANGE-OVER VALVE 2 (P)

NOTE:

For the diagnostic procedure, refer to "DTC C1362 VDC CHANGE-OVER VALVE 2 (S)". <Ref. to VDC(diag)-49, DTC C1362 VDC CHANGE-OVER VALVE 2 (S), Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

VEHICLE DYNAMICS CONTROL (VDC) (DIAGNOSTICS)

V: DTC C1362 VDC CHANGE-OVER VALVE 2 (S)

DTC DETECTING CONDITION:

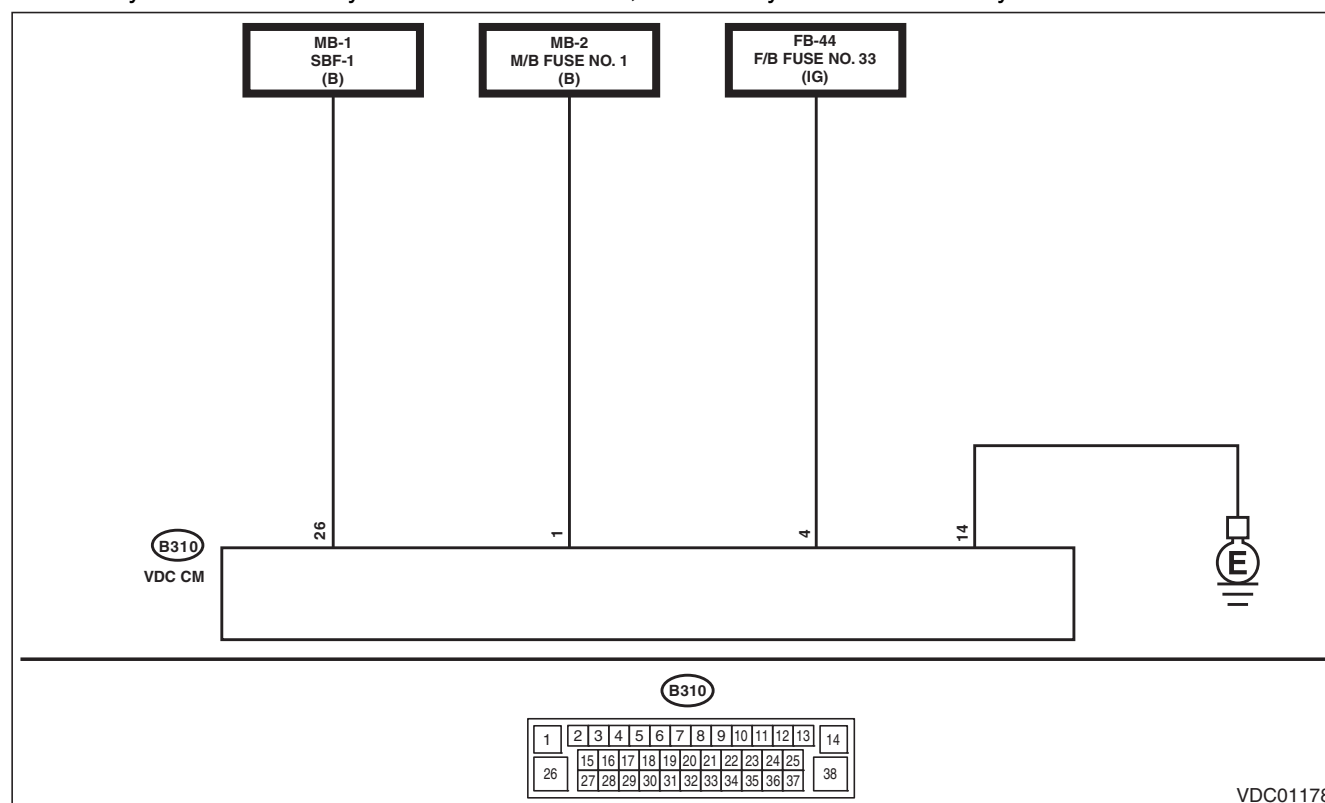
- Defective harness connector
- Defective VDCH/U solenoid valve

TROUBLE SYMPTOM:

- ABS does not operate.
- EBD does not operate.
- VDC does not operate.
- Hill start assist does not operate.
- Hill descent control does not operate. (Model with X MODE)
- EyeSight does not operate. (Model with EyeSight)

WIRING DIAGRAM:

Vehicle dynamics control system <Ref. to WI-418, Vehicle Dynamics Control System.>



Step	Check	Yes	No
1 CHECK VDCCM&H/U INPUT VOLTAGE. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from the VDCCM&H/U. 3) Run the engine at idle. 4) Measure the voltage between VDCCM&H/U connector and chassis ground. Connector & terminal (B310) No. 4 (+) — (B310) No. 14 (-): (B310) No. 1 (+) — (B310) No. 14 (-): (B310) No. 26 (+) — (B310) No. 14 (-):	Is the voltage 10 — 15 V?	Go to step 2.	Repair the power supply circuit.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

VEHICLE DYNAMICS CONTROL (VDC) (DIAGNOSTICS)

Step	Check	Yes	No
2 CHECK VDCCM&H/U GROUND CIRCUIT. 1) Turn the ignition switch to OFF. 2) Measure the resistance between VDCCM&H/U connector and chassis ground. Connector & terminal (B310) No. 14 — Chassis ground:	Is the resistance less than 10 Ω ?	Go to step 3.	Repair the VDCCM&H/U ground harness.
3 CHECK POOR CONTACT OF CONNECTORS.	Is there poor contact of connector between generator, battery and VDCCM&H/U?	Repair the connector.	Go to step 4.
4 CHECK VDCCM&H/U. 1) Connect all connectors. 2) Clear the memory. <Ref. to VDC(diag)-23, Clear Memory Mode.> 3) Perform the Inspection Mode. <Ref. to VDC(diag)-22, Inspection Mode.> 4) Read the DTC.	Is the same DTC displayed?	Replace the VDCCM&H/U. <Ref. to VDC-10, VDC Control Module and Hydraulic Control Unit (VDCCM&H/U).>	Go to step 5.
5 CHECK OTHER DTC DETECTION.	Is any other DTC displayed?	Perform the diagnosis according to DTC. <Ref. to VDC(diag)-36, List of Diagnostic Trouble Code (DTC).>	Temporary poor contact occurs.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

VEHICLE DYNAMICS CONTROL (VDC) (DIAGNOSTICS)

W: DTC C1411 ECU

DTC DETECTING CONDITION:

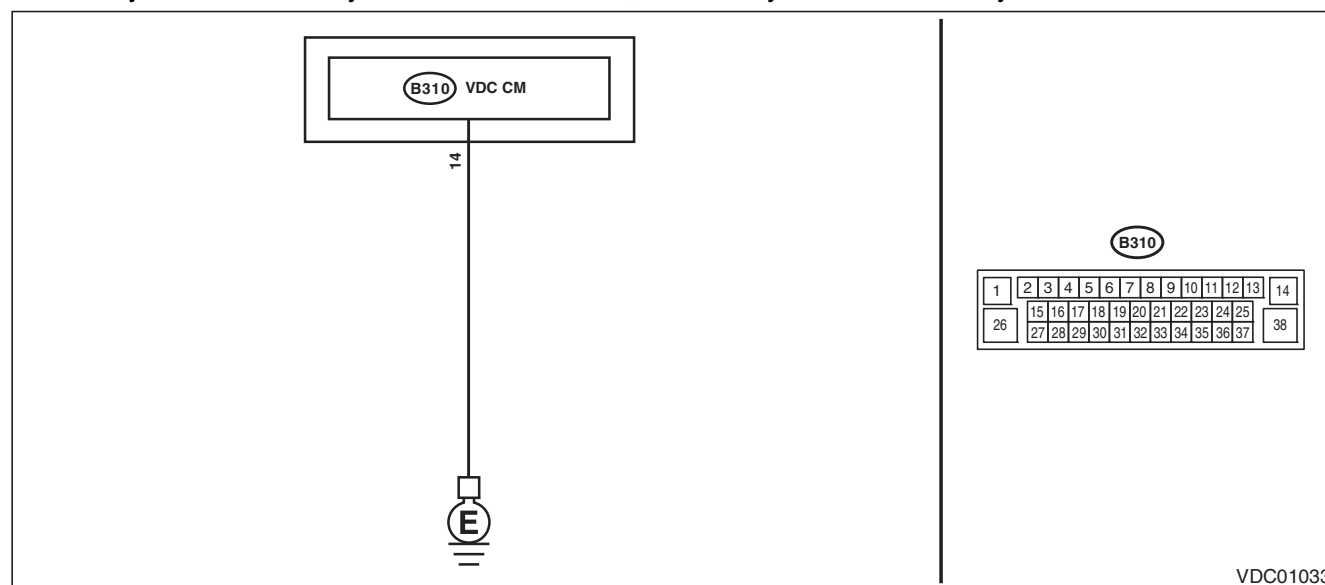
Defective VDCCM

TROUBLE SYMPTOM:

- ABS does not operate.
- EBD does not operate.
- VDC does not operate.
- Hill start assist does not operate.
- Hill descent control does not operate. (Model with X mode)
- EyeSight does not operate. (Model with EyeSight)

WIRING DIAGRAM:

Vehicle dynamics control system <Ref. to WI-418, Vehicle Dynamics Control System.>



Step	Check	Yes	No
1 CHECK VDCCM&H/U GROUND CIRCUIT. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from the VDCCM&H/U. 3) Measure the resistance between VDCCM&H/U and chassis ground. Connector & terminal (B310) No. 14 — Chassis ground:	Is the resistance less than 10 Ω ?	Go to step 2.	Repair the VDCCM&H/U ground harness.
2 CHECK POOR CONTACT OF CONNECTORS.	Is there poor contact of the connector between the battery, ignition switch and VDCCM&H/U?	Repair the connector.	Go to step 3.
3 CHECK CAUSE OF SIGNAL NOISE.	Are the radio wave devices and electronic components installed correctly?	Go to step 4.	Install the radio wave devices and electronic components properly.
4 CHECK CAUSE OF SIGNAL NOISE.	Is there a noise source (such as an antenna) installed near the sensor harness and VDCCM?	Install the noise sources apart from sensor harness and VDCCM.	Go to step 5.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

VEHICLE DYNAMICS CONTROL (VDC) (DIAGNOSTICS)

	Step	Check	Yes	No
5	CHECK VDCCM&H/U. 1) Connect all connectors. 2) Clear the memory. <Ref. to VDC(diag)-23, Clear Memory Mode.> 3) Perform the Inspection Mode. <Ref. to VDC(diag)-22, Inspection Mode.> 4) Read the DTC.	Is the same DTC displayed?	Replace the VDCCM only. <Ref. to VDC-20, REPLACEMENT, VDC Control Module and Hydraulic Control Unit (VDCCM&H/U).>	Go to step 6.
6	CHECK OTHER DTC DETECTION.	Is any other DTC displayed?	Perform the diagnosis according to DTC. <Ref. to VDC(diag)-36, List of Diagnostic Trouble Code (DTC).>	Temporary poor contact occurs.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

VEHICLE DYNAMICS CONTROL (VDC) (DIAGNOSTICS)

X: DTC C1412 PARAMETER

DTC DETECTING CONDITION:

VDCCM parameter selection error

TROUBLE SYMPTOM:

- ABS does not operate.
- EBD does not operate.
- VDC does not operate.
- Hill start assist does not operate.
- Hill descent control does not operate. (Model with X MODE)
- EyeSight does not operate. (Model with EyeSight)

NOTE:

When the VDCCM or VDCCM&H/U is replaced, this DTC may be stored.

Step	Check	Yes	No
1 CHECK VDCCM&H/U IDENTIFICATION SYMBOL. Check the identification symbol attached on the H/U. <Ref. to VDC-2, SPECIFICATION, General Description.>	Is the identification symbol correct?	Go to step 2.	Replace the VDCCM&H/U. <Ref. to VDC-10, VDC Control Module and Hydraulic Control Unit (VDCCM&H/U).>
2 CHECK PARAMETER SELECTED IN VDC-CM. <Ref. to VDC(diag)-18, PARAMETER CHECK, OPERATION, Subaru Select Monitor.>	Does the parameter registered in the VDCCM match the relevant vehicle?	Replace the VDCCM&H/U. <Ref. to VDC-10, VDC Control Module and Hydraulic Control Unit (VDCCM&H/U).>	Select and register the correct parameter. <Ref. to VDC(diag)-18, PARAMETER SELECTION, OPERATION, Subaru Select Monitor.>



Diagnostic Procedure with Diagnostic Trouble Code (DTC)

VEHICLE DYNAMICS CONTROL (VDC) (DIAGNOSTICS)

Y: DTC C1413 POWER SUPPLY VOLT ERROR

DTC DETECTING CONDITION:

Improper VDCCM&H/U power supply voltage

TROUBLE SYMPTOM:

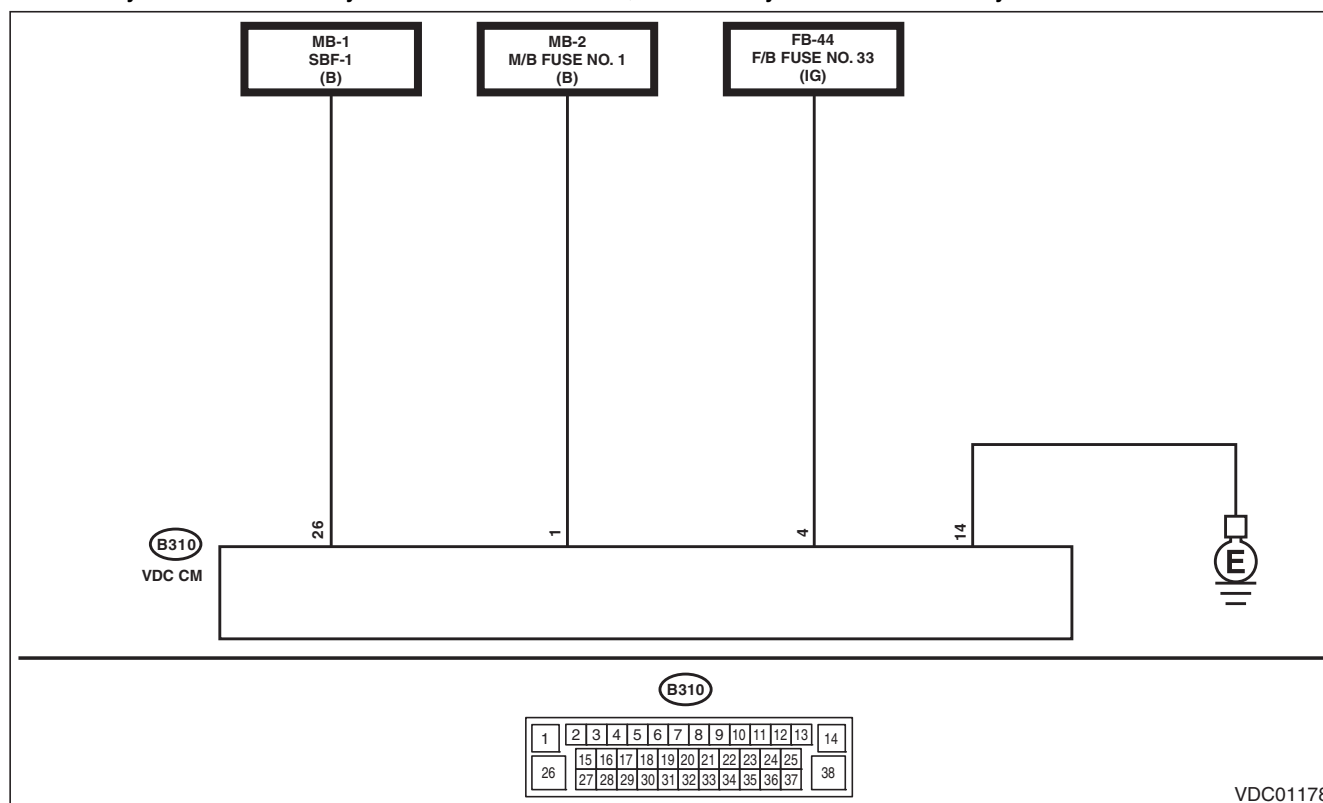
- ABS does not operate.
- EBD may not operate.
- VDC does not operate.
- Hill start assist does not operate.
- Hill descent control does not operate. (Model with X MODE)
- EyeSight does not operate. (Model with EyeSight)

NOTE:

Warning lights go off if voltage returns.

WIRING DIAGRAM:

Vehicle dynamics control system <Ref. to WI-418, Vehicle Dynamics Control System.>



Step	Check	Yes	No
1 CHECK GENERATOR. 1) Start the engine. 2) Run the engine at idle after warming up. 3) Measure the voltage between generator terminal B and chassis ground. Terminals Generator terminal B (+) — Chassis ground (-):	Is the voltage 10 — 15 V?	Go to step 2.	Repair the generator.
2 CHECK BATTERY TERMINAL. Turn the ignition switch to OFF.	Are the positive and negative battery terminals clamped tightly?	Go to step 3.	Tighten the terminal.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

VEHICLE DYNAMICS CONTROL (VDC) (DIAGNOSTICS)

Step	Check	Yes	No
3 CHECK VDCCM&H/U INPUT VOLTAGE. 1) Disconnect the connector from the VDCCM&H/U. 2) Run the engine at idle. 3) Operate devices such as headlights, air conditioner, rear defogger, etc. which produce an electrical load. 4) Measure the voltage between VDCCM&H/U connector and chassis ground. Connector & terminal (B310) No. 4 (+) — (B310) No. 14 (-): (B310) No. 1 (+) — (B310) No. 14 (-): (B310) No. 26 (+) — (B310) No. 14 (-):	Is the voltage 10 — 15 V?	Go to step 4.	Repair the power supply circuit.
4 CHECK VDCCM&H/U GROUND CIRCUIT. 1) Turn the ignition switch to OFF. 2) Measure the resistance between VDCCM&H/U connector and chassis ground. Connector & terminal (B310) No. 14 — Chassis ground:	Is the resistance less than 10 Ω ?	Go to step 5.	Repair the VDCCM&H/U ground harness.
5 CHECK POOR CONTACT OF CONNECTORS.	Is there poor contact of connector between generator, battery and VDCCM&H/U?	Repair the connector.	Go to step 6.
6 CHECK VDCCM&H/U. 1) Connect all connectors. 2) Clear the memory. <Ref. to VDC(diag)-23, Clear Memory Mode.> 3) Perform the Inspection Mode. <Ref. to VDC(diag)-22, Inspection Mode.> 4) Read the DTC.	Is the same DTC displayed?	Replace the VDCCM only. <Ref. to VDC-20, REPLACEMENT, VDC Control Module and Hydraulic Control Unit (VDCCM&H/U).>	Go to step 7.
7 CHECK OTHER DTC DETECTION.	Is any other DTC displayed?	Perform the diagnosis according to DTC. <Ref. to VDC(diag)-36, List of Diagnostic Trouble Code (DTC).>	Temporary poor contact occurs.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

VEHICLE DYNAMICS CONTROL (VDC) (DIAGNOSTICS)

Z: DTC C1421 ECM CONTROL SYSTEM

DTC DETECTING CONDITION:

ECM malfunctioning

TROUBLE SYMPTOM:

- ABS does not operate.
- VDC does not operate.
- Hill start assist does not operate.
- Hill descent control does not operate. (Model with X mode)
- EyeSight does not operate. (Model with EyeSight)

	Step	Check	Yes	No
1	CHECK COOPERATION CONTROL FEASIBILITY OF ECM USING SUBARU SELECT MONITOR. 1) Start the engine, and run the engine at idle approximately 5 minutes. 2) Connect Subaru Select Monitor, and select “Current Data Display & Save”. 3) Check the «E/G Control Stop Flag» displayed on screen.	Is the «E/G Control Stop Flag» “1”?	Go to step 4.	Go to step 2.
2	CHECK WARNING LIGHT. Check whether the VDC warning light illuminates after driving for 1 minute or more at a speed of 10 km/h (6 MPH) or more.	Does the VDC warning light illuminate?	Go to step 3.	VDC is normal. Perform the Clear Memory Mode. NOTE: DTC may be recorded if cranking is performed during driving.
3	CHECK POOR CONTACT OF CONNECTORS.	Is there poor contact of ECM connector?	Repair the connector.	Go to step 4.
4	CHECK ECM. Refer to the basic diagnostic procedure of ENGINE (DIAGNOSTICS).	Is ECM normal?	Go to step 5.	Replace the ECM. <Ref. to FU(H4DOTC)-134, Engine Control Module (ECM).> <Ref. to FU(H4DO)-94, Engine Control Module (ECM).>
5	CHECK VDCCM&H/U. 1) Connect all connectors. 2) Perform the Clear Memory Mode. <Ref. to VDC(diag)-23, Clear Memory Mode.> 3) Perform the Inspection Mode. <Ref. to VDC(diag)-22, Inspection Mode.> 4) Read the DTC.	Is the same DTC displayed?	Replace the VDCCM only. <Ref. to VDC-20, REPLACEMENT, VDC Control Module and Hydraulic Control Unit (VDCCM&H/U).>	Go to step 6.
6	CHECK OTHER DTC DETECTION.	Is any other DTC displayed?	Perform the diagnosis according to DTC. <Ref. to VDC(diag)-36, List of Diagnostic Trouble Code (DTC).>	It results from a temporary noise interference.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

VEHICLE DYNAMICS CONTROL (VDC) (DIAGNOSTICS)

AA:DTC C1422 VDC INTERRUPTION FOR ENGINE CONVENIENCE

DTC DETECTING CONDITION:

ECM prohibits the cooperation control.

