# VDC (DIAGNOSTICS)

VDC

# 1. Basic Diagnostic Procedure

## A: PROCEDURE

### 1. WITHOUT SUBARU SELECT MONITOR

| Step | | Check | Yes | No |
|---|---|---|---|---|
| 1 | **CHECK PRE-INSPECTION.**<br>1) Ask the customer when and how the trouble occurred using interview checklist. <Ref. to VDC-6, Check List for Interview.><br>2) Before performing diagnosis, inspect unit which might influence the VDC problem. <Ref. to VDC-9, INSPECTION, General Description.> | Is unit that might influence the VDC problem normal? | Go to step **2.** | Repair or replace each unit. |
| 2 | **CHECK INDICATION OF DIAGNOSTIC TROUBLE CODE (DTC).**<br>Calling up diagnostic trouble code (DTC). <Ref. to VDC-24, WITHOUT SUBARU SELECT MONITOR, OPERATION, Read Diagnostic Trouble Code (DTC).> | Is diagnostic trouble code (DTC) readable? | Go to step **3.** | Inspect using diagnostic chart for warning light failure. <Ref. to VDC-34, Diagnostics Chart with Diagnosis Connector.><br>NOTE:<br>Call up diagnostic trouble code (DTC) again after inspecting warning light. <Ref. to VDC-24, WITHOUT SUBARU SELECT MONITOR, OPERATION, Read Diagnostic Trouble Code (DTC).> |
| 3 | **CHECK DIAGNOSTIC TROUBLE CODE (DTC).**<br>NOTE:<br>Record all diagnostic trouble codes (DTCs). | Is only the start code issued? | Go to step **4.** | Go to step **5.** |
| 4 | **PERFORM THE GENERAL DIAGNOSTICS.**<br>1) Inspect using “General Diagnostics Table”. <Ref. to VDC-249, General Diagnostic Table.><br>2) Perform the clear memory mode. <Ref. to VDC-26, WITHOUT SUBARU SELECT MONITOR, OPERATION, Clear Memory Mode.><br>3) Perform the inspection mode. <Ref. to VDC-25, Inspection Mode.><br>Calling up the diagnostic trouble code (DTC). <Ref. to VDC-24, WITHOUT SUBARU SELECT MONITOR, OPERATION, Read Diagnostic Trouble Code (DTC).> | Is only the start code issued? | Complete the diagnosis. | Go to step **5.** |

| | Step | Check | Yes | No |
|---|---|---|---|---|
| 5 | **PERFORM THE DIAGNOSIS.**<br>1) Inspect using “Diagnostics Chart with Diagnostic Connector”.<Ref. to VDC-34, Diagnostics Chart with Diagnosis Connector.><br>NOTE:<br>For diagnostic trouble code (DTC) list, refer to “List of Diagnostic Trouble Code (DTC)”. <Ref. to VDC-28, WITHOUT SUBARU SELECT MONITOR, LIST, List of Diagnostic Trouble Code (DTC).><br>2) Repair trouble cause.<br>3) Perform the clear memory mode. <Ref. to VDC-26, WITHOUT SUBARU SELECT MONITOR, OPERATION, Clear Memory Mode.><br>4) Perform the inspection mode. <Ref. to VDC-25, Inspection Mode.><br>5) Calling up the diagnostic trouble code (DTC). <Ref. to VDC-24, WITHOUT SUBARU SELECT MONITOR, OPERATION, Read Diagnostic Trouble Code (DTC).> | Is only the start code issued? | Complete the diagnosis. | Inspect using “Diagnostics Chart with Diagnostic Connector”. <Ref. to VDC-34, Diagnostics Chart with Diagnosis Connector.> |

**CAUTION:**
**Remove foreign matter (dust, water, etc.) from the VDCCM connector during removal and installation.**

NOTE:
- To check harness for broken wires or short circuits, shake it while holding it or the connector.
- When ABS and/or VDC warning light illuminates, read and record diagnostic trouble code (DTC) indicated by ABS warning light.

## 2. WITH SUBARU SELECT MONITOR

| | Step | Check | Yes | No |
|---|---|---|---|---|
| 1 | **CHECK PRE-INSPECTION.**<br>1) Ask the customer when and how the trouble occurred using interview checklist. <Ref. to VDC-6, Check List for Interview.><br>2) Before performing diagnosis, inspect unit which might influence the VDC problem. <Ref. to VDC-9, INSPECTION, General Description.> | Is unit that might influence the VDC problem normal? | Go to step **2.** | Repair or replace each unit. |
| 2 | **CHECK INDICATION OF TROUBLE CODE DISPLAY.**<br>1) Turn ignition switch to OFF.<br>2) Connect the SUBARU SELECT MONITOR to data link connector.<br>3) Turn ignition switch to ON and SUBARU SELECT MONITOR to ON.<br>4) Calling up the diagnostic trouble code (DTC). <Ref. to VDC-24, WITH SUBARU SELECT MONITOR, OPERATION, Read Diagnostic Trouble Code (DTC).><br>5) Record all diagnostic trouble codes (DTCs) and frame data. | Is the corresponding DTC displayed? | Go to step **3.** | Go to step **4.** |
| 3 | **PERFORM THE GENERAL DIAGNOSTICS.**<br>1) Inspect using “General Diagnostics Table”. <Ref. to VDC-249, INSPECTION, General Diagnostic Table.><br>2) Perform the clear memory mode. <Ref. to VDC-26, WITH SUBARU SELECT MONITOR, OPERATION, Clear Memory Mode.><br>3) Perform the inspection mode. <Ref. to VDC-25, OPERATION, Inspection Mode.><br>4) Calling up the diagnostic trouble code (DTC). <Ref. to VDC-24, WITH SUBARU SELECT MONITOR, OPERATION, Read Diagnostic Trouble Code (DTC).> | Is no diagnostic trouble code (DTC) displayed or do VDC and ABS warning lights constantly remain on? | Complete the diagnosis. | Go to step **4.** |
| 4 | **PERFORM THE DIAGNOSIS.**<br>1) Inspect using “Diagnostics Chart with Subaru Select Monitor”.<Ref. to VDC-122, Diagnostics Chart with Select Monitor.><br>NOTE:<br>For diagnostic trouble code (DTC) list, refer to “List of Diagnostic Trouble Code (DTC)”. <Ref. to VDC-30, WITH SUBARU SELECT MONITOR, LIST, List of Diagnostic Trouble Code (DTC).><br>2) Repair trouble cause.<br>3) Perform the clear memory mode. <Ref. to VDC-26, WITH SUBARU SELECT MONITOR, OPERATION, Clear Memory Mode.><br>4) Perform the inspection mode. <Ref. to VDC-25, OPERATION, Inspection Mode.><br>5) Calling up the diagnostic trouble code (DTC). <Ref. to VDC-24, WITH SUBARU SELECT MONITOR, OPERATION, Read Diagnostic Trouble Code (DTC).> | Is no diagnostic trouble code (DTC) displayed or do VDC and ABS warning lights constantly remain on? | Complete the diagnosis. | Inspect using “Diagnostics Chart with Subaru Select Monitor”. <Ref. to VDC-122, Diagnostics Chart with Select Monitor.> |

NOTE:
- To check harness for broken wires or short circuits, shake it while holding it or the connector.

- Check list for interview. <Ref. to VDC-6, Check List for Interview.>

# 2. Check List for Interview

## A: CHECK

Check the following items about the vehicle's state.

### 1. STATE OF ABS AND/OR VDC WARNING LIGHT

| | | | | |
|---|---|---|---|---|
| ABS and/or VDC warning light comes on. | ❑ Always<br>❑ Sometimes<br>❑ Only once<br>❑ Does not come on<br>• When / how long does it come on?: | | | |
| Ignition key position | ❑ LOCK<br>❑ ACC<br>❑ ON (before starting engine)<br>❑ START<br>❑ On after starting (Engine running) | | | |
| Timing | ❑ Immediately after ignition is ON.<br>❑ Immediately after ignition starts. | | | |
| | ❑ When advancing | | km/h to | km/h |
| | | | MPH to | MPH |
| | ❑ While traveling at a constant speed | km/h | | MPH |
| | ❑ When decelerating | | km/h to | km/h |
| | | | MPH to | MPH |
| | ❑When turning to right | Steering angle: | | deg |
| | | Steering time: | | sec |
| | ❑ When turning to left | Steering angle: | | deg |
| | | Steering time: | | sec |
| | ❑ When moving other electrical parts | | | |
| | • Parts name:<br>• Operating condition: | | | |

### 2. STATE OF VDC OFF INDICATOR LIGHT

| | | | | |
|---|---|---|---|---|
| VDC OFF indicator light comes on. | ❑ Always<br>❑ Sometimes<br>❑ Only once<br>❑ Does not come on<br>• When / how long does it come on?: | | | |
| Ignition key position | ❑ LOCK<br>❑ ACC<br>❑ ON (before starting engine)<br>❑ START<br>❑ On after starting (Engine is running)<br>❑ On after starting (Engine is stop) | | | |
| Timing | ❑ Immediately after ignition is ON.<br>❑ Immediately after ignition starts. | | | |
| | ❑ When advancing | | km/h to | km/h |
| | | | MPH to | MPH |
| | ❑ While traveling at a constant speed | km/h | | MPH |
| | ❑ When decelerating | | km/h to | km/h |
| | | | MPH to | MPH |
| | ❑When turning to right | Steering angle: | | deg |
| | | Steering time: | | sec |
| | ❑ When turning to left | Steering angle: | | deg |
| | | Steering time: | | sec |
| | ❑ When moving other electrical parts | | | |
| | • Parts name:<br>• Operating condition: | | | |

## 3. STATE OF VDC OPERATION INDICATOR LIGHT

| | | | |
|---|---|---|---|
| VDC operation indicator light comes on. | ❑ Always<br>❑ Sometimes<br>❑ Only once<br>❑ Does not come on<br>• When / how long does it come on?: | | |
| Ignition key position | ❑ LOCK<br>❑ ACC<br>❑ ON (before starting engine)<br>❑ START<br>❑ On after starting (Engine running)<br>❑ On after starting (Engine stopped) | | |
| Timing | ❑ Immediately after ignition is ON.<br>❑ Immediately after ignition starts. | | |
| | ❑ When advancing | km/h to | km/h |
| | | MPH to | MPH |
| | ❑ While traveling at a constant speed | km/h | MPH |
| | ❑ When decelerating | km/h to | km/h |
| | | MPH to | MPH |
| | ❑When turning to right | Steering angle: | deg |
| | | Steering time: | sec |
| | ❑ When turning to left | Steering angle: | deg |
| | | Steering time: | sec |
| | ❑ When moving other electrical parts | | |
| | • Parts name:<br>• Operating condition: | | |

## 4. CONDITIONS UNDER WHICH TROUBLE OCCURS

| | | |
|---|---|---|
| Environment | a) Weather | ❑ Fine<br>❑ Cloudy<br>❑ Rainy<br>❑ Snowy<br>❑ Various/Others: |
| | b) Ambient temperature | °C (°F) |
| | c) Road | ❑ Urban area<br>❑ Suburbs<br>❑ Highway<br>❑ General road<br>❑ Ascending slope<br>❑ Descending slope<br>❑ Paved road<br>❑ Gravel road<br>❑ Muddy road<br>❑ Sandy place<br>❑ Straight<br>❑ Sharp curve<br>❑ Slow curve<br>❑ S-shaped curve<br>❑ Road with inclination on each side<br>❑ Others: |
| | d) Road surface | ❑ Dry<br>❑ Wet<br>❑ New-fallen snow<br>❑ Compressed snow<br>❑ Frozen slope<br>❑ Others: |

# CHECK LIST FOR INTERVIEW

| | | |
|---|---|---|
| Condition | a) Brakes | Deceleration: g |
| | | ❑ Continuous / ❑ Intermittent |
| | b) Accelerator | Acceleration: g |
| | | ❑ Continuous / ❑ Intermittent |
| | c) Vehicle speed | km/h \| MPH |
| | | ❑ Advancing<br>❑ Accelerating<br>❑ Reducing speed<br>❑ Low speed<br>❑ Turning<br>❑ 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: |
| | | Front LH tire: |
| | | Rear RH tire: |
| | | Rear LH tire: |
| | f) Steering wheel | ❑ Sharp turn<br>❑ Slow turn<br>❑ Straight-ahead operation<br>❑ Returned slowly<br>❑ Returned quickly |
| | g) Tire/wheel size | ❑ Specified<br>❑ Other than specified ( ) |
| | h) Tire type | ❑ Summer tire<br>❑ Studless tire (Brand name: ) |
| | i) Chain is passed around tires. : ❑ Yes / ❑ No | |
| | j) T tire is used. : ❑ Yes / ❑ No | |
| | k) Condition of suspension alignment: | |
| | l) Loading state: | |
| | m) Repair parts are used. : ❑ Yes / ❑ No | |
| | • What: | |
| | n) Others: | |

# 3. General Description

## A: CAUTION

### 1. SUPPLEMENTAL RESTRAINT SYSTEM "AIRBAG"

Airbag system wiring harness is routed near the ABS sensor, ABS control module and hydraulic control unit.

**CAUTION:**
**• All airbag system wiring harness and connectors are colored yellow. Do not use electrical test equipment on these circuit.**
**• Be careful not to damage airbag system wiring harness when servicing the ABS sensor, ABS control module and hydraulic control unit.**

## B: INSPECTION

Before performing diagnostics, check the following items which might affect VDC problems:

### 1. BATTERY

Measure battery voltage and specific gravity of electrolyte.

***Standard voltage: 12 V, or more***

***Specific gravity: Above 1.260***

### 2. BRAKE FLUID

1) Check brake fluid level.
2) Check brake fluid leakage.

### 3. HYDRAULIC UNIT

Check the hydraulic unit VDC.
• With brake tester <Ref. to VDC-13, CHECKING THE HYDRAULIC UNIT ABS OPERATION WITH BRAKE TESTER, INSPECTION, Hydraulic Control Unit (H/U).>
• Without brake tester <Ref. to VDC-14, CHECKING THE HYDRAULIC UNIT VDC OPERATION BY PRESSURE GAUGE, INSPECTION, Hydraulic Control Unit (H/U).>

### 4. BRAKE DRAG

Check brake drag.

### 5. BRAKE PAD AND ROTOR

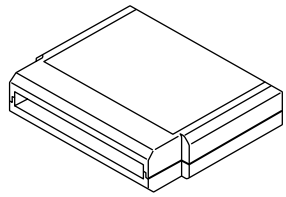
Check brake pad and rotor.
• Front <Ref. to BR-14, INSPECTION, Front Brake Pad.><Ref. to BR-15, INSPECTION, Front Disc Rotor.>
• Rear <Ref. to BR-19, INSPECTION, Rear Brake Pad.><Ref. to BR-20, INSPECTION, Rear Disc Rotor.>

### 6. TIRE

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

# C: PREPARATION TOOL

## 1. SPECIAL TOOLS

| ILLUSTRATION | TOOL NUMBER | DESCRIPTION | REMARKS |
|---|---|---|---|
|  ST-2082AA230 | 24082AA230 | CARTRIDGE | Troubleshooting for electrical systems. |
|  ST22771AA030 | 22771AA030 | SELECT MONITOR KIT | Troubleshooting for electrical systems.<br>• English: 22771AA030 (Without printer)<br>• German: 22771AA070 (Without printer)<br>• French: 22771AA080 (Without printer)<br>• Spanish: 22771AA090 (Without printer) |

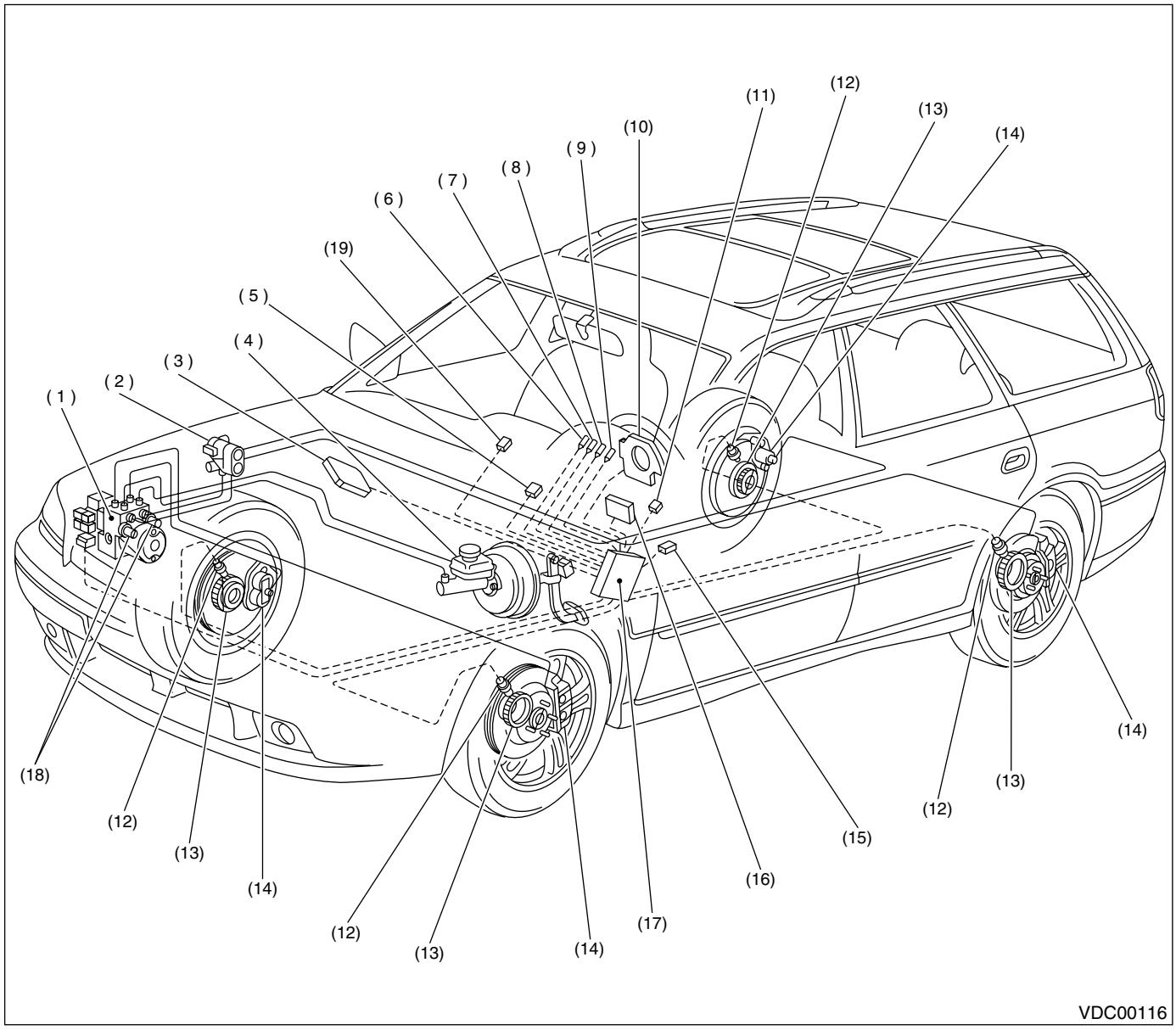
## 2. GENERAL PURPOSE TOOLS

| TOOL NAME | REMARKS |
|---|---|
| Circuit Tester | Used for measuring resistance, voltage and ampere. |
| Oscilloscope | Used for measuring sensor. |

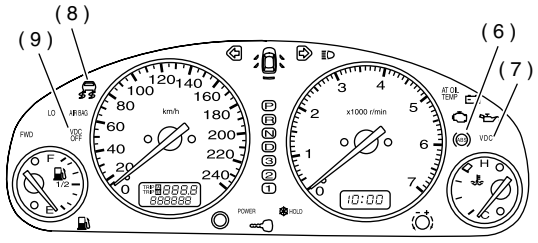
**MEMO:**

# 4. Electrical Components Location

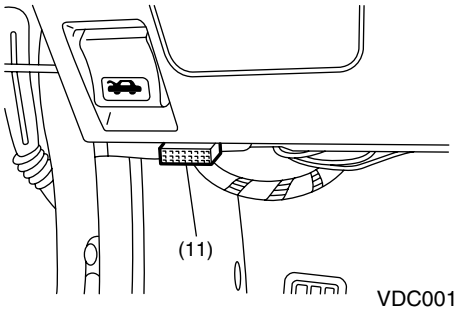
## A: LOCATION



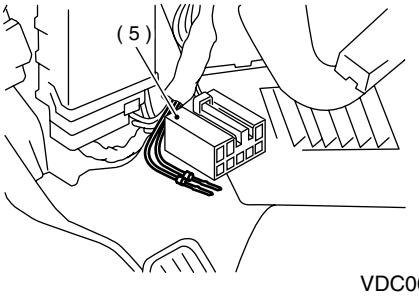

(1) VDC hydraulic control unit (VDCH/U)
(2) Proportioning valve
(3) Engine control module
(4) Master cylinder
(5) Diagnosis connector
(6) ABS warning light
(7) VDC warning light
(8) VDC operating indicator light
(9) VDC OFF indicator light
(10) Steering angle sensor
(11) Data link connector (for SUBARU select monitor)
(12) ABS sensor
(13) Tone wheel
(14) Wheel cylinder
(15) Yaw rate & lateral G sensor
(16) Transmission control module
(17) VDC control module (VDCCM)
(18) Pressure sensor
(19) VDC OFF switch



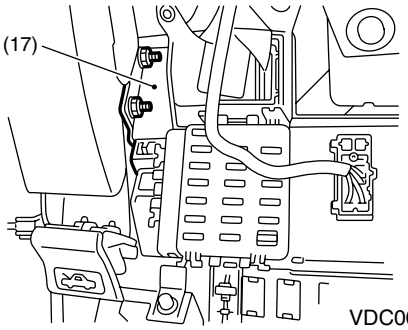
VDC00156



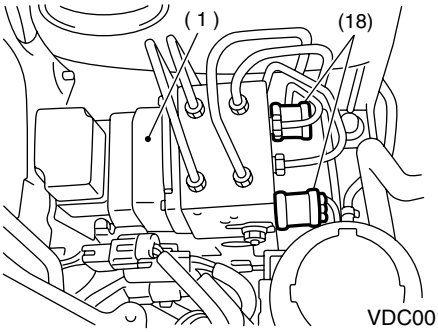
VDC00118



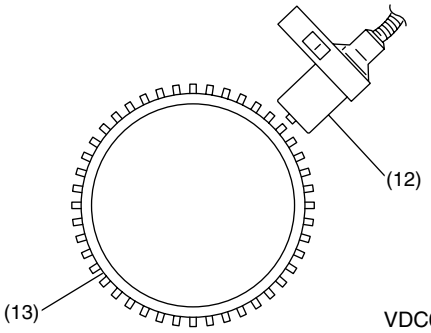
VDC00119



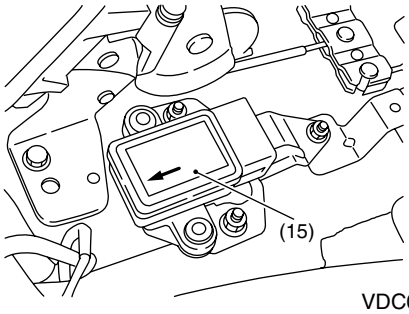
VDC00157



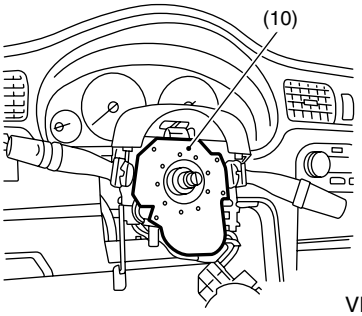
VDC00121



VDC00122



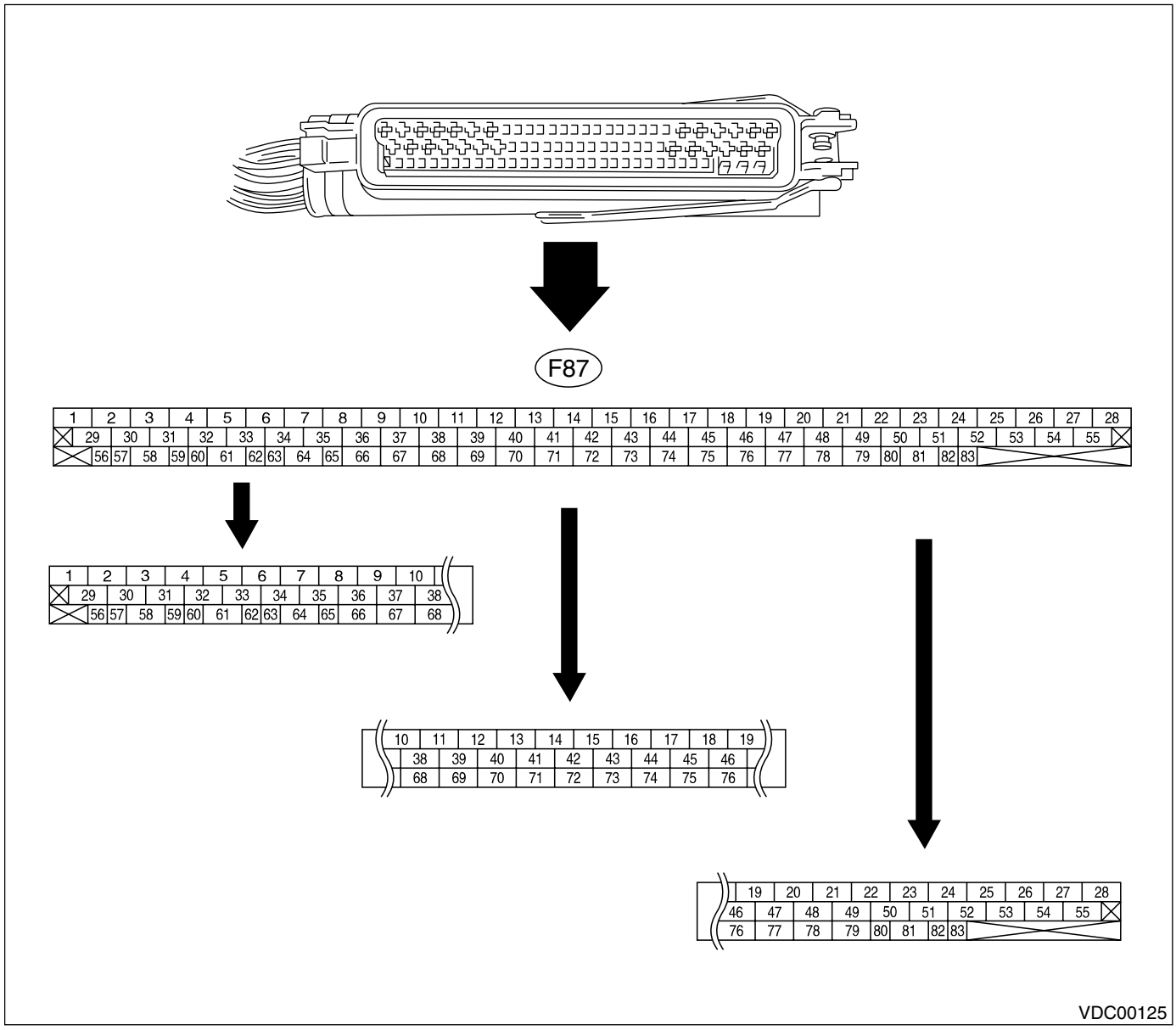
VDC00123



VDC00124

# 5. Control Module I/O Signal

## A: ELECTRICAL SPECIFICATION

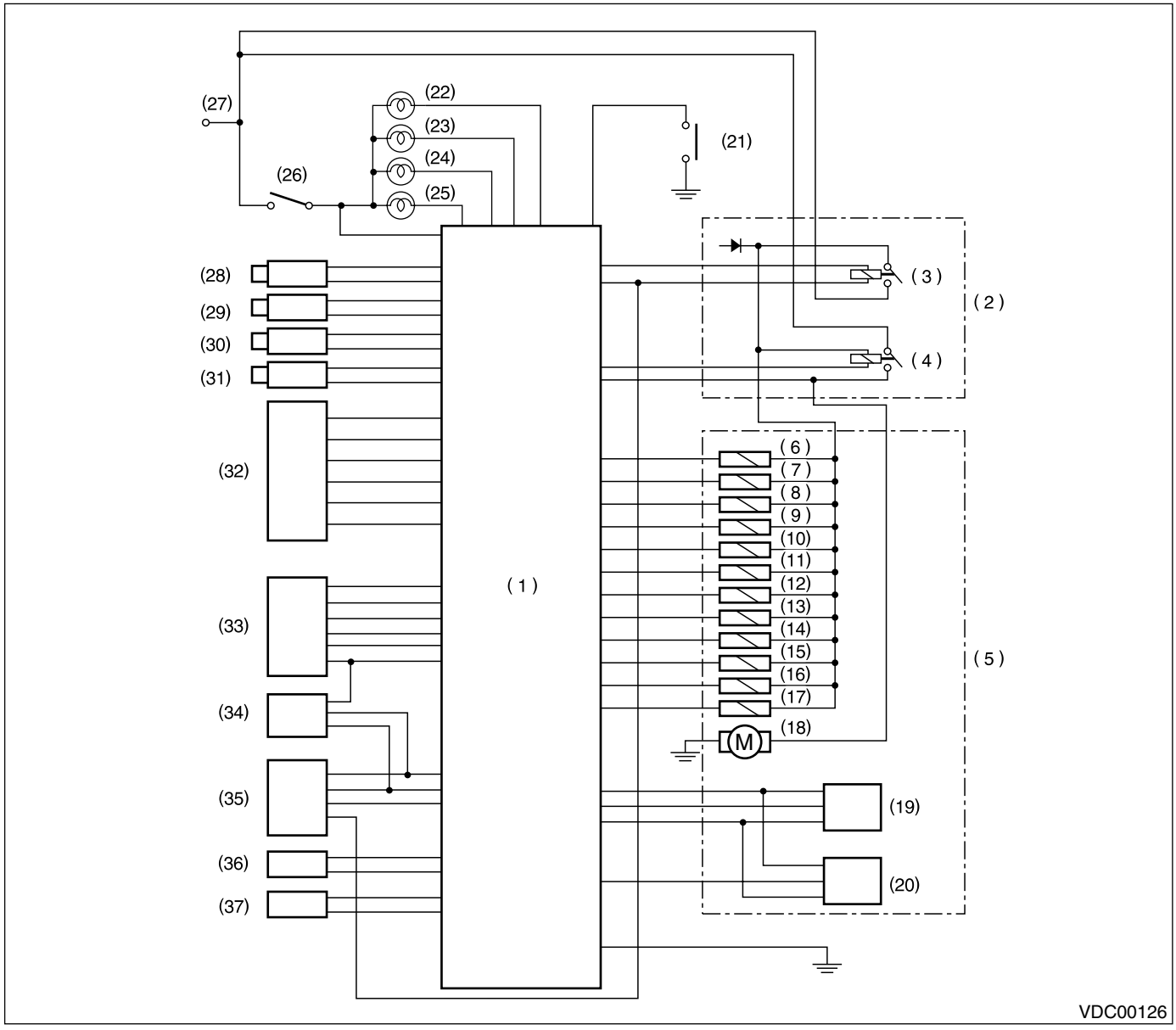



NOTE:
- The terminal numbers in the VDC control module connector are as shown in the figure.
- When the connector is removed from the VDCCM, the connector switch closes the circuit between terminal No. 53, No. 54 and No. 55. The ABS and VDC warning light illuminate.

| Contents | | Terminal No. (+)—(−) | Input/Output signal<br>Measured value and measuring condition |
|---|---|---|---|
| Ignition switch | | 28—1 | 10 — 15 V when ignition switch is ON. |
| ABS sensor (Wheel speed sensor) | Front left wheel | 49—19 | 0.12 — 1 V (When it is 20 Hz.) |
| | Front right wheel | 14—15 | |
| | Rear left wheel | 16—17 | |
| | Rear right wheel | 18—46 | |
| Yaw rate and lateral G sensor | Output (Lateral G sensor) | 70—64 | 2.2 — 2.8 V when vehicle is in horizontal position. |
| | Power supply | 63—64 | 10 — 15 V when ignition switch is ON. |
| | Output (Yaw rate sensor) | 65—64 | Wave form <Ref. to VDC-19, WAVEFORM, MEASUREMENT, Control Module I/O Signal.> |
| | Reference (Yaw rate sensor) | 66—64 | 2.1 — 2.9 V |
| | Test | 67—64 | 40 ms pulse signal with a cycle of 5 — 1 V <Ref. to VDC-19, WAVEFORM, MEASUREMENT, Control Module I/O Signal.> |
| | Ground | 64 | — |
| CAN communication line (+) | | 81—1 | 2.5 — 1.5 V pulse signal <Ref. to VDC-19, WAVEFORM, MEASUREMENT, Control Module I/O Signal.> |
| CAN communication line (−) | | 83—1 | 3.5 — 2.5 V pulse signal <Ref. to VDC-19, WAVEFORM, MEASUREMENT, Control Module I/O Signal.> |
| Engine module | AET | 21—1 | 1.5 V or less (ABS/TCS/VDC operating); 10 V or more (ABS/TCS/VDC not operating) |
| | AEB | 43—1 | 10 — 15 V (Ignition switch ON and vehicle at standstill) |
| | AEC | 8—1 | 10 — 15 V (Ignition switch ON and vehicle at standstill) |
| | EAS | 75—1 | 3.5 — 1.5 V pulse signal |
| | EAC | 45—1 | 3.5 — 1.5 V pulse signal |
| | Revolution | 9—1 | 10 — 1.5 V pulse signal |
| Relay box | Valve relay power supply | 27—1 | 10 — 15 V when ignition switch is ON. |
| | Valve relay coil | 47—1 | Less than 1.5 V when ignition switch is ON. |
| | Motor relay coil | 22—1 | 1.5 V or less (ABS/TCS/VDC operating); 10 V or more (ABS/TCS/VDC not operating) |
| | Motor monitoring | 10—1 | 10 V or less (ABS/TCS/VDC operating); 1.5 V or more (ABS/TCS/VDC not operating) |
| Hydraulic control unit | Front left inlet solenoid valve | 24—1 | 10 — 15 V when the valve is OFF and less than 1.5 V when the valve is ON. |
| | Front right inlet solenoid valve | 30—1 | |
| | Rear left inlet solenoid valve | 31—1 | |
| | Rear right inlet solenoid valve | 23—1 | |
| | Front left outlet solenoid valve | 51—1 | |
| | Front right outlet solenoid valve | 3—1 | |
| | Rear left outlet solenoid valve | 4—1 | |
| | Rear right outlet solenoid valve | 50—1 | |
| | Primary cut solenoid valve | 25—1 | |
| | Secondary cut solenoid valve | 26—1 | |
| | Primary suction solenoid valve | 29—1 | |
| | Secondary suction solenoid valve | 2—1 | |
| Pressure sensor | Power supply | 78—76 | 4.75 — 5.25 V when ignition switch is ON. |
| | Primary output | 77—76 | 0.48 — 0.72 V (Brake pedal released) |
| | Ground | 76 | — |
| | Secondary output | 36—76 | 0.48 — 0.72 V (Brake pedal released) |
| VDC operation indicator light | | 32—1 | Less than 1.5 V during 1.5 seconds when ignition switch is ON, and 10 — 15 V after 1.5 seconds. |
| VDC OFF indicator light | | 52—1 | 1.5 V or less (Ignition switch ON and VDC OFF indicator light ON); 10 — 15 V (Ignition switch ON and VDC OFF indicator light OFF) |

| | | | |
|---|---|---|---|
| VDC warning light | | 53—1 | Less than 1.5 V during 1.5 seconds when ignition switch is ON, and 10 — 15 V after 1.5 seconds. |
| ABS warning light | | 54—1 | Less than 1.5 V during 1.5 seconds when ignition switch is ON, and 10 — 15 V after 1.5 seconds. |
| Diagnosis connector | Terminal No. 8 | 13 | — |
| | Terminal No. 5 | 74 | — |
| Select monitor | Data is received. | 11—1 | Less than 1.5 V when no data is received. |
| | Data is sent. | 38—1 | 4.75 — 5.25 V when no data is sent. |
| VDC OFF switch | | 40—1 | 10 — 15 V when ignition switch is ON.<br>0 V (While pushing the switch) |
| Ground | | 1 | — |
| Ground | | 55 | — |

## B: SCHEMATIC



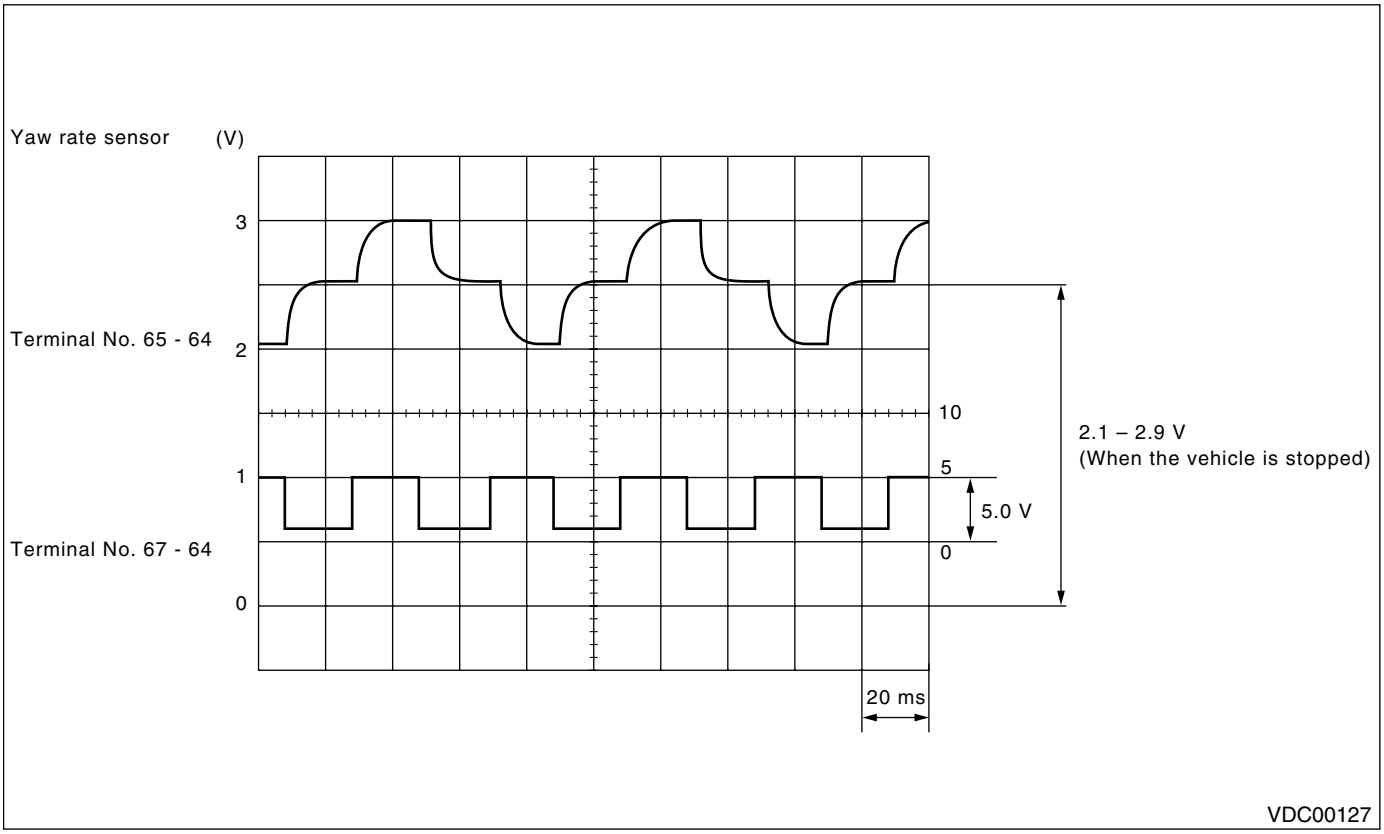

(1) VDC control module
(2) Relay box
(3) Valve relay
(4) Motor relay
(5) Hydraulic control unit
(6) Front left inlet solenoid valve
(7) Front left outlet solenoid valve
(8) Front right inlet solenoid valve
(9) Front right outlet solenoid valve
(10) Rear left inlet solenoid valve
(11) Rear left outlet solenoid valve
(12) Rear right inlet solenoid valve
(13) Rear right outlet solenoid valve
(14) Primary suction solenoid valve
(15) Primary cut solenoid valve
(16) Secondary suction solenoid valve
(17) Secondary cut solenoid valve
(18) Motor
(19) Primary pressure sensor
(20) Secondary pressure sensor
(21) VDC OFF switch
(22) ABS warning light
(23) VDC warning light
(24) VDC operating indicator light
(25) VDC OFF indicator light
(26) Ignition relay
(27) BATTERY
(28) Front left ABS sensor
(29) Front right ABS sensor
(30) Rear left ABS sensor
(31) Rear right ABS sensor
(32) Yaw rate and lateral G sensor
(33) Engine control module
(34) Transmission control module
(35) Steering angle sensor
(36) Diagnosis connector
(37) Data link connector

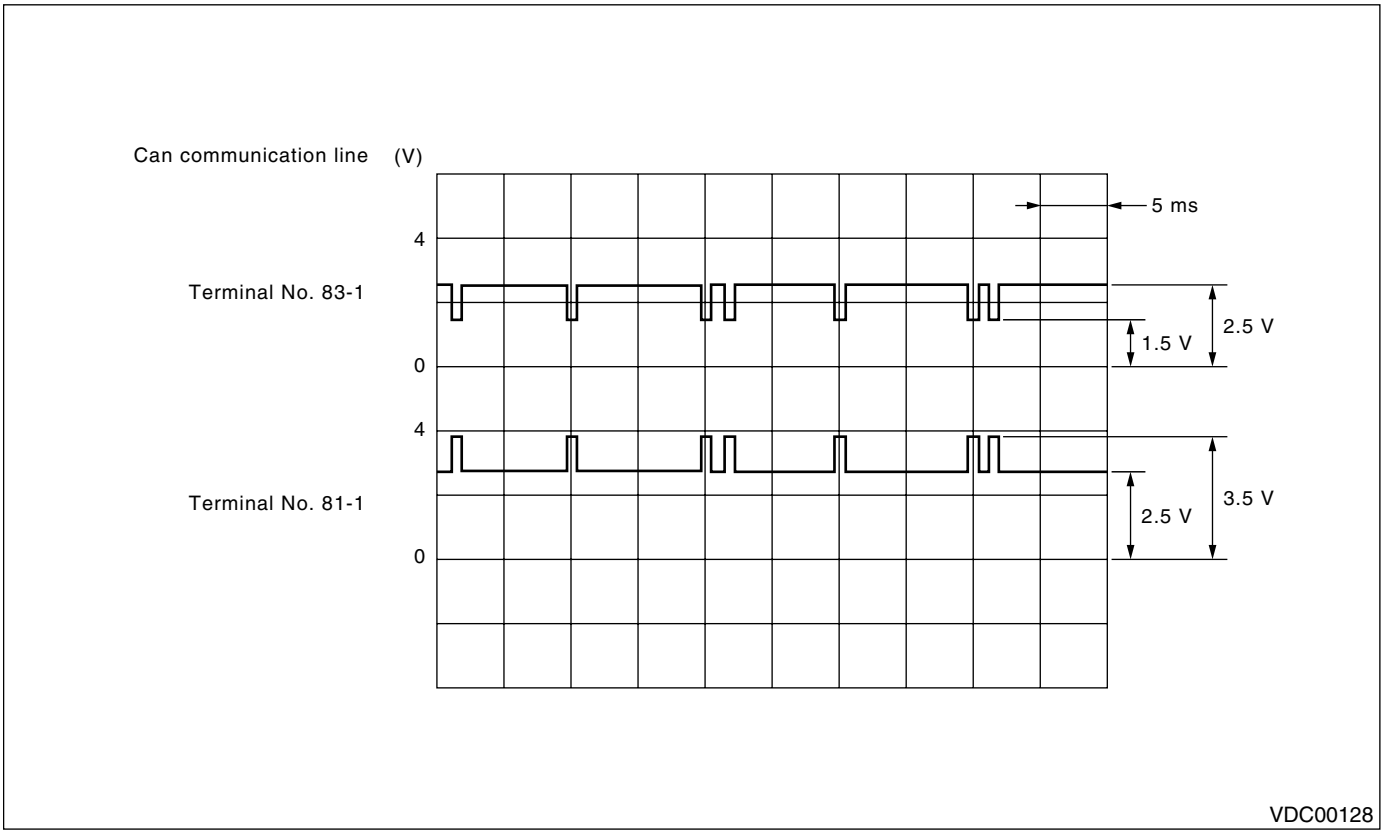
## C: MEASUREMENT

Measure input/output signal voltage.

NOTE:
Measure with the VDCCM connector cover removed. <Ref. to VDC-20, VDCCM Connector Cover.>

## 1. WAVEFORM


Yaw rate sensor
(V)
3
2
1
0
Terminal No. 65 - 64
Terminal No. 67 - 64
10
5
0
5.0 V
2.1 – 2.9 V
(When the vehicle is stopped)
20 ms
VDC00127

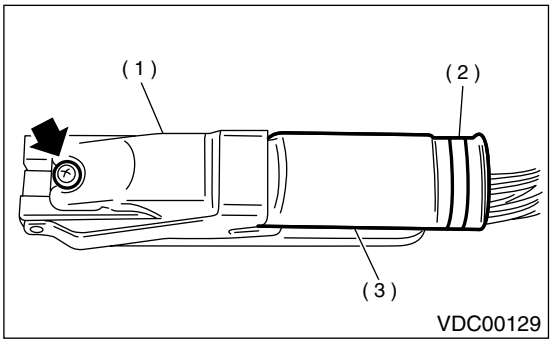

Can communication line
(V)
4
0
4
0
Terminal No. 83-1
Terminal No. 81-1
5 ms
2.5 V
1.5 V
3.5 V
2.5 V
VDC00128

# 6. VDCCM Connector Cover

## A: REMOVE

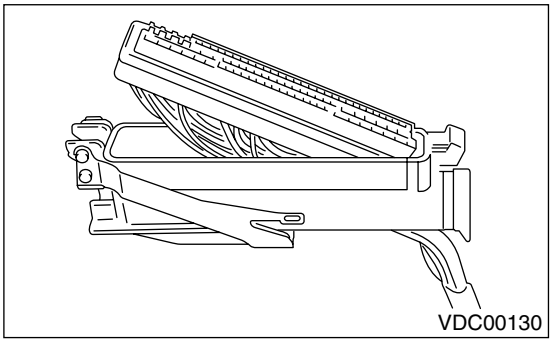
1) Turn ignition switch OFF.
2) Disconnect connector from VDCCM.
3) Remove band.
4) Remove cable clamp cover.
5) Remove screws securing connector cover.

**CAUTION:**
**Do not allow harness to catch on adjacent parts during installation.**




(1) Connector cover
(2) Band
(3) Cable clamp cover

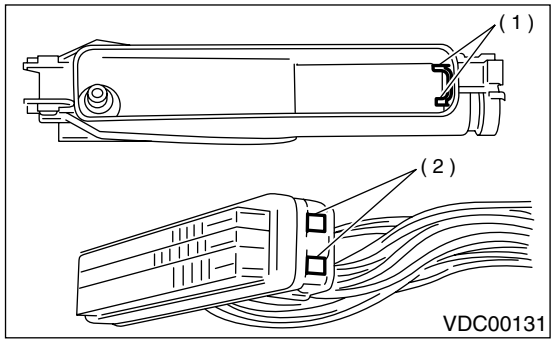
6) Remove connector cover.




## B: INSTALLATION

Install in the reverse order of removal.

NOTE:
Align connector cover rib with connector hole before installation.



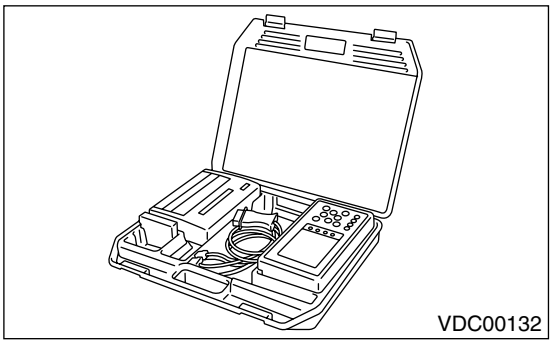

(1) Rib
(2) Hole

# 7. Subaru Select Monitor

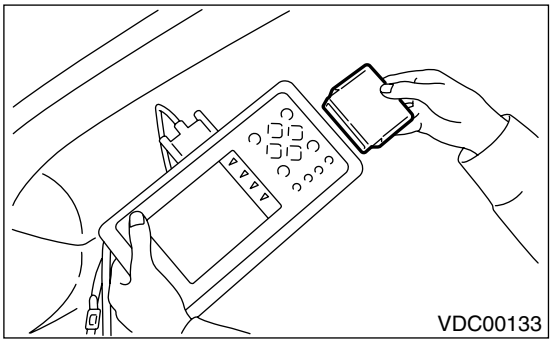
## A: OPERATION

### 1. READ DIAGNOSTIC TROUBLE CODE

1) Prepare Subaru Select Monitor kit.

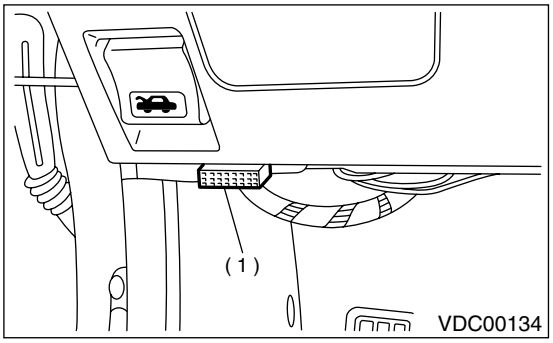



2) Connect diagnosis cable to Subaru Select Monitor.
3) Insert cartridge into Subaru Select Monitor. <Ref. to VDC-10, SPECIAL TOOLS, PREPARATION TOOL, General Description.>




4) Connect Subaru Select Monitor to data link connector.

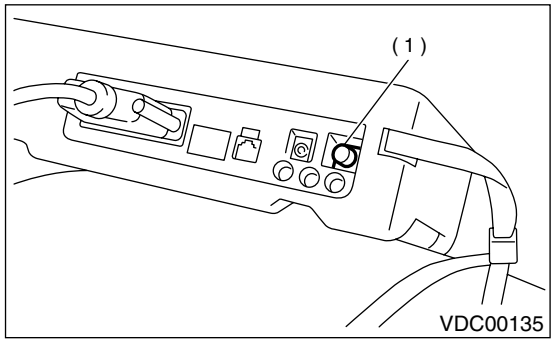
(1) Data link connector located in the lower portion of the instrument panel (on the driver's side).




(1) Data link connector

(2) Connect diagnosis cable to data link connector.

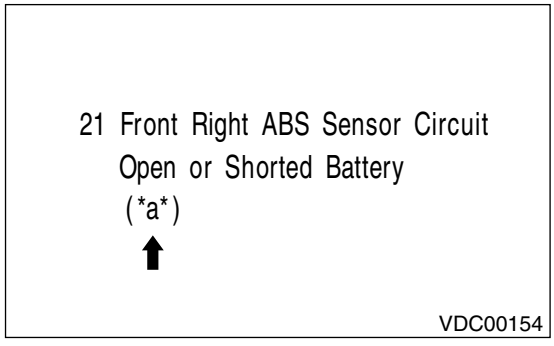
5) Turn ignition switch to ON (engine OFF) and Subaru Select Monitor switch to ON.




(1) Power switch

6) On the «Main Menu» display screen, select the {Each System Check} and press the [YES] key.
7) On the «System Selection Menu» display screen, select the {Brake Control System} and press the [YES] key.
8) Press the [YES] key after displayed the information of engine type.
9) On the «Brake Diagnosis» display screen, select the {Diagnostic Code(s) Display} and press the [YES] key.
10) On the «Diagnostic Code(s) Display» display screen, select the {Current Diagnostic Code(s)} or {History Diagnostic Code(s)} and press the [YES] key.

NOTE:
• For detailed operation procedure, refer to the SUBARU SELECT MONITOR OPERATION MANUAL.
• For detailed concerning diagnostic trouble codes, refer to the DIAGNOSTIC TROUBLE CODE LIST.
<Ref. to VDC-28, List of Diagnostic Trouble Code (DTC).>
• A maximum of 3 trouble codes are displayed in order of occurrence.




*a* refers to the troubles in order of occurrence (Latest, Old, Older).

| Display screen | Contents to be monitored |
|---|---|
| Latest | The most recent trouble code appears on the select monitor display. |
| Old | The second most recent trouble code appears on the select monitor display. |
| Older | The third most recent trouble code appears on the select monitor display. |

## 2. READ CURRENT DATA

1) On the «Main Menu» display screen, select {Each System Check} and press the «YES» key.
2) On the «System Selection Menu» display screen, select {Brake Control System} and press «YES» key.
3) Press the «YES» key after the VDC type is displayed.
4) On the «Brake Control Diagnosis» display screen, select {Current Data Display & Save} and press the «YES» key.
5) On the «Data Display Menu» display screen, select {Data Display} and press the «YES» key.
6) Using the scroll key, move the display screen up or down until the desired data is shown.

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

| Display screen | Contents to be monitored. | Unit of measure |
|---|---|---|
| FR wheel speed | Wheel speed detected by the Front Right ABS sensor is displayed. | km/h or MPH |
| FL wheel speed | Wheel speed detected by the Front Left ABS sensor is displayed. | km/h or MPH |
| RR wheel speed | Wheel speed detected by the Rear Right ABS sensor is displayed. | km/h or MPH |
| RL wheel speed | Wheel speed detected by the Rear Left ABS sensor is displayed. | km/h or MPH |
| Steering angle sensor | Steering wheel angle detected by the steering angle sensor is displayed. | deg |
| Yaw rate sensor | Vehicle's angular velocity detected by the yaw rate sensor is displayed. | deg/s |
| Lateral G sensor | Vehicle's lateral acceleration detected by the lateral G sensor is displayed. | V |
| Pressure sensor 1 | Brake fluid pressure detected by the primary pressure sensor is displayed. | V |
| Pressure sensor 2 | Brake fluid pressure detected by the secondary pressure sensor is displayed. | V |
| Longitudinal G sensor | Longitudinal G sensor is not equipped on vehicles after '00MY. But longitudinal G sensor will remain on monitor and 0 V will be displayed. | V |
| ABS CM power voltage | Voltage supplied to VDCCM is displayed. | V |
| Torque driver requires | Engine torque requested by the driver is displayed. | N·m |
| Current torque | Current engine torque is displayed. | N·m |
| Valve relay signal | Drive condition of the valve relay is displayed. | ON or OFF |
| Motor relay signal | Drive condition of the motor relay is displayed. | ON or OFF |
| VDC OFF lamp | ON operation of the VDC OFF indicator lamp is displayed. | ON or OFF |
| Motor relay monitor | Operating condition of the motor relay is displayed. | High or Low |
| PW signal | Accelerator position signal is displayed. | 1 or 0 |
| AET signal | Engine control start signal is displayed. | OPEN or GND |
| AEB signal | Engine control signal is displayed. | OPEN or GND |
| AEC signal | Engine control signal is displayed. | OPEN or GND |
| EAM signal | Engine control command signal is displayed. | 1 or 0 |

NOTE:
For detailed operation procedure, refer to the SUBARU SELECT MONITOR OPERATION MANUAL.

## 3. CLEAR MEMORY MODE

1) On the «Main Menu» display screen, select {2. Each System Check} and press the «YES» key.
2) On the «System Select Menu» display screen, select {Brake System} and press the «YES» key.
3) Press the «YES» key after the engine type is displayed.
4) On the «Brake Control Diagnosis» display screen, select {Clear Memory} and press the «YES» key.
5) When `Done' and `turn ignition switch OFF' are shown on the display screen, turn the Subaru Select Monitor and ignition switch to OFF.

NOTE:
For detailed operation procedure, refer to the SUBARU SELECT MONITOR OPERATION MANUAL.

## 4. FUNCTION CHECK

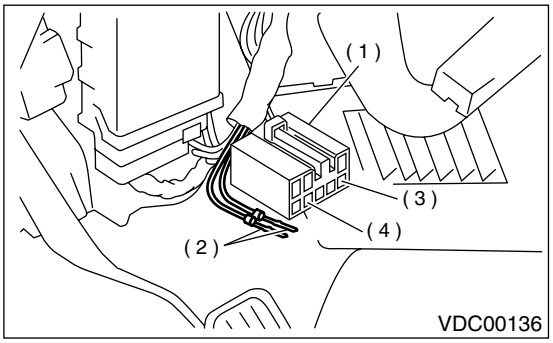
| Display screen | Contents to be monitored | Index No. |
|---|---|---|
| ABS sequence control mode | Perform ABS sequence control by operating valve and pump motor sequentially. | <Ref. to VDC-16, ABS Sequence Control.> |
| VDC check mode | Perform VDC sequence control by operating valve and pump motor sequentially. | <Ref. to VDC-19, VDC Sequence Control.> |
| Set mode St. r. A. Sen. N & Lat. G Sen. Op | Set both the neutral position of the steering angle sensor and the zero “0” point of the lateral G sensor. | <Ref. to VDC-26, Steering Angle Sensor.> |

# 8. Read Diagnostic Trouble Code (DTC)

## A: OPERATION

### 1. WITHOUT SUBARU SELECT MONITOR

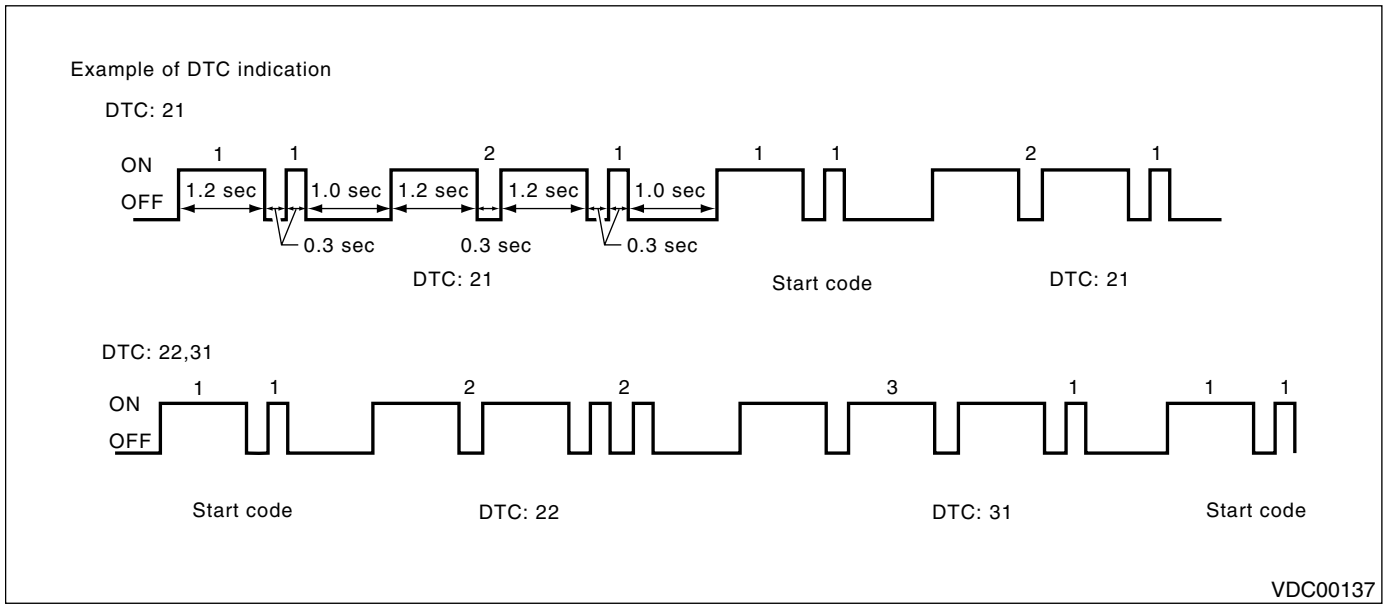
1) Take out diagnosis connector from side of driver's seat heater unit.




(1) Diagnosis connector
(2) Diagnosis terminal
(3) 8 terminal
(4) 5 terminal

2) Turn ignition switch OFF.
3) Connect diagnosis connector terminal 8 to diagnosis terminal.
4) Turn ignition switch ON.
5) ABS warning light is set in the diagnostic mode and blinks to identify diagnostic trouble code (DTC).
6) After the start code (11) is shown, the diagnostic trouble codes (DTCs) will be shown in order of the last information first.
These repeat for a maximum of 5 minutes.

NOTE:
• When there are no diagnostic trouble codes (DTCs) in memory, only the start code (11) is shown.
• When on-board diagnosis of the VDC control module detects a problem, the information (up to a maximum of three) will be stored in the EEP ROM as a diagnostic trouble code (DTC). When there are more than three, the most recent three will be stored. (Stored codes will stay in memory until they are cleared.)




### 2. WITH SUBARU SELECT MONITOR

Refer to SUBARU SELECT MONITOR for information about how to obtain and understand diagnostic trouble codes (DTCs). <Ref. to VDC-<Ref. to VDC-21, Subaru Select Monitor.>, Subaru Select Monitor.>

# 9. Inspection Mode

## A: OPERATION

Reproduce the condition under which the problem has occurred as much as possible.
Drive the vehicle at least ten minutes.

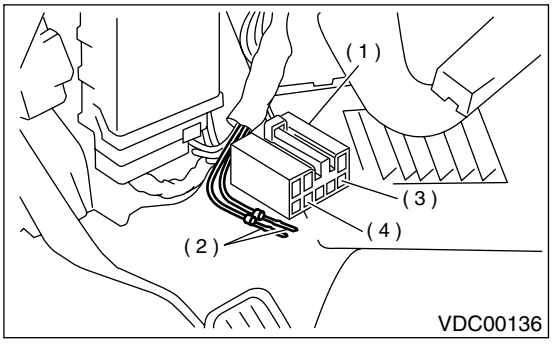
NOTE:
Make sure vehicle does not pull to one side during normal driving.

# 10.Clear Memory Mode

## A: OPERATION

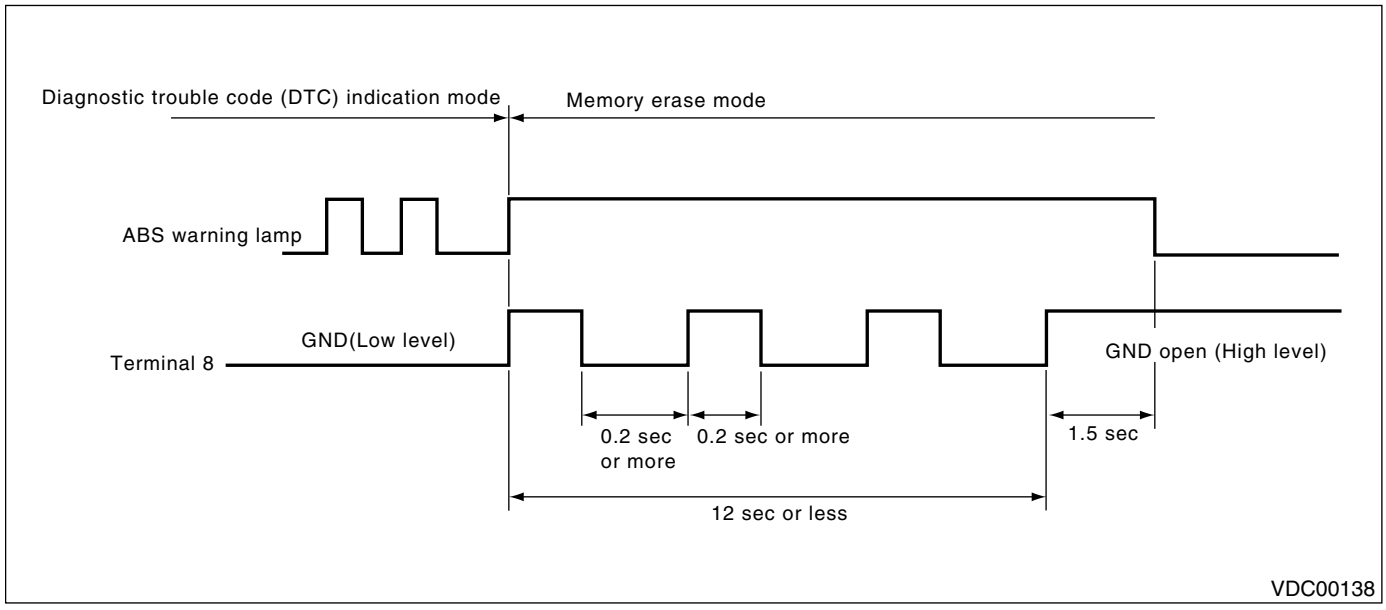
### 1. WITHOUT SUBARU SELECT MONITOR

1) After calling up a diagnostic trouble code (DTC), disconnect diagnosis connector terminal 8 from diagnosis terminal.




(1) Diagnosis connector
(2) Diagnosis terminal
(3) 8 terminal
(4) 5 terminal

2) Repeat 3 times within approx. 12 seconds; connecting and disconnecting terminal 8 and diagnosis terminal for at least 0.2 seconds each time.



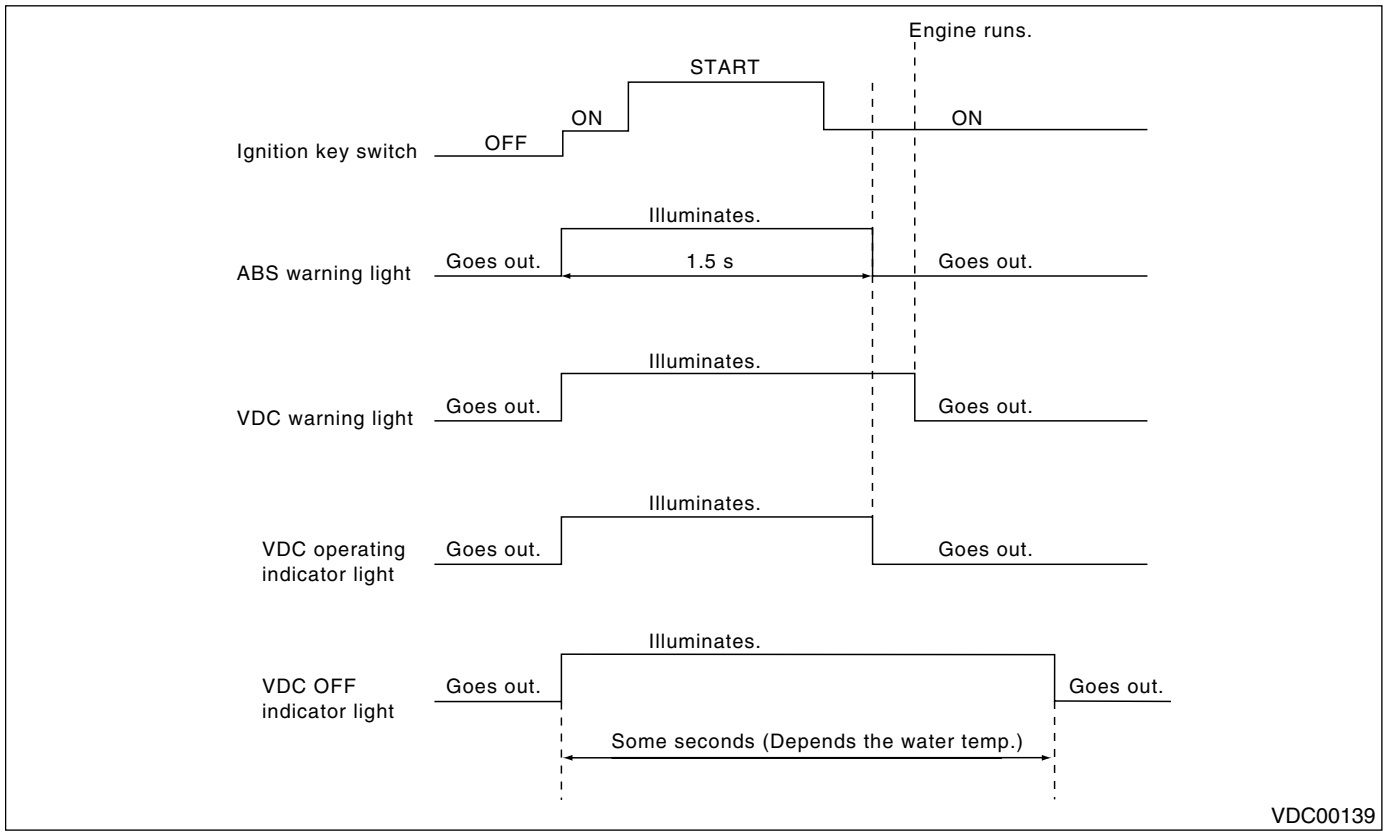

NOTE:
After diagnostics is completed, make sure to clear memory. Make sure only start code (11) is shown after memory is cleared.

### 2. WITH SUBARU SELECT MONITOR

Refer to SUBARU SELECT MONITOR for information about how to clear diagnostic trouble codes (DTCs). <Ref. to VDC-21, Subaru Select Monitor.>

# 11.Warning Light Illumination Pattern

## A: INSPECTION




1) When the warning and/or indicator lights do not illuminate in accordance with this illumination pattern, there must be an electrical malfunction.
2) When the warning and/or indicator lights remain constantly OFF, repair the warning and/or indicator lights circuit or diagnosis circuit. <Ref. to VDC-34, ABS WARNING LIGHT, VDC WARNING LIGHT, VDC OPERATING INDICATOR LIGHT OR VDC OFF INDICATOR LIGHT DOES NOT COME ON., Diagnostics Chart with Diagnosis Connector.>

NOTE:
• Even though the ABS warning light does not go out 1.5 seconds after it illuminates, the VDC system operates normally when the warning light goes out while driving at approximately 12 km/h (7 MPH). However, the Anti-lock brakes do not work while the ABS warning light is illuminated.
• It may take a few minutes for the VDC OFF indicator light to go out when the vehicle is exposed for some time in a low temperature area. This is not a problem because of low engine coolant temperatures.
• If a vehicle wheel is stuck or free-spinning for approximately 1 minute, power transfer fluctuation to the remaining wheels will occur. Power transfer conditions will differ from those occurring during normal vehicle operation. The ABS sensor will detect this condition. The ABS and VDC warning lights will illuminate. If the vehicle is operated with the four wheels lifted off the ground or with the four wheels placed on rollers, the VDCCM will detect a problem with the speed sensor and the ABS and VDC warning lights may illuminate. In this case, there is no abnormality. Clear the diagnostic code from memory.
• When the engine is started and vehicle movement begins, the VDCH/U motor pump and solenoid valve will operate for a few seconds. This permits checking of VDC function. Normal motor pump and solenoid valve operational noise will be heard. Normal brake pedal kick back will be felt when the brake pedal is depressed. In this case, there is no abnormality.