TROUBLE SYMPTOM:

VDC does not operate.

NOTE:

- For the diagnostic procedure, refer to "DTC C1421 ECM CONTROL SYSTEM". <Ref. to VDC(diag)-56, DTC C1421 ECM CONTROL SYSTEM, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>
- Warning lights go off if the cooperation control of ECM returns.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

VEHICLE DYNAMICS CONTROL (VDC) (DIAGNOSTICS)

AB:DTC C1423 DIFFERENT ECU SPECIFICATIONS

DTC DETECTING CONDITION:

Different control module specification

TROUBLE SYMPTOM:

- ABS does not operate.
- VDC does not operate.
- Hill start assist does not operate.
- Hill descent control does not operate. (Model with X mode)
- EyeSight does not operate. (Model with EyeSight)

NOTE:

When parameter selection for VDCCM is improper, this DTC may be memorized.

Step	Check	Yes	No	
1	CHECK VDCCM&H/U IDENTIFICATION SYMBOL. Check the identification symbol attached on the H/U. <Ref. to VDC-2, SPECIFICATION, General Description.>	Is the identification symbol correct?	Go to step 2.	Replace the VDCCM&H/U. <Ref. to VDC-10, VDC Control Module and Hydraulic Control Unit (VDCCM&H/U).>
2	CHECK PARAMETER SELECTED IN VDC-CM. <Ref. to VDC(diag)-18, PARAMETER CHECK, OPERATION, Subaru Select Monitor.>	Does the parameter registered in the VDCCM match the relevant vehicle?	CVT model: Go to step 3. MT model: Go to step 5.	Select and register the correct parameter. <Ref. to VDC(diag)-18, PARAMETER SELECTION, OPERATION, Subaru Select Monitor.>
3	CHECK TCM SPECIFICATION. Check the TCM specification.	Is the specification of TCM same as vehicle specification?	Go to step 4.	Replace the TCM. <Ref. to CVT(TR580)-144, Transmission Control Module (TCM).> <Ref. to CVT(TR690)-123, Transmission Control Module (TCM).>
4	CHECK CVT SYSTEM. 1) Start the engine. 2) Check the DTC in CVT system.	Is DTC of CVT system displayed?	Perform the diagnosis according to DTC. <Ref. to CVT(diag)-35, List of Diagnostic Trouble Code (DTC).>	Go to step 5.
5	CHECK ECM SPECIFICATION. Check the ECM specification.	Is the specification of ECM same as vehicle specification?	Go to step 6.	Replace the ECM. <Ref. to FU(H4DOTC)-134, Engine Control Module (ECM).> <Ref. to FU(H4DO)-94, Engine Control Module (ECM).>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

VEHICLE DYNAMICS CONTROL (VDC) (DIAGNOSTICS)

	Step	Check	Yes	No
6	CHECK VDCCM&H/U. 1) Connect all connectors. 2) Clear the memory. <Ref. to VDC(diag)-23, Clear Memory Mode.> 3) Perform the Inspection Mode. <Ref. to VDC(diag)-22, Inspection Mode.> 4) Read the DTC.	Is the same DTC displayed?	Replace the VDCCM only. <Ref. to VDC-20, REPLACEMENT, VDC Control Module and Hydraulic Control Unit (VDCCM&H/U).>	Go to step 7.
7	CHECK OTHER DTC DETECTION.	Is any other DTC displayed?	Perform the diagnosis according to DTC. <Ref. to VDC(diag)-36, List of Diagnostic Trouble Code (DTC).>	It results from a temporary noise interference.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

VEHICLE DYNAMICS CONTROL (VDC) (DIAGNOSTICS)

AC:DTC C1424 ECM FAILURE

DTC DETECTING CONDITION:

ECM malfunctioning

TROUBLE SYMPTOM:

- ABS does not operate.
- VDC does not operate.
- Hill start assist does not operate.
- Hill descent control does not operate. (Model with X MODE)
- EyeSight does not operate. (Model with EyeSight)

Step	Check	Yes	No
1	CHECK ECM. 1) Start the engine. 2) Check DTC of ECM.	Is DTC displayed?	Perform the diagnosis according to DTC. Go to step 2.
2	CHECK VDCCM&H/U. 1) Connect all connectors. 2) Clear the memory. <Ref. to VDC(diag)-23, Clear Memory Mode.> 3) Perform the Inspection Mode. <Ref. to VDC(diag)-22, Inspection Mode.> 4) Read the DTC.	Is the same DTC displayed?	Replace the VDCCM only. <Ref. to VDC-20, REPLACEMENT, VDC Control Module and Hydraulic Control Unit (VDCCM&H/U).> Go to step 3.
3	CHECK OTHER DTC DETECTION.	Is any other DTC displayed?	Perform the diagnosis according to DTC. <Ref. to VDC(diag)-36, List of Diagnostic Trouble Code (DTC).> It results from a temporary noise interference.



Diagnostic Procedure with Diagnostic Trouble Code (DTC)

VEHICLE DYNAMICS CONTROL (VDC) (DIAGNOSTICS)

AD:DTC C1431 AT ABNORMAL

DTC DETECTING CONDITION:

Defective TCM

TROUBLE SYMPTOM:

- ABS does not operate.
- VDC does not operate.
- Hill start assist does not operate.
- Hill descent control does not operate. (Model with X MODE)
- EyeSight does not operate. (Model with EyeSight)

Step	Check	Yes	No
1 CHECK TCM. 1) Start the engine. 2) Check DTC of TCM.	Is DTC displayed?	Perform the diagnosis according to DTC.	Go to step 2.
2 CHECK VDCCM&H/U. 1) Turn the ignition switch to OFF. 2) After turning the ignition switch to ON for approx. 10 seconds, turn it to OFF. 3) Turn the ignition switch to ON again. 4) Connect all connectors. 5) Clear the memory. <Ref. to VDC(diag)-23, Clear Memory Mode.> 6) Perform the Inspection Mode. <Ref. to VDC(diag)-22, Inspection Mode.> 7) Read the DTC.	Is the same DTC displayed?	Replace the VDCCM only. <Ref. to VDC-20, REPLACEMENT, VDC Control Module and Hydraulic Control Unit (VDCCM&H/U).>	Go to step 3.
3 CHECK OTHER DTC DETECTION.	Is any other DTC displayed?	Perform the diagnosis according to DTC. <Ref. to VDC(diag)-36, List of Diagnostic Trouble Code (DTC).>	It results from a temporary noise interference.

AE:DTC C1432 DIFFERENT ECU SPECIFICATIONS

NOTE:

For the diagnostic procedure, refer to "DTC C1423 DIFFERENT ECU SPECIFICATIONS". <Ref. to VDC(diag)-58, DTC C1423 DIFFERENT ECU SPECIFICATIONS, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

VEHICLE DYNAMICS CONTROL (VDC) (DIAGNOSTICS)

AF:DTC C1441 EyeSight REQUEST PRESSURE ABNORMAL

DTC DETECTING CONDITION:

Defective stereo camera

TROUBLE SYMPTOM:

EyeSight does not operate. (Model with EyeSight)

Step	Check	Yes	No
1 CHECK OTHER DTC DETECTION.	Is any other DTC displayed?	Perform the diagnosis according to DTC. <Ref. to VDC(diag)-36, List of Diagnostic Trouble Code (DTC).>	Go to step 2.
2 CHECK LAN SYSTEM. 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)-99, List of Diagnostic Trouble Code (DTC).>	Go to step 3.
3 CHECK POOR CONTACT OF CONNECTORS.	Is there poor contact of the stereo camera connector?	Repair the connector.	Go to step 4.
4 CHECK STEREO CAMERA. Perform the diagnosis for the EyeSight system. <Ref. to ES(diag)-2, Basic Diagnostic Procedure.>	Is the stereo camera normal?	Go to step 5.	Perform the diagnosis for the EyeSight system. <Ref. to ES(diag)-78, List of Diagnostic Trouble Code (DTC).>
5 CHECK VDCCM&H/U. 1) Connect all connectors. 2) Clear the memory. <Ref. to VDC(diag)-23, Clear Memory Mode.> 3) Perform the Inspection Mode. <Ref. to VDC(diag)-22, Inspection Mode.> 4) Read the DTC.	Is the same DTC displayed?	Replace the VDCCM only. <Ref. to VDC-20, REPLACEMENT, VDC Control Module and Hydraulic Control Unit (VDCCM&H/U).>	It results from a temporary noise interference.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

VEHICLE DYNAMICS CONTROL (VDC) (DIAGNOSTICS)

AG:DTC C1511 VALVE RELAY

DTC DETECTING CONDITION:

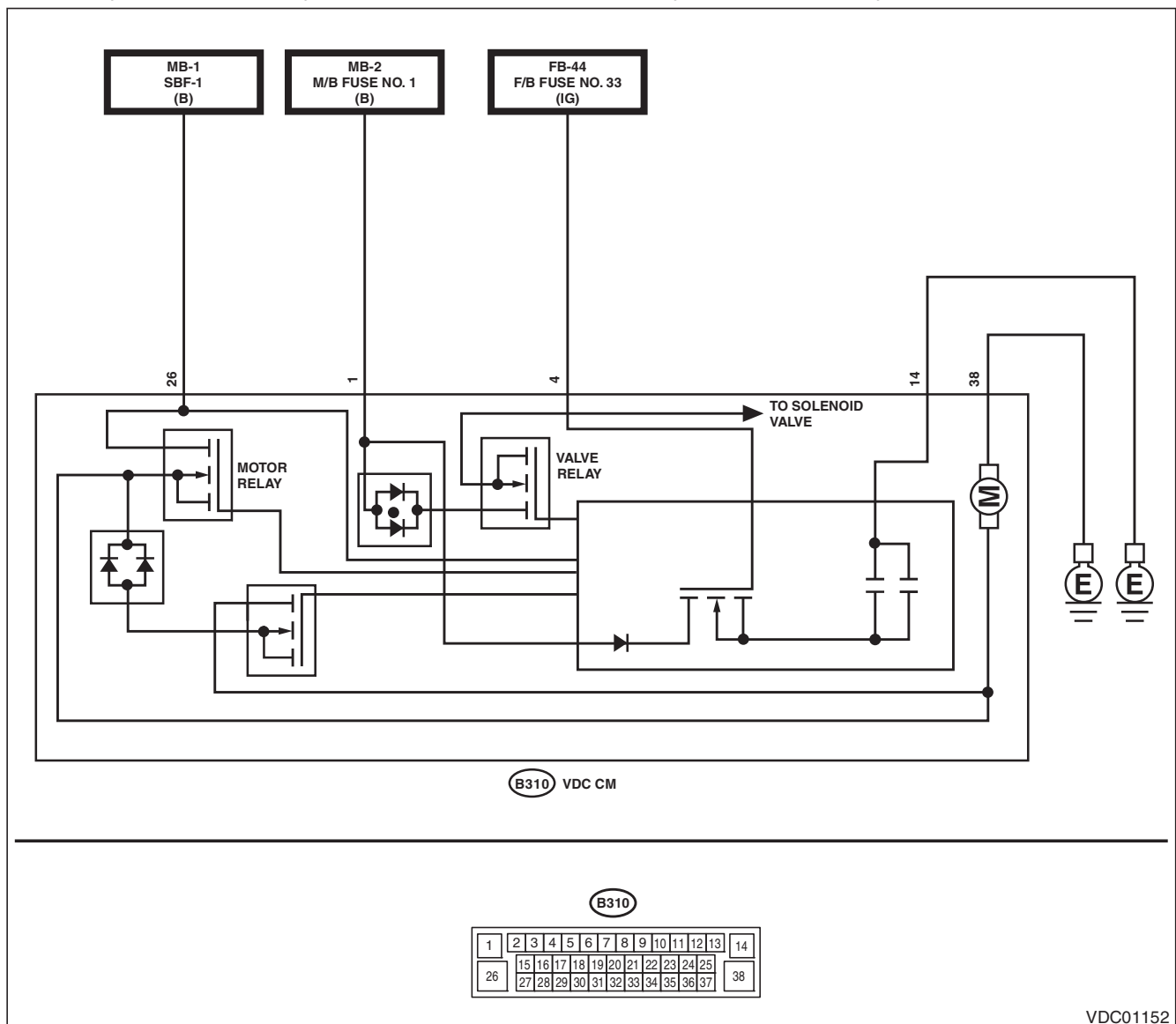
Defective valve relay

TROUBLE SYMPTOM:

- ABS does not operate.
- EBD does not operate.
- VDC does not operate.
- Hill start assist does not operate.
- Hill descent control does not operate. (Model with X MODE)
- EyeSight does not operate. (Model with EyeSight)

WIRING DIAGRAM:

Vehicle dynamics control system <Ref. to WI-418, Vehicle Dynamics Control System.>



Diagnostic Procedure with Diagnostic Trouble Code (DTC)

VEHICLE DYNAMICS CONTROL (VDC) (DIAGNOSTICS)

Step	Check	Yes	No
1 CHECK VDCCM&H/U INPUT VOLTAGE. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from the VDCCM&H/U. 3) Run the engine at idle. 4) Measure the voltage between VDCCM&H/U connector and chassis ground. <i>Connector & terminal</i> <i>(B310) No. 1 (+) — Chassis ground (-):</i> <i>(B310) No. 4 (+) — Chassis ground (-):</i>	Is the voltage 10 — 15 V?	Go to step 2.	Repair the power supply circuit.
2 CHECK VDCCM&H/U INPUT VOLTAGE. Calculate the voltage difference measured in step 1. A: (B310) No. 1 (+) — Chassis ground (-): B: (B310) No. 4 (+) — Chassis ground (-):	Is the voltage difference between A and B 2 V or more?	Repair the power supply circuit.	Go to step 3.
3 CHECK VDCCM&H/U GROUND CIRCUIT. 1) Turn the ignition switch to OFF. 2) Measure the resistance between VDCCM&H/U connector and chassis ground. <i>Connector & terminal</i> <i>(B310) No. 14 — Chassis ground:</i>	Is the resistance less than 10 Ω ?	Go to step 4.	Repair the VDCCM&H/U ground harness.
4 CHECK POOR CONTACT OF CONNECTORS.	Is there poor contact of connector between generator, battery and VDCCM&H/U?	Repair the connector.	Go to step 5.
5 CHECK VDCCM&H/U. 1) Connect all connectors. 2) Clear the memory. <Ref. to VDC(diag)-23, Clear Memory Mode.> 3) Perform the Inspection Mode. <Ref. to VDC(diag)-22, Inspection Mode.> 4) Read the DTC.	Is the same DTC displayed?	Replace the VDCCM only. <Ref. to VDC-20, REPLACEMENT, VDC Control Module and Hydraulic Control Unit (VDCCM&H/U).>	Go to step 6.
6 CHECK OTHER DTC DETECTION.	Is any other DTC displayed?	Perform the diagnosis according to DTC. <Ref. to VDC(diag)-36, List of Diagnostic Trouble Code (DTC).>	Temporary poor contact occurs.

AH:DTC C1512 VALVE SYSTEM

NOTE:

For the diagnostic procedure, refer to "DTC C1362 VDC CHANGE-OVER VALVE 2 (S)". <Ref. to VDC(diag)-49, DTC C1362 VDC CHANGE-OVER VALVE 2 (S), Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

VEHICLE DYNAMICS CONTROL (VDC) (DIAGNOSTICS)

AI: DTC C1521 MOTOR RELAY

DTC DETECTING CONDITION:

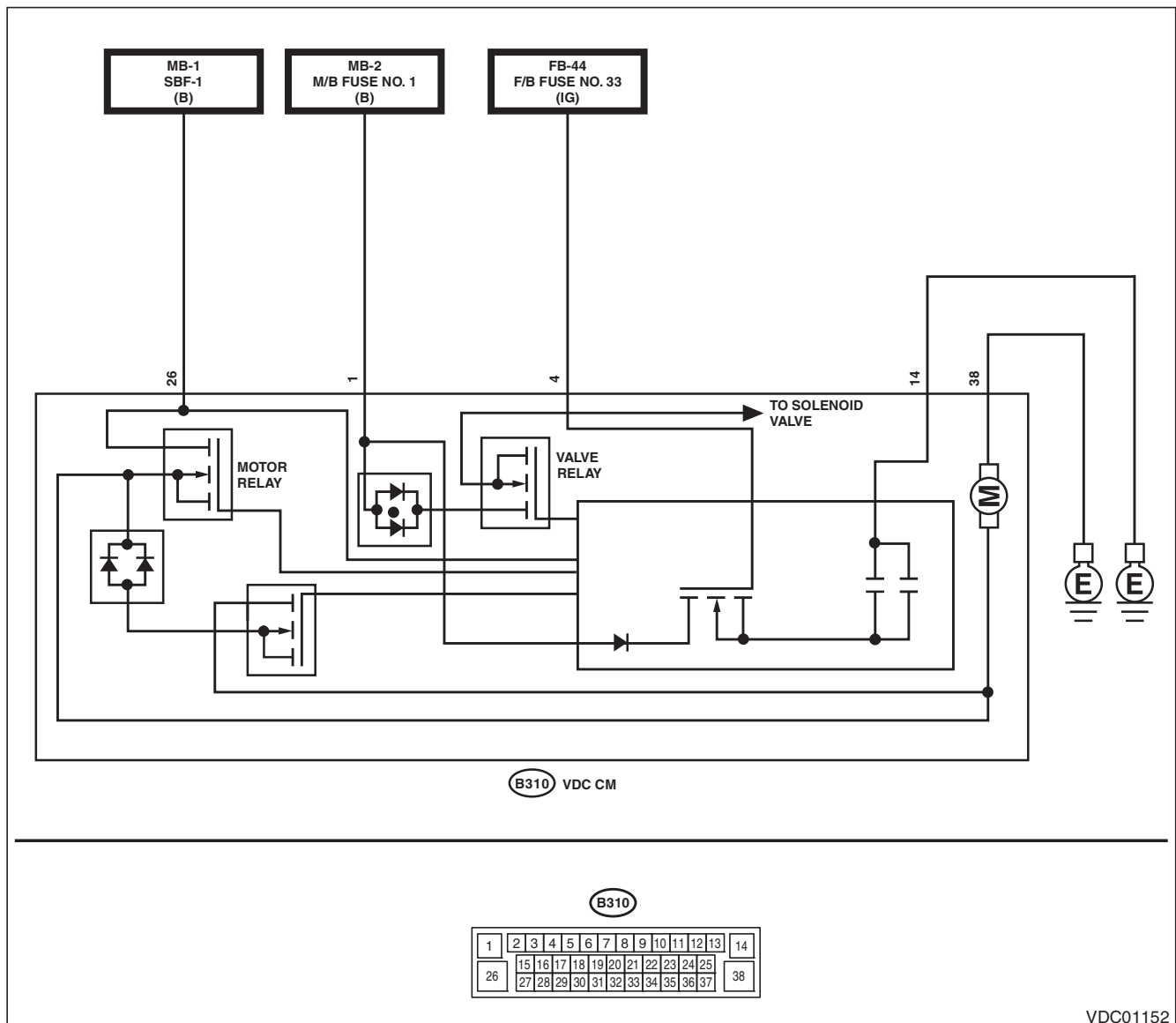
- Defective motor and motor relay
- Defective harness connector

TROUBLE SYMPTOM:

- ABS does not operate.
- VDC does not operate.
- EBD may not operate.
- Hill start assist does not operate.
- Hill descent control does not operate. (Model with X MODE)
- EyeSight does not operate. (Model with EyeSight)

WIRING DIAGRAM:

Vehicle dynamics control system <Ref. to WI-418, Vehicle Dynamics Control System.>



Diagnostic Procedure with Diagnostic Trouble Code (DTC)

VEHICLE DYNAMICS CONTROL (VDC) (DIAGNOSTICS)

Step	Check	Yes	No
1 CHECK VDCCM&H/U INPUT VOLTAGE. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from the VDCCM&H/U. 3) Turn the ignition switch to ON. 4) Measure the voltage between VDCCM&H/U connector and chassis ground. <i>Connector & terminal</i> <i>(B310) No. 4 (+) — Chassis ground (—):</i> <i>(B310) No. 26 (+) — Chassis ground (—):</i>	Is the voltage 10 — 15 V?	Go to step 2.	Repair the VDCCM&H/U power supply circuit.
2 CHECK VDCCM&H/U INPUT VOLTAGE. Calculate the voltage difference measured in step 1. A: (B310) No. 4 (+) — Chassis ground (—): B: (B310) No. 26 (+) — Chassis ground (—):	Is the voltage difference between A and B 2 V or more?	Repair the power supply circuit.	Go to step 3.
3 CHECK INSTALLATION OF VDCCM&H/U GROUND.	Is the VDCCM&H/U ground terminal installation bolt tightened to 13 N·m (1.3 kgf-m, 9.6 ft-lb)?	Go to step 4.	Tighten the VDCCM&H/U ground terminal installation bolt.
4 CHECK VDCCM&H/U GROUND CIRCUIT. 1) Turn the ignition switch to OFF. 2) Measure the resistance between VDCCM&H/U connector and chassis ground. <i>Connector & terminal</i> <i>(B310) No. 14 — Chassis ground:</i> <i>(B310) No. 38 — Chassis ground:</i>	Is the resistance less than 10 Ω?	Go to step 5.	Repair the VDCCM&H/U ground harness.
5 CHECK VDCCM&H/U MOTOR RELAY. Measure the resistance between VDCCM&H/U terminals. <i>Terminals</i> <i>No. 26 — No. 38:</i>	Is the resistance 1 MΩ or more?	Go to step 6.	Replace the VDCCM&H/U. <Ref. to VDC-10, VDC Control Module and Hydraulic Control Unit (VDCCM&H/U).>
6 CHECK POOR CONTACT OF CONNECTORS. Turn the ignition switch to OFF.	Is there poor contact of connector between generator, battery and VDCCM&H/U?	Repair the connector.	Go to step 7.
7 CHECK VDCCM&H/U. 1) Connect all connectors. 2) Clear the memory. <Ref. to VDC(diag)-23, Clear Memory Mode.> 3) Perform the Inspection Mode. <Ref. to VDC(diag)-22, Inspection Mode.> 4) Read the DTC.	Is the same DTC displayed?	Replace the VDCCM&H/U. <Ref. to VDC-10, VDC Control Module and Hydraulic Control Unit (VDCCM&H/U).>	Go to step 8.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

VEHICLE DYNAMICS CONTROL (VDC) (DIAGNOSTICS)

Step	Check	Yes	No
8 CHECK OTHER DTC DETECTION.	Is any other DTC displayed?	Perform the diagnosis according to DTC. <Ref. to VDC(diag)-36, List of Diagnostic Trouble Code (DTC).>	Temporary poor contact occurs. NOTE: Though the ABS warning light, and the VDC warning light & VDC indicator light may remain lit at this point, this is normal. Drive the vehicle at 40 km/h (25 MPH) or more in order to turn off the ABS warning light, and the VDC warning light & VDC indicator light. Be sure to drive the vehicle and check that the warning light goes off.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

VEHICLE DYNAMICS CONTROL (VDC) (DIAGNOSTICS)

AJ:DTC C1531 BLS OFF FAULT

DTC DETECTING CONDITION:

Defective stop light switch

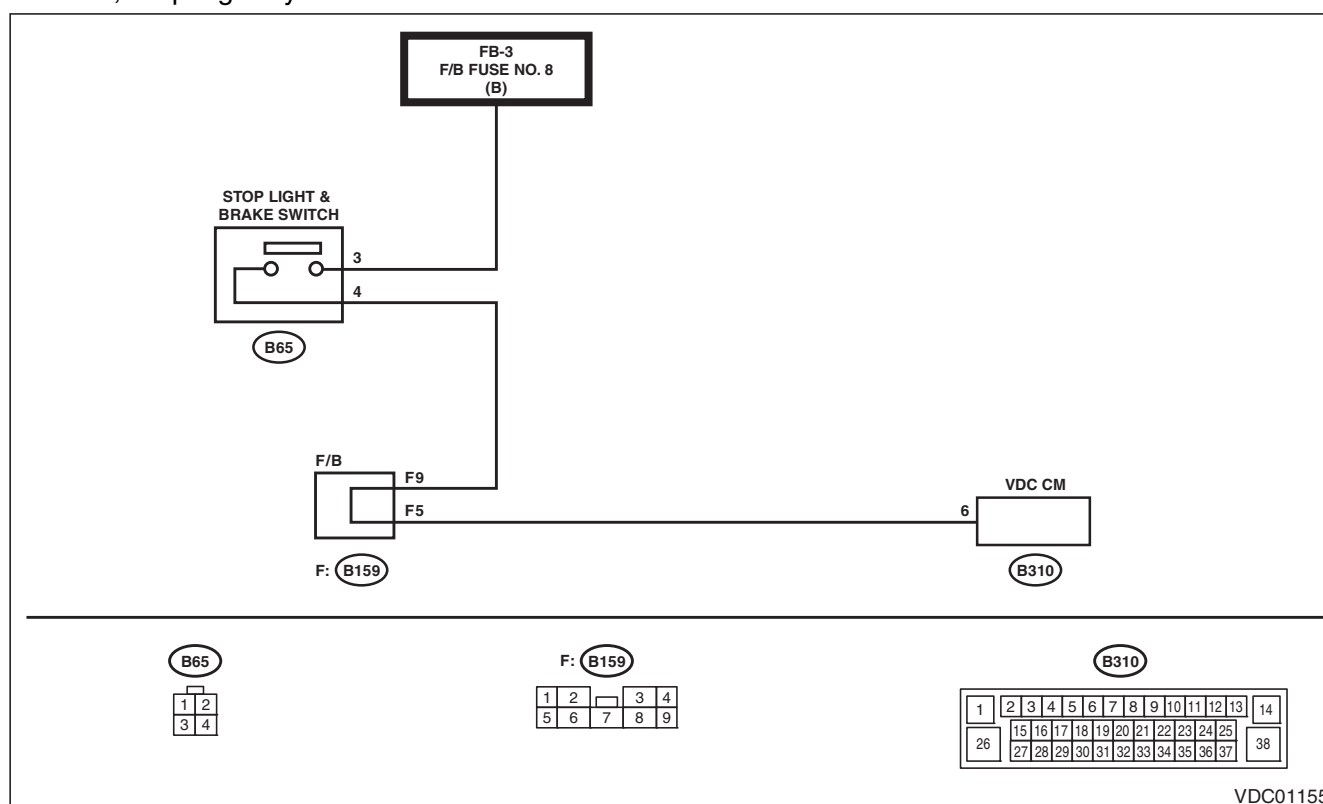
TROUBLE SYMPTOM:

- ABS does not operate.
- VDC does not operate.
- Hill start assist does not operate.
- Hill descent control does not operate. (Model with X MODE)
- EyeSight does not operate. (Model with EyeSight)

1. NON-TURBO MODEL (WITHOUT EyeSight AND X MODE)

WIRING DIAGRAM:

Stop light system <Ref. to WI-401, NON-TURBO MODEL (WITHOUT EyeSight AND X MODE), WIRING DIAGRAM, Stop Light System.>



VDC01155

Step	Check	Yes	No
1	CHECK STOP LIGHT SWITCH. Check the stop light switch. <Ref. to BR-76, INSTALLATION, Stop Light Switch.>	Go to step 2.	Adjust the installation position of the stop light switch. <Ref. to BR-76, INSTALLATION, Stop Light Switch.>
2	CHECK STOP LIGHT SWITCH. 1) Turn the ignition switch to OFF. 2) Disconnect the stop light switch connector. 3) Measure the resistance of stop light switch terminals. Connector & terminal (B65) No. 3 — No. 4:	Go to step 3.	Replace the stop light switch. <Ref. to BR-74, Stop Light Switch.>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

VEHICLE DYNAMICS CONTROL (VDC) (DIAGNOSTICS)

Step	Check	Yes	No
3 CHECK STOP LIGHT POWER SUPPLY. Measure the voltage between stop light switch terminal and chassis ground. <i>Connector & terminal</i> <i>(B65) No. 3 (+) — Chassis ground (-):</i>	Is the voltage 10 — 15 V?	Go to step 4.	Repair the stop light power supply circuit.
4 CHECK STOP LIGHT SWITCH HARNESS. 1) Disconnect the connector from the VDCCM&H/U. 2) Measure the resistance between VDCCM&H/U and stop light switch. <i>Connector & terminal</i> <i>(B65) No. 4 — (B310) No. 6:</i>	Is the resistance less than 1 Ω ?	Go to step 5.	Repair the stop light switch circuit.
5 CHECK POOR CONTACT OF CONNECTORS.	Is there poor contact of connector between stop light switch and VDCCM&H/U?	Repair the connector.	Go to step 6.
6 CHECK VDCCM&H/U. 1) Connect all connectors. 2) Clear the memory. <Ref. to VDC(diag)-23, Clear Memory Mode.> 3) Perform the Inspection Mode. <Ref. to VDC(diag)-22, Inspection Mode.> 4) Read the DTC.	Is the same DTC displayed?	Replace the VDCCM only. <Ref. to VDC-20, REPLACEMENT, VDC Control Module and Hydraulic Control Unit (VDCCM&H/U).>	Go to step 7.
7 CHECK OTHER DTC DETECTION.	Is any other DTC displayed?	Perform the diagnosis according to DTC. <Ref. to VDC(diag)-36, List of Diagnostic Trouble Code (DTC).>	Temporary poor contact occurs.



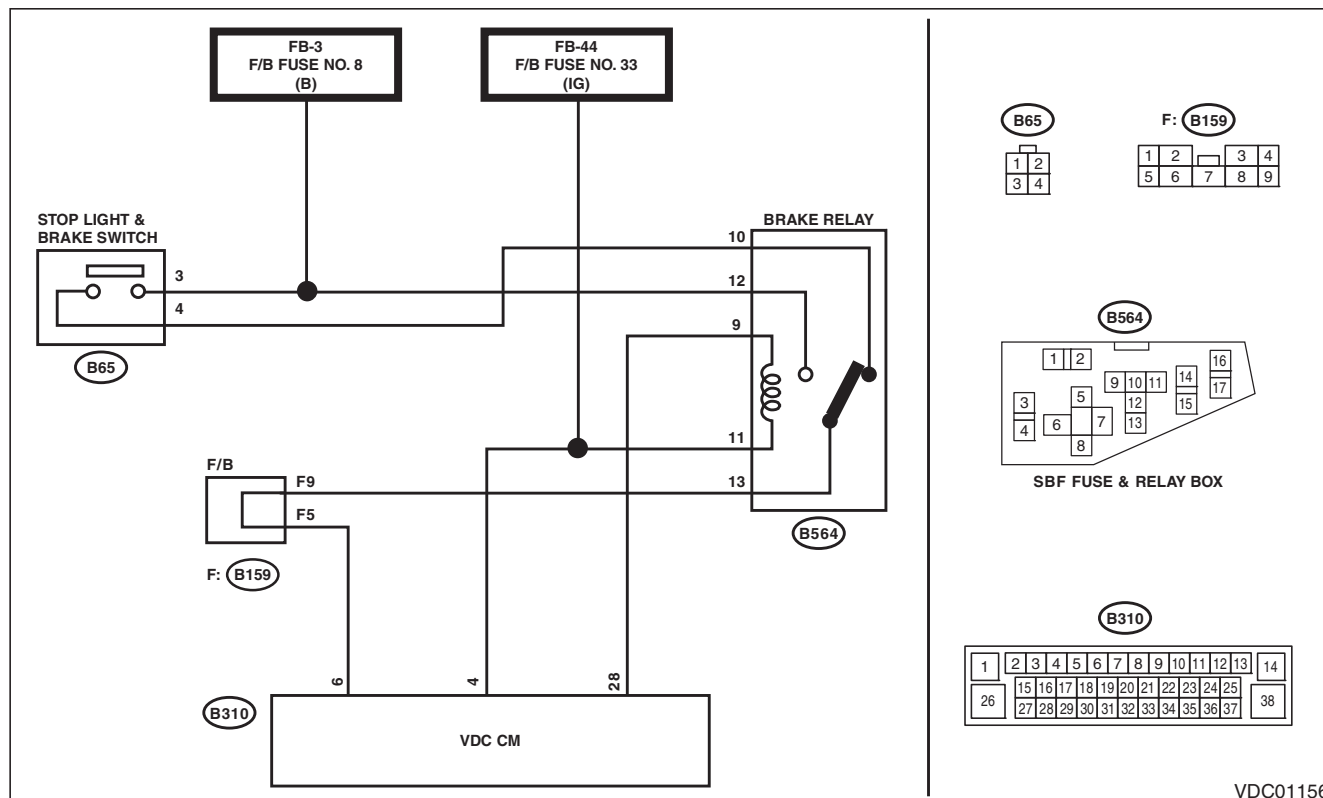
Diagnostic Procedure with Diagnostic Trouble Code (DTC)

VEHICLE DYNAMICS CONTROL (VDC) (DIAGNOSTICS)

2. EXCEPT FOR NON-TURBO MODEL (WITHOUT EyeSight AND X MODE)

WIRING DIAGRAM:

Stop light system <Ref. to WI-403, EXCEPT FOR NON-TURBO MODEL (WITHOUT EyeSight AND X MODE), WIRING DIAGRAM, Stop Light System.>



VDC01156

Step	Check	Yes	No
1 CHECK STOP LIGHT. 1) Turn the ignition switch to OFF. 2) Disconnect the ground cable from battery. 3) Remove the stop lights.	Are the stop lights OK?	Go to step 2.	Replace the stop lights.
2 CHECK STOP LIGHT SWITCH. Check the stop light switch. <Ref. to BR-76, INSTALLATION, Stop Light Switch.>	Is the installation position of the stop light switch correct?	Go to step 3.	Adjust the installation position of the stop light switch. <Ref. to BR-76, INSTALLATION, Stop Light Switch.>
3 CHECK STOP LIGHT SWITCH. 1) Disconnect the stop light switch connector. 2) Measure the resistance of stop light switch terminals. Connector & terminal (B65) No. 3 — No. 4:	Is the resistance less than 1 Ω when the stop light switch is ON (when pedal is depressed)?	Go to step 4.	Replace the stop light switch. <Ref. to BR-74, Stop Light Switch.>
4 CHECK BRAKE LIGHT RELAY. Measure the resistance between brake light relay terminals. Connector & terminal (B564) No. 10 — No. 13:	Is the resistance less than 1 Ω ?	Go to step 5.	Replace the brake light relay.
5 CHECK VDCCM&H/U CONNECTOR. Disconnect the connector from the VDCCM&H/U.	Is there poor contact or damage of the VDCCM&H/U connector?	Repair the VDCCM&H/U connector.	Go to step 6.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

VEHICLE DYNAMICS CONTROL (VDC) (DIAGNOSTICS)

Step	Check	Yes	No
6 CHECK STOP LIGHT SWITCH CIRCUIT. Measure the resistance of stop light switch circuit. <i>Connector & terminal</i> <i>(B310) No. 6 — (B564) No. 13:</i> <i>(B65) No. 4 — (B564) No. 10:</i> <i>(B65) No. 3 — (F/B fuse) No. 8:</i>	Is the resistance less than 1 Ω ?	Go to step 7.	Repair the stop light switch circuit.
7 CHECK STOP LIGHT SWITCH CIRCUIT. 1) Connect all connectors. 2) Connect the ground cable to battery. 3) Turn the ignition switch to ON. 4) Measure the voltage between brake light relay and chassis ground. <i>Connector & terminal</i> <i>(B564) No. 13 (+) — Chassis ground (-):</i>	Is the voltage 10 V or more when the stop light switch is ON (when pedal is depressed)?	Go to step 8.	Repair the stop light switch circuit.
8 CHECK VDCCM&H/U. 1) Clear the memory. <Ref. to VDC(diag)-23, Clear Memory Mode.> 2) Perform the Inspection Mode. <Ref. to VDC(diag)-22, Inspection Mode.> 3) Read the DTC.	Is the same DTC displayed?	Replace the VDCCM only. <Ref. to VDC-20, REPLACEMENT, VDC Control Module and Hydraulic Control Unit (VDCCM&H/U).>	Go to step 9.
9 CHECK OTHER DTC DETECTION.	Is any other DTC displayed?	Perform the diagnosis according to DTC. <Ref. to VDC(diag)-36, List of Diagnostic Trouble Code (DTC).>	Temporary poor contact occurs.