# 12.List of Diagnostic Trouble Code (DTC)

## A: LIST

### 1. WITHOUT SUBARU SELECT MONITOR

| DTC No. | Contents of diagnosis | | Index No. |
|---|---|---|---|
| 11 | Start code<br>• DTC is shown after start code.<br>• Only start code is shown in normal condition. | | — |
| 21 | Abnormal ABS sensor (Open circuit or input voltage too high) | Front right ABS sensor | <Ref. to VDC-48, DTC 21 ABNORMAL ABS SENSOR (OPEN CIRCUIT OR INPUT VOLTAGE TOO HIGH) (FRONT RH), Diagnostics Chart with Diagnosis Connector.> |
| 23 | | Front left ABS sensor | <Ref. to VDC-48, DTC 23 ABNORMAL ABS SENSOR (OPEN CIRCUIT OR INPUT VOLTAGE TOO HIGH) (FRONT LH), Diagnostics Chart with Diagnosis Connector.> |
| 25 | | Rear right ABS sensor | <Ref. to VDC-48, DTC 25 ABNORMAL ABS SENSOR (OPEN CIRCUIT OR INPUT VOLTAGE TOO HIGH) (REAR RH), Diagnostics Chart with Diagnosis Connector.> |
| 27 | | Rear left ABS sensor | <Ref. to VDC-50, DTC 27 ABNORMAL ABS SENSOR (OPEN CIRCUIT OR INPUT VOLTAGE TOO HIGH) (REAR LH), Diagnostics Chart with Diagnosis Connector.> |
| 22 | Abnormal ABS sensor (Abnormal ABS sensor signal) | Front right ABS sensor | <Ref. to VDC-54, DTC 22 ABNORMAL ABS SENSOR (ABNORMAL ABS SENSOR SIGNAL) (FRONT RH), Diagnostics Chart with Diagnosis Connector.> |
| 24 | | Front left ABS sensor | <Ref. to VDC-54, DTC 24 ABNORMAL ABS SENSOR (ABNORMAL ABS SENSOR SIGNAL) (FRONT LH), Diagnostics Chart with Diagnosis Connector.> |
| 26 | | Rear right ABS sensor | <Ref. to VDC-54, DTC 26 ABNORMAL ABS SENSOR (ABNORMAL ABS SENSOR SIGNAL) (REAR RH), Diagnostics Chart with Diagnosis Connector.> |
| 28 | | Rear left ABS sensor | <Ref. to VDC-56, DTC 28 ABNORMAL ABS SENSOR (ABNORMAL ABS SENSOR SIGNAL) (REAR LH), Diagnostics Chart with Diagnosis Connector.> |
| 29 | | Any one of four | <Ref. to VDC-60, DTC 29 ABNORMAL ABS SENSOR SIGNAL (ANY ONE OF FOUR), Diagnostics Chart with Diagnosis Connector.> |

| DTC No. | Contents of diagnosis | | Index No. |
|---|---|---|---|
| 31 | Abnormal solenoid valve circuit(s) | Front right inlet valve | <Ref. to VDC-63, DTC 31 ABNORMAL INLET AND CUT SOLENOID VALVE CIRCUIT(S) (FRONT RH INLET), Diagnostics Chart with Diagnosis Connector.> |
| 32 | | Front right outlet valve | <Ref. to VDC-68, DTC 32 ABNORMAL OUTLET AND SUCTION SOLENOID VALVE CIRCUIT(S) (FRONT RH OUTLET), Diagnostics Chart with Diagnosis Connector.> |
| 33 | | Front left inlet valve | <Ref. to VDC-63, DTC 33 ABNORMAL INLET AND CUT SOLENOID VALVE CIRCUIT(S) (FRONT LH INLET), Diagnostics Chart with Diagnosis Connector.> |
| 34 | | Front left outlet valve | <Ref. to VDC-68, DTC 34 ABNORMAL OUTLET AND SUCTION SOLENOID VALVE CIRCUIT(S) (FRONT LH OUTLET), Diagnostics Chart with Diagnosis Connector.> |
| 35 | | Rear right inlet valve | <Ref. to VDC-63, DTC 35 ABNORMAL INLET AND CUT SOLENOID VALVE CIRCUIT(S) (REAR RH INLET), Diagnostics Chart with Diagnosis Connector.> |
| 36 | | Rear right outlet valve | <Ref. to VDC-68, DTC 36 ABNORMAL OUTLET AND SUCTION SOLENOID VALVE CIRCUIT(S) (REAR RH OUTLET), Diagnostics Chart with Diagnosis Connector.> |
| 37 | | Rear left inlet valve | <Ref. to VDC-63, DTC 37 ABNORMAL INLET AND CUT SOLENOID VALVE CIRCUIT(S) (REAR LH INLET), Diagnostics Chart with Diagnosis Connector.> |
| 38 | | Rear left outlet valve | <Ref. to VDC-68, DTC 38 ABNORMAL OUTLET AND SUCTION SOLENOID VALVE CIRCUIT(S) (REAR LH OUTLET), Diagnostics Chart with Diagnosis Connector.> |
| 61 | | Primary cut valve | <Ref. to VDC-63, DTC 61 ABNORMAL INLET AND CUT SOLENOID VALVE CIRCUIT(S) (PRIMARY CUT), Diagnostics Chart with Diagnosis Connector.> |
| 62 | | Secondary cut valve | <Ref. to VDC-64, DTC 62 ABNORMAL INLET AND CUT SOLENOID VALVE CIRCUIT(S) (SECONDARY CUT), Diagnostics Chart with Diagnosis Connector.> |
| 63 | | Primary suction valve | <Ref. to VDC-68, DTC 63 ABNORMAL OUTLET AND SUCTION SOLENOID VALVE CIRCUIT(S) (PRIMARY SUCTION), Diagnostics Chart with Diagnosis Connector.> |
| 64 | | Secondary suction valve | <Ref. to VDC-70, DTC 64 ABNORMAL OUTLET AND SUCTION SOLENOID VALVE CIRCUIT(S) (SECONDARY SUCTION), Diagnostics Chart with Diagnosis Connector.> |
| 41 | Abnormal VDC control module | | <Ref. to VDC-74, DTC 41 ABNORMAL VDC CONTROL MODULE, Diagnostics Chart with Diagnosis Connector.> |
| 42 | Source voltage is abnormal. | | <Ref. to VDC-76, DTC 42 SOURCE VOLTAGE IS ABNORMAL., Diagnostics Chart with Diagnosis Connector.> |
| 43 | Faulty VDCCM-ECM communication line | | <Ref. to VDC-78, DTC 43 FAULTY VDCCM — ECM COMMUNICATION LINE, Diagnostics Chart with Diagnosis Connector.> |
| 44 | A communication with AT control abnormal | | <Ref. to VDC-82, DTC 44 A COMMUNICATION WITH AT CONTROL ABNORMAL, Diagnostics Chart with Diagnosis Connector.> |
| 45 | Control module out of specification | | <Ref. to VDC-84, DTC 45 CONTROL MODULE OUT OF SPECIFICATION, Diagnostics Chart with Diagnosis Connector.> |
| 46 | Abnormal voltage of 5 V power supply | | <Ref. to VDC-86, DTC 46 ABNORMAL VOLTAGE OF 5 V POWER SUPPLY, Diagnostics Chart with Diagnosis Connector.> |
| 47 | Faulty CAN communication line | | <Ref. to VDC-88, DTC 47 FAULTY CAN COMMUNICATION LINE, Diagnostics Chart with Diagnosis Connector.> |
| 48 | Faulty ECM-VDCCM communication line | | <Ref. to VDC-92, DTC 48 FAULTY ECM — VDCCM COMMUNICATION LINE, Diagnostics Chart with Diagnosis Connector.> |
| 49 | Abnormal engine speed signal | | <Ref. to VDC-94, DTC 49 ABNORMAL ENGINE SPEED SIGNAL, Diagnostics Chart with Diagnosis Connector.> |
| 51 | Abnormal valve relay | | <Ref. to VDC-96, DTC 51 ABNORMAL VALVE RELAY, Diagnostics Chart with Diagnosis Connector.> |

| DTC No. | Contents of diagnosis | Index No. |
|---|---|---|
| 52 | Abnormal motor and/or motor relay | <Ref. to VDC-102, DTC 52 ABNORMAL MOTOR AND/OR MOTOR RELAY, Diagnostics Chart with Diagnosis Connector.> |
| 71 | Abnormal steering angle sensor | <Ref. to VDC-106, DTC 71 ABNORMAL STEERING ANGLE SENSOR, Diagnostics Chart with Diagnosis Connector.> |
| 72 | Abnormal yaw rate sensor | <Ref. to VDC-110, DTC 72 ABNORMAL YAW RATE SENSOR, Diagnostics Chart with Diagnosis Connector.> |
| 73 | Abnormal lateral G sensor | <Ref. to VDC-114, DTC 73 ABNORMAL LATERAL G SENSOR, Diagnostics Chart with Diagnosis Connector.> |
| 74 | Abnormal pressure sensor | <Ref. to VDC-118, DTC 74 ABNORMAL PRESSURE SENSOR, Diagnostics Chart with Diagnosis Connector.> |

If any of the following multiple diagnostic trouble codes (DTCs) are present in memory, check the area corresponding to the first diagnostic trouble code (DTC). If no problem is detected, check the areas corresponding to the other diagnostic trouble codes (DTCs) in order of their appearance.

| Combination of DTC No. | Problem area | Index No. |
|---|---|---|
| 46, 74 | (F87) — No. 78, 68 or 69 lead circuit is shorted to ground or battery. | <Ref. to VDC-86, DTC 46 ABNORMAL VOLTAGE OF 5 V POWER SUPPLY, Diagnostics Chart with Diagnosis Connector.> |
| 44, 71 | (F87) — No. 83 or 81 lead circuit is open. | <Ref. to VDC-106, DTC 71 ABNORMAL STEERING ANGLE SENSOR, Diagnostics Chart with Diagnosis Connector.> |
| 51, 48, 71 | (F87) — No. 27 lead circuit is open. | <Ref. to VDC-106, DTC 71 ABNORMAL STEERING ANGLE SENSOR, Diagnostics Chart with Diagnosis Connector.> |
| 71, 51, 44 | (F87) — No. 27 lead circuit is open. | <Ref. to VDC-106, DTC 71 ABNORMAL STEERING ANGLE SENSOR, Diagnostics Chart with Diagnosis Connector.> |
| 72, 73 | (F87) — No. 63 lead circuit is open. | <Ref. to VDC-114, DTC 73 ABNORMAL LATERAL G SENSOR, Diagnostics Chart with Diagnosis Connector.> |

## 2. WITH SUBARU SELECT MONITOR

| DTC No. | Display screen | Contents of diagnosis | Index No. |
|---|---|---|---|
| — | Communication for initializing impossible | Select monitor communication failure | <Ref. to VDC-122, COMMUNICATION FOR INITIALIZING IMPOSSIBLE (SELECT MONITOR COMMUNICATION FAILURE), Diagnostics Chart with Select Monitor.> |
| — | No trouble code | Although no diagnostic trouble code appears on the select monitor display, the ABS warning light and/or VDC warning light and/or VDC operating indicator light and/or VDC OFF indicator light remains on. | <Ref. to VDC-34, Diagnostics Chart with Diagnosis Connector.> |
| — | No trouble code | Although no diagnostic trouble code appears on the select monitor display, the ABS warning light and/or VDC warning light and/or VDC operating indicator light and/or VDC OFF indicator light remains off. | <Ref. to VDC-34, Diagnostics Chart with Diagnosis Connector.> |
| 21 | Front right ABS sensor circuit open or shorted battery | Open or short circuit in front right ABS sensor circuit | <Ref. to VDC-125, DTC 21 FRONT RIGHT ABS SENSOR CIRCUIT OPEN OR SHORTED BATTERY, Diagnostics Chart with Select Monitor.> |
| 22 | Front right ABS sensor signal | Front right ABS sensor abnormal signal | <Ref. to VDC-130, DTC 22 FRONT RIGHT ABS SENSOR SIGNAL, Diagnostics Chart with Select Monitor.> |

| DTC No. | Display screen | Contents of diagnosis | Index No. |
|---|---|---|---|
| 23 | Front left ABS sensor circuit open or shorted battery | Open or short circuit in front left ABS sensor circuit | <Ref. to VDC-125, DTC 23 FRONT LEFT ABS SENSOR CIRCUIT OPEN OR SHORTED BATTERY, Diagnostics Chart with Select Monitor.> |
| 24 | Front left ABS sensor signal | Front left ABS sensor abnormal signal | <Ref. to VDC-130, DTC 24 FRONT LEFT ABS SENSOR SIGNAL, Diagnostics Chart with Select Monitor.> |
| 25 | Rear right ABS sensor circuit open or shorted battery | Open or short circuit in rear right ABS sensor circuit | <Ref. to VDC-125, DTC 25 REAR RIGHT ABS SENSOR CIRCUIT OPEN OR SHORTED BATTERY, Diagnostics Chart with Select Monitor.> |
| 26 | Rear right ABS sensor signal | Rear right ABS sensor abnormal signal | <Ref. to VDC-130, DTC 26 REAR RIGHT ABS SENSOR SIGNAL, Diagnostics Chart with Select Monitor.> |
| 27 | Rear left ABS sensor circuit open or shorted battery | Open or short circuit in rear left ABS sensor circuit | <Ref. to VDC-126, DTC 27 REAR LEFT ABS SENSOR CIRCUIT OPEN OR SHORTED BATTERY, Diagnostics Chart with Select Monitor.> |
| 28 | Rear left ABS sensor signal | Rear left ABS sensor abnormal signal | <Ref. to VDC-132, DTC 28 REAR LEFT ABS SENSOR SIGNAL, Diagnostics Chart with Select Monitor.> |
| 29 | Any one of four ABS sensor signal | Abnormal ABS sensor signal on any one of four sensor | <Ref. to VDC-138, DTC 29 ANY ONE OF FOUR ABS SENSOR SIGNAL, Diagnostics Chart with Select Monitor.> |
| 31 | FR hold valve malfunction | Front right inlet solenoid valve | <Ref. to VDC-141, DTC 31 FR HOLD VALVE MALFUNCTION (FRONT RIGHT INLET VALVE MALFUNCTION), Diagnostics Chart with Select Monitor.> |
| 32 | FR pressure reducing valve malfunction | Front right outlet solenoid valve malfunction | <Ref. to VDC-146, DTC 32 FR PRESSURE REDUCING VALVE MALFUNCTION (FRONT RIGHT OUTLET VALVE MALFUNCTION), Diagnostics Chart with Select Monitor.> |
| 33 | FL hold valve malfunction | Front left inlet solenoid valve malfunction | <Ref. to VDC-141, DTC 33 FL HOLD VALVE MALFUNCTION (FRONT LEFT INLET VALVE MALFUNCTION), Diagnostics Chart with Select Monitor.> |
| 34 | FL pressure reducing valve malfunction | Front left outlet solenoid valve | <Ref. to VDC-146, DTC 34 FL PRESSURE REDUCING VALVE MALFUNCTION (FRONT LEFT OUTLET VALVE MALFUNCTION), Diagnostics Chart with Select Monitor.> |
| 35 | RR hold valve malfunction | Rear right inlet solenoid valve malfunction | <Ref. to VDC-141, DTC 35 RR HOLD VALVE MALFUNCTION (REAR RIGHT INLET VALVE MALFUNCTION), Diagnostics Chart with Select Monitor.> |
| 36 | RR pressure reducing valve malfunction | Rear right outlet solenoid valve | <Ref. to VDC-146, DTC 36 RR PRESSURE REDUCING VALVE MALFUNCTION (REAR RIGHT OUTLET VALVE MALFUNCTION), Diagnostics Chart with Select Monitor.> |
| 37 | RL hold valve malfunction | Rear left inlet solenoid valve malfunction | <Ref. to VDC-141, DTC 37 RL HOLD VALVE MALFUNCTION (REAR LEFT INLET VALVE MALFUNCTION), Diagnostics Chart with Select Monitor.> |
| 38 | RL pressure reducing valve malfunction | Rear left outlet solenoid valve | <Ref. to VDC-146, DTC 38 RL PRESSURE REDUCING VALVE MALFUNCTION (REAR LEFT OUTLET VALVE MALFUNCTION), Diagnostics Chart with Select Monitor.> |
| 41 | Electrical control module | VDC control module malfunction | <Ref. to VDC-152, DTC 41 ELECTRICAL CONTROL MODULE (VDC CONTROL MODULE MALFUNCTION), Diagnostics Chart with Select Monitor.> |
| 42 | Power supply voltage low | Power supply voltage too low | <Ref. to VDC-154, DTC 42 POWER SUPPLY VOLTAGE LOW, Diagnostics Chart with Select Monitor.> |
| 43 | AET communication line malfunction | AET communication line malfunction | <Ref. to VDC-156, DTC 43 AET COMMUNICATION LINE MALFUNCTION, Diagnostics Chart with Select Monitor.> |
| 43 | AEB communication line malfunction | AEB communication line malfunction | <Ref. to VDC-160, DTC 43 AEB COMMUNICATION LINE MALFUNCTION, Diagnostics Chart with Select Monitor.> |
| 43 | AEC communication line malfunction | AEC communication line malfunction | <Ref. to VDC-164, DTC 43 AEC COMMUNICATION LINE MALFUNCTION, Diagnostics Chart with Select Monitor.> |
| 44 | TCM communication circuit | TCM communication line malfunction | <Ref. to VDC-168, DTC 44 TCM COMMUNICATION CIRCUIT, Diagnostics Chart with Select Monitor.> |
| 45 | Incorrect VDC control module | Incorrect VDC control module | <Ref. to VDC-170, DTC 45 INCORRECT VDC CONTROL MODULE, Diagnostics Chart with Select Monitor.> |

| DTC No. | Display screen | Contents of diagnosis | Index No. |
|---|---|---|---|
| 45 | TCM malfunction specifications | TCM malfunction specifications | <Ref. to VDC-171, DTC 45 TCM MALFUNCTION SPECIFICATIONS, Diagnostics Chart with Select Monitor.> |
| 46 | Abnormal voltage of 5 V power supply | Abnormal voltage of 5 V power supply | <Ref. to VDC-172, DTC 46 ABNORMAL VOLTAGE OF 5 V POWER SUPPLY, Diagnostics Chart with Select Monitor.> |
| 47 | Improper CAN communication | CAN communication line malfunction | <Ref. to VDC-174, DTC 47 IMPROPER CAN COMMUNICATION, Diagnostics Chart with Select Monitor.> |
| 48 | Improper EAC communication | EAC communication line malfunction | <Ref. to VDC-178, DTC 48 IMPROPER EAC COMMUNICATION, Diagnostics Chart with Select Monitor.> |
| 48 | EAS communication line grounding shorted | EAS communication line grounding | <Ref. to VDC-180, DTC 48 EAS COMMUNICATION LINE GROUNDING SHORTED, Diagnostics Chart with Select Monitor.> |
| 48 | Erroneous communication from EGI to VDC | Faulty ECM-VDCCM communication line | <Ref. to VDC-182, DTC 48 ERRONEOUS COMMUNICATION FROM EGI TO VDC, Diagnostics Chart with Select Monitor.> |
| 49 | Abnormal engine speed signal | Abnormal engine speed signal | <Ref. to VDC-184, DTC 49 ABNORMAL ENGINE SPEED SIGNAL, Diagnostics Chart with Select Monitor.> |
| 51 | Valve relay | Valve relay malfunction | <Ref. to VDC-186, DTC 51 VALVE RELAY, Diagnostics Chart with Select Monitor.> |
| 51 | Valve relay ON failure | Valve relay ON failure | <Ref. to VDC-192, DTC 51 VALVE RELAY ON FAILURE, Diagnostics Chart with Select Monitor.> |
| 52 | Motor and motor relay OFF failure | Motor and motor relay OFF failure | <Ref. to VDC-196, DTC 52 MOTOR AND MOTOR RELAY OFF FAILURE, Diagnostics Chart with Select Monitor.> |
| 52 | Motor and motor relay ON failure | Motor and motor relay ON failure | <Ref. to VDC-200, DTC 52 MOTOR AND MOTOR RELAY ON FAILURE, Diagnostics Chart with Select Monitor.> |
| 52 | Motor malfunction | Motor malfunction | <Ref. to VDC-204, DTC 52 MOTOR MALFUNCTION, Diagnostics Chart with Select Monitor.> |
| 61 | Normal opening valve 2 malfunction | Primary cut valve malfunction | <Ref. to VDC-141, DTC 61 NORMAL OPENING VALVE 2 MALFUNCTION (PRIMARY CUT VALVE MALFUNCTION), Diagnostics Chart with Select Monitor.> |
| 62 | Normal opening valve 1 malfunction | Secondary cut valve malfunction | <Ref. to VDC-142, DTC 62 NORMAL OPENING VALVE 1 MALFUNCTION (SECONDARY CUT VALVE MALFUNCTION), Diagnostics Chart with Select Monitor.> |
| 63 | Normal closing valve 2 malfunction | Primary suction valve malfunction | <Ref. to VDC-146, DTC 63 NORMAL CLOSING VALVE 2 MALFUNCTION (PRIMARY SUCTION VALVE MALFUNCTION), Diagnostics Chart with Select Monitor.> |
| 64 | Normal closing valve 1 malfunction | Secondary suction valve malfunction | <Ref. to VDC-148, DTC 64 NORMAL CLOSING VALVE 1 MALFUNCTION (SECONDARY SUCTION VALVE MALFUNCTION), Diagnostics Chart with Select Monitor.> |
| 71 | Steering angle sensor offset is too big. | Steering angle sensor offset is too big. | <Ref. to VDC-208, DTC 71 STEERING ANGLE SENSOR OFFSET IS TOO BIG., Diagnostics Chart with Select Monitor.> |
| 71 | Change range of steering angle sensor is too big. | Change range of steering angle sensor is too big. | <Ref. to VDC-210, DTC 71 CHANGE RANGE OF STEERING ANGLE SENSOR IS TOO BIG., Diagnostics Chart with Select Monitor.> |
| 71 | Steering angle sensor malfunction | Steering angle sensor malfunction | <Ref. to VDC-212, DTC 71 STEERING ANGLE SENSOR MALFUNCTION, Diagnostics Chart with Select Monitor.> |
| 71 | No signal from steering angle sensor | No signal from steering angle sensor | <Ref. to VDC-214, DTC 71 NO SIGNAL FROM STEERING ANGLE SENSOR, Diagnostics Chart with Select Monitor.> |
| 72 | Abnormal yaw rate sensor output | Abnormal yaw rate sensor output | <Ref. to VDC-218, DTC 72 ABNORMAL YAW RATE SENSOR OUTPUT, Diagnostics Chart with Select Monitor.> |
| 72 | Voltage inputted to yaw rate sensor exceeds specification. | Voltage inputted to yaw rate sensor exceeds specification. | <Ref. to VDC-220, DTC 72 VOLTAGE INPUTTED TO YAW RATE SENSOR EXCEEDS SPECIFICATION., Diagnostics Chart with Select Monitor.> |
| 72 | Abnormal yaw rate sensor reference voltage | Abnormal yaw rate sensor reference voltage | <Ref. to VDC-222, DTC 72 ABNORMAL YAW RATE SENSOR REFERENCE VOLTAGE, Diagnostics Chart with Select Monitor.> |
| 72 | Change range of yaw rate sensor signal is too big. | Change range of yaw rate sensor signal is too big. | <Ref. to VDC-226, DTC 72 CHANGE RANGE OF YAW RATE SENSOR SIGNAL IS TOO BIG., Diagnostics Chart with Select Monitor.> |

| DTC No. | Display screen | Contents of diagnosis | Index No. |
|---|---|---|---|
| 73 | Lateral G sensor offset is too big. | Lateral G sensor offset is too big. | <Ref. to VDC-229, DTC 73 LATERAL G SENSOR OFFSET IS TOO BIG., Diagnostics Chart with Select Monitor.> |
| 73 | Abnormal lateral G sensor output | Abnormal lateral G sensor output | <Ref. to VDC-229, DTC 73 ABNORMAL LATERAL G SENSOR OUTPUT, Diagnostics Chart with Select Monitor.> |
| 73 | Change range of lateral G sensor is too big. | Change range of lateral G sensor is too big. | <Ref. to VDC-229, DTC 73 CHANGE RANGE OF LATERAL G SENSOR IS TOO BIG., Diagnostics Chart with Select Monitor.> |
| 73 | Excessive lateral G sensor signal | Excessive lateral G sensor signal | <Ref. to VDC-230, DTC 73 EXCESSIVE LATERAL G SENSOR SIGNAL, Diagnostics Chart with Select Monitor.> |
| 73 | Voltage inputted to lateral G sensor exceeds specification. | Voltage inputted to lateral G sensor exceeds specification. | <Ref. to VDC-232, DTC 73 VOLTAGE INPUTTED TO LATERAL G SENSOR EXCEEDS SPECIFICATION., Diagnostics Chart with Select Monitor.> |
| 74 | Voltage inputted to pressure sensor 1 exceeds specification. | Voltage inputted to primary pressure sensor exceeds specification. | <Ref. to VDC-236, DTC 74 VOLTAGE INPUTTED TO PRESSURE SENSOR 1 EXCEEDS SPECIFICATION. (PRIMARY PRESSURE SENSOR), Diagnostics Chart with Select Monitor.> |
| 74 | Voltage inputted to pressure sensor 2 exceeds specification. | Voltage inputted to secondary pressure sensor exceeds specification. | <Ref. to VDC-240, DTC 74 VOLTAGE INPUTTED TO PRESSURE SENSOR 2 EXCEEDS SPECIFICATION. (SECONDARY PRESSURE SENSOR), Diagnostics Chart with Select Monitor.> |
| 74 | Pressure sensor 1 offset is too big. | Primary pressure sensor offset is too big. | <Ref. to VDC-243, DTC 74 PRESSURE SENSOR 1 OFFSET IS TOO BIG. (PRIMARY PRESSURE SENSOR), Diagnostics Chart with Select Monitor.> |
| 74 | Pressure sensor 2 offset is too big. | Secondary pressure sensor offset is too big. | <Ref. to VDC-244, DTC 74 PRESSURE SENSOR 2 OFFSET IS TOO BIG. (SECONDARY PRESSURE SENSOR), Diagnostics Chart with Select Monitor.> |
| 74 | Differential pressure of pressure sensor is too big. | Differential pressure of pressure sensor is too big. | <Ref. to VDC-246, DTC 74 DIFFERENTIAL PRESSURE OF PRESSURE SENSOR IS TOO BIG., Diagnostics Chart with Select Monitor.> |

If any of the following multiple diagnostic trouble codes (DTCs) are present in memory, check the area corresponding to the first diagnostic trouble code (DTC). If no problem is detected, check the areas corresponding to the other diagnostic trouble codes (DTCs) in order of their appearance.

| Combination of DTC No. | Problem area | Index No. |
|---|---|---|
| 46 Abnormal voltage of 5 V power supply<br>74 Voltage inputted to pressure sensor 2 exceeds specification. | (F87) — No. 78, 68 or 69 lead circuit is shorted to ground or battery. | <Ref. to VDC-172, DTC 46 ABNORMAL VOLTAGE OF 5 V POWER SUPPLY, Diagnostics Chart with Select Monitor.> |
| 44 TCM communication circuit<br>71 No signal from steering angle sensor | (F87) — No. 83 or 81 lead circuit is open. | <Ref. to VDC-214, DTC 71 NO SIGNAL FROM STEERING ANGLE SENSOR, Diagnostics Chart with Select Monitor.> |
| 51 Valve relay<br>48 Improper EAC communication<br>71 No signal from steering angle sensor | (F87) — No. 27 lead circuit is open. | <Ref. to VDC-214, DTC 71 NO SIGNAL FROM STEERING ANGLE SENSOR, Diagnostics Chart with Select Monitor.> |
| 71 No signal from steering angle sensor<br>51 Valve relay<br>44 TCM communication circuit | (F87) — No. 27 lead circuit is open. | <Ref. to VDC-214, DTC 71 NO SIGNAL FROM STEERING ANGLE SENSOR, Diagnostics Chart with Select Monitor.> |
| 73 Voltage inputted to lateral G sensor exceeds specification.<br>72 Voltage inputted to yaw rate sensor exceeds specifications. | (F87) — No. 23 lead circuit is open. | <Ref. to VDC-230, DTC 73 EXCESSIVE LATERAL G SENSOR SIGNAL, Diagnostics Chart with Select Monitor.> |

# 13.Diagnostics Chart with Diagnosis Connector

## A: ABS WARNING LIGHT, VDC WARNING LIGHT, VDC OPERATING INDICATOR LIGHT OR VDC OFF INDICATOR LIGHT DOES NOT COME ON.

***DIAGNOSIS:***

- ABS warning light circuit is open or shorted.
- VDC warning light circuit is open or shorted.
- VDC operating indicator light circuit is open or shorted.
- VDC OFF indicator light circuit is open or shorted.

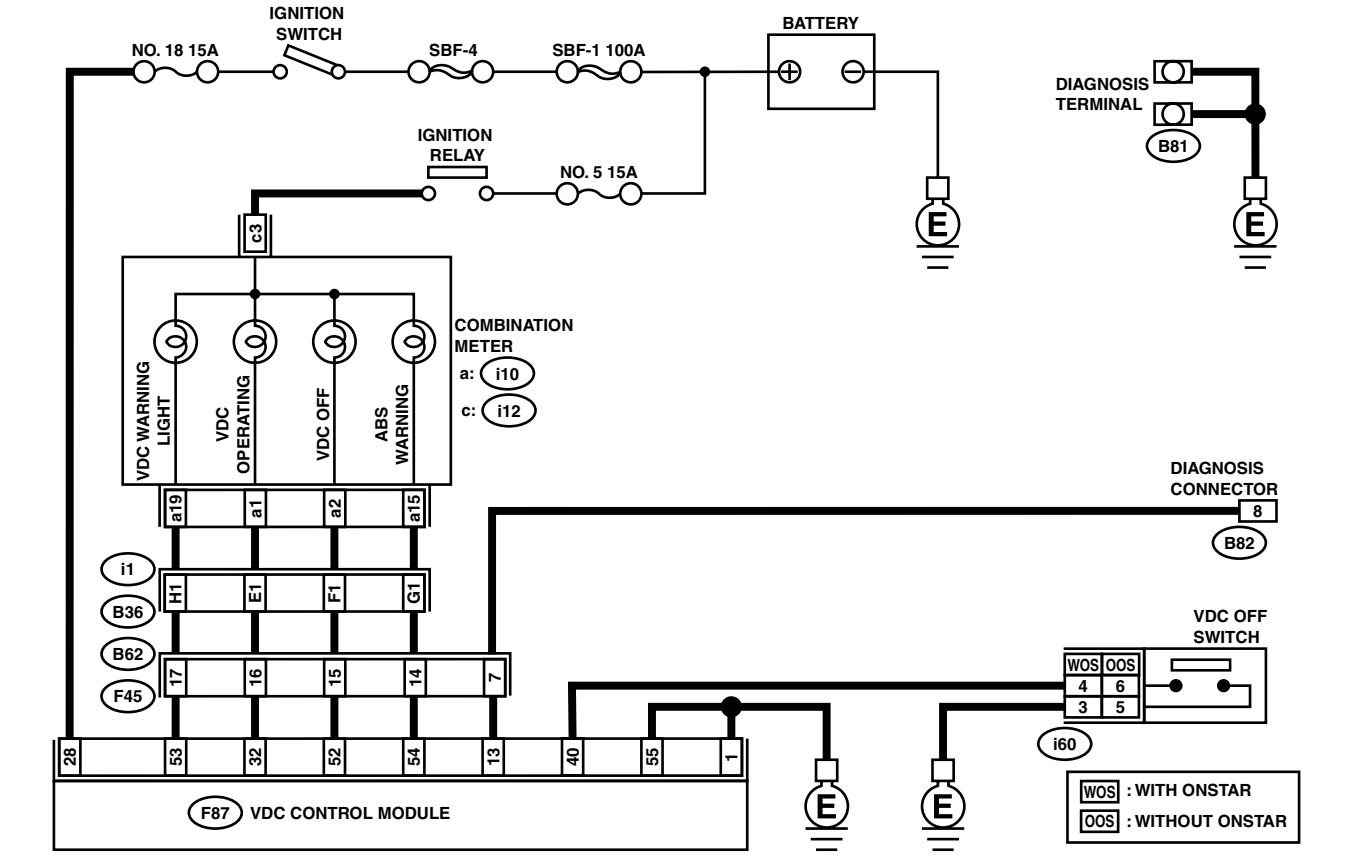
***TROUBLE SYMPTOM:***

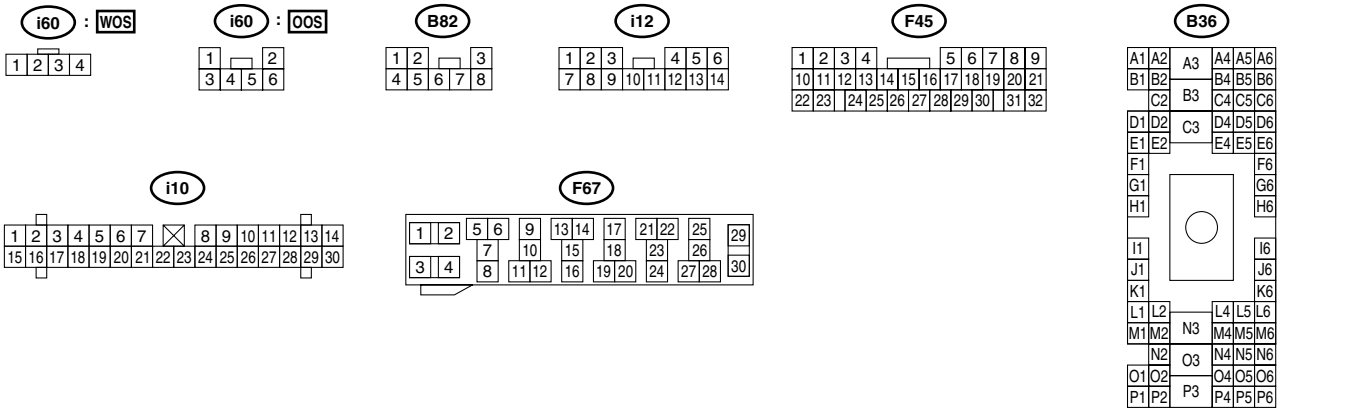
- When ignition switch is turned ON (engine OFF), ABS warning light, VDC warning light, VDC operating indicator light or VDC OFF indicator light does not come on.

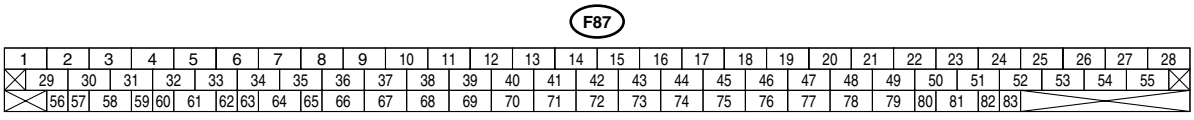
NOTE:
When pushing the VDC OFF switch for 10 seconds or more while revving the engine, the VDC OFF indicator light goes off and operations cannot be continued. Turn ignition switch from OFF to ON again to recover the previous condition.

**MEMO:**

## WIRING DIAGRAM:

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# DIAGNOSTICS CHART WITH DIAGNOSIS CONNECTOR

| | Step | Check | Yes | No |
|---|---|---|---|---|
| 1 | **CHECK IF OTHER WARNING LIGHTS TURN ON.**<br>Turn ignition switch to ON (engine OFF). | Do other warning lights turn on? | Go to step **2.** | Repair combination meter. <Ref. to IDI-13, Combination Meter Assembly.> |
| 2 | **CHECK LIGHT BULB.**<br>1) Turn ignition switch to OFF.<br>2) Remove combination meter.<br>3) Remove ABS warning light bulb, VDC warning light bulb, VDC operating indicator light bulb or VDC OFF indicator light bulb from combination meter. | Is light bulb OK? | Go to step **3.** | Replace faulty light bulb. <Ref. to IDI-13, DISASSEMBLY, Combination Meter Assembly.> |
| 3 | **CHECK BATTERY SHORT OF LIGHT HARNESS.**<br>1) Disconnect VDCCM connector from VDCCM.<br>2) Place a sheet of thick paper [thickness 1.5 mm (0.059 in)] in switch area of VDCCM connector.<br>3) Turn ignition switch to ON.<br>4) Measure voltage between VDC connector and chassis ground.<br>***Connector & terminal***<br>***ABS warning light***<br>***(F87) No. 54 (+) — Chassis ground (–):***<br>***VDC warning light***<br>***(F87) No. 53 (+) — Chassis ground (–):***<br>***VDC operating indicator light***<br>***(F87) No. 32 (+) — Chassis ground (–):***<br>***VDC OFF indicator light***<br>***(F87) No. 52 (+) — Chassis ground (–):*** | Is the measured value more than 3 V? | Go to step **4.** | Repair light harness. |
| 4 | **CHECK WIRING HARNESS.**<br>1) Turn ignition switch to OFF.<br>2) Install ABS warning light bulb from combination meter.<br>3) Install combination meter.<br>4) Place a sheet of thick paper [thickness 1.5 mm (0.059 in)] in switch area of VDCCM connector.<br>5) Turn ignition switch to ON.<br>6) Measure voltage between VDCCM connector and chassis ground.<br>***Connector & terminal***<br>***ABS warning light***<br>***(F87) No. 54 (+) — Chassis ground (–):***<br>***VDC warning light***<br>***(F87) No. 53 (+) — Chassis ground (–):***<br>***VDC operating indicator light***<br>***(F87) No. 32 (+) — Chassis ground (–):***<br>***VDC OFF indicator light***<br>***(F87) No. 52 (+) — Chassis ground (–):*** | Is the measured value within 10 to 15 V? | Go to step **5.** | Repair wiring harness. |
| 5 | **CHECK POOR CONTACT IN CONNECTORS.**<br>Turn ignition switch to OFF. | Is there poor contact in connectors between combination meter and VDCCM? | Repair connector. | Go to step **6.** |
| 6 | **CHECK WARNING AND INDICATOR LIGHTS.**<br>1) Connect connector to VDCCM.<br>2) Turn ignition switch to ON. | Do ABS warning light, VDC warning light, VDC operating indicator light and VDC OFF indicator light turn on? | A temporary poor contact. | Replace VDCCM. <Ref. to VDC-8, VDC Control Module (VDCCM).> |

## B: ABS AND VDC WARNING LIGHTS DO NOT GO OFF.

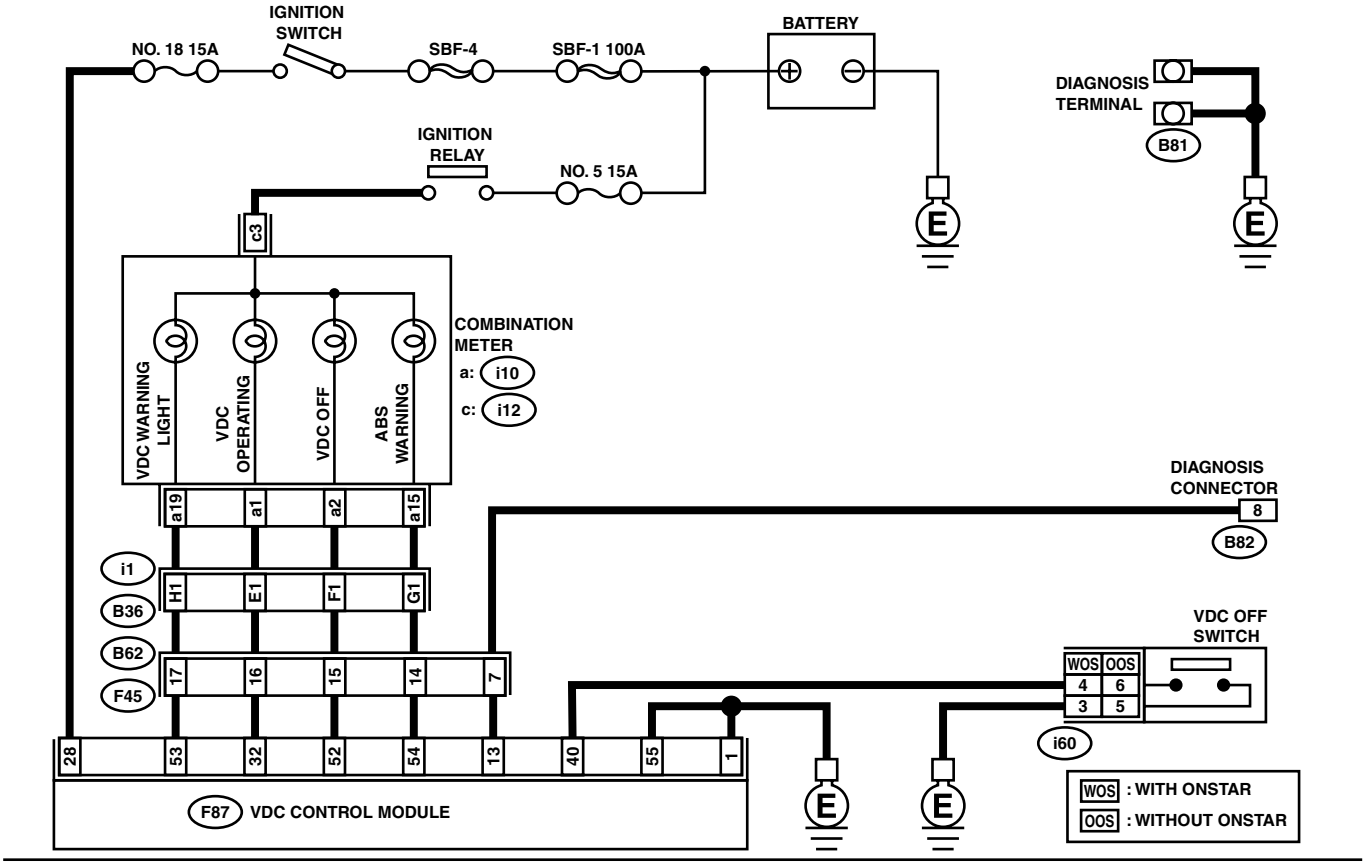
***DIAGNOSIS:***

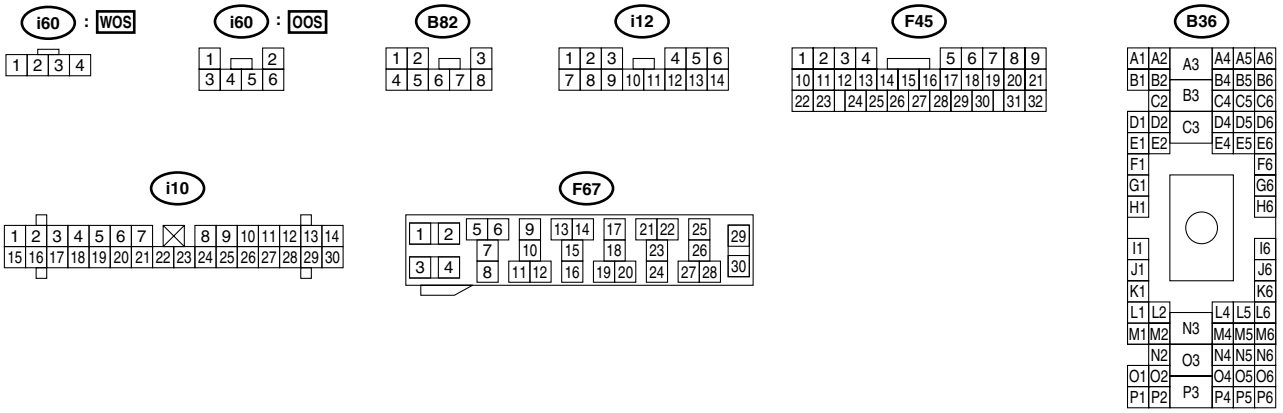
- ABS warning light circuit is open or shorted.
- VDC warning light circuit is open or shorted.
- Diagnosis circuit is open.

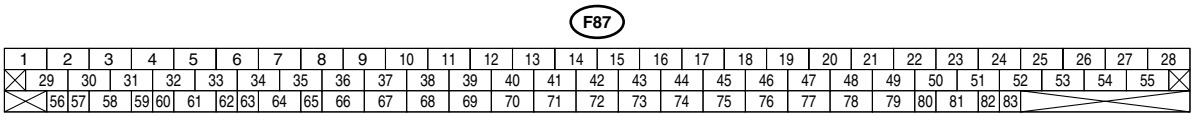
***TROUBLE SYMPTOM:***

- When starting the engine and while ABS and/or VDC warning light is kept ON.

**WIRING DIAGRAM:**

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| | Step | Check | Yes | No |
|---|---|---|---|---|
| 1 | **CHECK INSTALLATION OF VDCCM CONNECTOR.**<br>Turn ignition switch to OFF. | Is VDCCM connector inserted into VDCCM until the clamp locks onto it? | Go to step **2.** | Insert VDCCM connector into VDCCM until the clamp locks onto it. |
| 2 | **CHECK DIAGNOSIS TERMINAL.**<br>Measure resistance between diagnosis terminals (B81) and chassis ground.<br>***Terminals***<br>***Diagnosis terminal (A) — Chassis ground:***<br>***Diagnosis terminal (B) — Chassis ground:*** | Is the measured value less than 0.5 Ω? | Go to step **3.** | Repair diagnosis terminal harness. |
| 3 | **CHECK DIAGNOSIS LINE.**<br>1) Turn ignition switch to OFF.<br>2) Connect diagnosis terminal (B81) to diagnosis connector (B82) No. 8.<br>3) Disconnect connector from VDCCM.<br>4) Measure resistance between VDCCM connector and chassis ground.<br>***Connector & terminal***<br>***(F87) No. 13 — Chassis ground:*** | Is the measured value less than 0.5 Ω? | Go to step **4.** | Repair harness connector between VDCCM and diagnosis connector. |
| 4 | **CHECK WIRING HARNESS.**<br>1) Place a sheet of thick paper [thickness 1.5 mm (0.059 in)] in switch area of VDCCM connector.<br>2) Turn ignition switch to ON. | Do the ABS warning light and VDC warning light remain off? | Go to step **5.** | Repair front wiring harness. |
| 5 | **CHECK VDCCM TERMINAL.**<br>1) Turn ignition switch to OFF.<br>2) Check, if there is any faulty condition of VDCCM terminal. | Is there any faulty condition of VDCCM terminal? | Replace VDCCM. <Ref. to VDC-8, VDC Control Module (VDCCM).> | Go to step **6.** |
| 6 | **CHECK POWER SUPPLY OF VDCCM.**<br>1) Disconnect connector from VDCCM.<br>2) Start engine.<br>3) Idle the engine.<br>4) Measure voltage between VDCCM connector and chassis ground.<br>***Connector & terminal***<br>***(F87) No. 28 (+) — Chassis ground (–):*** | Is the measured value within 10 to 15 V? | Go to step **7.** | Repair VDCCM power supply circuit. |
| 7 | **CHECK POOR CONTACT IN VDCCM CONNECTOR.** | Is there poor contact in VDCCM connector? | Repair connector. | Replace VDCCM. <Ref. to VDC-8, VDC Control Module (VDCCM).> |

## C: VDC OPERATING INDICATOR LIGHT DOES NOT GO OFF.

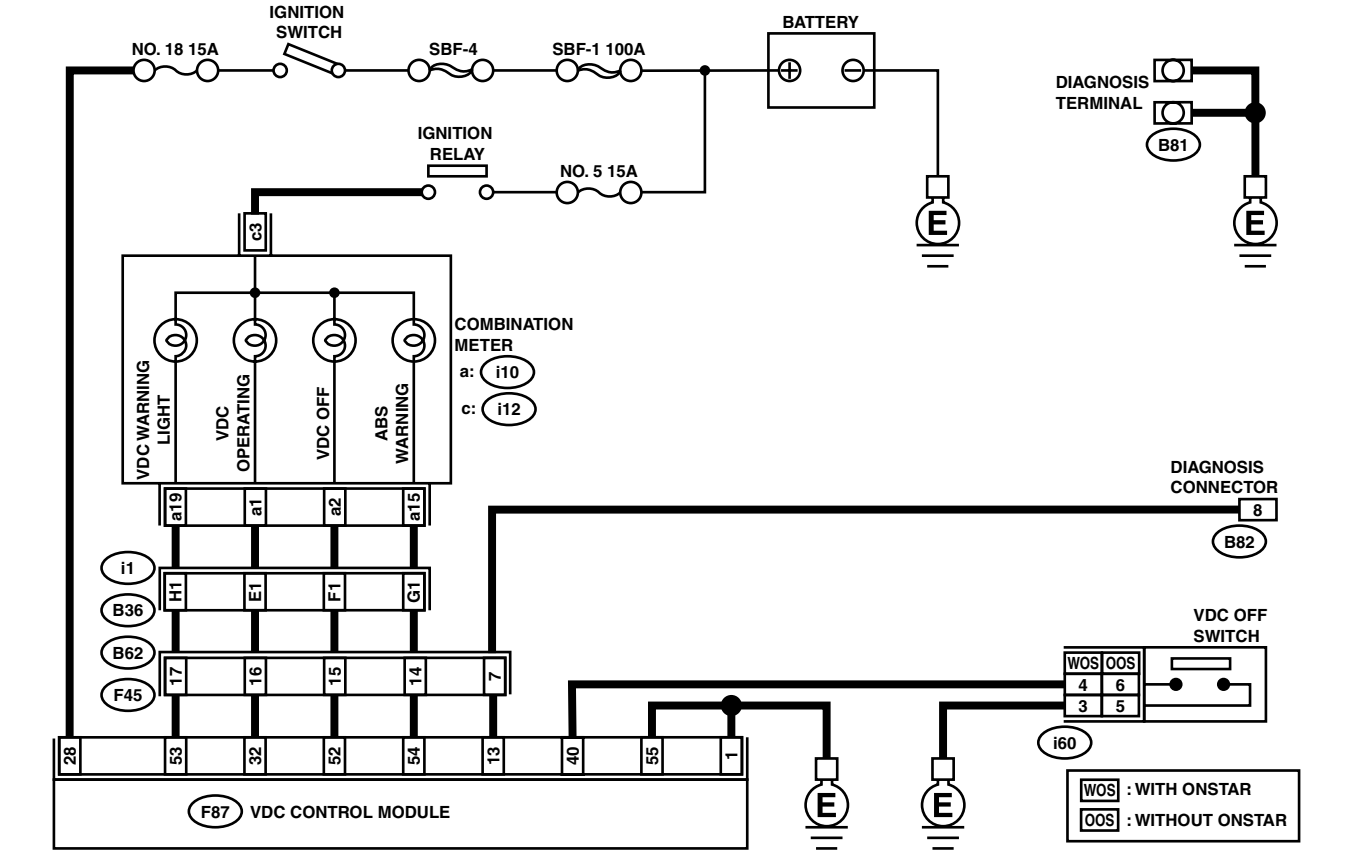
***DIAGNOSIS:***

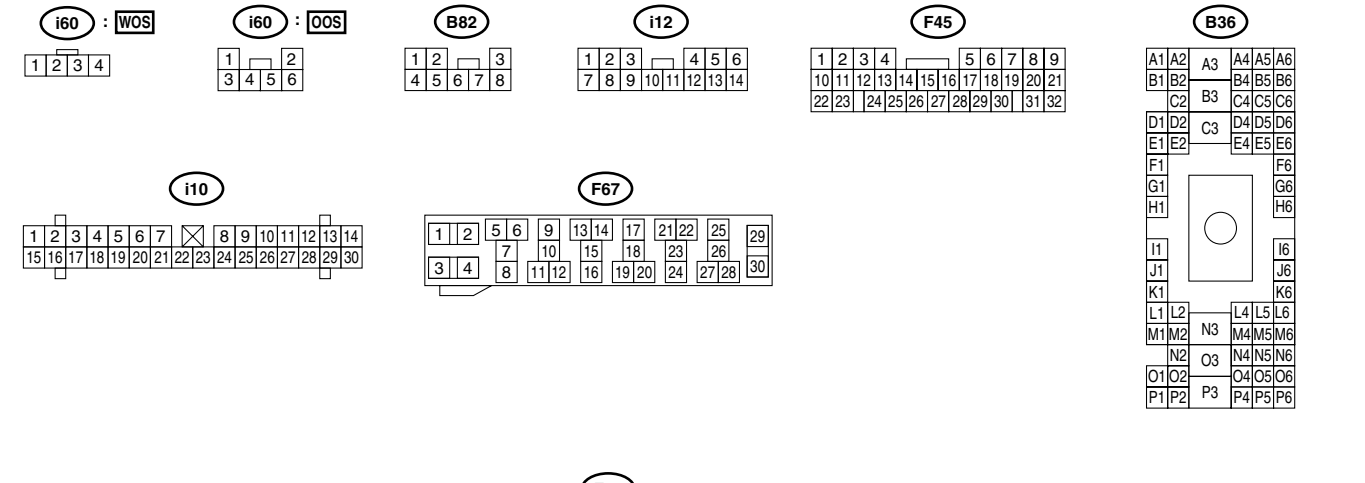
- VDC operating indicator light circuit is open or shorted.

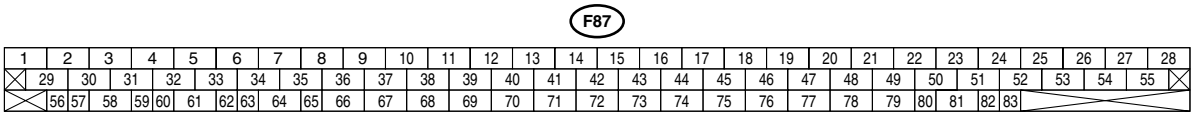
***TROUBLE SYMPTOM:***

- When starting the engine and while VDC operating indicator light is kept ON.

**WIRING DIAGRAM:**

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| | Step | Check | Yes | No |
|---|---|---|---|---|
| 1 | **CHECK WIRING HARNESS.**<br>1) Turn ignition switch to OFF.<br>2) Disconnect VDCCM connector from VDCCM.<br>3) Turn ignition switch to ON. | Does the VDC operating indicator light remain off? | Replace VDCCM. <Ref. to VDC-8, VDC Control Module (VDCCM).> | Repair wiring harness. |

**MEMO:**

## D: VDC OFF INDICATOR LIGHT DOES NOT GO OFF.

***DIAGNOSIS:***

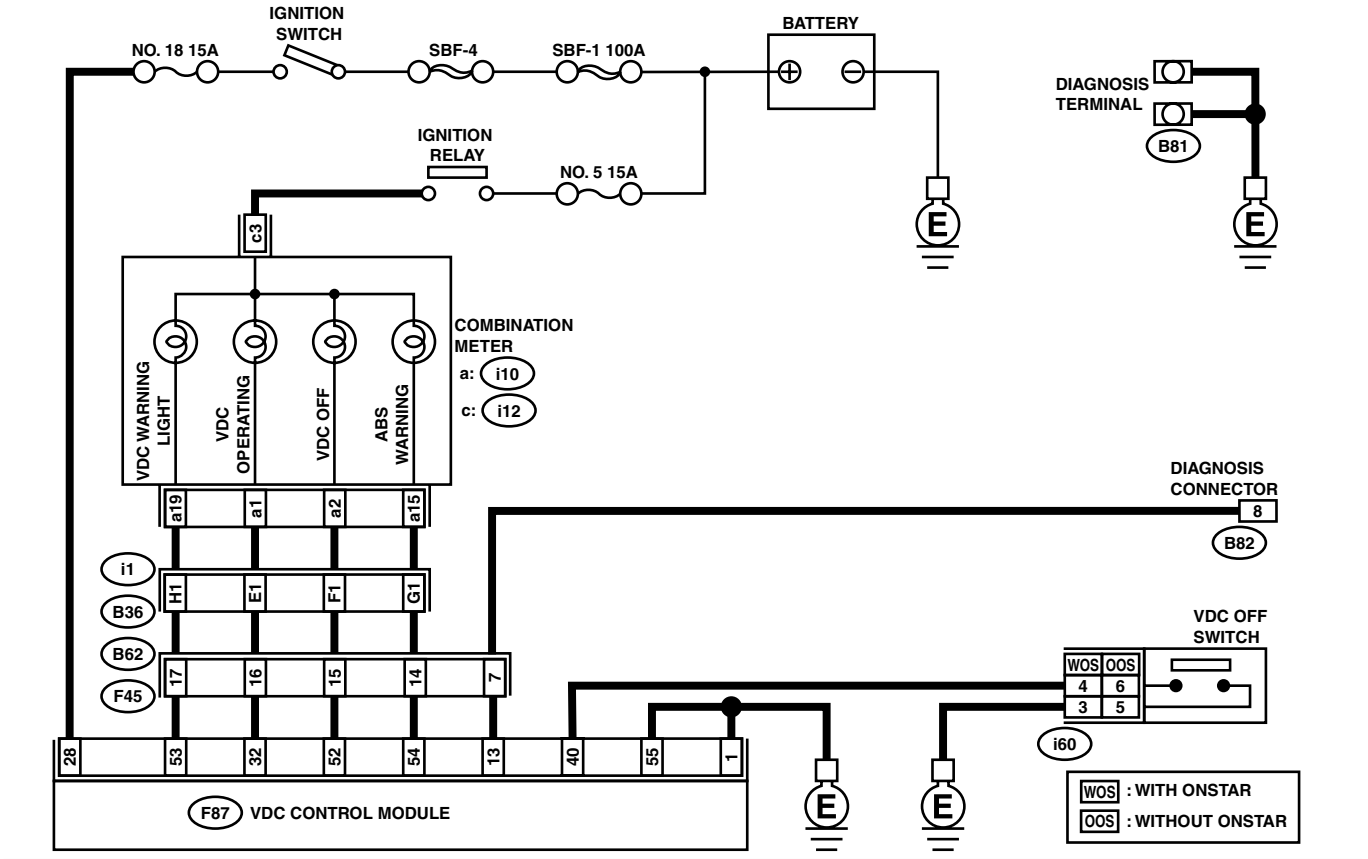
- VDC OFF indicator light circuit is open or shorted.
- VDC OFF switch is shorted.

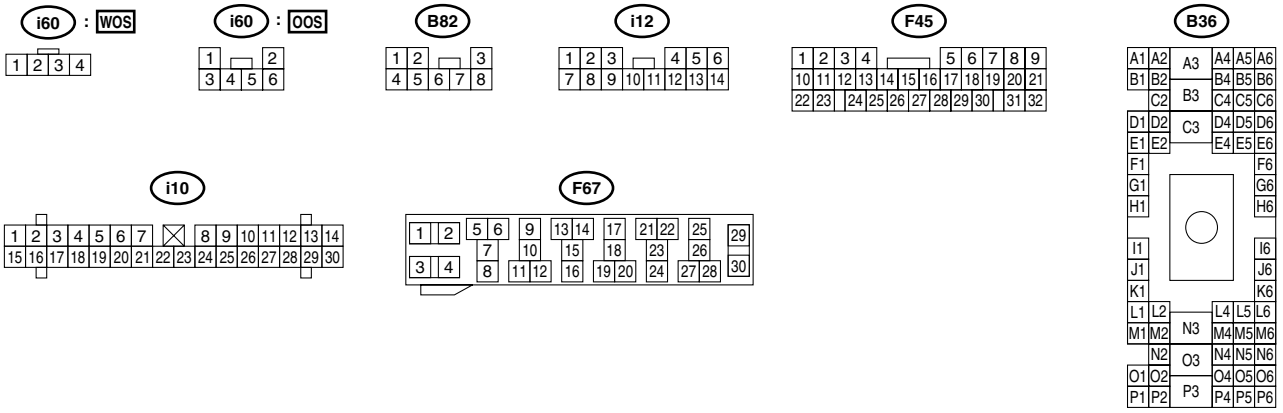
***TROUBLE SYMPTOM:***

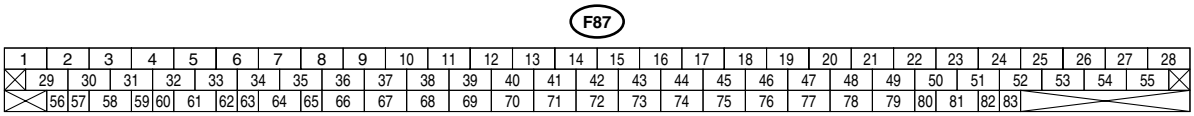
- When starting the engine and while VDC OFF indicator light is kept ON.

NOTE:
When pushing the VDC OFF switch for 10 seconds or more while revving the engine, the VDC OFF indicator light goes off and operations cannot be continued. Turn ignition switch from OFF to ON again to recover the previous condition.

## WIRING DIAGRAM:

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| | Step | Check | Yes | No |
|---|---|---|---|---|
| 1 | **OPERATE VDC OFF SWITCH.**<br>1) Operate VDC OFF switch.<br>2) Turn ignition switch OFF, then turn ignition switch ON. | Is VDC OFF indicator light off? | The VDC is normal. | Go to step **2.** |
| 2 | **CHECK ENGINE COOLANT TEMPERATURE.** | Does VDC OFF indicator light come on when engine coolant temperature is too low? Does it go out after engine has warmed up? | The VDC is normal. | Go to step **3.** |
| 3 | **CHECK VDC OFF SWITCH.**<br>Remove and check VDC OFF switch.<br><Ref. to VDC-32, VDC Off Switch.> | Is VDC OFF switch OK? | Go to step **4.** | Replace VDC OFF switch. |
| 4 | **CHECK WIRING HARNESS.**<br>1) Turn ignition switch to OFF.<br>2) Disconnect VDCCM connector from VDCCM.<br>3) Turn ignition switch to ON. | Does the VDC OFF indicator light remain off? | Go to step **5.** | Repair wiring harness. |
| 5 | **CHECK VDC OFF SWITCH LINE.**<br>1) Disconnect fuse from VDC OFF switch.<br>2) Measure resistance between VDCCM connector and chassis ground.<br>***Connector & terminal***<br>***(F87) No. 40 — Chassis ground:*** | Is the measured value more than 1 MΩ? | Replace VDCCM. <Ref. to VDC-8, VDC Control Module (VDCCM).> | Repair VDC OFF switch circuit. |

## E: DIAGNOSTIC TROUBLE CODE (DTC) DOES NOT APPEAR.

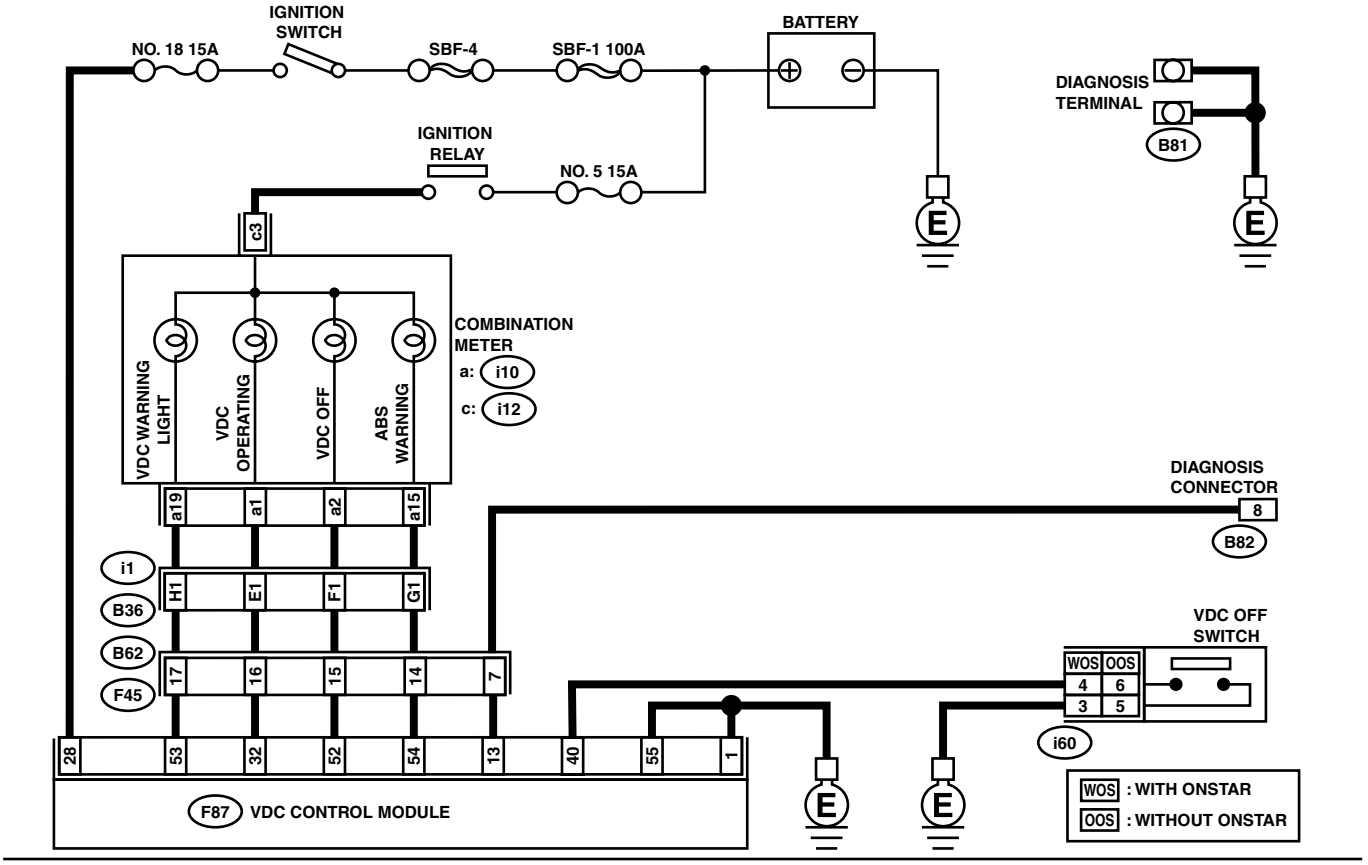
***DIAGNOSIS:***

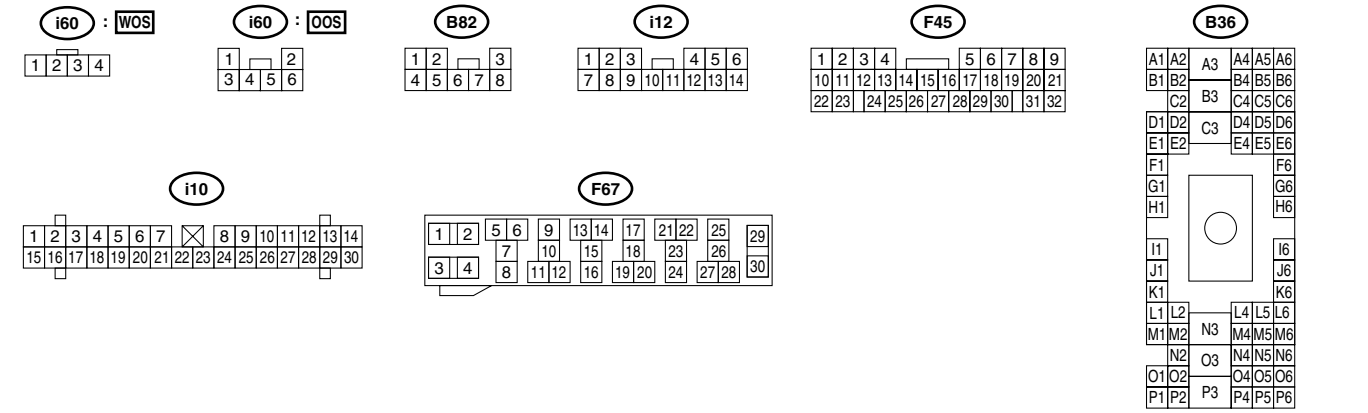
- Diagnosis circuit is open.

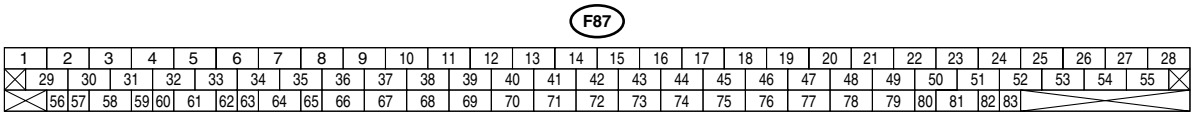
***TROUBLE SYMPTOM:***

- The ABS warning light turns on or off normally but the start code cannot be read out in the diagnostic mode.

**WIRING DIAGRAM:**




VDC00140

| | Step | Check | Yes | No |
|---|---|---|---|---|
| 1 | **CHECK DIAGNOSIS TERMINAL.**<br>Measure resistance between diagnosis terminals (B81) and chassis ground.<br>***Terminals***<br>***Diagnosis terminal (A) — Chassis ground:***<br>***Diagnosis terminal (B) — Chassis ground:*** | Is the measured value less than 0.5 Ω? | Go to step **2.** | Repair diagnosis terminal harness. |
| 2 | **CHECK DIAGNOSIS LINE.**<br>1) Turn ignition switch to OFF.<br>2) Connect diagnosis terminal (B81) to diagnosis connector (B82) No. 8.<br>3) Disconnect connector from VDCCM.<br>4) Measure resistance between VDCCM connector and chassis ground.<br>***Connector & terminal***<br>***(F87) No. 13 — Chassis ground:*** | Is the measured value less than 0.5 Ω? | Go to step **3.** | Repair harness connector between VDCCM and diagnosis connector. |
| 3 | **CHECK POOR CONTACT IN VDCCM CONNECTOR.** | Is there poor contact in VDCCM connector? | Repair connector. | Replace VDCCM. <Ref. to VDC-8, VDC Control Module (VDCCM).> |

## F: DTC 21 ABNORMAL ABS SENSOR (OPEN CIRCUIT OR INPUT VOLTAGE TOO HIGH) (FRONT RH)

NOTE:
For diagnostic procedure, refer to DTC 27. <Ref. to VDC-50, DTC 27 ABNORMAL ABS SENSOR (OPEN CIRCUIT OR INPUT VOLTAGE TOO HIGH) (REAR LH), Diagnostics Chart with Diagnosis Connector.>

## G: DTC 23 ABNORMAL ABS SENSOR (OPEN CIRCUIT OR INPUT VOLTAGE TOO HIGH) (FRONT LH)

NOTE:
For diagnostic procedure, refer to DTC 27. <Ref. to VDC-50, DTC 27 ABNORMAL ABS SENSOR (OPEN CIRCUIT OR INPUT VOLTAGE TOO HIGH) (REAR LH), Diagnostics Chart with Diagnosis Connector.>

## H: DTC 25 ABNORMAL ABS SENSOR (OPEN CIRCUIT OR INPUT VOLTAGE TOO HIGH) (REAR RH)

NOTE:
For diagnostic procedure, refer to DTC 27. <Ref. to VDC-50, DTC 27 ABNORMAL ABS SENSOR (OPEN CIRCUIT OR INPUT VOLTAGE TOO HIGH) (REAR LH), Diagnostics Chart with Diagnosis Connector.>

**MEMO:**

# I: DTC 27 ABNORMAL ABS SENSOR (OPEN CIRCUIT OR INPUT VOLTAGE TOO HIGH) (REAR LH)

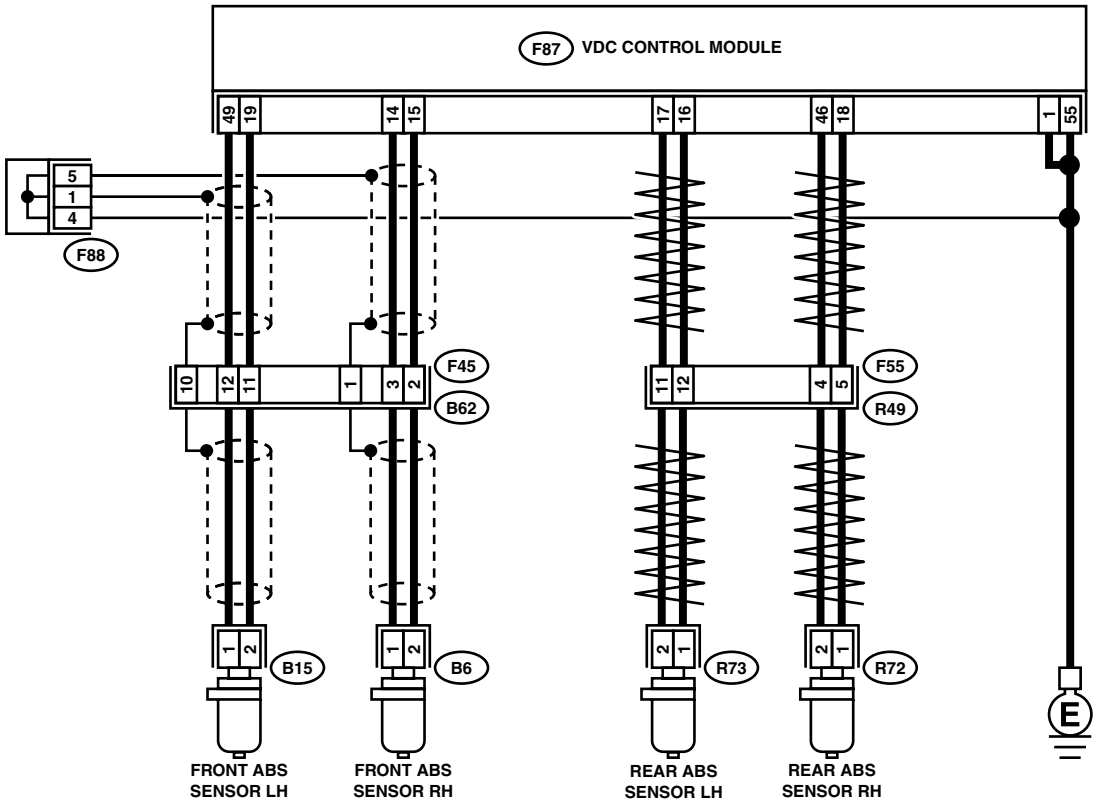
***DIAGNOSIS:***

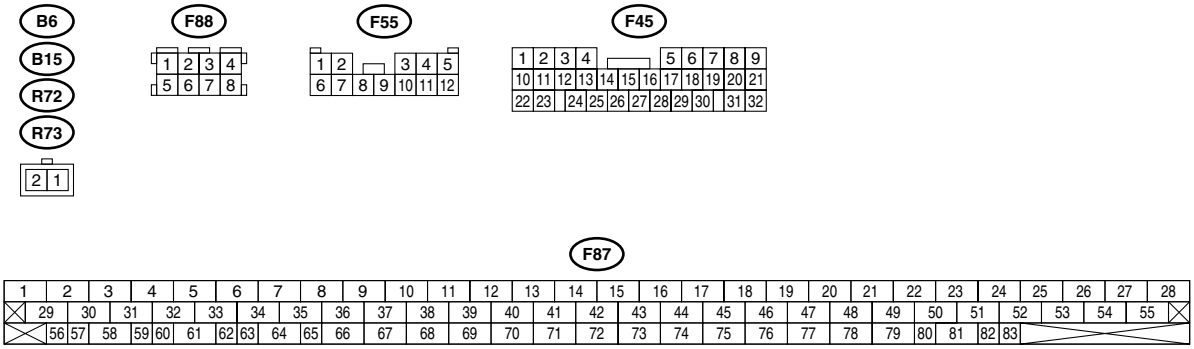
- Faulty ABS sensor (Broken wire, input voltage too high)
- Faulty harness connector

***TROUBLE SYMPTOM:***

- ABS does not operate.
- VDC does not operate.

**WIRING DIAGRAM:**

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| | Step | Check | Yes | No |
|---|---|---|---|---|
| 1 | **CHECK ABS SENSOR.**<br>1) Turn ignition switch to OFF.<br>2) Disconnect connector from ABS sensor.<br>3) Measure resistance of ABS sensor connector terminals.<br>***Terminal***<br>***Front RH No. 1 — No. 2:***<br>***Front LH No. 1 — No. 2:***<br>***Rear RH No. 1 — No. 2:***<br>***Rear LH No. 1 — No. 2:*** | Is the measure value within 1.0 to 1.5 kΩ? | Go to step **2.** | Replace ABS sensor. Front <Ref. to VDC-28, Front ABS Sensor.> Rear <Ref. to VDC-29, Rear ABS Sensor.> |
| 2 | **CHECK BATTERY SHORT OF ABS SENSOR.**<br>1) Disconnect connector from VDCCM.<br>2) Measure voltage between ABS sensor and chassis ground.<br>***Terminal***<br>***Front RH No. 1 (+) — Chassis ground (–):***<br>***Front LH No. 1 (+) — Chassis ground (–):***<br>***Rear RH No. 1 (+) — Chassis ground (–):***<br>***Rear LH No. 1 (+) — Chassis ground (–):*** | Is the measured value less than 1 V? | Go to step **3.** | Replace ABS sensor. Front <Ref. to VDC-28, Front ABS Sensor.> Rear <Ref. to VDC-29, Rear ABS Sensor.> |
| 3 | **CHECK BATTERY SHORT OF ABS SENSOR.**<br>1) Turn ignition switch to ON.<br>2) Measure voltage between ABS sensor and chassis ground.<br>***Terminal***<br>***Front RH No. 1 (+) — Chassis ground (–):***<br>***Front LH No. 1 (+) — Chassis ground (–):***<br>***Rear RH No. 1 (+) — Chassis ground (–):***<br>***Rear LH No. 1 (+) — Chassis ground (–):*** | Is the measured value less than 1 V? | Go to step **4.** | Replace ABS sensor. Front <Ref. to VDC-28, Front ABS Sensor.> Rear <Ref. to VDC-29, Rear ABS Sensor.> |
| 4 | **CHECK HARNESS/CONNECTOR BETWEEN VDCCM AND ABS SENSOR.**<br>1) Turn ignition switch to OFF.<br>2) Connect connector to ABS sensor.<br>3) Measure resistance between VDCCM connector terminals.<br>***Connector & terminal***<br>***DTC 21 / (F87) No. 14 — No. 15:***<br>***DTC 23 / (F87) No. 49 — No. 19:***<br>***DTC 25 / (F87) No. 18 — No. 46:***<br>***DTC 27 / (F87) No. 16 — No. 17:*** | Is the measure value within 1.0 to 1.5 kΩ? | Go to step **5.** | Repair harness/ connector between VDCCM and ABS sensor. |

# DIAGNOSTICS CHART WITH DIAGNOSIS CONNECTOR

| | Step | Check | Yes | No |
|---|---|---|---|---|
| 5 | **CHECK BATTERY SHORT OF HARNESS.**<br>Measure voltage between VDCCM connector and chassis ground.<br>***Connector & terminal***<br>***DTC 21 / (F87) No. 14 (+) — Chassis ground (–):***<br>***DTC 23 / (F87) No. 49 (+) — Chassis ground (–):***<br>***DTC 25 / (F87) No. 18 (+) — Chassis ground (–):***<br>***DTC 27 / (F87) No. 16 (+) — Chassis ground (–):*** | Is the measured value less than 1 V? | Go to step **6.** | Repair harness between VDCCM and ABS sensor. |
| 6 | **CHECK BATTERY SHORT OF HARNESS.**<br>1) Turn ignition switch to ON.<br>2) Measure voltage between VDCCM connector and chassis ground.<br>***Connector & terminal***<br>***DTC 21 / (F87) No. 14 (+) — Chassis ground (–):***<br>***DTC 23 / (F87) No. 49 (+) — Chassis ground (–):***<br>***DTC 25 / (F87) No. 18 (+) — Chassis ground (–):***<br>***DTC 27 / (F87) No. 16 (+) — Chassis ground (–):*** | Is the measured value less than 1 V? | Go to step **7.** | Repair harness between VDCCM and ABS sensor. |
| 7 | **CHECK INSTALLATION OF ABS SENSOR.** | Are the ABS sensor installation bolts tightened to 33 N·m (3.4 kg-m, 25 ft-lb)? | Go to step **8.** | Tighten ABS sensor installation bolts securely. |
| 8 | **CHECK ABS SENSOR GAP.**<br>Measure tone wheel-to-pole piece gap over entire perimeter of the wheel. | Is the measured value within the range below? Front wheel 0.3 - 0.8 mm (0.012 - 0.031 in) and Rear wheel 0.44 - 0.94 mm (0.0173 - 0.0370 in) | Go to step **9.** | Adjust the gap.<br>NOTE:<br>Adjust the gap using spacers (Part No. 26755AA000). If spacers cannot correct the gap, replace worn sensor or worn tone wheel. |
| 9 | **CHECK HUB AND TONE WHEEL RUNOUT.**<br>Measure hub and tone wheel runout. | Is the measured value less than 0.05 mm (0.0020 in)? | Go to step **10.** | Repair hub and tone wheel. Front <Ref. to VDC-28, Front ABS Sensor.> Rear <Ref. to VDC-29, Rear ABS Sensor.> |
| 10 | **CHECK POOR CONTACT IN CONNECTORS.** | Is there poor contact in connectors between VDCCM and ABS sensor? | Repair connector. | Go to step **11.** |
| 11 | **CHECK VDCCM.**<br>1) Connect all connectors.<br>2) Erase the memory.<br>3) Perform inspection mode.<br>4) Read out the diagnostic trouble code. | Is the same diagnostic trouble code as in the current diagnosis still being output? | Replace VDCCM. <Ref. to VDC-8, VDC Control Module (VDCCM).> | Go to step **12.** |

| | Step | Check | Yes | No |
|---|---|---|---|---|
| 12 | **CHECK ANY OTHER DIAGNOSTIC TROUBLE CODES APPEARANCE.** | Are other diagnostic trouble codes being output? | Proceed with the diagnosis corresponding to the diagnostic trouble code. | A temporary poor contact.<br>NOTE:<br>Check harness and connectors between VDCCM and ABS sensor. |

## J: DTC 22 ABNORMAL ABS SENSOR (ABNORMAL ABS SENSOR SIGNAL) (FRONT RH)

NOTE:
For diagnostic procedure, refer to DTC 28. <Ref. to VDC-56, DTC 28 ABNORMAL ABS SENSOR (ABNORMAL ABS SENSOR SIGNAL) (REAR LH), Diagnostics Chart with Diagnosis Connector.>

## K: DTC 24 ABNORMAL ABS SENSOR (ABNORMAL ABS SENSOR SIGNAL) (FRONT LH)

NOTE:
For diagnostic procedure, refer to DTC 28. <Ref. to VDC-56, DTC 28 ABNORMAL ABS SENSOR (ABNORMAL ABS SENSOR SIGNAL) (REAR LH), Diagnostics Chart with Diagnosis Connector.>

## L: DTC 26 ABNORMAL ABS SENSOR (ABNORMAL ABS SENSOR SIGNAL) (REAR RH)

NOTE:
For diagnostic procedure, refer to DTC 28. <Ref. to VDC-56, DTC 28 ABNORMAL ABS SENSOR (ABNORMAL ABS SENSOR SIGNAL) (REAR LH), Diagnostics Chart with Diagnosis Connector.>

**MEMO:**

## M: DTC 28 ABNORMAL ABS SENSOR (ABNORMAL ABS SENSOR SIGNAL) (REAR LH)

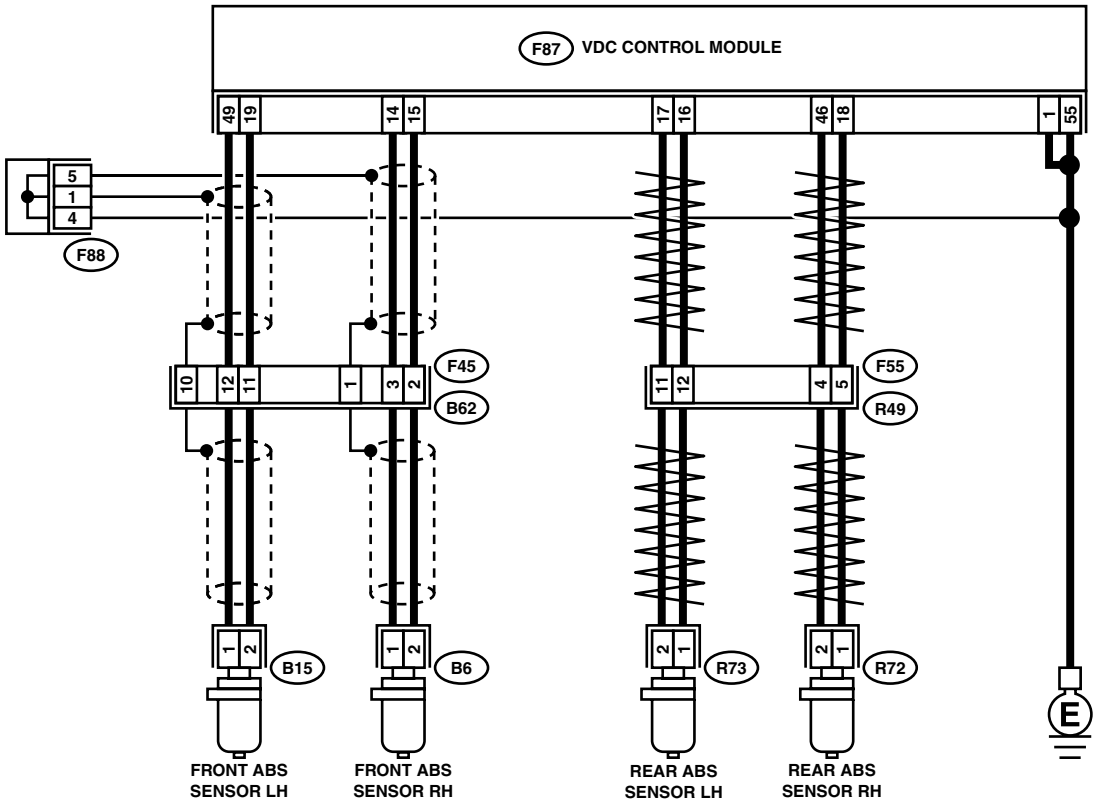
***DIAGNOSIS:***

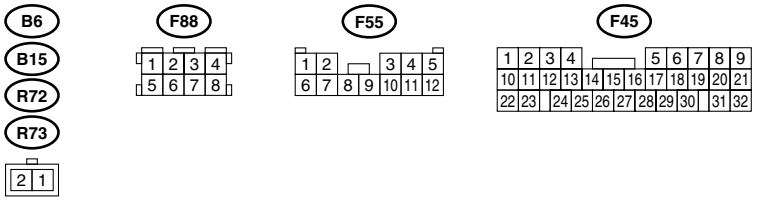
- Faulty ABS sensor signal (noise, irregular signal, etc.)
- Faulty harness/connector

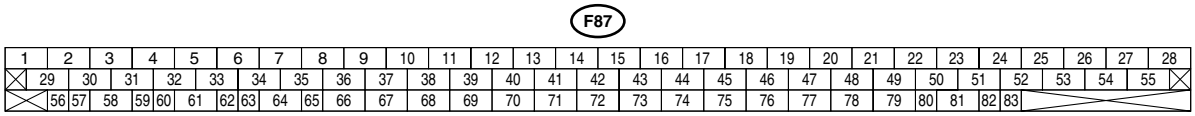
***TROUBLE SYMPTOM:***

- ABS does not operate.
- VDC does not operate.

**WIRING DIAGRAM:**

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| | Step | Check | Yes | No |
|---|---|---|---|---|
| 1 | **CHECK INSTALLATION OF ABS SENSOR.** | Are the ABS sensor installation bolts tightened 33 N·m (3.4 kg-m, 25 ft-lb)? | Go to step **2.** | Tighten ABS sensor installation bolts securely. |
| 2 | **CHECK ABS SENSOR GAP.**<br>Measure tone wheel to pole piece gap over entire perimeter of the wheel. | Is the measured value within the range below? Front wheel 0.3 - 0.8 mm (0.012 - 0.031 in) and Rear wheel 0.44 - 0.94 mm (0.0173 - 0.0370 in) | Go to step **3.** | Adjust the gap.<br>NOTE:<br>Adjust the gap using spacer (Part No. 26755AA000). If spacers cannot correct the gap, replace worn sensor or worn tone wheel. |
| 3 | **CHECK OSCILLOSCOPE.** | Is an oscilloscope available? | Go to step **4.** | Go to step **5.** |
| 4 | **CHECK ABS SENSOR SIGNAL.**<br>1) Raise all four wheels of ground.<br>2) Turn ignition switch OFF.<br>3) Remove VDCCM connector cover. <Ref. to VDC-20, VDCCM Connector Cover.><br>4) Connect the oscilloscope to the connector.<br>5) Turn ignition switch ON.<br>6) Rotate wheels and measure voltage at specified frequency. <Ref. to ABS-15, WAVEFORM, Control Module I/O Signal.><br>NOTE:<br>When this inspection is completed, the VDCCM sometimes stores the DTC 29.<br>***Connector & terminal***<br>***DTC 22 / (F87) No. 14 (+) — No. 15 (–):***<br>***DTC 24 / (F87) No. 49 (+) — No. 19 (–):***<br>***DTC 26 / (F87) No. 18 (+) — No. 46 (–):***<br>***DTC 28 / (F87) No. 16 (+) — No. 17 (–):*** | Is oscilloscope pattern smooth, as shown in figure? | Go to step **8.** | Go to step **5.** |
| 5 | **CHECK CONTAMINATION OF ABS SENSOR OR TONE WHEEL.**<br>Remove disc rotor from hub in accordance with diagnostic trouble code. | Is the ABS sensor pole piece or the tone wheel contaminated by dirt or other foreign matter? | Thoroughly remove dirt or other foreign matter. | Go to step **6.** |
| 6 | **CHECK DAMAGE OF ABS SENSOR OR TONE WHEEL.** | Are there broken or damaged in the ABS sensor pole piece or the tone wheel? | Replace ABS sensor or tone wheel. Front <Ref. to VDC-28, Front ABS Sensor.> and <Ref. to VDC-30, Front Tone Wheel.> Rear <Ref. to VDC-29, Rear ABS Sensor.> and <Ref. to VDC-31, Rear Tone Wheel.> | Go to step **7.** |
| 7 | **CHECK TONE WHEEL RUNOUT.**<br>Measure tone wheel runout. | Is the measured value less than 0.05 mm (0.0020 in)? | Go to step **8.** | Repair tone wheel. Front <Ref. to VDC-30, Front Tone Wheel.> Rear <Ref. to VDC-31, Rear Tone Wheel.> |

# DIAGNOSTICS CHART WITH DIAGNOSIS CONNECTOR

| | Step | Check | Yes | No |
|---|---|---|---|---|
| 8 | **CHECK RESISTANCE OF ABS SENSOR.**<br>1) Turn ignition switch OFF.<br>2) Disconnect connector from ABS sensor.<br>3) Measure resistance between ABS sensor connector terminals.<br>***Terminal***<br>***Front RH No. 1 — No. 2:***<br>***Front LH No. 1 — No. 2:***<br>***Rear RH No. 1 — No. 2:***<br>***Rear LH No. 1 — No. 2:*** | Is the measured value within 1.0 to 1.5 kΩ? | Go to step **9.** | Replace ABS sensor. Front <Ref. to VDC-28, Front ABS Sensor.> Rear <Ref. to VDC-29, Rear ABS Sensor.> |
| 9 | **CHECK GROUND SHORT OF ABS SENSOR.**<br>Measure resistance between ABS sensor and chassis ground.<br>***Terminal***<br>***Front RH No. 1 — Chassis ground:***<br>***Front LH No. 1 — Chassis ground:***<br>***Rear RH No. 1 — Chassis ground:***<br>***Rear LH No. 1 — Chassis ground:*** | Is the measured value more than 1 MΩ? | Go to step **10.** | Replace ABS sensor. Front <Ref. to VDC-28, Front ABS Sensor.> Rear <Ref. to VDC-29, Rear ABS Sensor.> |
| 10 | **CHECK HARNESS/CONNECTOR BETWEEN VDCCM AND ABS SENSOR.**<br>1) Connect connector to ABS sensor.<br>2) Disconnect connector from VDCCM.<br>3) Measure resistance at VDCCM connector terminals.<br>***Connector & terminal***<br>***DTC 22 / (F87) No. 14 — No. 15:***<br>***DTC 24 / (F87) No. 49 — No. 19:***<br>***DTC 26 / (F87) No. 18 — No. 46:***<br>***DTC 28 / (F87) No. 16 — No. 17:*** | Is the measured value within 1.0 to 1.5 kΩ? | Go to step **11.** | Repair harness/ connector between VDCCM and ABS sensor. |
| 11 | **CHECK GROUND SHORT OF HARNESS.**<br>Measure resistance between VDCCM connector and chassis ground.<br>***Connector & terminal***<br>***DTC 22 / (F87) No. 14 — Chassis ground:***<br>***DTC 24 / (F87) No. 49 — Chassis ground:***<br>***DTC 26 / (F87) No. 18 — Chassis ground:***<br>***DTC 28 / (F87) No. 16 — Chassis ground:*** | Is the measured value more than 1 MΩ? | Go to step **12.** | Repair harness/ connector between VDCCM and ABS sensor. |
| 12 | **CHECK GROUND CIRCUIT OF VDCCM.**<br>Measure resistance between VDCCM and chassis ground.<br>***Connector & terminal***<br>***(F87) No. 1 — Chassis ground:***<br>***(F87) No. 55 — Chassis ground:*** | Is the measured value less than 0.5 Ω? | Go to step **13.** | Repair VDCCM ground harness. |
| 13 | **CHECK POOR CONTACT IN CONNECTORS.** | Is there poor contact in connectors between VDCCM and ABS sensor? | Repair connector. | Go to step **14.** |
| 14 | **CHECK SOURCES OF SIGNAL NOISE.** | Is the car telephone or the wireless transmitter properly installed? | Go to step **15.** | Properly install the car telephone or the wireless transmitter. |
| 15 | **CHECK SOURCES OF SIGNAL NOISE.** | Are noise sources (such as an antenna) installed near the sensor harness? | Install the noise sources apart from the sensor harness. | Go to step **16.** |

| | Step | Check | Yes | No |
|---|---|---|---|---|
| 16 | **CHECK SHIELD CIRCUIT.**<br>1) Connect all connectors.<br>2) Measure resistance between shield connector and chassis ground.<br>***Connector & terminal***<br>***DTC 22 / (F45) No. 1 — Chassis ground:***<br>***DTC 24 / (F45) No. 10 — Chassis ground:***<br>NOTE:<br>For the DTC 26 and 28, Go to step **17.** | Is the measured value less than 0.5 Ω? | Go to step **17.** | Repair shield harness. |
| 17 | **CHECK VDCCM.**<br>1) Connect all connectors.<br>2) Erase the memory.<br>3) Perform inspection mode.<br>4) Read out the diagnostic trouble code. | Is the same diagnostic trouble code as in the current diagnosis still being output? | Replace VDCCM. <Ref. to VDC-8, VDC Control Module (VDCCM).> | Go to step **18.** |
| 18 | **CHECK ANY OTHER DIAGNOSTIC TROUBLE CODES APPEARANCE.** | Are other diagnostic trouble codes being output? | Proceed with the diagnosis corresponding to the diagnostic trouble code. | A temporary noise interference. |

## N: DTC 29 ABNORMAL ABS SENSOR SIGNAL (ANY ONE OF FOUR)

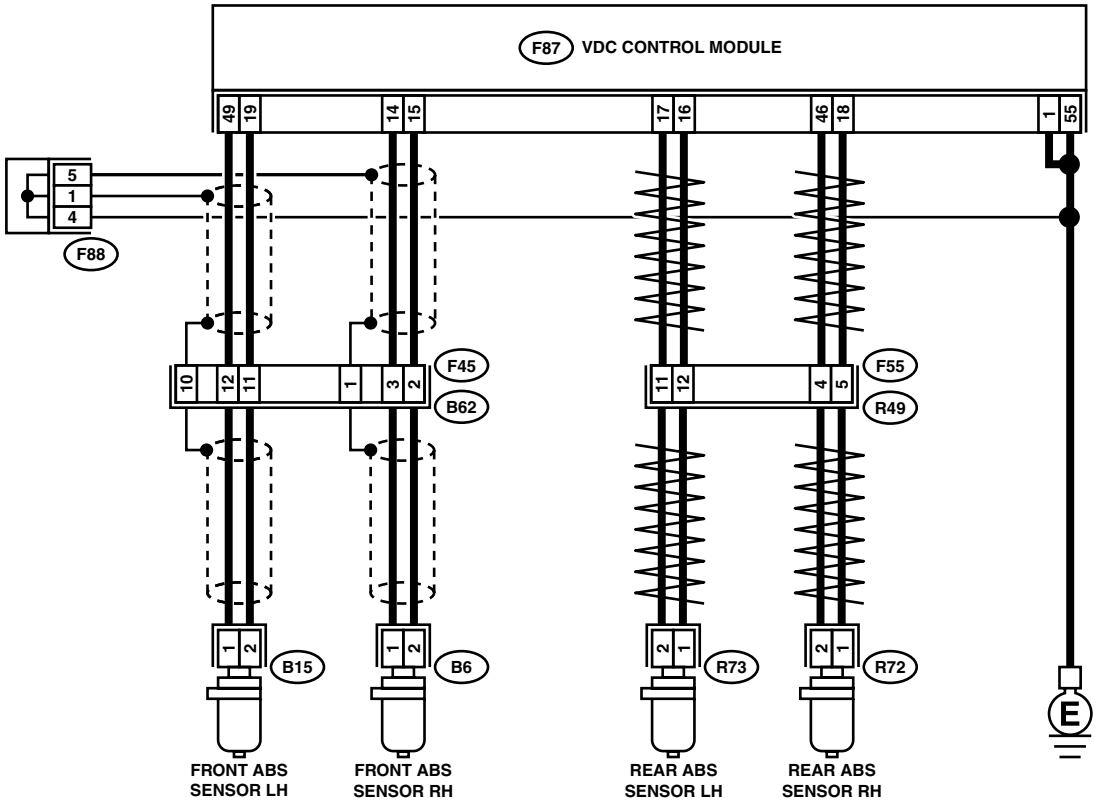
***DIAGNOSIS:***

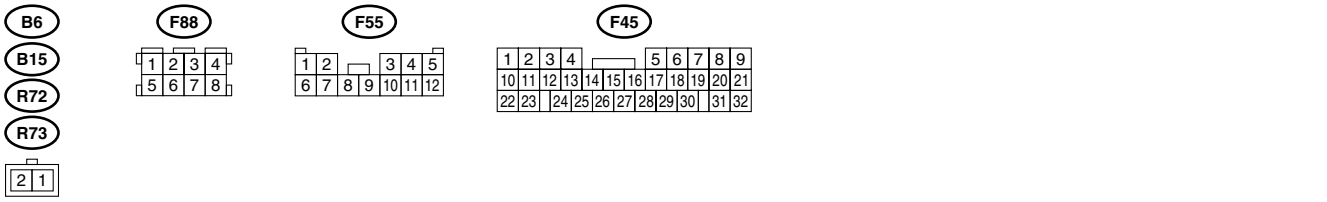
- Faulty ABS sensor signal (noise, irregular signal, etc.)
- Faulty tone wheel
- Wheels turning freely for a long time

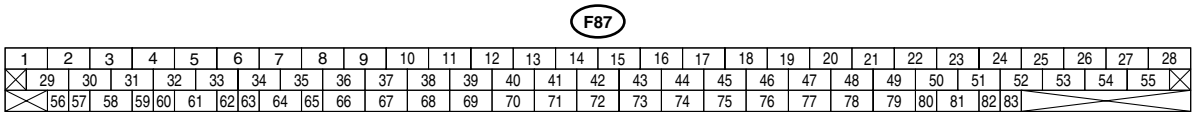
***TROUBLE SYMPTOM:***

- ABS does not operate.
- VDC does not operate.

**WIRING DIAGRAM:**

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| | Step | Check | Yes | No |
|---|---|---|---|---|
| 1 | **CHECK IF THE WHEELS HAVE TURNED FREELY.**<br>Check if the wheels have been turned freely for more than one minute, such as when the vehicle is jacked-up, under full-lock cornering or when tire is not in contact with road surface. | Did the wheels turn freely over 1 minute? | The VDC is normal. Erase the diagnostic trouble code.<br>NOTE:<br>When the wheels turn freely for a long time, such as when the vehicle is towed or jacked-up, or when steering wheel is continuously turned all the way, this trouble code may sometimes occur. | Go to step **2.** |
| 2 | **CHECK TIRE SPECIFICATIONS.** | Are the tire specifications correct? | Go to step **3.** | Replace tire. |
| 3 | **CHECK WEAR OF TIRE.** | Is the tire worn excessively? | Replace tire. | Go to step **4.** |
| 4 | **CHECK TIRE PRESSURE.** | Is the tire pressure correct? | Go to step **5.** | Adjust tire pressure. |
| 5 | **CHECK INSTALLATION OF ABS SENSOR.** | Are the ABS sensor installation bolts tightened 33 N·m (3.4 kg-m, 25 ft-lb)? | Go to step **6.** | Tighten ABS sensor installation bolts securely. |
| 6 | **CHECK ABS SENSOR GAP.**<br>Measure tone wheel to pole piece gap over entire perimeter of the wheel. | Is the measured value within the range below? Front wheel 0.3 - 0.8 mm (0.012 - 0.031 in) and Rear wheel 0.44 - 0.94 mm (0.0173 - 0.0370 in) | Go to step **7.** | Adjust the gap.<br>NOTE:<br>Adjust the gap using spacer (Part No. 26755AA000). If spacers cannot correct the gap, replace worn sensor or worn tone wheel. |
| 7 | **CHECK OSCILLOSCOPE.** | Is an oscilloscope available? | Go to step **8.** | Go to step **9.** |
| 8 | **CHECK ABS SENSOR SIGNAL.**<br>1) Raise all four wheels of ground.<br>2) Turn ignition switch OFF.<br>3) Remove VDCCM connector cover. <Ref. to VDC-20, VDCCM Connector Cover.><br>4) Connect the oscilloscope to the connector.<br>5) Turn ignition switch ON.<br>6) Rotate wheels and measure voltage at specified frequency. <Ref. to ABS-15, WAVEFORM, Control Module I/O Signal.><br>NOTE:<br>When this inspection is completed, the VDCCM sometimes stores the DTC 29.<br>***Connector & terminal***<br>***(F87) No. 14 (+) — No. 15 (–) (Front RH):***<br>***(F87) No. 49 (+) — No. 19 (–) (Front LH):***<br>***(F87) No. 18 (+) — No. 46 (–) (Rear RH):***<br>***(F87) No. 16 (+) — No. 17 (–) (Rear LH):*** | Is oscilloscope pattern smooth, as shown in figure? | Go to step **12.** | Go to step **9.** |
| 9 | **CHECK CONTAMINATION OF ABS SENSOR OR TONE WHEEL.**<br>Remove disc rotor from hub. | Is the ABS sensor pole piece or the tone wheel contaminated by dirt or other foreign matter? | Thoroughly remove dirt or other foreign matter. | Go to step **10.** |

| | Step | Check | Yes | No |
|---|---|---|---|---|
| 10 | **CHECK DAMAGE OF ABS SENSOR OR TONE WHEEL.** | Are there broken or damaged teeth in the ABS sensor pole piece or the tone wheel? | Replace ABS sensor or tone wheel. Front <Ref. to VDC-28, Front ABS Sensor.> and <Ref. to VDC-30, Front Tone Wheel.> Rear <Ref. to VDC-29, Rear ABS Sensor.> and <Ref. to VDC-31, Rear Tone Wheel.> | Go to step **11.** |
| 11 | **CHECK TONE WHEEL RUNOUT.**<br>Measure tone wheel runout. | Is the measured value less than 0.05 mm (0.0020 in)? | Go to step **12.** | Repair tone wheel. Front <Ref. to VDC-30, Front Tone Wheel.> Rear <Ref. to VDC-31, Rear Tone Wheel.> |
| 12 | **CHECK VDCCM.**<br>1) Turn ignition switch to OFF.<br>2) Connect all connectors.<br>3) Erase the memory.<br>4) Perform inspection mode.<br>5) Read out the diagnostic trouble code. | Is the diagnostic same trouble code as in the current diagnosis still being output? | Replace VDCCM. <Ref. to VDC-8, VDC Control Module (VDCCM).> | Go to step **13.** |
| 13 | **CHECK ANY OTHER DIAGNOSTIC TROUBLE CODES APPEARANCE.** | Are other diagnostic trouble codes being output? | Proceed with the diagnosis corresponding to the diagnostic trouble code. | A temporary poor contact. |

## O: DTC 31 ABNORMAL INLET AND CUT SOLENOID VALVE CIRCUIT(S) (FRONT RH INLET)

NOTE:
For diagnostic procedure, refer to DTC 62. <Ref. to VDC-64, DTC 62 ABNORMAL INLET AND CUT SOLENOID VALVE CIRCUIT(S) (SECONDARY CUT), Diagnostics Chart with Diagnosis Connector.>

## P: DTC 33 ABNORMAL INLET AND CUT SOLENOID VALVE CIRCUIT(S) (FRONT LH INLET)

NOTE:
For diagnostic procedure, refer to DTC 62. <Ref. to VDC-64, DTC 62 ABNORMAL INLET AND CUT SOLENOID VALVE CIRCUIT(S) (SECONDARY CUT), Diagnostics Chart with Diagnosis Connector.>

## Q: DTC 35 ABNORMAL INLET AND CUT SOLENOID VALVE CIRCUIT(S) (REAR RH INLET)

NOTE:
For diagnostic procedure, refer to DTC 62. <Ref. to VDC-64, DTC 62 ABNORMAL INLET AND CUT SOLENOID VALVE CIRCUIT(S) (SECONDARY CUT), Diagnostics Chart with Diagnosis Connector.>

## R: DTC 37 ABNORMAL INLET AND CUT SOLENOID VALVE CIRCUIT(S) (REAR LH INLET)

NOTE:
For diagnostic procedure, refer to DTC 62. <Ref. to VDC-64, DTC 62 ABNORMAL INLET AND CUT SOLENOID VALVE CIRCUIT(S) (SECONDARY CUT), Diagnostics Chart with Diagnosis Connector.>

## S: DTC 61 ABNORMAL INLET AND CUT SOLENOID VALVE CIRCUIT(S) (PRIMARY CUT)

NOTE:
For diagnostic procedure, refer to DTC 62. <Ref. to VDC-64, DTC 62 ABNORMAL INLET AND CUT SOLENOID VALVE CIRCUIT(S) (SECONDARY CUT), Diagnostics Chart with Diagnosis Connector.>

# T: DTC 62 ABNORMAL INLET AND CUT SOLENOID VALVE CIRCUIT(S) (SECONDARY CUT)

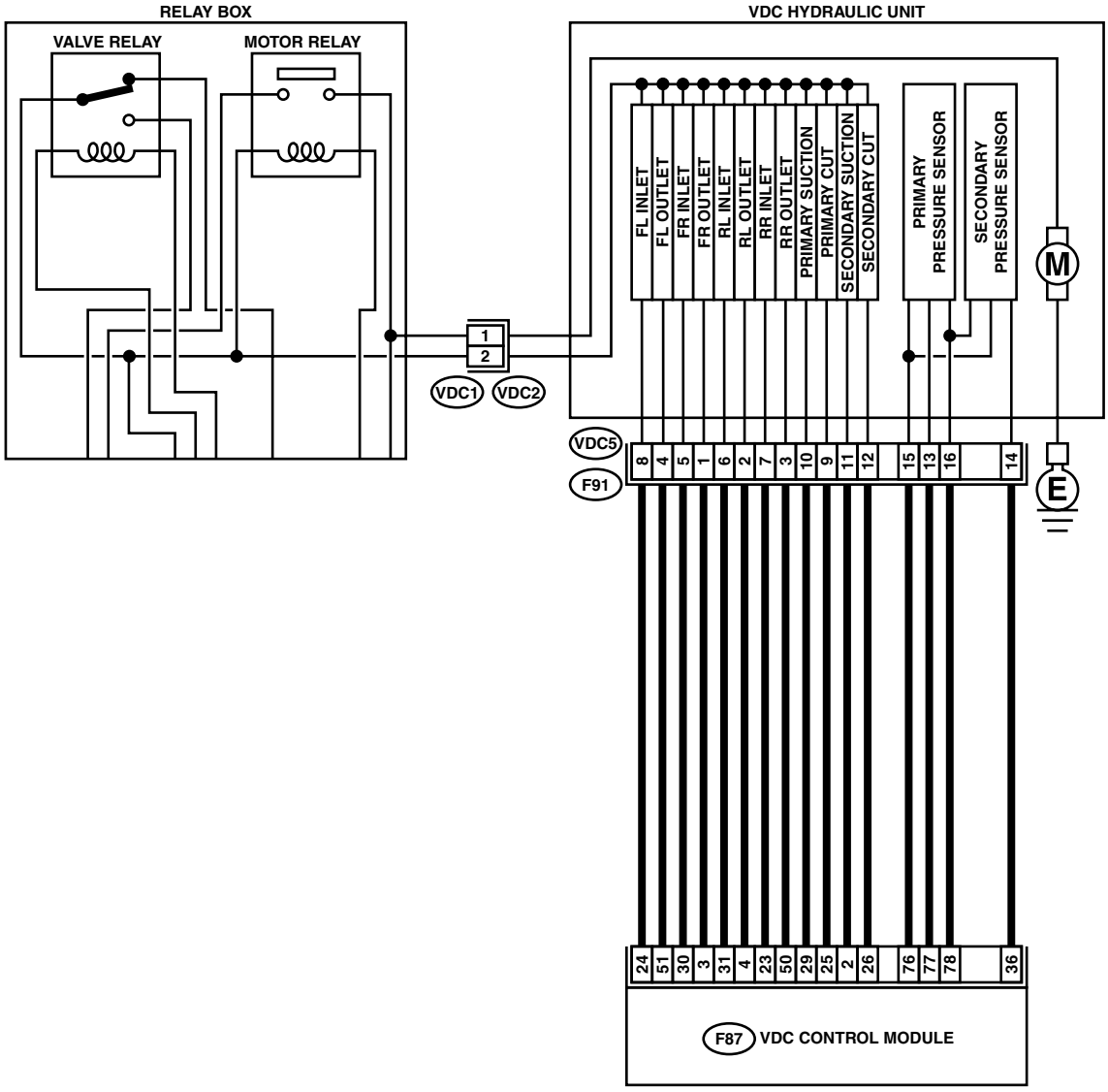
***DIAGNOSIS:***

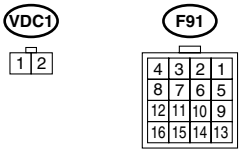
- Faulty harness/connector
- Faulty solenoid valve in VDCH/U

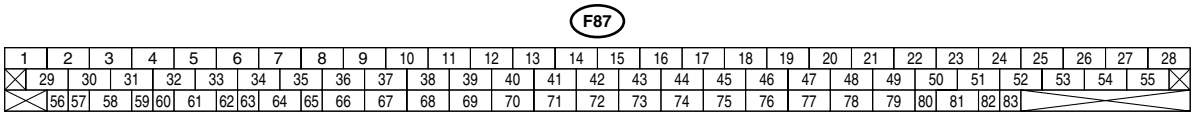
***TROUBLE SYMPTOM:***

- ABS does not operate.
- VDC does not operate.

**WIRING DIAGRAM:**

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| | Step | Check | Yes | No |
|---|---|---|---|---|
| 1 | **CHECK RESISTANCE OF SOLENOID VALVE.**<br>1) Turn ignition switch to OFF.<br>2) Disconnect two connectors (VDC1, F91) from VDCH/U.<br>3) Measure resistance between VDCH/U connector terminals.<br>***Connector & terminal***<br>***DTC 31/(VDC5) No. 5 — (VDC2) No. 2:***<br>***DTC 33/(VDC5) No. 8 — (VDC2) No. 2:***<br>***DTC 35/(VDC5) No. 7 — (VDC2) No. 2:***<br>***DTC 37/(VDC5) No. 6 — (VDC2) No. 2:***<br>***DTC 61/(VDC5) No. 9 — (VDC2) No. 2:***<br>***DTC 62/(VDC5) No. 12 — (VDC2) No. 2:*** | Is the measured value within 8.04 to 9.04 Ω? | Go to step **2.** | Replace VDCH/U. <Ref. to VDC-8, VDC Control Module (VDCCM).> |
| 2 | **CHECK GROUND SHORT OF SOLENOID VALVE.**<br>Measure resistance between VDCH/U connector and chassis ground.<br>***Connector & terminal***<br>***DTC 31/(VDC5) No. 5 — Chassis ground:***<br>***DTC 33/(VDC5) No. 8 — Chassis ground:***<br>***DTC 35/(VDC5) No. 7 — Chassis ground:***<br>***DTC 37/(VDC5) No. 6 — Chassis ground:***<br>***DTC 61/(VDC5) No. 9 — Chassis ground:***<br>***DTC 62/(VDC5) No. 12 — Chassis ground:*** | Is the measured value more than 1 MΩ? | Go to step **3.** | Replace VDCH/U. <Ref. to VDC-8, VDC Control Module (VDCCM).> |
| 3 | **CHECK BATTERY SHORT OF SOLENOID VALVE.**<br>1) Disconnect connector from VDCCM.<br>2) Measure voltage between VDCH/U connector and chassis ground.<br>***Connector & terminal***<br>***DTC 31/(VDC5) No. 5 (+) — Chassis ground (–):***<br>***DTC 33/(VDC5) No. 8 (+) — Chassis ground (–):***<br>***DTC 35/(VDC5) No. 7 (+) — Chassis ground (–):***<br>***DTC 37/(VDC5) No. 6 (+) — Chassis ground (–):***<br>***DTC 61/(VDC5) No. 9 (+) — Chassis ground (–):***<br>***DTC 62/(VDC5) No. 12 (+) — Chassis ground (–):*** | Is the measured value less than 1 V? | Go to step **4.** | Replace VDCH/U. <Ref. to VDC-8, VDC Control Module (VDCCM).> |

| | Step | Check | Yes | No |
|---|---|---|---|---|
| 4 | **CHECK BATTERY SHORT OF SOLENOID VALVE.**<br>1) Turn ignition switch to ON.<br>2) Measure voltage between VDCH/U connector and chassis ground.<br>***Connector & terminal***<br>***DTC 31/(VDC5) No. 5 (+) — Chassis ground (–):***<br>***DTC 33/(VDC5) No. 8 (+) — Chassis ground (–):***<br>***DTC 35/(VDC5) No. 7 (+) — Chassis ground (–):***<br>***DTC 37/(VDC5) No. 6 (+) — Chassis ground (–):***<br>***DTC 61/(VDC5) No. 9 (+) — Chassis ground (–):***<br>***DTC 62/(VDC5) No. 12 (+) — Chassis ground (–):*** | Is the measured value less than 1 V? | Go to step **5.** | Replace VDCH/U. <Ref. to VDC-8, VDC Control Module (VDCCM).> |
| 5 | **CHECK BATTERY SHORT OF HARNESS.**<br>1) Turn ignition switch to OFF.<br>2) Measure voltage between VDCCM connector and chassis ground.<br>***Connector & terminal***<br>***DTC 31/(F87) No. 30 (+) — Chassis ground (–):***<br>***DTC 33/(F87) No. 24 (+) — Chassis ground (–):***<br>***DTC 35/(F87) No. 23 (+) — Chassis ground (–):***<br>***DTC 37/(F87) No. 31 (+) — Chassis ground (–):***<br>***DTC 61/(F87) No. 25 (+) — Chassis ground (–):***<br>***DTC 62/(F87) No. 26 (+) — Chassis ground (–):*** | Is the measured value less than 1 V? | Go to step **6.** | Repair harness between VDCCM and VDCH/U. |
| 6 | **CHECK BATTERY SHORT OF HARNESS.**<br>1) Turn ignition switch to ON.<br>2) Measure voltage between VDCCM connector and chassis ground.<br>***Connector & terminal***<br>***DTC 31/(F87) No. 30 (+) — Chassis ground (–):***<br>***DTC 33/(F87) No. 24 (+) — Chassis ground (–):***<br>***DTC 35/(F87) No. 23 (+) — Chassis ground (–):***<br>***DTC 37/(F87) No. 31 (+) — Chassis ground (–):***<br>***DTC 61/(F87) No. 25 (+) — Chassis ground (–):***<br>***DTC 62/(F87) No. 26 (+) — Chassis ground (–):*** | Is the measured value less than 1 V? | Go to step **7.** | Repair harness between VDCCM and VDCH/U. |

| | Step | Check | Yes | No |
|---|---|---|---|---|
| 7 | **CHECK GROUND SHORT OF HARNESS.**<br>1) Turn ignition switch to OFF.<br>2) Measure resistance between VDCCM connector and chassis ground.<br>***Connector & terminal***<br>***DTC 31/(F87) No. 30 — Chassis ground:***<br>***DTC 33/(F87) No. 24 — Chassis ground:***<br>***DTC 35/(F87) No. 23 — Chassis ground:***<br>***DTC 37/(F87) No. 31 — Chassis ground:***<br>***DTC 61/(F87) No. 25 — Chassis ground:***<br>***DTC 62/(F87) No. 26 — Chassis ground:*** | Is the measured value more than 1 MΩ? | Go to step **8.** | Repair harness between VDCCM and VDCH/U. |
| 8 | **CHECK HARNESS/CONNECTOR BETWEEN VDCCM AND VDCH/U.**<br>1) Connect connector (F91) to VDCH/U.<br>2) Measure resistance between VDCCM connector and VDCH/U connector.<br>***Connector & terminal***<br>***DTC 31/(F87) No. 30 — (VDC2) No. 2:***<br>***DTC 33/(F87) No. 24 — (VDC2) No. 2:***<br>***DTC 35/(F87) No. 23 — (VDC2) No. 2:***<br>***DTC 37/(F87) No. 31— (VDC2) No. 2:***<br>***DTC 61/(F87) No. 25 — (VDC2) No. 2:***<br>***DTC 62/(F87) No. 26 — (VDC2) No. 2:*** | Is the measured value within 7 to 10 Ω? | Go to step **9.** | Repair harness/ connector between VDCCM and VDCH/U. |
| 9 | **CHECK POOR CONTACT IN CONNECTORS.** | Is there poor contact in connectors between VDCCM and VDCH/U? | Repair connector. | Go to step **10.** |
| 10 | **CHECK VDCCM.**<br>1) Connect all connectors.<br>2) Erase the memory.<br>3) Perform inspection mode.<br>4) Read out the diagnostic trouble code. | Is the same diagnostic trouble code as in the current diagnosis still being output? | Repair VDCCM. <Ref. to VDC-8, VDC Control Module (VDCCM).> | Go to step **11.** |
| 11 | **CHECK ANY OTHER DIAGNOSTIC TROUBLE CODES APPEARANCE.** | Are other diagnostic trouble codes being output? | Proceed with the diagnosis corresponding to the diagnostic trouble code. | A temporary poor contact. |

## U: DTC 32 ABNORMAL OUTLET AND SUCTION SOLENOID VALVE CIRCUIT(S) (FRONT RH OUTLET)

NOTE:
For diagnostic procedure, refer to DTC 64. <Ref. to VDC-70, DTC 64 ABNORMAL OUTLET AND SUCTION SOLENOID VALVE CIRCUIT(S) (SECONDARY SUCTION), Diagnostics Chart with Diagnosis Connector.>

## V: DTC 34 ABNORMAL OUTLET AND SUCTION SOLENOID VALVE CIRCUIT(S) (FRONT LH OUTLET)

NOTE:
For diagnostic procedure, refer to DTC 64. <Ref. to VDC-70, DTC 64 ABNORMAL OUTLET AND SUCTION SOLENOID VALVE CIRCUIT(S) (SECONDARY SUCTION), Diagnostics Chart with Diagnosis Connector.>

## W: DTC 36 ABNORMAL OUTLET AND SUCTION SOLENOID VALVE CIRCUIT(S) (REAR RH OUTLET)

NOTE:
For diagnostic procedure, refer to DTC 64. <Ref. to VDC-70, DTC 64 ABNORMAL OUTLET AND SUCTION SOLENOID VALVE CIRCUIT(S) (SECONDARY SUCTION), Diagnostics Chart with Diagnosis Connector.>

## X: DTC 38 ABNORMAL OUTLET AND SUCTION SOLENOID VALVE CIRCUIT(S) (REAR LH OUTLET)

NOTE:
For diagnostic procedure, refer to DTC 64. <Ref. to VDC-70, DTC 64 ABNORMAL OUTLET AND SUCTION SOLENOID VALVE CIRCUIT(S) (SECONDARY SUCTION), Diagnostics Chart with Diagnosis Connector.>

## Y: DTC 63 ABNORMAL OUTLET AND SUCTION SOLENOID VALVE CIRCUIT(S) (PRIMARY SUCTION)

NOTE:
For diagnostic procedure, refer to DTC 64. <Ref. to VDC-70, DTC 64 ABNORMAL OUTLET AND SUCTION SOLENOID VALVE CIRCUIT(S) (SECONDARY SUCTION), Diagnostics Chart with Diagnosis Connector.>

**MEMO:**

## Z: DTC 64 ABNORMAL OUTLET AND SUCTION SOLENOID VALVE CIRCUIT(S) (SECONDARY SUCTION)

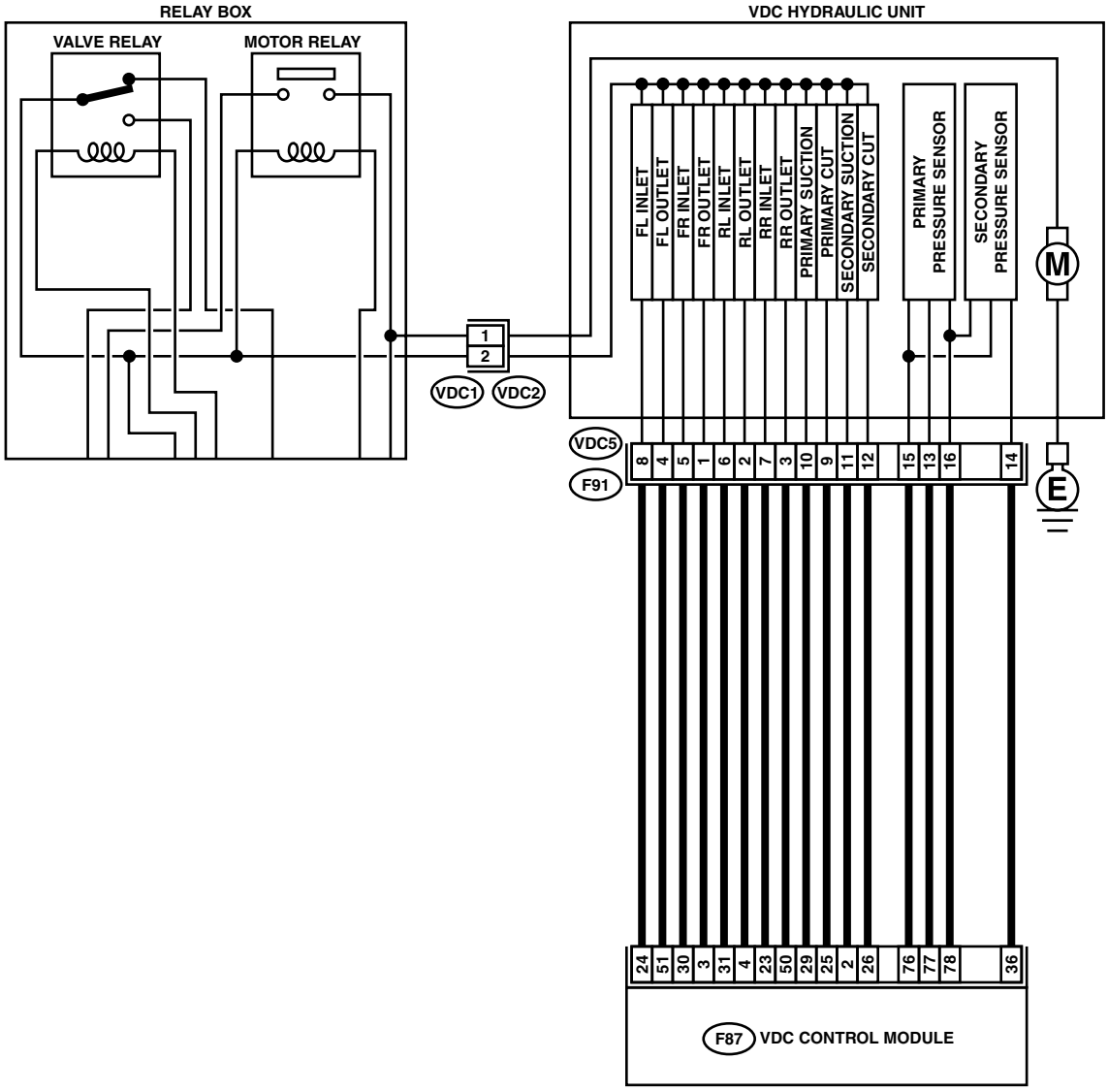
***DIAGNOSIS:***

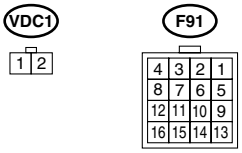
- Faulty harness/connector
- Faulty solenoid valve in VDCH/U

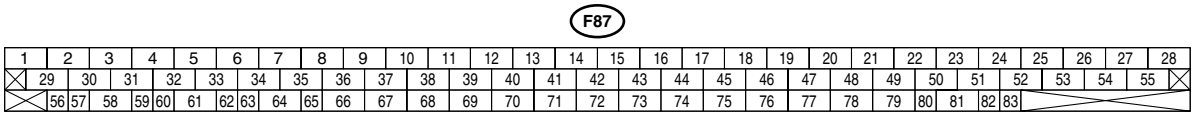
***TROUBLE SYMPTOM:***

- ABS does not operate.
- VDC does not operate.

**WIRING DIAGRAM:**




VDC00142

| | Step | Check | Yes | No |
|---|---|---|---|---|
| 1 | **CHECK RESISTANCE OF SOLENOID VALVE.**<br>1) Turn ignition switch to OFF.<br>2) Disconnect two connectors (VDC1, F91) from VDCH/U.<br>3) Measure resistance between VDCH/U connector terminals.<br>***Connector & terminal***<br>***DTC 32/(VDC5) No. 1 — (VDC2) No. 2:***<br>***DTC 34/(VDC5) No. 4 — (VDC2) No. 2:***<br>***DTC 36/(VDC5) No. 3 — (VDC2) No. 2:***<br>***DTC 38/(VDC5) No. 2 — (VDC2) No. 2:***<br>***DTC 63/(VDC5) No. 10 — (VDC2) No. 2:***<br>***DTC 64/(VDC5) No. 11 — (VDC2) No. 2:*** | Is the measured value within 3.8 to 4.8 Ω? | Go to step **2.** | Replace VDCH/U. <Ref. to VDC-8, VDC Control Module (VDCCM).> |
| 2 | **CHECK GROUND SHORT OF SOLENOID VALVE.**<br>Measure resistance between VDCH/U connector and chassis ground.<br>***Connector & terminal***<br>***DTC 32/(VDC5) No. 1 — Chassis ground:***<br>***DTC 34/(VDC5) No. 4 — Chassis ground:***<br>***DTC 36/(VDC5) No. 3 — Chassis ground:***<br>***DTC 38/(VDC5) No. 2 — Chassis ground:***<br>***DTC 63/(VDC5) No. 10 — Chassis ground:***<br>***DTC 64/(VDC5) No. 11 — Chassis ground:*** | Is the measured value more than 1 MΩ? | Go to step **3.** | Replace VDCH/U. <Ref. to VDC-8, VDC Control Module (VDCCM).> |
| 3 | **CHECK BATTERY SHORT OF SOLENOID VALVE.**<br>1) Disconnect connector from VDCCM.<br>2) Measure voltage between VDCH/U connector and chassis ground.<br>***Connector & terminal***<br>***DTC 32/(VDC5) No. 1 (+) — Chassis ground (–):***<br>***DTC 34/(VDC5) No. 4 (+) — Chassis ground (–):***<br>***DTC 36/(VDC5) No. 3 (+) — Chassis ground (–):***<br>***DTC 38/(VDC5) No. 2 (+) — Chassis ground (–):***<br>***DTC 63/(VDC5) No. 10 (+) — Chassis ground (–):***<br>***DTC 64/(VDC5) No. 11 (+) — Chassis ground (–):*** | Is the measured value less than 1 V? | Go to step **4.** | Replace VDCH/U. <Ref. to VDC-8, VDC Control Module (VDCCM).> |

| | Step | Check | Yes | No |
|---|---|---|---|---|
| 4 | **CHECK BATTERY SHORT OF SOLENOID VALVE.**<br>1) Turn ignition switch to ON.<br>2) Measure voltage between VDCH/U connector and chassis ground.<br>***Connector & terminal***<br>***DTC 32/(VDC5) No. 1 (+) — Chassis ground (–):***<br>***DTC 34/(VDC5) No. 4 (+) — Chassis ground (–):***<br>***DTC 36/(VDC5) No. 3 (+) — Chassis ground (–):***<br>***DTC 38/(VDC5) No. 2 (+) — Chassis ground (–):***<br>***DTC 63/(VDC5) No. 10 (+) — Chassis ground (–):***<br>***DTC 64/(VDC5) No. 11 (+) — Chassis ground (–):*** | Is the measured value less than 1 V? | Go to step **5.** | Replace VDCH/U. <Ref. to VDC-8, VDC Control Module (VDCCM).> |
| 5 | **CHECK BATTERY SHORT OF HARNESS.**<br>1) Turn ignition switch to OFF.<br>2) Measure voltage between VDCCM connector and chassis ground.<br>***Connector & terminal***<br>***DTC 32/(F87) No. 3 (+) — Chassis ground (–):***<br>***DTC 34/(F87) No. 51 (+) — Chassis ground (–):***<br>***DTC 36/(F87) No. 50 (+) — Chassis ground (–):***<br>***DTC 38/(F87) No. 4 (+) — Chassis ground (–):***<br>***DTC 63/(F87) No. 29 (+) — Chassis ground (–):***<br>***DTC 64/(F87) No. 2 (+) — Chassis ground (–):*** | Is the measured value less than 1 V? | Go to step **6.** | Repair harness between VDCCM and VDCH/U. |
| 6 | **CHECK BATTERY SHORT OF HARNESS.**<br>1) Turn ignition switch to ON.<br>2) Measure voltage between VDCCM connector and chassis ground.<br>***Connector & terminal***<br>***DTC 32/(F87) No. 3 (+) — Chassis ground (–):***<br>***DTC 34/(F87) No. 51 (+) — Chassis ground (–):***<br>***DTC 36/(F87) No. 50 (+) — Chassis ground (–):***<br>***DTC 38/(F87) No. 4 (+) — Chassis ground (–):***<br>***DTC 63/(F87) No. 29 (+) — Chassis ground (–):***<br>***DTC 64/(F87) No. 2 (+) — Chassis ground (–):*** | Is the measured value less than 1 V? | Go to step **7.** | Repair harness between VDCCM and VDCH/U. |

| | Step | Check | Yes | No |
|---|---|---|---|---|
| 7 | **CHECK GROUND SHORT OF HARNESS.**<br>1) Turn ignition switch to OFF.<br>2) Measure resistance between VDCCM connector and chassis ground.<br>***Connector & terminal***<br>***DTC 32/(F87) No. 3 — Chassis ground:***<br>***DTC 34/(F87) No. 51 — Chassis ground:***<br>***DTC 36/(F87) No. 50 — Chassis ground:***<br>***DTC 38/(F87) No. 4 — Chassis ground:***<br>***DTC 63/(F87) No. 29 — Chassis ground:***<br>***DTC 64/(F87) No. 2 — Chassis ground:*** | Is the measured value more than 1 MΩ? | Go to step **8.** | Repair harness between VDCCM and VDCH/U. |
| 8 | **CHECK HARNESS/CONNECTOR BETWEEN VDCCM AND VDCH/U.**<br>1) Connect connector (F91) to VDCH/U.<br>2) Measure resistance between VDCCM connector and VDCH/U connector.<br>***Connector & terminal***<br>***DTC 32/(F87) No. 3 — (VDC2) No. 1:***<br>***DTC 34/(F87) No. 51 — (VDC2) No. 1:***<br>***DTC 36/(F87) No. 50 — (VDC2) No. 1:***<br>***DTC 38/(F87) No. 4 — (VDC2) No. 1:***<br>***DTC 63/(F87) No. 29 — (VDC2) No. 1:***<br>***DTC 64/(F87) No. 2 — (VDC2) No. 1:*** | Is the measured value within 3 to 6 Ω? | Go to step **9.** | Repair harness/ connector between VDCCM and VDCH/U. |
| 9 | **CHECK POOR CONTACT IN CONNECTORS.** | Is there poor contact in connectors between VDCCM and VDCH/U? | Repair connector. | Go to step **10.** |
| 10 | **CHECK VDCCM.**<br>1) Connect all connectors.<br>2) Erase the memory.<br>3) Perform inspection mode.<br>4) Read out the diagnostic trouble code. | Is the same diagnostic trouble code as in the current diagnosis still being output? | Replace VDCCM. <Ref. to VDC-8, VDC Control Module (VDCCM).> | Go to step **11.** |
| 11 | **CHECK ANY OTHER DIAGNOSTIC TROUBLE CODES APPEARANCE.** | Are other diagnostic trouble codes being output? | Proceed with the diagnosis corresponding to the diagnostic trouble code. | A temporary poor contact. |

## AA:DTC 41 ABNORMAL VDC CONTROL MODULE

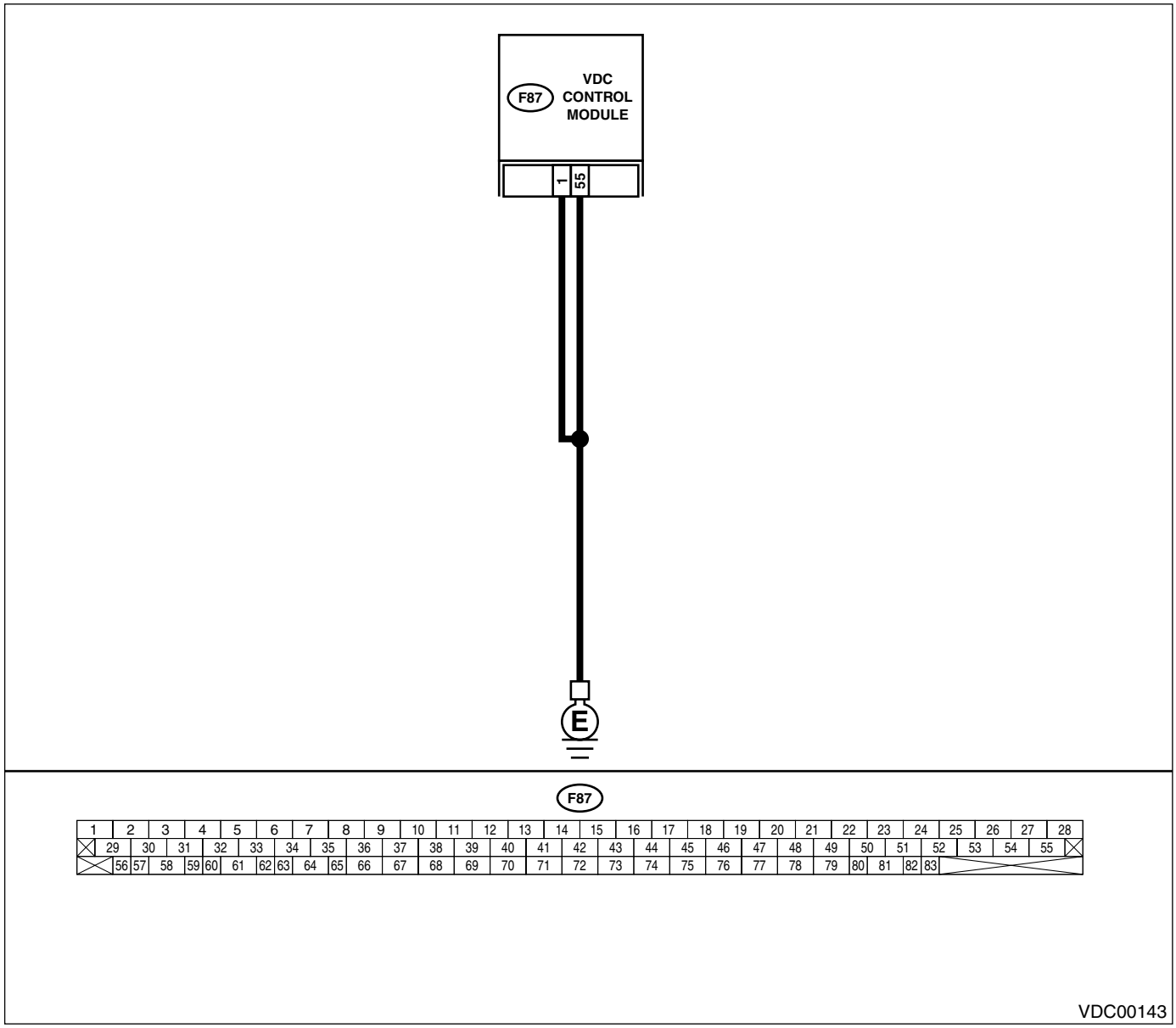
***DIAGNOSIS:***

- Faulty VDCCM

***TROUBLE SYMPTOM:***

- ABS does not operate.
- VDC does not operate.

**WIRING DIAGRAM:**



| | Step | Check | Yes | No |
|---|---|---|---|---|
| 1 | **CHECK GROUND CIRCUIT OF VDCCM.**<br>1) Turn ignition switch to OFF.<br>2) Disconnect connector from VDCCM.<br>3) Measure resistance between VDCCM and chassis ground.<br>***Connector & terminal***<br>***(F87) No. 1 — Chassis ground:***<br>***(F87) No. 55 — Chassis ground:*** | Is the measured value less than 0.5 Ω? | Go to step **2.** | Repair VDCCM ground harness. |
| 2 | **CHECK POOR CONTACT IN CONNECTORS.** | Is there poor contact in connectors between battery, ignition switch and VDCCM? | Repair connector. | Go to step **3.** |
| 3 | **CHECK SOURCES OF SIGNAL NOISE.** | Is the car telephone or the wireless transmitter properly installed? | Go to step **4.** | Properly install the car telephone or the wireless transmitter. |
| 4 | **CHECK SOURCES OF SIGNAL NOISE.** | Are noise sources (such as an antenna) installed near the sensor harness? | Install the noise sources apart from the sensor harness. | Go to step **5.** |
| 5 | **CHECK VDCCM.**<br>1) Connect all connectors.<br>2) Erase the memory.<br>3) Perform inspection mode.<br>4) Read out the diagnostic trouble code. | Is the same diagnostic trouble code as in the current diagnosis still being output? | Replace VDCCM. <Ref. to VDC-8, VDC Control Module (VDCCM).> | Go to step **6.** |
| 6 | **CHECK ANY OTHER DIAGNOSTIC TROUBLE CODES APPEARANCE.** | Are other diagnostic trouble codes being output? | Proceed with the diagnosis corresponding to the diagnostic trouble code. | A temporary poor contact. |

## AB:DTC 42 SOURCE VOLTAGE IS ABNORMAL.

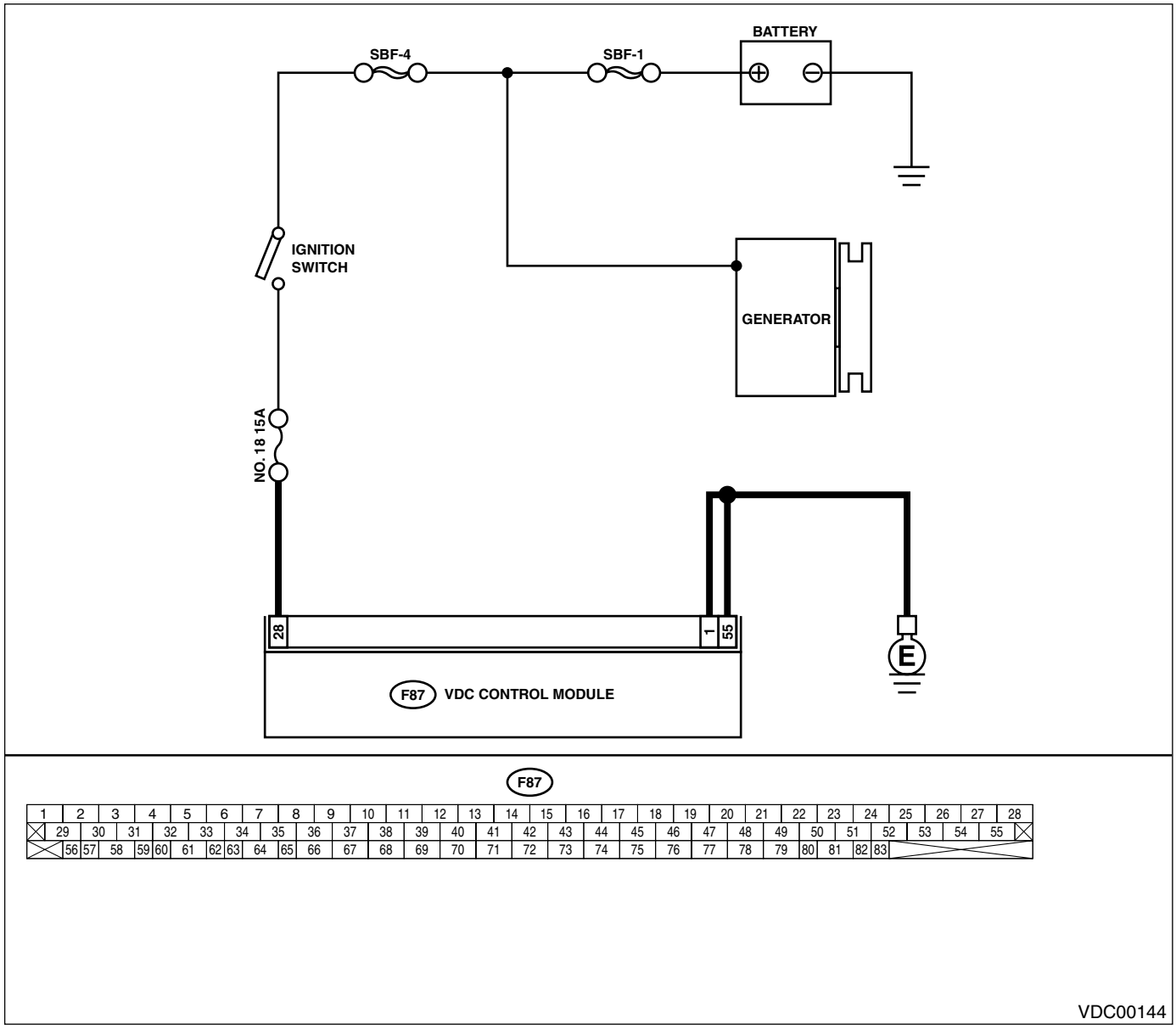
***DIAGNOSIS:***

- Power source voltage of the VDCCM is low.

***TROUBLE SYMPTOM:***

- ABS does not operate.
- VDC does not operate.

**WIRING DIAGRAM:**



| | Step | Check | Yes | No |
|---|---|---|---|---|
| 1 | **CHECK GENERATOR.**<br>1) Start engine.<br>2) Idling after warm-up.<br>3) Measure voltage between generator B terminal and chassis ground.<br>***Terminal***<br>***Generator B terminal — Chassis ground:*** | Is the measured value within 10 to 15 V? | Go to step **2.** | Repair generator. |
| 2 | **CHECK BATTERY TERMINAL.**<br>Turn ignition switch to OFF. | Are the positive and negative battery terminals tightly clamped? | Go to step **3.** | Tighten the clamp of terminal. |
| 3 | **CHECK INPUT VOLTAGE OF VDCCM.**<br>1) Disconnect connector from VDCCM.<br>2) Run the engine at idle.<br>3) Measure voltage between VDCCM connector and chassis ground.<br>***Connector & terminal***<br>***(F87) No. 28 (+) — Chassis ground (–):*** | Is the measured value within 10 to 15 V? | Go to step **4.** | Repair harness connector between battery, ignition switch and VDCCM. |
| 4 | **CHECK GROUND CIRCUIT OF VDCCM.**<br>1) Turn ignition switch to OFF.<br>2) Measure resistance between VDCCM connector and chassis ground.<br>***Connector & terminal***<br>***(F87) No. 1 — Chassis ground:***<br>***(F87) No. 55 — Chassis ground:*** | Is the measured value less than 0.5 Ω? | Go to step **5.** | Repair VDCCM ground harness. |
| 5 | **CHECK POOR CONTACT IN CONNECTORS.** | Is there poor contact in connectors between generator, battery and VDCCM? | Repair connector. | Go to step **6.** |
| 6 | **CHECK VDCCM.**<br>1) Connect all connectors.<br>2) Erase the memory.<br>3) Perform inspection mode.<br>4) Read out the diagnostic trouble code. | Is the same diagnostic trouble code as in the current diagnosis still being output? | Replace VDCCM. <Ref. to VDC-8, VDC Control Module (VDCCM).> | Go to step **7.** |
| 7 | **CHECK ANY OTHER DIAGNOSTIC TROUBLE CODES APPEARANCE.** | Are other diagnostic trouble codes being output? | Proceed with the diagnosis corresponding to the diagnostic trouble code. | A temporary poor contact. |

## AC:DTC 43 FAULTY VDCCM — ECM COMMUNICATION LINE

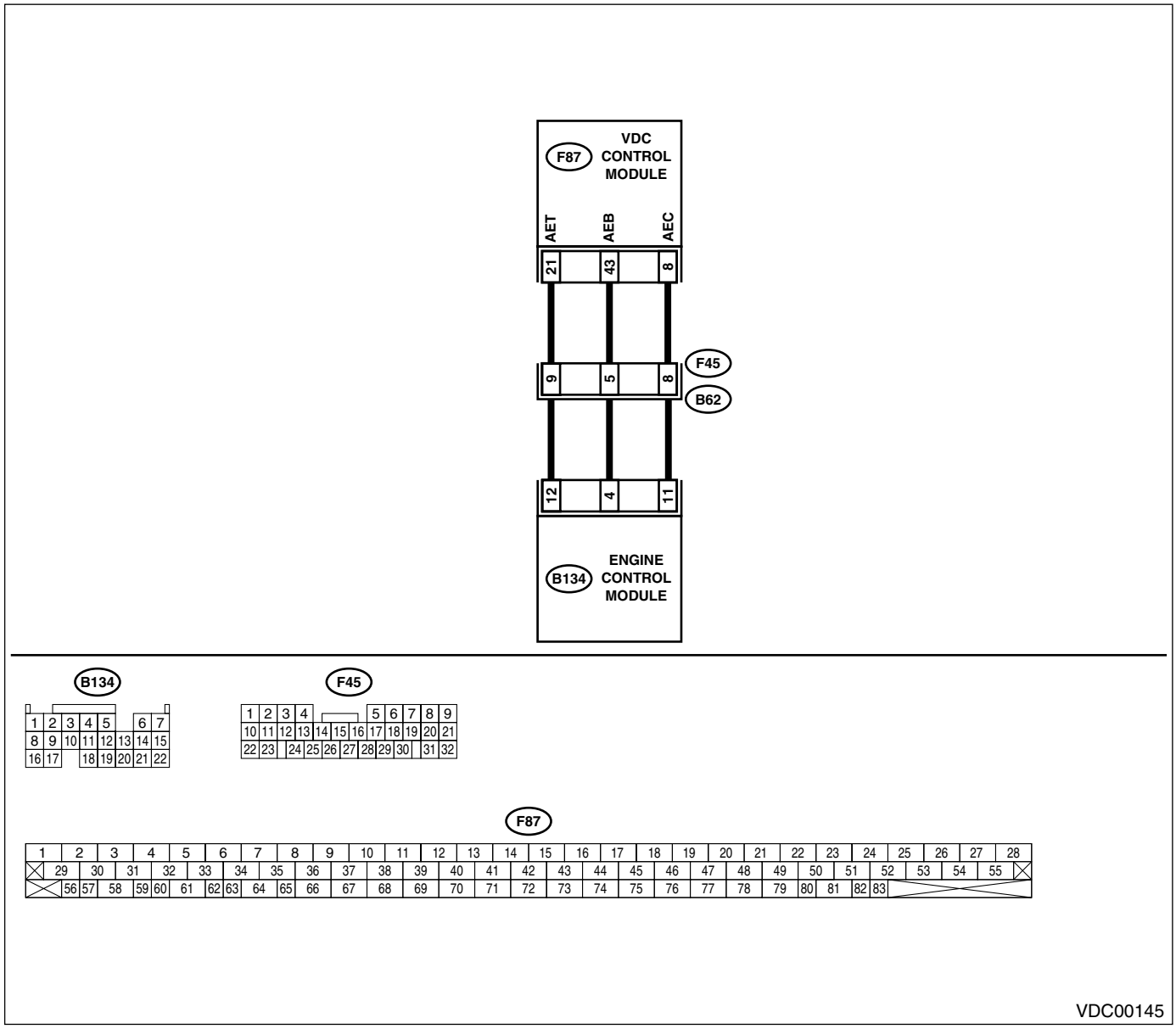
***DIAGNOSIS:***

- AET communication line is broken or short circuited.
- AEB communication line is broken or short circuited.
- AEC communication line is broken or short circuited.

***TROUBLE SYMPTOM:***

- VDC does not operate.

**WIRING DIAGRAM:**



| | Step | Check | Yes | No |
|---|---|---|---|---|
| 1 | **CHECK HARNESS/CONNECTOR BETWEEN VDCCM AND ECM.**<br>1) Turn ignition switch to OFF.<br>2) Disconnect connector from VDCCM.<br>3) Disconnect connector from ECM.<br>4) Measure resistance between VDCCM connector and ECM.<br>***Connector & terminal***<br>***(F87) No. 21 — (B134) No. 12:***<br>***(F87) No. 43 — (B134) No. 4:***<br>***(F87) No. 8 — (B134) No. 11:*** | Is the measured value less than 0.5 Ω? | Go to step **2.** | Repair harness/ connector between VDCCM and ECM. |
| 2 | **CHECK GROUND SHORT OF HARNESS.**<br>Measure resistance between VDCCM connector and chassis ground.<br>***Connector & terminal***<br>***(F87) No. 21 — Chassis ground:***<br>***(F87) No. 43 — Chassis ground:***<br>***(F87) No. 8 — Chassis ground:*** | Is the measured value more than 1 MΩ? | Go to step **3.** | Repair harness/ connector between VDCCM and ECM. |
| 3 | **CHECK BATTERY SHORT OF HARNESS.**<br>Measure voltage between VDCCM connector and chassis ground.<br>***Connector & terminal***<br>***(F87) No. 21 (+) — Chassis ground (–):***<br>***(F87) No. 43 (+) — Chassis ground (–):***<br>***(F87) No. 8 (+) — Chassis ground (–):*** | Is the measured value less than 0.5 V? | Go to step **4.** | Repair harness/ connector between VDCCM and ECM. |
| 4 | **CHECK BATTERY SHORT OF HARNESS.**<br>1) Turn ignition switch to ON.<br>2) Measure voltage between VDCCM connector and chassis ground.<br>***Connector & terminal***<br>***(F87) No. 21 (+) — Chassis ground (–):***<br>***(F87) No. 43 (+) — Chassis ground (–):***<br>***(F87) No. 8 (+) — Chassis ground (–):*** | Is the measured value less than 1 V? | Go to step **5.** | Repair harness/ connector between VDCCM and ECM. |
| 5 | **CHECK HARNESS/CONNECTOR BETWEEN VDCCM AND ECM.**<br>1) Turn ignition switch to OFF.<br>2) Connect connector to ECM.<br>3) Turn ignition switch to ON.<br>4) Measure voltage between VDCCM connector and chassis ground.<br>***Connector & terminal***<br>***(F87) No. 21 (+) — Chassis ground (–):***<br>***(F87) No. 43 (+) — Chassis ground (–):***<br>***(F87) No. 8 (+) — Chassis ground (–):*** | Is the measured value within 10 to 15 V? | Go to step **6.** | Go to step **9.** |
| 6 | **CHECK POOR CONTACT IN CONNECTORS.** | Is there poor contact in connectors between ECM and VDCCM? | Repair connector. | Go to step **7.** |
| 7 | **CHECK VDCCM.**<br>1) Turn ignition switch to OFF.<br>2) Connect all connectors.<br>3) Erase the memory.<br>4) Perform inspection mode.<br>5) Read out the diagnostic trouble code. | Is the same diagnostic trouble code as in the current diagnosis still being output? | Replace VDCCM. <Ref. to VDC-8, VDC Control Module (VDCCM).> | Go to step **8.** |
| 8 | **CHECK ANY OTHER DIAGNOSTIC TROUBLE CODES APPEARANCE.** | Are other diagnostic trouble codes being output? | Proceed with the diagnosis corresponding to the diagnostic trouble code. | A temporary poor contact. |

| | Step | Check | Yes | No |
|---|---|---|---|---|
| 9 | **CHECK ECM.**<br>1) Turn ignition switch to ON.<br>2) Measure voltage between ECM connector terminal and chassis ground.<br>***Connector & terminal***<br>***(B134) No. 12 (+) — Chassis ground (–):***<br>***(B134) No. 4 (+) — Chassis ground (–):***<br>***(B134) No. 11 (+) — Chassis ground (–):*** | Is the measured value within 10 to 15 V? | Repair harness/ connector between ECM and VDCCM. | Go to step **10.** |
| 10 | **CHECK POOR CONTACT IN CONNECTORS.** | Is there poor contact in connector ECM? | Repair connector. | Go to step **11.** |
| 11 | **CHECK ENGINE.** | Is the engine functioning normally? | Replace ECM. <Ref. to FU(H6DO)-46, Engine Control Module.> | Repair engine. |

**MEMO:**

## AD:DTC 44 A COMMUNICATION WITH AT CONTROL ABNORMAL

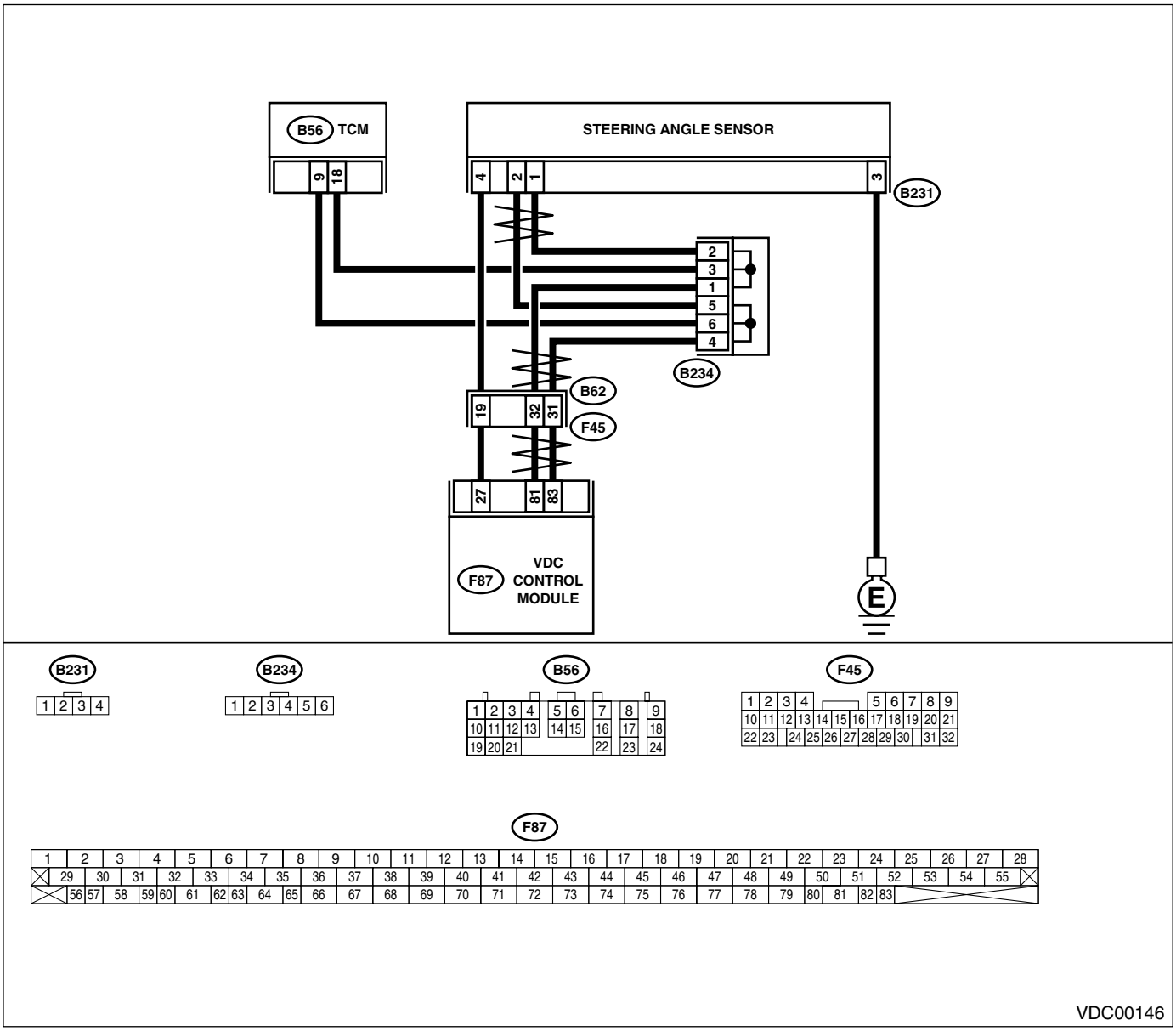
***DIAGNOSIS:***

- Communication with AT control faults

***TROUBLE SYMPTOM:***

- VDC does not operate.

**WIRING DIAGRAM:**




VDC00146

| | Step | Check | Yes | No |
|---|---|---|---|---|
| 1 | **CHECK RESISTANCE OF HARNESS.**<br>1) Turn ignition switch to OFF.<br>2) Disconnect two connectors from TCM.<br>3) Measure resistance between TCM connector terminals.<br>***Connector & terminal (B56) No. 9 — No. 18:*** | Is the measured value within 57 to 63 Ω? | Go to step **2.** | Repair harness between TCM and VDCCM. |
| 2 | **CHECK POOR CONTACT IN CONNECTORS.** | Is there poor contact in TCM connectors? | Repair connector. | Go to step **3.** |
| 3 | **CHECK TCM.**<br>1) Turn ignition switch to OFF.<br>2) Connect all connectors.<br>3) Erase the memory.<br>4) Perform inspection mode.<br>5) Read out the diagnostic trouble code. | Is the same diagnostic trouble code as in the current diagnosis still being output? | Replace TCM. <Ref. to 4AT-79, Transmission Control Module (TCM).> | Go to step **4.** |
| 4 | **CHECK ANY OTHER DIAGNOSTIC TROUBLE CODES APPEARANCE.** | Are other diagnostic trouble codes being output? | Proceed with the diagnosis corresponding to the diagnostic trouble code. | A temporary poor contact. |

## AE:DTC 45 CONTROL MODULE OUT OF SPECIFICATION

***DIAGNOSIS:***

- Control module out of specification

***TROUBLE SYMPTOM:***

- ABS does not operate.
- VDC does not operate.

| | Step | Check | Yes | No |
|---|---|---|---|---|
| 1 | **CHECK TCM.** | Is the same diagnostic trouble code as in the current diagnosis still being output? | Go to step **2.** | Proceed with the diagnosis corresponding to the diagnostic trouble code. |
| 2 | **CHECK VDCCM SPECIFICATIONS.**<br>Check the VDCCM identification mark.<br>***VDCCM identification mark***<br>***P*** | Does the VDCCM identification mark agree with the vehicle specifications? | Go to step **3.** | Replace VDCCM. <Ref. to VDC-8, VDC Control Module (VDCCM).> |
| 3 | **CHECK TCM SPECIFICATIONS.**<br>Check the TCM identification mark.<br>***TCM identification mark***<br>***HN*** | Does the TCM identification mark agree with the vehicle specifications? | Go to step **4.** | Replace TCM. <Ref. to 4AT-79, Transmission Control Module (TCM).> |
| 4 | **CHECK TCM.**<br>1) Replace TCM. <Ref. to 4AT-79, Transmission Control Module (TCM).><br>2) Erase the memory.<br>3) Perform inspection mode.<br>4) Read out the diagnostic trouble code. | Is the same diagnostic trouble code as in the current diagnosis still being output? | Go to step **5.** | The original TCM has been faulty. |
| 5 | **CHECK VDCCM.**<br>1) Install original TCM.<br>2) Replace VDCCM. <Ref. to VDC-8, VDC Control Module (VDCCM).><br>3) Erase the memory.<br>4) Perform inspection mode.<br>5) Read out the diagnostic trouble code. | Is the same diagnostic trouble code as in the current diagnosis still being output? | Go to step **6.** | The original VDCCM has been faulty. |
| 6 | **CHECK VDCCM.** | Is the same diagnostic trouble code as in the current diagnosis still being output? | Replace TCM. <Ref. to 4AT-79, Transmission Control Module (TCM).> | Proceed with the diagnosis corresponding to the diagnostic trouble code. |

**MEMO:**

## AF:DTC 46 ABNORMAL VOLTAGE OF 5 V POWER SUPPLY

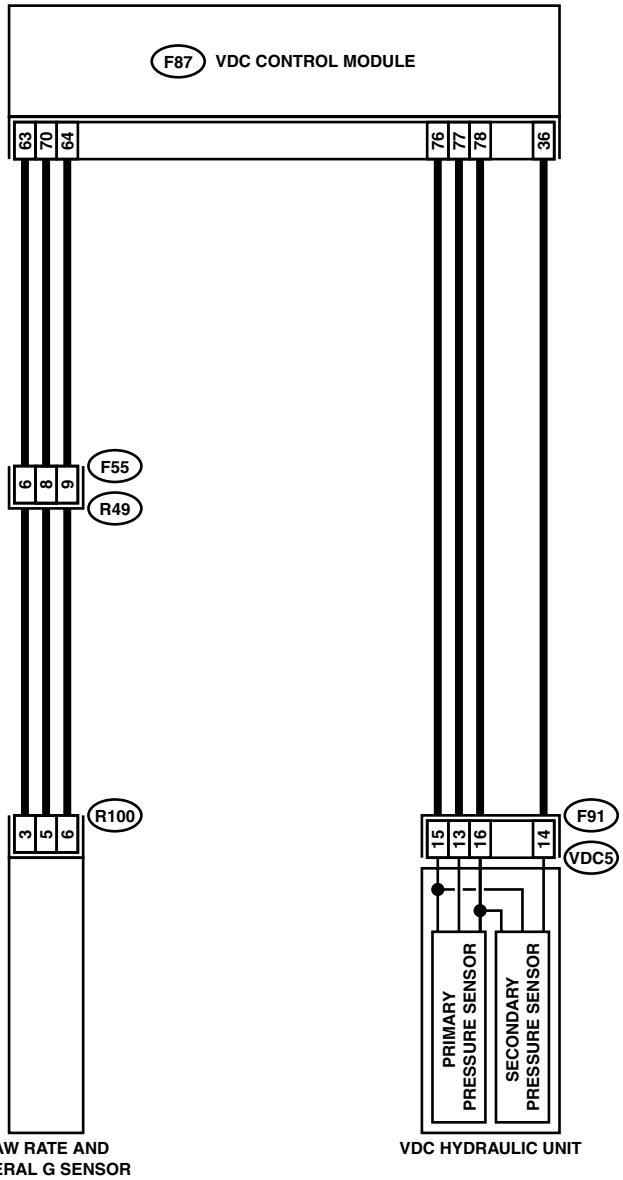
***DIAGNOSIS:***

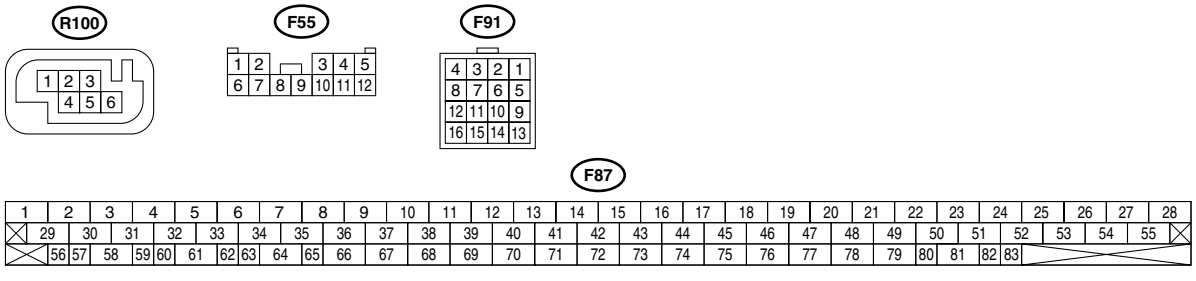
- 5 volt power supply is abnormal.

***TROUBLE SYMPTOM:***

- ABS does not operate.
- VDC does not operate.

**WIRING DIAGRAM:**




VDC00147

| | Step | Check | Yes | No |
|---|---|---|---|---|
| 1 | **CHECK GROUND SHORT OF SENSOR AND HARNESS.**<br>1) Turn ignition switch OFF.<br>2) Disconnect connector from VDCCM.<br>3) Measure resistance between VDCCM connector and chassis ground.<br>***Connector & terminal***<br>***(F87) No. 63 — Chassis ground (Lateral G sensor):***<br>***(F87) No. 78 — Chassis ground (Pressure sensor):*** | Is the measured value more than 1 MΩ? | Go to step **3.** | Go to step **2.** |
| 2 | **CHECK GROUND SHORT OF HARNESS.**<br>1) Disconnect connector from faulty sensors.<br>2) Measure resistance between VDCCM and chassis ground.<br>***Connector & terminal***<br>***(F87) No. 63 — Chassis ground (Lateral G sensor):***<br>***(F87) No. 78 — Chassis ground (Pressure sensor):*** | Is the measured value more than 1 MΩ? | Replace faulty sensors. | Repair or replace harness connector between VDCCM and faulty sensor. |
| 3 | **CHECK BATTERY SHORT OF SENSOR AND HARNESS.**<br>Measure voltage between VDCCM and chassis ground.<br>***Connector & terminal***<br>***(F87) No. 63 (+) — Chassis ground (–) (Lateral G sensor):***<br>***(F87) No. 78 (+) — Chassis ground (–) (Pressure sensor):*** | Is the measured value less than 0.5 V? | Go to step **4.** | Go to step **5.** |
| 4 | **CHECK BATTERY SHORT OF SENSOR AND HARNESS.**<br>1) Turn ignition switch to ON.<br>2) Measure voltage between VDCCM connector and chassis ground.<br>***Connector & terminal***<br>***(F87) No. 63 (+) — Chassis ground (–) (Lateral G sensor):***<br>***(F87) No. 78 (+) — Chassis ground (–) (Pressure sensor):*** | Is the measured value less than 0.5 V? | Replace VDCCM. <Ref. to VDC-8, VDC Control Module (VDCCM).> | Go to step **5.** |
| 5 | **CHECK BATTERY SHORT OF HARNESS.**<br>1) Turn ignition switch to OFF.<br>2) Disconnect connector from faulty sensors.<br>3) Measure voltage between VDCCM and chassis ground.<br>***Connector & terminal***<br>***(F87) No. 63 (+) — Chassis ground (–) (Lateral G sensor):***<br>***(F87) No. 78 (+) — Chassis ground (–) (Pressure sensor):*** | Is the measured value less than 0.5 V? | Go to step **6.** | Repair or replace harness connector between VDCCM and faulty sensor. |
| 6 | **CHECK BATTERY SHORT OF HARNESS.**<br>1) Turn ignition switch to ON.<br>2) Measure voltage between VDCCM and chassis ground.<br>***Connector & terminal***<br>***(F87) No. 63 (+) — Chassis ground (–) (Lateral G sensor):***<br>***(F87) No. 78 (+) — Chassis ground (–) (Pressure sensor):*** | Is the measured value less than 0.5 V? | Replace faulty sensor. | Repair or replace harness connector between VDCCM and faulty sensor. |

## AG:DTC 47 FAULTY CAN COMMUNICATION LINE

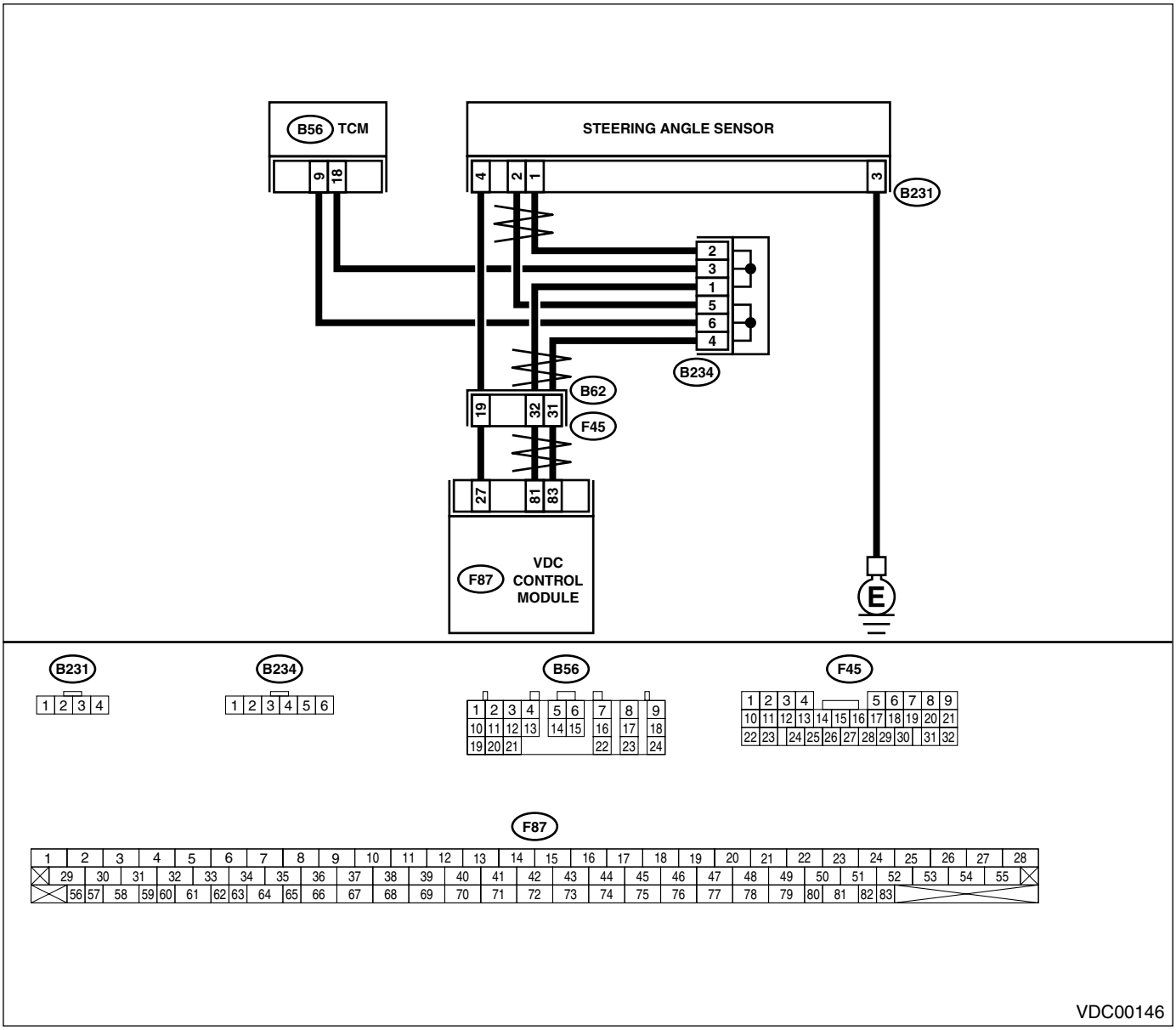
***DIAGNOSIS:***

- CAN communication line is broken or short circuited.