Diagnostic Procedure with Diagnostic Trouble Code (DTC)

VEHICLE DYNAMICS CONTROL (VDC) (DIAGNOSTICS)

AK:DTC C1532 BLS ON FAULT

DTC DETECTING CONDITION:

Defective stop light switch

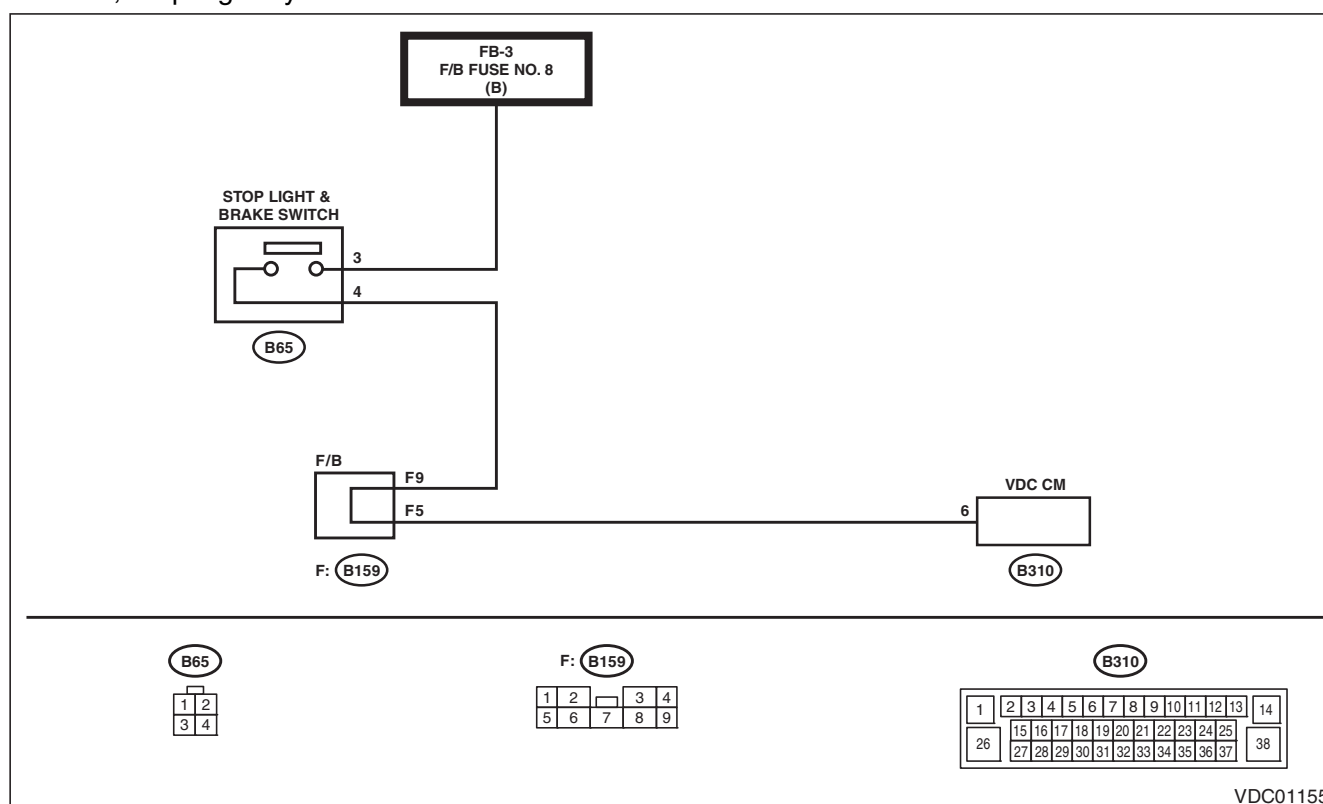
TROUBLE SYMPTOM:

- ABS does not operate sometimes.
- VDC does not operate sometimes.
- Hill start assist does not operate.
- Hill descent control does not operate sometimes. (Model with X MODE)
- EyeSight does not operate sometimes. (Model with EyeSight)

1. NON-TURBO MODEL (WITHOUT EyeSight AND X MODE)

WIRING DIAGRAM:

Stop light system <Ref. to WI-401, NON-TURBO MODEL (WITHOUT EyeSight AND X MODE), WIRING DIAGRAM, Stop Light System.>



	Step	Check	Yes	No
1	CHECK STOP LIGHT SWITCH. 1) Turn the ignition switch to OFF. 2) Disconnect the stop light switch connector. 3) Measure the resistance of stop light switch terminals. <i>Connector & terminal</i> <i>(B65) No. 3 — No. 4:</i>	Is the resistance 1 MΩ or more when stop light switch is OFF (when pedal is not depressed)?	Go to step 2.	Replace the stop light switch. <Ref. to BR-74, Stop Light Switch.>
2	CHECK STOP LIGHT SWITCH HARNESS. 1) Disconnect the connector from the VDCCM&H/U. 2) Measure the resistance between VDCCM&H/U connector and chassis ground. <i>Connector & terminal</i> <i>(B310) No. 6 — Chassis ground:</i>	Is the resistance less than 1 MΩ?	Go to step 3.	Repair the stop light switch circuit.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

VEHICLE DYNAMICS CONTROL (VDC) (DIAGNOSTICS)

Step	Check	Yes	No
3 INTERVIEW CUSTOMERS. Make sure that the operation was performed in which accelerator pedal and brake pedal were depressed simultaneously (with depressing brake pedal with left foot).	Were the acceleration pedal and brake pedal depressed simultaneously?	System is normal. (DTC may be recorded while brake is applied during driving.)	Go to step 4.
4 CHECK VDCCM&H/U. 1) Connect all connectors. 2) Clear the memory. <Ref. to VDC(diag)-23, Clear Memory Mode.> 3) Perform the Inspection Mode. <Ref. to VDC(diag)-22, Inspection Mode.> 4) Read the DTC.	Is the same DTC displayed?	Replace the VDCCM only. <Ref. to VDC-20, REPLACEMENT, VDC Control Module and Hydraulic Control Unit (VDCCM&H/U).>	Go to step 5.
5 CHECK OTHER DTC DETECTION.	Is any other DTC displayed?	Perform the diagnosis according to DTC. <Ref. to VDC(diag)-36, List of Diagnostic Trouble Code (DTC).>	Temporary poor contact occurs.

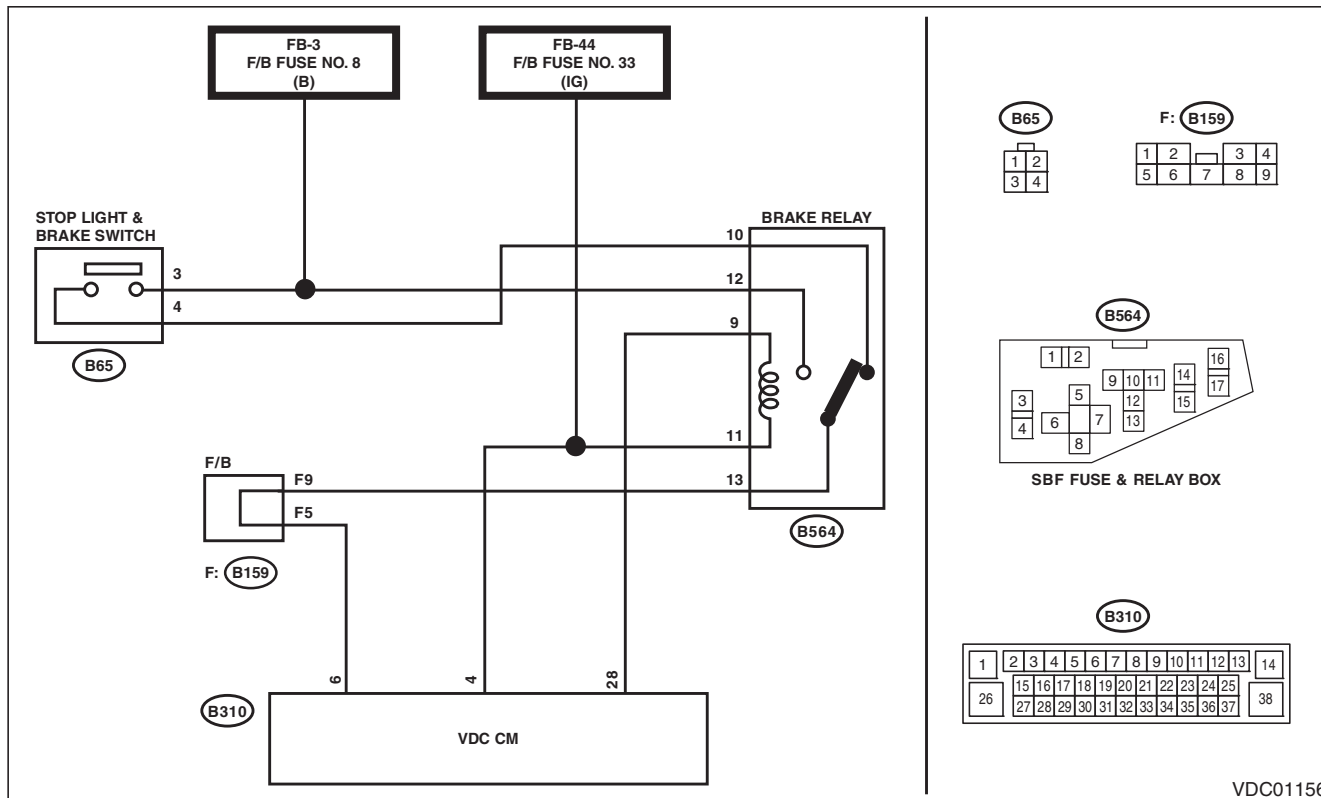
Diagnostic Procedure with Diagnostic Trouble Code (DTC)

VEHICLE DYNAMICS CONTROL (VDC) (DIAGNOSTICS)

2. EXCEPT FOR NON-TURBO MODEL (WITHOUT EyeSight AND X MODE)

WIRING DIAGRAM:

Stop light system <Ref. to WI-403, EXCEPT FOR NON-TURBO MODEL (WITHOUT EyeSight AND X MODE), WIRING DIAGRAM, Stop Light System.>



VDC01156

Step	Check	Yes	No
1 INTERVIEW CUSTOMERS. Make sure that the operation was performed in which accelerator pedal and brake pedal were depressed simultaneously (with depressing brake pedal with left foot).	Were the acceleration pedal and brake pedal depressed simultaneously?	System is normal. (DTC may be recorded while brake is applied during driving.)	Go to step 2.
2 CHECK BRAKE LIGHT RELAY. 1) Turn the ignition switch to OFF. 2) Disconnect the ground cable from battery. 3) Measure the resistance between brake light relay terminals. Connector & terminal (B564) No. 12 — No. 13:	Is the resistance less than 1 Ω?	Replace the brake light relay.	Go to step 3.
3 CHECK VDCCM&H/U CONNECTOR. Disconnect the connector from the VDCCM&H/U.	Is there poor contact or damage of the VDCCM&H/U connector?	Repair the VDCCM&H/U connector.	Go to step 4.
4 CHECK STOP LIGHT SWITCH CIRCUIT. 1) Connect the ground cable to battery. 2) Turn the ignition switch to ON. 3) Measure the voltage between stop light switch and chassis ground. Connector & terminal (B564) No. 13 (+) — Chassis ground (-):	Is the voltage 10 V or more when the stop light switch is OFF (when pedal is not depressed)?	Repair the stop light switch circuit.	Go to step 5.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

VEHICLE DYNAMICS CONTROL (VDC) (DIAGNOSTICS)

Step	Check	Yes	No
5 CHECK VDCCM&H/U. 1) Connect all connectors. 2) Clear the memory. <Ref. to VDC(diag)-23, Clear Memory Mode.> 3) Perform the Inspection Mode. <Ref. to VDC(diag)-22, Inspection Mode.> 4) Read the DTC.	Is the same DTC displayed?	Replace the VDCCM only. <Ref. to VDC-20, REPLACEMENT, VDC Control Module and Hydraulic Control Unit (VDCCM&H/U).>	Go to step 6.
6 CHECK OTHER DTC DETECTION.	Is any other DTC displayed?	Perform the diagnosis according to DTC. <Ref. to VDC(diag)-36, List of Diagnostic Trouble Code (DTC).>	Temporary poor contact occurs.

AL:DTC C1541 CLUTCH OFF FAULT

NOTE:

For the diagnostic procedure, refer to "DTC C1542 CLUTCH ON FAULT". <Ref. to VDC(diag)-76, DTC C1542 CLUTCH ON FAULT, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>



Diagnostic Procedure with Diagnostic Trouble Code (DTC)

VEHICLE DYNAMICS CONTROL (VDC) (DIAGNOSTICS)

AM:DTC C1542 CLUTCH ON FAULT

DTC DETECTING CONDITION:

Abnormal clutch signal

TROUBLE SYMPTOM:

Hill start assist does not operate.

NOTE:

Depending on the user clutch operation patterns, the hill start assist warning light may illuminate for a while, and then go off.

Illumination condition:

While the vehicle speed is 10 km/h (6 MPH) or above, and the clutch switch signal ON (depressed) condition continues five minutes or more, if the vehicle speed lowers to 10 km/h (6 MPH) or below, the module judge as abnormal (clutch switch stuck ON), and then turn on the warning light.

Turning off condition:

If the clutch switch signal OFF (foot released) condition continues for 2 second, the module turns off the warning light.

The hill start assist function does not operate, while the warning light illuminates.

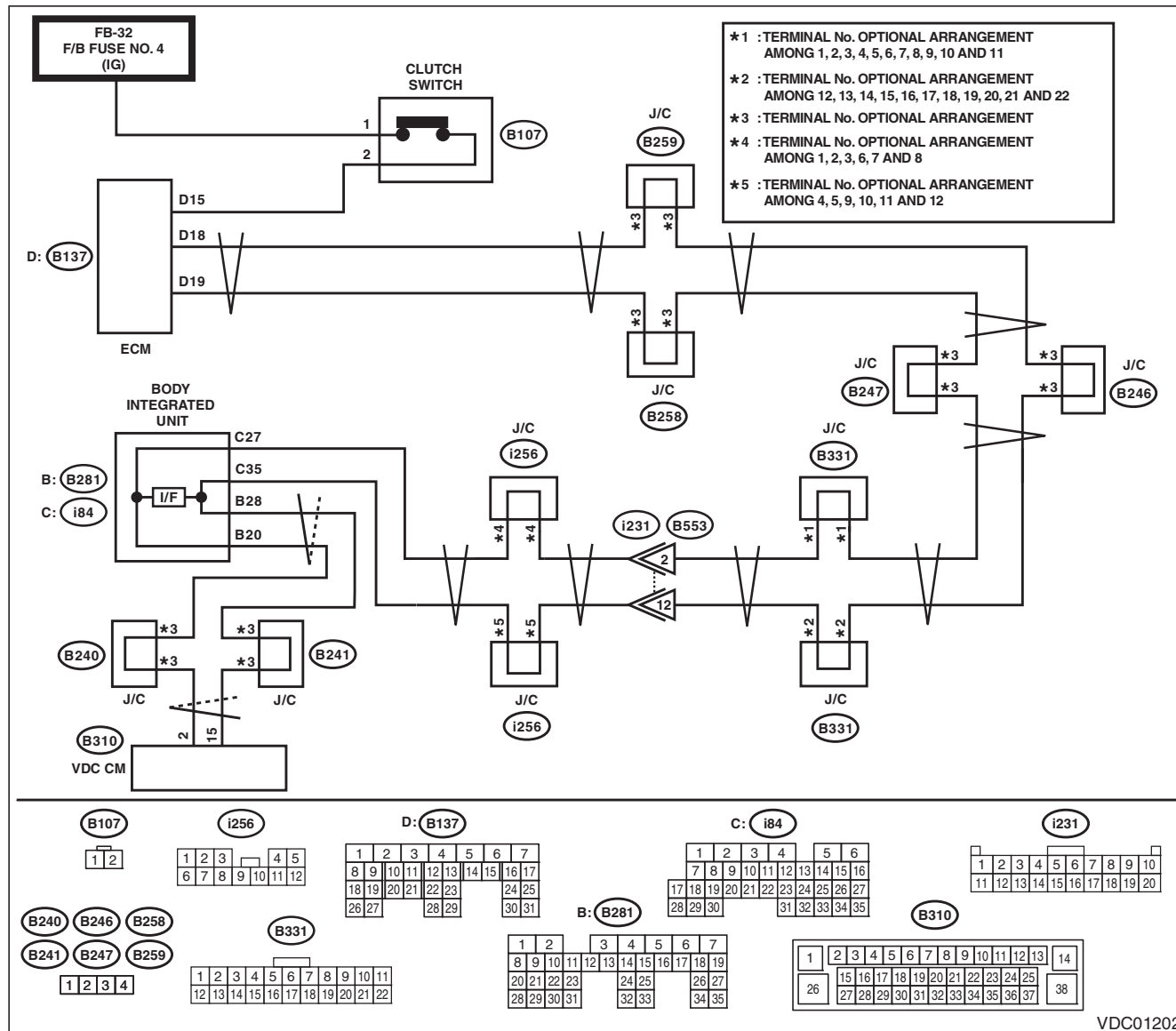
Diagnostic Procedure with Diagnostic Trouble Code (DTC)

VEHICLE DYNAMICS CONTROL (VDC) (DIAGNOSTICS)

WIRING DIAGRAM:

Engine electrical system <Ref. to WI-166, NON-TURBO MODEL (WITHOUT PUSH BUTTON START), WIRING DIAGRAM, Engine Electrical System.>

CAN communication system <Ref. to WI-96, NON-TURBO MODEL, WIRING DIAGRAM, CAN Communication System.>



VDC01202

Step	Check	Yes	No
1	CHECK LAN SYSTEM. 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)-99, List of Diagnostic Trouble Code (DTC).>	Go to step 2.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

VEHICLE DYNAMICS CONTROL (VDC) (DIAGNOSTICS)

Step	Check	Yes	No
2 CHECK CLUTCH SIGNAL USING SUBARU SELECT MONITOR. 1) Select "Current Data Display & Save" on the Subaru Select Monitor. <Ref. to VDC(diag)-16, READ CURRENT DATA, OPERATION, Subaru Select Monitor.> 2) Read the «Clutch Switch» displayed on display.	Is "OFF" displayed when the clutch pedal is not depressed, and is "ON" displayed when depressed?	Go to step 5.	Go to step 3.
3 CHECK CLUTCH SIGNAL OF ECM USING SUBARU SELECT MONITOR. 1) Select "Current Data Display & Save" on Subaru Select Monitor. <Ref. to EN(H4DO)(diag)-41, DISPLAY OF ENGINE FREEZE FRAME DATA, OPERATION, Subaru Select Monitor.> 2) Read the «Clutch Switch» displayed on display.	Is "OFF" displayed when the clutch pedal is not depressed, and is "ON" displayed when depressed?	Go to step 5.	Go to step 4.
4 CHECK HARNESS BETWEEN ECM AND CLUTCH SWITCH. 1) Turn the ignition switch to OFF. 2) Disconnect the connectors from ECM and clutch switch. 3) Measure the resistance of harness between ECM and clutch switch connector. Connector & terminal (B137) No. 15 — (B107) No. 2:	Is the resistance less than 1 Ω?	Repair the power supply circuit of clutch switch. Or replace the clutch switch. <Ref. to CL-29, Clutch Switch.>	Repair the harness between ECM and clutch switch connector.
5 CHECK VDCCM&H/U. 1) Connect all connectors. 2) Clear the memory. <Ref. to VDC(diag)-23, Clear Memory Mode.> 3) Perform the Inspection Mode. <Ref. to VDC(diag)-22, Inspection Mode.> 4) Read the DTC.	Is the same DTC displayed?	Replace the VDCCM only. <Ref. to VDC-20, REPLACEMENT, VDC Control Module and Hydraulic Control Unit (VDCCM&H/U).>	Go to step 6.
6 CHECK OTHER DTC DETECTION.	Is any other DTC displayed?	Perform the diagnosis according to DTC. <Ref. to VDC(diag)-36, List of Diagnostic Trouble Code (DTC).>	Temporary poor contact occurs.

AN:DTC C1561 REVERSE OFF FAULT

NOTE:

For the diagnostic procedure, refer to "DTC C1562 REVERSE ON FAULT". <Ref. to VDC(diag)-79, DTC C1562 REVERSE ON FAULT, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

VEHICLE DYNAMICS CONTROL (VDC) (DIAGNOSTICS)

AO:DTC C1562 REVERSE ON FAULT

DTC DETECTING CONDITION:

Abnormal reverse signal

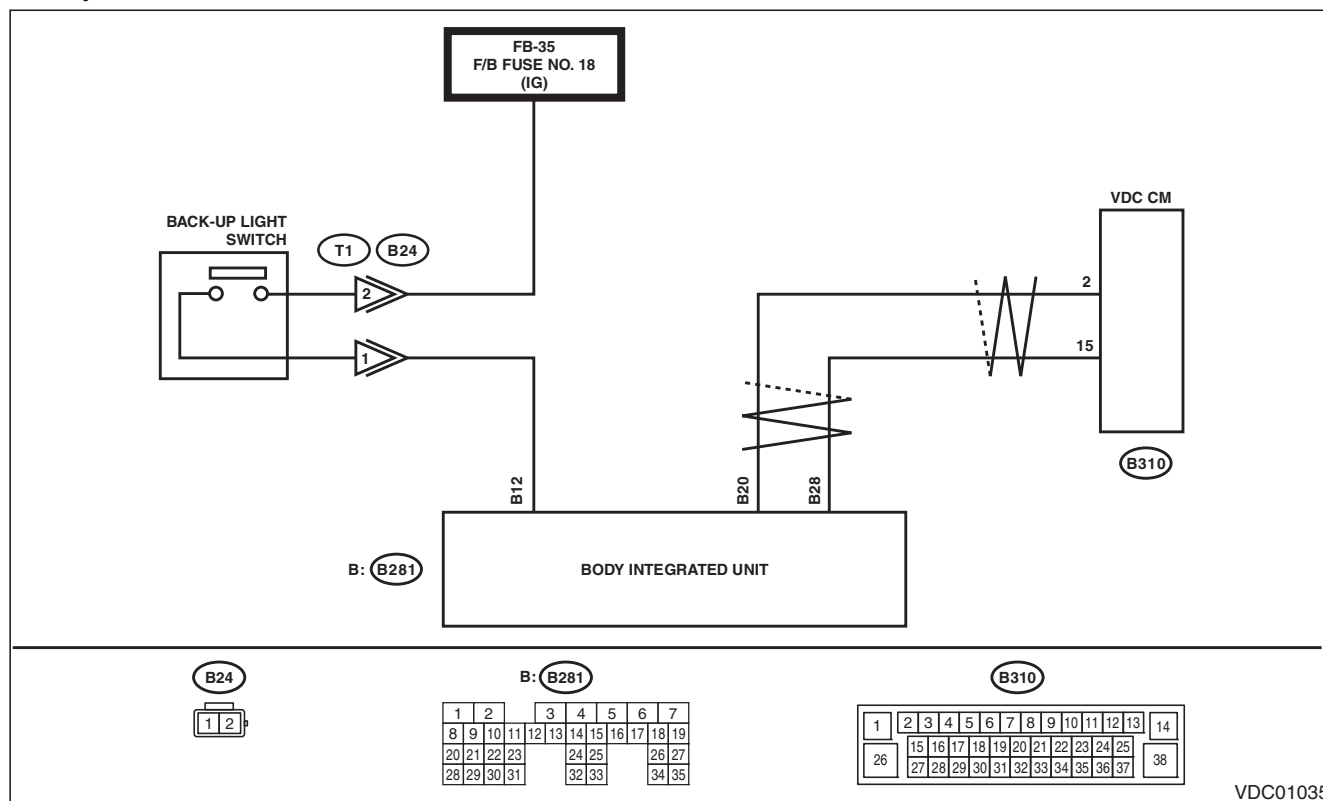
TROUBLE SYMPTOM:

Hill start assist does not operate.

WIRING DIAGRAM:

Back-up light system <Ref. to WI-90, NON-TURBO MODEL, WIRING DIAGRAM, Back-up Light System.>

CAN communication system <Ref. to WI-96, NON-TURBO MODEL, WIRING DIAGRAM, CAN Communication System.>



Step	Check	Yes	No
1	CHECK LAN SYSTEM. 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)-99, List of Diagnostic Trouble Code (DTC).>
2	CHECK REVERSE SIGNAL USING SUBARU SELECT MONITOR. 1) Select "Current Data Display & Save" on the Subaru Select Monitor. <Ref. to VDC(diag)-16, READ CURRENT DATA, OPERATION, Subaru Select Monitor.> 2) Read the «Reverse Signal» displayed on display.	Is "OFF" displayed when the shift lever is placed in any position other than reverse, and is "ON" displayed in reverse position?	Go to step 5.
3	CHECK BACK-UP LIGHT ILLUMINATION. 1) Turn the ignition switch to ON. 2) Place the shift lever in reverse position.	Does the back-up light illuminate?	Repair the back-up light circuit.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

VEHICLE DYNAMICS CONTROL (VDC) (DIAGNOSTICS)

Step	Check	Yes	No
4 CHECK HARNESS BETWEEN BODY INTEGRATED UNIT AND BACK-UP LIGHT SWITCH. 1) Turn the ignition switch to OFF. 2) Disconnect the connectors from body integrated unit and back-up light switch. 3) Measure the resistance of harness between body integrated unit and back-up light switch connector. Connector & terminal (B281) No. 12 — (B24) No. 1:	Is the resistance less than 1 Ω ?	Replace the back-up light switch. <Ref. to 6MT-40, Switches and Harness.>	Repair the harness between body integrated unit and back-up light switch connector.
5 CHECK VDCCM&H/U. 1) Connect all connectors. 2) Clear the memory. <Ref. to VDC(diag)-23, Clear Memory Mode.> 3) Perform the Inspection Mode. <Ref. to VDC(diag)-22, Inspection Mode.> 4) Read the DTC.	Is the same DTC displayed?	Replace the VDCCM only. <Ref. to VDC-20, REPLACEMENT, VDC Control Module and Hydraulic Control Unit (VDCCM&H/U).>	Go to step 6.
6 CHECK OTHER DTC DETECTION.	Is any other DTC displayed?	Perform the diagnosis according to DTC. <Ref. to VDC(diag)-36, List of Diagnostic Trouble Code (DTC).>	Temporary poor contact occurs.



AP:DTC C1571 BRAKE LAMP RELAY OFF MALFUNCTION

DTC DETECTING CONDITION:

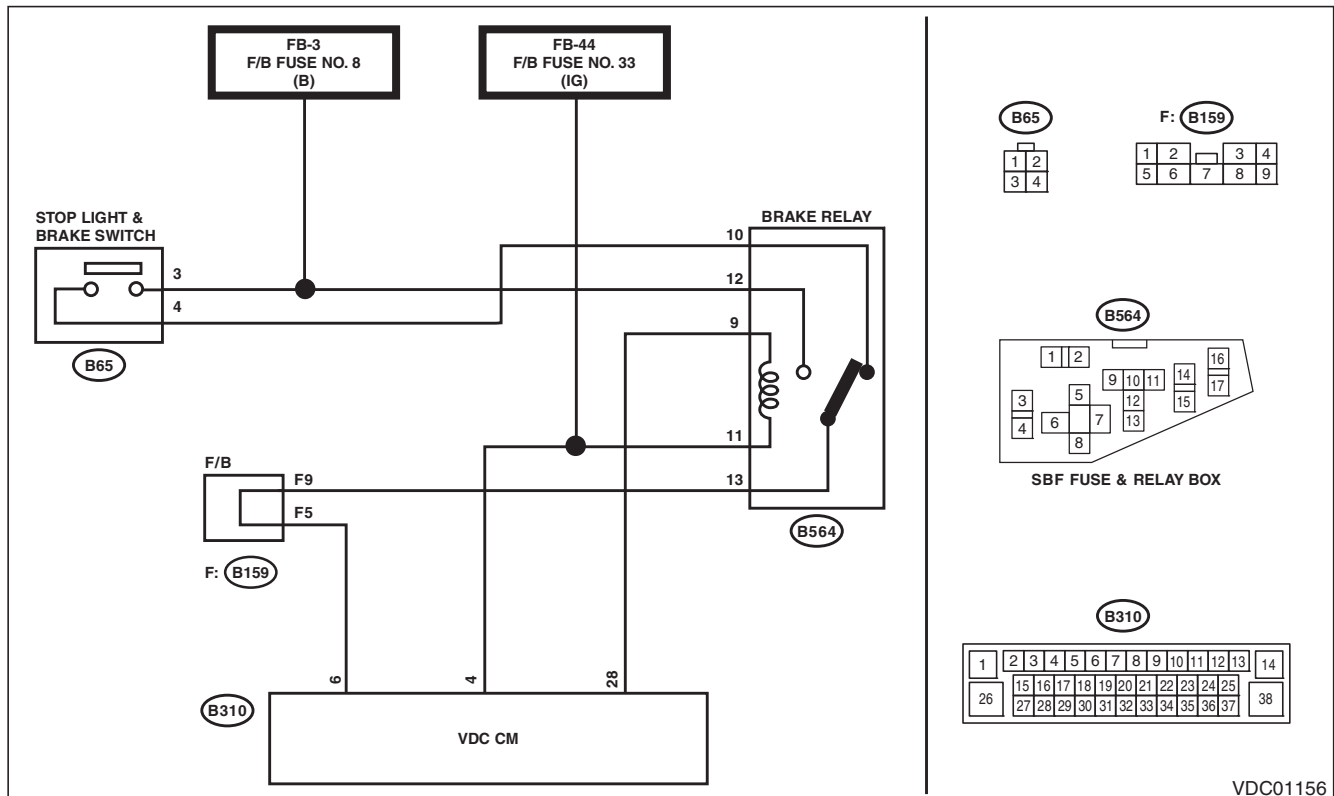
Defective brake light relay signal

TROUBLE SYMPTOM:

- Hill descent control does not operate. (Model with X mode)
- EyeSight does not operate. (Model with EyeSight)
- Brake lights do not illuminate sometimes.

WIRING DIAGRAM:

Stop light system <Ref. to WI-403, EXCEPT FOR NON-TURBO MODEL (WITHOUT EyeSight AND X MODE), WIRING DIAGRAM, Stop Light System.>



	Step	Check	Yes	No
1	CHECK DTC. Check the DTC using Subaru Select Monitor.	Are any DTCs related to the stop light switch displayed?	Perform the diagnosis according to DTC. <Ref. to VDC(diag)-36, List of Diagnostic Trouble Code (DTC).>	Go to step 2.
2	CHECK BRAKE LIGHT RELAY. 1) Turn the ignition switch to OFF. 2) Disconnect the ground cable from battery. 3) Remove the brake light relay. 4) Measure the resistance between brake light relay terminals (B564)No. 9 — (B564)No. 11 when the battery voltage is applied. Connector & terminal (B564) No. 12 — No. 13:	Is the resistance less than 1 Ω?	Go to step 3.	Replace the brake light relay.
3	CHECK VDCCM&H/U CONNECTOR. Disconnect the connector from the VDCCM&H/U.	Is there poor contact or damage of the VDCCM&H/U connector?	Repair the VDCCM&H/U connector.	Go to step 4.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

VEHICLE DYNAMICS CONTROL (VDC) (DIAGNOSTICS)

Step	Check	Yes	No
4 CHECK STOP LIGHT SWITCH CIRCUIT. Measure the resistance between brake light relay and the fuse. <i>Connector & terminal</i> <i>(B564) No. 12 — (F/B fuse) No. 8:</i>	Is the resistance less than 1 Ω ?	Go to step 5.	Repair the stop light switch circuit.
5 CHECK STOP LIGHT SWITCH CIRCUIT. 1) Connect all connectors. 2) Connect the ground cable to battery. 3) Turn the ignition switch to ON. 4) Measure the voltage between brake light relay and chassis ground. <i>Connector & terminal</i> <i>(B564) No. 12 (+) — Chassis ground (-):</i>	Is the voltage 10 V or more?	Go to step 6.	Repair the stop light switch circuit.
6 CHECK BRAKE LIGHT RELAY CIRCUIT. 1) Turn the ignition switch to OFF. 2) Remove the brake light relay. 3) Turn the ignition switch to ON. 4) Measure the voltage between brake light relay and chassis ground. <i>Connector & terminal</i> <i>(B564) No. 9 (+) — Chassis ground (-):</i>	Is the voltage 10 V or more?	Repair the faulty brake light circuit.	Go to step 7.
7 CHECK VDCCM&H/U. 1) Turn the ignition switch to OFF. 2) Connect all connectors and relays. 3) Clear the memory. <Ref. to VDC(diag)-23, Clear Memory Mode.> 4) Read the DTC.	Is the same DTC displayed?	Replace the VDCCM only. <Ref. to VDC-20, REPLACEMENT, VDC Control Module and Hydraulic Control Unit (VDCCM&H/U).>	Go to step 8.
8 CHECK OTHER DTC DETECTION.	Is any other DTC displayed?	Perform the diagnosis according to DTC. <Ref. to VDC(diag)-36, List of Diagnostic Trouble Code (DTC).>	Temporary poor contact occurs.

AQ:DTC C1572 BRAKE LAMP RELAY ON MALFUNCTION

DTC DETECTING CONDITION:

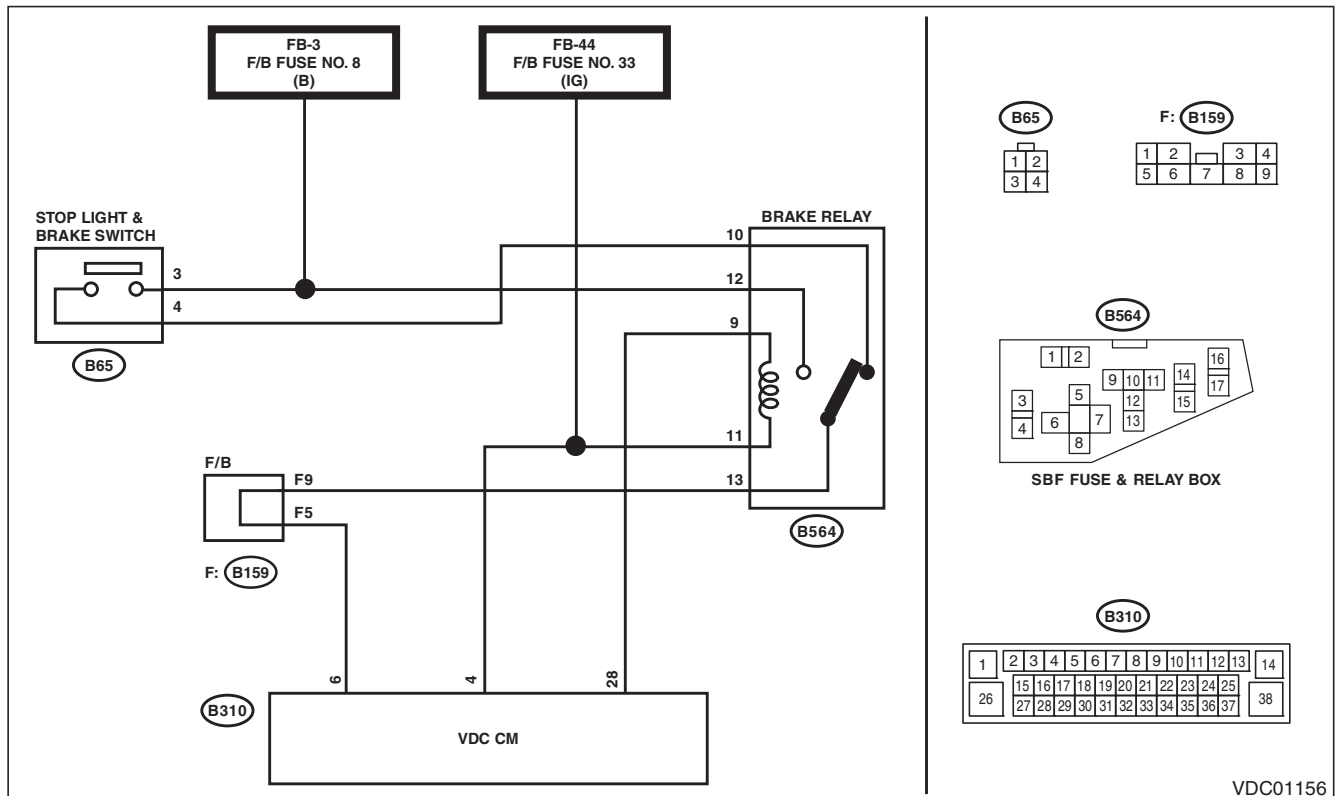
Defective brake light relay signal

TROUBLE SYMPTOM:

- Hill descent control does not operate. (Model with X mode)
- EyeSight does not operate. (Model with EyeSight)
- Brake lights do not go off sometimes.