***TROUBLE SYMPTOM:***

- ABS does not operate.
- VDC does not operate.

**WIRING DIAGRAM:**




VDC00146

| | Step | Check | Yes | No |
|---|---|---|---|---|
| 1 | **CHECK HARNESS BETWEEN VDCCM, STEERING ANGLE SENSOR AND TCM.**<br>1) Turn ignition switch OFF.<br>2) Disconnect connector from VDCCM, TCM and steering angle sensor.<br>3) Measure resistance between VDCCM, TCM and steering angle sensor.<br>***Connector & terminal***<br>***(F87) No. 83 — (B56) No. 9:***<br>***(F87) No. 81 — (B56) No. 18:***<br>***(F87) No. 83 — (B231) No. 2:***<br>***(F87) No. 81 — (B231) No. 1:*** | Is the measured value less than 0.5 Ω? | Go to step **3.** | Go to step **2.** |
| 2 | **CHECK HARNESS BETWEEN STEERING ANGLE SENSOR AND TCM.**<br>Measure resistance between TCM and steering angle sensor.<br>***Connector & terminal***<br>***(B56) No. 9 — (B231) No. 2:***<br>***(B56) No. 18 — (B231) No. 1:*** | Is the measured value less than 0.5 Ω? | Repair or replace harness connector between VDCCM and steering angle sensor. | Repair or replace harness connector between TCM and steering angle sensor. |
| 3 | **CHECK GROUND SHORT OF HARNESS.**<br>Measure resistance between VDCCM and chassis ground.<br>***Connector & terminal***<br>***(F87) No. 83 — Chassis ground:***<br>***(F87) No. 81 — Chassis ground:*** | Is the measured value more than 1 MΩ? | Go to step **4.** | Repair or replace harness connector between VDCCM, TCM and steering angle sensor. |
| 4 | **CHECK BATTERY SHORT OF SENSOR.**<br>Measure voltage between VDCCM and chassis ground.<br>***Connector & terminal***<br>***(F87) No. 83 — Chassis ground:***<br>***(F87) No. 81 — Chassis ground:*** | Is the measured value less than 0.5 V? | Go to step **5.** | Repair or replace harness connector between VDCCM, TCM and steering angle sensor. |
| 5 | **CHECK BATTERY SHORT OF SENSOR.**<br>1) Turn ignition switch to ON.<br>2) Measure voltage between VDCCM and chassis ground.<br>***Connector & terminal***<br>***(F87) No. 83 — Chassis ground:***<br>***(F87) No. 81 — Chassis ground:*** | Is the measured value less than 0.5 V? | Go to step **6.** | Repair or replace harness connector between VDCCM, TCM and steering angle sensor. |
| 6 | **CHECK STEERING ANGLE SENSOR.**<br>1) Turn ignition switch to OFF.<br>2) Connect connector to steering angle sensor.<br>3) Measure resistance between VDCCM connector terminals.<br>***Connector & terminal***<br>***(F87) No. 83 — No. 81:*** | Is the measured value within 114 to 126 Ω? | Go to step **8.** | Go to step **7.** |
| 7 | **CHECK POOR CONTACT IN CONNECTORS.** | Is there poor contact in steering angle sensor? | Replace steering angle sensor. | Repair or replace steering angle sensor connector. |
| 8 | **CHECK VDCCM.**<br>1) Connect connector to VDCCM.<br>2) Disconnect connector from steering angle sensor.<br>3) Measure resistance between steering angle sensor connector terminals.<br>***Connector & terminal***<br>***(B231) No. 1 — No. 2:*** | Is the measured value within 114 to 126 Ω? | Go to step **10.** | Go to step **9.** |

| | Step | Check | Yes | No |
|---|---|---|---|---|
| 9 | **CHECK POOR CONTACT IN CONNECTORS.** | Is there poor contact in steering angle sensor? | Replace VDCCM. <Ref. to VDC-8, VDC Control Module (VDCCM).> | Repair or replace VDCCM connector. |
| 10 | **CHECK TCM.**<br>1) Connect connector to TCM.<br>2) Disconnect connector from VDCCM.<br>3) Measure resistance between steering angle sensor terminals.<br>***Connector & terminal (B231) No. 1 — No. 2:*** | Is the measured value more than 1 MΩ? | Go to step **12.** | Go to step **11.** |
| 11 | **CHECK POOR CONTACT IN CONNECTORS.** | Is there poor contact in steering angle sensor? | Replace TCM. <Ref. to 4AT-79, Transmission Control Module (TCM).> | Repair or replace TCM connector. |
| 12 | **CHECK VDCCM.**<br>1) Connect all connectors.<br>2) Erase the memory.<br>3) Perform inspection mode.<br>4) Read out the diagnostic trouble code. | Are other diagnostic trouble codes being output? | Go to step **13.** | A temporary poor contact. |
| 13 | **CHECK DIAGNOSTIC TROUBLE CODE.** | Is the same diagnostic trouble code as in the current diagnosis still being output? | Go to step **14.** | Proceed with the diagnosis corresponding to the diagnostic trouble code. |
| 14 | **CHECK AT SYSTEM DIAGNOSTIC TROUBLE CODE.** | Is the AT system diagnostic trouble code DTC 86? | Replace steering angle sensor. | Replace VDCCM. <Ref. to VDC-8, VDC Control Module (VDCCM).> |

**MEMO:**

## AH:DTC 48 FAULTY ECM — VDCCM COMMUNICATION LINE

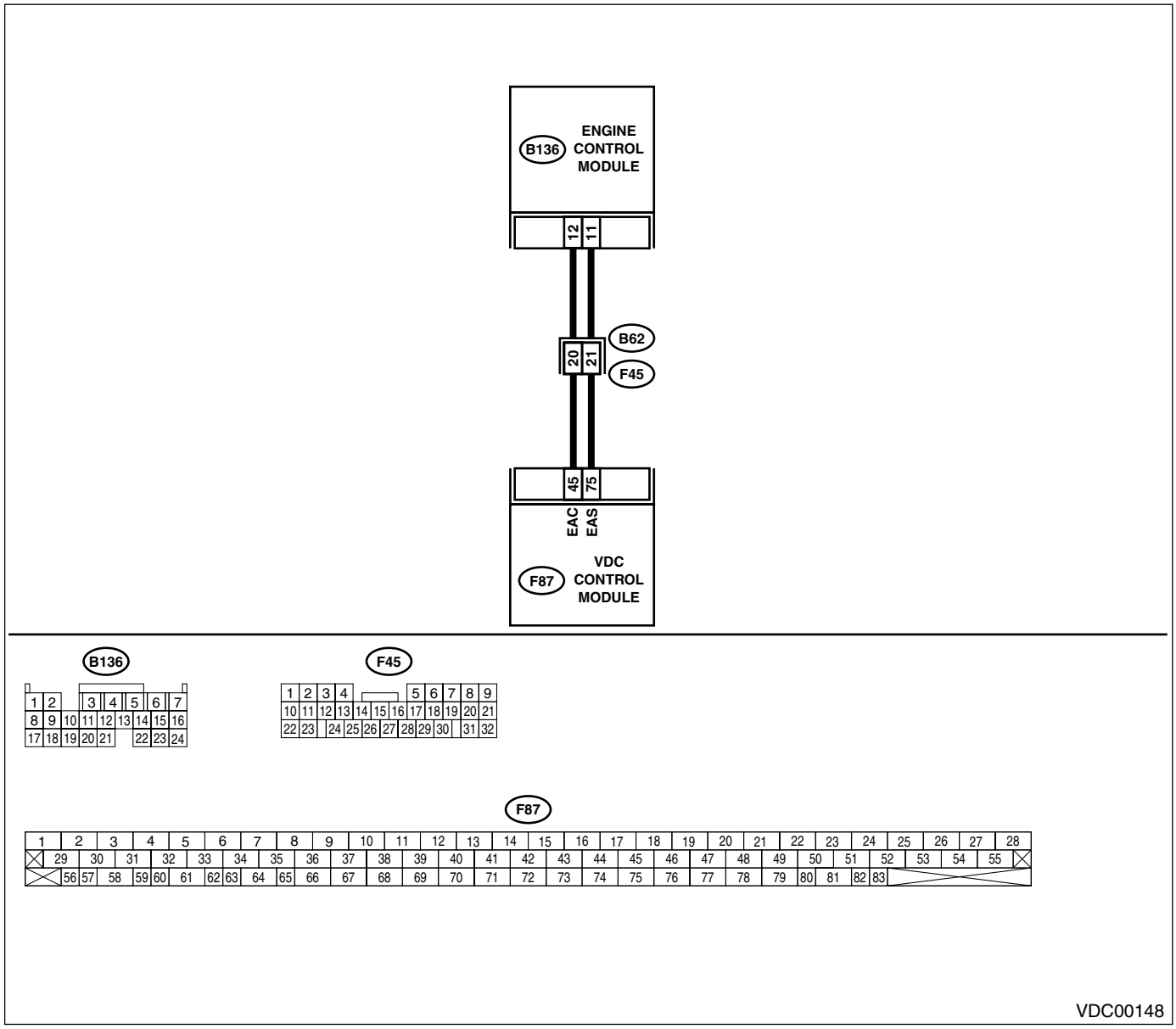
***DIAGNOSIS:***

- EAS communication line is broken or short circuited.
- EAC communication line is broken or short circuited.

***TROUBLE SYMPTOM:***

- ABS does not operate.
- VDC does not operate.

**WIRING DIAGRAM:**




VDC00148

| | Step | Check | Yes | No |
|---|---|---|---|---|
| 1 | **CHECK HARNESS BETWEEN ECM AND VDCCM.**<br>1) Turn ignition switch to OFF.<br>2) Disconnect connectors from VDCCM and ECM.<br>3) Measure resistance between VDCCM and ECM.<br>***Connector & terminal***<br>***(F87) No. 75 — (B136) No. 11:***<br>***(F87) No. 45 — (B136) No. 12:*** | Is the measured value less than 0.5 Ω? | Go to step **2.** | Repair or replace open circuit between VDCCM and ECM. |
| 2 | **CHECK GROUND SHORT OF HARNESS.**<br>Measure resistance between VDCCM and ECM.<br>***Connector & terminal***<br>***(F87) No. 75 — Chassis ground:***<br>***(F87) No. 45 — Chassis ground:*** | Is the measured value more than 1 MΩ? | Go to step **3.** | Repair or replace ground short circuit between VDCCM and ECM. |
| 3 | **CHECK BATTERY SHORT OF HARNESS.**<br>1) Turn ignition switch to ON.<br>2) Measure voltage between VDCCM and chassis ground.<br>***Connector & terminal***<br>***(F87) No. 75 — Chassis ground:***<br>***(F87) No. 45 — Chassis ground:*** | Is the measured value less than 0.5 V? | Go to step **4.** | Repair or replace battery short circuit between VDCCM and ECM. |
| 4 | **CHECK INPUT VOLTAGE TO ECM.**<br>1) Turn ignition switch to OFF.<br>2) Connect connector to VDCCM.<br>3) Turn ignition switch to ON.<br>4) Measure voltage between ECM connector and chassis ground.<br>***Connector & terminal***<br>***(B136) No. 11 (+) — Chassis ground (–):***<br>***(B136) No. 12 (+) — Chassis ground (–):*** | Is the measured value within 10 to 15 V? | Go to step **6.** | Go to step **5.** |
| 5 | **CHECK POOR CONTACT IN ECM CONNECTORS.** | Is there poor contact in ECM connector? | Replace ECM. <Ref. to FU(H6DO)-46, Engine Control Module.> | Repair or replace ECM connector. |
| 6 | **ERASE MEMORY.**<br>1) Connect all connectors.<br>2) Erase the memory. | Can the memory be erased? | Go to step **7.** | Replace VDCCM. <Ref. to VDC-8, VDC Control Module (VDCCM).> |
| 7 | **CHECK DIAGNOSTIC TROUBLE CODE.**<br>1) Perform inspection mode.<br>2) Read out the diagnostic trouble code. | Is the same diagnostic trouble code as in the current diagnosis still being output? | Replace ECM. <Ref. to FU(H6DO)-46, Engine Control Module.> | A temporary poor contact. |

## AI: DTC 49 ABNORMAL ENGINE SPEED SIGNAL

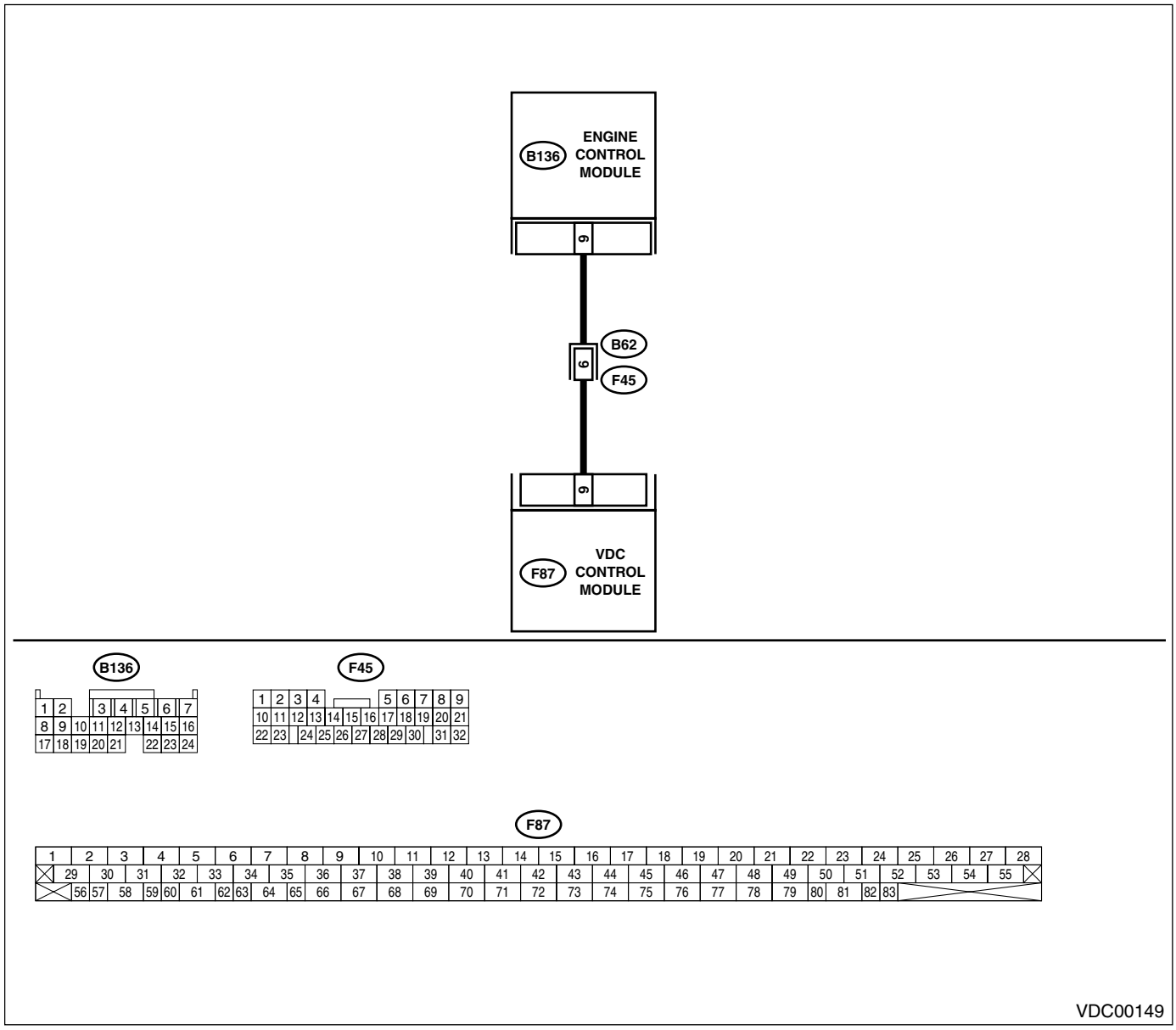
***DIAGNOSIS:***

- Engine speed signal line is broken or short circuited.

***TROUBLE SYMPTOM:***

- VDC does not operate.

**WIRING DIAGRAM:**



| | Step | Check | Yes | No |
|---|---|---|---|---|
| 1 | **CHECK TACHOMETER OPERATION IN COMBINATION METER.** | Does tachometer operate normally? | Go to step **2.** | Repair tachometer. |
| 2 | **CHECK HARNESS BETWEEN VDCCM AND ECM.**<br>1) Turn ignition switch to OFF.<br>2) Disconnect connector from VDCCM and ECM.<br>3) Measure resistance between VDCCM connector and ECM.<br>***Connector & terminal***<br>***(F87) No. 9 — (B136) No. 9:*** | Is the measured value less than 0.5 Ω? | Go to step **3.** | Repair harness connector between VDCCM and ECM. |
| 3 | **CHECK POOR CONTACT IN CONNECTORS.** | Is there poor contact in connectors between VDCCM and ECM? | Repair connector. | Go to step **4.** |
| 4 | **CHECK VDCCM.**<br>1) Connect all connectors.<br>2) Erase the memory.<br>3) Perform inspection mode.<br>4) Read out the diagnostic trouble code. | Is the same diagnostic trouble code as in the current diagnosis still being output? | Replace VDCCM. <Ref. to VDC-8, VDC Control Module (VDCCM).> | Go to step **5.** |
| 5 | **CHECK ANY OTHER DIAGNOSTIC TROUBLE CODES APPEARANCE.** | Are other diagnostic trouble codes being output? | Proceed with the diagnosis corresponding to the diagnostic trouble code. | A temporary poor contact. |

## AJ:DTC 51 ABNORMAL VALVE RELAY

***DIAGNOSIS:***

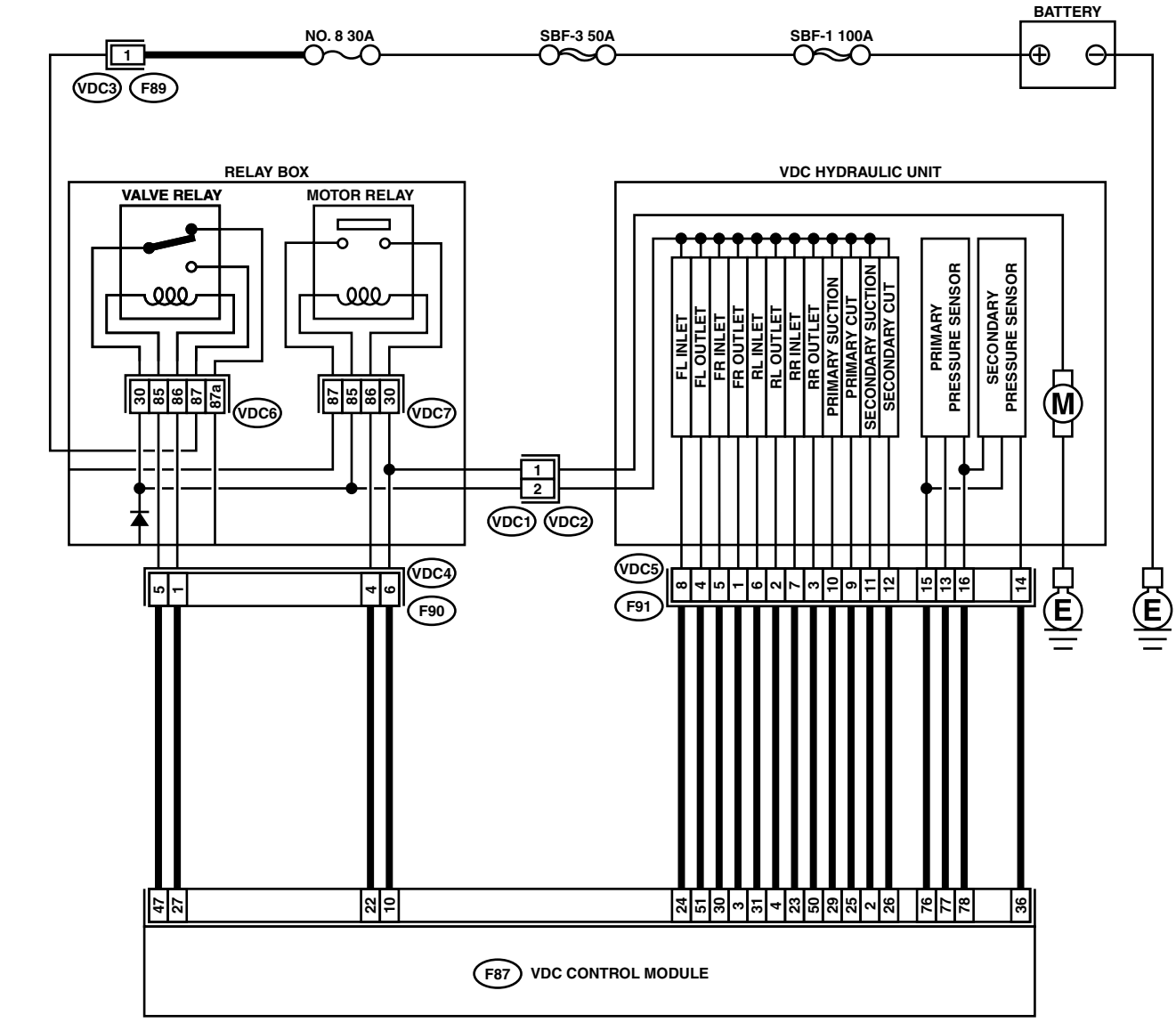
- Faulty valve relay

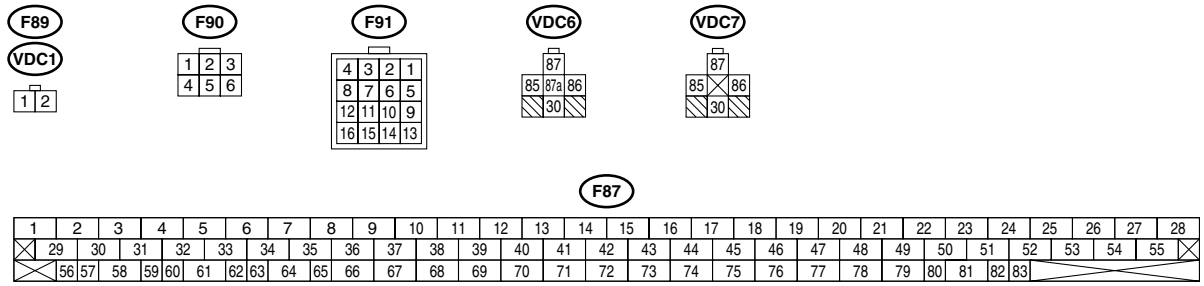
NOTE:
When DTC 74 ABNORMAL PRESSURE SENSOR procedure 4 is carried out, DTC 51 is memorized.

***TROUBLE SYMPTOM:***

- ABS does not operate.
- VDC does not operate.

**WIRING DIAGRAM:**




VDC00150

| | Step | Check | Yes | No |
|---|---|---|---|---|
| 1 | **CHECK RESISTANCE OF VALVE RELAY.**<br>1) Turn ignition switch to OFF.<br>2) Remove valve relay from relay box.<br>3) Measure resistance between valve relay terminals.<br>***Terminals***<br>***No. 85 — No. 86:*** | Is the measured value within 93 to 113 Ω? | Go to step **2.** | Replace valve relay. |
| 2 | **CHECK CONTACT POINT OF VALVE RELAY.**<br>1) Connect battery to valve relay terminals No. 85 and No. 86.<br>2) Measure resistance between valve relay terminals.<br>***Terminals***<br>***No. 30 — No. 87:*** | Is the measured value less than 0.5 Ω? | Go to step **3.** | Replace valve relay. |
| 3 | **CHECK CONTACT POINT OF VALVE RELAY.**<br>Measure resistance between valve relay terminals.<br>***Terminals***<br>***No. 30 — No. 87a:*** | Is the measured value more than 1 MΩ? | Go to step **4.** | Replace valve relay. |
| 4 | **CHECK CONTACT POINT OF VALVE RELAY.**<br>1) Disconnect battery from valve relay terminals.<br>2) Measure resistance between valve relay terminals.<br>***Terminals***<br>***No. 30 — No. 87:*** | Is the measured value more than 1 MΩ? | Go to step **5.** | Replace valve relay. |
| 5 | **CHECK CONTACT POINT OF VALVE RELAY.**<br>Measure resistance between valve relay terminals.<br>***Terminals***<br>***No. 30 — No. 87a:*** | Is the measured value less than 0.5 Ω? | Go to step **6.** | Replace valve relay. |
| 6 | **CHECK SHORT OF VALVE RELAY.**<br>Measure resistance between valve relay terminals.<br>***Terminals***<br>***No. 86 — No. 87:***<br>***No. 86 — No. 87a:*** | Is the measured value more than 1 MΩ? | Go to step **7.** | Replace valve relay. |
| 7 | **CHECK POWER SUPPLY FOR VALVE RELAY.**<br>1) Disconnect connector (F89) from relay box.<br>2) Measure voltage between relay box connector and chassis ground.<br>***Connector & terminal***<br>***(F89) No. 1 (+) — Chassis ground (–):*** | Is the measured value within 10 to 15 V? | Go to step **8.** | Repair harness between battery and relay box connector. Check fuse No. 8. |
| 8 | **CHECK OPEN CIRCUIT AND GROUND SHORT IN POWER SUPPLY CIRCUIT OF RELAY BOX.**<br>1) Disconnect connector (VDC1) from VDCH/U.<br>2) Connect connector (F89) to relay box.<br>3) Measure voltage of relay box.<br>***Connector & terminal***<br>***(VDC6) No. 87 (+) — Chassis ground (–):*** | Is the measured value within 10 to 15 V? | Go to step **9.** | Replace relay box and check fuse No. 8. |

| | Step | Check | Yes | No |
|---|---|---|---|---|
| 9 | **CHECK OPEN CIRCUIT IN CONTROL CIRCUIT OF RELAY BOX.**<br>1) Turn ignition switch to OFF.<br>2) Disconnect connector (F90) from relay box.<br>3) Measure resistance between relay box connector and valve relay installing point.<br>***Connector & terminal***<br>***(VDC4) No. 5 — (VDC6) No. 85:***<br>***(VDC4) No. 1 — (VDC6) No. 86:*** | Is the measured value less than 0.5 Ω? | Go to step **10.** | Replace relay box. |
| 10 | **CHECK GROUND SHORT IN CONTACT POINT CIRCUIT OF RELAY BOX.**<br>Measure resistance between relay box connector and chassis ground.<br>***Connector & terminal***<br>***(VDC4) No. 5 — Chassis ground:***<br>***(VDC4) No. 1 — Chassis ground:*** | Is the measured value more than 1 MΩ? | Go to step **11.** | Replace relay box and check fuse No. 8. |
| 11 | **CHECK BATTERY SHORT IN CONTACT POINT CIRCUIT OF RELAY BOX.**<br>Measure voltage between relay box connector and chassis ground.<br>***Connector & terminal***<br>***(VDC4) No. 5 (+) — Chassis ground (–):***<br>***(VDC4) No. 1 (+) — Chassis ground (–):*** | Is the measured value less than 1 V? | Go to step **12.** | Replace relay box. Check fuse No. 8. |
| 12 | **CHECK BATTERY SHORT IN CONTACT POINT CIRCUIT OF RELAY BOX.**<br>1) Turn ignition switch to ON.<br>2) Measure voltage between relay box connector and chassis ground.<br>***Connector & terminal***<br>***(VDC4) No. 5 (+) — Chassis ground (–):***<br>***(VDC4) No. 1 (+) — Chassis ground (–):*** | Is the measured value less than 1 V? | Go to step **13.** | Replace relay box. Check fuse No. 8. |
| 13 | **CHECK OPEN CIRCUIT IN CONTROL SYSTEM HARNESS OF VALVE RELAY.**<br>1) Turn ignition switch to OFF.<br>2) Disconnect connector from VDCCM.<br>3) Measure resistance between VDCCM connector and relay box connector.<br>***Connector & terminal***<br>***(F87) No. 47 — (F90) No. 5:***<br>***(F87) No. 27 — (F90) No. 1:*** | Is the measured value less than 0.5 Ω? | Go to step **14.** | Repair harness between VDCCM and relay box. |
| 14 | **CHECK GROUND SHORT IN CONTROL SYSTEM HARNESS OF VALVE RELAY.**<br>Measure resistance between VDCCM connector and chassis ground.<br>***Connector & terminal***<br>***(F87) No. 47 — Chassis ground:***<br>***(F87) No. 27 — Chassis ground:*** | Is the measured value more than 1 MΩ? | Go to step **15.** | Repair harness between VDCCM and relay box and check all fuses. |
| 15 | **CHECK BATTERY SHORT IN CONTROL SYSTEM HARNESS OF VALVE RELAY.**<br>Measure voltage between VDCCM connector and chassis ground.<br>***Connector & terminal***<br>***(F87) No. 27 (+) — Chassis ground (–):***<br>***(F87) No. 47 (+) — Chassis ground (–):*** | Is the measured value less than 1 V? | Go to step **16.** | Repair harness between VDCCM and relay box. |

| | Step | Check | Yes | No |
|---|---|---|---|---|
| 16 | **CHECK BATTERY SHORT IN CONTROL SYSTEM HARNESS OF VALVE RELAY.**<br>1) Turn ignition switch to ON.<br>2) Measure voltage between VDCCM connector and chassis ground.<br>***Connector & terminal***<br>***(F87) No. 27 (+) — Chassis ground (–):***<br>***(F87) No. 47 (+) — Chassis ground (–):*** | Is the measured value less than 1 V? | Go to step **17.** | Repair harness between VDCCM and relay box. |
| 17 | **CHECK OPEN CIRCUIT IN CONTACT POINT CIRCUIT OF RELAY BOX.**<br>Measure resistance between VDCH/U connector and valve relay installing point.<br>***Connector & terminal***<br>***(VDC1) No. 2 — (VDC6) No. 30:*** | Is the measured value less than 0.5 Ω? | Go to step **18.** | Replace relay box. |
| 18 | **CHECK GROUND SHORT IN CONTACT POINT CIRCUIT OF RELAY BOX.**<br>Measure resistance between VDCH/U connector and chassis ground.<br>***Connector & terminal***<br>***(VDC1) No. 2 — Chassis ground:*** | Is the measured value more than 1 MΩ? | Go to step **19.** | Replace relay box and check fuse No. 8. |
| 19 | **CHECK BATTERY SHORT IN CONTACT POINT CIRCUIT OF RELAY BOX.**<br>Measure voltage between VDCH/U connector and chassis ground.<br>***Connector & terminal***<br>***(VDC1) No. 2 (+) — Chassis ground (–):*** | Is the measured value less than 1 V? | Go to step **20.** | Replace relay box. Check fuse No. 8. |
| 20 | **CHECK BATTERY SHORT IN CONTACT POINT CIRCUIT OF RELAY BOX.**<br>1) Turn ignition switch to ON.<br>2) Measure voltage between VDCH/U connector and chassis ground.<br>***Connector & terminal***<br>***(VDC1) No. 2 (+) — Chassis ground (–):*** | Is the measured value less than 1 V? | Go to step **21.** | Replace relay box. Check fuse No. 8. |
| 21 | **CHECK RESISTANCE OF INLET AND CUT SOLENOID VALVES.**<br>1) Disconnect connector from VDCH/U.<br>2) Measure resistance between VDCH/U connector terminals.<br>***Connector & terminal***<br>***(VDC5) No. 8 — (VDC2) No. 2:***<br>***(VDC5) No. 5 — (VDC2) No. 2:***<br>***(VDC5) No. 6 — (VDC2) No. 2:***<br>***(VDC5) No. 7 — (VDC2) No. 2:***<br>***(VDC5) No. 9 — (VDC2) No. 2:***<br>***(VDC5) No. 12 — (VDC2) No. 2:*** | Is the measured value within 8.04 to 9.04 Ω? | Go to step **22.** | Replace VDCH/U. <Ref. to VDC-8, VDC Control Module (VDCCM).> |
| 22 | **CHECK RESISTANCE OF OUTLET SOLENOID VALVE.**<br>Measure resistance between VDCH/U connector terminals.<br>***Connector & terminal***<br>***(VDC5) No. 4 — (VDC2) No. 2:***<br>***(VDC5) No. 1 — (VDC2) No. 2:***<br>***(VDC5) No. 2 — (VDC2) No. 2:***<br>***(VDC5) No. 3 — (VDC2) No. 2:***<br>***(VDC5) No. 10 — (VDC2) No. 2:***<br>***(VDC5) No. 11 — (VDC2) No. 2:*** | Is the measured value within 4.04 to 4.54 Ω? | Go to step **23.** | Replace VDCH/U. <Ref. to VDC-8, VDC Control Module (VDCCM).> |

| | Step | Check | Yes | No |
|---|---|---|---|---|
| 23 | **CHECK GROUND SHORT OF SOLENOID VALVE.**<br>Measure resistance between VDCH/U connector and chassis ground.<br>***Connector & terminal***<br>***(VDC2) No. 2 — Chassis ground:*** | Is the measured value more than 1 MΩ? | Go to step **24.** | Replace VDCH/U and check all fuses. <Ref. to VDC-8, VDC Control Module (VDCCM).> |
| 24 | **CHECK BATTERY SHORT OF SOLENOID VALVE.**<br>Measure voltage between VDCH/U connector and chassis ground.<br>***Connector & terminal***<br>***(VDC2) No. 2 (+) — Chassis ground (–):*** | Is the measured value less than 1 V? | Go to step **25.** | Replace VDCH/U and check all fuses. <Ref. to VDC-8, VDC Control Module (VDCCM).> |
| 25 | **CHECK BATTERY SHORT OF SOLENOID VALVE.**<br>1) Turn ignition switch to ON.<br>2) Measure voltage between VDCH/U connector and chassis ground.<br>***Connector & terminal***<br>***(VDC2) No. 2 (+) — Chassis ground (–):*** | Is the measured value less than 1 V? | Go to step **26.** | Replace VDCH/U and check all fuses. <Ref. to VDC-8, VDC Control Module (VDCCM).> |
| 26 | **CHECK BATTERY SHORT OF HARNESS.**<br>1) Turn ignition switch to OFF.<br>2) Disconnect connector from VDCCM.<br>3) Measure voltage between VDCCM connector and chassis ground.<br>***Connector & terminal***<br>***(F87) No. 30 (+) — Chassis ground (–):***<br>***(F87) No. 24 (+) — Chassis ground (–):***<br>***(F87) No. 23 (+) — Chassis ground (–):***<br>***(F87) No. 31 (+) — Chassis ground (–):***<br>***(F87) No. 26 (+) — Chassis ground (–):***<br>***(F87) No. 25 (+) — Chassis ground (–):***<br>***(F87) No. 3 (+) — Chassis ground (–):***<br>***(F87) No. 51 (+) — Chassis ground (–):***<br>***(F87) No. 50 (+) — Chassis ground (–):***<br>***(F87) No. 4 (+) — Chassis ground (–):***<br>***(F87) No. 2 (+) — Chassis ground (–):***<br>***(F87) No. 29 (+) — Chassis ground (–):*** | Is the measured value less than 1 V? | Go to step **27.** | Repair harness between VDCH/U and VDCCM and check all fuses. |
| 27 | **CHECK BATTERY SHORT OF HARNESS.**<br>1) Turn ignition switch to ON.<br>2) Measure voltage between VDCCM connector and chassis ground.<br>***Connector & terminal***<br>***(F87) No. 30 (+) — Chassis ground (–):***<br>***(F87) No. 24 (+) — Chassis ground (–):***<br>***(F87) No. 23 (+) — Chassis ground (–):***<br>***(F87) No. 31 (+) — Chassis ground (–):***<br>***(F87) No. 26 (+) — Chassis ground (–):***<br>***(F87) No. 25 (+) — Chassis ground (–):***<br>***(F87) No. 3 (+) — Chassis ground (–):***<br>***(F87) No. 51 (+) — Chassis ground (–):***<br>***(F87) No. 50 (+) — Chassis ground (–):***<br>***(F87) No. 4 (+) — Chassis ground (–):***<br>***(F87) No. 2 (+) — Chassis ground (–):***<br>***(F87) No. 29 (+) — Chassis ground (–):*** | Is the measured value less than 1 V? | Go to step **28.** | Repair harness between VDCH/U and VDCCM and check all fuses. |

| | Step | Check | Yes | No |
|---|---|---|---|---|
| 28 | **CHECK GROUND SHORT OF HARNESS.**<br>1) Turn ignition switch to OFF.<br>2) Measure resistance between VDCCM connector and chassis ground.<br>***Connector & terminal***<br>***(F87) No. 30 — Chassis ground:***<br>***(F87) No. 24 — Chassis ground:***<br>***(F87) No. 23 — Chassis ground:***<br>***(F87) No. 31 — Chassis ground:***<br>***(F87) No. 26 — Chassis ground:***<br>***(F87) No. 25 — Chassis ground:***<br>***(F87) No. 3 — Chassis ground:***<br>***(F87) No. 51 — Chassis ground:***<br>***(F87) No. 50 — Chassis ground:***<br>***(F87) No. 4 — Chassis ground:***<br>***(F87) No. 2 — Chassis ground:***<br>***(F87) No. 29 — Chassis ground:*** | Is the measured value more than 1 MΩ? | Go to step **29.** | Repair harness between VDCH/U and VDCCM. |
| 29 | **CHECK HARNESS/CONNECTOR BETWEEN VDCCM AND VDCH/U.**<br>1) Connect connector (F91) to VDCH/U.<br>2) Measure resistance between VDCCM connector and VDCH/U connector.<br>***Connector & terminal***<br>***(F87) No. 30 — (VDC2) No. 2:***<br>***(F87) No. 24 — (VDC2) No. 2:***<br>***(F87) No. 23 — (VDC2) No. 2:***<br>***(F87) No. 31 — (VDC2) No. 2:***<br>***(F87) No. 26 — (VDC2) No. 2:***<br>***(F87) No. 25 — (VDC2) No. 2:*** | Is the measured value within 8.0 to 10.0 Ω? | Go to step **30.** | Repair harness/ connector between VDCH/U and VDCCM. |
| 30 | **CHECK HARNESS/CONNECTOR BETWEEN VDCCM AND VDCH/U.**<br>Measure resistance between VDCCM connector and VDCH/U connector.<br>***Connector & terminal***<br>***(F87) No. 3 — (VDC2) No. 2:***<br>***(F87) No. 51 — (VDC2) No. 2:***<br>***(F87) No. 50 — (VDC2) No. 2:***<br>***(F87) No. 4 — (VDC2) No. 2:***<br>***(F87) No. 2 — (VDC2) No. 2:***<br>***(F87) No. 29 — (VDC2) No. 2:*** | Is the measured value within 4.0 to 6.0 Ω? | Go to step **31.** | Repair harness/ connector between VDCH/U and VDCCM. |
| 31 | **CHECK POOR CONTACT IN CONNECTORS.** | Is there poor contact in connector between VDCCM and VDCH/U? | Repair connector. | Go to step **32.** |
| 32 | **CHECK VDCCM.**<br>1) Connect all connectors.<br>2) Erase the memory.<br>3) Perform inspection mode.<br>4) Read out the diagnostic trouble code. | Is the same diagnostic trouble code as in the current diagnosis still being output? | Replace VDCCM. <Ref. to VDC-8, VDC Control Module (VDCCM).> | Go to step **33.** |
| 33 | **CHECK ANY OTHER DIAGNOSTIC TROUBLE CODES APPEARANCE.** | Are other diagnostic trouble codes being output? | Proceed with the diagnosis corresponding to the diagnostic trouble code. | A temporary poor contact. |

## AK:DTC 52 ABNORMAL MOTOR AND/OR MOTOR RELAY

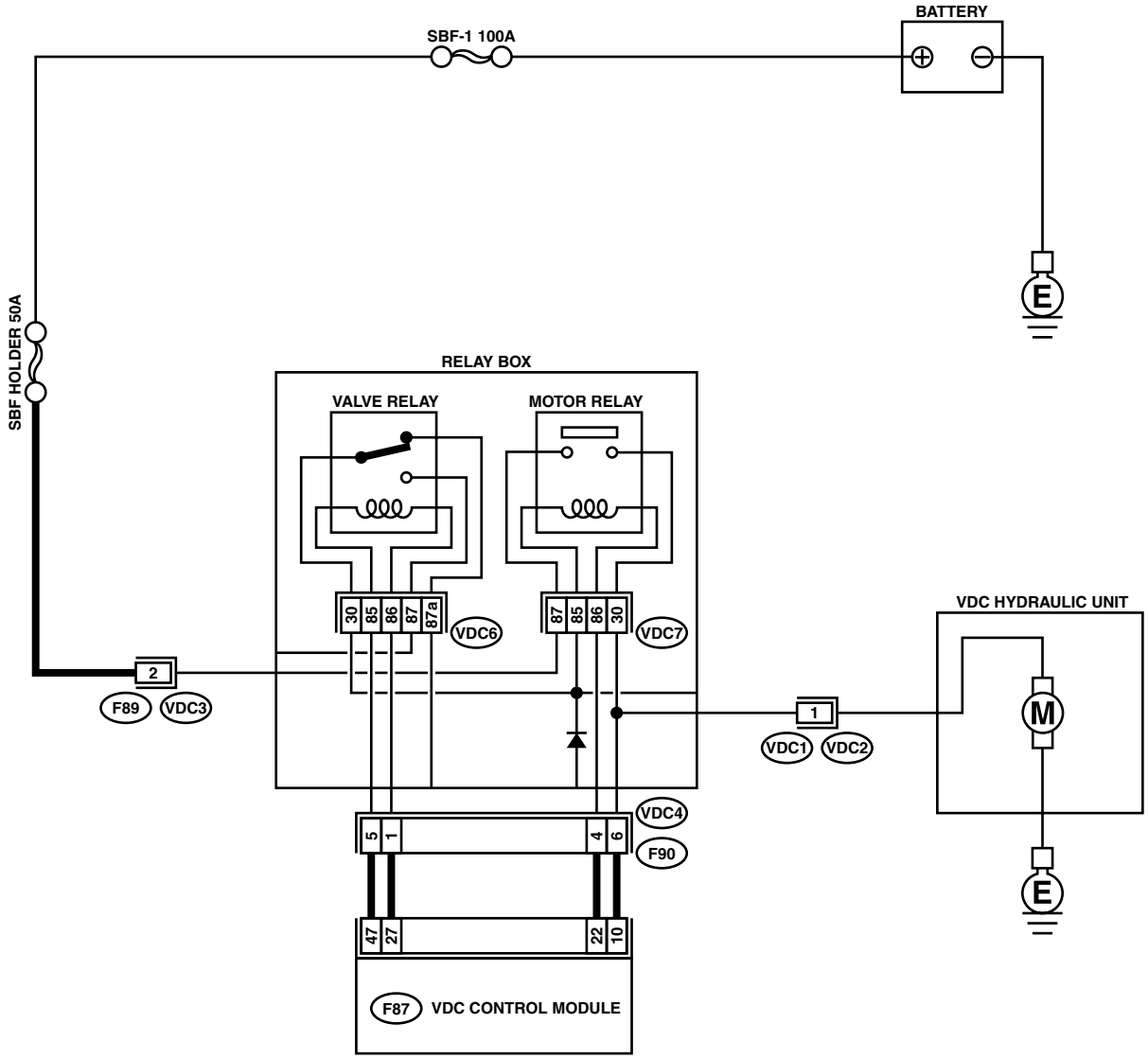
***DIAGNOSIS:***

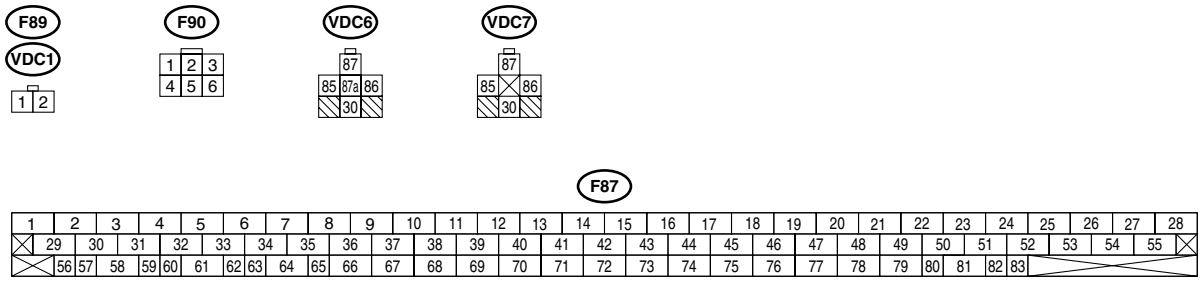
- Faulty motor
- Faulty motor relay
- Faulty harness connector

***TROUBLE SYMPTOM:***

- ABS does not operate.
- VDC does not operate.

**WIRING DIAGRAM:**




VDC00155

| | Step | Check | Yes | No |
|---|---|---|---|---|
| 1 | **CHECK RESISTANCE OF MOTOR RELAY.**<br>1) Turn ignition switch to OFF.<br>2) Remove motor relay from relay box.<br>3) Measure resistance between motor relay terminals.<br>***Terminals***<br>***No. 85 — No. 86:*** | Is the measured value within 70 to 90 Ω? | Go to step **2.** | Replace motor relay. |
| 2 | **CHECK CONTACT POINT OF MOTOR RELAY.**<br>1) Connect battery to motor relay terminals No. 85 and No. 86.<br>2) Measure resistance between motor relay terminals.<br>***Terminals***<br>***No. 30 — No. 87:*** | Is the measured value less than 0.5 Ω? | Go to step **3.** | Replace motor relay. |
| 3 | **CHECK CONTACT POINT OF MOTOR RELAY.**<br>1) Disconnect battery from motor relay terminals.<br>2) Measure resistance between motor relay terminals.<br>***Terminals***<br>***No. 30 — No. 87:*** | Is the measured value more than 1 MΩ? | Go to step **4.** | Replace motor relay. |
| 4 | **CHECK SHORT OF MOTOR RELAY.**<br>Measure resistance between motor relay terminals.<br>***Terminals***<br>***No. 85 — No. 30:***<br>***No. 85 — No. 87:*** | Is the measured value more than 1 MΩ? | Go to step **5.** | Replace motor relay. |
| 5 | **CHECK INPUT VOLTAGE OF RELAY BOX.**<br>1) Disconnect connector (F89) from relay box.<br>2) Disconnect connector from VDCCM.<br>3) Measure voltage between relay box connector and chassis ground.<br>***Connector & terminal***<br>***(F89) No. 2 (+) — Chassis ground (–):*** | Is the measured value within 10 to 15 V? | Go to step **6.** | Repair harness/ connector between battery and relay box, and check fuse SBF holder. |
| 6 | **CHECK INPUT VOLTAGE OF MOTOR RELAY.**<br>1) Connect connector (F89) to relay box.<br>2) Measure voltage between relay box and chassis ground.<br>***Connector & terminal***<br>***(VDC7) No. 87 (+) — Chassis ground (–):*** | Is the measured value within 10 to 15 V? | Go to step **7.** | Replace relay box. |
| 7 | **CHECK OPEN CIRCUIT IN CONTACT POINT CIRCUIT OF RELAY BOX.**<br>1) Turn ignition switch to OFF.<br>2) Disconnect connectors (VDC2, F90) from relay box.<br>3) Measure resistance between relay box connector unit and motor relay installing portion.<br>***Connector & terminal***<br>***(VDC1) No. 1 — (VDC7) No. 30:*** | Is the measured value less than 0.5 Ω? | Go to step **8.** | Replace relay box. |
| 8 | **CHECK OPEN CIRCUIT IN MONITOR SYSTEM CIRCUIT OF RELAY BOX.**<br>Measure resistance between relay box connector and motor relay installing point.<br>***Connector & terminal***<br>***(VDC4) No. 6 — (VDC7) No. 30:*** | Is the measured value less than 0.5 Ω? | Go to step **9.** | Replace relay box. |

| | Step | Check | Yes | No |
|---|---|---|---|---|
| 9 | **CHECK OPEN CIRCUIT IN CONTROL CIRCUIT OF RELAY BOX.**<br>Measure resistance between motor relay installing point and relay box connector.<br>***Connector & terminal***<br>***(VDC4) No. 4 — (VDC7) No. 86:*** | Is the measured value less than 0.5 Ω? | Go to step **10.** | Replace relay box. |
| 10 | **CHECK OPEN CIRCUIT IN CONTROL CIRCUIT OF RELAY BOX.**<br>1) Remove valve relay from relay box.<br>2) Measure resistance between motor relay installing point and valve relay installing point.<br>***Connector & terminal***<br>***(VDC7) No. 85 — (VDC6) No. 30:*** | Is the measured value less than 0.5 Ω? | Go to step **11.** | Replace relay box. |
| 11 | **CHECK GROUND SHORT IN CIRCUIT OF RELAY BOX.**<br>Measure resistance between relay box connector unit and chassis ground.<br>***Connector & terminal***<br>***(VDC4) No. 4 — Chassis ground:***<br>***(VDC4) No. 6 — Chassis ground:*** | Is the measured value more than 1 MΩ? | Go to step **12.** | Replace relay box. |
| 12 | **CHECK BATTERY SHORT IN CIRCUIT OF RELAY BOX.**<br>Measure voltage between relay box connector and chassis ground.<br>***Connector & terminal***<br>***(VDC4) No. 4 (+) — Chassis ground (–):***<br>***(VDC4) No. 6 (+) — Chassis ground (–):*** | Is the measured value less than 1 V? | Go to step **13.** | Replace relay box. |
| 13 | **CHECK BATTERY SHORT IN CIRCUIT OF RELAY BOX.**<br>1) Turn ignition switch to ON.<br>2) Measure voltage between relay box connector and chassis ground.<br>***Connector & terminal***<br>***(VDC4) No. 4 (+) — Chassis ground (–):***<br>***(VDC4) No. 6 (+) — Chassis ground (–):*** | Is the measured value less than 1 V? | Go to step **14.** | Replace relay box. |
| 14 | **CHECK OPEN CIRCUIT IN RELAY CONTROL SYSTEM HARNESS.**<br>1) Turn ignition switch to OFF.<br>2) Measure resistance between VDCCM connector and relay box connector.<br>***Connector & terminal***<br>***(F87) No. 22 — (F90) No. 4:***<br>***(F87) No. 10 — (F90) No. 6:*** | Is the measured value less than 0.5 Ω? | Go to step **15.** | Repair harness connector between VDCCM and relay box. |
| 15 | **CHECK GROUND SHORT IN HARNESS BETWEEN RELAY BOX AND VDCCM.**<br>Measure resistance between VDCCM connector and chassis ground.<br>***Connector & terminal***<br>***(F87) No. 22 — Chassis ground:***<br>***(F87) No. 10 — Chassis ground:*** | Is the measured value more than 1 MΩ? | Go to step **16.** | Repair harness between VDCCM and relay box. Check fuse SBF holder. |
| 16 | **CHECK BATTERY SHORT IN HARNESS BETWEEN RELAY BOX AND VDCCM.**<br>Measure voltage between VDCCM connector and chassis ground.<br>***Connector & terminal***<br>***(F87) No. 22 (+) — Chassis ground (–):***<br>***(F87) No. 10 (+) — Chassis ground (–):*** | Is the measured value less than 1 V? | Go to step **17.** | Repair harness between VDCCM and relay box. Check fuse SBF holder. |

| | Step | Check | Yes | No |
|---|---|---|---|---|
| 17 | **CHECK BATTERY SHORT IN HARNESS BETWEEN RELAY BOX AND VDCCM.**<br>1) Turn ignition switch to ON.<br>2) Measure voltage between VDCCM connector and chassis ground.<br>***Connector & terminal***<br>***(F87) No. 22 (+) — Chassis ground (–):***<br>***(F87) No. 10 (+) — Chassis ground (–):*** | Is the measured value less than 1 V? | Go to step **18.** | Repair harness between VDCCM and relay box. Check fuse SBF holder. |
| 18 | **CHECK CONDITION OF MOTOR GROUND.**<br>***Tightening torque:***<br>***32±10 N·m (3.3±1.0 kgf-m, 24±7 ft-lb)*** | Is the motor ground terminal clamped to 33 N·m (3.4 kg-m, 25 ft-lb)? | Go to step **19.** | Tighten the clamp of motor ground terminal. |
| 19 | **CHECK VDCCM MOTOR DRIVE TERMINAL.**<br>1) Turn ignition switch OFF.<br>2) Remove VDC connector cover. <Ref. to VDC-20, REMOVE, VDCCM Connector Cover.><br>3) Connect all connectors.<br>4) Install motor relay and valve relay to relay box.<br>5) Operate the ABS check sequence. <Ref. to VDC-16, ABS Sequence Control.><br>6) Measure voltage between VDCCM connector terminals.<br>***Connector & terminal***<br>***(F87) No. 22 (+) — No. 1 (–):*** | Does the voltage drop from between 10 V and 13 V to less than 1.5 V, and rise to between 10 V and 13 V again when carrying out the check sequence? | Go to step **20.** | Replace VDCCM. <Ref. to VDC-8, VDC Control Module (VDCCM).> |
| 20 | **CHECK MOTOR OPERATION.**<br>Operate the check sequence. <Ref. to VDC-19, VDC Sequence Control.> | Can motor revolution noise (buzz) be heard when carrying out the check sequence? | Go to step **21.** | Replace VDCH/U. <Ref. to VDC-8, VDC Control Module (VDCCM).> |
| 21 | **CHECK POOR CONTACT IN CONNECTORS.**<br>Turn ignition switch to OFF. | Is there poor contact in connector between VDCH/U, relay box and VDCCM? | Repair connector. | Go to step **22.** |
| 22 | **CHECK VDCCM.**<br>1) Connect all connectors.<br>2) Erase the memory.<br>3) Perform inspection mode.<br>4) Read out the diagnostic trouble code. | Is the same diagnostic trouble code as in the current diagnosis still being output? | Replace VDCCM. <Ref. to VDC-8, VDC Control Module (VDCCM).> | Go to step **23.** |
| 23 | **CHECK ANY OTHER DIAGNOSTIC TROUBLE CODES APPEARANCE.** | Are other diagnostic trouble codes being output? | Proceed with the diagnosis corresponding to the diagnostic trouble code. | A temporary poor contact. |

## AL:DTC 71 ABNORMAL STEERING ANGLE SENSOR

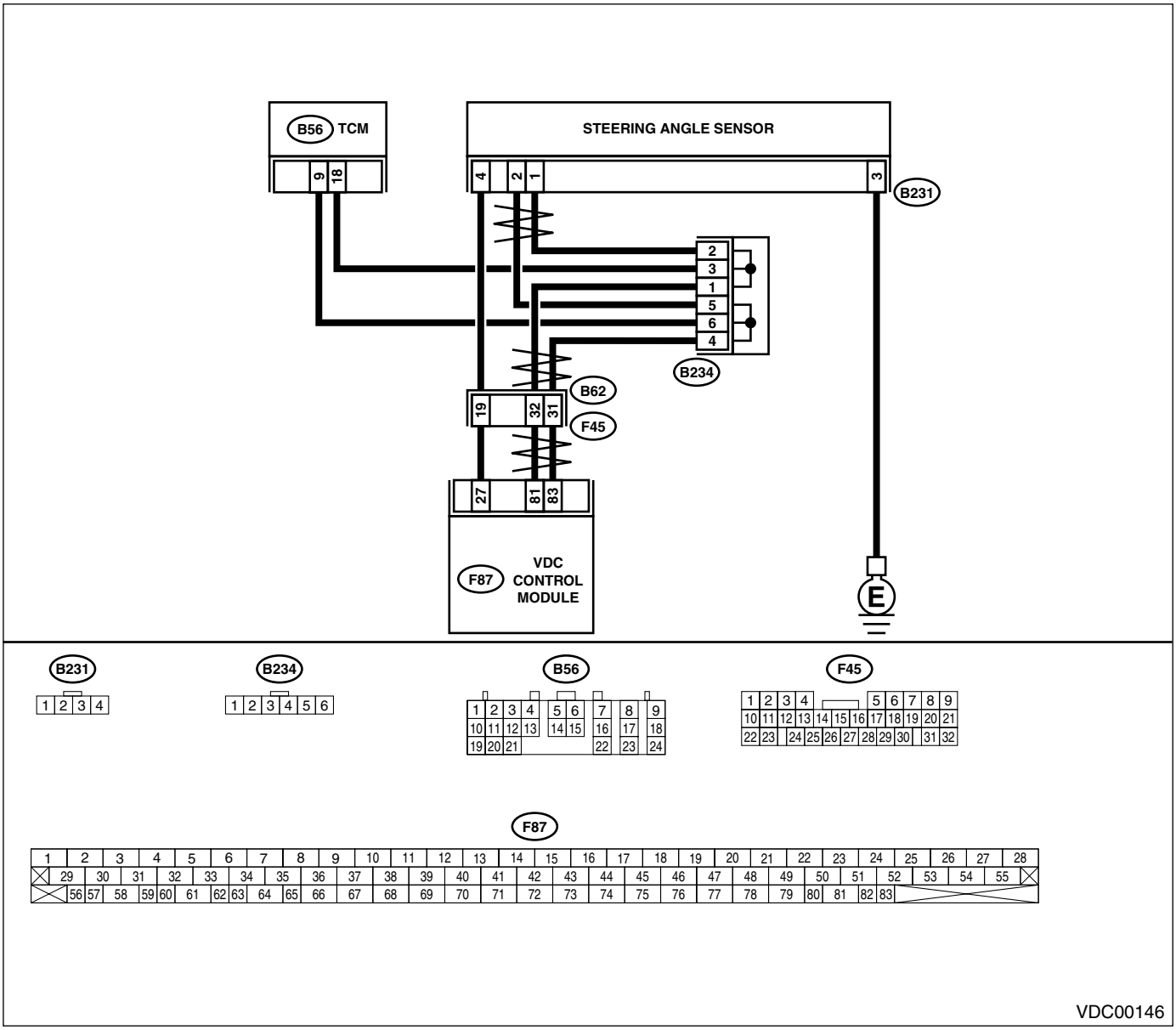
***DIAGNOSIS:***

- Faulty steering angle sensor

***TROUBLE SYMPTOM:***

- ABS does not operate.
- VDC does not operate.

**WIRING DIAGRAM:**




VDC00146

| | Step | Check | Yes | No |
|---|---|---|---|---|
| 1 | **CHECK THE STEERING WHEEL.**<br>1) Drive the vehicle on a flat road.<br>2) Stop the vehicle in a straight line.<br>3) Check the angle of steering wheel. | Is the angle of steering wheel alignment less than 5° from the straight-ahead position? | Go to step **2.** | Perform centering alignment of steering. |
| 2 | **CHECK RUNNING FIELD.**<br>Check if the vehicle was driven on banked road surfaces or sandy surfaces (not dirt road surfaces). | Was the vehicle driven on banked road surfaces or sandy surfaces (not dirt road surfaces)? | Driving on banked road surfaces or sandy surfaces (not dirt road surfaces) sometimes results in a VDCCM memory trouble code. | Go to step **3.** |
| 3 | **CHECK POWER SUPPLY OF STEERING ANGLE SENSOR.**<br>1) Turn ignition switch to OFF.<br>2) Disconnect connector from steering angle sensor.<br>3) Turn ignition switch to ON.<br>4) Measure voltage between steering angle sensor and chassis ground.<br>***Connector & terminal***<br>***(B231) No. 4 — Chassis ground:*** | Is the measured value within 10 to 15 V? | Go to step **6.** | Go to step **4.** |
| 4 | **CHECK OUTPUT VOLTAGE OF VDCCM.**<br>1) Turn ignition switch to OFF.<br>2) Disconnect connector from VDCCM.<br>3) Remove cover for VDCCM connector. <Ref. to VDC-20, REMOVE, VDCCM Connector Cover.><br>4) Connect connector to VDCCM.<br>5) Turn ignition switch to ON.<br>6) Measure voltage between VDCCM and chassis ground.<br>***Connector & terminal***<br>***(F87) No. 27 — Chassis ground:*** | Is the measured value within 10 to 15 V? | Repair harness between yaw rate sensor and VDCCM. | Go to step **5.** |
| 5 | **CHECK POOR CONTACT IN CONNECTORS.** | Is there poor contact in yaw rate sensor connector? | Repair or replace VDCCM connector. | Replace VDCCM. <Ref. to VDC-8, VDC Control Module (VDCCM).> |
| 6 | **CHECK GROUND CIRCUIT OF STEERING ANGLE SENSOR.**<br>Measure resistance between steering sensor and chassis ground.<br>***Connector & terminal***<br>***(B231) No. 3 — Chassis ground:*** | Is the measured value less than 0.5 Ω? | Go to step **7.** | Repair steering angle sensor ground harness. |
| 7 | **CHECK HARNESS OF STEERING ANGLE SENSOR.**<br>1) Connect connector to steering angle sensor.<br>2) Disconnect connector from VDCCM.<br>3) Measure resistance between VDCCM connector terminals.<br>***Connector & terminal***<br>***(F87) No. 81 — No. 83:*** | Is the measured value within 114 to 126 Ω? | Repair harness between steering angle sensor and VDCCM. | Go to step **8.** |
| 8 | **CHECK STEERING ANGLE SENSOR.**<br>1) Turn ignition switch to OFF.<br>2) Connect all connectors.<br>3) Erase the memory.<br>4) Perform inspection mode.<br>5) Read out the diagnostic trouble code. | Is the same diagnostic trouble code as in the current diagnosis still being output? | Go to step **10.** | Go to step **9.** |

| | Step | Check | Yes | No |
|---|---|---|---|---|
| 9 | **CHECK ANY OTHER DIAGNOSTIC TROUBLE CODES APPEARANCE.** | Are other diagnostic trouble codes being output? | Proceed with the diagnosis corresponding to the diagnostic trouble code. | A temporary poor contact. |
| 10 | **CHECK VDCCM.**<br>1) Turn ignition switch to OFF.<br>2) Replace steering angle sensor.<br>3) Erase the memory.<br>4) Perform inspection mode.<br>5) Read out the diagnostic trouble code. | Is the same diagnostic trouble code as in the current diagnosis still being output? | Replace VDCCM. <Ref. to VDC-8, VDC Control Module (VDCCM).> | Go to step **11.** |
| 11 | **CHECK ANY OTHER DIAGNOSTIC TROUBLE CODES APPEARANCE.** | Are other diagnostic trouble codes being output? | Proceed with the diagnosis corresponding to the diagnostic trouble code. | The original steering angle sensor has been faulty. |

**MEMO:**

## AM:DTC 72 ABNORMAL YAW RATE SENSOR

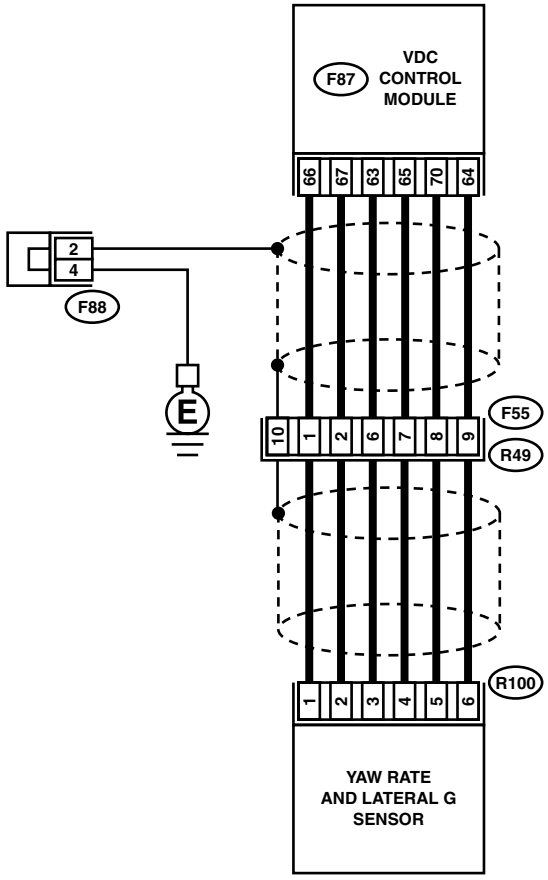
***DIAGNOSIS:***

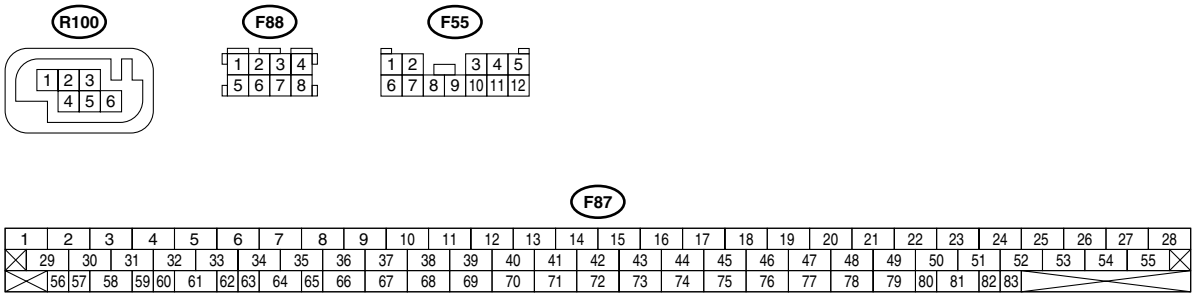
- Faulty yaw rate sensor

***TROUBLE SYMPTOM:***

- ABS does not operate.
- VDC does not operate.

**WIRING DIAGRAM:**




VDC00151

| | Step | Check | Yes | No |
|---|---|---|---|---|
| 1 | **CHECK THE STEERING WHEEL.**<br>1) Drive the vehicle on a flat road.<br>2) Stop the vehicle in a straight line.<br>3) Check the angle of steering wheel. | Is the angle of steering wheel alignment less than 5° from the straight-ahead position? | Go to step **2.** | Perform centering alignment of steering. |
| 2 | **CHECK RUNNING FIELD.** | Was the vehicle driven on banked road surfaces or sandy surfaces (not dirt road surfaces) or surfaces with holes or bumps at high speeds? | Driving on banked road surfaces or sandy surfaces (not dirt road surfaces) or surfaces with holes or bumps at high speeds, sometimes results in a VDCCM memory trouble code. | Go to step **3.** |
| 3 | **CHECK INSTALLATION OF YAW RATE AND LATERAL G SENSOR.**<br>Check installation of yaw rate and lateral G sensor. | Is the yaw rate and lateral G sensor fixed securely? | Go to step **4.** | Install yaw rate and lateral G sensor securely. |
| 4 | **CHECK POWER SUPPLY OF YAW RATE AND LATERAL G SENSOR.**<br>1) Turn ignition switch OFF.<br>2) Disconnect connector from yaw rate and lateral G sensor.<br>3) Turn ignition switch to ON.<br>4) Measure voltage between yaw rate and lateral G sensor and chassis ground.<br>***Connector & terminal***<br>***(R100) No. 3 — Chassis ground:*** | Is the measured value within 10 to 15 V? | Go to step **7.** | Go to step **5.** |
| 5 | **CHECK OUTPUT VOLTAGE OF VDCCM.**<br>1) Turn ignition switch to OFF.<br>2) Disconnect connector from VDCCM.<br>3) Remove cover for VDCCM connector. <Ref. to VDC-20, REMOVE, VDCCM Connector Cover.><br>4) Connect connector to VDCCM.<br>5) Turn ignition switch to ON.<br>6) Measure voltage between VDCCM connector and chassis ground.<br>***Connector & terminal***<br>***(F87) No. 63 — Chassis ground:*** | Is the measured value within 10 to 15 V? | Repair harness between yaw rate and lateral G sensor and VDCCM. | Go to step **6.** |
| 6 | **CHECK POOR CONTACT IN CONNECTORS.** | Is there poor contact in yaw rate and lateral G sensor connector? | Repair or replace VDCCM connector. | Replace VDCCM. <Ref. to VDC-8, VDC Control Module (VDCCM).> |
| 7 | **CHECK GROUND CIRCUIT OF YAW RATE AND LATERAL G SENSOR.**<br>Measure resistance between yaw rate and lateral G sensor and chassis ground.<br>***Connector & terminal***<br>***(R100) No. 6 — Chassis ground:*** | Is the measured value less than 0.5 Ω? | Go to step **10.** | Go to step **8.** |

| | Step | Check | Yes | No |
|---|---|---|---|---|
| 8 | **CHECK GROUND CIRCUIT OF VDCCM.**<br>1) Disconnect connector from VDCCM.<br>2) Remove cover from VDCCM connector. <Ref. to VDC-20, REMOVE, VDCCM Connector Cover.><br>3) Connect connector to VDCCM.<br>4) Measure resistance between VDCCM connector and chassis ground.<br>***Connector & terminal***<br>***(F87) No. 64 — Chassis ground:*** | Is the measured value less than 0.5 Ω? | Repair harness between yaw rate and lateral G sensor and VDCCM. | Go to step **9.** |
| 9 | **CHECK POOR CONTACT IN CONNECTORS.** | Is there poor contact in VDCCM connector? | Repair or replace VDCCM connector. | Replace VDCCM. <Ref. to VDC-8, VDC Control Module (VDCCM).> |
| 10 | **CHECK HARNESS OF YAW RATE AND LATERAL G SENSOR.**<br>1) Disconnect connector from VDCCM.<br>2) Measure resistance between VDCCM and yaw rate and lateral G sensor.<br>***Connector & terminal***<br>***(F87) No. 65 — (R100) No. 4:***<br>***(F87) No. 66 — (R100) No. 1:***<br>***(F87) No. 67 — (R100) No. 2:*** | Is the measured value less than 0.5 Ω? | Go to step **11.** | Repair harness between yaw rate and lateral G sensor and VDCCM. |
| 11 | **CHECK GROUND SHORT OF HARNESS.**<br>Measure resistance between VDCCM connector and chassis ground.<br>***Connector & terminal***<br>***(F87) No. 65 — Chassis ground:***<br>***(F87) No. 66 — Chassis ground:***<br>***(F87) No. 67 — Chassis ground:*** | Is the measured value more than 1 MΩ? | Go to step **12.** | Repair harness between yaw rate and lateral G sensor and VDCCM. |
| 12 | **CHECK BATTERY SHORT OF HARNESS.**<br>Measure voltage between VDCCM connector and chassis ground.<br>***Connector & terminal***<br>***(F87) No. 65 (+) — Chassis ground (–):***<br>***(F87) No. 66 (+) — Chassis ground (–):***<br>***(F87) No. 67 (+) — Chassis ground (–):*** | Is the measured value less than 0.5 V? | Go to step **13.** | Repair harness between yaw rate and lateral G sensor and VDCCM. |
| 13 | **CHECK BATTERY SHORT OF HARNESS.**<br>1) Turn ignition switch to ON.<br>2) Measure voltage between VDCCM and chassis ground.<br>***Connector & terminal***<br>***(F87) No. 65 (+) — Chassis ground (–):***<br>***(F87) No. 66 (+) — Chassis ground (–):***<br>***(F87) No. 67 (+) — Chassis ground (–):*** | Is the measured value less than 0.5 V? | Go to step **14.** | Repair harness between yaw rate and lateral G sensor and VDCCM. |
| 14 | **CHECK YAW RATE AND LATERAL G SENSOR.**<br>1) Turn ignition switch to OFF.<br>2) Install yaw rate and lateral G sensor to body.<br>3) Connect all connectors.<br>4) Turn ignition switch to ON.<br>5) Measure voltage between VDCCM connector terminals.<br>***Connector & terminal***<br>***(F87) No. 66 (+) — No. 64 (–):*** | Is the measured value within 2.1 to 2.9 V? | Go to step **15.** | Replace yaw rate and lateral G sensor. <Ref. to VDC-22, Yaw Rate and Lateral G Sensor.> |

| | Step | Check | Yes | No |
|---|---|---|---|---|
| 15 | **CHECK YAW RATE AND LATERAL G SENSOR.**<br>1) Turn ignition switch to ON.<br>2) Check oscilloscope signal pattern between VDCCM connector terminals.<Ref. to VDC-19, WAVEFORM, MEASUREMENT, Control Module I/O Signal.><br>***Connector & terminal***<br>***(F87) No. 67 (+) — No. 64 (–):*** | Is the oscilloscope pattern the same as shown in the figure? | Go to step **16.** | Replace VDCCM. <Ref. to VDC-8, VDC Control Module (VDCCM).> |
| 16 | **CHECK YAW RATE SENSOR.**<br>Check oscilloscope pattern between yaw rate and lateral G sensor terminals.<Ref. to VDC-19, WAVEFORM, MEASUREMENT, Control Module I/O Signal.><br>***Connector & terminal***<br>***(F87) No. 65 (+) — No. 64 (–):*** | Is the oscilloscope pattern the same as shown in the figure? | Replace VDCCM. <Ref. to VDC-8, VDC Control Module (VDCCM).> | Replace yaw rate and lateral G sensor. <Ref. to VDC-8, VDC Control Module (VDCCM).> |

## AN:DTC 73 ABNORMAL LATERAL G SENSOR

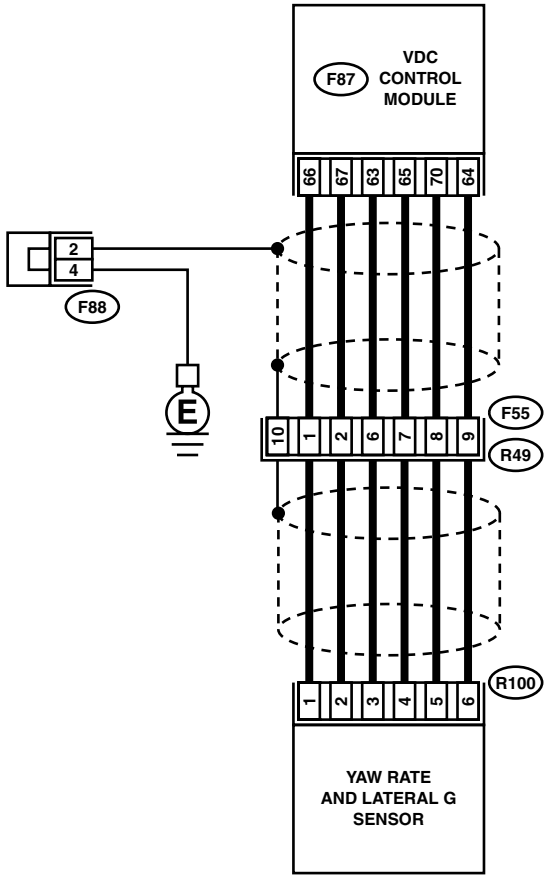
***DIAGNOSIS:***

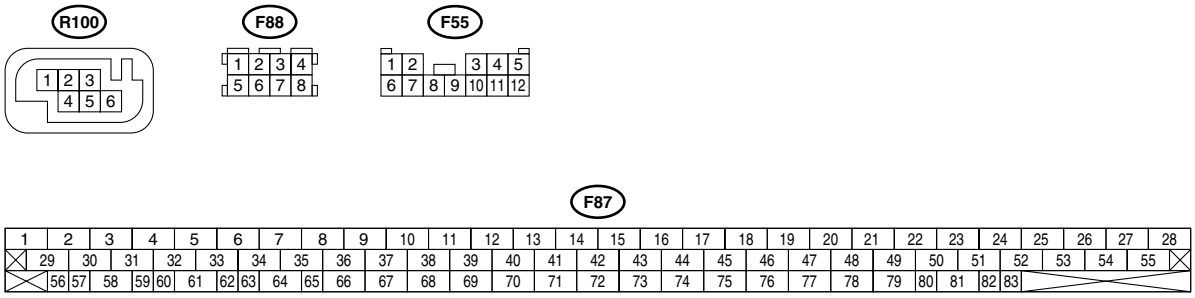
- Faulty lateral G sensor

***TROUBLE SYMPTOM:***

- ABS does not operate.
- VDC does not operate.