WIRING DIAGRAM:

Stop light system <Ref. to WI-403, EXCEPT FOR NON-TURBO MODEL (WITHOUT EyeSight AND X MODE), WIRING DIAGRAM, Stop Light System.>



	Step	Check	Yes	No
1	CHECK FUSE. 1) Turn the ignition switch to OFF. 2) Disconnect the ground cable from battery. 3) Check the fuse (No. 33).	Is the fuse blown out?	Replace the fuse (No. 33).	Go to step 2.
2	CHECK BRAKE LIGHT RELAY. Measure the resistance between brake light relay terminals. Connector & terminal (B564) No. 9 — No. 11:	Is the resistance less than 1 Ω?	Go to step 3.	Replace the brake light relay.
3	CHECK VDCCM&H/U CONNECTOR. Disconnect the connector from the VDCCM&H/U.	Is there poor contact or damage of the VDCCM&H/U connector?	Repair the VDCCM&H/U connector.	Go to step 4.
4	CHECK BRAKE LIGHT RELAY CIRCUIT. Measure the resistance between the brake light relay and VDCCM&H/U connector. Connector & terminal (B564) No. 9 — (B310) No. 28: (B564) No. 11 — (F/B fuse) No. 33:	Is the resistance less than 1 Ω?	Go to step 5.	Repair the faulty brake light circuit.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

VEHICLE DYNAMICS CONTROL (VDC) (DIAGNOSTICS)

Step	Check	Yes	No
5 CHECK BRAKE LIGHT RELAY CIRCUIT. 1) Connect all connectors. 2) Connect the ground cable to battery. 3) Turn the ignition switch to ON. 4) Measure the voltage between brake light relay and chassis ground. Connector & terminal (B564) No. 11 (+) — Chassis ground (–):	Is the voltage 10 V or more?	Go to step 6.	Repair the faulty brake light circuit.
6 CHECK VDCCM&H/U. 1) Clear the memory. <Ref. to VDC(diag)-23, Clear Memory Mode.> 2) Read the DTC.	Is the same DTC displayed?	Replace the VDCCM only. <Ref. to VDC-20, REPLACEMENT, VDC Control Module and Hydraulic Control Unit (VDCCM&H/U).>	Go to step 7.
7 CHECK OTHER DTC DETECTION.	Is any other DTC displayed?	Perform the diagnosis according to DTC. <Ref. to VDC(diag)-36, List of Diagnostic Trouble Code (DTC).>	Temporary poor contact occurs.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

VEHICLE DYNAMICS CONTROL (VDC) (DIAGNOSTICS)

AR:DTC C1711 STEERING ANGLE SENSOR ABNORMAL

DTC DETECTING CONDITION:

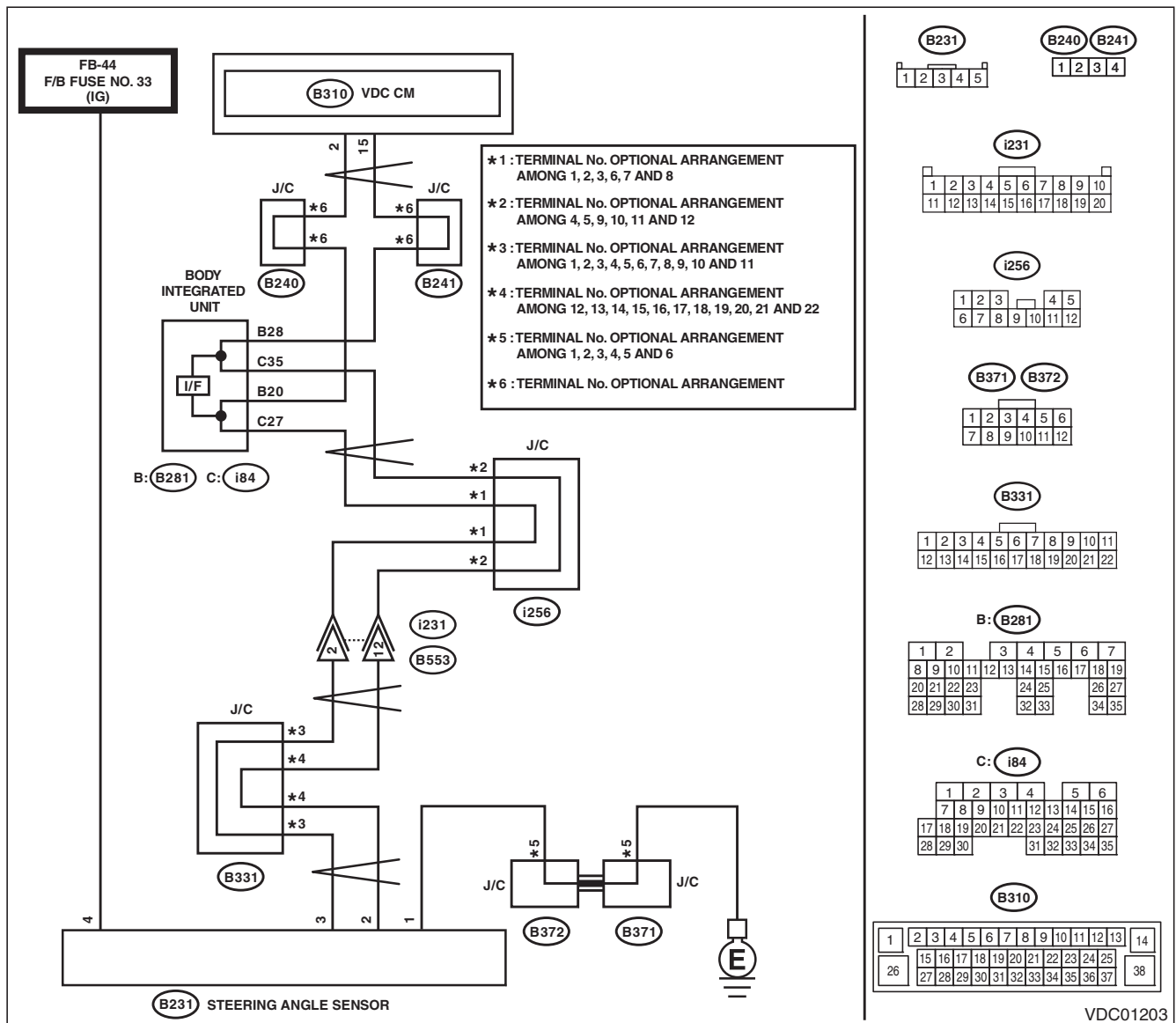
Defective steering angle sensor

TROUBLE SYMPTOM:

- ABS does not operate.
- VDC does not operate.
- Hill start assist does not operate.
- Hill descent control does not operate. (Model with X mode)
- EyeSight does not operate. (Model with EyeSight)

WIRING DIAGRAM:

Vehicle dynamics control system <Ref. to WI-418, Vehicle Dynamics Control System.>



Diagnostic Procedure with Diagnostic Trouble Code (DTC)

VEHICLE DYNAMICS CONTROL (VDC) (DIAGNOSTICS)

Step	Check	Yes	No
1 CHECK POWER SUPPLY FOR STEERING ANGLE SENSOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from steering angle sensor. 3) Turn the ignition switch to ON. 4) Measure the voltage between steering angle sensor and chassis ground. Connector & terminal (B231) No. 4 (+) — Chassis ground (–):	Is the voltage 10 — 15 V?	Go to step 2.	Repair the steering angle sensor power supply circuit.
2 CHECK GROUND CIRCUIT OF STEERING ANGLE SENSOR. Measure the resistance between steering angle sensor and chassis ground. Connector & terminal (B231) No. 1 — Chassis ground:	Is the resistance less than 10 Ω ?	Go to step 3.	Repair ground circuit in the steering angle sensor.
3 CHECK STEERING ANGLE SENSOR HARNESS. 1) Disconnect the connector from the VDCCM&H/U. 2) Measure the resistance between VDCCM&H/U and steering angle sensor. Connector & terminal (B231) No. 2 — (B310) No. 15: (B231) No. 3 — (B310) No. 2:	Is the resistance less than 1 Ω ?	Go to step 4.	Repair the harness between the steering angle sensor and VDCCM&H/U.
4 CHECK GROUND SHORT CIRCUIT OF STEERING ANGLE SENSOR HARNESS. Measure the resistance between steering angle sensor and chassis ground. Connector & terminal (B231) No. 2 — Chassis ground: (B231) No. 3 — Chassis ground:	Is the resistance 1 M Ω or more?	Go to step 5.	Repair the harness between the steering angle sensor and VDCCM&H/U.
5 CHECK STEERING WHEEL. 1) Drive the vehicle on a flat road. 2) Park the vehicle straight. 3) Check the steering wheel for deviation from center.	Is the deviation from the center of steering wheel less than 5°?	Go to step 6.	Perform the centering adjustment of steering wheel, and perform the VDC sensor midpoint setting mode. <Ref. to VDC-23, VDC SENSOR MIDPOINT SETTING MODE, ADJUSTMENT, VDC Control Module and Hydraulic Control Unit (VDCCM&H/U).>
6 CHECK OUTPUT OF STEERING ANGLE SENSOR USING SUBARU SELECT MONITOR. 1) Adjust steering wheel to the center position. 2) Connect Subaru Select Monitor, and select "Current Data Display & Save". 3) Read the «Steering Angle Sensor» displayed on display.	Is the indicated reading of the «Steering Angle Sensor» on the monitor display –10° — 10°?	Perform the VDC sensor midpoint setting mode. Go to step 7. <Ref. to VDC-23, VDC SENSOR MIDPOINT SETTING MODE, ADJUSTMENT, VDC Control Module and Hydraulic Control Unit (VDCCM&H/U).>	Check the installation of the steering wheel and steering angle sensor.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

VEHICLE DYNAMICS CONTROL (VDC) (DIAGNOSTICS)

Step	Check	Yes	No
7 CHECK STEERING ANGLE SENSOR USING SUBARU SELECT MONITOR. 1) Turn the ignition switch to OFF. 2) Connect all connectors. 3) Clear the memory. <Ref. to VDC(diag)-23, Clear Memory Mode.> 4) Perform the Inspection Mode. <Ref. to VDC(diag)-22, Inspection Mode.> 5) Read the DTC.	Is the same DTC displayed?	Go to step 8.	Go to step 9.
8 CHECK VDCCM&H/U. 1) Turn the ignition switch to OFF. 2) Replace the steering angle sensor. <Ref. to VDC-33, Steering Angle Sensor.> 3) Clear the memory. <Ref. to VDC(diag)-23, Clear Memory Mode.> 4) Perform the Inspection Mode. <Ref. to VDC(diag)-22, Inspection Mode.> 5) Read the DTC.	Is the same DTC displayed?	Replace the VDCCM only. <Ref. to VDC-20, REPLACEMENT, VDC Control Module and Hydraulic Control Unit (VDCCM&H/U).>	Go to step 10.
9 CHECK OTHER DTC DETECTION.	Is any other DTC displayed?	Perform the diagnosis according to DTC. <Ref. to VDC(diag)-36, List of Diagnostic Trouble Code (DTC).>	Temporary poor contact occurs.
10 CHECK OTHER DTC DETECTION.	Is any other DTC displayed?	Perform the diagnosis according to DTC. <Ref. to VDC(diag)-36, List of Diagnostic Trouble Code (DTC).>	Original steering angle sensor malfunction



Diagnostic Procedure with Diagnostic Trouble Code (DTC)

VEHICLE DYNAMICS CONTROL (VDC) (DIAGNOSTICS)

AS:DTC C1721 YAW RATE SENSOR ABNORMAL

DTC DETECTING CONDITION:

Defective yaw rate & G sensor

TROUBLE SYMPTOM:

- ABS does not operate.
- VDC does not operate.
- Hill start assist does not operate.
- Hill descent control does not operate. (Model with X MODE)
- EyeSight does not operate. (Model with EyeSight)

1. MODELS WITHOUT EyeSight

Step	Check	Yes	No
1 INTERVIEW CUSTOMERS. Check if the vehicle ran the road with banks or sandy surface (which does not mean a dirt road).	Did the vehicle run the road with banks or sandy surface (which does not mean a dirt road)?	VDCCM&H/U may record DTC when the vehicle ran the road with banks or sandy surface (which does not mean a dirt road).	Go to step 2.
2 CHECK INSTALLATION OF VDCCM&H/U.	Is VDCCM&H/U installed properly without being tilted? Is the bracket deformation-free? Are the VDCCM&H/U installation bolts installed without missing or getting loose?	Go to step 3.	Repair the defective part. Go to step 3. • Install VDCCM&H/U properly. • Replace the bracket if faulty. • Tighten the VDCCM&H/U installation bolt. <Ref. to VDC-5, VDC CONTROL MODULE & HYDRAULIC CONTROL UNIT (VDCCM&H/U), COMPONENT, General Description.>
3 CHECK OUTPUT OF YAW RATE & G SENSOR WITH SUBARU SELECT MONITOR. 1) Drive the vehicle on a flat road. 2) Park the vehicle straight. 3) Select "Current Data Display & Save" on the Subaru Select Monitor. 4) Read the «Yaw Rate Sensor» displayed on display.	Is the reading indicated on monitor display -4 — 4 deg/s?	Go to step 4.	Replace the VDCCM only. <Ref. to VDC-20, REPLACEMENT, VDC Control Module and Hydraulic Control Unit (VDCCM&H/U).>
4 CHECK OUTPUT OF STEERING ANGLE SENSOR WITH SUBARU SELECT MONITOR. 1) Drive the vehicle on a flat road. 2) Park the vehicle straight. 3) Select "Current Data Display & Save" on the Subaru Select Monitor. 4) Read the «Steering Angle Sensor» displayed on display.	Is the reading indicated on monitor display -10 — 10°?	Go to step 5.	Perform the centering adjustment of steering wheel.



Diagnostic Procedure with Diagnostic Trouble Code (DTC)

VEHICLE DYNAMICS CONTROL (VDC) (DIAGNOSTICS)

Step	Check	Yes	No
5 CHECK VDCCM&H/U. 1) Turn the ignition switch to OFF. 2) Clear the memory. <Ref. to VDC(diag)-23, Clear Memory Mode.> 3) Perform the Inspection Mode. <Ref. to VDC(diag)-22, Inspection Mode.> 4) Read the DTC.	Is the same DTC displayed?	Replace the VDCCM only. <Ref. to VDC-20, REPLACEMENT, VDC Control Module and Hydraulic Control Unit (VDCCM&H/U).>	Go to step 6.
6 CHECK OTHER DTC DETECTION.	Is any other DTC displayed?	Perform the diagnosis according to DTC. <Ref. to VDC(diag)-36, List of Diagnostic Trouble Code (DTC).>	It results from a temporary noise interference.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

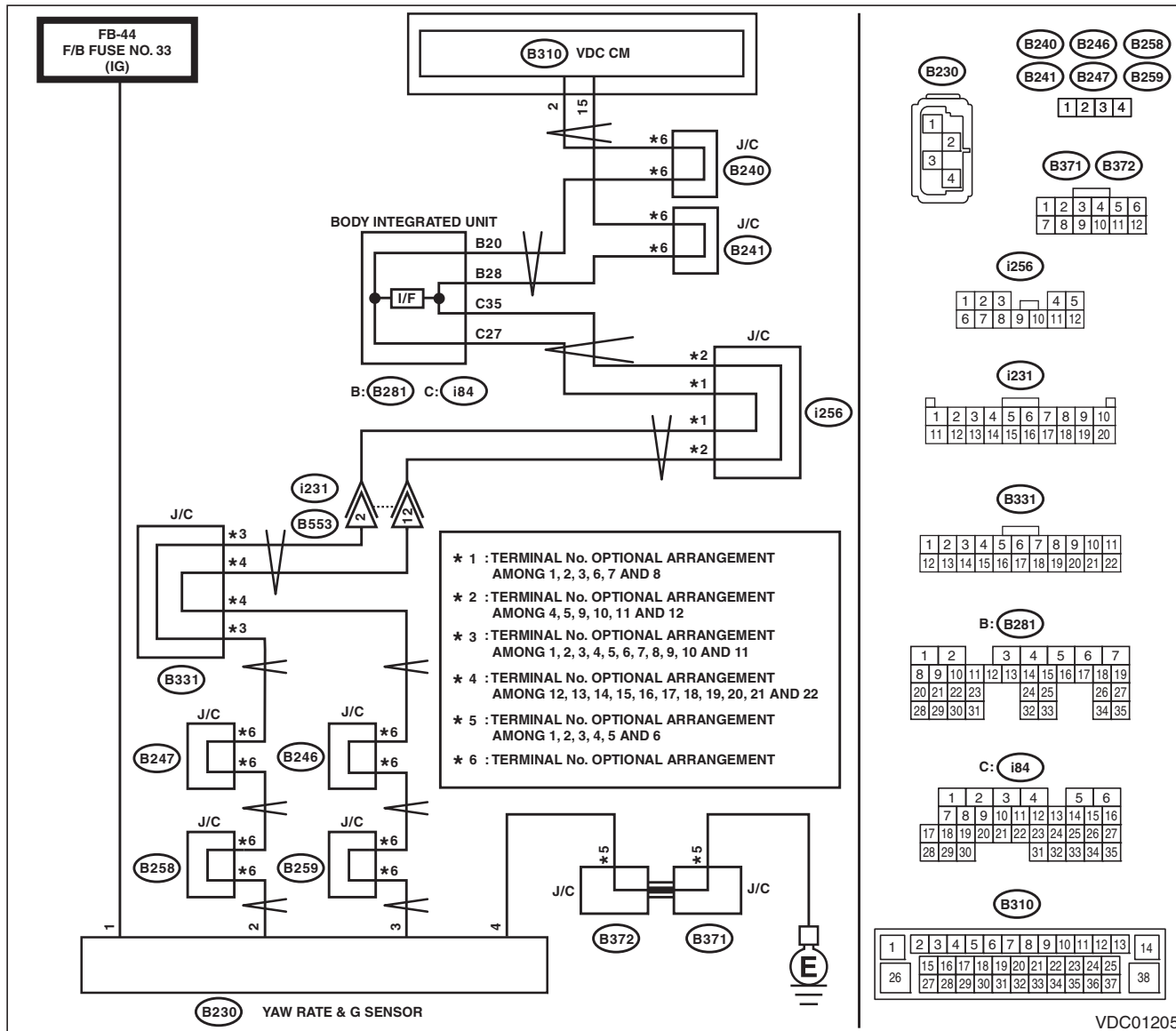
VEHICLE DYNAMICS CONTROL (VDC) (DIAGNOSTICS)

2. MODELS WITH EyeSight

WIRING DIAGRAM:

- Non-turbo model

Vehicle dynamics control system <Ref. to WI-418, NON-TURBO MODEL, WIRING DIAGRAM, Vehicle Dynamics Control System.>

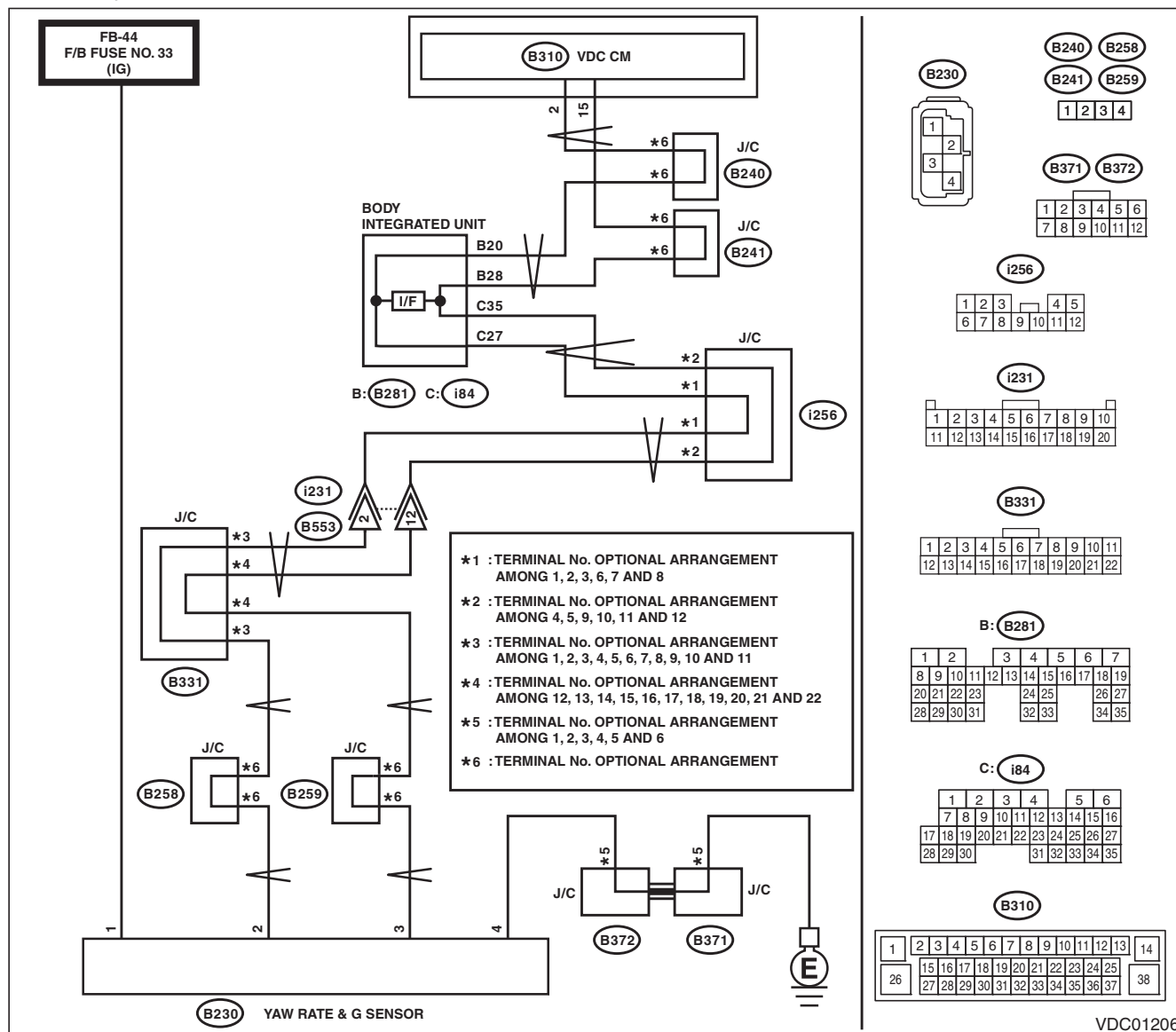


Diagnostic Procedure with Diagnostic Trouble Code (DTC)

VEHICLE DYNAMICS CONTROL (VDC) (DIAGNOSTICS)

- Turbo model

Vehicle dynamics control system <Ref. to WI-424, TURBO MODEL, WIRING DIAGRAM, Vehicle Dynamics Control System.>



Step	Check	Yes	No	
1	INTERVIEW CUSTOMERS. Check if the vehicle ran the road with banks or sandy surface (which does not mean a dirt road).	Did the vehicle run the road with banks or sandy surface (which does not mean a dirt road)?	VDCCM&H/U may record DTC when the vehicle ran the road with banks or sandy surface (which does not mean a dirt road).	Go to step 2.
2	CHECK YAW RATE & G SENSOR INSTALLATION.	Is the yaw rate & G sensor installation bolt tightened to 7.5 N·m (0.76 kgf-m, 5.5 ft-lb)?	Go to step 3.	Tighten the yaw rate & G sensor installation bolt.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

VEHICLE DYNAMICS CONTROL (VDC) (DIAGNOSTICS)

Step	Check	Yes	No
3 CHECK POWER SUPPLY OF YAW RATE & G SENSOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from yaw rate & G sensor. 3) Turn the ignition switch to ON. 4) Measure the voltage between yaw rate & G sensor and chassis ground. Connector & terminal (B230) No. 1 (+) — Chassis ground (-):	Is the voltage 10 — 15 V?	Go to step 4.	Repair the yaw rate & G sensor power supply circuit.
4 CHECK YAW RATE & G SENSOR GROUND CIRCUIT. Measure the resistance between yaw rate & G sensor and chassis ground. Connector & terminal (B230) No. 4 — Chassis ground:	Is the resistance less than 10 Ω ?	Go to step 5.	Repair the yaw rate & G sensor ground circuit.
5 CHECK OUTPUT OF YAW RATE & G SENSOR WITH SUBARU SELECT MONITOR. 1) Drive the vehicle on a flat road. 2) Park the vehicle straight. 3) Select "Current Data Display & Save" on the Subaru Select Monitor. <Ref. to VDC(diag)-16, READ CURRENT DATA, OPERATION, Subaru Select Monitor.> 4) Read the «Yaw Rate Sensor» displayed on display.	Is the reading indicated on monitor display -4 — 4 deg/s?	Go to step 6.	Replace the yaw rate & G sensor. <Ref. to VDC-31, Yaw Rate and G Sensor.>
6 CHECK YAW RATE & G SENSOR. 1) Turn the ignition switch to OFF. 2) Connect all connectors. 3) Clear the memory. <Ref. to VDC(diag)-23, Clear Memory Mode.> 4) Perform the Inspection Mode. <Ref. to VDC(diag)-22, Inspection Mode.> 5) Read the DTC.	Is the same DTC displayed?	Go to step 7.	Go to step 8.
7 CHECK VDCCM&H/U. 1) Turn the ignition switch to OFF. 2) Replace the yaw rate & G sensor. <Ref. to VDC-31, Yaw Rate and G Sensor.> 3) Clear the memory. <Ref. to VDC(diag)-23, Clear Memory Mode.> 4) Perform the Inspection Mode. <Ref. to VDC(diag)-22, Inspection Mode.> 5) Read the DTC.	Is the same DTC displayed?	Replace the VDCCM only. <Ref. to VDC-20, REPLACEMENT, VDC Control Module and Hydraulic Control Unit (VDCCM&H/U).>	Go to step 9.
8 CHECK OTHER DTC DETECTION.	Is any other DTC displayed?	Perform the diagnosis according to DTC. <Ref. to VDC(diag)-36, List of Diagnostic Trouble Code (DTC).>	Temporary poor contact occurs.
9 CHECK OTHER DTC DETECTION.	Is any other DTC displayed?	Perform the diagnosis according to DTC. <Ref. to VDC(diag)-36, List of Diagnostic Trouble Code (DTC).>	Malfunction is found in original yaw rate & G sensor.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

VEHICLE DYNAMICS CONTROL (VDC) (DIAGNOSTICS)

AT:DTC C1731 G SENSOR ABNORMAL

NOTE:

For the diagnostic procedure, refer to "DTC C1732 LATERAL G SENSOR ABNORMAL". <Ref. to VDC(diag)-94, DTC C1732 LATERAL G SENSOR ABNORMAL, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

VEHICLE DYNAMICS CONTROL (VDC) (DIAGNOSTICS)

AU:DTC C1732 LATERAL G SENSOR ABNORMAL

DTC DETECTING CONDITION:

Defective lateral G sensor

TROUBLE SYMPTOM:

- ABS does not operate.
- VDC does not operate.
- Hill start assist does not operate.
- Hill descent control does not operate. (Model with X MODE)
- EyeSight does not operate. (Model with EyeSight)

1. MODELS WITHOUT EyeSight

Step	Check	Yes	No
1	CHECK INSTALLATION OF VDCCM&H/U. Is VDCCM&H/U installed properly without being tilted? Is the bracket deformation-free? Are the VDCCM&H/U installation bolts installed without missing or getting loose?	Go to step 2.	Repair the defective part. Go to step 2. • Install VDCCM&H/U properly. • Replace the bracket if faulty. • Tighten the VDCCM&H/U installation bolt. <Ref. to VDC-5, VDC CONTROL MODULE & HYDRAULIC CONTROL UNIT (VDCCM&H/U), COMPONENT, General Description.>
2	CHECK OUTPUT OF STEERING ANGLE SENSOR USING SUBARU SELECT MONITOR. 1) Park the vehicle straight on a level surface. 2) Connect Subaru Select Monitor, and select "Current Data Display & Save". 3) Read the «Steering Angle Sensor» displayed on display.	Go to step 3.	Check the installation of steering angle sensor.
3	CHECK OUTPUT OF LATERAL G SENSOR AND LONGITUDINAL G SENSOR WITH SUBARU SELECT MONITOR. 1) Park the vehicle straight on a level surface. 2) Connect Subaru Select Monitor, and select "Current Data Display & Save". 3) Read the «Lateral G Sensor» «Longitudinal G Sensor» displayed on display.	Go to step 4.	Recheck from step 1, and if the problem is not solved, go to next. Go to step 7.
4	SET 0 POINT OF LATERAL G SENSOR AND LONGITUDINAL G SENSOR WITH SUBARU SELECT MONITOR. 1) Select "Work Support" on Subaru Select Monitor. 2) Perform the VDC sensor midpoint setting mode. <Ref. to VDC-23, VDC SENSOR MID-POINT SETTING MODE, ADJUSTMENT, VDC Control Module and Hydraulic Control Unit (VDCCM&H/U).>	Go to step 5.	Recheck from step 1, and when the 0 point setting is not possible, replace the VDCCM only. <Ref. to VDC-20, REPLACEMENT, VDC Control Module and Hydraulic Control Unit (VDCCM&H/U).>



Diagnostic Procedure with Diagnostic Trouble Code (DTC)

VEHICLE DYNAMICS CONTROL (VDC) (DIAGNOSTICS)

Step	Check	Yes	No
5 PERFORM DRIVING TEST. Drive approximately 10 minutes, and check if the warning lights illuminate or improperly operate during driving. In a safe place, drive the vehicle while alternating acceleration and deceleration as much as possible.	Did the ABS warning light or VDC warning light remain off? Does ABS or VDC operate without malfunction?	Go to step 6.	Recheck from step 1, and when the warning lights illuminate or improperly operate, replace the VDCCM only. <Ref. to VDC-20, REPLACEMENT, VDC Control Module and Hydraulic Control Unit (VDCCM&H/U).>
6 CHECK OUTPUT OF LATERAL G SENSOR AND LONGITUDINAL G SENSOR WITH SUBARU SELECT MONITOR. 1) Park the vehicle on a level surface. 2) Connect Subaru Select Monitor, and select "Current Data Display & Save". 3) Read the «Lateral G Sensor» «Longitudinal G Sensor» displayed on display.	Is the indicated reading of the lateral G sensor and longitudinal G sensor on the monitor display $-1.5 \text{ — } 1.5 \text{ m/s}^2$?	It results from a temporary noise interference.	Recheck from step 1, and if the problem is not solved, replace the VDCCM only. <Ref. to VDC-20, REPLACEMENT, VDC Control Module and Hydraulic Control Unit (VDCCM&H/U).>
7 CHECK OUTPUT OF LATERAL G SENSOR AND LONGITUDINAL G SENSOR WITH SUBARU SELECT MONITOR. 1) Remove the VDCCM&H/U installation bolt and bracket. 2) Keep VDCCM&H/U in a horizontal position. 3) Connect Subaru Select Monitor, and select "Current Data Display & Save". 4) Read the «Lateral G Sensor» «Longitudinal G Sensor» displayed on display.	When the VDCCM&H/U is in a horizontal position, is the indicated reading of the lateral G sensor and longitudinal G sensor on the monitor display $-1.5 \text{ — } 1.5 \text{ m/s}^2$?	Check the bracket and brake pipe, and install VDCCM&H/U in a horizontal position to the vehicle.	Replace the VDCCM only. <Ref. to VDC-20, REPLACEMENT, VDC Control Module and Hydraulic Control Unit (VDCCM&H/U).>



Diagnostic Procedure with Diagnostic Trouble Code (DTC)

VEHICLE DYNAMICS CONTROL (VDC) (DIAGNOSTICS)

2. MODELS WITH EyeSight

Step	Check	Yes	No
1 CHECK YAW RATE & G SENSOR INSTALLATION.	Is the yaw rate & G sensor installation bolt tightened to 7.5 N·m (0.76 kgf-m, 5.5 ft-lb)?	Go to step 2.	Tighten the yaw rate & G sensor attachment bolt.
2 CHECK OUTPUT OF LATERAL G SENSOR WITH SUBARU SELECT MONITOR. 1) Park the vehicle on a level surface. 2) Select "Current Data Display & Save" on the Subaru Select Monitor. <Ref. to VDC(diag)-16, READ CURRENT DATA, OPERATION, Subaru Select Monitor.> 3) Read the «Lateral G Sensor» displayed on display.	Is the indicated reading on the monitor display $-1.5 \text{ — } 1.5 \text{ m/s}^2$?	Go to step 3.	Replace the yaw rate & G sensor. <Ref. to VDC-31, Yaw Rate and G Sensor.>
3 CHECK OUTPUT OF LATERAL G SENSOR WITH SUBARU SELECT MONITOR. 1) Turn the ignition switch to OFF. 2) Remove the yaw rate & G sensor from vehicle. 3) Turn the ignition switch to ON, and select the "Current Data Display & Save" in Subaru Select Monitor. <Ref. to VDC(diag)-16, READ CURRENT DATA, OPERATION, Subaru Select Monitor.> 4) Read the «Lateral G Sensor» displayed on display.	When the yaw rate & G sensor is inclined 90° to the right, is the indicated value $6.8 \text{ — } 12.8 \text{ m/s}^2$?	Go to step 4.	Replace the yaw rate & G sensor. <Ref. to VDC-31, Yaw Rate and G Sensor.>
4 CHECK LATERAL G SENSOR WITH SUBARU SELECT MONITOR. Read the «Lateral G Sensor» displayed on display.	When the yaw rate & G sensor is inclined 90° to the left, is the indicated value $-6.8 \text{ — } -12.8 \text{ m/s}^2$?	Go to step 5.	Replace the yaw rate & G sensor. <Ref. to VDC-31, Yaw Rate and G Sensor.>
5 CHECK POOR CONTACT OF CONNECTORS. Turn the ignition switch to OFF.	Is there poor contact of connector between VDCCM&H/U and yaw rate & G sensor?	Repair the connector.	Go to step 6.
6 CHECK VDCCM&H/U. 1) Connect all connectors. 2) Clear the memory. <Ref. to VDC(diag)-23, Clear Memory Mode.> 3) Perform the Inspection Mode. <Ref. to VDC(diag)-22, Inspection Mode.> 4) Read the DTC.	Is the same DTC displayed?	Replace the VDCCM only. <Ref. to VDC-20, REPLACEMENT, VDC Control Module and Hydraulic Control Unit (VDCCM&H/U).>	Go to step 7.
7 CHECK OTHER DTC DETECTION.	Is any other DTC displayed?	Perform the diagnosis according to DTC. <Ref. to VDC(diag)-36, List of Diagnostic Trouble Code (DTC).>	Temporary poor contact occurs.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

VEHICLE DYNAMICS CONTROL (VDC) (DIAGNOSTICS)

AV:DTC C1733 LONGITUDINAL G SENSOR ABNORMAL

DTC DETECTING CONDITION:

Defective longitudinal G sensor

TROUBLE SYMPTOM:

- ABS does not operate.
- VDC does not operate.
- Hill start assist does not operate.
- Hill descent control does not operate. (Model with X MODE)
- EyeSight does not operate. (Model with EyeSight)

1. MODELS WITHOUT EyeSight

NOTE:

For the diagnostic procedure, refer to "DTC C1732 LATERAL G SENSOR ABNORMAL". <Ref. to VDC(diag)-94, DTC C1732 LATERAL G SENSOR ABNORMAL, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

2. MODELS WITH EyeSight

Step	Check	Yes	No
1 WHETHER A WHEEL TURNED FREELY OR NOT. Check if the wheels have been turned freely for one minute or more, such as when the vehicle is jacked-up, under full-lock cornering or when the wheels are not in contact with road surface.	Did the wheels turn freely?	VDC is normal. Clear the memory. <Ref. to VDC(diag)-23, Clear Memory Mode.>	Go to step 2.
2 CHECK OUTPUT OF LONGITUDINAL G SENSOR USING SUBARU SELECT MONITOR. 1) Park the vehicle on a level surface. 2) Select "Current Data Display & Save" on the Subaru Select Monitor. <Ref. to VDC(diag)-16, READ CURRENT DATA, OPERATION, Subaru Select Monitor.> 3) Read the «Longitudinal G Sensor» displayed on display.	Is the indicated reading on the monitor display $-1.2 \text{ — } 1.2 \text{ m/s}^2$?	Go to step 3.	Replace the yaw rate & G sensor. <Ref. to VDC-31, Yaw Rate and G Sensor.>
3 CHECK OUTPUT OF LONGITUDINAL G SENSOR USING SUBARU SELECT MONITOR. 1) Turn the ignition switch to OFF. 2) Remove the yaw rate & G sensor from vehicle. <Ref. to VDC-31, Yaw Rate and G Sensor.> 3) Turn the ignition switch to ON, and select the "Current Data Display & Save" in Subaru Select Monitor. <Ref. to VDC(diag)-16, READ CURRENT DATA, OPERATION, Subaru Select Monitor.> 4) Read the «Longitudinal G Sensor» displayed on display.	When the yaw rate & G sensor is inclined 90° to the front, is the indicated value $6.8 \text{ — } 12.8 \text{ m/s}^2$?	Go to step 4.	Replace the yaw rate & G sensor. <Ref. to VDC-31, Yaw Rate and G Sensor.>
4 CHECK OUTPUT OF LONGITUDINAL G SENSOR USING SUBARU SELECT MONITOR. Read the «Longitudinal G Sensor» displayed on display.	When the yaw rate & G sensor is inclined 90° to the rear, is the indicated value $-6.8 \text{ — } -12.8 \text{ m/s}^2$?	Go to step 5.	Replace the yaw rate & G sensor. <Ref. to VDC-31, Yaw Rate and G Sensor.>
5 CHECK POOR CONTACT OF CONNECTOR. Turn the ignition switch to OFF.	Is there poor contact of connector between VDCCM&H/U and yaw rate & G sensor?	Repair the connector.	Go to step 6.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

VEHICLE DYNAMICS CONTROL (VDC) (DIAGNOSTICS)

	Step	Check	Yes	No
6	CHECK VDCCM&H/U. 1) Connect all connectors. 2) Clear the memory. <Ref. to VDC(diag)-23, Clear Memory Mode.> 3) Perform the Inspection Mode. <Ref. to VDC(diag)-22, Inspection Mode.> 4) Read the DTC.	Is the same DTC displayed?	Replace the VDCCM only. <Ref. to VDC-20, REPLACEMENT, VDC Control Module and Hydraulic Control Unit (VDCCM&H/U).>	Go to step 7.
7	CHECK OTHER DTC DETECTION.	Is any other DTC displayed?	Perform the diagnosis according to DTC. <Ref. to VDC(diag)-36, List of Diagnostic Trouble Code (DTC).>	Temporary poor contact occurs.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

VEHICLE DYNAMICS CONTROL (VDC) (DIAGNOSTICS)

AW:DTC C1741 PRESSURE SENSOR

DTC DETECTING CONDITION:

Defective pressure sensor

TROUBLE SYMPTOM:

- ABS does not operate.
- VDC does not operate.
- Hill start assist does not operate.
- Hill descent control does not operate. (Model with X MODE)
- EyeSight does not operate. (Model with EyeSight)

Step	Check	Yes	No	
1	CHECK STOP LIGHT SWITCH CIRCUIT. Check stop light switch open circuit.	Is the stop light switch circuit OK?	Go to step 2.	Repair the stop light switch circuit. NOTE: If there is malfunction in the stop light circuit, DTC may be recorded in the memory.
2	CHECK OUTPUT OF PRESSURE SENSOR WITH SUBARU SELECT MONITOR. 1) Select “Current Data Display & Save” in Subaru Select Monitor. <Ref. to VDC(diag)-16, READ CURRENT DATA, OPERATION, Subaru Select Monitor.> 2) Read the «Pressure Sensor» displayed on display.	With the brake pedal released, is the displayed value 0 — 11 bar?	Go to step 3.	Replace the VDCCM&H/U. <Ref. to VDC-10, VDC Control Module and Hydraulic Control Unit (VDCCM&H/U).>
3	CHECK OUTPUT OF PRESSURE SENSOR WITH SUBARU SELECT MONITOR. 1) Select “Current Data Display & Save” in Subaru Select Monitor. <Ref. to VDC(diag)-16, READ CURRENT DATA, OPERATION, Subaru Select Monitor.> 2) Read the «Pressure Sensor» displayed on display.	When the brake pedal is operated, does the pressure sensor output value displayed on the display change in accordance with the brake pedal?	Go to step 4.	Replace the VDCCM&H/U. <Ref. to VDC-10, VDC Control Module and Hydraulic Control Unit (VDCCM&H/U).>
4	CHECK PRESSURE SENSOR. 1) Clear the memory. <Ref. to VDC(diag)-23, Clear Memory Mode.> 2) Perform the Inspection Mode. <Ref. to VDC(diag)-22, Inspection Mode.> 3) Read the DTC.	Is the same DTC displayed?	Replace the VDCCM&H/U. <Ref. to VDC-10, VDC Control Module and Hydraulic Control Unit (VDCCM&H/U).>	Go to step 5.
5	CHECK OTHER DTC DETECTION.	Is any other DTC displayed?	Perform the diagnosis according to DTC. <Ref. to VDC(diag)-36, List of Diagnostic Trouble Code (DTC).>	It results from a temporary noise interference.