**WIRING DIAGRAM:**

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| | Step | Check | Yes | No |
|---|---|---|---|---|
| 1 | **CHECK INSTALLATION OF LATERAL G SENSOR.**<br>Check installation of lateral G sensor. | Is the yaw rate and lateral G sensor fixed securely? | Go to step **2.** | Install yaw rate and lateral G sensor securely. |
| 2 | **CHECK INPUT VOLTAGE OF G SENSOR.**<br>1) Turn ignition switch to OFF.<br>2) Remove console box.<br>3) Disconnect connector from yaw rate and lateral G sensor.<br>4) Turn ignition switch to ON.<br>5) Measure voltage between yaw rate and lateral G sensor connector terminals.<br>***Connector & terminal***<br>***(R100) No. 3 (+) — No. 6 (–):*** | Is the measured value within 10 to 15 V? | Go to step **3.** | Repair harness/ connector between yaw rate and lateral G sensor and VDCCM. |
| 3 | **CHECK YAW RATE AND LATERAL G SENSOR.**<br>1) Turn ignition switch to OFF.<br>2) Measure resistance between yaw rate and lateral G sensor terminals.<br>***Terminals***<br>***No. 3 — No. 5:*** | Is the measured value within 4.3 to 4.9 kΩ? | Go to step **4.** | Replace yaw rate and lateral G sensor. <Ref. to VDC-22, Yaw Rate and Lateral G Sensor.> |
| 4 | **CHECK OPEN CIRCUIT IN YAW RATE AND LATERAL G SENSOR OUTPUT HARNESS AND GROUND HARNESS.**<br>1) Connect connector to yaw rate and lateral G sensor.<br>2) Disconnect connector from VDCCM.<br>3) Measure resistance between VDCCM connector terminals.<br>***Connector & terminal***<br>***(F87) No. 63 — No. 70:*** | Is the measured value within 4.3 to 4.9 kΩ? | Go to step **5.** | Repair harness/ connector between yaw rate and lateral G sensor and VDCCM. |
| 5 | **CHECK GROUND SHORT IN YAW RATE AND LATERAL G SENSOR HARNESS.**<br>1) Disconnect connector from yaw rate and lateral G sensor.<br>2) Measure resistance between VDCCM connector and chassis ground.<br>***Connector & terminal***<br>***(F87) No. 63 — Chassis ground:***<br>***(F87) No. 70 — Chassis ground:***<br>***(F87) No. 64 — Chassis ground:*** | Is the measured value more than 1 MΩ? | Go to step **6.** | Repair harness between yaw rate and lateral G sensor and VDCCM. |
| 6 | **CHECK BATTERY SHORT OF HARNESS.**<br>Measure voltage between VDCCM connector and chassis ground.<br>***Connector & terminal***<br>***(F87) No. 63 (+) — Chassis ground (–):***<br>***(F87) No. 70 (+) — Chassis ground (–):***<br>***(F87) No. 64 (+) — Chassis ground (–):*** | Is the measured value less than 1 V? | Go to step **7.** | Repair harness between yaw rate and lateral G sensor and VDCCM. |
| 7 | **CHECK BATTERY SHORT OF HARNESS.**<br>1) Turn ignition switch to ON.<br>2) Measure voltage between VDCCM connector and chassis ground.<br>***Connector & terminal***<br>***(F87) No. 63 (+) — Chassis ground (–):***<br>***(F87) No. 70 (+) — Chassis ground (–):***<br>***(F87) No. 64 (+) — Chassis ground (–):*** | Is the measured value less than 1 V? | Go to step **8.** | Repair harness between yaw rate and lateral G sensor and VDCCM. |

| | Step | Check | Yes | No |
|---|---|---|---|---|
| 8 | **CHECK LATERAL G SENSOR.**<br>1) Turn ignition switch to OFF.<br>2) Remove yaw rate and lateral G sensor from vehicle.<br>3) Connect connector to yaw rate and lateral G sensor.<br>4) Connect connector to VDCCM.<br>5) Turn ignition switch to ON.<br>6) Measure voltage between yaw rate and lateral G sensor connector terminals.<br>***Connector & terminal***<br>***(R100) No. 5 (+) — No. 6 (–):*** | Is the measured value within 2.3 to 2.7 V when yaw rate and lateral G sensor is horizontal? | Go to step **9.** | Replace yaw rate and lateral G sensor. <Ref. to VDC-22, Yaw Rate and Lateral G Sensor.> |
| 9 | **CHECK YAW RATE AND LATERAL G SENSOR.**<br>Measure voltage between yaw rate and lateral G sensor connector terminals.<br>***Connector & terminal***<br>***(R100) No. 5 (+) — No. 6 (–):*** | Is the measured value within 3.3 to 3.7 V when yaw rate and lateral G sensor is inclined 90° to left? | Go to step **10.** | Replace yaw rate and lateral G sensor. <Ref. to VDC-22, Yaw Rate and Lateral G Sensor.> |
| 10 | **CHECK YAW RATE AND LATERAL G SENSOR.**<br>Measure voltage between yaw rate and lateral G sensor connector terminals.<br>***Connector & terminal***<br>***(R100) No. 5 (+) — No. 6 (–):*** | Is the measured value within 1.3 to 1.7 V when yaw rate and lateral G sensor is inclined 90° to right? | Go to step **11.** | Replace yaw rate and lateral G sensor. <Ref. to VDC-22, Yaw Rate and Lateral G Sensor.> |
| 11 | **CHECK POOR CONTACT IN CONNECTORS.** | Is there poor contact in connector between VDCCM and yaw rate and lateral G sensor? | Repair connector. | Go to step **12.** |
| 12 | **CHECK VDCCM.**<br>1) Connect all connectors.<br>2) Erase the memory.<br>3) Perform inspection mode.<br>4) Read out the diagnostic trouble code. | Is the same diagnostic trouble code as in the current diagnosis still being output? | Replace VDCCM. <Ref. to VDC-8, VDC Control Module (VDCCM).> | Go to step **13.** |
| 13 | **CHECK ANY OTHER DIAGNOSTIC TROUBLE CODES APPEARANCE.** | Are other diagnostic trouble codes being output? | Proceed with the diagnosis corresponding to the diagnostic trouble code. | A temporary poor contact. |

**MEMO:**

## AO:DTC 74 ABNORMAL PRESSURE SENSOR

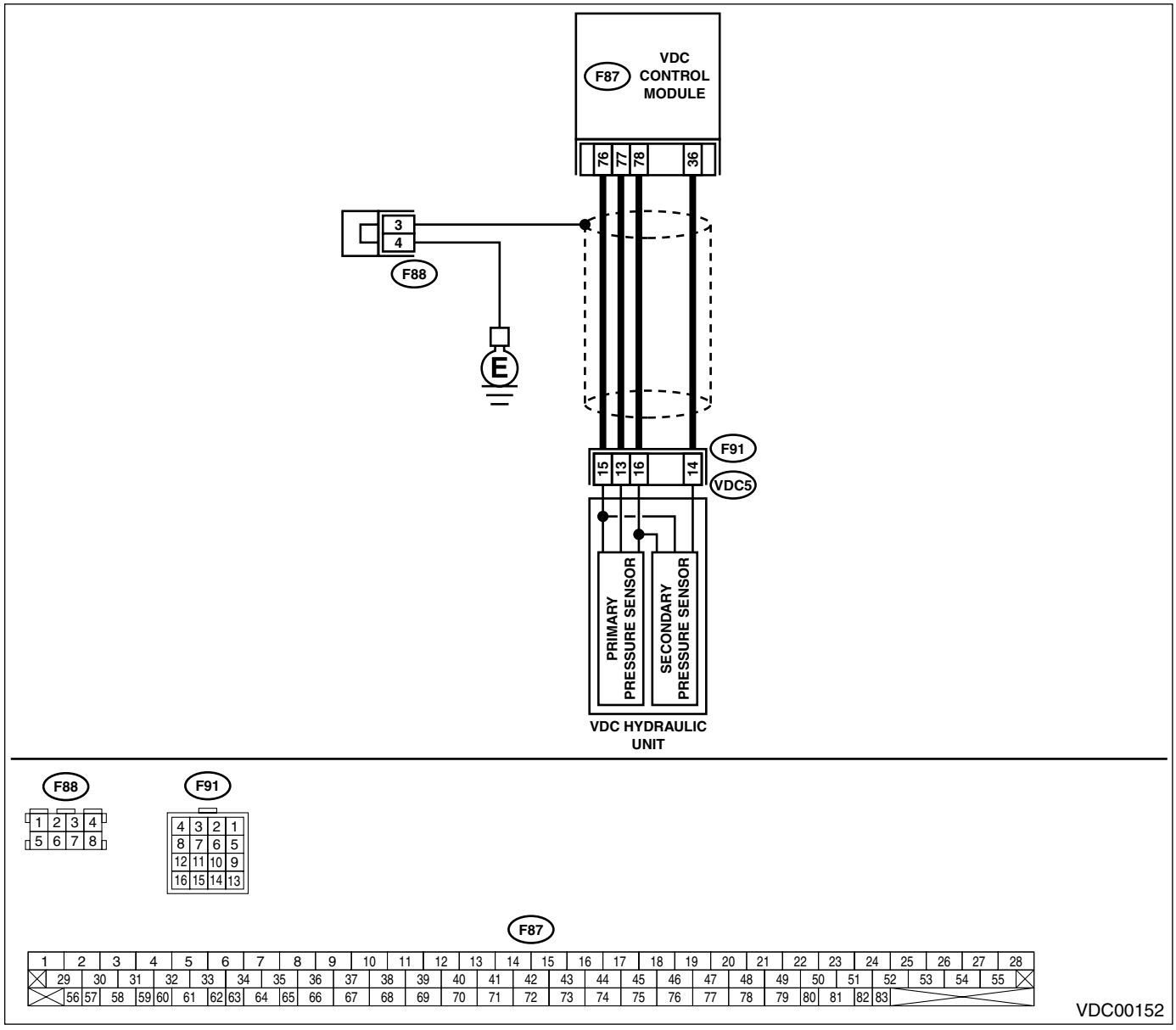
***DIAGNOSIS:***

- Faulty pressure sensor

***TROUBLE SYMPTOM:***

- ABS does not operate.
- VDC does not operate.

**WIRING DIAGRAM:**



| | Step | Check | Yes | No |
|---|---|---|---|---|
| 1 | **CHECK GROUND CIRCUIT OF PRESSURE SENSOR.**<br>1) Turn ignition switch to OFF.<br>2) Disconnect connector (F91) from VDCH/U.<br>3) Measure resistance between VDCH/U connector and chassis ground.<br>***Connector & terminal***<br>***(F91) No. 15 — Chassis ground:*** | Is the measured value less than 0.5 Ω? | Go to step **4.** | Go to step **2.** |
| 2 | **CHECK GROUND CIRCUIT OF VDCCM.**<br>1) Disconnect connector from VDCCM.<br>2) Remove cover from VDCCM. <Ref. to VDC-20, REMOVE, VDCCM Connector Cover.><br>3) Connect connector to VDCCM.<br>4) Measure resistance between VDCCM and chassis ground.<br>***Connector & terminal***<br>***(F87) No. 76 — Chassis ground:*** | Is the measured value less than 0.5 Ω? | Replace harness between VDCH/U and VDCCM. | Go to step **3.** |
| 3 | **CHECK POOR CONTACT IN CONNECTORS.** | Is there poor contact in VDCCM connector? | Repair or replace VDCCM connector. | Replace VDCCM. <Ref. to VDC-8, VDC Control Module (VDCCM).> |
| 4 | **CHECK POWER SUPPLY OF PRESSURE SENSOR.**<br>NOTE:<br>When this inspection is carried out, DTC 51 ABNORMAL VALVE RELAY is memorized, but this does not indicate valve relay malfunction.<br>1) Turn ignition switch to ON.<br>2) Measure voltage between VDCH/U connector terminals.<br>***Connector & terminal***<br>***(F91) No. 16 (+) — No. 15 (–):*** | Is the measured value within 4.75 to 5.25 V? | Go to step **7.** | Go to step **5.** |
| 5 | **CHECK POWER SUPPLY OF VDCCM.**<br>1) Turn ignition switch to OFF.<br>2) Disconnect connector from VDCCM.<br>3) Remove cover from VDCCM. <Ref. to VDC-20, REMOVE, VDCCM Connector Cover.><br>4) Connect connector to VDCCM.<br>5) Turn ignition switch to ON.<br>6) Measure voltage between VDCCM connector terminals.<br>***Connector & terminal***<br>***(F87) No. 78 (+) — No. 76 (–):*** | Is the measured value within 4.75 to 5.25 V? | Repair harness between VDCH/U and VDCCM. | Go to step **6.** |
| 6 | **CHECK POOR CONTACT IN CONNECTORS.** | Is there poor contact in VDCCM connector? | Repair or replace VDCCM connector. | Replace VDCCM. <Ref. to VDC-8, VDC Control Module (VDCCM).> |
| 7 | **CHECK GROUND SHORT OF HARNESS.**<br>1) Turn ignition switch to OFF.<br>2) Disconnect connector from VDCCM.<br>3) Measure resistance between VDCH/U connector and chassis ground.<br>***Connector & terminal***<br>***(F91) No. 13 — Chassis ground:***<br>***(F91) No. 14 — Chassis ground:*** | Is the measured value more than 1 MΩ? | Go to step **8.** | Repair harness between VDCH/U and VDCCM. |

| | Step | Check | Yes | No |
|---|---|---|---|---|
| 8 | **CHECK BATTERY SHORT OF HARNESS.**<br>Measure voltage between VDCH/U connector and chassis ground.<br>***Connector & terminal***<br>***(F91) No. 13 (+) — Chassis ground (–):***<br>***(F91) No. 14 (+) — Chassis ground (–):*** | Is the measured value less than 0.5 V? | Go to step **9.** | Repair harness between VDCH/U and VDCCM. |
| 9 | **CHECK BATTERY SHORT OF HARNESS.**<br>1) Turn ignition switch to ON.<br>2) Measure voltage between VDCH/U connector and chassis ground.<br>***Connector & terminal***<br>***(F91) No. 13 (+) — Chassis ground (–):***<br>***(F91) No. 14 (+) — Chassis ground (–):*** | Is the measured value less than 0.5 V? | Go to step **10.** | Repair harness between VDCH/U and VDCCM. |
| 10 | **CHECK OUTPUT VOLTAGE OF PRESSURE SENSOR.**<br>1) Turn ignition switch to OFF.<br>2) Disconnect connector from VDCCM.<br>3) Remove cover from VDCCM. <Ref. to VDC-20, REMOVE, VDCCM Connector Cover.><br>4) Connect connector to VDCCM.<br>5) Connect all connectors.<br>6) Turn ignition switch to ON.<br>7) Do not depress brake pedal.<br>8) Measure voltage between VDCCM connector terminals.<br>***Connector & terminal***<br>***(F87) No. 77 (+) — No. 76 (–):***<br>***(F87) No. 36 (+) — No. 76 (–):*** | Is the measured value within 0.48 to 0.72 V? | Go to step **11.** | Replace VDCH/U. <Ref. to VDC-8, VDC Control Module (VDCCM).> |
| 11 | **CHECK BRAKE FLUID LEAKAGE.**<br>Inspect fluid leakage between brake master cylinder and VDCH/U. | Does brake fluid leak? | Retighten or replace. | Go to step **12.** |
| 12 | **CHECK BRAKE MASTER CYLINDER.**<br>Inspect brake master cylinder hydraulic pressure. <Ref. to BR-29, OPERATION CHECK (WITH GAUGES), INSPECTION, Brake Booster.> | Is hydraulic pressure normal? | Go to step **13.** | Replace master cylinder. |
| 13 | **CHECK BRAKE PEDAL STROKE.**<br>Measure the stroke between non-forced pedal position and forced pedal position with 50 kg (110 lb). | Is the measured value less than 95 mm (3.74 in)? | Go to step **14.** | Perform bleeding. |
| 14 | **CHECK INPUT VOLTAGE OF PRESSURE SENSOR.**<br>1) Depress the brake pedal with 50 kg (110 lb).<br>2) Measure voltage between VDCCM connector terminals.<br>***Connector & terminal***<br>***A (F87) No. 77 (+) — No. 76 (–):***<br>***B (F87) No. 36 (+) — No. 76 (–):*** | Is the voltage difference between A and B more than 0.2 V? | Go to step **15.** | Replace VDCH/U. <Ref. to VDC-8, VDC Control Module (VDCCM).> |
| 15 | **CHECK POOR CONTACT IN CONNECTORS.** | Is there poor contact in connector between VDCCM and pressure sensor? | Repair connector. | Go to step **16.** |
| 16 | **CHECK VDCCM.**<br>1) Connect all connectors.<br>2) Erase the memory.<br>3) Perform inspection mode.<br>4) Read out the diagnostic trouble code. | Is the same diagnostic trouble code as in the current diagnosis still being output? | Replace VDCCM. <Ref. to VDC-8, VDC Control Module (VDCCM).> | Go to step **17.** |

| Step | | Check | Yes | No |
|---|---|---|---|---|
| 17 | **CHECK ANY OTHER DIAGNOSTIC TROUBLE CODES APPEARANCE.** | Are other diagnostic trouble codes being output? | Proceed with the diagnosis corresponding to the diagnostic trouble code. | A temporary poor contact. |

# 14.Diagnostics Chart with Select Monitor

## A: COMMUNICATION FOR INITIALIZING IMPOSSIBLE (SELECT MONITOR COMMUNICATION FAILURE)

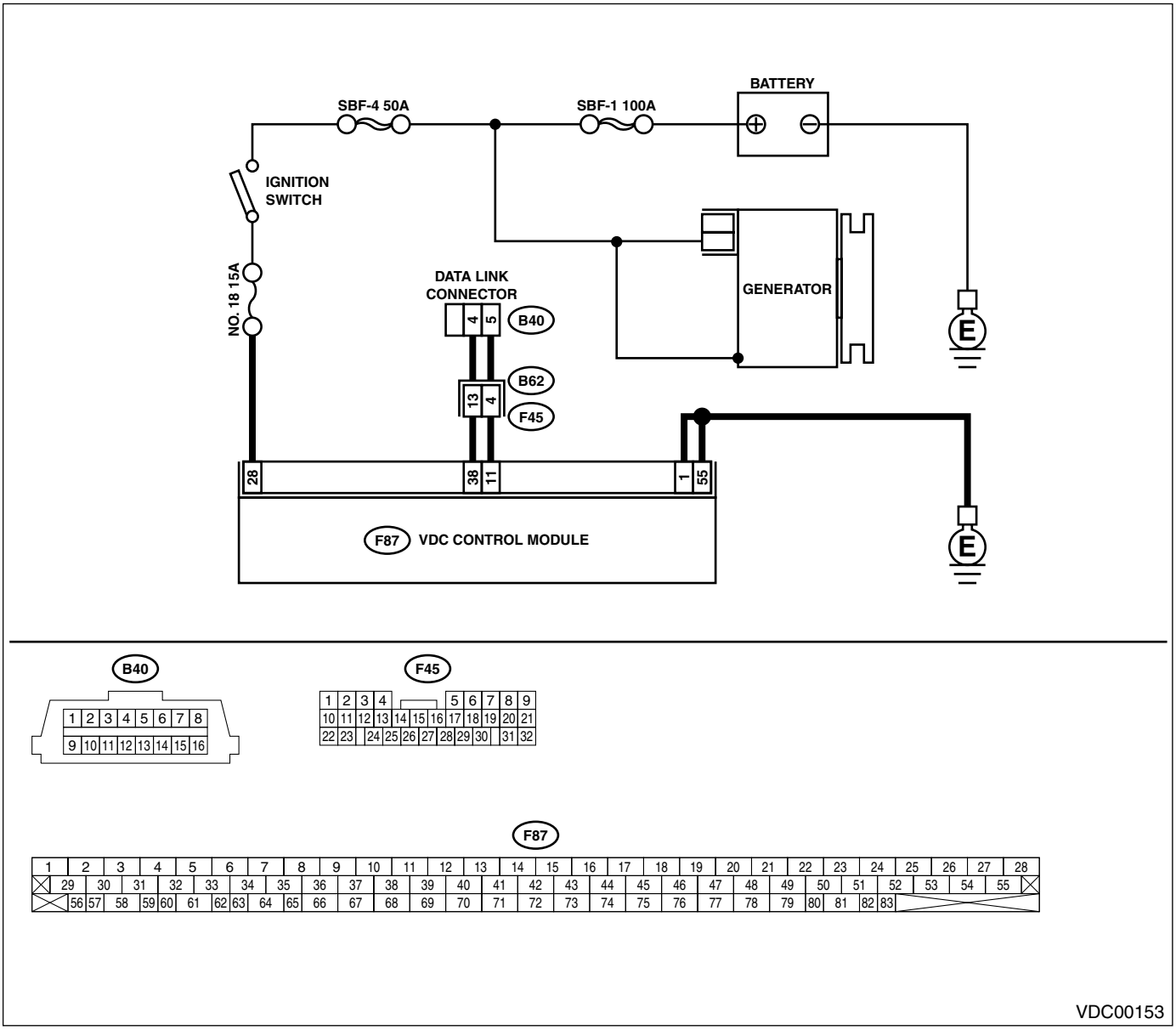
**DIAGNOSIS:**

- Faulty harness connector

**TROUBLE SYMPTOM:**

- ABS warning light remains on.

**WIRING DIAGRAM:**



# DIAGNOSTICS CHART WITH SELECT MONITOR

| | Step | Check | Yes | No |
|---|---|---|---|---|
| 1 | **CHECK IGNITION SWITCH.** | Is ignition switch to ON? | Go to step **2.** | Turn ignition switch to ON, and select VDCCM mode using the select monitor. |
| 2 | **CHECK BATTERY.**<br>1) Turn ignition switch to OFF.<br>2) Measure battery voltage. | Is the measured value more than 11 V? | Go to step **3.** | Charge or replace battery. |
| 3 | **CHECK BATTERY TERMINAL.** | Is there poor contact at battery terminal? | Repair or tighten battery terminal. | Go to step **4.** |
| 4 | **CHECK COMMUNICATION OF SELECT MONITOR.**<br>1) Turn ignition switch to ON.<br>2) Using the select monitor, check whether communication to other systems can be executed normally. | Are the name and year of the system displayed on the select monitor? | Go to step **9.** | Go to step **5.** |
| 5 | **CHECK COMMUNICATION OF SELECT MONITOR.**<br>1) Turn ignition switch to OFF.<br>2) Disconnect VDCCM connector.<br>3) Check whether communication to other systems can be executed normally. | Are the name and year of the system displayed on the select monitor? | Go to step **10.** | Go to step **6.** |
| 6 | **CHECK COMMUNICATION OF SELECT MONITOR.**<br>1) Turn ignition switch to OFF.<br>2) Connect VDCCM module connector.<br>3) Disconnect cruise control module connector.<br>4) Check whether communication to other systems can be executed normally.<br>NOTE:<br>If the vehicle is not equipped with cruise control: Go to step **7.** | Are the name and year of the system displayed on the select monitor? | Inspect cruise control module. | Go to step **7.** |
| 7 | **CHECK HARNESS CONNECTOR BETWEEN EACH CONTROL MODULE AND DATA LINK CONNECTOR.**<br>1) Turn ignition switch to OFF.<br>2) Disconnect VDCCM, and cruise control module connectors.<br>3) Measure resistance between data link connector and chassis ground.<br>***Connector & terminal***<br>***(B40) No. 5 — Chassis ground:***<br>***(B40) No. 4 — Chassis ground:*** | Is the measured value more than 1 MΩ? | Go to step **8.** | Repair harness and connector between each control module and data link connector. |
| 8 | **CHECK OUTPUT SIGNAL FOR VDCCM.**<br>1) Turn ignition switch to ON.<br>2) Measure voltage between data link connector and chassis ground.<br>***Connector & terminal***<br>***(B40) No. 5 — Chassis ground:***<br>***(B40) No. 4 — Chassis ground:*** | Is the measured value less than 1 V? | Repair harness and connector between each control module and data link connector. | Go to step **9.** |
| 9 | **CHECK HARNESS/CONNECTOR BETWEEN VDCCM AND DATA LINK CONNECTOR.**<br>Measure resistance between VDCCM connector and data link connector.<br>***Connector & terminal***<br>***(F87) No. 11 — (B40) No. 5:***<br>***(F87) No. 38 — (B40) No. 4:*** | Is the measured value more than 0.5 Ω? | Repair harness and connector between VDCCM and data link connector. | Go to step **10.** |

| | Step | Check | Yes | No |
|---|---|---|---|---|
| 10 | **CHECK INSTALLATION OF VDCCM CONNECTOR.**<br>Turn ignition switch to OFF. | Is VDCCM connector inserted into VDCCM until the clamp locks onto it? | Go to step **11.** | Insert VDCCM connector into VDCCM until the clamp locks onto it. |
| 11 | **CHECK POWER SUPPLY CIRCUIT.**<br>1) Turn ignition switch to ON (engine OFF).<br>2) Measure ignition power supply voltage between VDCCM connector and chassis ground.<br>***Connector & terminal***<br>***(F87) No. 28 (+) — Chassis ground (–):*** | Is the measured value less than 10 V? | Go to step **12.** | Repair open circuit in harness between VDCCM and battery. |
| 12 | **CHECK HARNESS CONNECTOR BETWEEN VDCCM AND CHASSIS GROUND.**<br>1) Turn ignition switch to OFF.<br>2) Disconnect connector from VDCCM and transmission.<br>3) Measure resistance of harness between VDCCM and chassis ground.<br>***Connector & terminal***<br>***(F87) No. 1 — Chassis ground:***<br>***(F87) No. 55 — Chassis ground:*** | Is the measured value less than 1 Ω? | Go to step **13.** | Repair open circuit in harness between VDCCM and inhibitor side connector, and poor contact in coupling connector. |
| 13 | **CHECK POOR CONTACT IN CONNECTORS.** | Is there poor contact in control module power supply, ground line and data link connector? | Repair connector. | Replace VDCCM. <Ref. to VDC-8, VDC Control Module (VDCCM).> |

## B: DTC 21 FRONT RIGHT ABS SENSOR CIRCUIT OPEN OR SHORTED BATTERY

NOTE:
For diagnostic procedure, refer to DTC 27. <Ref. to VDC-126, DTC 27 REAR LEFT ABS SENSOR CIRCUIT OPEN OR SHORTED BATTERY, Diagnostics Chart with Select Monitor.>

## C: DTC 23 FRONT LEFT ABS SENSOR CIRCUIT OPEN OR SHORTED BATTERY

NOTE:
For diagnostic procedure, refer to DTC 27. <Ref. to VDC-126, DTC 27 REAR LEFT ABS SENSOR CIRCUIT OPEN OR SHORTED BATTERY, Diagnostics Chart with Select Monitor.>

## D: DTC 25 REAR RIGHT ABS SENSOR CIRCUIT OPEN OR SHORTED BATTERY

NOTE:
For diagnostic procedure, refer to DTC 27. <Ref. to VDC-126, DTC 27 REAR LEFT ABS SENSOR CIRCUIT OPEN OR SHORTED BATTERY, Diagnostics Chart with Select Monitor.>

# E: DTC 27 REAR LEFT ABS SENSOR CIRCUIT OPEN OR SHORTED BATTERY

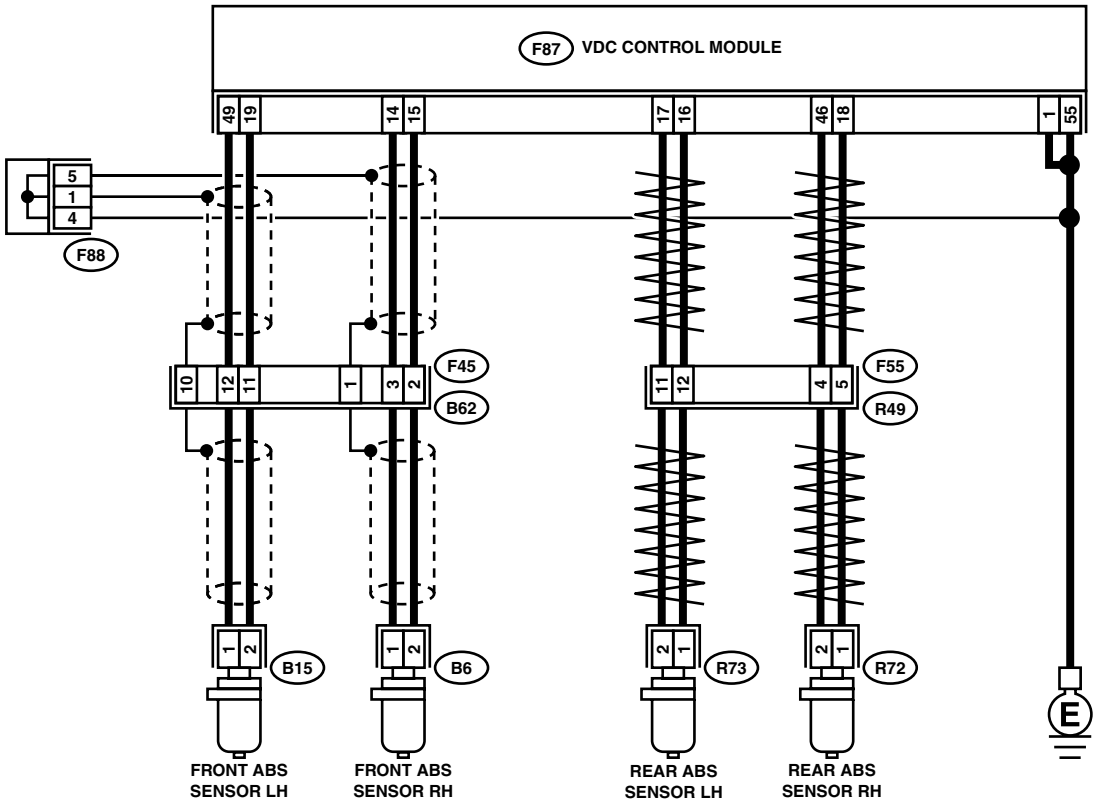
**DIAGNOSIS:**

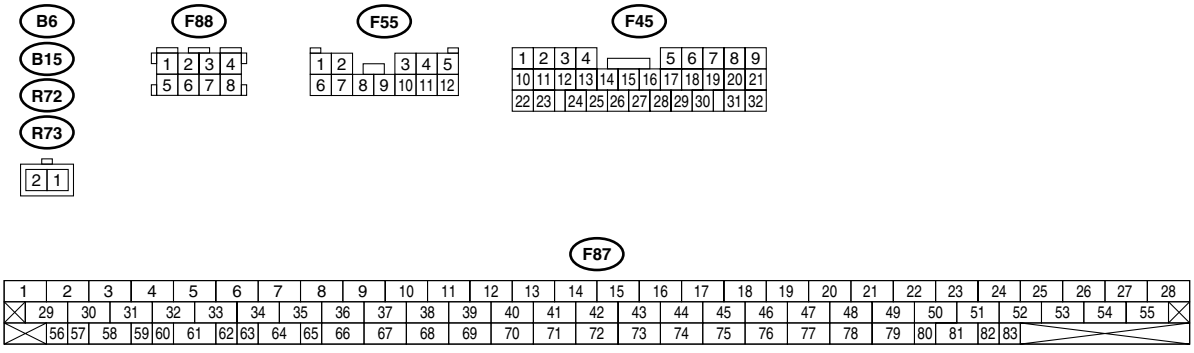
- Faulty ABS sensor (Broken wire, input voltage too high)
- Faulty harness connector

**TROUBLE SYMPTOM:**

- ABS does not operate.
- VDC does not operate.

**WIRING DIAGRAM:**

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# DIAGNOSTICS CHART WITH SELECT MONITOR

| | Step | Check | Yes | No |
|---|---|---|---|---|
| 1 | **CHECK OUTPUT OF ABS SENSOR USING SELECT MONITOR.**<br>1) Select “Current data display & Save” on the select monitor.<br>2) Read the ABS sensor output corresponding to the faulty system in the select monitor data display mode. | Does the speed indicated on the display change in response to the speedometer reading during acceleration/deceleration when the steering wheel is in the straight-ahead position? | Go to step **2.** | Go to step **9.** |
| 2 | **CHECK INSTALLATION OF ABS SENSOR.** | Are the ABS sensor installation bolts tightened to 33 N·m (3.4 kg-m, 25 ft-lb)? | Go to step **3.** | Tighten ABS sensor installation bolts securely. |
| 3 | **CHECK ABS SENSOR GAP.**<br>Measure tone wheel-to-pole piece gap over entire perimeter of the wheel. | Is the measured value within the range below? Front wheel 0.3 - 0.8 mm (0.012 - 0.031 in) and Rear wheel 0.44 - 0.94 mm (0.0173 - 0.0370 in) | Go to step **4.** | Adjust the gap.<br>NOTE:<br>Adjust the gap using spacers (Part No. 26755AA000). If spacers cannot correct the gap, replace worn sensor or worn tone wheel. |
| 4 | **CHECK TONE WHEEL RUNOUT.**<br>Measure tone wheel runout. | Is the measured value less than 0.05 mm (0.0020 in)? | Go to step **5.** | Repair tone wheel. Front <Ref. to VDC-30, Front Tone Wheel.> Rear <Ref. to VDC-31, Rear Tone Wheel.> |
| 5 | **CHECK POOR CONTACT IN CONNECTORS.**<br>Turn ignition switch to OFF. | Is there poor contact in connectors between VDCCM and ABS sensor? | Repair connector. | Go to step **6.** |
| 6 | **CHECK VDCCM.**<br>1) Connect all connectors.<br>2) Erase the memory.<br>3) Perform inspection mode.<br>4) Read out the diagnostic trouble code. | Is the same diagnostic trouble code as in the current diagnosis still being output? | Replace VDCCM. <Ref. to VDC-8, VDC Control Module (VDCCM).> | Go to step **7.** |
| 7 | **CHECK ANY OTHER DIAGNOSTIC TROUBLE CODES APPEARANCE.** | Are other diagnostic trouble codes being output? | Proceed with the diagnosis corresponding to the diagnostic trouble code. | A temporary poor contact.<br>NOTE:<br>Check harness and connectors between VDCCM and ABS sensor. |
| 8 | **CHECK ABS SENSOR.**<br>1) Turn ignition switch to OFF.<br>2) Disconnect connector from ABS sensor.<br>3) Measure resistance of ABS sensor connector terminals.<br>***Terminal***<br>***Front RH No. 1 — No. 2:***<br>***Front LH No. 1 — No. 2:***<br>***Rear RH No. 1 — No. 2:***<br>***Rear LH No. 1 — No. 2:*** | Is the measured value within 1.0 to 1.5 kΩ? | Go to step **9.** | Replace ABS sensor. Front <Ref. to VDC-28, Front ABS Sensor.> Rear <Ref. to VDC-29, Rear ABS Sensor.> |

| | Step | Check | Yes | No |
|---|---|---|---|---|
| 9 | **CHECK BATTERY SHORT OF ABS SENSOR.**<br>1) Disconnect connector from VDCCM.<br>2) Measure voltage between ABS sensor and chassis ground.<br>***Terminal***<br>***Front RH No. 1 (+) — Chassis ground (–):***<br>***Front LH No. 1 (+) — Chassis ground (–):***<br>***Rear RH No. 1 (+) — Chassis ground (–):***<br>***Rear LH No. 1 (+) — Chassis ground (–):*** | Is the measured value less than 1 V? | Go to step **10.** | Replace ABS sensor. Front <Ref. to VDC-28, Front ABS Sensor.> Rear <Ref. to VDC-29, Rear ABS Sensor.> |
| 10 | **CHECK BATTERY SHORT OF ABS SENSOR.**<br>1) Turn ignition switch to ON.<br>2) Measure voltage between ABS sensor and chassis ground.<br>***Terminal***<br>***Front RH No. 1 (+) — Chassis ground (–):***<br>***Front LH No. 1 (+) — Chassis ground (–):***<br>***Rear RH No. 1 (+) — Chassis ground (–):***<br>***Rear LH No. 1 (+) — Chassis ground (–):*** | Is the measured value less than 1 V? | Go to step **11.** | Replace ABS sensor. Front <Ref. to VDC-28, Front ABS Sensor.> Rear <Ref. to VDC-29, Rear ABS Sensor.> |
| 11 | **CHECK HARNESS/CONNECTOR BETWEEN VDCCM AND ABS SENSOR.**<br>1) Turn ignition switch to OFF.<br>2) Connect connector to ABS sensor.<br>3) Measure resistance between VDCCM connector terminals.<br>***Connector & terminal***<br>***DTC 21 / (F87) No. 14 — No. 15:***<br>***DTC 23 / (F87) No. 49 — No. 19:***<br>***DTC 25 / (F87) No. 18 — No. 46:***<br>***DTC 27 / (F87) No. 16 — No. 17:*** | Is the measured value within 1.0 to 1.5 kΩ? | Go to step **12.** | Repair harness/ connector between VDCCM and ABS sensor. |
| 12 | **CHECK BATTERY SHORT OF HARNESS.**<br>Measure voltage between VDCCM connector and chassis ground.<br>***Connector & terminal***<br>***DTC 21 / (F87) No. 14 (+) — Chassis ground (–):***<br>***DTC 23 / (F87) No. 49 (+) — Chassis ground (–):***<br>***DTC 25 / (F87) No. 18 (+) — Chassis ground (–):***<br>***DTC 27 / (F87) No. 16 (+) — Chassis ground (–):*** | Is the measured value less than 1 V? | Go to step **13.** | Repair harness between VDCCM and ABS sensor. |

| | Step | Check | Yes | No |
|---|---|---|---|---|
| 13 | **CHECK BATTERY SHORT OF HARNESS.**<br>1) Turn ignition switch to ON.<br>2) Measure voltage between VDCCM connector and chassis ground.<br>***Connector & terminal***<br>***DTC 21 / (F87) No. 14 (+) — Chassis ground (–):***<br>***DTC 23 / (F87) No. 49 (+) — Chassis ground (–):***<br>***DTC 25 / (F87) No. 18 (+) — Chassis ground (–):***<br>***DTC 27 / (F87) No. 16 (+) — Chassis ground (–):*** | Is the measured value less than 1 V? | Go to step **14.** | Repair harness between VDCCM and ABS sensor. |
| 14 | **CHECK INSTALLATION OF ABS SENSOR.** | Are the ABS sensor installation bolts tightened to 33 N·m (3.4 kg-m, 25 ft-lb)? | Go to step **15.** | Tighten ABS sensor installation bolts securely. |
| 15 | **CHECK ABS SENSOR GAP.**<br>Measure tone wheel-to-pole piece gap over entire perimeter of the wheel. | Is the measured value within the range below? Front wheel 0.3 - 0.8 mm (0.012 - 0.031 in) and Rear wheel 0.44 - 0.94 mm (0.0173 - 0.0370 in) | Go to step **16.** | Adjust the gap.<br>NOTE:<br>Adjust the gap using spacers (Part No. 26755AA000). If spacers cannot correct the gap, replace worn sensor or worn tone wheel. |
| 16 | **CHECK HUB AND TONE WHEEL RUNOUT.**<br>Measure hub and tone wheel runout. | Is the measured value less than 0.05 mm (0.0020 in)? | Go to step **17.** | Repair hub and tone wheel. Front <Ref. to VDC-28, Front ABS Sensor.> Rear <Ref. to VDC-29, Rear ABS Sensor.> |
| 17 | **CHECK POOR CONTACT IN CONNECTORS.** | Is there poor contact in connectors between VDCCM and ABS sensor? | Repair connector. | Go to step **18.** |
| 18 | **CHECK VDCCM.**<br>1) Connect all connectors.<br>2) Erase the memory.<br>3) Perform inspection mode.<br>4) Read out the diagnostic trouble code. | Is the same diagnostic trouble code as in the current diagnosis still being output? | Replace VDCCM. <Ref. to VDC-8, VDC Control Module (VDCCM).> | Go to step **19.** |
| 19 | **CHECK ANY OTHER DIAGNOSTIC TROUBLE CODES APPEARANCE.** | Are other diagnostic trouble codes being output? | Proceed with the diagnosis corresponding to the diagnostic trouble code. | A temporary poor contact.<br>NOTE:<br>Check harness and connectors between VDCCM and ABS sensor. |

## F: DTC 22 FRONT RIGHT ABS SENSOR SIGNAL

NOTE:
For diagnostic procedure, refer to DTC 28. <Ref. to VDC-132, DTC 28 REAR LEFT ABS SENSOR SIGNAL, Diagnostics Chart with Select Monitor.>

## G: DTC 24 FRONT LEFT ABS SENSOR SIGNAL

NOTE:
For diagnostic procedure, refer to DTC 28. <Ref. to VDC-132, DTC 28 REAR LEFT ABS SENSOR SIGNAL, Diagnostics Chart with Select Monitor.>

## H: DTC 26 REAR RIGHT ABS SENSOR SIGNAL

NOTE:
For diagnostic procedure, refer to DTC 28. <Ref. to VDC-132, DTC 28 REAR LEFT ABS SENSOR SIGNAL, Diagnostics Chart with Select Monitor.>

**MEMO:**

# I: DTC 28 REAR LEFT ABS SENSOR SIGNAL

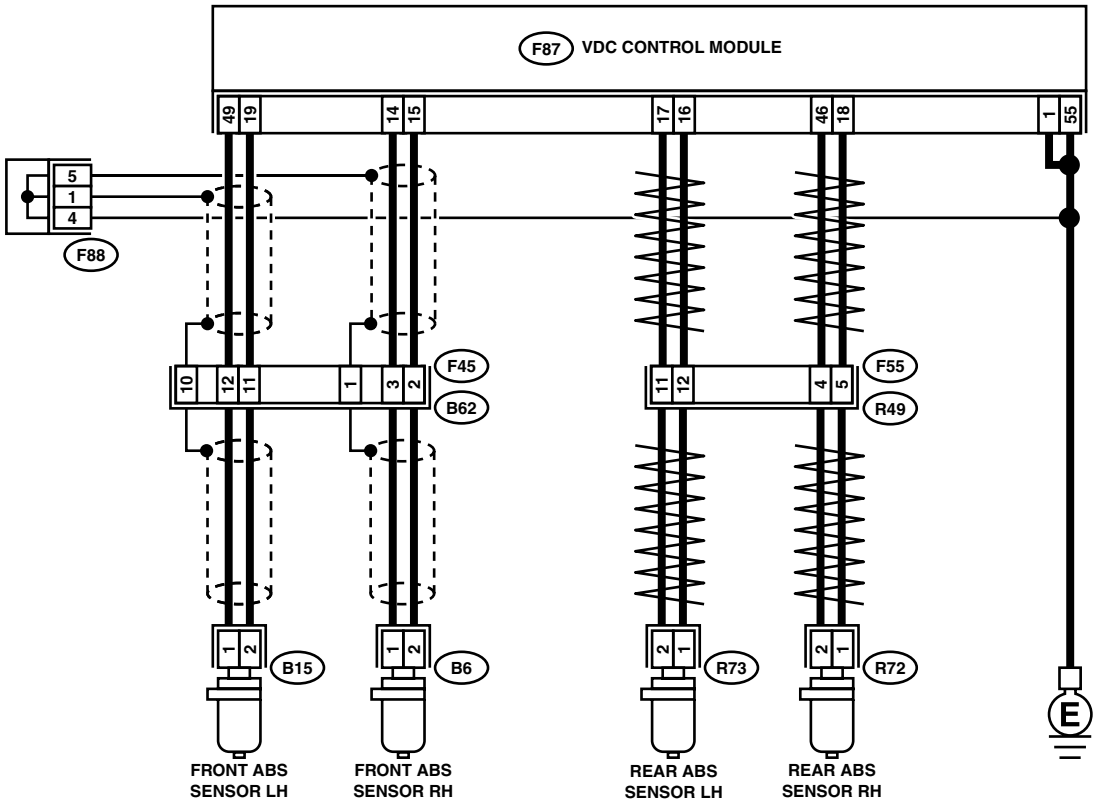
**DIAGNOSIS:**

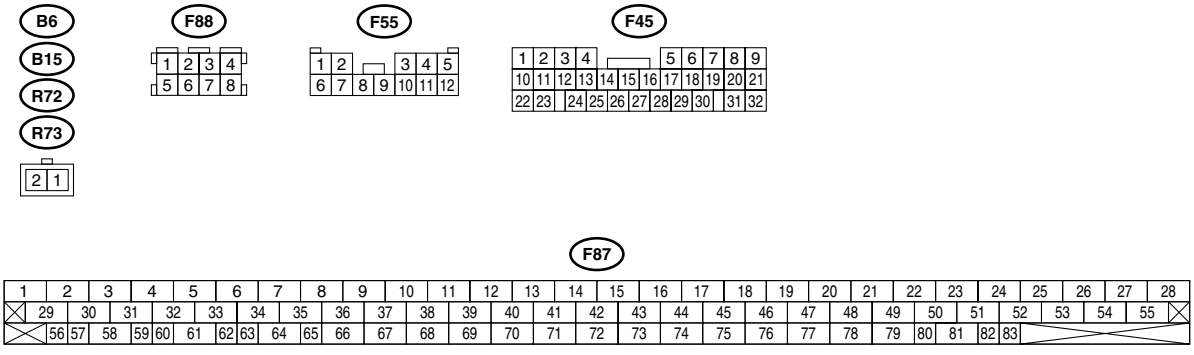
- Faulty ABS sensor signal (noise, irregular signal)
- Faulty harness/connector

**TROUBLE SYMPTOM:**

- ABS does not operate.
- VDC does not operate.

**WIRING DIAGRAM:**

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| | Step | Check | Yes | No |
|---|---|---|---|---|
| 1 | **CHECK OUTPUT OF ABS SENSOR USING SELECT MONITOR.**<br>1) Select "Current data display & Save" on the select monitor.<br>2) Read the ABS sensor output corresponding to the faulty system in the select monitor data display mode. | Does the speed indicated on the display change in response to the speedometer reading during acceleration/deceleration when the steering wheel is in the straight-ahead position? | Go to step **2.** | Go to step **8.** |
| 2 | **CHECK POOR CONTACT IN CONNECTORS.**<br>Turn ignition switch to OFF. | Is there poor contact in connectors between VDCCM and ABS sensor? | Repair connector. | Go to step **3.** |
| 3 | **CHECK SOURCES OF SIGNAL NOISE.** | Is the car telephone or the wireless transmitter properly installed? | Go to step **4.** | Properly install the car telephone or the wireless transmitter. |
| 4 | **CHECK SOURCES OF SIGNAL NOISE.** | Are noise sources (such as an antenna) installed near the sensor harness? | Install the noise sources apart from the sensor harness. | Go to step **5.** |
| 5 | **CHECK SHIELD CIRCUIT.**<br>1) Turn ignition switch to OFF.<br>2) Connect all connectors.<br>3) Measure resistance between shield connector and chassis ground.<br>***Connector & terminal***<br>***DTC 22 / (F45) No. 1 — Chassis ground:***<br>***DTC 24 / (F45) No. 10 — Chassis ground:***<br>NOTE:<br>For the DTC 26 and 28, Go to step **6.** | Is the measured value less than 0.5 Ω? | Go to step **6.** | Repair shield harness. |
| 6 | **CHECK VDCCM.**<br>1) Connect all connectors.<br>2) Erase the memory.<br>3) Perform inspection mode.<br>4) Read out the diagnostic trouble code. | Is the same diagnostic trouble code as in the current diagnosis still being output? | Replace VDCCM. <Ref. to VDC-8, VDC Control Module (VDCCM).> | Go to step **7.** |
| 7 | **CHECK ANY OTHER DIAGNOSTIC TROUBLE CODES APPEARANCE.** | Are other diagnostic trouble codes being output? | Proceed with the diagnosis corresponding to the diagnostic trouble code. | A temporary noise interference. |
| 8 | **CHECK INSTALLATION OF ABS SENSOR.** | Are the ABS sensor installation bolts tightened to 33 N·m (3.4 kg-m, 25 ft-lb)? | Go to step **9.** | Tighten ABS sensor installation bolts securely. |
| 9 | **CHECK ABS SENSOR GAP.**<br>Measure tone wheel to pole piece gap over entire perimeter of the wheel. | Is the measured value within the range below? Front wheel 0.3 - 0.8 mm (0.012 - 0.031 in) and Rear wheel 0.44 - 0.94 mm (0.0173 - 0.0370 in) | Go to step **10.** | Adjust the gap.<br>NOTE:<br>Adjust the gap using spacer (Part No. 26755AA000). If spacers cannot correct the gap, replace worn sensor or worn tone wheel. |
| 10 | **CHECK OSCILLOSCOPE.** | Is an oscilloscope available? | Go to step **11.** | Go to step **12.** |

| | Step | Check | Yes | No |
|---|---|---|---|---|
| 11 | **CHECK ABS SENSOR SIGNAL.**<br>1) Raise all four wheels of ground.<br>2) Turn ignition switch OFF.<br>3) Remove VDCCM connector cover. <Ref. to VDC-20, VDCCM Connector Cover.><br>4) Connect the oscilloscope to the connector.<br>5) Turn ignition switch ON.<br>6) Rotate wheels and measure voltage at specified frequency.<br>NOTE:<br>When this inspection is completed, the VDCCM sometimes stores the DTC 29.<br>***Connector & terminal***<br>***DTC 22 / (F87) No. 14 (+) — No. 15 (–):***<br>***DTC 24 / (F87) No. 49 (+) — No. 19 (–):***<br>***DTC 26 / (F87) No. 18 (+) — No. 46 (–):***<br>***DTC 28 / (F87) No. 16 (+) — No. 17 (–):*** | Is oscilloscope pattern smooth, as shown in figure? | Go to step **15.** | Go to step **12.** |
| 12 | **CHECK CONTAMINATION OF ABS SENSOR OR TONE WHEEL.**<br>Remove disc rotor from hub in accordance with diagnostic trouble code. | Is the ABS sensor pole piece or the tone wheel contaminated by dirt or other foreign matter? | Thoroughly remove dirt or other foreign matter. | Go to step **13.** |
| 13 | **CHECK DAMAGE OF ABS SENSOR OR TONE WHEEL.** | Are there broken or damaged in the ABS sensor pole piece or the tone wheel? | Replace ABS sensor or tone wheel. Front <Ref. to VDC-28, Front ABS Sensor.> and <Ref. to VDC-30, Front Tone Wheel.> Rear <Ref. to VDC-29, Rear ABS Sensor.> and <Ref. to VDC-31, Rear Tone Wheel.> | Go to step **14.** |
| 14 | **CHECK TONE WHEEL RUNOUT.**<br>Measure tone wheel runout. | Is the measured value less than 0.05 mm (0.0020 in)? | Go to step **15.** | Repair tone wheel. Front <Ref. to VDC-30, Front Tone Wheel.> Rear <Ref. to VDC-31, Rear Tone Wheel.> |
| 15 | **CHECK RESISTANCE OF ABS SENSOR.**<br>1) Turn ignition switch OFF.<br>2) Disconnect connector from ABS sensor.<br>3) Measure resistance between ABS sensor connector terminals.<br>***Terminal***<br>***Front RH No. 1 — No. 2:***<br>***Front LH No. 1 — No. 2:***<br>***Rear RH No. 1 — No. 2:***<br>***Rear LH No. 1 — No. 2:*** | Is the measured value within 1.0 to 1.5 kΩ? | Go to step **16.** | Replace ABS sensor. Front <Ref. to VDC-28, Front ABS Sensor.> Rear <Ref. to VDC-29, Rear ABS Sensor.> |
| 16 | **CHECK GROUND SHORT OF ABS SENSOR.**<br>Measure resistance between ABS sensor and chassis ground.<br>***Terminal***<br>***Front RH No. 1 — Chassis ground:***<br>***Front LH No. 1 — Chassis ground:***<br>***Rear RH No. 1 — Chassis ground:***<br>***Rear LH No. 1 — Chassis ground:*** | Is the measured value more than 1 MΩ? | Go to step **17.** | Replace ABS sensor. Front <Ref. to VDC-28, Front ABS Sensor.> Rear <Ref. to VDC-29, Rear ABS Sensor.> |

| | Step | Check | Yes | No |
|---|---|---|---|---|
| 17 | **CHECK HARNESS/CONNECTOR BETWEEN VDCCM AND ABS SENSOR.**<br>1) Connect connector to ABS sensor.<br>2) Disconnect connector from VDCCM.<br>3) Measure resistance at VDCCM connector terminals.<br>***Connector & terminal***<br>***DTC 22 / (F87) No. 14 — No. 15:***<br>***DTC 24 / (F87) No. 49 — No. 19:***<br>***DTC 26 / (F87) No. 18 — No. 46:***<br>***DTC 28 / (F87) No. 16 — No. 17:*** | Is the measured value within 1.0 to 1.5 kΩ? | Go to step **18.** | Repair harness/ connector between VDCCM and ABS sensor. |
| 18 | **CHECK GROUND SHORT OF HARNESS.**<br>Measure resistance between VDCCM connector and chassis ground.<br>***Connector & terminal***<br>***DTC 22 / (F87) No. 14 — Chassis ground:***<br>***DTC 24 / (F87) No. 49 — Chassis ground:***<br>***DTC 26 / (F87) No. 18 — Chassis ground:***<br>***DTC 28 / (F87) No. 16 — Chassis ground:*** | Is the measured value more than 1 MΩ? | Go to step **19.** | Repair harness/ connector between VDCCM and ABS sensor. |
| 19 | **CHECK GROUND CIRCUIT OF VDCCM.**<br>Measure resistance between VDCCM and chassis ground.<br>***Connector & terminal***<br>***(F87) No. 1 — Chassis ground:***<br>***(F87) No. 55 — Chassis ground:*** | Is the measured value less than 0.5 Ω? | Go to step **20.** | Repair VDCCM ground harness. |
| 20 | **CHECK POOR CONTACT IN CONNECTORS.** | Is there poor contact in connectors between VDCCM and ABS sensor? | Repair connector. | Go to step **21.** |
| 21 | **CHECK SOURCES OF SIGNAL NOISE.** | Is the car telephone or the wireless transmitter properly installed? | Go to step **22.** | Properly install the car telephone or the wireless transmitter. |
| 22 | **CHECK SOURCES OF SIGNAL NOISE.** | Are noise sources (such as an antenna) installed near the sensor harness? | Install the noise sources apart from the sensor harness. | Go to step **23.** |
| 23 | **CHECK SHIELD CIRCUIT.**<br>1) Connect all connectors.<br>2) Measure resistance between shield connector and chassis ground.<br>***Connector & terminal***<br>***DTC 22 / (F45) No. 1 — Chassis ground:***<br>***DTC 24 / (F45) No. 10 — Chassis ground:***<br>NOTE:<br>For the DTC 26 and 28, Go to step **25.** | Is the measured value less than 0.5 Ω? | Go to step **24.** | Repair shield harness. |
| 24 | **CHECK VDCCM.**<br>1) Connect all connectors.<br>2) Erase the memory.<br>3) Perform inspection mode.<br>4) Read out the diagnostic trouble code. | Is the same diagnostic trouble code as in the current diagnosis still being output? | Replace VDCCM. <Ref. to VDC-8, VDC Control Module (VDCCM).> | Go to step **25.** |

| Step | | Check | Yes | No |
|---|---|---|---|---|
| 25 | **CHECK ANY OTHER DIAGNOSTIC TROUBLE CODES APPEARANCE.** | Are other diagnostic trouble codes being output? | Proceed with the diagnosis corresponding to the diagnostic trouble code. | A temporary noise interference. |

**MEMO:**

## J: DTC 29 ANY ONE OF FOUR ABS SENSOR SIGNAL

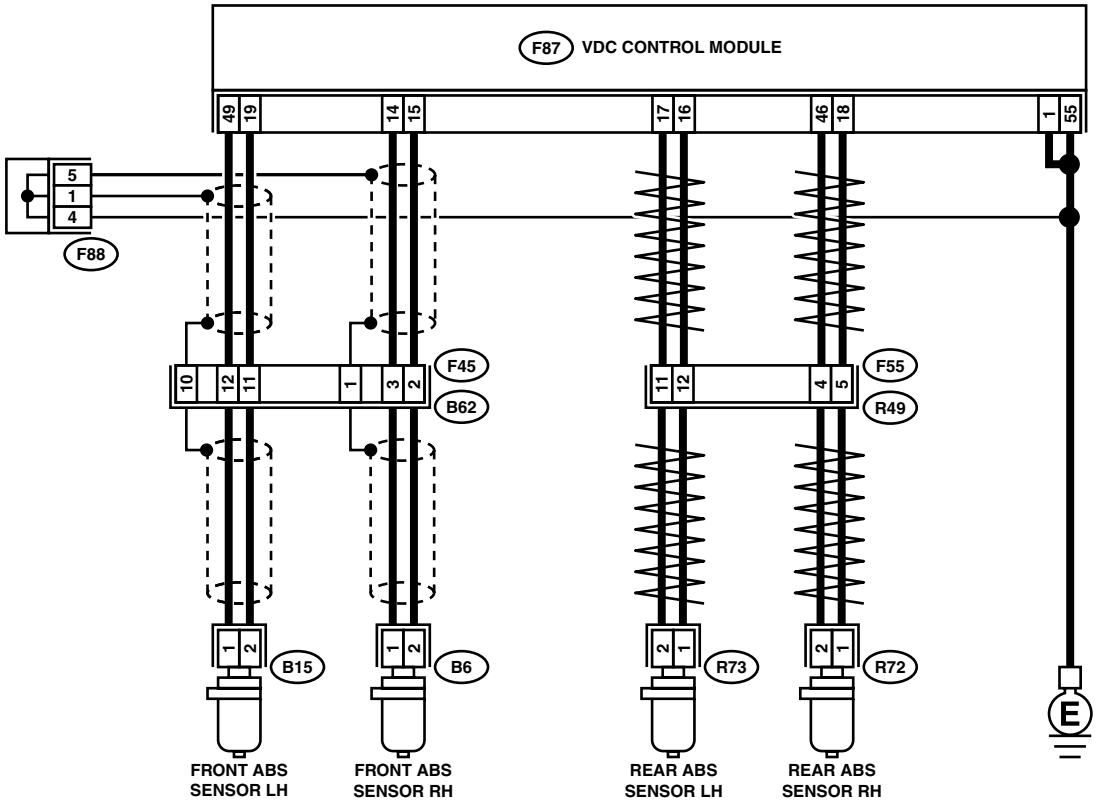
**DIAGNOSIS:**

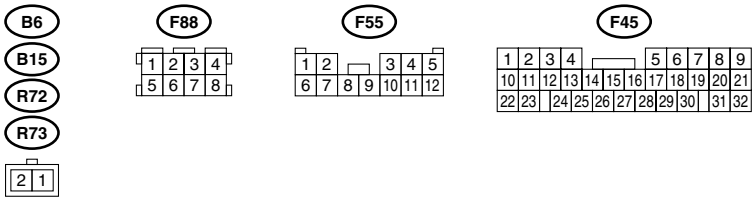
- Faulty ABS sensor signal (noise, irregular signal, etc.)
- Faulty tone wheel
- Wheels turning freely for a long time

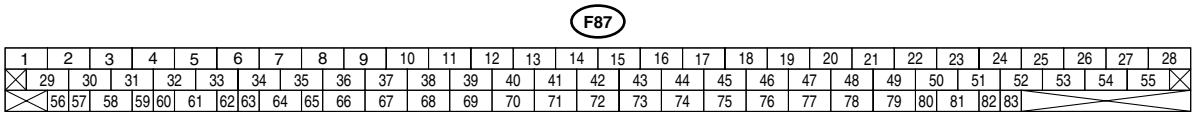
**TROUBLE SYMPTOM:**

- ABS does not operate.
- VDC does not operate.

**WIRING DIAGRAM:**

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| | Step | Check | Yes | No |
|---|---|---|---|---|
| 1 | **CHECK IF THE WHEELS HAVE TURNED FREELY.**<br>Check if the wheels have been turned freely for more than one minute, such as when the vehicle is jacked-up, under full-lock cornering or when tire is not in contact with road surface. | Did the wheels turn freely over 1 minute? | The VDC is normal. Erase the diagnostic trouble code.<br>NOTE:<br>When the wheels turn freely for a long time, such as when the vehicle is towed or jacked-up, or under full-lock cornering locked in full, this trouble code may sometimes occur. | Go to step **2.** |
| 2 | **CHECK TIRE SPECIFICATIONS.** | Are the tire specifications correct? | Go to step **3.** | Replace tire. |
| 3 | **CHECK WEAR OF TIRE.** | Is the tire worn excessively? | Replace tire. | Go to step **4.** |
| 4 | **CHECK TIRE PRESSURE.** | Is the tire pressure correct? | Go to step **5.** | Adjust tire pressure. |
| 5 | **CHECK INSTALLATION OF ABS SENSOR.** | Are the ABS sensor installation bolts tightened to 33 N·m (3.4 kg-m, 25 ft-lb)? | Go to step **6.** | Tighten ABS sensor installation bolts securely. |
| 6 | **CHECK ABS SENSOR GAP.**<br>Measure tone wheel to pole piece gap over entire perimeter of the wheel. | Is the measured value within the range below? Front wheel 0.3 - 0.8 mm (0.012 - 0.031 in) and Rear wheel 0.44 - 0.94 mm (0.0173 - 0.0370 in) | Go to step **7.** | Adjust the gap.<br>NOTE:<br>Adjust the gap using spacer (Part No. 26755AA000). If spacers cannot correct the gap, replace worn sensor or worn tone wheel. |
| 7 | **CHECK OSCILLOSCOPE.** | Is an oscilloscope available? | Go to step **8.** | Go to step **9.** |
| 8 | **CHECK ABS SENSOR SIGNAL.**<br>1) Raise all four wheels of ground.<br>2) Turn ignition switch OFF.<br>3) Remove VDCCM connector cover. <Ref. to VDC-20, REMOVE, VDCCM Connector Cover.><br>4) Connect the oscilloscope to the connector.<br>5) Turn ignition switch ON.<br>6) Rotate wheels and measure voltage at specified frequency. <Ref. to ABS-15, WAVEFORM, Control Module I/O Signal.><br>NOTE:<br>When this inspection is completed, the VDCCM sometimes stores the DTC 29.<br>***Connector & terminal***<br>***(F49) No. 14 (+) — No. 15 (–) (Front RH):***<br>***(F49) No. 49 (+) — No. 19 (–) (Front LH):***<br>***(F49) No. 18 (+) — No. 46 (–) (Rear RH):***<br>***(F49) No. 16 (+) — No. 17 (–) (Rear LH):*** | Is oscilloscope pattern smooth, as shown in figure? | Go to step **12.** | Go to step **9.** |
| 9 | **CHECK CONTAMINATION OF ABS SENSOR OR TONE WHEEL.**<br>Remove disc rotor from hub. | Is the ABS sensor pole piece or the tone wheel contaminated by dirt or other foreign matter? | Thoroughly remove dirt or other foreign matter. | Go to step **10.** |

| | Step | Check | Yes | No |
|---|---|---|---|---|
| 10 | **CHECK DAMAGE OF ABS SENSOR OR TONE WHEEL.** | Are there broken or damaged teeth in the ABS sensor pole piece or the tone wheel? | Replace ABS sensor or tone wheel. Front <Ref. to VDC-28, Front ABS Sensor.> and <Ref. to VDC-30, Front Tone Wheel.> Rear <Ref. to VDC-29, Rear ABS Sensor.> and <Ref. to VDC-31, Rear Tone Wheel.> | Go to step **11.** |
| 11 | **CHECK TONE WHEEL RUNOUT.**<br>Measure tone wheel runout. | Is the measured value less than 0.05 mm (0.0020 in)? | Go to step **12.** | Repair tone wheel. Front <Ref. to VDC-30, Front Tone Wheel.> Rear <Ref. to VDC-31, Rear Tone Wheel.> |
| 12 | **CHECK VDCCM.**<br>1) Turn ignition switch to OFF.<br>2) Connect all connectors.<br>3) Erase the memory.<br>4) Perform inspection mode.<br>5) Read out the diagnostic trouble code. | Is the same diagnostic trouble code as in the current diagnosis still being output? | Replace VDCCM. <Ref. to VDC-8, VDC Control Module (VDCCM).> | Go to step **13.** |
| 13 | **CHECK ANY OTHER DIAGNOSTIC TROUBLE CODES APPEARANCE.** | Are other diagnostic trouble codes being output? | Proceed with the diagnosis corresponding to the diagnostic trouble code. | A temporary poor contact. |

## K: DTC 31 FR HOLD VALVE MALFUNCTION (FRONT RIGHT INLET VALVE MALFUNCTION)

NOTE:
For diagnostic procedure, refer to DTC 62. <Ref. to VDC-142, DTC 62 NORMAL OPENING VALVE 1 MALFUNCTION (SECONDARY CUT VALVE MALFUNCTION), Diagnostics Chart with Select Monitor.>

## L: DTC 33 FL HOLD VALVE MALFUNCTION (FRONT LEFT INLET VALVE MALFUNCTION)

NOTE:
For diagnostic procedure, refer to DTC 62. <Ref. to VDC-142, DTC 62 NORMAL OPENING VALVE 1 MALFUNCTION (SECONDARY CUT VALVE MALFUNCTION), Diagnostics Chart with Select Monitor.>

## M: DTC 35 RR HOLD VALVE MALFUNCTION (REAR RIGHT INLET VALVE MALFUNCTION)

NOTE:
For diagnostic procedure, refer to DTC 62. <Ref. to VDC-142, DTC 62 NORMAL OPENING VALVE 1 MALFUNCTION (SECONDARY CUT VALVE MALFUNCTION), Diagnostics Chart with Select Monitor.>

## N: DTC 37 RL HOLD VALVE MALFUNCTION (REAR LEFT INLET VALVE MALFUNCTION)

NOTE:
For diagnostic procedure, refer to DTC 62. <Ref. to VDC-142, DTC 62 NORMAL OPENING VALVE 1 MALFUNCTION (SECONDARY CUT VALVE MALFUNCTION), Diagnostics Chart with Select Monitor.>

## O: DTC 61 NORMAL OPENING VALVE 2 MALFUNCTION (PRIMARY CUT VALVE MALFUNCTION)

NOTE:
For diagnostic procedure, refer to DTC 62. <Ref. to VDC-142, DTC 62 NORMAL OPENING VALVE 1 MALFUNCTION (SECONDARY CUT VALVE MALFUNCTION), Diagnostics Chart with Select Monitor.>

# P: DTC 62 NORMAL OPENING VALVE 1 MALFUNCTION (SECONDARY CUT VALVE MALFUNCTION)

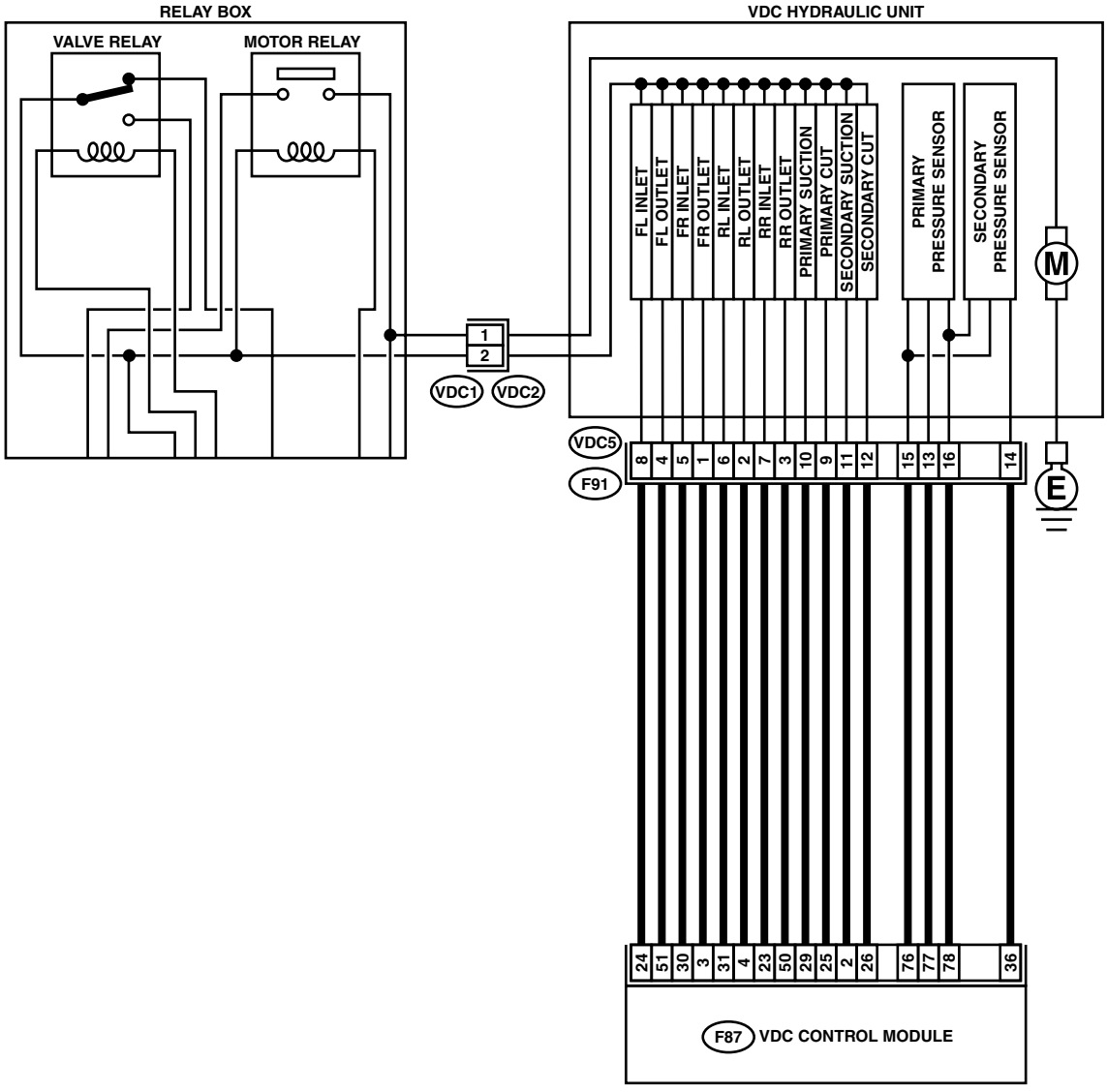
***DIAGNOSIS:***

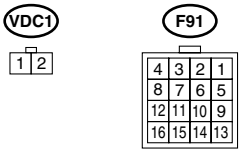
- Faulty harness/connector
- Faulty solenoid valve in VDCH/U

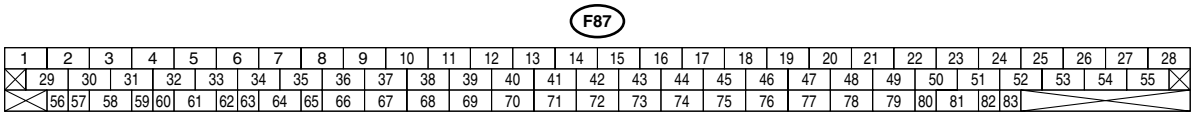
***TROUBLE SYMPTOM:***

- ABS does not operate.
- VDC does not operate.

**WIRING DIAGRAM:**




VDC00142

| | Step | Check | Yes | No |
|---|---|---|---|---|
| 1 | **CHECK RESISTANCE OF SOLENOID VALVE.**<br>1) Turn ignition switch to OFF.<br>2) Disconnect two connectors (VDC1, F91) from VDCH/U.<br>3) Measure resistance between VDCH/U connector terminals.<br>***Connector & terminal***<br>***DTC 31/(VDC5) No. 5 — (VDC2) No. 2:***<br>***DTC 33/(VDC5) No. 8 — (VDC2) No. 2:***<br>***DTC 35/(VDC5) No. 7 — (VDC2) No. 2:***<br>***DTC 37/(VDC5) No. 6 — (VDC2) No. 2:***<br>***DTC 61/(VDC5) No. 9 — (VDC2) No. 2:***<br>***DTC 62/(VDC5) No. 12 — (VDC2) No. 2:*** | Is the measured value within 8.04 to 9.04 Ω? | Go to step **2.** | Replace VDCH/U. <Ref. to VDC-8, VDC Control Module (VDCCM).> |
| 2 | **CHECK GROUND SHORT OF SOLENOID VALVE.**<br>Measure resistance between VDCH/U connector and chassis ground.<br>***Connector & terminal***<br>***DTC 31/(VDC5) No. 5 — Chassis ground:***<br>***DTC 33/(VDC5) No. 8 — Chassis ground:***<br>***DTC 35/(VDC5) No. 7 — Chassis ground:***<br>***DTC 37/(VDC5) No. 6 — Chassis ground:***<br>***DTC 61/(VDC5) No. 9 — Chassis ground:***<br>***DTC 62/(VDC5) No. 12 — Chassis ground:*** | Is the measured value more than 1 MΩ? | Go to step **3.** | Replace VDCH/U. <Ref. to VDC-8, VDC Control Module (VDCCM).> |
| 3 | **CHECK BATTERY SHORT OF SOLENOID VALVE.**<br>1) Disconnect connector from VDCCM.<br>2) Measure voltage between VDCH/U connector and chassis ground.<br>***Connector & terminal***<br>***DTC 31/(VDC5) No. 5 (+) — Chassis ground (–):***<br>***DTC 33/(VDC5) No. 8 (+) — Chassis ground (–):***<br>***DTC 35/(VDC5) No. 7 (+) — Chassis ground (–):***<br>***DTC 37/(VDC5) No. 6 (+) — Chassis ground (–):***<br>***DTC 61/(VDC5) No. 9 (+) — Chassis ground (–):***<br>***DTC 62/(VDC5) No. 12 (+) — Chassis ground (–):*** | Is the measured value less than 1 V? | Go to step **4.** | Replace VDCH/U. <Ref. to VDC-8, VDC Control Module (VDCCM).> |

| Step | | Check | Yes | No |
|---|---|---|---|---|
| 4 | **CHECK BATTERY SHORT OF SOLENOID VALVE.**<br>1) Turn ignition switch to ON.<br>2) Measure voltage between VDCH/U connector and chassis ground.<br>***Connector & terminal***<br>***DTC 31/(VDC5) No. 5 (+) — Chassis ground (–):***<br>***DTC 33/(VDC5) No. 8 (+) — Chassis ground (–):***<br>***DTC 35/(VDC5) No. 7 (+) — Chassis ground (–):***<br>***DTC 37/(VDC5) No. 6 (+) — Chassis ground (–):***<br>***DTC 61/(VDC5) No. 9 (+) — Chassis ground (–):***<br>***DTC 62/(VDC5) No. 12 (+) — Chassis ground (–):*** | Is the measured value less than 1 V? | Go to step **5.** | Replace VDCH/U. <Ref. to VDC-8, VDC Control Module (VDCCM).> |
| 5 | **CHECK BATTERY SHORT OF HARNESS.**<br>1) Turn ignition switch to OFF.<br>2) Measure voltage between VDCCM connector and chassis ground.<br>***Connector & terminal***<br>***DTC 31/(F87) No. 30 (+) — Chassis ground (–):***<br>***DTC 33/(F87) No. 24 (+) — Chassis ground (–):***<br>***DTC 35/(F87) No. 23 (+) — Chassis ground (–):***<br>***DTC 37/(F87) No. 31 (+) — Chassis ground (–):***<br>***DTC 61/(F87) No. 25 (+) — Chassis ground (–):***<br>***DTC 62/(F87) No. 26 (+) — Chassis ground (–):*** | Is the measured value less than 1 V? | Go to step **6.** | Repair harness between VDCCM and VDCH/U. |
| 6 | **CHECK BATTERY SHORT OF HARNESS.**<br>1) Turn ignition switch to ON.<br>2) Measure voltage between VDCCM connector and chassis ground.<br>***Connector & terminal***<br>***DTC 31/(F87) No. 30 (+) — Chassis ground (–):***<br>***DTC 33/(F87) No. 24 (+) — Chassis ground (–):***<br>***DTC 35/(F87) No. 23 (+) — Chassis ground (–):***<br>***DTC 37/(F87) No. 31 (+) — Chassis ground (–):***<br>***DTC 61/(F87) No. 25 (+) — Chassis ground (–):***<br>***DTC 62/(F87) No. 26 (+) — Chassis ground (–):*** | Is the measured value less than 1 V? | Go to step **7.** | Repair harness between VDCCM and VDCH/U. |

| | Step | Check | Yes | No |
|---|---|---|---|---|
| 7 | **CHECK GROUND SHORT OF HARNESS.**<br>1) Turn ignition switch to OFF.<br>2) Measure resistance between VDCCM connector and chassis ground.<br>***Connector & terminal***<br>***DTC 31/(F87) No. 30 — Chassis ground:***<br>***DTC 33/(F87) No. 24 — Chassis ground:***<br>***DTC 35/(F87) No. 23 — Chassis ground:***<br>***DTC 37/(F87) No. 31 — Chassis ground:***<br>***DTC 61/(F87) No. 25 — Chassis ground:***<br>***DTC 62/(F87) No. 26 — Chassis ground:*** | Is the measured value more than 1 MΩ? | Go to step **8.** | Repair harness between VDCCM and VDCH/U. |
| 8 | **CHECK HARNESS/CONNECTOR BETWEEN VDCCM AND VDCH/U.**<br>1) Connect connector (F91) to VDCH/U.<br>2) Measure resistance between VDCCM connector and VDCH/U connector.<br>***Connector & terminal***<br>***DTC 31/(F87) No. 30 — (VDC2) No. 2:***<br>***DTC 33/(F87) No. 24 — (VDC2) No. 2:***<br>***DTC 35/(F87) No. 23 — (VDC2) No. 2:***<br>***DTC 37/(F87) No. 31 — (VDC2) No. 2:***<br>***DTC 61/(F87) No. 25 — (VDC2) No. 2:***<br>***DTC 62/(F87) No. 26 — (VDC2) No. 2:*** | Is the measured value within 7 to 10 Ω? | Go to step **9.** | Repair harness/ connector between VDCCM and VDCH/U. |
| 9 | **CHECK POOR CONTACT IN CONNECTORS.** | Is there poor contact in connectors between VDCCM and VDCH/U? | Repair connector. | Go to step **10.** |
| 10 | **CHECK VDCCM.**<br>1) Connect all connectors.<br>2) Erase the memory.<br>3) Perform inspection mode.<br>4) Read out the diagnostic trouble code. | Is the same diagnostic trouble code as in the current diagnosis still being output? | Repair VDCCM. <Ref. to VDC-8, VDC Control Module (VDCCM).> | Go to step **11.** |
| 11 | **CHECK ANY OTHER DIAGNOSTIC TROUBLE CODES APPEARANCE.** | Are other diagnostic trouble codes being output? | Proceed with the diagnosis corresponding to the diagnostic trouble code. | A temporary poor contact. |

## Q: DTC 32 FR PRESSURE REDUCING VALVE MALFUNCTION (FRONT RIGHT OUTLET VALVE MALFUNCTION)

NOTE:
For diagnostic procedure, refer to DTC 64. <Ref. to VDC-148, DTC 64 NORMAL CLOSING VALVE 1 MALFUNCTION (SECONDARY SUCTION VALVE MALFUNCTION), Diagnostics Chart with Select Monitor.>

## R: DTC 34 FL PRESSURE REDUCING VALVE MALFUNCTION (FRONT LEFT OUTLET VALVE MALFUNCTION)

NOTE:
For diagnostic procedure, refer to DTC 64. <Ref. to VDC-148, DTC 64 NORMAL CLOSING VALVE 1 MALFUNCTION (SECONDARY SUCTION VALVE MALFUNCTION), Diagnostics Chart with Select Monitor.>

## S: DTC 36 RR PRESSURE REDUCING VALVE MALFUNCTION (REAR RIGHT OUTLET VALVE MALFUNCTION)

NOTE:
For diagnostic procedure, refer to DTC 64. <Ref. to VDC-148, DTC 64 NORMAL CLOSING VALVE 1 MALFUNCTION (SECONDARY SUCTION VALVE MALFUNCTION), Diagnostics Chart with Select Monitor.>

## T: DTC 38 RL PRESSURE REDUCING VALVE MALFUNCTION (REAR LEFT OUTLET VALVE MALFUNCTION)

NOTE:
For diagnostic procedure, refer to DTC 64. <Ref. to VDC-148, DTC 64 NORMAL CLOSING VALVE 1 MALFUNCTION (SECONDARY SUCTION VALVE MALFUNCTION), Diagnostics Chart with Select Monitor.>

## U: DTC 63 NORMAL CLOSING VALVE 2 MALFUNCTION (PRIMARY SUCTION VALVE MALFUNCTION)

NOTE:
For diagnostic procedure, refer to DTC 64. <Ref. to VDC-148, DTC 64 NORMAL CLOSING VALVE 1 MALFUNCTION (SECONDARY SUCTION VALVE MALFUNCTION), Diagnostics Chart with Select Monitor.>

**MEMO:**

## V: DTC 64 NORMAL CLOSING VALVE 1 MALFUNCTION (SECONDARY SUCTION VALVE MALFUNCTION)

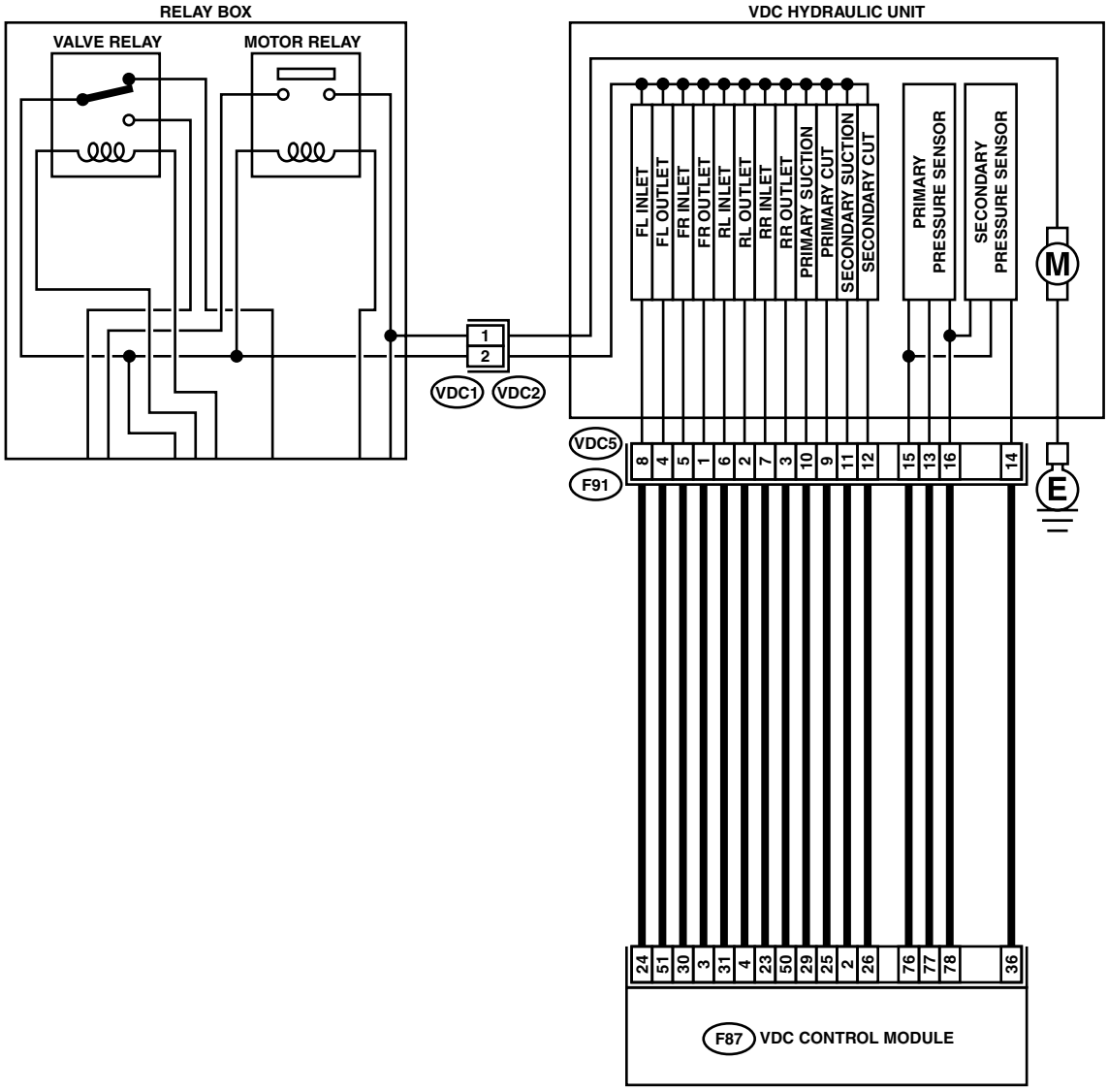
***DIAGNOSIS:***

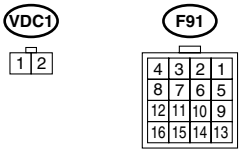
- Faulty harness/connector
- Faulty solenoid valve in VDCH/U

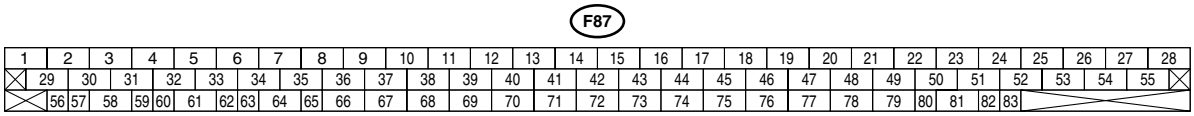
***TROUBLE SYMPTOM:***

- ABS does not operate.
- VDC does not operate.

**WIRING DIAGRAM:**




VDC00142

| | Step | Check | Yes | No |
|---|---|---|---|---|
| 1 | **CHECK RESISTANCE OF SOLENOID VALVE.**<br>1) Turn ignition switch to OFF.<br>2) Disconnect two connectors (VDC1, F91) from VDCH/U.<br>3) Measure resistance between VDCH/U connector terminals.<br>***Connector & terminal***<br>***DTC 32/(VDC5) No. 1 — (VDC2) No. 2:***<br>***DTC 34/(VDC5) No. 4 — (VDC2) No. 2:***<br>***DTC 36/(VDC5) No. 3 — (VDC2) No. 2:***<br>***DTC 38/(VDC5) No. 2 — (VDC2) No. 2:***<br>***DTC 63/(VDC5) No. 10 — (VDC2) No. 2:***<br>***DTC 64/(VDC5) No. 11 — (VDC2) No. 2:*** | Is the measured value within 3.8 to 4.8 Ω? | Go to step **2.** | Replace VDCH/U. <Ref. to VDC-8, VDC Control Module (VDCCM).> |
| 2 | **CHECK GROUND SHORT OF SOLENOID VALVE.**<br>Measure resistance between VDCH/U connector and chassis ground.<br>***Connector & terminal***<br>***DTC 32/(VDC5) No. 1 — Chassis ground:***<br>***DTC 34/(VDC5) No. 4 — Chassis ground:***<br>***DTC 36/(VDC5) No. 3 — Chassis ground:***<br>***DTC 38/(VDC5) No. 2 — Chassis ground:***<br>***DTC 63/(VDC5) No. 10 — Chassis ground:***<br>***DTC 64/(VDC5) No. 11 — Chassis ground:*** | Is the measured value more than 1 MΩ? | Go to step **3.** | Replace VDCH/U. <Ref. to VDC-8, VDC Control Module (VDCCM).> |
| 3 | **CHECK BATTERY SHORT OF SOLENOID VALVE.**<br>1) Disconnect connector from VDCCM.<br>2) Measure voltage between VDCH/U connector and chassis ground.<br>***Connector & terminal***<br>***DTC 32/(VDC5) No. 1 (+) — Chassis ground (–):***<br>***DTC 34/(VDC5) No. 4 (+) — Chassis ground (–):***<br>***DTC 36/(VDC5) No. 3 (+) — Chassis ground (–):***<br>***DTC 38/(VDC5) No. 2 (+) — Chassis ground (–):***<br>***DTC 63/(VDC5) No. 10 (+) — Chassis ground (–):***<br>***DTC 64/(VDC5) No. 11 (+) — Chassis ground (–):*** | Is the measured value less than 1 V? | Go to step **4.** | Replace VDCH/U. <Ref. to VDC-8, VDC Control Module (VDCCM).> |

| | Step | Check | Yes | No |
|---|---|---|---|---|
| 4 | **CHECK BATTERY SHORT OF SOLENOID VALVE.**<br>1) Turn ignition switch to ON.<br>2) Measure voltage between VDCH/U connector and chassis ground.<br>***Connector & terminal***<br>***DTC 32/(VDC5) No. 1 (+) — Chassis ground (–):***<br>***DTC 34/(VDC5) No. 4 (+) — Chassis ground (–):***<br>***DTC 36/(VDC5) No. 3 (+) — Chassis ground (–):***<br>***DTC 38/(VDC5) No. 2 (+) — Chassis ground (–):***<br>***DTC 63/(VDC5) No. 10 (+) — Chassis ground (–):***<br>***DTC 64/(VDC5) No. 11 (+) — Chassis ground (–):*** | Is the measured value less than 1 V? | Go to step **5.** | Replace VDCH/U. <Ref. to VDC-8, VDC Control Module (VDCCM).> |
| 5 | **CHECK BATTERY SHORT OF HARNESS.**<br>1) Turn ignition switch to OFF.<br>2) Measure voltage between VDCCM connector and chassis ground.<br>***Connector & terminal***<br>***DTC 32/(F87) No. 3 (+) — Chassis ground (–):***<br>***DTC 34/(F87) No. 51 (+) — Chassis ground (–):***<br>***DTC 36/(F87) No. 50 (+) — Chassis ground (–):***<br>***DTC 38/(F87) No. 4 (+) — Chassis ground (–):***<br>***DTC 63/(F87) No. 29 (+) — Chassis ground (–):***<br>***DTC 64/(F87) No. 2 (+) — Chassis ground (–):*** | Is the measured value less than 1 V? | Go to step **6.** | Repair harness between VDCCM and VDCH/U. |
| 6 | **CHECK BATTERY SHORT OF HARNESS.**<br>1) Turn ignition switch to ON.<br>2) Measure voltage between VDCCM connector and chassis ground.<br>***Connector & terminal***<br>***DTC 32/(F87) No. 3 (+) — Chassis ground (–):***<br>***DTC 34/(F87) No. 51 (+) — Chassis ground (–):***<br>***DTC 36/(F87) No. 50 (+) — Chassis ground (–):***<br>***DTC 38/(F87) No. 4 (+) — Chassis ground (–):***<br>***DTC 63/(F87) No. 29 (+) — Chassis ground (–):***<br>***DTC 64/(F87) No. 2 (+) — Chassis ground (–):*** | Is the measured value less than 1 V? | Go to step **7.** | Repair harness between VDCCM and VDCH/U. |

| | Step | Check | Yes | No |
|---|---|---|---|---|
| 7 | **CHECK GROUND SHORT OF HARNESS.**<br>1) Turn ignition switch to OFF.<br>2) Measure resistance between VDCCM connector and chassis ground.<br>***Connector & terminal***<br>***DTC 32/(F87) No. 3 — Chassis ground:***<br>***DTC 34/(F87) No. 51 — Chassis ground:***<br>***DTC 36/(F87) No. 50 — Chassis ground:***<br>***DTC 38/(F87) No. 4 — Chassis ground:***<br>***DTC 63/(F87) No. 29 — Chassis ground:***<br>***DTC 64/(F87) No. 2 — Chassis ground:*** | Is the measured value more than 1 MΩ? | Go to step **8.** | Repair harness between VDCCM and VDCH/U. |
| 8 | **CHECK HARNESS/CONNECTOR BETWEEN VDCCM AND VDCH/U.**<br>1) Connect connector (F91) to VDCH/U.<br>2) Measure resistance between VDCCM connector and VDCH/U connector.<br>***Connector & terminal***<br>***DTC 32/(F87) No. 3 — (VDC2) No. 1:***<br>***DTC 34/(F87) No. 51 — (VDC2) No. 1:***<br>***DTC 36/(F87) No. 50 — (VDC2) No. 1:***<br>***DTC 38/(F87) No. 4 — (VDC2) No. 1:***<br>***DTC 63/(F87) No. 29 — (VDC2) No. 1:***<br>***DTC 64/(F87) No. 2 — (VDC2) No. 1:*** | Is the measured value within 3 to 6 Ω? | Go to step **9.** | Repair harness/ connector between VDCCM and VDCH/U. |
| 9 | **CHECK POOR CONTACT IN CONNECTORS.** | Is there poor contact in connectors between VDCCM and VDCH/U? | Repair connector. | Go to step **10.** |
| 10 | **CHECK VDCCM.**<br>1) Connect all connectors.<br>2) Erase the memory.<br>3) Perform inspection mode.<br>4) Read out the diagnostic trouble code. | Is the same diagnostic trouble code as in the current diagnosis still being output? | Replace VDCCM. <Ref. to VDC-8, VDC Control Module (VDCCM).> | Go to step **11.** |
| 11 | **CHECK ANY OTHER DIAGNOSTIC TROUBLE CODES APPEARANCE.** | Are other diagnostic trouble codes being output? | Proceed with the diagnosis corresponding to the diagnostic trouble code. | A temporary poor contact. |

## W: DTC 41 ELECTRICAL CONTROL MODULE (VDC CONTROL MODULE MALFUNCTION)

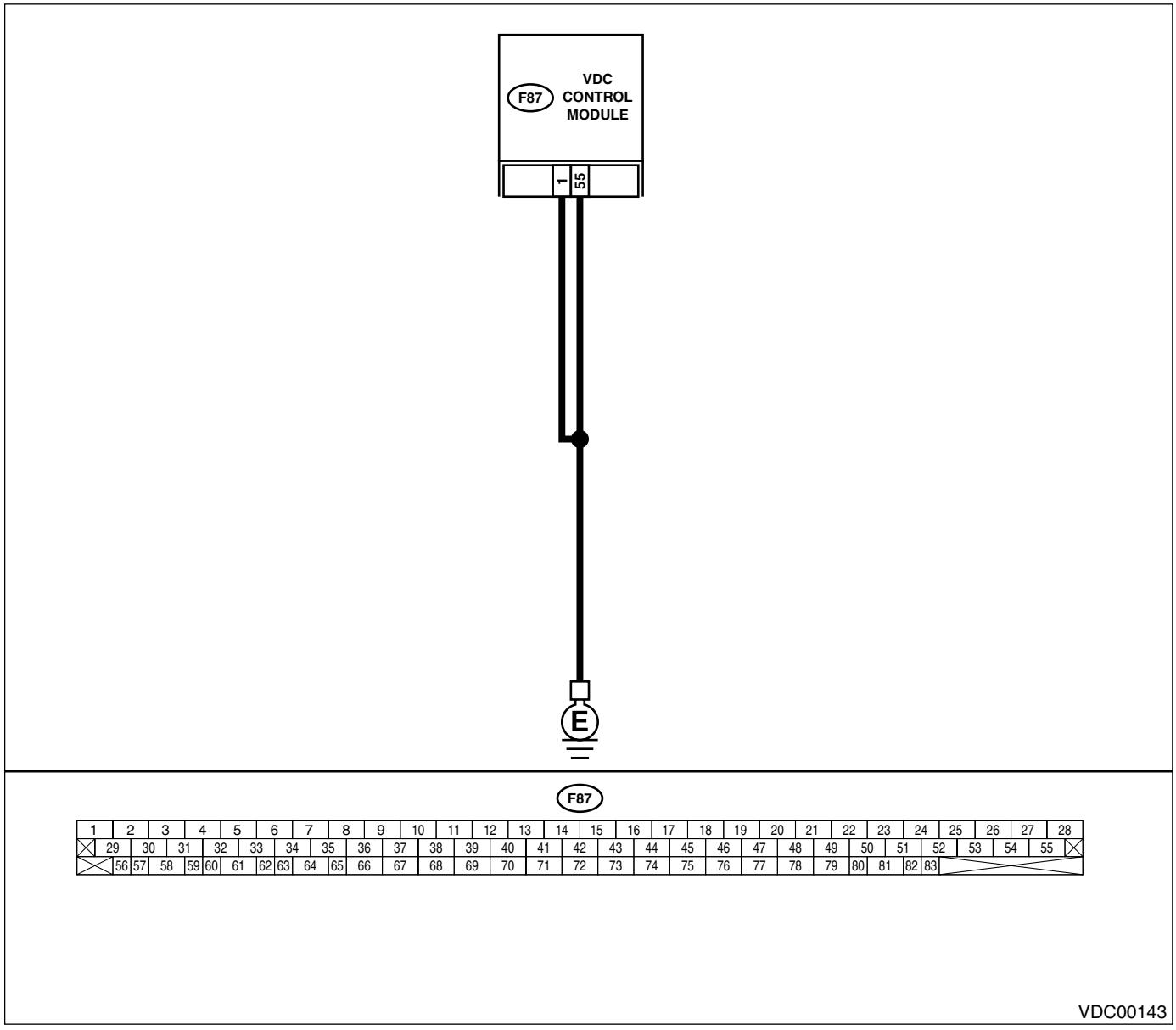
***DIAGNOSIS:***

- Faulty VDCCM

***TROUBLE SYMPTOM:***

- ABS does not operate.
- VDC does not operate.

**WIRING DIAGRAM:**



| | Step | Check | Yes | No |
|---|---|---|---|---|
| 1 | **CHECK GROUND CIRCUIT OF VDCCM.**<br>1) Turn ignition switch to OFF.<br>2) Disconnect connector from VDCCM.<br>3) Measure resistance between VDCCM and chassis ground.<br>***Connector & terminal***<br>***(F87) No. 1 — Chassis ground:***<br>***(F87) No. 55 — Chassis ground:*** | Is the measured value less than 0.5 Ω? | Go to step **2.** | Repair VDCCM ground harness. |
| 2 | **CHECK POOR CONTACT IN CONNECTORS.** | Is there poor contact in connectors between battery, ignition switch and VDCCM? | Repair connector. | Go to step **3.** |
| 3 | **CHECK SOURCES OF SIGNAL NOISE.** | Is the car telephone or the wireless transmitter properly installed? | Go to step **4.** | Properly install the car telephone or the wireless transmitter. |
| 4 | **CHECK SOURCES OF SIGNAL NOISE.** | Are noise sources (such as an antenna) installed near the sensor harness? | Install the noise sources apart from the sensor harness. | Go to step **5.** |
| 5 | **CHECK VDCCM.**<br>1) Connect all connectors.<br>2) Erase the memory.<br>3) Perform inspection mode.<br>4) Read out the diagnostic trouble code. | Is the same diagnostic trouble code as in the current diagnosis still being output? | Replace VDCCM. <Ref. to VDC-8, VDC Control Module (VDCCM).> | Go to step **6.** |
| 6 | **CHECK ANY OTHER DIAGNOSTIC TROUBLE CODES APPEARANCE.** | Are other diagnostic trouble codes being output? | Proceed with the diagnosis corresponding to the diagnostic trouble code. | A temporary poor contact. |

## X: DTC 42 POWER SUPPLY VOLTAGE LOW

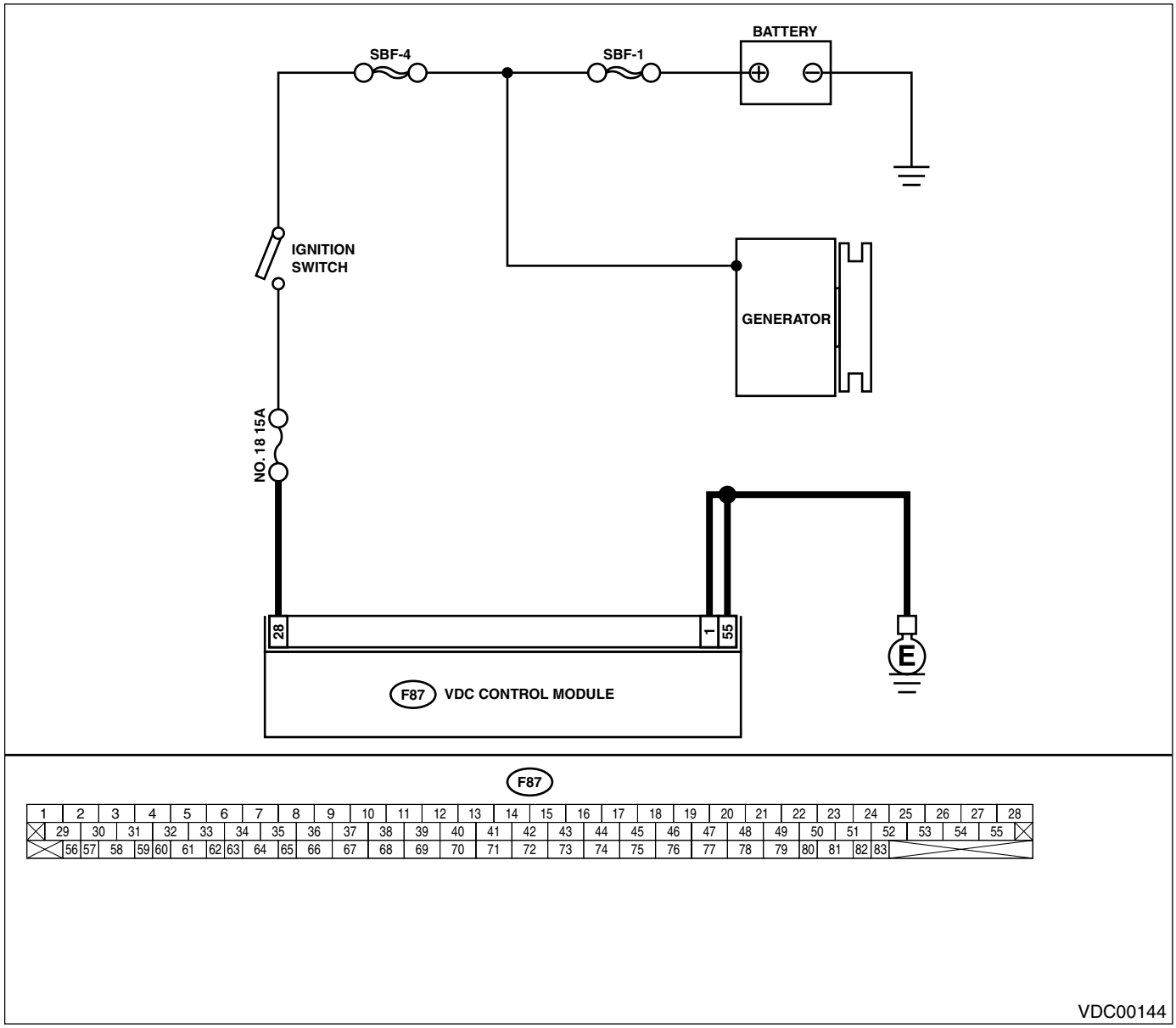
***DIAGNOSIS:***

- Power source voltage of the VDCCM is low.

***TROUBLE SYMPTOM:***

- ABS does not operate.
- VDC does not operate.

**WIRING DIAGRAM:**



| | Step | Check | Yes | No |
|---|---|---|---|---|
| 1 | **CHECK GENERATOR.**<br>1) Start engine.<br>2) Idling after warm-up.<br>3) Measure voltage between generator B terminal and chassis ground.<br>***Terminal***<br>***Generator B terminal — Chassis ground:*** | Is the measured value within 10 to 15 V? | Go to step **2.** | Repair generator. |
| 2 | **CHECK BATTERY TERMINAL.**<br>Turn ignition switch to OFF. | Are the positive and negative battery terminals tightly clamped? | Go to step **3.** | Tighten the clamp of terminal. |
| 3 | **CHECK INPUT VOLTAGE OF VDCCM.**<br>1) Disconnect connector from VDCCM.<br>2) Run the engine at idle.<br>3) Measure voltage between VDCCM connector and chassis ground.<br>***Connector & terminal***<br>***(F87) No. 28 (+) — Chassis ground (–):*** | Is the measured value within 10 to 15 V? | Go to step **4.** | Repair harness connector between battery, ignition switch and VDCCM. |
| 4 | **CHECK GROUND CIRCUIT OF VDCCM.**<br>1) Turn ignition switch to OFF.<br>2) Measure resistance between VDCCM and chassis ground.<br>***Connector & terminal***<br>***(F87) No. 1 — Chassis ground:***<br>***(F87) No. 55 — Chassis ground:*** | Is the measured value less than 0.5 Ω? | Go to step **5.** | Repair VDCCM ground harness. |
| 5 | **CHECK POOR CONTACT IN CONNECTORS.** | Is there poor contact in connectors between generator, battery and VDCCM? | Repair connector. | Go to step **6.** |
| 6 | **CHECK VDCCM.**<br>1) Connect all connectors.<br>2) Erase the memory.<br>3) Perform inspection mode.<br>4) Read out the diagnostic trouble code. | Is the same diagnostic trouble code as in the current diagnosis still being output? | Replace VDCCM. <Ref. to VDC-8, VDC Control Module (VDCCM).> | Go to step **7.** |
| 7 | **CHECK ANY OTHER DIAGNOSTIC TROUBLE CODES APPEARANCE.** | Are other diagnostic trouble codes being output? | Proceed with the diagnosis corresponding to the diagnostic trouble code. | A temporary poor contact. |

# Y: DTC 43 AET COMMUNICATION LINE MALFUNCTION

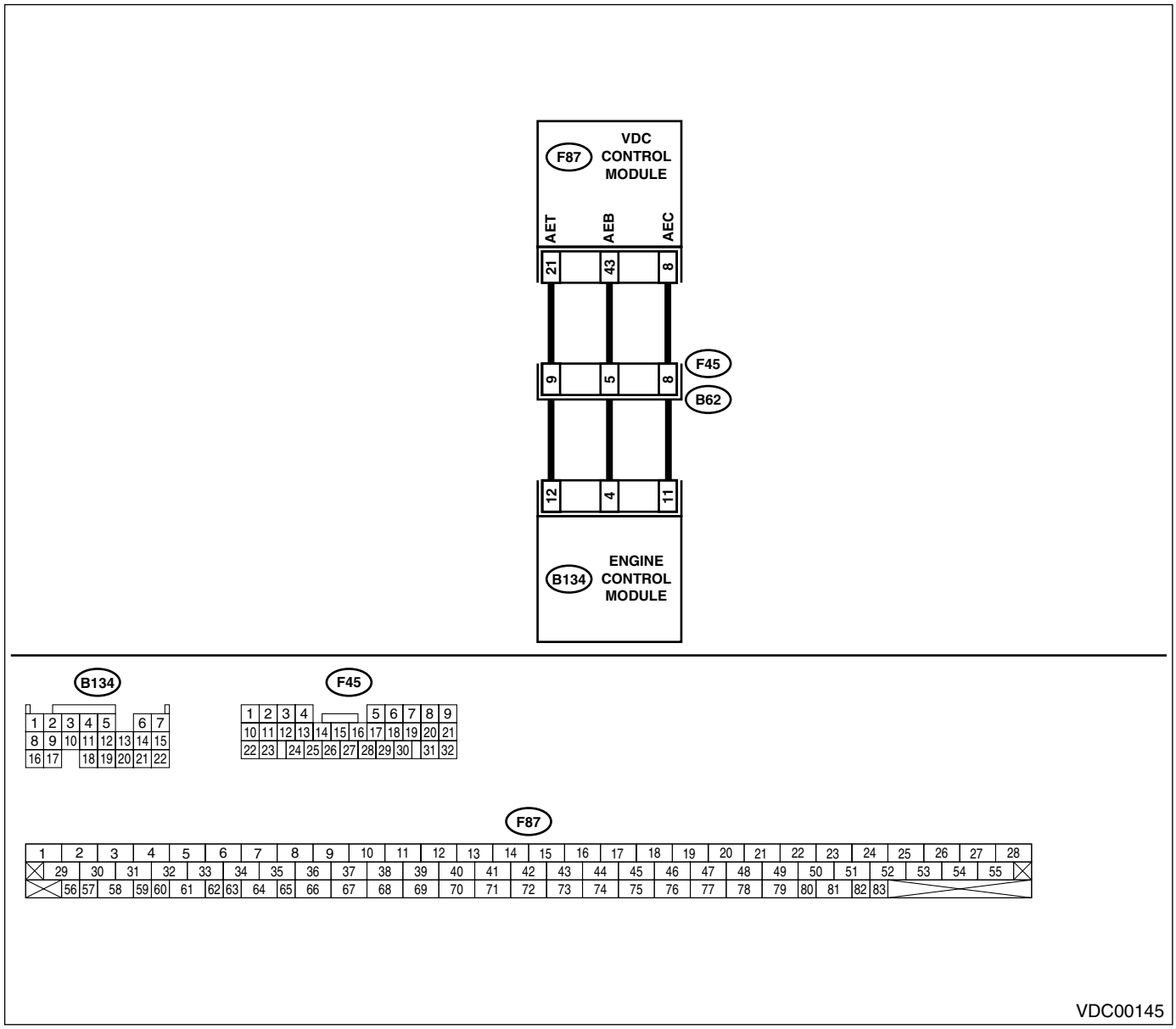
***DIAGNOSIS:***

- AET communication line is broken or short circuited.

***TROUBLE SYMPTOM:***

- VDC does not operate.

**WIRING DIAGRAM:**



| | Step | Check | Yes | No |
|---|---|---|---|---|
| 1 | **CHECK HARNESS/CONNECTOR BETWEEN VDCCM AND ECM.**<br>1) Turn ignition switch to OFF.<br>2) Disconnect connector from VDCCM.<br>3) Disconnect connector from ECM.<br>4) Measure resistance between VDCCM connector and ECM.<br>***Connector & terminal***<br>***(F87) No. 21 — (B134) No. 12:*** | Is the measured value less than 0.5 Ω? | Go to step **2.** | Repair harness/ connector between VDCCM and ECM. |
| 2 | **CHECK GROUND SHORT OF HARNESS.**<br>Measure resistance between VDCCM connector and chassis ground.<br>***Connector & terminal***<br>***(F87) No. 21 — Chassis ground:*** | Is the measured value more than 1 MΩ? | Go to step **3.** | Repair harness/ connector between VDCCM and ECM. |
| 3 | **CHECK BATTERY SHORT OF HARNESS.**<br>Measure voltage between VDCCM connector and chassis ground.<br>***Terminal***<br>***(F87) No. 21 (+) — Chassis ground (–):*** | Is the measured value less than 0.5 V? | Go to step **4.** | Repair harness/ connector between VDCCM and ECM. |
| 4 | **CHECK BATTERY SHORT OF HARNESS.**<br>1) Turn ignition switch to ON.<br>2) Measure voltage between VDCCM connector and chassis ground.<br>***Terminal***<br>***(F87) No. 21 (+) — Chassis ground (–):*** | Is the measured value less than 1 V? | Go to step **5.** | Repair harness/ connector between VDCCM and ECM. |
| 5 | **CHECK HARNESS/CONNECTOR BETWEEN VDCCM AND ECM.**<br>1) Turn ignition switch to OFF.<br>2) Connect connector to ECM.<br>3) Turn ignition switch to ON.<br>4) Measure voltage between VDCCM connector and chassis ground.<br>***Connector & terminal***<br>***(F87) No. 21 (+) — Chassis ground (–):*** | Is the measured value within 10 to 15 V? | Go to step **6.** | Go to step **9.** |
| 6 | **CHECK POOR CONTACT IN CONNECTORS.** | Is there poor contact in connectors between ECM and VDCCM? | Repair connector. | Go to step **7.** |
| 7 | **CHECK VDCCM.**<br>1) Turn ignition switch to OFF.<br>2) Connect all connectors.<br>3) Erase the memory.<br>4) Perform inspection mode.<br>5) Read out the diagnostic trouble code. | Is the same diagnostic trouble code as in the current diagnosis still being output? | Replace VDCCM. <Ref. to VDC-8, VDC Control Module (VDCCM).> | Go to step **8.** |
| 8 | **CHECK ANY OTHER DIAGNOSTIC TROUBLE CODES APPEARANCE.** | Are other diagnostic trouble codes being output? | Proceed with the diagnosis corresponding to the diagnostic trouble code. | A temporary poor contact. |
| 9 | **CHECK ECM.**<br>1) Turn ignition switch to ON.<br>2) Measure voltage between ECM connector terminal and chassis ground.<br>***Connector & terminal***<br>***(B134) No. 12 (+) — Chassis ground (–):*** | Is the measured value within 10 to 15 V? | Repair harness/ connector between ECM and VDCCM. | Go to step **10.** |
| 10 | **CHECK POOR CONTACT IN CONNECTORS.** | Is there poor contact in connector ECM? | Repair connector. | Go to step **11.** |

| Step | Check | Yes | No |
|---|---|---|---|
| 11 **CHECK ENGINE.** | Is the engine functioning normally? | Replace ECM. <Ref. to FU(H6DO)-46, Engine Control Module.> | Repair engine. |

**MEMO:**

## Z: DTC 43 AEB COMMUNICATION LINE MALFUNCTION

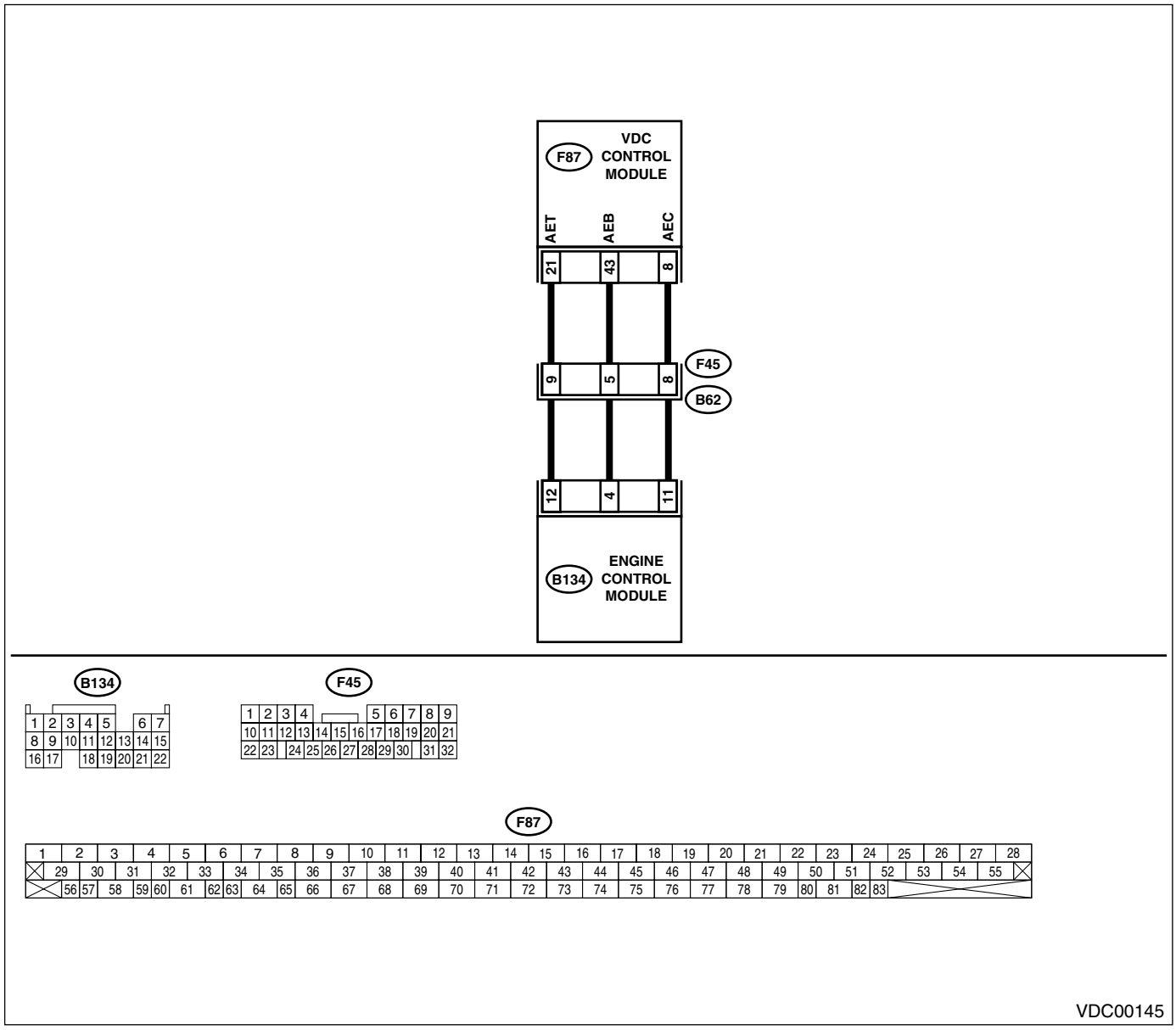
***DIAGNOSIS:***

- AEB communication line is broken or short circuited.

***TROUBLE SYMPTOM:***

- VDC does not operate.

**WIRING DIAGRAM:**



| | Step | Check | Yes | No |
|---|---|---|---|---|
| 1 | **CHECK HARNESS/CONNECTOR BETWEEN VDCCM AND ECM.**<br>1) Turn ignition switch to OFF.<br>2) Disconnect connector from VDCCM.<br>3) Disconnect connector from ECM.<br>4) Measure resistance between VDCCM connector and ECM.<br>***Connector & terminal***<br>***(F87) No. 43 — (B134) No. 4:*** | Is the measured value less than 0.5 Ω? | Go to step **2.** | Repair harness/ connector between VDCCM and ECM. |
| 2 | **CHECK GROUND SHORT OF HARNESS.**<br>Measure resistance between VDCCM connector and chassis ground.<br>***Connector & terminal***<br>***(F87) No. 43 — Chassis ground:*** | Is the measured value more than 1 MΩ? | Go to step **3.** | Repair harness/ connector between VDCCM and ECM. |
| 3 | **CHECK BATTERY SHORT OF HARNESS.**<br>Measure voltage between VDCCM connector and chassis ground.<br>***Connector & terminal***<br>***(F87) No. 43 (+) — Chassis ground (–):*** | Is the measured value less than 0.5 V? | Go to step **4.** | Repair harness/ connector between VDCCM and ECM. |
| 4 | **CHECK BATTERY SHORT OF HARNESS.**<br>1) Turn ignition switch to ON.<br>2) Measure voltage between VDCCM connector and chassis ground.<br>***Connector & terminal***<br>***(F87) No. 43 (+) — Chassis ground (–):*** | Is the measured value less than 1 V? | Go to step **5.** | Repair harness/ connector between VDCCM and ECM. |
| 5 | **CHECK HARNESS/CONNECTOR BETWEEN VDCCM AND ECM.**<br>1) Turn ignition switch to OFF.<br>2) Connect connector to ECM.<br>3) Turn ignition switch to ON.<br>4) Measure voltage between VDCCM connector and chassis ground.<br>***Connector & terminal***<br>***(F87) No. 43 (+) — Chassis ground (–):*** | Is the measured value within 10 to 15 V? | Go to step **6.** | Go to step **9.** |
| 6 | **CHECK POOR CONTACT IN CONNECTORS.** | Is there poor contact in connectors between ECM and VDCCM? | Repair connector. | Go to step **7.** |
| 7 | **CHECK VDCCM.**<br>1) Turn ignition switch to OFF.<br>2) Connect all connectors.<br>3) Erase the memory.<br>4) Perform inspection mode.<br>5) Read out the diagnostic trouble code. | Is the same diagnostic trouble code as in the current diagnosis still being output? | Replace VDCCM. <Ref. to VDC-8, VDC Control Module (VDCCM).> | Go to step **8.** |
| 8 | **CHECK ANY OTHER DIAGNOSTIC TROUBLE CODES APPEARANCE.** | Are other diagnostic trouble codes being output? | Proceed with the diagnosis corresponding to the diagnostic trouble code. | A temporary poor contact. |
| 9 | **CHECK ECM.**<br>1) Turn ignition switch to ON.<br>2) Measure voltage between ECM connector terminal and chassis ground.<br>***Connector & terminal***<br>***(B134) No. 4 (+) — Chassis ground (–):*** | Is the measured value within 10 to 15 V? | Repair harness/ connector between ECM and VDCCM. | Go to step **10.** |
| 10 | **CHECK POOR CONTACT IN CONNECTORS.** | Is there poor contact in connector ECM? | Repair connector. | Go to step **11.** |

| Step | Check | Yes | No |
|---|---|---|---|
| 11 **CHECK ENGINE.** | Is the engine functioning normally? | Replace ECM. <Ref. to FU(H6DO)-46, Engine Control Module.> | Repair engine. |

**MEMO:**

## AA:DTC 43 AEC COMMUNICATION LINE MALFUNCTION

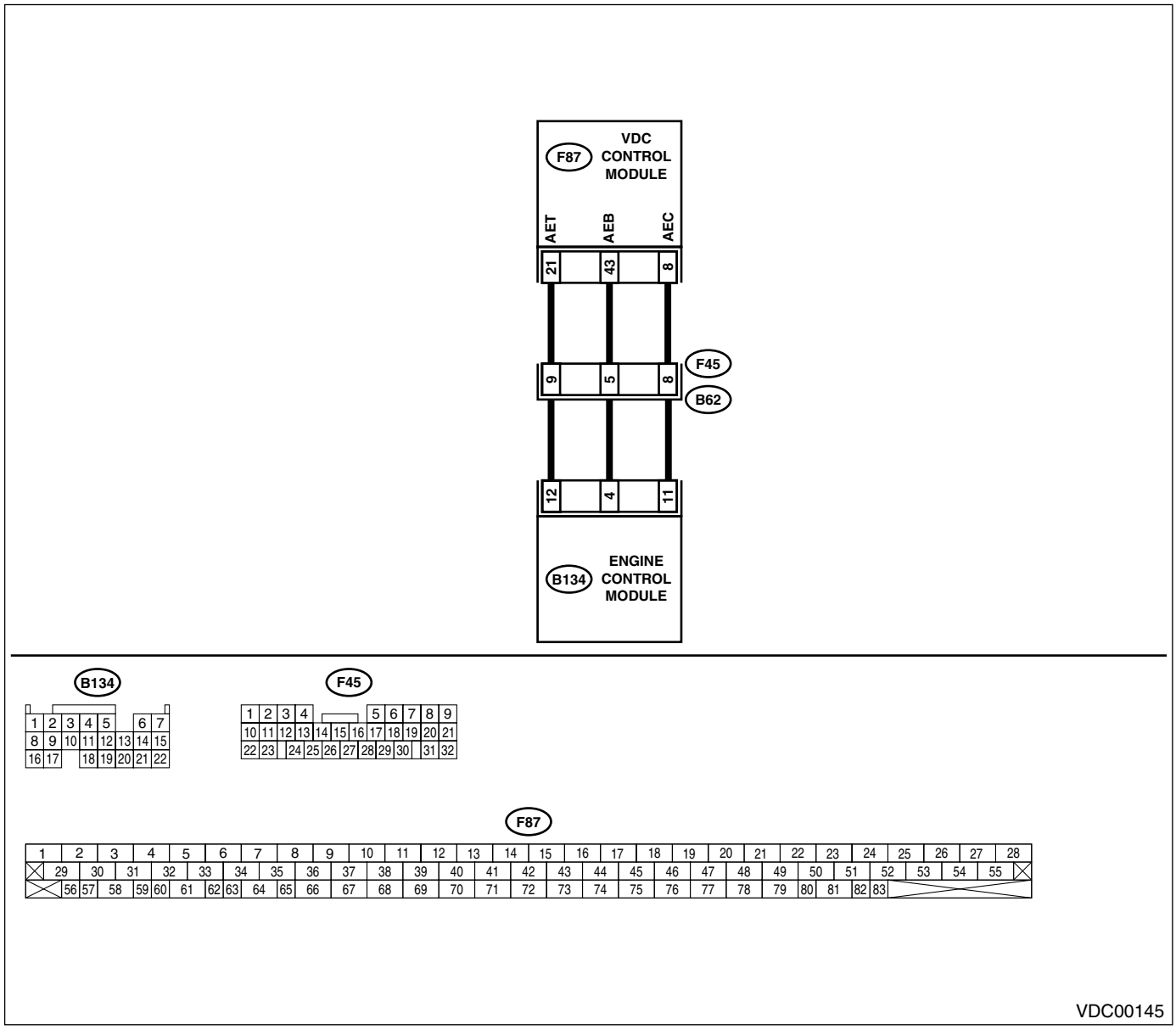
***DIAGNOSIS:***

- AEC communication line is broken or short circuited.

***TROUBLE SYMPTOM:***

- VDC does not operate.

**WIRING DIAGRAM:**



| | Step | Check | Yes | No |
|---|---|---|---|---|
| 1 | **CHECK HARNESS/CONNECTOR BETWEEN VDCCM AND ECM.**<br>1) Turn ignition switch to OFF.<br>2) Disconnect connector from VDCCM.<br>3) Disconnect connector from ECM.<br>4) Measure resistance between VDCCM connector and ECM.<br>***Connector & terminal***<br>***(F87) No. 8 — (B134) No. 11:*** | Is the measured value less than 0.5 Ω? | Go to step **2.** | Repair harness/ connector between VDCCM and ECM. |
| 2 | **CHECK GROUND SHORT OF HARNESS.**<br>Measure resistance between VDCCM connector and chassis ground.<br>***Connector & terminal***<br>***(F87) No. 8 — Chassis ground:*** | Is the measured value more than 1 MΩ? | Go to step **3.** | Repair harness/ connector between VDCCM and ECM. |
| 3 | **CHECK BATTERY SHORT OF HARNESS.**<br>Measure voltage between VDCCM connector and chassis ground.<br>***Connector & terminal***<br>***(F87) No. 8 (+) — Chassis ground (–):*** | Is the measured value less than 0.5 V? | Go to step **4.** | Repair harness/ connector between VDCCM and ECM. |
| 4 | **CHECK BATTERY SHORT OF HARNESS.**<br>1) Turn ignition switch to ON.<br>2) Measure voltage between VDCCM connector and chassis ground.<br>***Connector & terminal***<br>***(F87) No. 8 (+) — Chassis ground (–):*** | Is the measured value less than 1 V? | Go to step **5.** | Repair harness/ connector between VDCCM and ECM. |
| 5 | **CHECK HARNESS/CONNECTOR BETWEEN VDCCM AND ECM.**<br>1) Turn ignition switch to OFF.<br>2) Connect connector to ECM.<br>3) Turn ignition switch to ON.<br>4) Measure voltage between VDCCM connector and chassis ground.<br>***Connector & terminal***<br>***(F87) No. 8 (+) — Chassis ground (–):*** | Is the measured value within 10 to 15 V? | Go to step **6.** | Go to step **9.** |
| 6 | **CHECK POOR CONTACT IN CONNECTORS.** | Is there poor contact in connectors between ECM and VDCCM? | Repair connector. | Go to step **7.** |
| 7 | **CHECK VDCCM.**<br>1) Turn ignition switch to OFF.<br>2) Connect all connectors.<br>3) Erase the memory.<br>4) Perform inspection mode.<br>5) Read out the diagnostic trouble code. | Is the same diagnostic trouble code as in the current diagnosis still being output? | Replace VDCCM. <Ref. to VDC-8, VDC Control Module (VDCCM).> | Go to step **8.** |
| 8 | **CHECK ANY OTHER DIAGNOSTIC TROUBLE CODES APPEARANCE.** | Are other diagnostic trouble codes being output? | Proceed with the diagnosis corresponding to the diagnostic trouble code. | A temporary poor contact. |
| 9 | **CHECK ECM.**<br>1) Turn ignition switch to ON.<br>2) Measure voltage between ECM connector terminal and chassis ground.<br>***Connector & terminal***<br>***(B134) No. 11 (+) — Chassis ground (–):*** | Is the measured value within 10 to 15 V? | Repair harness/ connector between ECM and VDCCM. | Go to step **10.** |
| 10 | **CHECK POOR CONTACT IN CONNECTORS.** | Is there poor contact in connector ECM? | Repair connector. | Go to step **11.** |

| Step | Check | Yes | No |
|---|---|---|---|
| 11 **CHECK ENGINE.** | Is the engine functioning normally? | Replace ECM. <Ref. to FU(H6DO)-46, Engine Control Module.> | Repair engine. |

**MEMO:**

## AB:DTC 44 TCM COMMUNICATION CIRCUIT

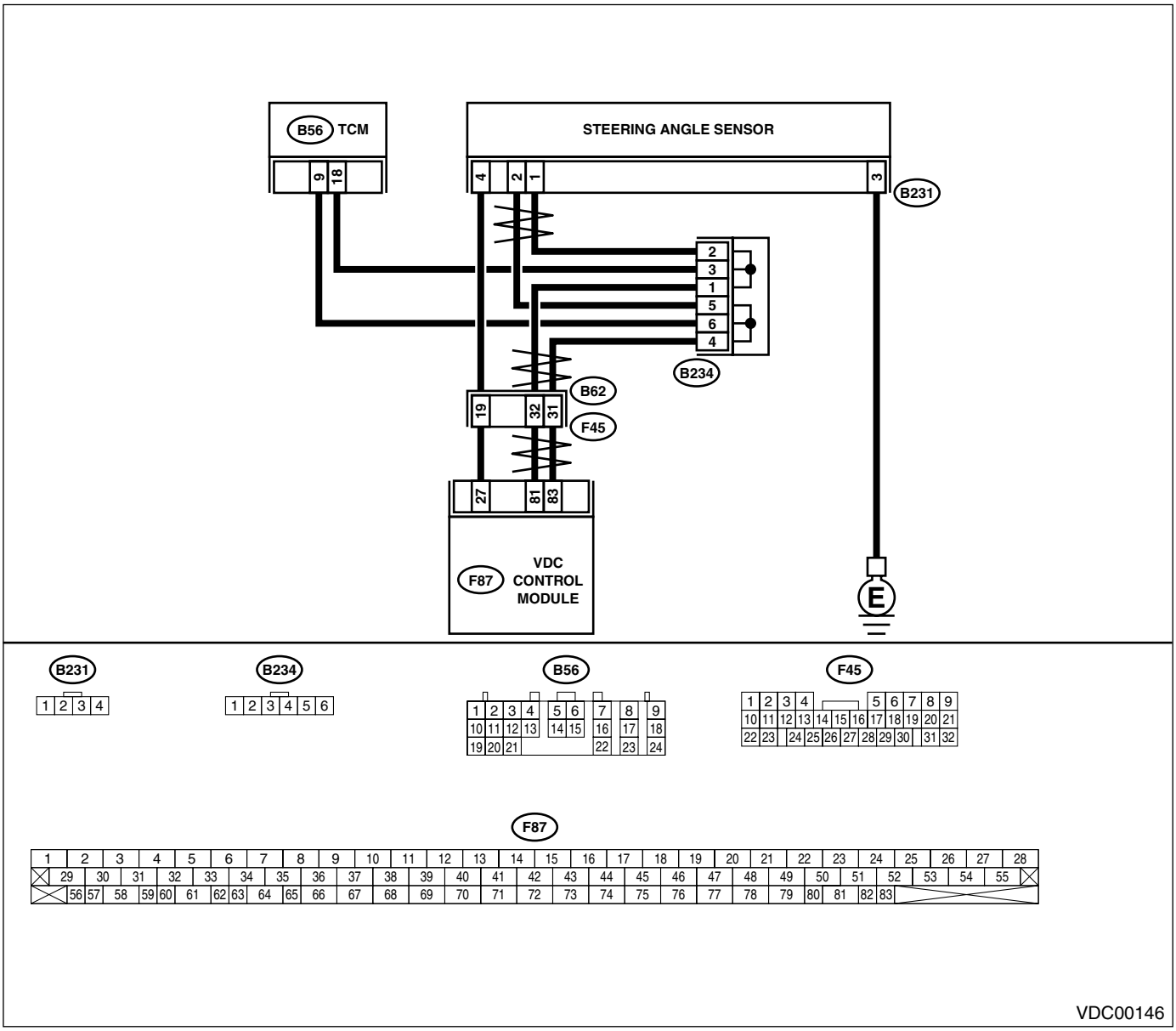
***DIAGNOSIS:***

- Communication with AT control faults

***TROUBLE SYMPTOM:***

- VDC does not operate.

**WIRING DIAGRAM:**




VDC00146

| | Step | Check | Yes | No |
|---|---|---|---|---|
| 1 | **CHECK RESISTANCE OF HARNESS.**<br>1) Turn ignition switch to OFF.<br>2) Disconnect two connectors from TCM.<br>3) Measure resistance between TCM connector terminals.<br>***Connector & terminal (B56) No. 9 — No. 18:*** | Is the measured value within 57 to 63 Ω? | Go to step **2.** | Repair harness between TCM and VDCCM. |
| 2 | **CHECK POOR CONTACT IN CONNECTORS.** | Is there poor contact in TCM connectors? | Repair connector. | Go to step **3.** |
| 3 | **CHECK TCM.**<br>1) Turn ignition switch to OFF.<br>2) Connect all connectors.<br>3) Erase the memory.<br>4) Perform inspection mode.<br>5) Read out the diagnostic trouble code. | Is the same diagnostic trouble code as in the current diagnosis still being output? | Replace TCM. <Ref. to 4AT-79, Transmission Control Module (TCM).> | Go to step **4.** |
| 4 | **CHECK ANY OTHER DIAGNOSTIC TROUBLE CODES APPEARANCE.** | Are other diagnostic trouble codes being output? | Proceed with the diagnosis corresponding to the diagnostic trouble code. | A temporary poor contact. |

## AC:DTC 45 INCORRECT VDC CONTROL MODULE

***DIAGNOSIS:***

- Control module out of specification

***TROUBLE SYMPTOM:***

- ABS does not operate.
- VDC does not operate.

| | Step | Check | Yes | No |
|---|---|---|---|---|
| 1 | **CHECK VDCCM SPECIFICATIONS.**<br>Check the VDCCM identification mark.<br>***VDCCM identification mark***<br>***P*** | Does the VDCCM identification mark agree with the vehicle specifications? | Go to step **2.** | Replace VDCCM. <Ref. to VDC-8, VDC Control Module (VDCCM).> |
| 2 | **CHECK TCM SPECIFICATIONS.**<br>Check the TCM identification mark.<br>***TCM identification mark***<br>***HN*** | Does the TCM identification mark agree with the vehicle specifications? | Go to step **3.** | Replace TCM. <Ref. to 4AT-79, Transmission Control Module (TCM).> |
| 3 | **CHECK TCM.**<br>1) Replace TCM. <Ref. to 4AT-79, Transmission Control Module (TCM).><br>2) Erase the memory.<br>3) Perform inspection mode.<br>4) Read out the diagnostic trouble code. | Is the same diagnostic trouble code as in the current diagnosis still being output? | Go to step **4.** | The original TCM has been faulty. |
| 4 | **CHECK TCM.** | Is the same diagnostic trouble code as in the current diagnosis still being output? | Go to step **5.** | Proceed with the diagnosis corresponding to the diagnostic trouble code. |
| 5 | **CHECK VDCCM.**<br>1) Install original TCM.<br>2) Replace VDCCM. <Ref. to VDC-8, VDC Control Module (VDCCM).><br>3) Erase the memory.<br>4) Perform inspection mode.<br>5) Read out the diagnostic trouble code. | Is the same diagnostic trouble code as in the current diagnosis still being output? | Go to step **6.** | The original VDCCM has been faulty. |
| 6 | **CHECK VDCCM.** | Is the same diagnostic trouble code as in the current diagnosis still being output? | Replace TCM. <Ref. to 4AT-79, Transmission Control Module (TCM).> | Proceed with the diagnosis corresponding to the diagnostic trouble code. |

## AD:DTC 45 TCM MALFUNCTION SPECIFICATIONS

***DIAGNOSIS:***

- Control module out of specification

***TROUBLE SYMPTOM:***

- ABS does not operate.
- VDC does not operate.

| Step | | Check | Yes | No |
|---|---|---|---|---|
| 1 | **CHECK AT SYSTEM.**<br>1) Start the engine.<br>2) Check AT system diagnostic trouble code. | Is the AT system diagnostic trouble code is same with the specification? | Repair AT system. | Replace VDCCM. <Ref. to VDC-8, VDC Control Module (VDCCM).> |

## AE:DTC 46 ABNORMAL VOLTAGE OF 5 V POWER SUPPLY

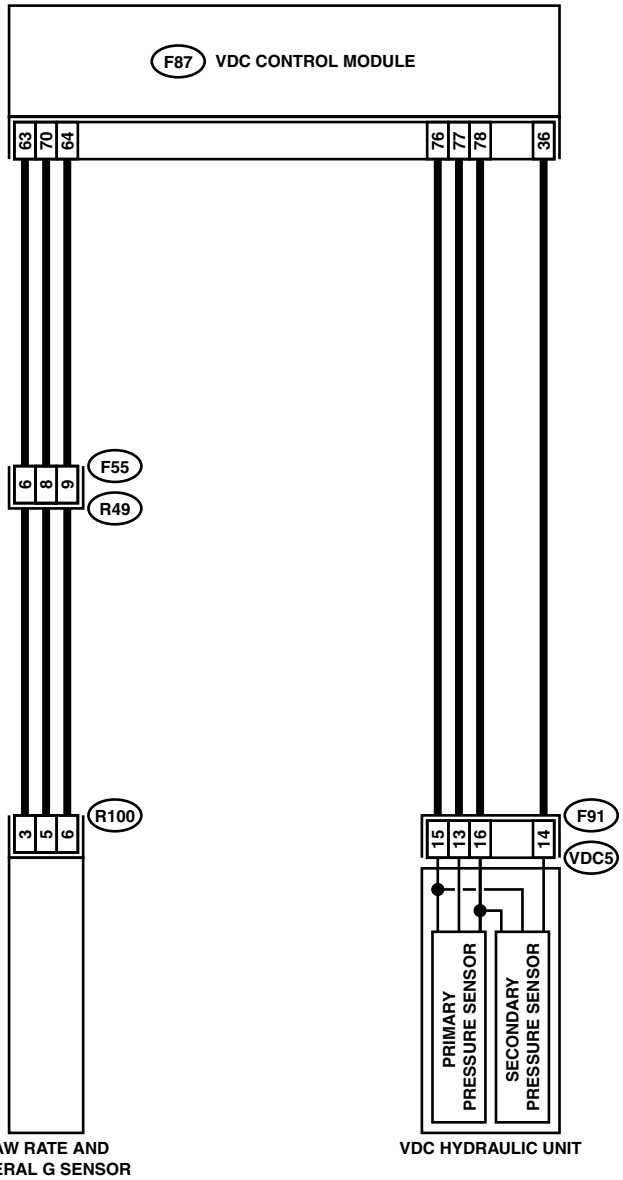
***DIAGNOSIS:***

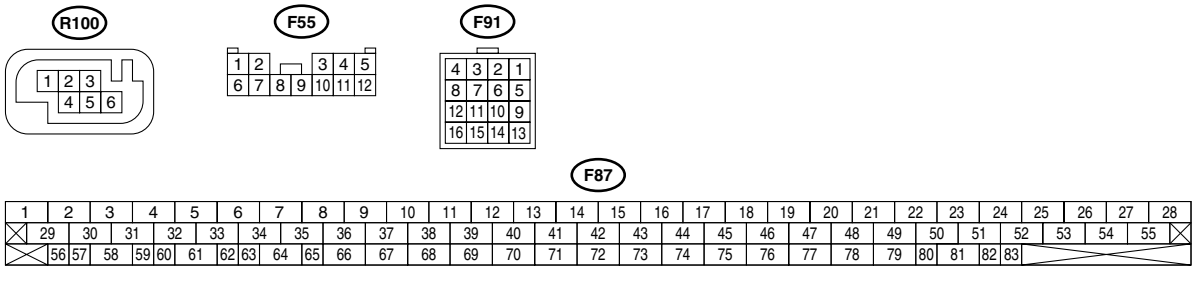
- 5 volt power supply is abnormal.

***TROUBLE SYMPTOM:***

- ABS does not operate.
- VDC does not operate.

**WIRING DIAGRAM:**




VDC00147

| | Step | Check | Yes | No |
|---|---|---|---|---|
| 1 | **CHECK GROUND SHORT OF SENSOR AND HARNESS.**<br>1) Turn ignition switch OFF.<br>2) Disconnect connector from VDCCM.<br>3) Measure resistance between VDCCM connector and chassis ground.<br>***Connector & terminal***<br>***(F87) No. 63 — Chassis ground (Lateral G sensor):***<br>***(F87) No. 78 — Chassis ground (Pressure sensor):*** | Is the measured value more than 1 MΩ? | Go to step **3.** | Go to step **2.** |
| 2 | **CHECK GROUND SHORT OF HARNESS.**<br>1) Disconnect connector from faulty sensors.<br>2) Measure resistance between VDCCM and chassis ground.<br>***Connector & terminal***<br>***(F87) No. 63 — Chassis ground (Lateral G sensor):***<br>***(F87) No. 78 — Chassis ground (Pressure sensor):*** | Is the measured value more than 1 MΩ? | Replace faulty sensors. | Repair or replace harness connector between VDCCM and faulty sensor. |
| 3 | **CHECK BATTERY SHORT OF SENSOR AND HARNESS.**<br>Measure voltage between VDCCM and chassis ground.<br>***Connector & terminal***<br>***(F87) No. 63 (+) — Chassis ground (–) (Lateral G sensor):***<br>***(F87) No. 78 (+) — Chassis ground (–) (Pressure sensor):*** | Is the measured value less than 0.5 V? | Go to step **4.** | Go to step **5.** |
| 4 | **CHECK BATTERY SHORT OF SENSOR AND HARNESS.**<br>1) Turn ignition switch to ON.<br>2) Measure voltage between VDCCM connector and chassis ground.<br>***Connector & terminal***<br>***(F87) No. 63 (+) — Chassis ground (–) (Lateral G sensor):***<br>***(F87) No. 78 (+) — Chassis ground (–) (Pressure sensor):*** | Is the measured value less than 0.5 V? | Replace VDCCM. <Ref. to VDC-8, VDC Control Module (VDCCM).> | Go to step **5.** |
| 5 | **CHECK BATTERY SHORT OF HARNESS.**<br>1) Turn ignition switch to OFF.<br>2) Disconnect connector from faulty sensors.<br>3) Measure voltage between VDCCM and chassis ground.<br>***Connector & terminal***<br>***(F87) No. 63 (+) — Chassis ground (–) (Lateral G sensor):***<br>***(F87) No. 78 (+) — Chassis ground (–) (Pressure sensor):*** | Is the measured value less than 0.5 V? | Go to step **6.** | Repair or replace harness connector between VDCCM and faulty sensor. |
| 6 | **CHECK BATTERY SHORT OF HARNESS.**<br>1) Turn ignition switch to ON.<br>2) Measure voltage between VDCCM and chassis ground.<br>***Connector & terminal***<br>***(F87) No. 63 (+) — Chassis ground (–) (Lateral G sensor):***<br>***(F87) No. 78 (+) — Chassis ground (–) (Pressure sensor):*** | Is the measured value less than 0.5 V? | Replace faulty sensor. | Repair or replace harness connector between VDCCM and faulty sensor. |

## AF:DTC 47 IMPROPER CAN COMMUNICATION

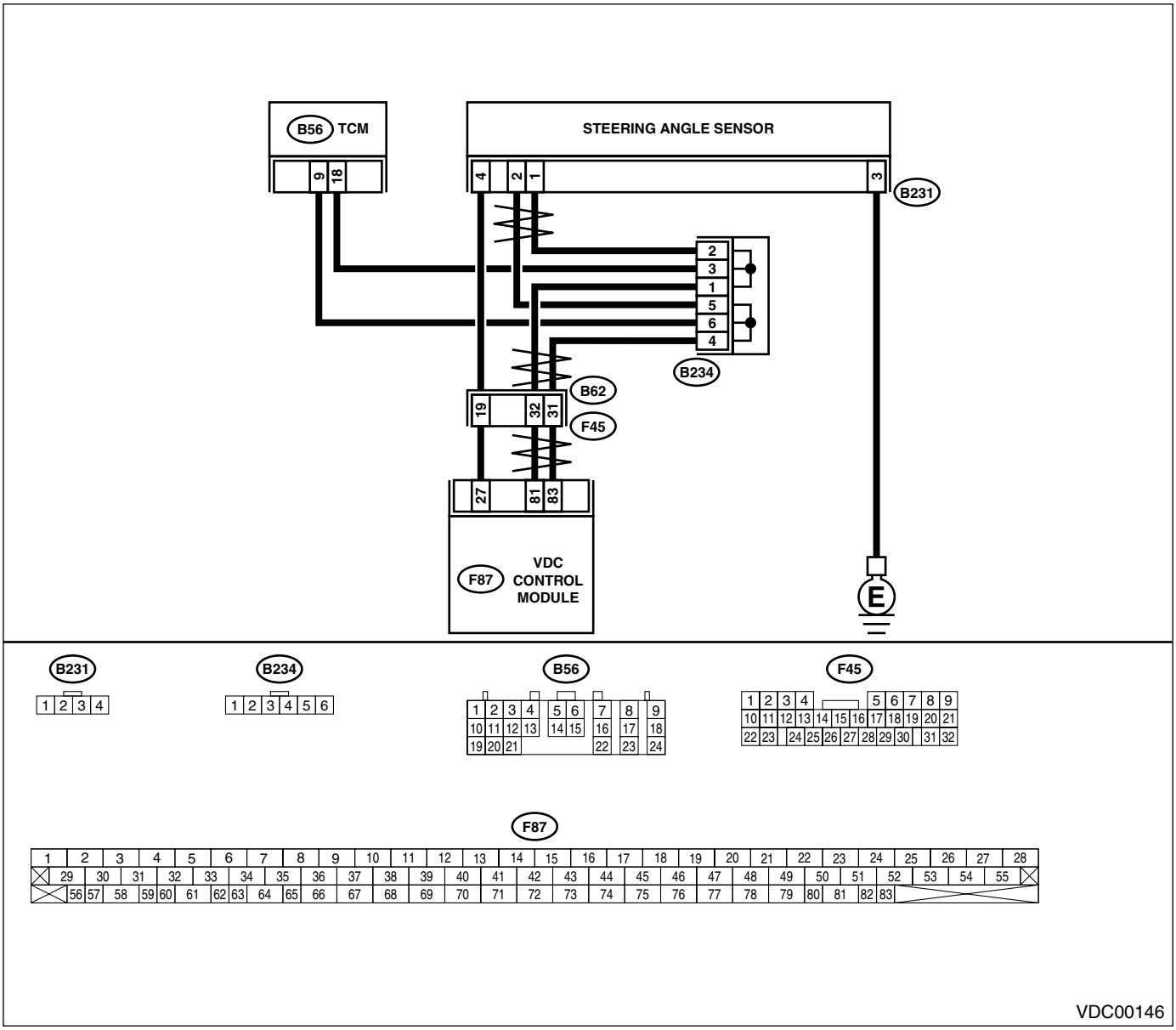
***DIAGNOSIS:***

- CAN communication line is broken or short circuited.

***TROUBLE SYMPTOM:***

- ABS does not operate.
- VDC does not operate.

**WIRING DIAGRAM:**




VDC00146

| | Step | Check | Yes | No |
|---|---|---|---|---|
| 1 | **CHECK HARNESS BETWEEN VDCCM, STEERING ANGLE SENSOR AND TCM.**<br>1) Turn ignition switch OFF.<br>2) Disconnect connector from VDCCM, TCM and steering angle sensor.<br>3) Measure resistance between VDCCM, TCM and steering angle sensor.<br>***Connector & terminal***<br>***(F87) No. 83 — (B56) No. 9:***<br>***(F87) No. 81 — (B56) No. 18:***<br>***(F87) No. 83 — (B231) No. 2:***<br>***(F87) No. 81 — (B231) No. 1:*** | Is the measured value less than 0.5 Ω? | Go to step **3.** | Go to step **2.** |
| 2 | **CHECK HARNESS BETWEEN STEERING ANGLE SENSOR AND TCM.**<br>Measure resistance between TCM and steering angle sensor.<br>***Connector & terminal***<br>***(B56) No. 9 — (B231) No. 2:***<br>***(B56) No. 18 — (B231) No. 1:*** | Is the measured value less than 0.5 Ω? | Repair or replace harness connector between VDCCM and steering angle sensor. | Repair or replace harness connector between TCM and steering angle sensor. |
| 3 | **CHECK GROUND SHORT OF HARNESS.**<br>Measure resistance between VDCCM and chassis ground.<br>***Connector & terminal***<br>***(F87) No. 83 — Chassis ground:***<br>***(F87) No. 81 — Chassis ground:*** | Is the measured value more than 1 MΩ? | Go to step **4.** | Repair or replace harness connector between VDCCM, TCM and steering angle sensor. |
| 4 | **CHECK BATTERY SHORT OF SENSOR.**<br>Measure voltage between VDCCM and chassis ground.<br>***Connector & terminal***<br>***(F87) No. 83 — Chassis ground:***<br>***(F87) No. 81 — Chassis ground:*** | Is the measured value less than 0.5 V? | Go to step **5.** | Repair or replace harness connector between VDCCM, TCM and steering angle sensor. |
| 5 | **CHECK BATTERY SHORT OF SENSOR.**<br>1) Turn ignition switch to ON.<br>2) Measure voltage between VDCCM and chassis ground.<br>***Connector & terminal***<br>***(F87) No. 83 — Chassis ground:***<br>***(F87) No. 81 — Chassis ground:*** | Is the measured value less than 0.5 V? | Go to step **6.** | Repair or replace harness connector between VDCCM, TCM and steering angle sensor. |
| 6 | **CHECK STEERING ANGLE SENSOR.**<br>1) Turn ignition switch to OFF.<br>2) Connect connector to steering angle sensor.<br>3) Measure resistance between VDCCM connector terminals.<br>***Connector & terminal***<br>***(F87) No. 83 — No. 81:*** | Is the measured value within 114 to 126 Ω? | Go to step **8.** | Go to step **7.** |
| 7 | **CHECK POOR CONTACT IN CONNECTORS.** | Is there poor contact in steering angle sensor? | Replace steering angle sensor. | Repair or replace steering angle sensor connector. |
| 8 | **CHECK VDCCM.**<br>1) Connect connector to VDCCM.<br>2) Disconnect connector from steering angle sensor.<br>3) Measure resistance between steering angle sensor connector terminals.<br>***Connector & terminal***<br>***(B231) No. 1 — No. 2:*** | Is the measured value within 114 to 126 Ω? | Go to step **10.** | Go to step **9.** |

| | Step | Check | Yes | No |
|---|---|---|---|---|
| 9 | **CHECK POOR CONTACT IN CONNECTORS.** | Is there poor contact in steering angle sensor? | Replace VDCCM. <Ref. to VDC-8, VDC Control Module (VDCCM).> | Repair or replace VDCCM connector. |
| 10 | **CHECK TCM.**<br>1) Connect connector to TCM.<br>2) Disconnect connector from VDCCM.<br>3) Measure resistance between steering angle sensor terminals.<br>***Connector & terminal (B231) No. 1 — No. 2:*** | Is the measured value more than 1 MΩ? | Go to step **12.** | Go to step **11.** |
| 11 | **CHECK POOR CONTACT IN CONNECTORS.** | Is there poor contact in steering angle sensor? | Replace TCM. <Ref. to 4AT-79, Transmission Control Module (TCM).> | Repair or replace TCM connector. |
| 12 | **CHECK VDCCM.**<br>1) Connect all connectors.<br>2) Erase the memory.<br>3) Perform inspection mode.<br>4) Read out the diagnostic trouble code. | Are other diagnostic trouble codes being output? | Go to step **13.** | A temporary poor contact. |
| 13 | **CHECK DIAGNOSTIC TROUBLE CODE.** | Is the same diagnostic trouble code as in the current diagnosis still being output? | Go to step **14.** | Proceed with the diagnosis corresponding to the diagnostic trouble code. |
| 14 | **CHECK AT SYSTEM DIAGNOSTIC TROUBLE CODE.** | Is the AT system diagnostic trouble code DTC 86? | Replace steering angle sensor. | Replace VDCCM. <Ref. to VDC-8, VDC Control Module (VDCCM).> |

**MEMO:**

## AG:DTC 48 IMPROPER EAC COMMUNICATION

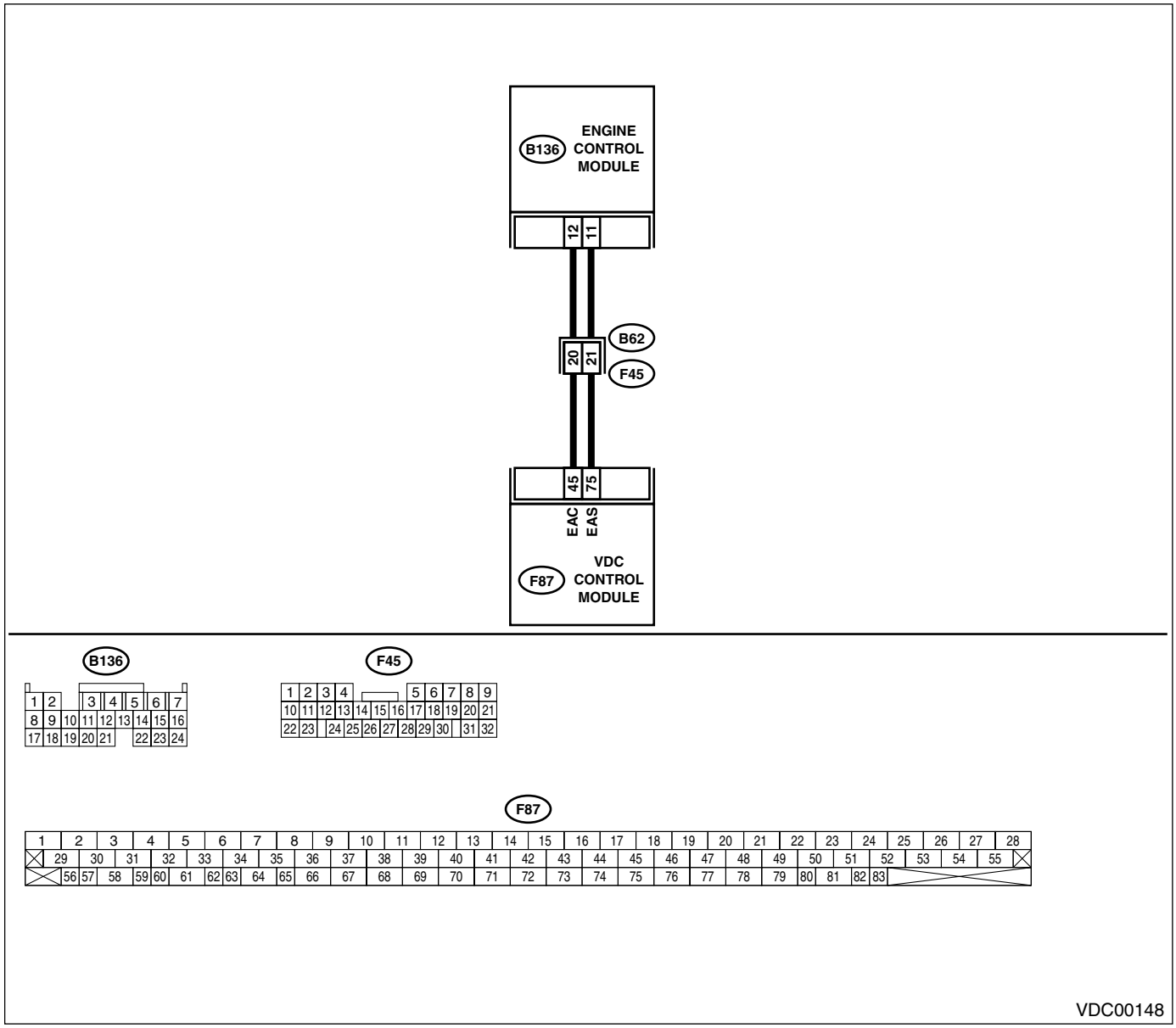
***DIAGNOSIS:***

- EAC communication line is broken or short circuited.

***TROUBLE SYMPTOM:***

- ABS does not operate.
- VDC does not operate.

**WIRING DIAGRAM:**




VDC00148

| | Step | Check | Yes | No |
|---|---|---|---|---|
| 1 | **CHECK HARNESS BETWEEN ECM AND VDCCM.**<br>1) Turn ignition switch to OFF.<br>2) Disconnect connector from VDCCM and ECM.<br>3) Measure resistance between VDCCM and ECM.<br>***Connector & terminal***<br>***(F87) No. 45 — (B136) No. 12:*** | Is the measured value less than 0.5 Ω? | Go to step **2.** | Repair or replace open circuit between VDCCM and ECM. |
| 2 | **CHECK GROUND SHORT OF HARNESS.**<br>Measure resistance between VDCCM and ECM.<br>***Connector & terminal***<br>***(F87) No. 45 — Chassis ground:*** | Is the measured value more than 1 MΩ? | Go to step **3.** | Repair or replace ground short circuit between VDCCM and ECM. |
| 3 | **CHECK BATTERY SHORT OF HARNESS.**<br>1) Turn ignition switch to ON.<br>2) Measure voltage between VDCCM and chassis ground.<br>***Connector & terminal***<br>***(F87) No. 45 — Chassis ground:*** | Is the measured value less than 0.5 V? | Go to step **4.** | Repair or replace battery short circuit between VDCCM and ECM. |
| 4 | **CHECK INPUT VOLTAGE FROM ECM.**<br>1) Turn ignition switch to OFF.<br>2) Connect connector to VDCCM.<br>3) Turn ignition switch to ON.<br>4) Measure voltage between ECM and chassis ground.<br>***Connector & terminal***<br>***(B136) No. 12 (+) — Chassis ground (–):*** | Is the measured value within 10 to 15 V? | Go to step **6.** | Go to step **5.** |
| 5 | **CHECK POOR CONTACT IN ECM CONNECTORS.** | Is there poor contact in ECM connector? | Replace ECM. <Ref. to FU(H6DO)-46, Engine Control Module.> | Repair or replace ECM connector. |
| 6 | **ERASE MEMORY.**<br>1) Connect all connectors.<br>2) Erase the memory. | Can the memory be erased? | Go to step **7.** | Replace VDCCM. <Ref. to VDC-8, VDC Control Module (VDCCM).> |
| 7 | **CHECK DIAGNOSTIC TROUBLE CODE.**<br>1) Perform inspection mode.<br>2) Read out the diagnostic trouble code. | Is the same diagnostic trouble code as in the current diagnosis still being output? | Replace ECM. <Ref. to FU(H6DO)-46, Engine Control Module.> | A temporary poor contact. |

## AH:DTC 48 EAS COMMUNICATION LINE GROUNDING SHORTED

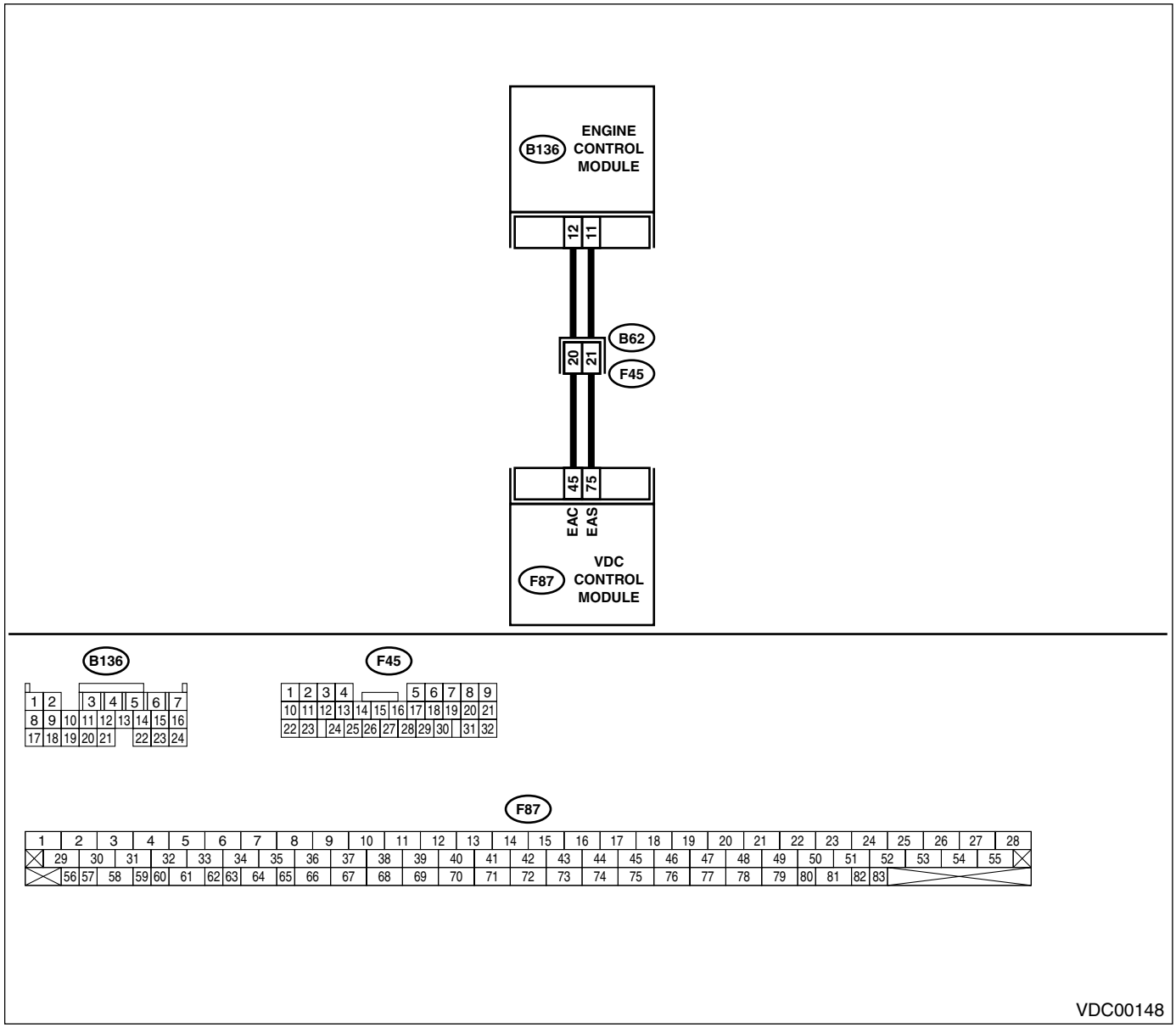
***DIAGNOSIS:***

- EAS communication line is short circuited.