Diagnostic Procedure with Diagnostic Trouble Code (DTC)

VEHICLE DYNAMICS CONTROL (VDC) (DIAGNOSTICS)

AX:DTC C1742 W/C PRESSURE SENSOR

DTC DETECTING CONDITION:

Defective pressure sensor

TROUBLE SYMPTOM:

EyeSight does not operate. (Model with EyeSight)

	Step	Check	Yes	No
1	CHECK OUTPUT OF PRESSURE SENSOR WITH SUBARU SELECT MONITOR. 1) Select "Current Data Display & Save" in Subaru Select Monitor. 2) Read the FL wheel cylinder output and FR wheel cylinder output displayed on display.	With the brake pedal released, is the displayed value 0 — 11 bar?	Go to step 2.	Replace the VDCCM&H/U.
2	CHECK OUTPUT OF PRESSURE SENSOR WITH SUBARU SELECT MONITOR. 1) Select "Current Data Display & Save" in Subaru Select Monitor. 2) Read the FL wheel cylinder output and FR wheel cylinder output displayed on display.	When the brake pedal is operated, do the FL wheel cylinder output and FR wheel cylinder output displayed on the screen change in accordance with the brake pedal? In addition, is the difference between FR and FL wheel cylinder output values less than 10 bar?	Go to step 3.	Replace the VDCCM&H/U.
3	CHECK PRESSURE SENSOR. 1) Clear the memory. <Ref. to VDC(diag)-23, Clear Memory Mode.> 2) Perform the Inspection Mode. <Ref. to VDC(diag)-22, Inspection Mode.>	Is the same DTC displayed?	Replace the VDCCM&H/U.	Go to step 4.
4	CHECK OTHER DTC DETECTION.	Is any other DTC displayed?	Perform the diagnosis according to DTC.	It results from a temporary noise interference.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

VEHICLE DYNAMICS CONTROL (VDC) (DIAGNOSTICS)

AY:DTC C1811 SYSTEM FAILURE

DTC DETECTING CONDITION:

ABS and VDC long time sequential control

TROUBLE SYMPTOM:

- ABS does not operate.
- VDC does not operate.
- EBD may not operate.
- Hill start assist does not operate.
- Hill descent control does not operate. (Model with X MODE)
- EyeSight does not operate. (Model with EyeSight)

Step	Check	Yes	No
1	CHECK INSTALLATION OF VDCCM&H/U. Is VDCCM&H/U installed properly without being tilted? Is the bracket deformation-free? Are the VDCCM&H/U installation bolts installed without missing or getting loose?	Go to step 2.	Repair the defective part. Go to step 2. • Install VDCCM&H/U properly. • Replace the bracket if faulty. • Tighten the VDCCM&H/U installation bolt. <Ref. to VDC-5, VDC CONTROL MODULE & HYDRAULIC CONTROL UNIT (VDCCM&H/U), COMPONENT, General Description.>
2	CHECK STEERING WHEEL. 1) Drive the vehicle on a flat road. 2) Park the vehicle straight. 3) Check the steering wheel for deviation from center.	Go to step 3.	Perform the centering adjustment of steering wheel, and perform the VDC sensor mid-point setting mode. Go to step 3. <Ref. to VDC-23, VDC SENSOR MIDPOINT SETTING MODE, ADJUSTMENT, VDC Control Module and Hydraulic Control Unit (VDCCM&H/U).>
3	CHECK OUTPUT OF STEERING ANGLE SENSOR USING SUBARU SELECT MONITOR. 1) Adjust steering wheel to the center position. 2) Connect Subaru Select Monitor, and select "Current Data Display & Save". 3) Read the "Steer Angle Sensor Op" displayed on display.	Go to step 4.	Check the installation of the steering wheel and steering angle sensor, and replace the parts if necessary.



Diagnostic Procedure with Diagnostic Trouble Code (DTC)

VEHICLE DYNAMICS CONTROL (VDC) (DIAGNOSTICS)

Step	Check	Yes	No
4 CHECK OUTPUT OF SENSORS USING SUBARU SELECT MONITOR. 1) Drive the vehicle on a flat road. 2) Park the vehicle straight. 3) Connect Subaru Select Monitor, and select "Current Data Display & Save". 4) Read output of sensors displayed on display.	Are the indicated reading of sensor outputs following values? Lateral G sensor Output: $-2 \text{ — } 2 \text{ m/s}^2$ Longitudinal G sensor output: $-2 \text{ — } 2 \text{ m/s}^2$ Yaw Rate Sensor Output: $-4 \text{ — } 4 \text{ deg/s}$	Go to step 5.	Recheck from step 1, and if the problem is not solved, go to next. Go to step 8.
5 SET 0 POINT FOR LONGITUDINAL G SENSOR USING SUBARU SELECT MONITOR. 1) Select "Work Support" on Subaru Select Monitor. 2) Perform the VDC sensor midpoint setting mode. <Ref. to VDC-23, VDC SENSOR MIDPOINT SETTING MODE, ADJUSTMENT, VDC Control Module and Hydraulic Control Unit (VDCCM&H/U).>	Is the 0 point setting successful?	Go to step 6.	Recheck from step 1, and when the 0 point setting is not possible, replace the VDCCM and the steering angle sensor. <Ref. to VDC-20, REPLACEMENT, VDC Control Module and Hydraulic Control Unit (VDCCM&H/U).> <Ref. to VDC-33, Steering Angle Sensor.>
6 PERFORM DRIVING TEST. Drive approximately 10 minutes, and check if the warning lights illuminate or improperly operate during driving.	Did the ABS warning light or VDC warning light remain off? Does ABS or VDC operate without malfunction?	Go to step 7.	Recheck from step 1, and when the warning lights illuminate or improperly operate, replace the VDCCM only. <Ref. to VDC-20, REPLACEMENT, VDC Control Module and Hydraulic Control Unit (VDCCM&H/U).>
7 CHECK OUTPUT OF SENSORS USING SUBARU SELECT MONITOR. 1) Park the vehicle on a level surface. 2) Connect Subaru Select Monitor, and select "Current Data Display & Save". 3) Read output of sensors displayed on display.	Are the indicated reading of sensor outputs following values? Lateral G sensor Output: $-2 \text{ — } 2 \text{ m/s}^2$ Longitudinal G sensor output: $-2 \text{ — } 2 \text{ m/s}^2$ Yaw Rate Sensor Output: $-4 \text{ — } 4 \text{ deg/s}$	It results from a temporary noise interference.	Replace the VDCCM only. <Ref. to VDC-20, REPLACEMENT, VDC Control Module and Hydraulic Control Unit (VDCCM&H/U).>
8 CHECK OUTPUT OF SENSORS USING SUBARU SELECT MONITOR. 1) Remove the VDCCM&H/U installation bolt and bracket. 2) Keep VDCCM&H/U in a horizontal position. 3) Connect Subaru Select Monitor, and select "Current Data Display & Save". 4) Read output of sensors displayed on display.	When VDCCM&H/U is in a horizontal position, are the indicated reading of sensor outputs following values? Lateral G sensor Output: $-1.5 \text{ — } 1.5 \text{ m/s}^2$ Longitudinal G sensor output: $-1.5 \text{ — } 1.5 \text{ m/s}^2$ Yaw Rate Sensor Output: $-4 \text{ — } 4 \text{ deg/s}$	Check the bracket and brake pipe, and install VDCCM&H/U in a horizontal position to the vehicle.	Replace the VDCCM only. <Ref. to VDC-20, REPLACEMENT, VDC Control Module and Hydraulic Control Unit (VDCCM&H/U).>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

VEHICLE DYNAMICS CONTROL (VDC) (DIAGNOSTICS)

AZ:DTC C1821 BRAKE TEMPERATURE ABNORMAL

DTC DETECTING CONDITION:

Abnormal brake disc temperature

TROUBLE SYMPTOM:

Hill descent control does not operate. (Model with X MODE)

Step	Check	Yes	No
1 CHECK DTC. 1) Connect all connectors. 2) Read the DTC.	Is the DTC a current malfunction?	Stop the vehicle and turn off the engine until the DTC becomes a past malfunction.	It results from a temporal increase in brake temperature. Check the brake pads, disc rotors, and brake fluid.

BA:DTC U0073 CONTROL MODULE COMMUNICATION BUS "A" OFF

NOTE:

Refer to "LAN SYSTEM (DIAGNOSTICS)" for diagnostic procedure. <Ref. to LAN(diag)-2, Basic Diagnostic Procedure.>

BB:DTC U0100 LOST COMMUNICATION WITH ECM/PCM "A"

NOTE:

Refer to "LAN SYSTEM (DIAGNOSTICS)" for diagnostic procedure. <Ref. to LAN(diag)-2, Basic Diagnostic Procedure.>

BC:DTC U0101 LOST COMMUNICATION WITH TCM

NOTE:

Refer to "LAN SYSTEM (DIAGNOSTICS)" for diagnostic procedure. <Ref. to LAN(diag)-2, Basic Diagnostic Procedure.>

BD:DTC U0123 LOST COMMUNICATION WITH YAW RATE SENSOR MODULE

NOTE:

Refer to "LAN SYSTEM (DIAGNOSTICS)" for diagnostic procedure. <Ref. to LAN(diag)-2, Basic Diagnostic Procedure.>

BE:DTC U0126 LOST COMMUNICATION WITH STEERING ANGLE SENSOR MODULE

NOTE:

Refer to "LAN SYSTEM (DIAGNOSTICS)" for diagnostic procedure. <Ref. to LAN(diag)-2, Basic Diagnostic Procedure.>

BF:DTC U0140 LOST COMMUNICATION WITH BODY CONTROL MODULE

NOTE:

Refer to "LAN SYSTEM (DIAGNOSTICS)" for diagnostic procedure. <Ref. to LAN(diag)-2, Basic Diagnostic Procedure.>

BG:DTC U0401 INVALID DATA RECEIVED FROM ECM/PCM "A"

NOTE:

Refer to "LAN SYSTEM (DIAGNOSTICS)" for diagnostic procedure. <Ref. to LAN(diag)-2, Basic Diagnostic Procedure.>

BH:DTC U0402 INVALID DATA RECEIVED FROM TCM

NOTE:

Refer to "LAN SYSTEM (DIAGNOSTICS)" for diagnostic procedure. <Ref. to LAN(diag)-2, Basic Diagnostic Procedure.>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

VEHICLE DYNAMICS CONTROL (VDC) (DIAGNOSTICS)

BI: DTC U0422 INVALID DATA RECEIVED FROM BODY CONTROL MODULE

NOTE:

Refer to "LAN SYSTEM (DIAGNOSTICS)" for diagnostic procedure. <Ref. to LAN(diag)-2, Basic Diagnostic Procedure.>

BJ:DTC U0428 INVALID DATA RECEIVED FROM STEERING ANGLE SENSOR MODULE

NOTE:

Refer to "LAN SYSTEM (DIAGNOSTICS)" for diagnostic procedure. <Ref. to LAN(diag)-2, Basic Diagnostic Procedure.>

BK:DTC U0513 INVALID DATA RECEIVED FROM YAW RATE SENSOR MODULE

NOTE:

Refer to "LAN SYSTEM (DIAGNOSTICS)" for diagnostic procedure. <Ref. to LAN(diag)-2, Basic Diagnostic Procedure.>

BL:DTC U1235 LOST COMMUNICATION WITH EyeSight

NOTE:

Refer to "LAN SYSTEM (DIAGNOSTICS)" for diagnostic procedure. <Ref. to LAN(diag)-2, Basic Diagnostic Procedure.>

BM:DTC U1433 INVALID DATA RECEIVED FROM EyeSight

NOTE:

Refer to "LAN SYSTEM (DIAGNOSTICS)" for diagnostic procedure. <Ref. to LAN(diag)-2, Basic Diagnostic Procedure.>



General Diagnostic Table

VEHICLE DYNAMICS CONTROL (VDC) (DIAGNOSTICS)

13.General Diagnostic Table

A: INSPECTION

Symptoms		Main probable cause	Other probable cause
Poor brake performance	Long braking/stopping distance	• VDCCM&H/U • Brake pad • Aeration to brake line • Tire specifications, tire wear and air pressures • Incorrect wiring or piping connections	• Defective ABS wheel speed sensor or sensor gap • Defective steering angle sensor or improper neutral position • Defective yaw rate & G sensor or improper installation of VDCCM&H/U. • Master cylinder • Brake caliper • Disc rotor • Brake pipe • Brake booster
	Wheel lock	• VDCCM&H/U • Defective ABS wheel speed sensor or sensor gap • Incorrect wiring or piping connections	• Defective steering angle sensor or improper neutral position • Defective yaw rate & G sensor or improper installation of VDCCM&H/U. • Brake caliper • Brake pipe
	Brake drag	• VDCCM&H/U • Defective ABS wheel speed sensor or sensor gap • Master cylinder • Brake caliper • Parking brake • Axle and wheels • Brake pedal play	• Defective steering angle sensor or improper neutral position • Defective yaw rate & G sensor or improper installation of VDCCM&H/U. • Brake pad • Brake pipe
	Long brake pedal stroke	• Aeration to brake line • Brake pedal play	• VDCCM&H/U • Master cylinder • Brake caliper • Brake pad • Brake pipe • Brake booster
	Vehicle vertical pitching	• VDCCM&H/U • Road surface (uneven) • Suspension play or fatigue (reduced damping) • Incorrect wiring or piping connections	• Defective ABS wheel speed sensor or sensor gap • Defective steering angle sensor or improper neutral position • Defective yaw rate & G sensor or improper installation of VDCCM&H/U.
Poor brake performance	Unstable or uneven braking	• VDCCM&H/U • Defective ABS wheel speed sensor or sensor gap • Brake caliper • Brake pad • Road surface (uneven) • Tire specifications, tire wear and air pressures • Incorrect wiring or piping connections	• Defective ABS wheel speed sensor or sensor gap • Defective steering angle sensor or improper neutral position • Defective yaw rate & G sensor or improper installation of VDCCM&H/U. • Master cylinder • Disc rotor • Brake pipe • Axle and wheels • Road with crowns or banks • Suspension play or fatigue (reduced damping)

General Diagnostic Table

VEHICLE DYNAMICS CONTROL (VDC) (DIAGNOSTICS)

Symptoms		Main probable cause	Other probable cause
Vibration or noise • When braking suddenly • When accelerating suddenly • While driving on a slippery road	Excessive brake pedal vibration	• Road surface (uneven) • Incorrect wiring or piping connections	• VDCCM&H/U • Brake booster • Suspension play or fatigue (reduced damping)
	Noise from VDCH/U	• VDCCM&H/U (mount bushing) • Defective ABS wheel speed sensor or sensor gap • Brake pipe	• VDCCM&H/U • Defective steering angle sensor or improper neutral position • Defective yaw rate & G sensor or improper installation of VDCCM&H/U.
	Noise from the front side of vehicle	• VDCCM&H/U (mount bushing) • Defective ABS wheel speed sensor or sensor gap • Master cylinder • Brake caliper • Brake pad • Disc rotor • Brake pipe • Brake booster • Suspension play or fatigue (reduced damping)	• Axle and wheels • Tire specifications, tire wear and air pressures
	Noise from the rear side of vehicle	• Defective ABS wheel speed sensor or sensor gap • Brake caliper • Brake pad • Disc rotor • Parking brake • Brake pipe • Suspension play or fatigue (reduced damping)	• Axle and wheels • Tire specifications, tire wear and air pressures
Engine does not accelerate or goes into a stall when accelerating suddenly or driving on a slippery surface.		• VDCCM&H/U • Defective ABS wheel speed sensor or sensor gap • Master cylinder • Brake caliper • Parking brake • Incorrect wiring or piping	• Defective steering angle sensor or improper neutral position • Defective yaw rate & G sensor or improper installation of VDCCM&H/U. • Brake pad • Brake pipe
Poor change-direction-operation stability of TCS	Deviation to right or left direction	• VDCCM&H/U • Defective ABS wheel speed sensor or sensor gap • Defective steering angle sensor or improper neutral position • Defective yaw rate & G sensor or improper installation of VDCCM&H/U. • Brake caliper • Brake pad • Wheel alignment • Road surface (uneven) • Road with crowns or banks • Tire specifications, tire wear and air pressures • Incorrect wiring or piping connections	• Disc rotor • Brake pipe • Axle and wheels • Suspension play or fatigue (reduced damping)
	Vehicle spin	• VDCCM&H/U • Defective ABS wheel speed sensor or sensor gap • Defective steering angle sensor or improper neutral position • Defective yaw rate & G sensor or improper installation of VDCCM&H/U. • Brake pad • Tire specifications, tire wear and air pressures • Incorrect wiring or piping connections	• Brake caliper • Brake pipe

General Diagnostic Table

VEHICLE DYNAMICS CONTROL (VDC) (DIAGNOSTICS)

Symptoms	Main probable cause	Other probable cause
Steering wheel drag while driving	• VDCCM&H/U • Defective ABS wheel speed sensor or sensor gap • Defective steering angle sensor or improper neutral position • Defective yaw rate & G sensor or improper installation of VDCCM&H/U. • Incorrect wiring or piping connections • Power steering system	• Brake caliper • Brake pad • Disc rotor • Wheel alignment • Road surface (uneven) • Road with crowns or banks • Suspension play or fatigue (reduced damping) • Tire specifications, tire wear and air pressures
VDC operates while driving normally.	• VDCCM&H/U • Defective ABS wheel speed sensor or sensor gap • Defective steering angle sensor or improper neutral position • Defective yaw rate & G sensor or improper installation of VDCCM&H/U. • Wheel alignment • Road surface (uneven) • Road with crowns or banks • Suspension play or fatigue (reduced damping) • Tire specifications, tire wear and air pressures • Incorrect wiring or piping connections • Power steering system	
VDC OFF indicator light does not illuminate when the VDC OFF switch is depressed. NOTE: When pressing VDC OFF switch for 30 seconds or more, VDC OFF indicator light goes off and cannot operate any more. When turning the ignition switch from OFF to ON, the previous status is restored.	• Harness • Combination meter • VDC OFF switch	

General Diagnostic Table

VEHICLE DYNAMICS CONTROL (VDC) (DIAGNOSTICS)

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