***TROUBLE SYMPTOM:***

- ABS does not operate.
- VDC does not operate.

**WIRING DIAGRAM:**



| | Step | Check | Yes | No |
|---|---|---|---|---|
| 1 | **CHECK GROUND SHORT OF HARNESS.**<br>1) Turn ignition switch to OFF.<br>2) Disconnect connector from VDCCM and ECM.<br>3) Measure resistance between VDCCM and ECM.<br>***Connector & terminal***<br>***(F87) No. 75 — Chassis ground:*** | Is the measured value more than 1 MΩ? | Go to step **2.** | Repair or replace ground short circuit between VDCCM and ECM. |
| 2 | **CHECK INPUT VOLTAGE FROM ECM.**<br>1) Connect connector to VDCCM.<br>2) Turn ignition switch to ON.<br>3) Measure voltage between ECM and chassis ground.<br>***Connector & terminal***<br>***(B136) No. 11 (+) — Chassis ground (–):*** | Is the measured value within 10 to 15 V? | Go to step **4.** | Go to step **3.** |
| 3 | **CHECK POOR CONTACT IN ECM CONNECTORS.** | Is there poor contact in ECM connector? | Replace ECM. <Ref. to FU(H6DO)-46, Engine Control Module.> | Repair or replace ECM connector. |
| 4 | **ERASE MEMORY.**<br>1) Connect all connectors.<br>2) Erase the memory. | Can the memory be erased? | Go to step **5.** | Replace VDCCM. <Ref. to VDC-8, VDC Control Module (VDCCM).> |
| 5 | **CHECK DIAGNOSTIC TROUBLE CODE.**<br>1) Perform inspection mode.<br>2) Read out the diagnostic trouble code. | Is the same diagnostic trouble code as in the current diagnosis still being output? | Replace ECM. <Ref. to FU(H6DO)-46, Engine Control Module.> | A temporary poor contact. |

## AI: DTC 48 ERRONEOUS COMMUNICATION FROM EGI TO VDC

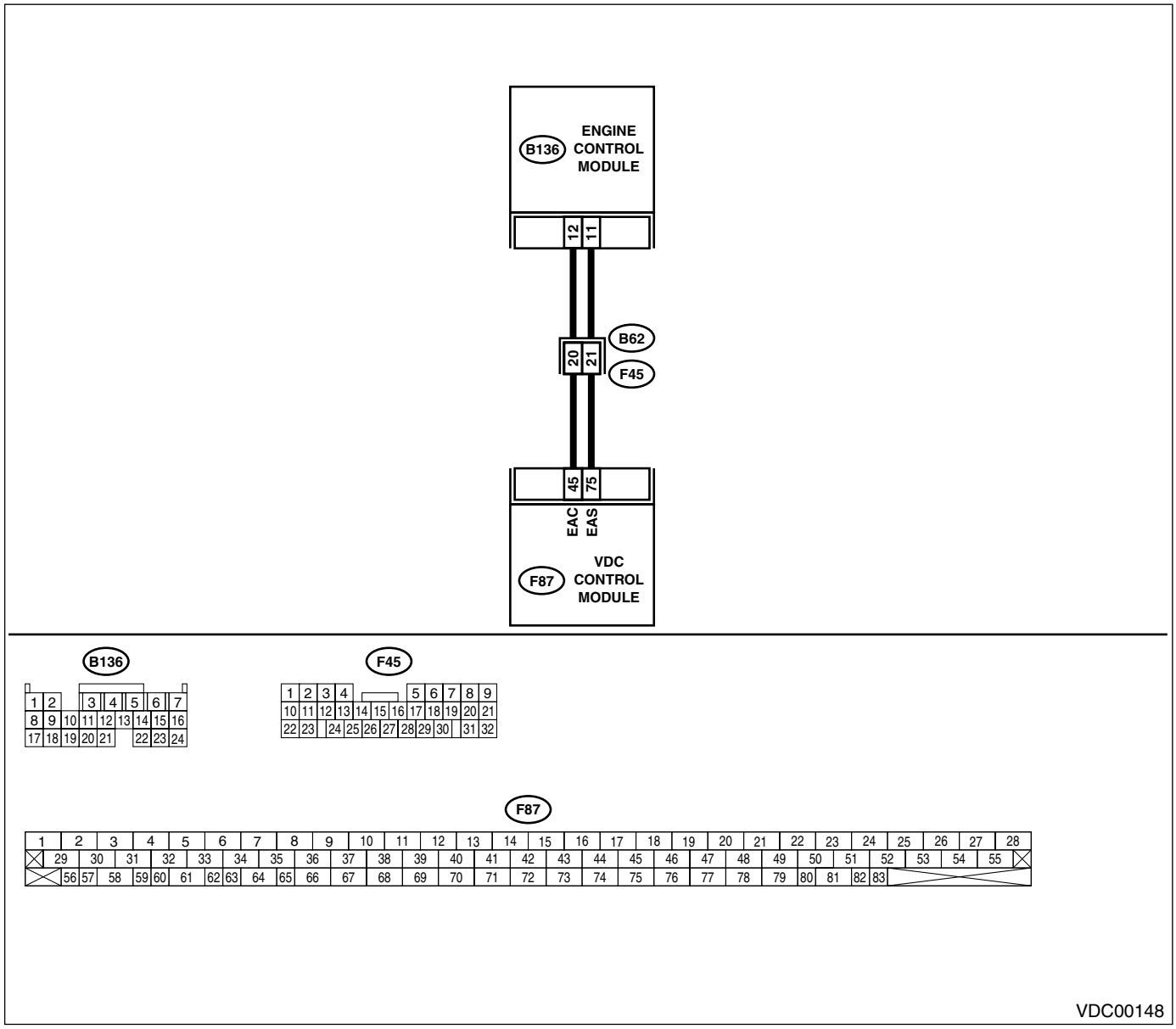
***DIAGNOSIS:***

- EAS communication line is broken or short circuited.
- EAC communication line is broken or short circuited.

***TROUBLE SYMPTOM:***

- ABS does not operate.
- VDC does not operate.

**WIRING DIAGRAM:**




VDC00148

| | Step | Check | Yes | No |
|---|---|---|---|---|
| 1 | **CHECK HARNESS BETWEEN ECM AND VDCCM.**<br>1) Turn ignition switch to OFF.<br>2) Disconnect connector from VDCCM and ECM.<br>3) Measure resistance between VDCCM and ECM.<br>***Connector & terminal***<br>***(F87) No. 75 — (B136) No. 11:***<br>***(F87) No. 45 — (B136) No. 12:*** | Is the measured value less than 0.5 Ω? | Go to step **2.** | Repair or replace open circuit between VDCCM and ECM. |
| 2 | **CHECK BATTERY SHORT OF HARNESS.**<br>1) Turn ignition switch to ON.<br>2) Measure voltage between VDCCM and chassis ground.<br>***Connector & terminal***<br>***(F87) No. 75 — Chassis ground:***<br>***(F87) No. 45 — Chassis ground:*** | Is the measured value less than 0.5 V? | Go to step **3.** | Repair or replace battery short circuit between VDCCM and ECM. |
| 3 | **CHECK INPUT VOLTAGE FROM ECM.**<br>1) Turn ignition switch to OFF.<br>2) Connect connector to VDCCM.<br>3) Turn ignition switch to ON.<br>4) Measure voltage between ECM and chassis ground.<br>***Connector & terminal***<br>***(B136) No. 11 (+) — Chassis ground (–):***<br>***(B136) No. 12 (+) — Chassis ground (–):*** | Is the measured value within 10 to 15 V? | Go to step **5.** | Go to step **4.** |
| 4 | **CHECK POOR CONTACT IN ECM CONNECTORS.** | Is there poor contact in ECM connector? | Replace ECM. <Ref. to FU(H6DO)-46, Engine Control Module.> | Repair or replace ECM connector. |
| 5 | **ERASE MEMORY.**<br>1) Connect all connectors.<br>2) Erase the memory. | Can the memory be erased? | Go to step **6.** | Replace VDCCM. <Ref. to VDC-8, VDC Control Module (VDCCM).> |
| 6 | **CHECK DIAGNOSTIC TROUBLE CODE.**<br>1) Perform inspection mode.<br>2) Read out the diagnostic trouble code. | Is the same diagnostic trouble code as in the current diagnosis still being output? | Replace ECM. <Ref. to FU(H6DO)-46, Engine Control Module.> | A temporary poor contact. |

## AJ:DTC 49 ABNORMAL ENGINE SPEED SIGNAL

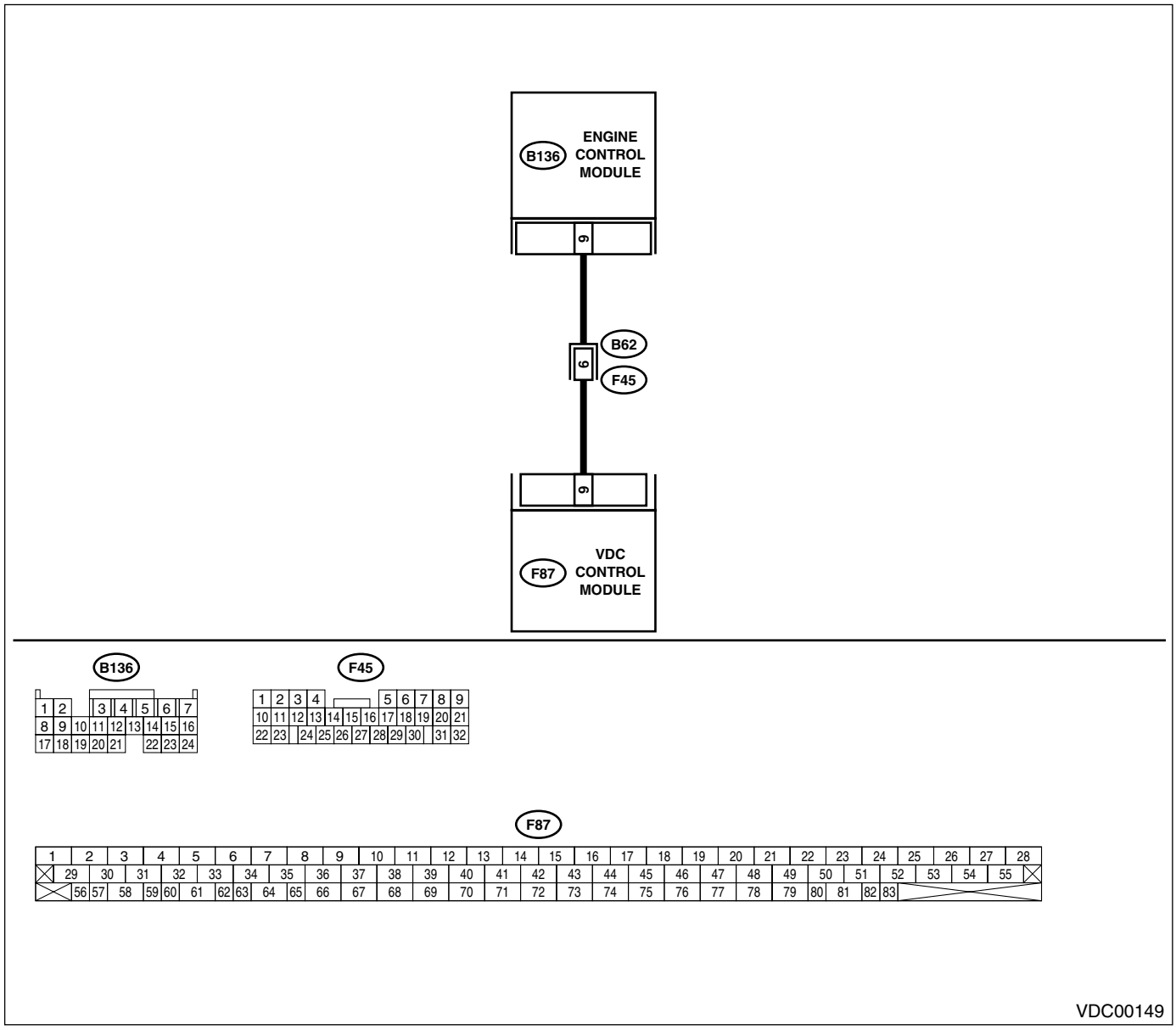
***DIAGNOSIS:***

- Engine speed signal line is broken or short circuited.

***TROUBLE SYMPTOM:***

- VDC does not operate.

**WIRING DIAGRAM:**



| | Step | Check | Yes | No |
|---|---|---|---|---|
| 1 | **CHECK TACHOMETER OPERATION IN COMBINATION METER.** | Does tachometer operate normally? | Go to step **2.** | Repair tachometer. |
| 2 | **CHECK HARNESS BETWEEN VDCCM AND ECM.**<br>1) Turn ignition switch to OFF.<br>2) Disconnect connector from VDCCM and ECM.<br>3) Measure resistance between VDCCM connector and ECM.<br>***Connector & terminal***<br>***(F87) No. 9 — (B136) No. 9:*** | Is the measured value less than 0.5 Ω? | Go to step **3.** | Repair harness connector between VDCCM and ECM. |
| 3 | **CHECK POOR CONTACT IN CONNECTORS.** | Is there poor contact in connectors between VDCCM and ECM? | Repair connector. | Go to step **4.** |
| 4 | **CHECK VDCCM.**<br>1) Connect all connectors.<br>2) Erase the memory.<br>3) Perform inspection mode.<br>4) Read out the diagnostic trouble code. | Is the same diagnostic trouble code as in the current diagnosis still being output? | Replace VDCCM. <Ref. to VDC-8, VDC Control Module (VDCCM).> | Go to step **5.** |
| 5 | **CHECK ANY OTHER DIAGNOSTIC TROUBLE CODES APPEARANCE.** | Are other diagnostic trouble codes being output? | Proceed with the diagnosis corresponding to the diagnostic trouble code. | A temporary poor contact. |

## AK:DTC 51 VALVE RELAY

***DIAGNOSIS:***

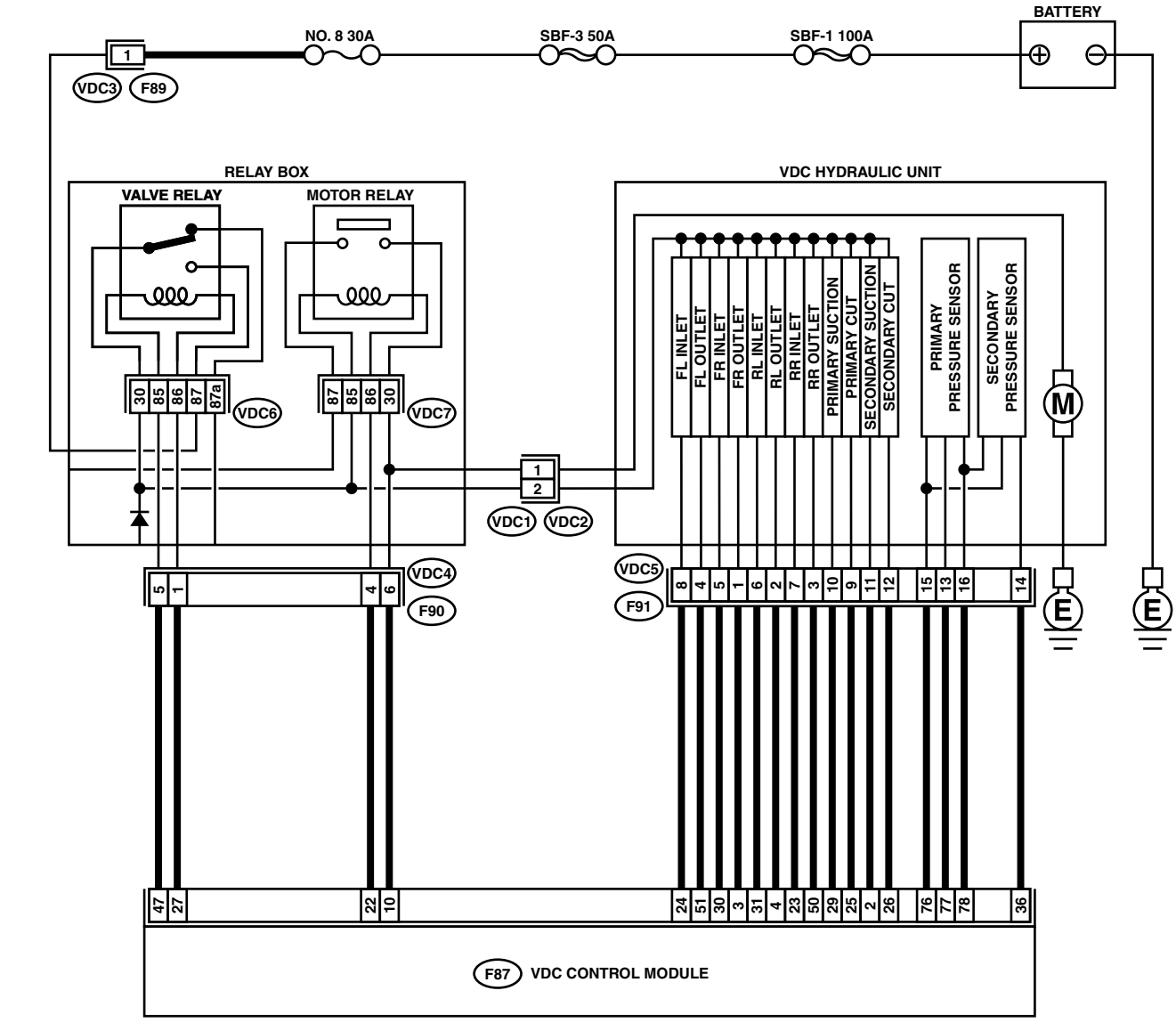
- Faulty valve relay

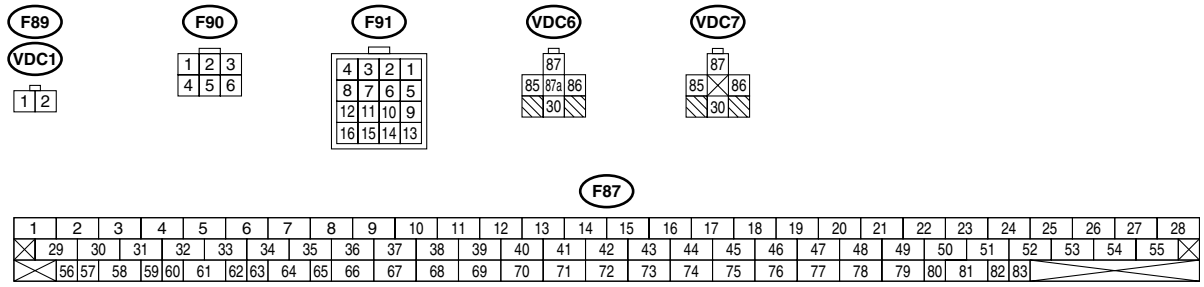
NOTE:
When DTC 74 inspection is carried out, DTC 51 is memorized.

***TROUBLE SYMPTOM:***

- ABS does not operate.
- VDC does not operate.

**WIRING DIAGRAM:**




VDC00150

| | Step | Check | Yes | No |
|---|---|---|---|---|
| 1 | **CHECK RESISTANCE OF VALVE RELAY.**<br>1) Turn ignition switch to OFF.<br>2) Remove valve relay from relay box.<br>3) Measure resistance between valve relay terminals.<br>***Terminals***<br>***No. 85 — No. 86:*** | Is the measured value within 93 to 113 Ω? | Go to step **2.** | Replace valve relay. |
| 2 | **CHECK CONTACT POINT OF VALVE RELAY.**<br>1) Connect battery to valve relay terminals No. 85 and No. 86.<br>2) Measure resistance between valve relay terminals.<br>***Terminals***<br>***No. 30 — No. 87:*** | Is the measured value less than 0.5 Ω? | Go to step **3.** | Replace valve relay. |
| 3 | **CHECK CONTACT POINT OF VALVE RELAY.**<br>Measure resistance between valve relay terminals.<br>***Terminals***<br>***No. 30 — No. 87a:*** | Is the measured value more than 1 MΩ? | Go to step **4.** | Replace valve relay. |
| 4 | **CHECK CONTACT POINT OF VALVE RELAY.**<br>1) Disconnect battery from valve relay terminals.<br>2) Measure resistance between valve relay terminals.<br>***Terminals***<br>***No. 30 — No. 87:*** | Is the measured value more than 1 MΩ? | Go to step **5.** | Replace valve relay. |
| 5 | **CHECK CONTACT POINT OF VALVE RELAY.**<br>Measure resistance between valve relay terminals.<br>***Terminals***<br>***No. 30 — No. 87a:*** | Is the measured value less than 0.5 Ω? | Go to step **6.** | Replace valve relay. |
| 6 | **CHECK SHORT OF VALVE RELAY.**<br>Measure resistance between valve relay terminals.<br>***Terminals***<br>***No. 86 — No. 87:***<br>***No. 86 — No. 87a:*** | Is the measured value more than 1 MΩ? | Go to step **7.** | Replace valve relay. |
| 7 | **CHECK POWER SUPPLY FOR VALVE RELAY.**<br>1) Disconnect connector (F89) from relay box.<br>2) Turn ignition switch to ON.<br>3) Measure voltage between relay box connector and chassis ground.<br>***Connector & terminal***<br>***(F89) No. 1 (+) — Chassis ground (–):*** | Is the measured value within 10 to 15 V? | Go to step **8.** | Repair harness between battery and relay box connector. Check fuse No. 8. |
| 8 | **CHECK OPEN CIRCUIT AND GROUND SHORT IN POWER SUPPLY CIRCUIT OF RELAY BOX.**<br>1) Disconnect connector (VDC1) from VDCH/U.<br>2) Connect connector (F89) to relay box.<br>3) Turn ignition switch to ON.<br>4) Measure voltage of relay box.<br>***Connector & terminal***<br>***(VDC6) No. 87 — Chassis ground:*** | Is the measured value within 10 to 15 V? | Go to step **9.** | Replace relay box and check fuse No. 8. |

| | Step | Check | Yes | No |
|---|---|---|---|---|
| 9 | **CHECK OPEN CIRCUIT IN CONTROL CIRCUIT OF RELAY BOX.**<br>1) Turn ignition switch to OFF.<br>2) Disconnect connector (F90) from relay box.<br>3) Measure resistance between relay box connector and valve relay installing point.<br>***Connector & terminal***<br>***(VDC4) No. 5 — (VDC6) No. 85:***<br>***(VDC4) No. 1 — (VDC6) No. 86:*** | Is the measured value less than 0.5 Ω? | Go to step **10.** | Replace relay box. |
| 10 | **CHECK GROUND SHORT IN CONTACT POINT CIRCUIT OF RELAY BOX.**<br>Measure resistance between relay box connector and chassis ground.<br>***Connector & terminal***<br>***(VDC4) No. 5 — Chassis ground:***<br>***(VDC4) No. 1 — Chassis ground:*** | Is the measured value more than 1 MΩ? | Go to step **11.** | Replace relay box and check fuse SBF6. |
| 11 | **CHECK OPEN CIRCUIT IN CONTROL SYSTEM HARNESS OF VALVE RELAY.**<br>1) Turn ignition switch to OFF.<br>2) Disconnect connector from VDCCM.<br>3) Measure resistance between VDCCM connector and relay box connector.<br>***Connector & terminal***<br>***(F87) No. 47 — (F90) No. 5:***<br>***(F87) No. 27 — (F90) No. 1:*** | Is the measured value less than 0.5 Ω? | Go to step **12.** | Repair harness between VDCCM and relay box. |
| 12 | **CHECK GROUND SHORT IN CONTROL SYSTEM HARNESS OF VALVE RELAY.**<br>Measure resistance between VDCCM connector and chassis ground.<br>***Connector & terminal***<br>***(F87) No. 47 — Chassis ground:***<br>***(F87) No. 27 — Chassis ground:*** | Is the measured value more than 1 MΩ? | Go to step **13.** | Repair harness between VDCCM and relay box. |
| 13 | **CHECK OPEN CIRCUIT IN CONTACT POINT CIRCUIT OF RELAY BOX.**<br>Measure resistance between VDCH/U connector and valve relay installing point.<br>***Connector & terminal***<br>***(VDC1) No. 2 — (VDC6) No. 30:*** | Is the measured value less than 0.5 Ω? | Go to step **14.** | Replace relay box. |
| 14 | **CHECK GROUND SHORT IN CONTACT POINT CIRCUIT OF RELAY BOX.**<br>Measure resistance between VDCH/U connector and chassis ground.<br>***Connector & terminal***<br>***(VDC1) No. 2 — Chassis ground:*** | Is the measured value more than 1 MΩ? | Go to step **15.** | Replace relay box and check fuse No. 8. |
| 15 | **CHECK RESISTANCE OF INLET AND CUT SOLENOID VALVES.**<br>1) Disconnect connector from VDCH/U.<br>2) Measure resistance between VDCH/U connector terminals.<br>***Connector & terminal***<br>***(VDC5) No. 8 — (VDC2) No. 2:***<br>***(VDC5) No. 5 — (VDC2) No. 2:***<br>***(VDC5) No. 6 — (VDC2) No. 2:***<br>***(VDC5) No. 7 — (VDC2) No. 2:***<br>***(VDC5) No. 9 — (VDC2) No. 2:***<br>***(VDC5) No. 12 — (VDC2) No. 2:*** | Is the measured value within 8.04 to 9.04 Ω? | Go to step **16.** | Replace VDCH/U. <Ref. to VDC-8, VDC Control Module (VDCCM).> |

| | Step | Check | Yes | No |
|---|---|---|---|---|
| 16 | **CHECK RESISTANCE OF OUTLET SOLENOID VALVE.**<br>Measure resistance between VDCH/U connector terminals.<br>***Connector & terminal***<br>***(VDC5) No. 4 — (VDC2) No. 2:***<br>***(VDC5) No. 1 — (VDC2) No. 2:***<br>***(VDC5) No. 2 — (VDC2) No. 2:***<br>***(VDC5) No. 3 — (VDC2) No. 2:***<br>***(VDC5) No. 10 — (VDC2) No. 2:***<br>***(VDC5) No. 11 — (VDC2) No. 2:*** | Is the measured value within 4.04 to 4.54 Ω? | Go to step **17.** | Replace VDCH/U. <Ref. to VDC-8, VDC Control Module (VDCCM).> |
| 17 | **CHECK GROUND SHORT OF SOLENOID VALVE.**<br>Measure resistance between VDCH/U connector and chassis ground.<br>***Connector & terminal***<br>***(VDC2) No. 2 — Chassis ground:*** | Is the measured value more than 1 MΩ? | Go to step **18.** | Replace VDCH/U and check all fuses. <Ref. to VDC-8, VDC Control Module (VDCCM).> |
| 18 | **CHECK GROUND SHORT OF HARNESS.**<br>1) Turn ignition switch to OFF.<br>2) Measure resistance between VDCCM connector and chassis ground.<br>***Connector & terminal***<br>***(F87) No. 30 — Chassis ground:***<br>***(F87) No. 24 — Chassis ground:***<br>***(F87) No. 23 — Chassis ground:***<br>***(F87) No. 31 — Chassis ground:***<br>***(F87) No. 26 — Chassis ground:***<br>***(F87) No. 25 — Chassis ground:***<br>***(F87) No. 3 — Chassis ground:***<br>***(F87) No. 51 — Chassis ground:***<br>***(F87) No. 50 — Chassis ground:***<br>***(F87) No. 4 — Chassis ground:***<br>***(F87) No. 2 — Chassis ground:***<br>***(F87) No. 29 — Chassis ground:*** | Is the measured value more than 1 MΩ? | Go to step **19.** | Repair harness between VDCH/U and VDCCM. |
| 19 | **CHECK HARNESS/CONNECTOR BETWEEN VDCCM AND VDCH/U.**<br>1) Connect connector (F91) to VDCH/U.<br>2) Measure resistance between VDCCM connector and VDCH/U<br>***Connector & terminal***<br>***(F87) No. 30 — (VDC2) No. 2:***<br>***(F87) No. 24 — (VDC2) No. 2:***<br>***(F87) No. 23 — (VDC2) No. 2:***<br>***(F87) No. 31 — (VDC2) No. 2:***<br>***(F87) No. 26 — (VDC2) No. 2:***<br>***(F87) No. 25 — (VDC2) No. 2:*** | Is the measured value within 8.0 to 10.0 Ω? | Go to step **20.** | Repair harness/ connector between VDCH/U and VDCCM. |
| 20 | **CHECK HARNESS/CONNECTOR BETWEEN VDCCM AND VDCH/U.**<br>Measure resistance between VDCCM connector terminals.<br>***Connector & terminal***<br>***(F87) No. 3 — (VDC2) No. 2:***<br>***(F87) No. 51 — (VDC2) No. 2:***<br>***(F87) No. 50 — (VDC2) No. 2:***<br>***(F87) No. 4 — (VDC2) No. 2:***<br>***(F87) No. 2 — (VDC2) No. 2:***<br>***(F87) No. 29 — (VDC2) No. 2:*** | Is the measured value within 4.0 to 6.0 Ω? | Go to step **21.** | Repair harness/ connector between VDCH/U and VDCCM. |
| 21 | **CHECK POOR CONTACT IN CONNECTORS.** | Is there poor contact in connector between VDCCM and VDCH/U? | Repair connector. | Go to step **22.** |

| Step | | Check | Yes | No |
|---|---|---|---|---|
| 22 | **CHECK VDCCM.**<br>1) Connect all connectors.<br>2) Erase the memory.<br>3) Perform inspection mode.<br>4) Read out the diagnostic trouble code. | Is the same diagnostic trouble code as in the current diagnosis still being output? | Replace VDCCM. <Ref. to VDC-8, VDC Control Module (VDCCM).> | Go to step **23.** |
| 23 | **CHECK ANY OTHER DIAGNOSTIC TROUBLE CODES APPEARANCE.** | Are other diagnostic trouble codes being output? | Proceed with the diagnosis corresponding to the diagnostic trouble code. | A temporary poor contact. |

**MEMO:**

## AL:DTC 51 VALVE RELAY ON FAILURE

***DIAGNOSIS:***

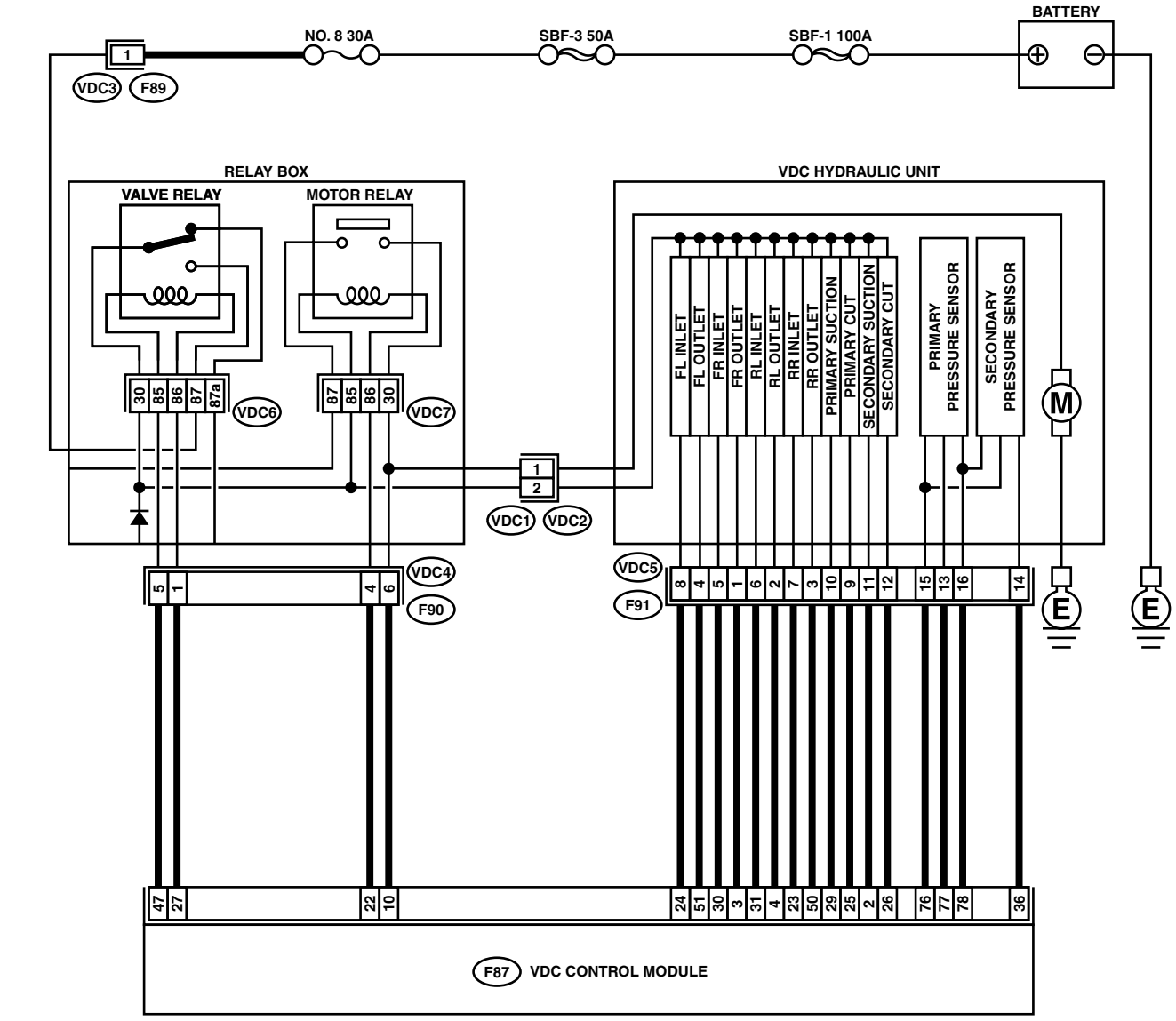
- Faulty valve relay

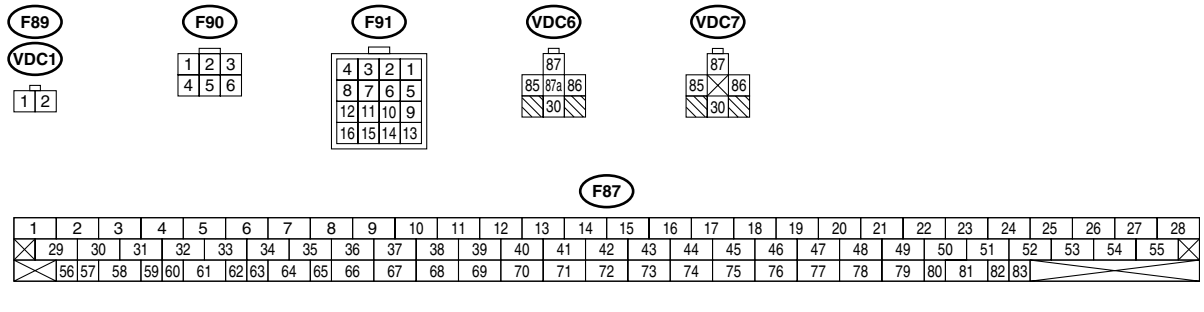
NOTE:
When DTC 74 inspection is carried out, DTC 51 is memorized.

***TROUBLE SYMPTOM:***

- ABS does not operate.
- VDC does not operate.

**WIRING DIAGRAM:**




VDC00150

| | Step | Check | Yes | No |
|---|---|---|---|---|
| 1 | **CHECK CONTACT POINT OF VALVE RELAY.**<br>1) Turn ignition switch to OFF.<br>2) Remove valve relay from relay box.<br>3) Connect battery to valve relay terminals No. 85 and No. 86.<br>4) Measure resistance between valve relay terminals.<br>***Terminals***<br>***No. 30 — No. 87:*** | Is the measured value less than 0.5 Ω? | Go to step **2.** | Replace valve relay. |
| 2 | **CHECK CONTACT POINT OF VALVE RELAY.**<br>Measure resistance between valve relay terminals.<br>***Terminals***<br>***No. 30 — No. 87a:*** | Is the measured value more than 1 MΩ? | Go to step **3.** | Replace valve relay. |
| 3 | **CHECK CONTACT POINT OF VALVE RELAY.**<br>1) Disconnect battery from valve relay terminals.<br>2) Measure resistance between valve relay terminals.<br>***Terminals***<br>***No. 30 — No. 87:*** | Is the measured value more than 1 MΩ? | Go to step **4.** | Replace valve relay. |
| 4 | **CHECK CONTACT POINT OF VALVE RELAY.**<br>Measure resistance between valve relay terminals.<br>***Terminals***<br>***No. 30 — No. 87a:*** | Is the measured value less than 0.5 Ω? | Go to step **5.** | Replace valve relay. |
| 5 | **CHECK SHORT OF VALVE RELAY.**<br>Measure resistance between valve relay terminals.<br>***Terminals***<br>***No. 86 — No. 87:***<br>***No. 86 — No. 87a:*** | Is the measured value more than 1 MΩ? | Go to step **6.** | Replace valve relay. |
| 6 | **CHECK BATTERY SHORT IN CONTACT POINT CIRCUIT OF RELAY BOX.**<br>1) Disconnect connector (F90) from relay box.<br>2) Measure voltage between relay box connector and chassis ground.<br>***Connector & terminal***<br>***(VDC4) No. 5 (+) — Chassis ground (–):***<br>***(VDC4) No. 1 (+) — Chassis ground (–):*** | Is the measured value less than 1 V? | Go to step **7.** | Replace relay box. Check fuse No. 8 and SBF3. |
| 7 | **CHECK BATTERY SHORT IN CONTACT POINT CIRCUIT OF RELAY BOX.**<br>1) Turn ignition switch to ON.<br>2) Measure voltage between VDCH/U connector and chassis ground.<br>***Connector & terminal***<br>***(VDC4) No. 5 (+) — Chassis ground (–):***<br>***(VDC4) No. 1 (+) — Chassis ground (–):*** | Is the measured value less than 1 V? | Go to step **8.** | Replace relay box. Check fuse No. 8 and SBF3. |

| | Step | Check | Yes | No |
|---|---|---|---|---|
| 8 | **CHECK BATTERY SHORT IN CONTROL SYSTEM HARNESS OF VALVE RELAY.**<br>1) Turn ignition switch to OFF.<br>2) Disconnect connector from VDCCM.<br>3) Disconnect connector from VDCH/U.<br>4) Measure voltage between VDCCM connector and chassis ground.<br>***Connector & terminal***<br>***(F87) No. 27 (+) — Chassis ground (–):***<br>***(F87) No. 47 (+) — Chassis ground (–):*** | Is the measured value less than 1 V? | Go to step **9.** | Repair harness between VDCCM and relay box and check all fuses. |
| 9 | **CHECK BATTERY SHORT IN CONTROL SYSTEM HARNESS OF VALVE RELAY.**<br>1) Turn ignition switch to ON.<br>2) Measure voltage between VDCCM connector and chassis ground.<br>***Connector & terminal***<br>***(F87) No. 27 (+) — Chassis ground (–):***<br>***(F87) No. 47 (+) — Chassis ground (–):*** | Is the measured value less than 1 V? | Go to step **10.** | Repair harness between VDCCM and relay box and check all fuses. |
| 10 | **CHECK BATTERY SHORT IN CONTACT POINT CIRCUIT OF RELAY BOX.**<br>1) Disconnect connector VDC1 from relay box.<br>2) Measure voltage between VDCH/U connector and chassis ground.<br>***Connector & terminal***<br>***(VDC1) No. 2 (+) — Chassis ground (–):*** | Is the measured value less than 1 V? | Go to step **11.** | Replace relay box. |
| 11 | **CHECK BATTERY SHORT IN CONTACT POINT CIRCUIT OF RELAY BOX.**<br>1) Turn ignition switch to ON.<br>2) Measure voltage between VDCH/U connector and chassis ground.<br>***Connector & terminal***<br>***(VDC1) No. 2 (+) — Chassis ground (–):*** | Is the measured value less than 1 V? | Go to step **12.** | Replace relay box. |
| 12 | **CHECK BATTERY SHORT OF SOLENOID VALVE.**<br>1) Turn ignition switch to OFF.<br>2) Measure voltage between VDCH/U connector and chassis ground.<br>***Connector & terminal***<br>***(VDC2) No. 2 (+) — Chassis ground (–):*** | Is the measured value less than 1 V? | Go to step **13.** | Replace VDCH/U and check all fuses. <Ref. to VDC-8, VDC Control Module (VDCCM).> |
| 13 | **CHECK BATTERY SHORT OF SOLENOID VALVE.**<br>1) Turn ignition switch to ON.<br>2) Measure voltage between VDCH/U connector and chassis ground.<br>***Connector & terminal***<br>***(VDC2) No. 2 (+) — Chassis ground (–):*** | Is the measured value less than 1 V? | Go to step **14.** | Replace VDCH/U and check all fuses. <Ref. to VDC-8, VDC Control Module (VDCCM).> |

| | Step | Check | Yes | No |
|---|---|---|---|---|
| 14 | **CHECK BATTERY SHORT OF HARNESS.**<br>1) Turn ignition switch to OFF.<br>2) Measure voltage between VDCCM connector and chassis ground.<br>***Connector & terminal***<br>***(F87) No. 30 (+) — Chassis ground (–):***<br>***(F87) No. 24 (+) — Chassis ground (–):***<br>***(F87) No. 23 (+) — Chassis ground (–):***<br>***(F87) No. 31 (+) — Chassis ground (–):***<br>***(F87) No. 26 (+) — Chassis ground (–):***<br>***(F87) No. 25 (+) — Chassis ground (–):***<br>***(F87) No. 3 (+) — Chassis ground (–):***<br>***(F87) No. 51 (+) — Chassis ground (–):***<br>***(F87) No. 50 (+) — Chassis ground (–):***<br>***(F87) No. 4 (+) — Chassis ground (–):***<br>***(F87) No. 2 (+) — Chassis ground (–):***<br>***(F87) No. 29 (+) — Chassis ground (–):*** | Is the measured value less than 1 V? | Go to step **15.** | Repair harness between VDCH/U and VDCCM and check all fuses. |
| 15 | **CHECK BATTERY SHORT OF HARNESS.**<br>1) Turn ignition switch to ON.<br>2) Measure voltage between VDCCM connector and chassis ground.<br>***Connector & terminal***<br>***(F87) No. 30 (+) — Chassis ground (–):***<br>***(F87) No. 24 (+) — Chassis ground (–):***<br>***(F87) No. 23 (+) — Chassis ground (–):***<br>***(F87) No. 31 (+) — Chassis ground (–):***<br>***(F87) No. 26 (+) — Chassis ground (–):***<br>***(F87) No. 25 (+) — Chassis ground (–):***<br>***(F87) No. 3 (+) — Chassis ground (–):***<br>***(F87) No. 51 (+) — Chassis ground (–):***<br>***(F87) No. 50 (+) — Chassis ground (–):***<br>***(F87) No. 4 (+) — Chassis ground (–):***<br>***(F87) No. 2 (+) — Chassis ground (–):***<br>***(F87) No. 29 (+) — Chassis ground (–):*** | Is the measured value less than 1 V? | Go to step **16.** | Repair harness between VDCH/U and VDCCM and check all fuses. |
| 16 | **CHECK POOR CONTACT IN CONNECTORS.**<br>Turn ignition switch to OFF. | Is there poor contact in connector between VDCCM and VDCH/U? | Repair connector. | Go to step **17.** |
| 17 | **CHECK VDCCM.**<br>1) Connect all connectors.<br>2) Erase the memory.<br>3) Perform inspection mode.<br>4) Read out the diagnostic trouble code. | Is the same diagnostic trouble code as in the current diagnosis still being output? | Replace VDCCM. <Ref. to VDC-8, VDC Control Module (VDCCM).> | Go to step **18.** |
| 18 | **CHECK ANY OTHER DIAGNOSTIC TROUBLE CODES APPEARANCE.** | Are other diagnostic trouble codes being output? | Proceed with the diagnosis corresponding to the diagnostic trouble code. | A temporary poor contact. |

## AM:DTC 52 MOTOR AND MOTOR RELAY OFF FAILURE

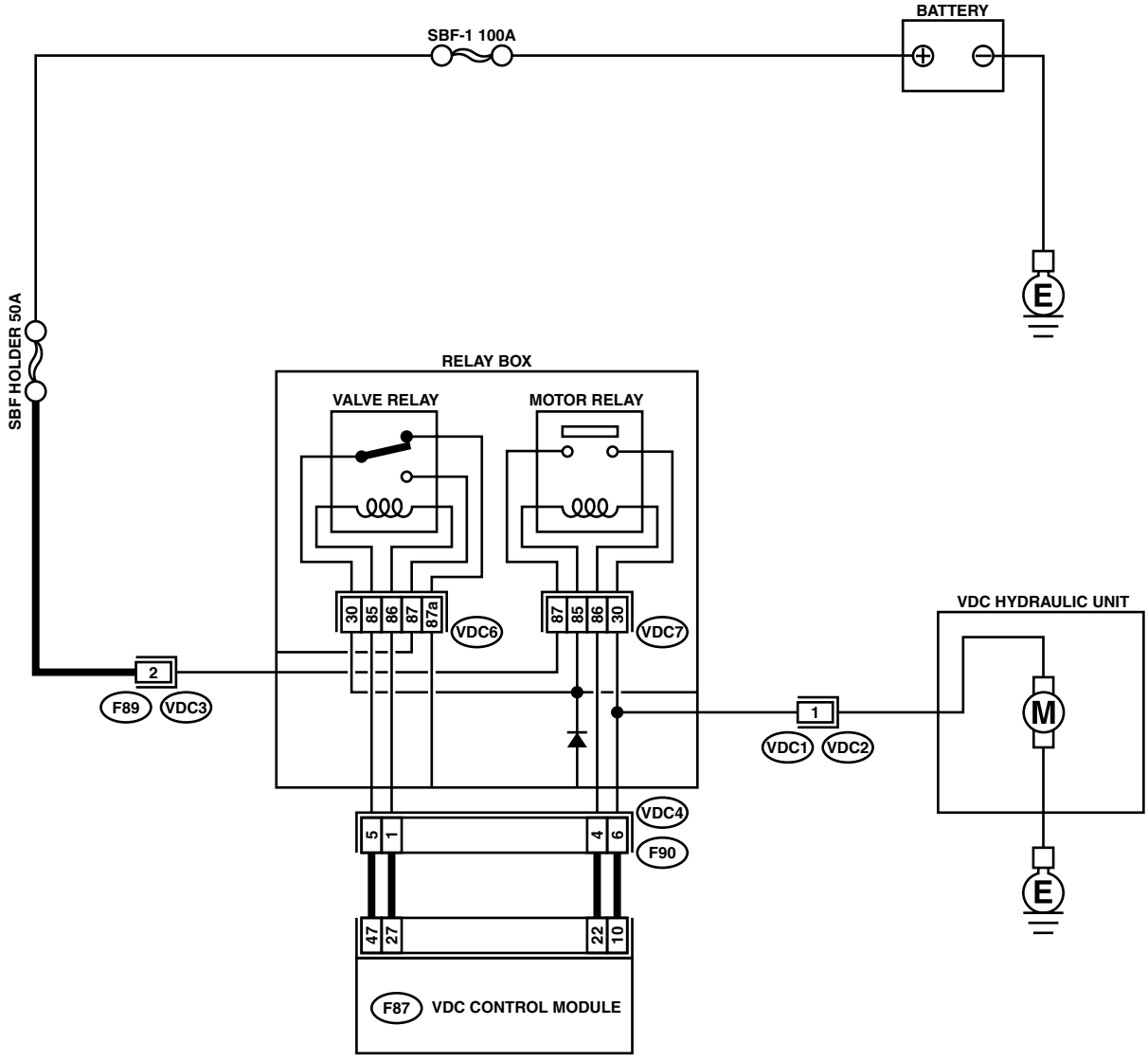
***DIAGNOSIS:***

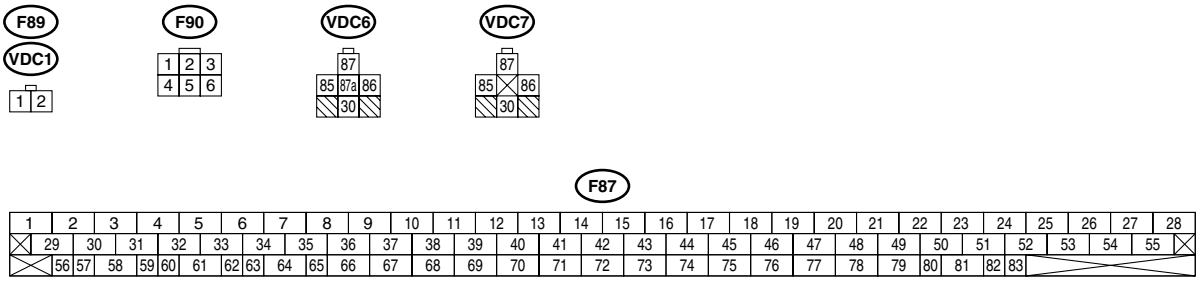
- Faulty motor relay
- Faulty harness connector

***TROUBLE SYMPTOM:***

- ABS does not operate.
- VDC does not operate.

**WIRING DIAGRAM:**




VDC00155

| | Step | Check | Yes | No |
|---|---|---|---|---|
| 1 | **CHECK CONTACT POINT OF MOTOR RELAY.**<br>1) Turn ignition switch to OFF.<br>2) Remove motor relay from relay box.<br>3) Measure resistance between motor relay terminals.<br>***Terminals***<br>***No. 30 — No. 87:*** | Is the measured value more than 1 MΩ? | Go to step **2.** | Replace motor relay. |
| 2 | **CHECK SHORT OF MOTOR RELAY.**<br>Measure resistance between motor relay terminals.<br>***Terminals***<br>***No. 85 — No. 30:***<br>***No. 85 — No. 87:*** | Is the measured value more than 1 MΩ? | Go to step **3.** | Replace motor relay. |
| 3 | **CHECK GROUND SHORT IN CIRCUIT OF RELAY BOX.**<br>1) Disconnect connector (F90) from relay box.<br>2) Measure resistance between relay box connector unit and chassis ground.<br>***Connector & terminal***<br>***(VDC4) No. 4 — Chassis ground:*** | Is the measured value more than 1 MΩ? | Go to step **4.** | Replace relay box. |
| 4 | **CHECK BATTERY SHORT IN CIRCUIT OF RELAY BOX.**<br>Measure voltage between relay box connector and chassis ground.<br>***Connector & terminal***<br>***(VDC4) No. 6 (+) — Chassis ground (–):*** | Is the measured value less than 1 V? | Go to step **5.** | Replace relay box. |
| 5 | **CHECK BATTERY SHORT IN CIRCUIT OF RELAY BOX.**<br>1) Turn ignition switch to ON.<br>2) Measure voltage between relay box connector and chassis ground.<br>***Connector & terminal***<br>***(VDC4) No. 6 (+) — Chassis ground (–):*** | Is the measured value less than 1 V? | Go to step **6.** | Replace relay box. |
| 6 | **CHECK GROUND SHORT IN HARNESS BETWEEN RELAY BOX AND VDCCM.**<br>1) Turn ignition switch to OFF.<br>2) Disconnect connector from VDCCM.<br>3) Measure resistance between VDCCM connector and chassis ground.<br>***Connector & terminal***<br>***(F87) No. 22 — Chassis ground:*** | Is the measured value more than 1 MΩ? | Go to step **7.** | Repair harness between VDCCM and relay box. Check fuse SBF holder. |
| 7 | **CHECK BATTERY SHORT IN HARNESS BETWEEN RELAY BOX AND VDCCM.**<br>Measure voltage between VDCCM connector and chassis ground.<br>***Connector & terminal***<br>***(F87) No. 10 (+) — Chassis ground (–):*** | Is the measured value less than 1 V? | Go to step **8.** | Repair harness between VDCCM and relay box. |
| 8 | **CHECK BATTERY SHORT IN HARNESS BETWEEN RELAY BOX AND VDCCM.**<br>1) Turn ignition switch to ON.<br>2) Measure voltage between VDCCM connector and chassis ground.<br>***Connector & terminal***<br>***(F87) No. 10 (+) — Chassis ground (–):*** | Is the measured value less than 1 V? | Go to step **9.** | Repair harness between VDCCM and relay box. |
| 9 | **CHECK POOR CONTACT IN CONNECTORS.**<br>Turn ignition switch to OFF. | Is there poor contact in connector between VDCH/U, relay box and VDCCM? | Repair connector. | Go to step **10.** |

| | Step | Check | Yes | No |
|---|---|---|---|---|
| 10 | **CHECK VDCCM.**<br>1) Connect all connectors.<br>2) Erase the memory.<br>3) Perform inspection mode.<br>4) Read out the diagnostic trouble code. | Is the same diagnostic trouble code as in the current diagnosis still being output? | Replace VDCCM. <Ref. to VDC-8, VDC Control Module (VDCCM).> | Go to step **11.** |
| 11 | **CHECK ANY OTHER DIAGNOSTIC TROUBLE CODES APPEARANCE.** | Are other diagnostic trouble codes being output? | Proceed with the diagnosis corresponding to the diagnostic trouble code. | A temporary poor contact. |

**MEMO:**

## AN:DTC 52 MOTOR AND MOTOR RELAY ON FAILURE

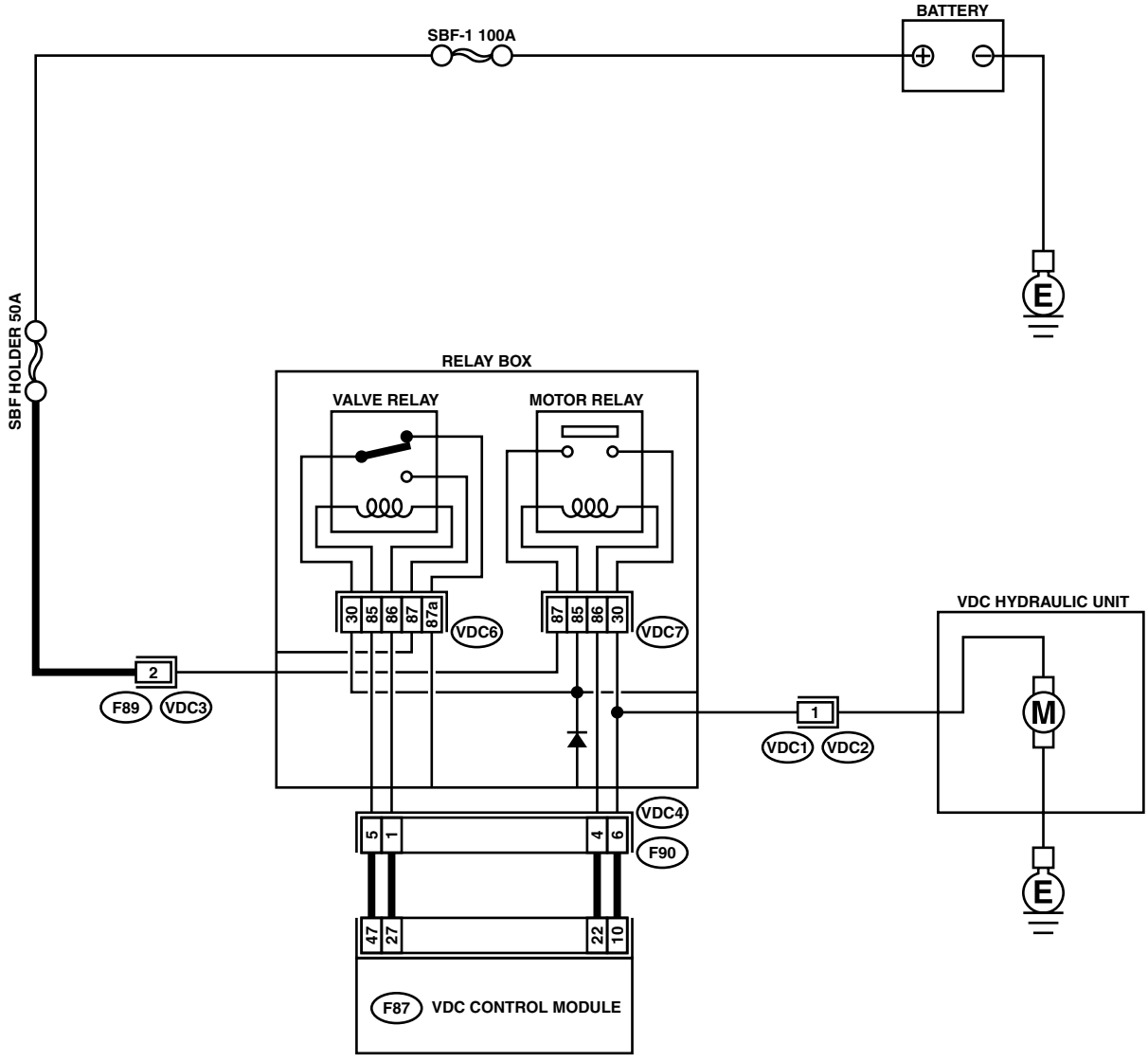
***DIAGNOSIS:***

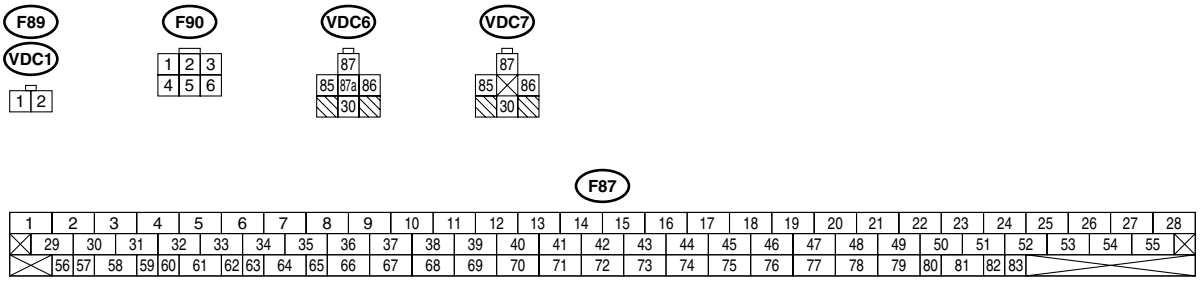
- Faulty motor relay
- Faulty harness connector

***TROUBLE SYMPTOM:***

- ABS does not operate.
- VDC does not operate.

**WIRING DIAGRAM:**




VDC00155

| | Step | Check | Yes | No |
|---|---|---|---|---|
| 1 | **CHECK RESISTANCE OF MOTOR RELAY.**<br>1) Turn ignition switch to OFF.<br>2) Remove motor relay from relay box.<br>3) Measure resistance between motor relay terminals.<br>***Terminals***<br>***No. 85 — No. 86:*** | Is the measured value within 70 to 90 Ω? | Go to step **2.** | Replace motor relay. |
| 2 | **CHECK CONTACT POINT OF MOTOR RELAY.**<br>1) Connect battery to motor relay terminals No. 85 and No. 86.<br>2) Measure resistance between motor relay terminals.<br>***Terminals***<br>***No. 30 — No. 87:*** | Is the measured value less than 0.5 Ω? | Go to step **3.** | Replace motor relay. |
| 3 | **CHECK SHORT OF MOTOR RELAY.**<br>Measure resistance between motor relay terminals.<br>***Terminals***<br>***No. 85 — No. 30:***<br>***No. 85 — No. 87:*** | Is the measured value more than 1 MΩ? | Go to step **4.** | Replace motor relay. |
| 4 | **CHECK INPUT VOLTAGE OF RELAY BOX.**<br>1) Disconnect connector (F89) from relay box.<br>2) Disconnect connector from VDCCM.<br>3) Turn ignition switch to ON.<br>4) Measure voltage between relay box connector and chassis ground.<br>***Connector & terminal***<br>***(F89) No. 2 (+) — Chassis ground (–):*** | Is the measured value within 10 to 15 V? | Go to step **5.** | Repair harness/ connector between battery and relay box, and check fuse SBF holder. |
| 5 | **CHECK INPUT VOLTAGE OF MOTOR RELAY.**<br>1) Turn ignition switch to OFF.<br>2) Connect connector (F89) to relay box.<br>3) Turn ignition switch to ON.<br>4) Measure voltage between relay box and chassis ground.<br>***Connector & terminal***<br>***(VDC7) No. 87 (+) — Chassis ground (–):*** | Is the measured value within 10 to 15 V? | Go to step **6.** | Replace relay box. |
| 6 | **CHECK OPEN CIRCUIT IN CONTACT POINT CIRCUIT OF RELAY BOX.**<br>1) Turn ignition switch to OFF.<br>2) Disconnect connectors (VDC2, F90) from relay box.<br>3) Measure resistance between relay box connector unit and motor relay installing portion.<br>***Connector & terminal***<br>***(VDC1) No. 1 — (VDC7) No. 30:*** | Is the measured value less than 0.5 Ω? | Go to step **7.** | Replace relay box. |
| 7 | **CHECK OPEN CIRCUIT IN MONITOR SYSTEM CIRCUIT OF RELAY BOX.**<br>Measure resistance between relay box connector and motor relay installing point.<br>***Connector & terminal***<br>***(VDC4) No. 6 — (VDC7) No. 30:*** | Is the measured value less than 0.5 Ω? | Go to step **8.** | Replace relay box. |

| Step | | Check | Yes | No |
|---|---|---|---|---|
| 8 | **CHECK OPEN CIRCUIT IN CONTROL CIRCUIT OF RELAY BOX.**<br>Measure resistance between motor relay installing point and relay box connector.<br>***Connector & terminal***<br>***(VDC4) No. 4 — (VDC7) No. 86:*** | Is the measured value less than 0.5 Ω? | Go to step **9.** | Replace relay box. |
| 9 | **CHECK OPEN CIRCUIT IN CONTROL CIRCUIT OF RELAY BOX.**<br>1) Remove valve relay from relay box.<br>2) Measure resistance between motor relay installing point and valve relay installing point.<br>***Connector & terminal***<br>***(VDC7) No. 85 — (VDC6) No. 30:*** | Is the measured value less than 0.5 Ω? | Go to step **10.** | Replace relay box. |
| 10 | **CHECK GROUND SHORT IN CIRCUIT OF RELAY BOX.**<br>Measure resistance between relay box connector and chassis ground.<br>***Connector & terminal***<br>***(VDC4) No. 4 — Chassis ground:***<br>***(VDC4) No. 6 — Chassis ground:*** | Is the measured value more than 1 MΩ? | Go to step **11.** | Replace relay box. |
| 11 | **CHECK BATTERY SHORT IN CIRCUIT OF RELAY BOX.**<br>Measure voltage between relay box connector and chassis ground.<br>***Connector & terminal***<br>***(VDC4) No. 6 (+) — Chassis ground (–):*** | Is the measured value less than 1 V? | Go to step **12.** | Replace relay box. |
| 12 | **CHECK BATTERY SHORT IN CIRCUIT OF RELAY BOX.**<br>1) Turn ignition switch to ON.<br>2) Measure voltage between relay box connector and chassis ground.<br>***Connector & terminal***<br>***(VDC4) No. 6 (+) — Chassis ground (–):*** | Is the measured value less than 1 V? | Go to step **13.** | Replace relay box. |
| 13 | **CHECK OPEN CIRCUIT IN RELAY CONTROL SYSTEM HARNESS.**<br>Measure resistance between VDCCM connector and relay box connector.<br>***Connector & terminal***<br>***(F87) No. 22 — (F90) No. 4:***<br>***(F87) No. 10 — (F90) No. 6:*** | Is the measured value less than 0.5 Ω? | Go to step **14.** | Repair harness connector between VDCCM and relay box. |
| 14 | **CHECK GROUND SHORT IN HARNESS BETWEEN RELAY BOX AND VDCCM.**<br>Measure resistance between VDCCM connector and chassis ground.<br>***Connector & terminal***<br>***(F87) No. 22 — Chassis ground:***<br>***(F87) No. 10 — Chassis ground:*** | Is the measured value more than 1 MΩ? | Go to step **15.** | Repair harness between VDCCM and relay box. Check fuse SBF holder. |
| 15 | **CHECK BATTERY SHORT IN HARNESS BETWEEN RELAY BOX AND VDCCM.**<br>Measure voltage between VDCCM connector and chassis ground.<br>***Connector & terminal***<br>***(F87) No. 10 (+) — Chassis ground (–):*** | Is the measured value less than 1 V? | Go to step **16.** | Repair harness between VDCCM and relay box. Check fuse SBF holder. |

| | Step | Check | Yes | No |
|---|---|---|---|---|
| 16 | **CHECK BATTERY SHORT IN HARNESS BETWEEN RELAY BOX AND VDCCM.**<br>1) Turn ignition switch to ON.<br>2) Measure voltage between VDCCM connector and chassis ground.<br>***Connector & terminal***<br>***(F87) No. 10 (+) — Chassis ground (–):*** | Is the measured value less than 1 V? | Go to step **17.** | Repair harness between VDCCM and relay box. Check fuse SBF holder. |
| 17 | **CHECK POOR CONTACT IN CONNECTORS.**<br>Turn ignition switch to OFF. | Is there poor contact in connector between VDCH/U, relay box and VDCCM? | Repair connector. | Go to step **18.** |
| 18 | **CHECK VDCCM.**<br>1) Connect all connectors.<br>2) Erase the memory.<br>3) Perform inspection mode.<br>4) Read out the diagnostic trouble code. | Is the same diagnostic trouble code as in the current diagnosis still being output? | Replace VDCCM. <Ref. to VDC-8, VDC Control Module (VDCCM).> | Go to step **19.** |
| 19 | **CHECK ANY OTHER DIAGNOSTIC TROUBLE CODES APPEARANCE.** | Are other diagnostic trouble codes being output? | Proceed with the diagnosis corresponding to the diagnostic trouble code. | A temporary poor contact. |

## AO:DTC 52 MOTOR MALFUNCTION

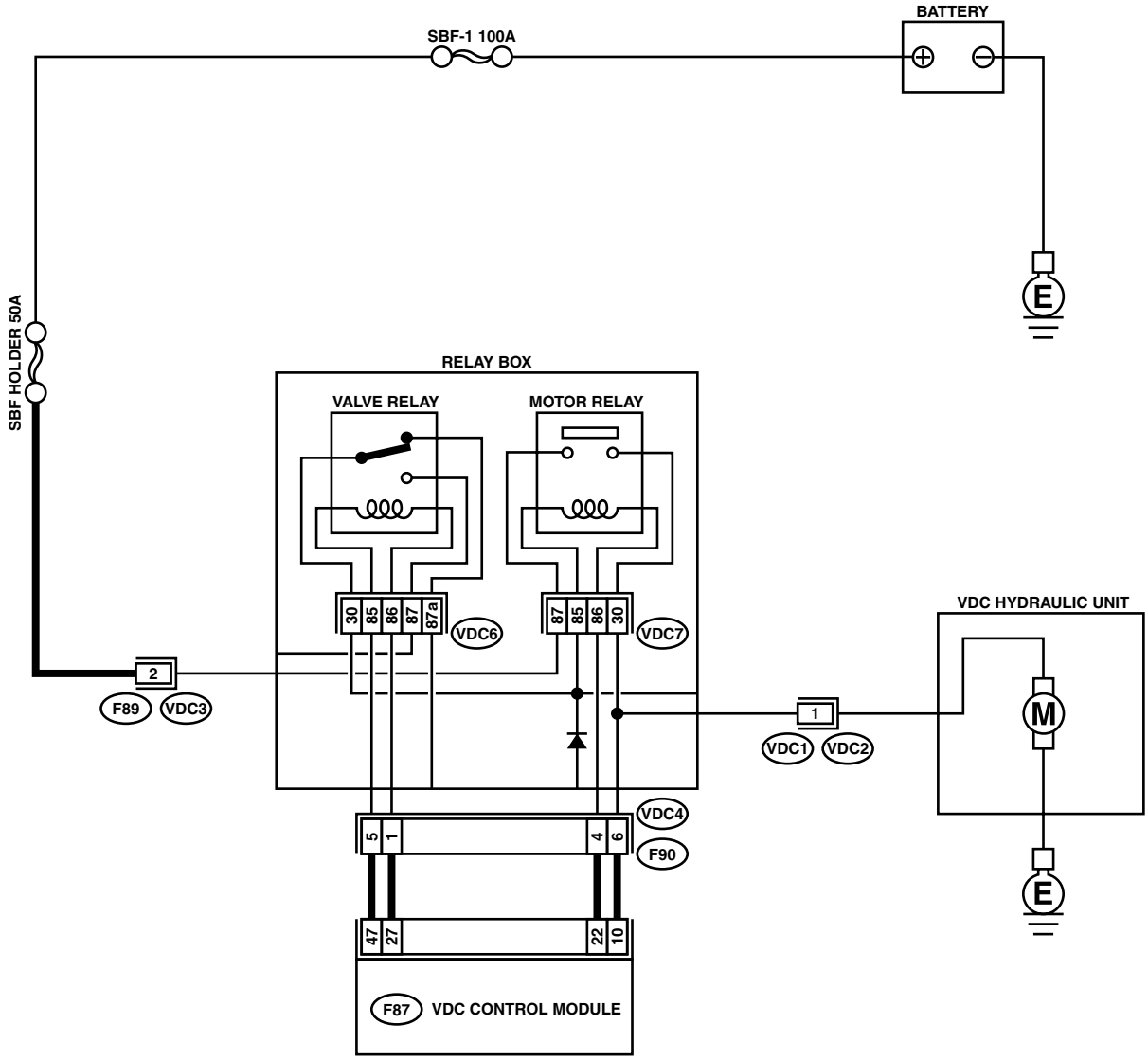
***DIAGNOSIS:***

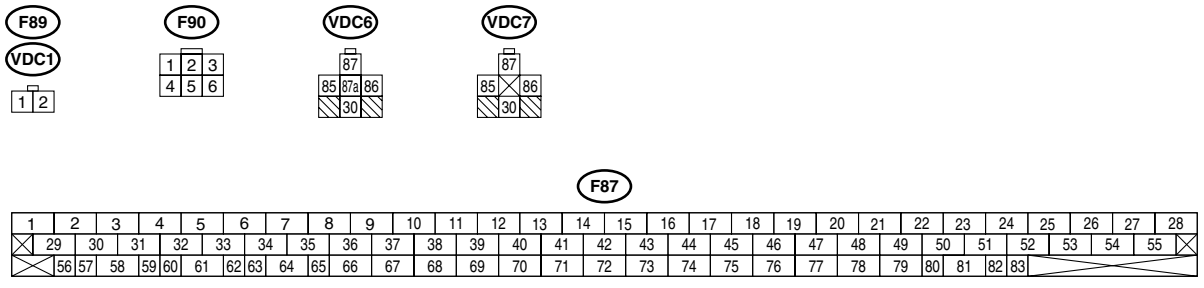
- Faulty motor
- Faulty motor relay
- Faulty harness connector

***TROUBLE SYMPTOM:***

- ABS does not operate.
- VDC does not operate.

**WIRING DIAGRAM:**




VDC00155

| | Step | Check | Yes | No |
|---|---|---|---|---|
| 1 | **CHECK CONTACT POINT OF MOTOR RELAY.**<br>1) Turn ignition switch to OFF.<br>2) Remove motor relay from relay box.<br>3) Connect battery to motor relay terminals No. 85 and No. 86.<br>4) Measure resistance between motor relay terminals.<br>***Terminals***<br>***No. 30 — No. 87:*** | Is the measured value less than 0.5 Ω? | Go to step **2.** | Replace motor relay. |
| 2 | **CHECK CONTACT POINT OF MOTOR RELAY.**<br>1) Disconnect battery from motor relay terminals.<br>2) Measure resistance between motor relay terminals.<br>***Terminals***<br>***No. 30 — No. 87:*** | Is the measured value more than 1 MΩ? | Go to step **3.** | Replace motor relay. |
| 3 | **CHECK INPUT VOLTAGE OF RELAY BOX.**<br>1) Disconnect connector (F89) from relay box.<br>2) Disconnect connector from VDCCM.<br>3) Turn ignition switch to ON.<br>4) Measure voltage between relay box connector and chassis ground.<br>***Connector & terminal***<br>***(F89) No. 2 (+) — Chassis ground (–):*** | Is the measured value within 10 to 15 V? | Go to step **4.** | Repair harness/ connector between battery and relay box, and check fuse SBF holder. |
| 4 | **CHECK INPUT VOLTAGE OF MOTOR RELAY.**<br>1) Turn ignition switch to OFF.<br>2) Connect connector (F89) to relay box.<br>3) Turn ignition switch to ON.<br>4) Measure voltage between relay box and chassis ground.<br>***Connector & terminal***<br>***(VDC7) No. 87 (+) — Chassis ground (–):*** | Is the measured value within 10 to 15 V? | Go to step **5.** | Replace relay box. |
| 5 | **CHECK CONDITION OF MOTOR GROUND.** | Is the motor ground terminal clamped to 33 N·m (3.4 kg-m, 25 ft-lb)? | Go to step **6.** | Tighten the clamp of motor ground terminal. |
| 6 | **CHECK VDCCM MOTOR DRIVE TERMINAL.**<br>1) Turn ignition switch OFF.<br>2) Remove VDC connector cover. <Ref. to VDC-20, REMOVE, VDCCM Connector Cover.><br>3) Connect all connectors.<br>4) Install motor relay.<br>5) Operate the ABS check sequence. <Ref. to VDC-16, ABS Sequence Control.><br>6) Measure voltage between VDCCM connector terminals.<br>***Connector & terminal***<br>***(F87) No. 22 (+) — No. 1 (–):*** | Does the voltage drop from between 10 V and 13 V to less than 1.5 V, and rise to between 10 V and 13 V again when carrying out the check sequence? | Go to step **7.** | Replace VDCCM. <Ref. to VDC-8, VDC Control Module (VDCCM).> |
| 7 | **CHECK MOTOR OPERATION.**<br>Operate the check sequence. <Ref. to VDC-19, VDC Sequence Control.> | Can motor revolution noise (buzz) be heard when carrying out the check sequence? | Go to step **8.** | Replace VDCH/U. <Ref. to VDC-8, VDC Control Module (VDCCM).> |
| 8 | **CHECK POOR CONTACT IN CONNECTORS.**<br>Turn ignition switch to OFF. | Is there poor contact in connector between VDCH/U, relay box and VDCCM? | Repair connector. | Go to step **9.** |

| | Step | Check | Yes | No |
|---|---|---|---|---|
| 9 | **CHECK VDCCM.**<br>1) Connect all connectors.<br>2) Erase the memory.<br>3) Perform inspection mode.<br>4) Read out the diagnostic trouble code. | Is the same diagnostic trouble code as in the current diagnosis still being output? | Replace VDCCM. <Ref. to VDC-8, VDC Control Module (VDCCM).> | Go to step **10.** |
| 10 | **CHECK ANY OTHER DIAGNOSTIC TROUBLE CODES APPEARANCE.** | Are other diagnostic trouble codes being output? | Proceed with the diagnosis corresponding to the diagnostic trouble code. | A temporary poor contact. |

**MEMO:**

## AP:DTC 71 STEERING ANGLE SENSOR OFFSET IS TOO BIG.

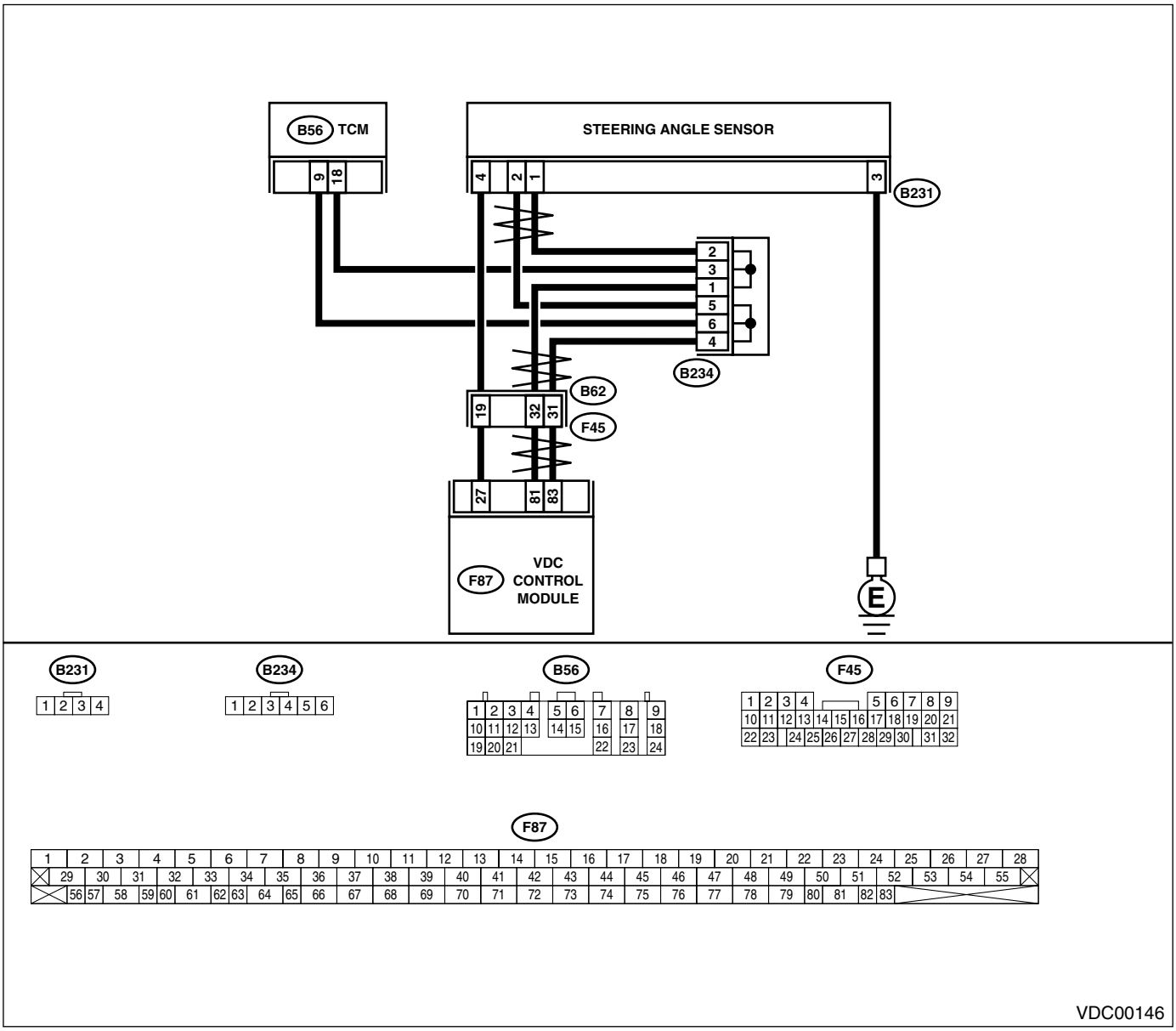
***DIAGNOSIS:***

- Faulty steering angle sensor

***TROUBLE SYMPTOM:***

- VDC does not operate.

**WIRING DIAGRAM:**




VDC00146

| | Step | Check | Yes | No |
|---|---|---|---|---|
| 1 | **CHECK THE STEERING WHEEL.**<br>1) Drive the vehicle on a flat road.<br>2) Stop the vehicle in a straight line.<br>3) Check the angle of steering wheel. | Is the angle of steering wheel alignment less than 5° from the straight-ahead position? | Go to step **2.** | Perform centering alignment of steering wheel. |
| 2 | **CHECK VDCCM.**<br>1) Turn ignition switch to OFF.<br>2) Connect all connectors.<br>3) Erase the memory.<br>4) Perform inspection mode.<br>5) Read out the diagnostic trouble code. | Is the same diagnostic trouble code as in the current diagnosis still being output? | Replace VDCCM. <Ref. to VDC-8, VDC Control Module (VDCCM).> | Go to step **3.** |
| 3 | **CHECK ANY OTHER DIAGNOSTIC TROUBLE CODES APPEARANCE.** | Are other diagnostic trouble codes being output? | Proceed with the diagnosis corresponding to the diagnostic trouble code. | A temporary poor contact. |

## AQ:DTC 71 CHANGE RANGE OF STEERING ANGLE SENSOR IS TOO BIG.

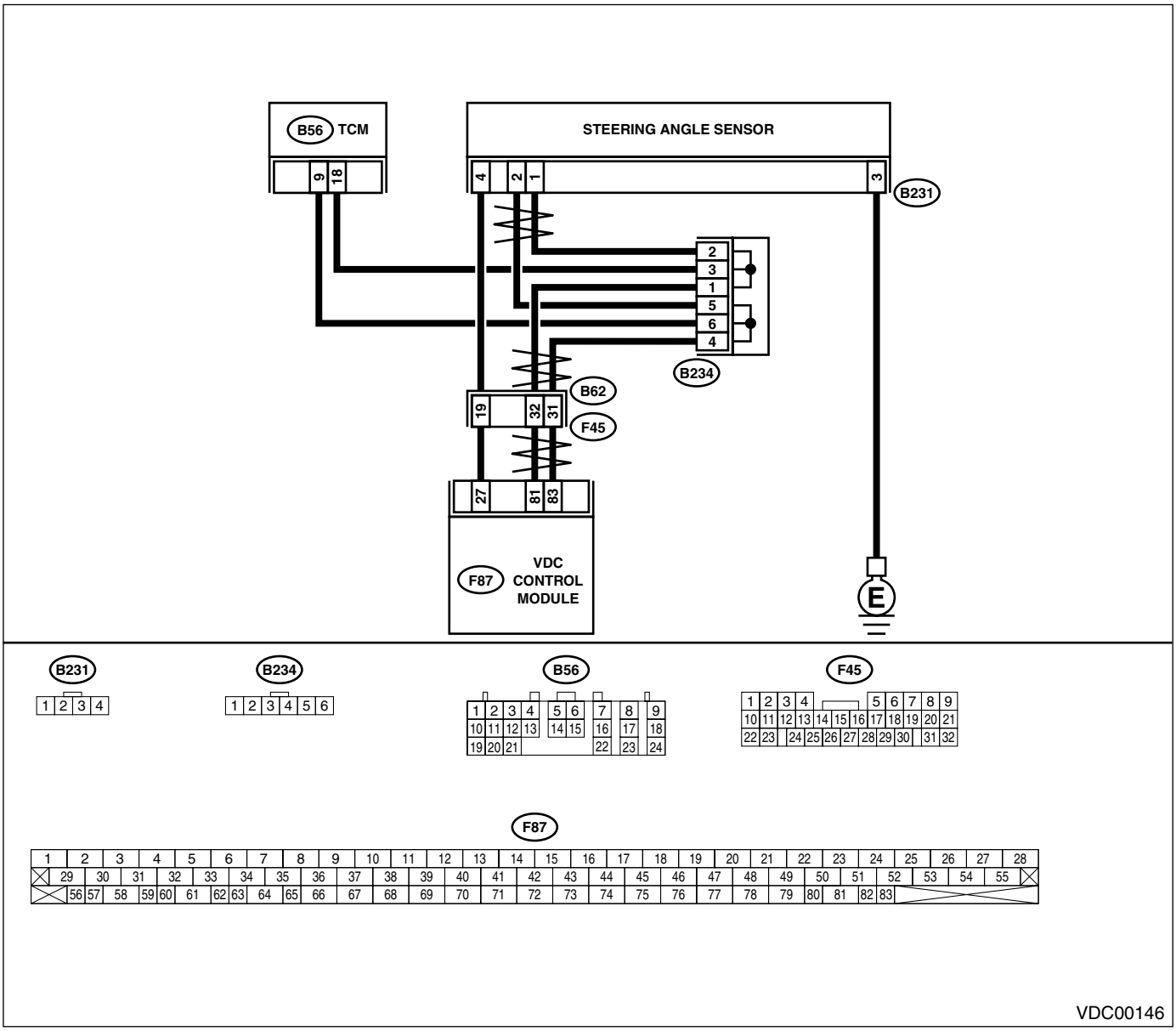
***DIAGNOSIS:***

- Faulty steering angle sensor

***TROUBLE SYMPTOM:***

- VDC does not operate.

**WIRING DIAGRAM:**




VDC00146

| | Step | Check | Yes | No |
|---|---|---|---|---|
| 1 | **CHECK VDCCM.**<br>1) Turn ignition switch to OFF.<br>2) Connect all connectors.<br>3) Erase the memory.<br>4) Perform inspection mode.<br>5) Read out the diagnostic trouble code. | Is the same diagnostic trouble code as in the current diagnosis still being output? | Replace VDCCM. <Ref. to VDC-8, VDC Control Module (VDCCM).> | Go to step **2.** |
| 2 | **CHECK ANY OTHER DIAGNOSTIC TROUBLE CODES APPEARANCE.** | Are other diagnostic trouble codes being output? | Proceed with the diagnosis corresponding to the diagnostic trouble code. | A temporary poor contact. |

## AR:DTC 71 STEERING ANGLE SENSOR MALFUNCTION

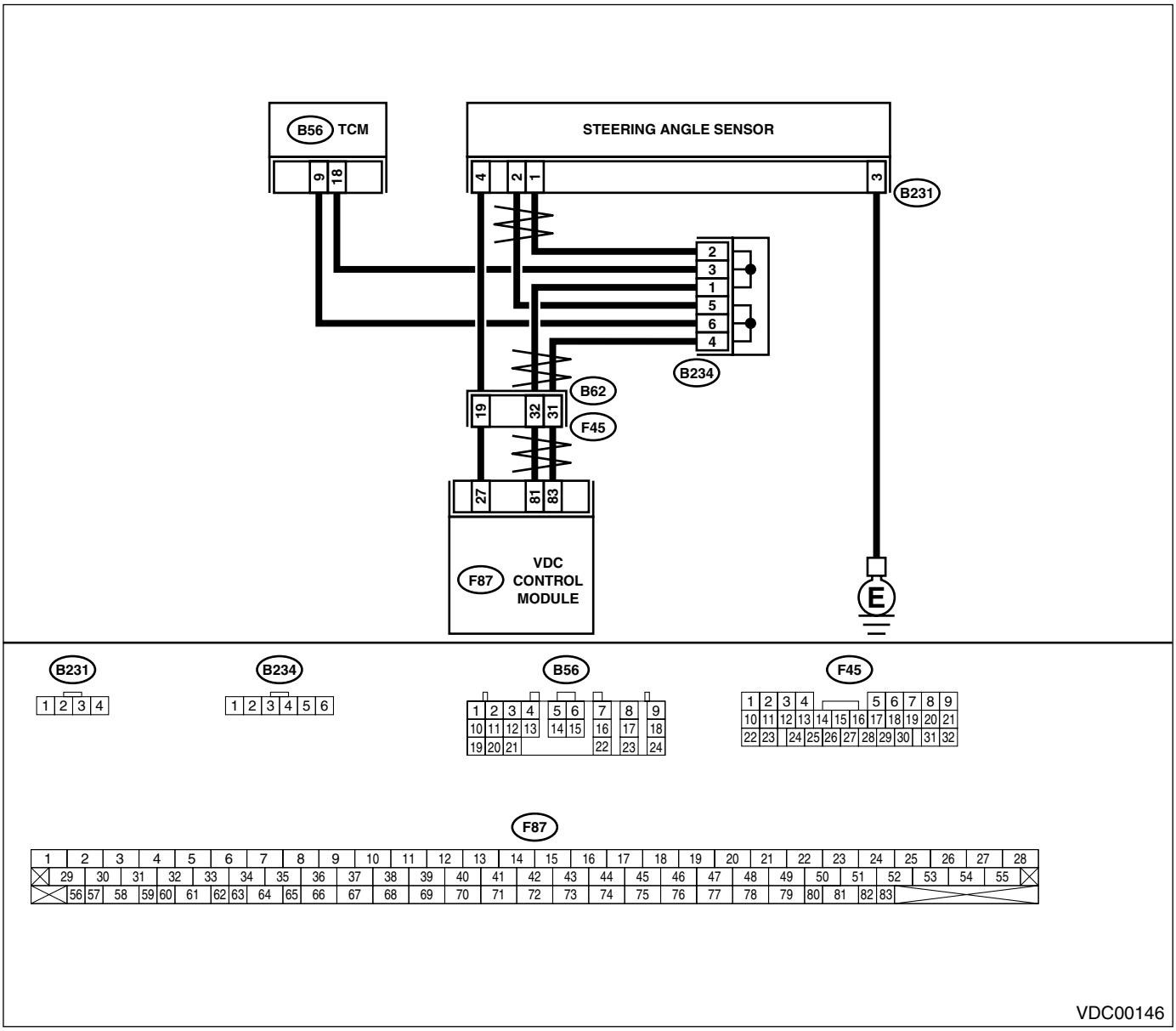
***DIAGNOSIS:***

- Faulty steering angle sensor

***TROUBLE SYMPTOM:***

- VDC does not operate.

**WIRING DIAGRAM:**




VDC00146

| | Step | Check | Yes | No |
|---|---|---|---|---|
| 1 | **CHECK THE STEERING WHEEL.**<br>1) Drive the vehicle on a flat road.<br>2) Stop the vehicle in a straight line.<br>3) Check the angle of steering wheel. | Is the angle of steering wheel alignment less than 5° from the straight-ahead position? | Go to step **2.** | Perform centering alignment of steering. |
| 2 | **CHECK OUTPUT OF STEERING ANGLE SENSOR USING SELECT MONITOR.**<br>1) Select “Current data display & Save” on the select monitor.<br>2) Read steering angle sensor output on the select monitor display. | Does the steering angle sensor output (value) change on the monitor display when the steering wheel is turned in either direction? | Go to step **3.** | Replace steering angle sensor. |
| 3 | **CHECK RUNNING FIELD.**<br>Check if the vehicle was driven on banked road surfaces or sandy surfaces (not dirt road surfaces). | Was the vehicle driven on banked road surfaces or sandy surfaces (not dirt road surfaces)? | Driving on banked road surfaces or sandy surfaces (not dirt road surfaces) sometimes results in a VDCCM memory trouble code. | Go to step **4.** |
| 4 | **CHECK VDCCM.**<br>1) Turn ignition switch to OFF.<br>2) Connect all connectors.<br>3) Erase the memory.<br>4) Perform inspection mode.<br>5) Read out the diagnostic trouble code. | Is the same diagnostic trouble code as in the current diagnosis still being output? | Replace VDCCM. <Ref. to VDC-8, VDC Control Module (VDCCM).> | Go to step **5.** |
| 5 | **CHECK ANY OTHER DIAGNOSTIC TROUBLE CODES APPEARANCE.** | Are other diagnostic trouble codes being output? | Proceed with the diagnosis corresponding to the diagnostic trouble code. | A temporary poor contact. |

## AS:DTC 71 NO SIGNAL FROM STEERING ANGLE SENSOR

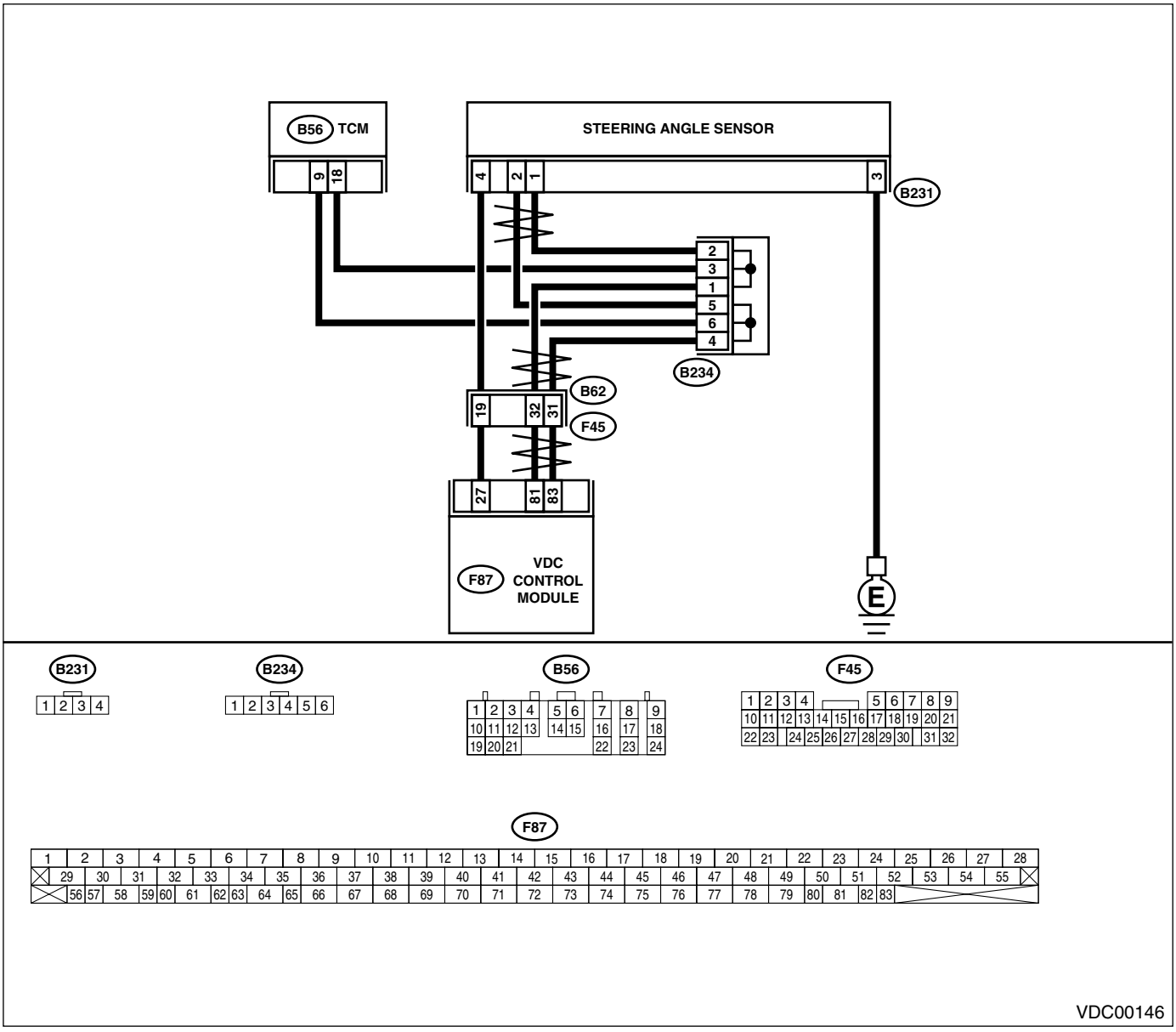
***DIAGNOSIS:***

- Faulty steering angle sensor

***TROUBLE SYMPTOM:***

- ABS does not operate.
- VDC does not operate.

**WIRING DIAGRAM:**




VDC00146

| | Step | Check | Yes | No |
|---|---|---|---|---|
| 1 | **CHECK POWER SUPPLY OF STEERING ANGLE SENSOR.**<br>1) Turn ignition switch to OFF.<br>2) Disconnect connector from steering angle sensor.<br>3) Turn ignition switch to ON.<br>4) Measure voltage between steering angle sensor and chassis ground.<br>***Connector & terminal***<br>***(B231) No. 4 — Chassis ground:*** | Is the measured value within 10 to 15 V? | Go to step **4.** | Go to step **2.** |
| 2 | **CHECK OUTPUT VOLTAGE OF VDCCM.**<br>1) Turn ignition switch to OFF.<br>2) Disconnect connector from VDCCM.<br>3) Remove cover for VDCCM connector. <Ref. to VDC-19, VDC Sequence Control.><br>4) Connect connector to VDCCM.<br>5) Turn ignition switch to ON.<br>6) Measure voltage between VDCCM and chassis ground.<br>***Connector & terminal***<br>***(F87) No. 27 — Chassis ground:*** | Is the measured value within 10 to 15 V? | Repair harness between yaw rate sensor and VDCCM. | Go to step **3.** |
| 3 | **CHECK POOR CONTACT IN CONNECTORS.** | Is there poor contact in yaw rate sensor connector? | Repair or replace VDCCM connector. | Replace VDCCM. <Ref. to VDC-8, VDC Control Module (VDCCM).> |
| 4 | **CHECK GROUND CIRCUIT OF STEERING ANGLE SENSOR.**<br>Measure resistance between steering sensor and chassis ground.<br>***Connector & terminal***<br>***(B231) No. 3 — Chassis ground:*** | Is the measured value less than 0.5 Ω? | Go to step **5.** | Repair steering angle sensor ground harness. |
| 5 | **CHECK HARNESS OF STEERING ANGLE SENSOR.**<br>1) Connect connector to steering angle sensor.<br>2) Disconnect connector from VDCCM.<br>3) Measure resistance between VDCCM connector terminals.<br>***Connector & terminal***<br>***(F87) No. 81 — No. 83:*** | Is the measured value within 114 to 126 Ω? | Repair harness between steering angle sensor and VDCCM. | Go to step **6.** |
| 6 | **CHECK STEERING ANGLE SENSOR.**<br>1) Turn ignition switch to OFF.<br>2) Connect all connectors.<br>3) Erase the memory.<br>4) Perform inspection mode.<br>5) Read out the diagnostic trouble code. | Is the same diagnostic trouble code as in the current diagnosis still being output? | Go to step **8.** | Go to step **7.** |
| 7 | **CHECK ANY OTHER DIAGNOSTIC TROUBLE CODES APPEARANCE.** | Are other diagnostic trouble codes being output? | Proceed with the diagnosis corresponding to the diagnostic trouble code. | A temporary poor contact. |
| 8 | **CHECK VDCCM.**<br>1) Turn ignition switch to OFF.<br>2) Replace steering angle sensor.<br>3) Erase the memory.<br>4) Perform inspection mode.<br>5) Read out the diagnostic trouble code. | Is the same diagnostic trouble code as in the current diagnosis still being output? | Replace VDCCM. <Ref. to VDC-8, VDC Control Module (VDCCM).> | Go to step **9.** |

| Step | | Check | Yes | No |
|---|---|---|---|---|
| 9 | **CHECK ANY OTHER DIAGNOSTIC TROUBLE CODES APPEARANCE.** | Are other diagnostic trouble codes being output? | Proceed with the diagnosis corresponding to the diagnostic trouble code. | The original steering angle sensor has been faulty. |

**MEMO:**

## AT:DTC 72 ABNORMAL YAW RATE SENSOR OUTPUT

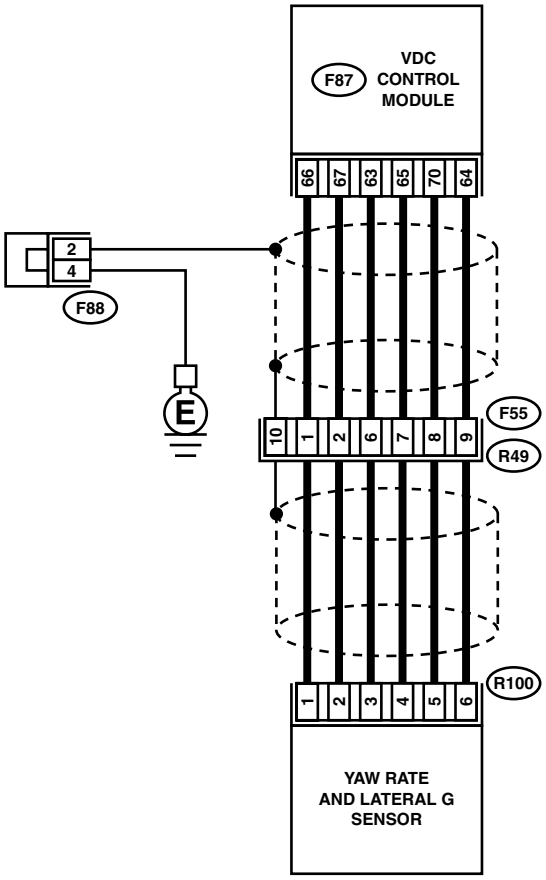
***DIAGNOSIS:***

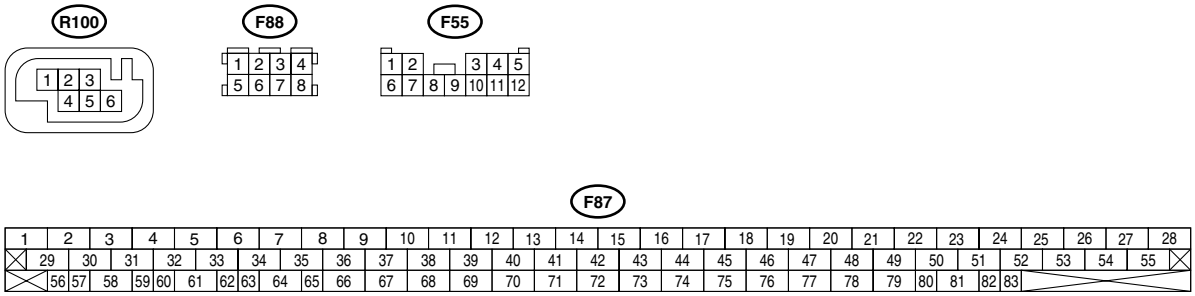
- Faulty yaw rate sensor

***TROUBLE SYMPTOM:***

- VDC does not operate.

**WIRING DIAGRAM:**




VDC00151

| | Step | Check | Yes | No |
|---|---|---|---|---|
| 1 | **CHECK RUNNING FIELD.** | Was the vehicle driven on banked road surfaces or sandy surfaces (not dirt road surfaces)? | Driving on banked road surfaces or sandy surfaces (not dirt road surfaces) sometimes results in a VDCCM memory diagnostic trouble code. | Go to step **2.** |
| 2 | **CHECK INSTALLATION OF YAW RATE AND LATERAL G SENSOR.**<br>Check installation of yaw rate and lateral G sensor. | Is the yaw rate and lateral G sensor fixed securely? | Go to step **3.** | Install yaw rate and lateral G sensor securely. |
| 3 | **CHECK OUTPUT OF YAW RATE AND LATERAL G SENSOR USING SELECT MONITOR.**<br>1) Drive the vehicle on a flat road.<br>2) Stop the vehicle in a straight line.<br>3) Select “Current data display & Save” on the select monitor.<br>4) Read yaw rate and lateral G sensor output on the select monitor display. | Is the displayed value within 0±5.25 deg/s? | Go to step **4.** | Replace yaw rate and lateral G sensor. <Ref. to VDC-22, Yaw Rate and Lateral G Sensor.> |
| 4 | **CHECK OUTPUT OF STEERING ANGLE SENSOR USING SELECT MONITOR.**<br>1) Drive the vehicle on a flat road.<br>2) Stop the vehicle in a straight line.<br>3) Select “Current data display & Save” on the select monitor.<br>4) Read steering angle sensor output on the select monitor display. | Is the displayed value within 0±2.5 deg? | Go to step **5.** | Perform centering alignment of steering wheel. |
| 5 | **CHECK YAW RATE AND LATERAL G SENSOR.**<br>1) Turn ignition switch to OFF.<br>2) Connect all connectors.<br>3) Erase the memory.<br>4) Perform inspection mode.<br>5) Read out the diagnostic trouble code. | Is the same diagnostic trouble code as in the current diagnosis still being output? | Go to step **6.** | Go to step **7.** |
| 6 | **CHECK ANY OTHER DIAGNOSTIC TROUBLE CODES APPEARANCE.** | Are other diagnostic trouble codes being output? | Proceed with the diagnosis corresponding to the diagnostic trouble code. | A temporary poor contact. |
| 7 | **CHECK VDCCM.**<br>1) Turn ignition switch to OFF.<br>2) Replace yaw rate and lateral G sensor.<br>3) Erase the memory.<br>4) Perform inspection mode.<br>5) Read out the diagnostic trouble code. | Is the same diagnostic trouble code as in the current diagnosis still being output? | Replace VDCCM. <Ref. to VDC-8, VDC Control Module (VDCCM).> | Go to step **8.** |
| 8 | **CHECK ANY OTHER DIAGNOSTIC TROUBLE CODES APPEARANCE.** | Are other diagnostic trouble codes being output? | Proceed with the diagnosis corresponding to the diagnostic trouble code. | The original yaw rate and lateral G sensor has been faulty. |

## AU:DTC 72 VOLTAGE INPUTTED TO YAW RATE SENSOR EXCEEDS SPECIFICATION.

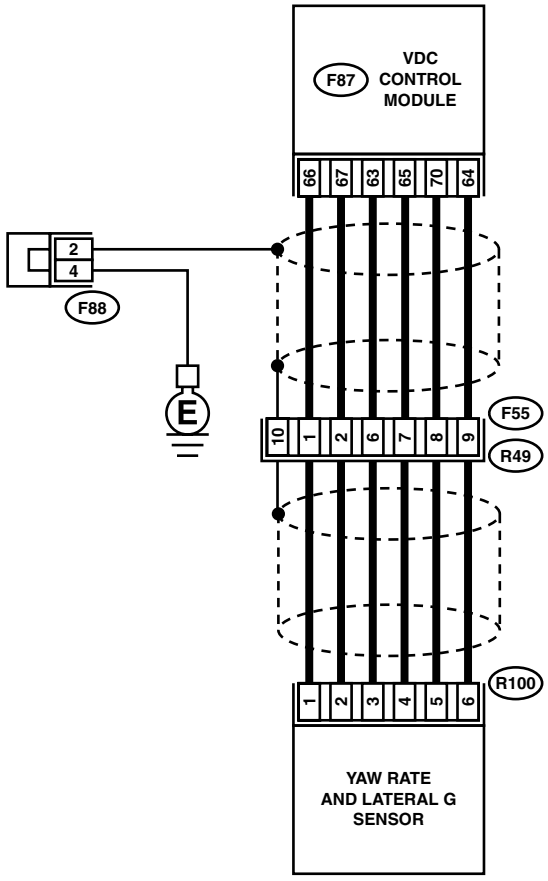
***DIAGNOSIS:***

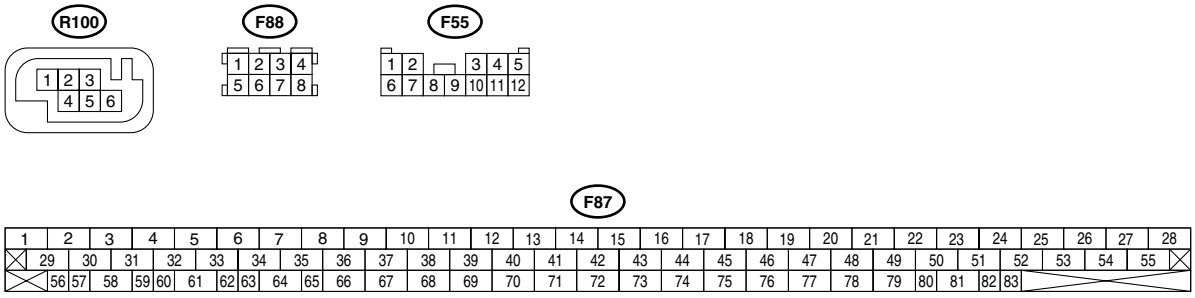
- Faulty yaw rate sensor

***TROUBLE SYMPTOM:***

- VDC does not operate.

**WIRING DIAGRAM:**




VDC00151

| | Step | Check | Yes | No |
|---|---|---|---|---|
| 1 | **CHECK POWER SUPPLY OF YAW RATE AND LATERAL G SENSOR.**<br>1) Turn ignition switch OFF.<br>2) Disconnect connector from yaw rate and lateral G sensor.<br>3) Turn ignition switch to ON.<br>4) Measure voltage between yaw rate and lateral G sensor and chassis ground.<br>***Connector & terminal***<br>***(R100) No. 3 — Chassis ground:*** | Is the measured value within 10 to 15 V? | Go to step **4.** | Go to step **2.** |
| 2 | **CHECK OUTPUT VOLTAGE OF VDCCM.**<br>1) Turn ignition switch to OFF.<br>2) Disconnect connector from VDCCM.<br>3) Remove cover for VDCCM connector. <Ref. to VDC-20, VDCCM Connector Cover.><br>4) Connect connector to VDCCM.<br>5) Turn ignition switch to ON.<br>6) Measure voltage between VDCCM and chassis ground.<br>***Connector & terminal***<br>***(F87) No. 63 — Chassis ground:*** | Is the measured value within 10 to 15 V? | Repair harness between yaw rate and lateral G sensor and VDCCM. | Go to step **3.** |
| 3 | **CHECK POOR CONTACT IN CONNECTORS.** | Is there poor contact in yaw rate and lateral G sensor connector? | Repair or replace VDCCM connector. | Replace VDCCM. <Ref. to VDC-8, VDC Control Module (VDCCM).> |
| 4 | **CHECK HARNESS OF YAW RATE AND LATERAL G SENSOR.**<br>1) Turn ignition switch OFF.<br>2) Disconnect connector from VDCCM.<br>3) Measure resistance between VDCCM and yaw rate and lateral G sensor.<br>***Connector & terminal***<br>***(F87) No. 65 — (R100) No. 4:*** | Is the measured value less than 0.5 Ω? | Go to step **5.** | Repair harness between yaw rate and lateral G sensor and VDCCM. |
| 5 | **CHECK GROUND SHORT OF HARNESS.**<br>Measure resistance between VDCCM and chassis ground.<br>***Connector & terminal***<br>***(F87) No. 65 — Chassis ground:*** | Is the measured value more than 1 MΩ? | Go to step **6.** | Repair harness between yaw rate and lateral G sensor and VDCCM. |
| 6 | **CHECK BATTERY SHORT OF HARNESS.**<br>Measure voltage between VDCCM and chassis ground.<br>***Connector & terminal***<br>***(F87) No. 65 (+) — Chassis ground (–):*** | Is the measured value less than 0.5 V? | Go to step **7.** | Repair harness between yaw rate and lateral G sensor and VDCCM. |
| 7 | **CHECK BATTERY SHORT OF HARNESS.**<br>1) Turn ignition switch to ON.<br>2) Measure voltage between VDCCM and chassis ground.<br>***Connector & terminal***<br>***(F87) No. 65 (+) — Chassis ground (–):*** | Is the measured value less than 0.5 V? | Replace yaw rate and lateral G sensor. <Ref. to VDC-22, Yaw Rate and Lateral G Sensor.> | Repair harness between yaw rate and lateral G sensor and VDCCM. |

## AV:DTC 72 ABNORMAL YAW RATE SENSOR REFERENCE VOLTAGE

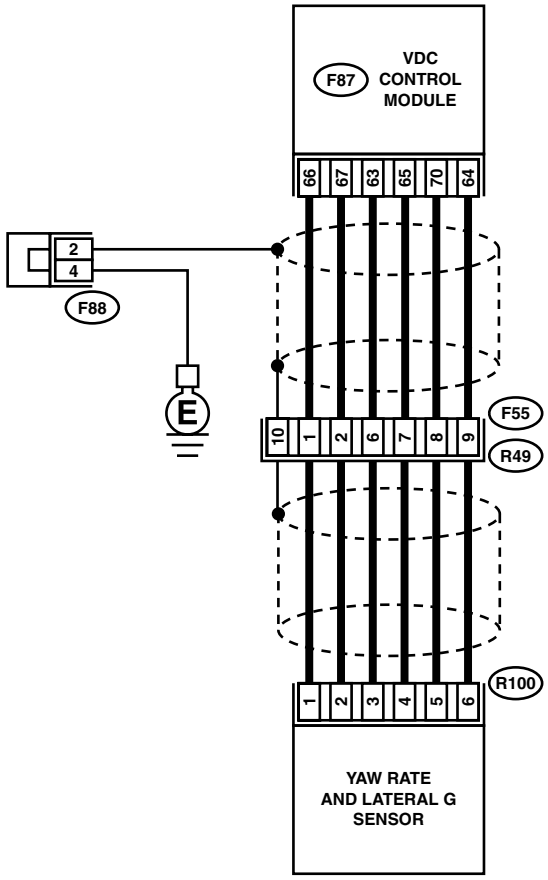
***DIAGNOSIS:***

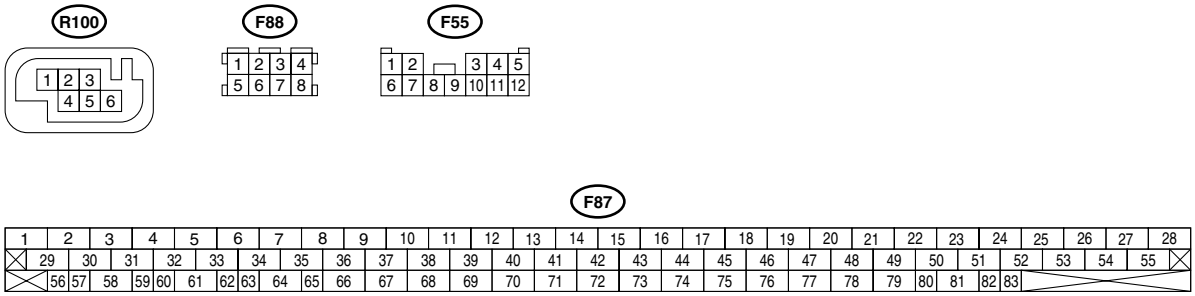
- Faulty yaw rate sensor

***TROUBLE SYMPTOM:***

- VDC does not operate.

**WIRING DIAGRAM:**




VDC00151

| | Step | Check | Yes | No |
|---|---|---|---|---|
| 1 | **CHECK POWER SUPPLY OF YAW RATE AND LATERAL G SENSOR.**<br>1) Turn ignition switch OFF.<br>2) Disconnect connector from yaw rate and lateral G sensor.<br>3) Turn ignition switch to ON.<br>4) Measure voltage between yaw rate and lateral G sensor and chassis ground.<br>***Connector & terminal***<br>***(R100) No. 3 — Chassis ground:*** | Is the measured value within 10 to 15 V? | Go to step **4.** | Go to step **2.** |
| 2 | **CHECK OUTPUT VOLTAGE OF VDCCM.**<br>1) Turn ignition switch to OFF.<br>2) Disconnect connector from VDCCM.<br>3) Remove cover for VDCCM connector. <Ref. to VDC-20, REMOVE, VDCCM Connector Cover.><br>4) Connect connector to VDCCM.<br>5) Turn ignition switch to ON.<br>6) Measure voltage between VDCCM and chassis ground.<br>***Connector & terminal***<br>***(F87) No. 63 — Chassis ground:*** | Is the measured value within 10 to 15 V? | Repair harness between yaw rate and lateral G sensor and VDCCM. | Go to step **3.** |
| 3 | **CHECK POOR CONTACT IN CONNECTORS.** | Is there poor contact in yaw rate and lateral G sensor connector? | Repair or replace VDCCM connector. | Replace VDCCM. <Ref. to VDC-8, VDC Control Module (VDCCM).> |
| 4 | **CHECK HARNESS OF YAW RATE AND LATERAL G SENSOR.**<br>1) Disconnect connector from VDCCM.<br>2) Measure resistance between VDCCM and yaw rate and lateral G sensor.<br>***Connector & terminal***<br>***(F87) No. 66 — (R100) No. 1:*** | Is the measured value less than 0.5 Ω? | Go to step **5.** | Repair harness between yaw rate and lateral G sensor and VDCCM. |
| 5 | **CHECK GROUND SHORT OF HARNESS.**<br>Measure resistance between VDCCM and chassis ground.<br>***Connector & terminalDoes the measured value exceed the specified value?***<br>***(F87) No. 66 — Chassis ground:*** | Is the measured value more than 1 MΩ? | Go to step **6.** | Repair harness between yaw rate and lateral G sensor and VDCCM. |
| 6 | **CHECK BATTERY SHORT OF HARNESS.**<br>Measure voltage between VDCCM and chassis ground.<br>***Connector & terminal***<br>***(F87) No. 66 (+) — Chassis ground (–):*** | Is the measured value less than 0.5 V? | Go to step **7.** | Repair harness between yaw rate and lateral G sensor and VDCCM. |
| 7 | **CHECK BATTERY SHORT OF HARNESS.**<br>1) Turn ignition switch to ON.<br>2) Measure voltage between VDCCM and chassis ground.<br>***Connector & terminal***<br>***(F87) No. 66 — Chassis ground:*** | Is the measured value less than 0.5 V? | Go to step **8.** | Repair harness between yaw rate and lateral G sensor and VDCCM. |

| | Step | Check | Yes | No |
|---|---|---|---|---|
| 8 | **CHECK YAW RATE AND LATERAL G SENSOR.**<br>1) Turn ignition switch to OFF.<br>2) Install yaw rate and lateral G sensor to body.<br>3) Remove VDCCM connector cover. <Ref. to VDC-20, VDCCM Connector Cover.><br>4) Connect all connectors.<br>5) Turn ignition switch to ON.<br>6) Measure voltage between VDCCM connector terminals.<br>***Connector & terminal***<br>***(F87) No. 66 (+) — No. 64 (–):*** | Is the measured value within 2.1 to 2.9 V? | Replace VDCCM. <Ref. to VDC-8, VDC Control Module (VDCCM).> | Replace yaw rate and lateral G sensor. <Ref. to VDC-22, Yaw Rate and Lateral G Sensor.> |

**MEMO:**

## AW:DTC 72 CHANGE RANGE OF YAW RATE SENSOR SIGNAL IS TOO BIG.

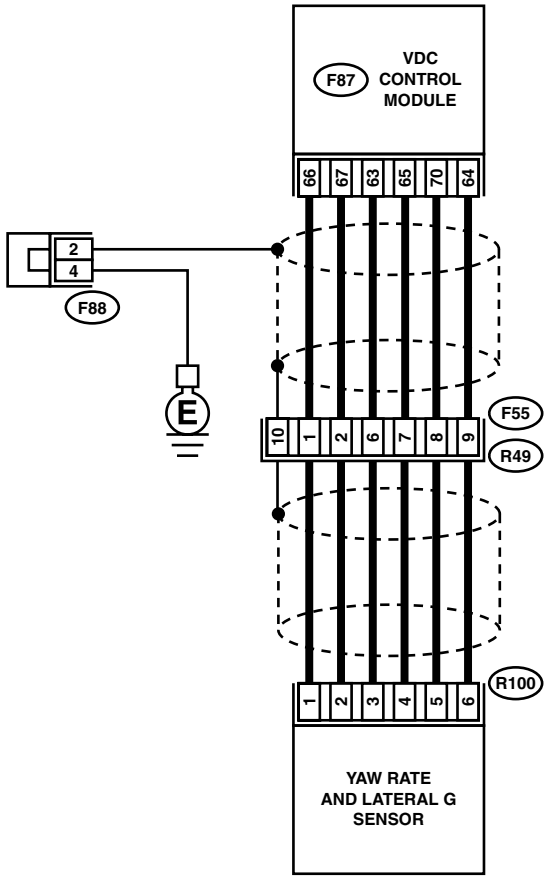
***DIAGNOSIS:***

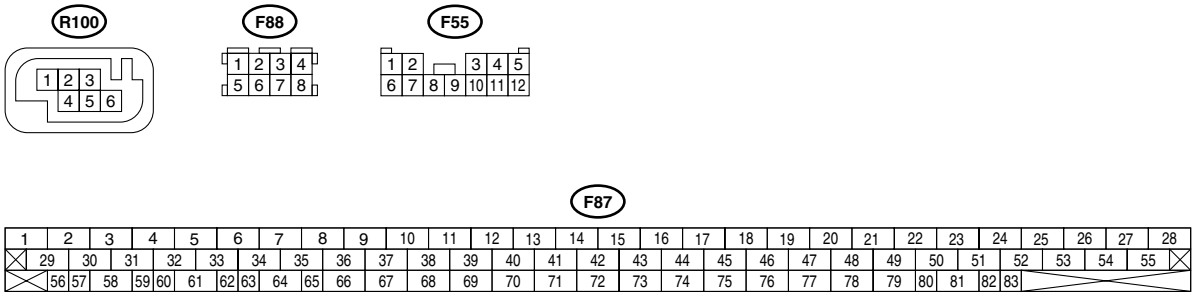
- Faulty yaw rate sensor

***TROUBLE SYMPTOM:***

- VDC does not operate.

**WIRING DIAGRAM:**




VDC00151

| | Step | Check | Yes | No |
|---|---|---|---|---|
| 1 | **CHECK RUNNING FIELD.** | Was the vehicle driven on surfaces with holes or bumps at high speeds? | When driving on surfaces with holes or bumps at high speeds, VDCCM sometimes records trouble codes in memory. | Go to step **2.** |
| 2 | **CHECK INSTALLATION OF YAW RATE AND LATERAL G SENSOR.**<br>Check installation of yaw rate and lateral G sensor. | Is the yaw rate and lateral G sensor fixed securely? | Go to step **3.** | Install yaw rate and lateral G sensor securely. |
| 3 | **CHECK POWER SUPPLY OF YAW RATE AND LATERAL G SENSOR.**<br>1) Turn ignition switch OFF.<br>2) Disconnect connector from yaw rate and lateral G sensor.<br>3) Turn ignition switch to ON.<br>4) Measure voltage between yaw rate and lateral G sensor and chassis ground.<br>***Connector & terminal***<br>***(R100) No. 3 — Chassis ground:*** | Is the measured value within 10 to 15 V? | Go to step **6.** | Go to step **4.** |
| 4 | **CHECK OUTPUT VOLTAGE OF VDCCM.**<br>1) Turn ignition switch to OFF.<br>2) Disconnect connector from VDCCM.<br>3) Remove cover for VDCCM connector. <Ref. to VDC-20, REMOVE, VDCCM Connector Cover.><br>4) Connect connector to VDCCM.<br>5) Turn ignition switch to ON.<br>6) Measure voltage between VDCCM and chassis ground.<br>***Connector & terminal***<br>***(F87) No. 63 — Chassis ground:*** | Is the measured value within 10 to 15 V? | Repair harness between yaw rate and lateral G sensor and VDCCM. | Go to step **5.** |
| 5 | **CHECK POOR CONTACT IN CONNECTORS.** | Is there poor contact in yaw rate and lateral G sensor connector? | Repair or replace VDCCM connector. | Replace VDCCM. <Ref. to VDC-8, VDC Control Module (VDCCM).> |
| 6 | **CHECK GROUND CIRCUIT OF YAW RATE AND LATERAL G SENSOR.**<br>Measure resistance between yaw rate and lateral G sensor and chassis ground.<br>***Connector & terminal***<br>***(R100) No. 6 — Chassis ground:*** | Is the measured value less than 0.5 Ω? | Go to step **9.** | Go to step **7.** |
| 7 | **CHECK GROUND CIRCUIT OF VDCCM.**<br>1) Disconnect connector from VDCCM.<br>2) Remove cover from VDCCM connector. <Ref. to VDC-20, VDCCM Connector Cover.><br>3) Connect connector to VDCCM.<br>4) Measure resistance between VDCCM and chassis ground.<br>***Connector & terminal***<br>***(F87) No. 64 — Chassis ground:*** | Is the measured value less than 0.5 Ω? | Repair harness between yaw rate and lateral G sensor and VDCCM. | Go to step **8.** |
| 8 | **CHECK POOR CONTACT IN CONNECTORS.** | Is there poor contact in VDCCM connector? | Repair or replace VDCCM connector. | Replace VDCCM. <Ref. to VDC-8, VDC Control Module (VDCCM).> |

| | Step | Check | Yes | No |
|---|---|---|---|---|
| 9 | **CHECK HARNESS OF YAW RATE AND LATERAL G SENSOR.**<br>1) Disconnect connector from VDCCM.<br>2) Measure resistance between VDCCM and yaw rate and lateral G sensor.<br>***Connector & terminal***<br>***(F87) No. 65 — (R100) No. 4:***<br>***(F87) No. 66 — (R100) No. 1:***<br>***(F87) No. 67 — (R100) No. 2:*** | Is the measured value less than 0.5 Ω? | Go to step **10.** | Repair harness between yaw rate and lateral G sensor and VDCCM. |
| 10 | **CHECK GROUND SHORT OF HARNESS.**<br>Measure resistance between VDCCM and chassis ground.<br>***Connector & terminal***<br>***(F87) No. 65 — Chassis ground:***<br>***(F87) No. 66 — Chassis ground:***<br>***(F87) No. 67 — Chassis ground:*** | Is the measured value more than 1 MΩ? | Go to step **11.** | Repair harness between yaw rate and lateral G sensor and VDCCM. |
| 11 | **CHECK BATTERY SHORT OF HARNESS.**<br>Measure voltage between VDCCM and chassis ground.<br>***Connector & terminal***<br>***(F87) No. 65 (+) — Chassis ground (–):***<br>***(F87) No. 66 (+) — Chassis ground (–):***<br>***(F87) No. 67 (+) — Chassis ground (–):*** | Is the measured value less than 0.5 V? | Go to step **12.** | Repair harness between yaw rate and lateral G sensor and VDCCM. |
| 12 | **CHECK BATTERY SHORT OF HARNESS.**<br>1) Turn ignition switch to ON.<br>2) Measure voltage between VDCCM and chassis ground.<br>***Connector & terminal***<br>***(F87) No. 65 — Chassis ground:***<br>***(F87) No. 66 — Chassis ground:***<br>***(F87) No. 67 — Chassis ground:*** | Is the measured value less than 0.5 V? | Go to step **13.** | Repair harness between yaw rate and lateral G sensor and VDCCM. |
| 13 | **CHECK YAW RATE AND LATERAL G SENSOR.**<br>1) Turn ignition switch to OFF.<br>2) Install yaw rate and lateral G sensor to body.<br>3) Connect all connectors.<br>4) Turn ignition switch to ON.<br>5) Measure voltage between yaw rate and lateral G sensor connector terminals.<br>***Connector & terminal***<br>***(F87) No. 66 (+) — No. 64 (–):*** | Is the measured value within 2.1 to 2.9 V? | Replace VDCCM. <Ref. to VDC-8, VDC Control Module (VDCCM).> | Replace yaw rate and lateral G sensor. <Ref. to VDC-22, Yaw Rate and Lateral G Sensor.> |

## AX:DTC 73 LATERAL G SENSOR OFFSET IS TOO BIG.

NOTE:
For diagnostic procedure, refer to DTC 73. <Ref. to VDC-230, DTC 73 EXCESSIVE LATERAL G SENSOR SIGNAL, Diagnostics Chart with Select Monitor.>

## AY:DTC 73 ABNORMAL LATERAL G SENSOR OUTPUT

NOTE:
For diagnostic procedure, refer to DTC 73. <Ref. to VDC-230, DTC 73 EXCESSIVE LATERAL G SENSOR SIGNAL, Diagnostics Chart with Select Monitor.>

## AZ:DTC 73 CHANGE RANGE OF LATERAL G SENSOR IS TOO BIG.

NOTE:
For diagnostic procedure, refer to DTC 73. <Ref. to VDC-230, DTC 73 EXCESSIVE LATERAL G SENSOR SIGNAL, Diagnostics Chart with Select Monitor.>

## BA:DTC 73 EXCESSIVE LATERAL G SENSOR SIGNAL

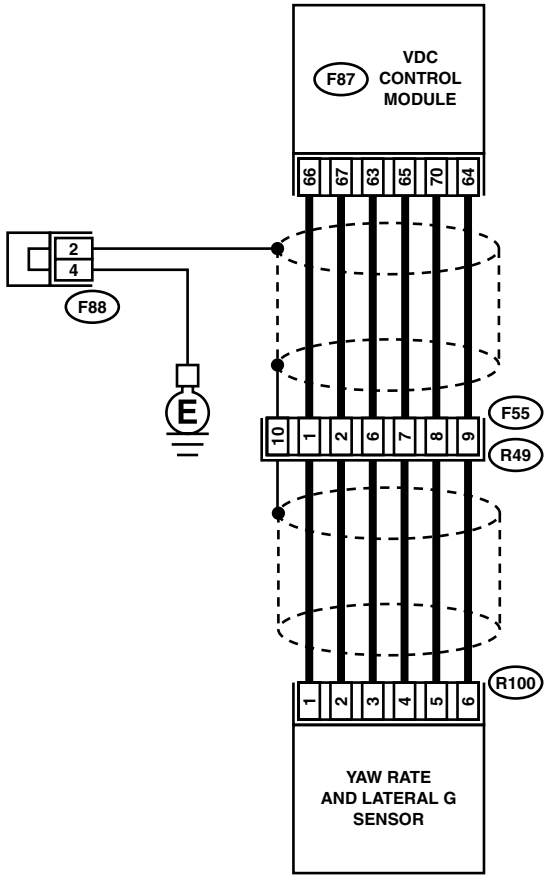
***DIAGNOSIS:***

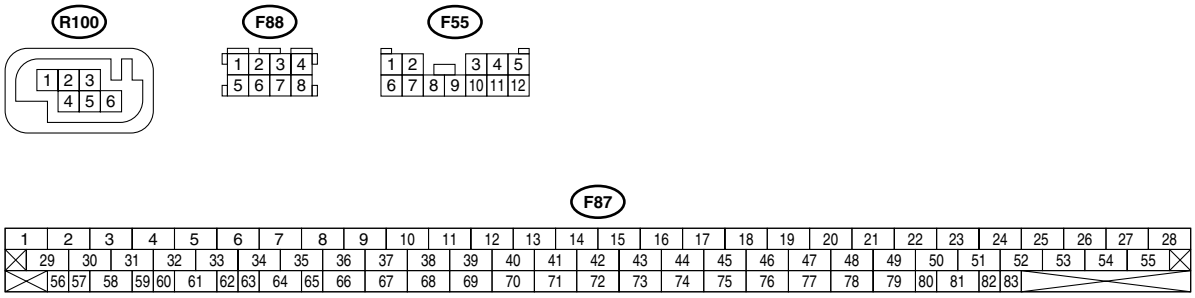
- Faulty lateral G sensor

***TROUBLE SYMPTOM:***

- ABS does not operate.
- VDC does not operate.

**WIRING DIAGRAM:**




VDC00151

| | Step | Check | Yes | No |
|---|---|---|---|---|
| 1 | **CHECK INSTALLATION OF YAW RATE AND LATERAL G SENSOR.**<br>Check installation of yaw rate and lateral G sensor. | Is the yaw rate and lateral G sensor fixed securely? | Go to step **2.** | Install yaw rate and lateral G sensor securely. |
| 2 | **CHECK OUTPUT OF LATERAL G SENSOR USING SELECT MONITOR.**<br>1) Stop the vehicle on a flat road.<br>2) Select “Current data display & Save” on the select monitor.<br>3) Read yaw rate and lateral G sensor output on the select monitor display. | Is the measured value within 2.3 to 2.7 V? | Go to step **3.** | Replace yaw rate and lateral G sensor. <Ref. to VDC-22, Yaw Rate and Lateral G Sensor.> |
| 3 | **CHECK POOR CONTACT IN CONNECTORS.**<br>Turn ignition switch to OFF. | Is there poor contact in connector between VDCCM and yaw rate and lateral G sensor? | Repair connector. | Go to step **4.** |
| 4 | **CHECK VDCCM.**<br>1) Connect all connectors.<br>2) Erase the memory.<br>3) Perform inspection mode.<br>4) Read out the diagnostic trouble code. | Is the same diagnostic trouble code as in the current diagnosis still being output? | Replace VDCCM. <Ref. to VDC-8, VDC Control Module (VDCCM).> | Go to step **5.** |
| 5 | **CHECK ANY OTHER DIAGNOSTIC TROUBLE CODES APPEARANCE.** | Are other diagnostic trouble codes being output? | Proceed with the diagnosis corresponding to the diagnostic trouble code. | A temporary poor contact. |

## BB:DTC 73 VOLTAGE INPUTTED TO LATERAL G SENSOR EXCEEDS SPECIFICATION.

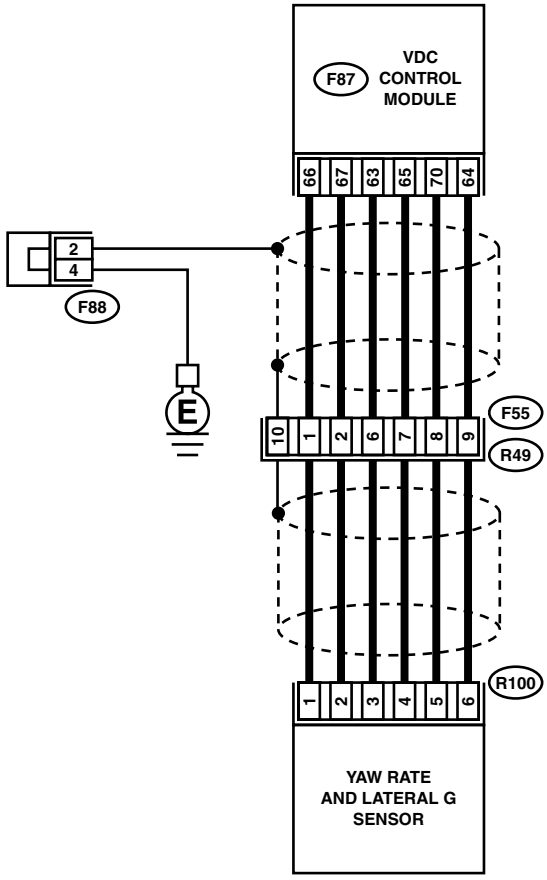
***DIAGNOSIS:***

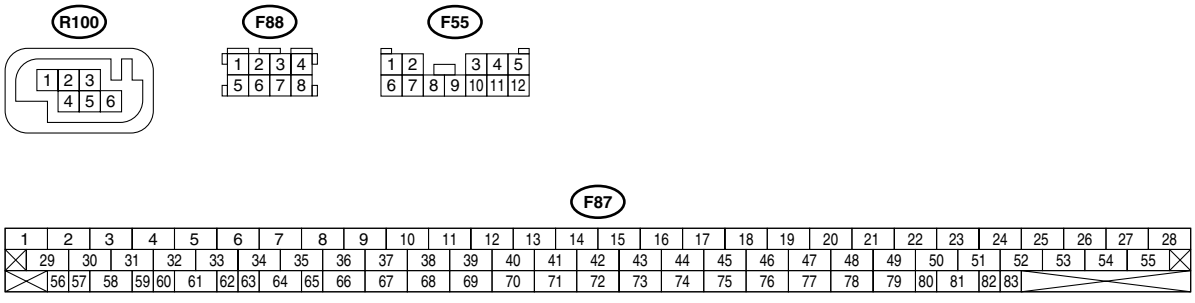
- Faulty lateral G sensor

***TROUBLE SYMPTOM:***

- ABS does not operate.
- VDC does not operate.

**WIRING DIAGRAM:**




VDC00151

| | Step | Check | Yes | No |
|---|---|---|---|---|
| 1 | **CHECK OUTPUT OF YAW RATE AND LATERAL G SENSOR USING SELECT MONITOR.**<br>1) Stop the vehicle on a flat road.<br>2) Select “Current data display & Save” on the select monitor.<br>3) Read yaw rate and lateral G sensor output on the select monitor display. | Is the measured value within 2.3 to 2.7 V? | Go to step **2.** | Go to step **5.** |
| 2 | **CHECK POOR CONTACT IN CONNECTORS.**<br>Turn ignition switch to OFF. | Is there poor contact in connector between VDCCM and yaw rate and lateral G sensor? | Repair connector. | Go to step **3.** |
| 3 | **CHECK VDCCM.**<br>1) Connect all connectors.<br>2) Erase the memory.<br>3) Perform inspection mode.<br>4) Read out the diagnostic trouble code. | Is the same diagnostic trouble code as in the current diagnosis still being output? | Replace VDCCM. <Ref. to VDC-8, VDC Control Module (VDCCM).> | Go to step **4.** |
| 4 | **CHECK ANY OTHER DIAGNOSTIC TROUBLE CODES APPEARANCE.** | Are other diagnostic trouble codes being output? | Proceed with the diagnosis corresponding to the diagnostic trouble code. | A temporary poor contact. |
| 5 | **CHECK INPUT VOLTAGE OF YAW RATE AND LATERAL G SENSOR.**<br>1) Turn ignition switch to OFF.<br>2) Remove console box.<br>3) Disconnect connector from yaw rate and lateral G sensor.<br>4) Turn ignition switch to ON.<br>5) Measure voltage between yaw rate and lateral G sensor connector terminals.<br>***Connector & terminal***<br>***(R100) No. 3 (+) — No. 6 (–):*** | Is the measured value within 10 to 15 V? | Go to step **6.** | Repair harness/ connector between yaw rate and lateral G sensor and VDCCM. |
| 6 | **CHECK YAW RATE AND LATERAL G SENSOR.**<br>1) Turn ignition switch to OFF.<br>2) Measure resistance between yaw rate and lateral G sensor terminals.<br>***Terminals***<br>***No. 3 — No. 5:*** | Is the measured value within 4.3 to 4.9 kΩ? | Go to step **7.** | Replace yaw rate and lateral G sensor. <Ref. to VDC-22, Yaw Rate and Lateral G Sensor.> |
| 7 | **CHECK OPEN CIRCUIT IN YAW RATE AND LATERAL G SENSOR OUTPUT HARNESS AND GROUND HARNESS.**<br>1) Connect connector to yaw rate and lateral G sensor.<br>2) Disconnect connector from VDCCM.<br>3) Measure resistance between VDCCM connector terminals.<br>***Connector & terminal***<br>***(F87) No. 70 — No. 64:*** | Is the measured value within 4.3 to 4.9 kΩ? | Go to step **8.** | Repair harness/ connector between yaw rate and lateral G sensor and VDCCM. |
| 8 | **CHECK GROUND SHORT IN YAW RATE AND LATERAL G SENSOR HARNESS.**<br>1) Disconnect connector from yaw rate and lateral G sensor.<br>2) Measure resistance between VDCCM connector and chassis ground.<br>***Connector & terminal***<br>***(F87) No. 63 — Chassis ground:***<br>***(F87) No. 70 — Chassis ground:***<br>***(F87) No. 64 — Chassis ground:*** | Is the measured value more than 1 MΩ? | Go to step **9.** | Repair harness between yaw rate and lateral G sensor and VDCCM. |

| | Step | Check | Yes | No |
|---|---|---|---|---|
| 9 | **CHECK YAW RATE AND LATERAL G SENSOR.**<br>1) Turn ignition switch to OFF.<br>2) Remove yaw rate and lateral G sensor from vehicle.<br>3) Connect connector to yaw rate and lateral G sensor.<br>4) Connect connector to VDCCM.<br>5) Turn ignition switch to ON.<br>6) Measure voltage between yaw rate and lateral G sensor connector terminals.<br>***Connector & terminal***<br>***(R100) No. 5 (+) — No. 6 (–):*** | Is the measured value within 2.3 to 2.7 V when yaw rate and lateral G sensor is horizontal? | Go to step **10.** | Replace yaw rate and lateral G sensor. <Ref. to VDC-22, Yaw Rate and Lateral G Sensor.> |
| 10 | **CHECK YAW RATE AND LATERAL G SENSOR.**<br>Measure voltage between yaw rate and lateral G sensor connector terminals.<br>***Connector & terminal***<br>***(R100) No. 5 (+) — No. 6 (–):*** | Is the measured value within 3.3 to 3.7 V when yaw rate and lateral G sensor is inclined 90° to left? | Go to step **11.** | Replace yaw rate and lateral G sensor. <Ref. to VDC-22, Yaw Rate and Lateral G Sensor.> |
| 11 | **CHECK YAW RATE AND LATERAL G SENSOR.**<br>Measure voltage between yaw rate and lateral G sensor connector terminals.<br>***Connector & terminal***<br>***(R100) No. 5 (+) — No. 6 (–):*** | Is the measured value within 1.3 to 1.7 V when yaw rate and lateral G sensor is inclined 90° to right? | Go to step **12.** | Replace yaw rate and lateral G sensor. <Ref. to VDC-22, Yaw Rate and Lateral G Sensor.> |
| 12 | **CHECK POOR CONTACT IN CONNECTORS.** | Is there poor contact in connector between VDCCM and yaw rate and lateral G sensor? | Repair connector. | Go to step **13.** |
| 13 | **CHECK VDCCM.**<br>1) Connect all connectors.<br>2) Erase the memory.<br>3) Perform inspection mode.<br>4) Read out the diagnostic trouble code. | Is the same diagnostic trouble code as in the current diagnosis still being output? | Replace VDCCM. <Ref. to VDC-8, VDC Control Module (VDCCM).> | Go to step **14.** |
| 14 | **CHECK ANY OTHER DIAGNOSTIC TROUBLE CODES APPEARANCE.** | Are other diagnostic trouble codes being output? | Proceed with the diagnosis corresponding to the diagnostic trouble code. | A temporary poor contact. |

**MEMO:**

## BC:DTC 74 VOLTAGE INPUTTED TO PRESSURE SENSOR 1 EXCEEDS SPECIFICATION. (PRIMARY PRESSURE SENSOR)

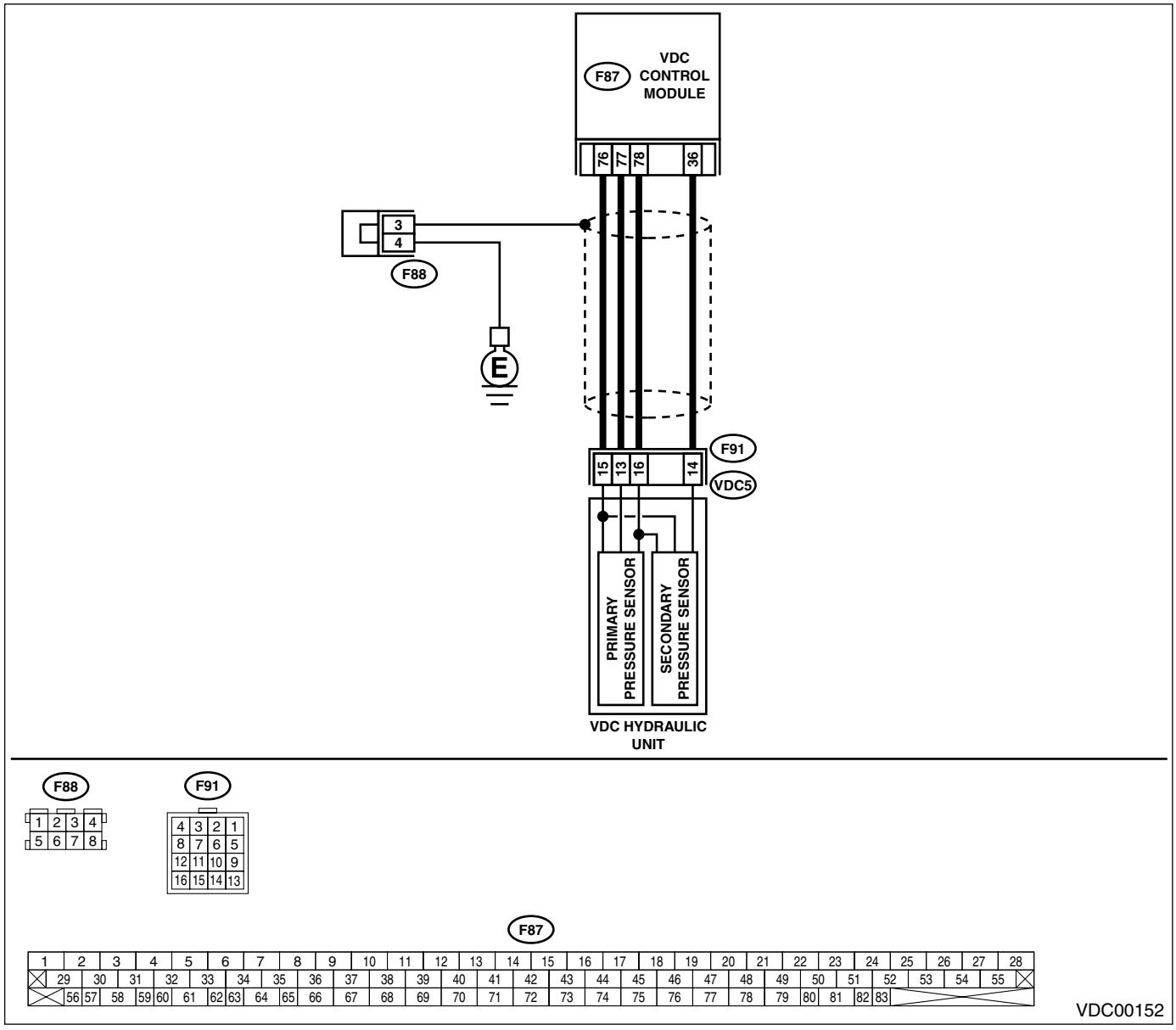
***DIAGNOSIS:***

- Faulty primary pressure sensor

***TROUBLE SYMPTOM:***

- ABS does not operate.
- VDC does not operate.

**WIRING DIAGRAM:**



| | Step | Check | Yes | No |
|---|---|---|---|---|
| 1 | **CHECK GROUND CIRCUIT OF PRESSURE SENSOR.**<br>1) Turn ignition switch to OFF.<br>2) Disconnect connector (F91) from VDCH/U.<br>3) Measure resistance between VDCH/U connector and chassis ground.<br>***Connector & terminal***<br>***(F91) No. 15 — Chassis ground:*** | Is the measured value less than 0.5 Ω? | Go to step **4.** | Go to step **2.** |
| 2 | **CHECK GROUND CIRCUIT OF VDCCM.**<br>1) Disconnect connector from VDCCM.<br>2) Remove cover from VDCCM. <Ref. to VDC-20, VDCCM Connector Cover.><br>3) Connect connector to VDCCM.<br>4) Measure resistance between VDCCM and chassis ground.<br>***Connector & terminal***<br>***(F87) No. 76 — Chassis ground:*** | Is the measured value less than 0.5 Ω? | Replace harness between VDCH/U and VDCCM. | Go to step **3.** |
| 3 | **CHECK POOR CONTACT IN CONNECTORS.** | Is there poor contact in VDCCM connector? | Repair or replace VDCCM connector. | Replace VDCCM. <Ref. to VDC-8, VDC Control Module (VDCCM).> |
| 4 | **CHECK POWER SUPPLY OF PRESSURE SENSOR.**<br>NOTE:<br>When this inspection is carried out, DTC 51 ABNORMAL VALVE RELAY is memorized, but this does not indicate valve relay malfunction.<br>1) Turn ignition switch to ON.<br>2) Measure voltage between VDCH/U connector terminals.<br>***Connector & terminal***<br>***(F91) No. 16 (+) — No. 15 (–):*** | Is the measured value within 4.75 to 5.25 V? | Go to step **7.** | Go to step **5.** |
| 5 | **CHECK POWER SUPPLY OF VDCCM.**<br>1) Turn ignition switch to OFF.<br>2) Disconnect connector from VDCCM.<br>3) Remove cover from VDCCM. <Ref. to VDC-20, REMOVE, VDCCM Connector Cover.><br>4) Connect connector to VDCCM.<br>5) Turn ignition switch to ON.<br>6) Measure voltage between VDCCM connector terminals.<br>***Connector & terminal***<br>***(F87) No. 78 (+) — No. 76 (–):*** | Is the measured value within 4.75 to 5.25 V? | Repair harness between VDCH/U and VDCCM. | Go to step **6.** |
| 6 | **CHECK POOR CONTACT IN CONNECTORS.** | Is there poor contact in VDCCM connector? | Repair or replace VDCCM connector. | Replace VDCCM. <Ref. to VDC-8, VDC Control Module (VDCCM).> |
| 7 | **CHECK GROUND SHORT OF HARNESS.**<br>1) Turn ignition switch to OFF.<br>2) Disconnect connector from VDCCM.<br>3) Measure resistance between VDCH/U connector and chassis ground.<br>***Connector & terminal***<br>***(F91) No. 13 — Chassis ground:*** | Is the measured value more than 1 MΩ? | Go to step **8.** | Repair harness between VDCH/U and VDCCM. |

| Step | | Check | Yes | No |
|---|---|---|---|---|
| 8 | **CHECK BATTERY SHORT OF HARNESS.**<br>Measure voltage between VDCH/U connector and chassis ground.<br>***Connector & terminal***<br>***(F91) No. 13 (+) — Chassis ground (–):*** | Is the measured value less than 0.5 V? | Go to step **9.** | Repair harness between VDCH/U and VDCCM. |
| 9 | **CHECK BATTERY SHORT OF HARNESS.**<br>1) Turn ignition switch to ON.<br>2) Measure voltage between VDCH/U connector and chassis ground.<br>***Connector & terminal***<br>***(F91) No. 13 (+) — Chassis ground (–):*** | Is the measured value less than 0.5 V? | Go to step **10.** | Repair harness between VDCH/U and VDCCM. |
| 10 | **CHECK INPUT VOLTAGE OF PRESSURE SENSOR.**<br>1) Turn ignition switch to OFF.<br>2) Disconnect connector from VDCCM.<br>3) Remove cover from VDCCM. <Ref. to VDC-20, REMOVE, VDCCM Connector Cover.><br>4) Connect connector to VDCCM.<br>5) Connect all connectors.<br>6) Turn ignition switch to ON.<br>7) Do not depress brake pedal.<br>8) Measure voltage between VDCCM connector terminals.<br>***Connector & terminal***<br>***(F87) No. 77 (+) — No. 76 (–):*** | Is the measured value within 0.48 to 0.72 V? | Go to step **11.** | Replace VDCH/U. <Ref. to VDC-8, VDC Control Module (VDCCM).> |
| 11 | **CHECK POOR CONTACT IN CONNECTORS.** | Is there poor contact in connector between VDCCM and pressure sensor? | Repair connector. | Go to step **12.** |
| 12 | **CHECK VDCCM.**<br>1) Connect all connectors.<br>2) Erase the memory.<br>3) Perform inspection mode.<br>4) Read out the diagnostic trouble code. | Is the same diagnostic trouble code as in the current diagnosis still being output? | Replace VDCCM. <Ref. to VDC-8, VDC Control Module (VDCCM).> | Go to step **13.** |
| 13 | **CHECK ANY OTHER DIAGNOSTIC TROUBLE CODES APPEARANCE.** | Are other diagnostic trouble codes being output? | Proceed with the diagnosis corresponding to the diagnostic trouble code. | A temporary poor contact. |

**MEMO:**

## BD:DTC 74 VOLTAGE INPUTTED TO PRESSURE SENSOR 2 EXCEEDS SPECIFICATION. (SECONDARY PRESSURE SENSOR)

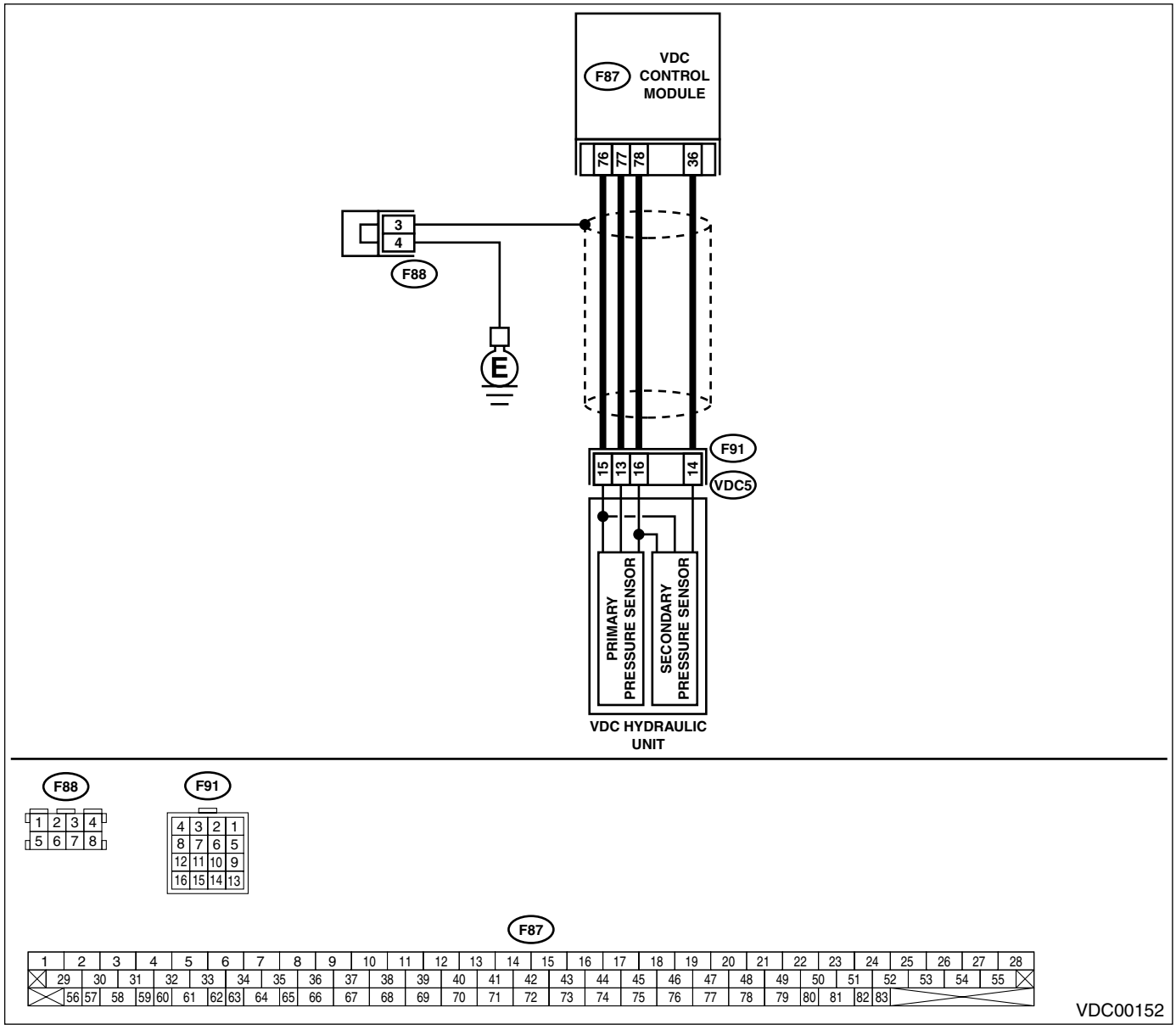
***DIAGNOSIS:***

- Faulty secondary pressure sensor

***TROUBLE SYMPTOM:***

- ABS does not operate.
- VDC does not operate.

**WIRING DIAGRAM:**



| | Step | Check | Yes | No |
|---|---|---|---|---|
| 1 | **CHECK GROUND CIRCUIT OF PRESSURE SENSOR.**<br>1) Turn ignition switch to OFF.<br>2) Disconnect connector (F91) from VDCH/U.<br>3) Measure resistance between VDCH/U connector and chassis ground.<br>***Connector & terminal***<br>***(F91) No. 15 — Chassis ground:*** | Is the measured value less than 0.5 Ω? | Go to step **4.** | Go to step **2.** |
| 2 | **CHECK GROUND CIRCUIT OF VDCCM.**<br>1) Disconnect connector from VDCCM.<br>2) Remove cover from VDCCM. <Ref. to VDC-20, REMOVE, VDCCM Connector Cover.><br>3) Connect connector to VDCCM.<br>4) Measure resistance between VDCCM and chassis ground.<br>***Connector & terminal***<br>***(F87) No. 76 — Chassis ground:*** | Is the measured value less than 0.5 Ω? | Replace harness between VDCH/U and VDCCM. | Go to step **3.** |
| 3 | **CHECK POOR CONTACT IN CONNECTORS.** | Is there poor contact in VDCCM connector? | Repair or replace VDCCM connector. | Replace VDCCM. <Ref. to VDC-8, VDC Control Module (VDCCM).> |
| 4 | **CHECK POWER SUPPLY OF PRESSURE SENSOR.**<br>NOTE:<br>When this inspection is carried out, DTC 51 ABNORMAL VALVE RELAY is memorized, but this does not indicate valve relay malfunction.<br>1) Turn ignition switch to ON.<br>2) Measure voltage between VDCH/U connector terminals.<br>***Connector & terminal***<br>***(F91) No. 16 (+) — No. 15 (–):*** | Is the measured value within 4.75 to 5.25 V? | Go to step **7.** | Go to step **5.** |
| 5 | **CHECK POWER SUPPLY OF VDCCM.**<br>1) Turn ignition switch to OFF.<br>2) Disconnect connector from VDCCM.<br>3) Remove cover from VDCCM. <Ref. to VDC-20, VDCCM Connector Cover.><br>4) Connect connector to VDCCM.<br>5) Turn ignition switch to ON.<br>6) Measure voltage between VDCCM connector terminals.<br>***Connector & terminal***<br>***(F87) No. 78 (+) — No. 76 (–):*** | Is the measured value within 4.75 to 5.25 V? | Repair harness between VDCH/U and VDCCM. | Go to step **6.** |
| 6 | **CHECK POOR CONTACT IN CONNECTORS.** | Is there poor contact in VDCCM connector? | Repair or replace VDCCM connector. | Replace VDCCM. <Ref. to VDC-8, VDC Control Module (VDCCM).> |
| 7 | **CHECK GROUND SHORT OF HARNESS.**<br>1) Turn ignition switch to OFF.<br>2) Disconnect connector from VDCCM.<br>3) Measure resistance between VDCH/U connector and chassis ground.<br>***Connector & terminal***<br>***(F91) No. 14 — Chassis ground:*** | Is the measured value more than 1 MΩ? | Go to step **8.** | Repair harness between VDCH/U and VDCCM. |

| Step | | Check | Yes | No |
|---|---|---|---|---|
| 8 | **CHECK BATTERY SHORT OF HARNESS.**<br>Measure voltage between VDCH/U connector and chassis ground.<br>***Connector & terminal***<br>***(F91) No. 14 (+) — Chassis ground (–):*** | Is the measured value less than 0.5 V? | Go to step **9.** | Repair harness between VDCH/U and VDCCM. |
| 9 | **CHECK BATTERY SHORT OF HARNESS.**<br>1) Turn ignition switch to ON.<br>2) Measure voltage between VDCH/U connector and chassis ground.<br>***Connector & terminal***<br>***(F91) No. 13 (+) — Chassis ground (–):***<br>***(F91) No. 14 (+) — Chassis ground (–):*** | Is the measured value less than 0.5 V? | Go to step **10.** | Repair harness between VDCH/U and VDCCM. |
| 10 | **CHECK INPUT VOLTAGE OF PRESSURE SENSOR.**<br>1) Turn ignition switch to OFF.<br>2) Disconnect connector from VDCCM.<br>3) Remove cover from VDCCM. <Ref. to VDC-20, REMOVE, VDCCM Connector Cover.><br>4) Connect connector to VDCCM.<br>5) Connect all connectors.<br>6) Turn ignition switch to ON.<br>7) Do not depress brake pedal.<br>8) Measure voltage between VDCCM connector terminals.<br>***Connector & terminal***<br>***(F87) No. 36 (+) — No. 76 (–):*** | Is the measured value within 0.48 to 0.72 V? | Go to step **11.** | Replace VDCH/U. <Ref. to VDC-8, VDC Control Module (VDCCM).> |
| 11 | **CHECK POOR CONTACT IN CONNECTORS.** | Is there poor contact in connector between VDCCM and pressure sensor? | Repair connector. | Go to step **12.** |
| 12 | **CHECK VDCCM.**<br>1) Connect all connectors.<br>2) Erase the memory.<br>3) Perform inspection mode.<br>4) Read out the diagnostic trouble code. | Is the same diagnostic trouble code as in the current diagnosis still being output? | Replace VDCCM. <Ref. to VDC-8, VDC Control Module (VDCCM).> | Go to step **13.** |
| 13 | **CHECK ANY OTHER DIAGNOSTIC TROUBLE CODES APPEARANCE.** | Are other diagnostic trouble codes being output? | Proceed with the diagnosis corresponding to the diagnostic trouble code. | A temporary poor contact. |

## BE:DTC 74 PRESSURE SENSOR 1 OFFSET IS TOO BIG. (PRIMARY PRESSURE SENSOR)

NOTE:
For diagnostic procedure, refer to DTC 74. <Ref. to VDC-244, DTC 74 PRESSURE SENSOR 2 OFFSET IS TOO BIG. (SECONDARY PRESSURE SENSOR), Diagnostics Chart with Select Monitor.>

## BF:DTC 74 PRESSURE SENSOR 2 OFFSET IS TOO BIG. (SECONDARY PRESSURE SENSOR)

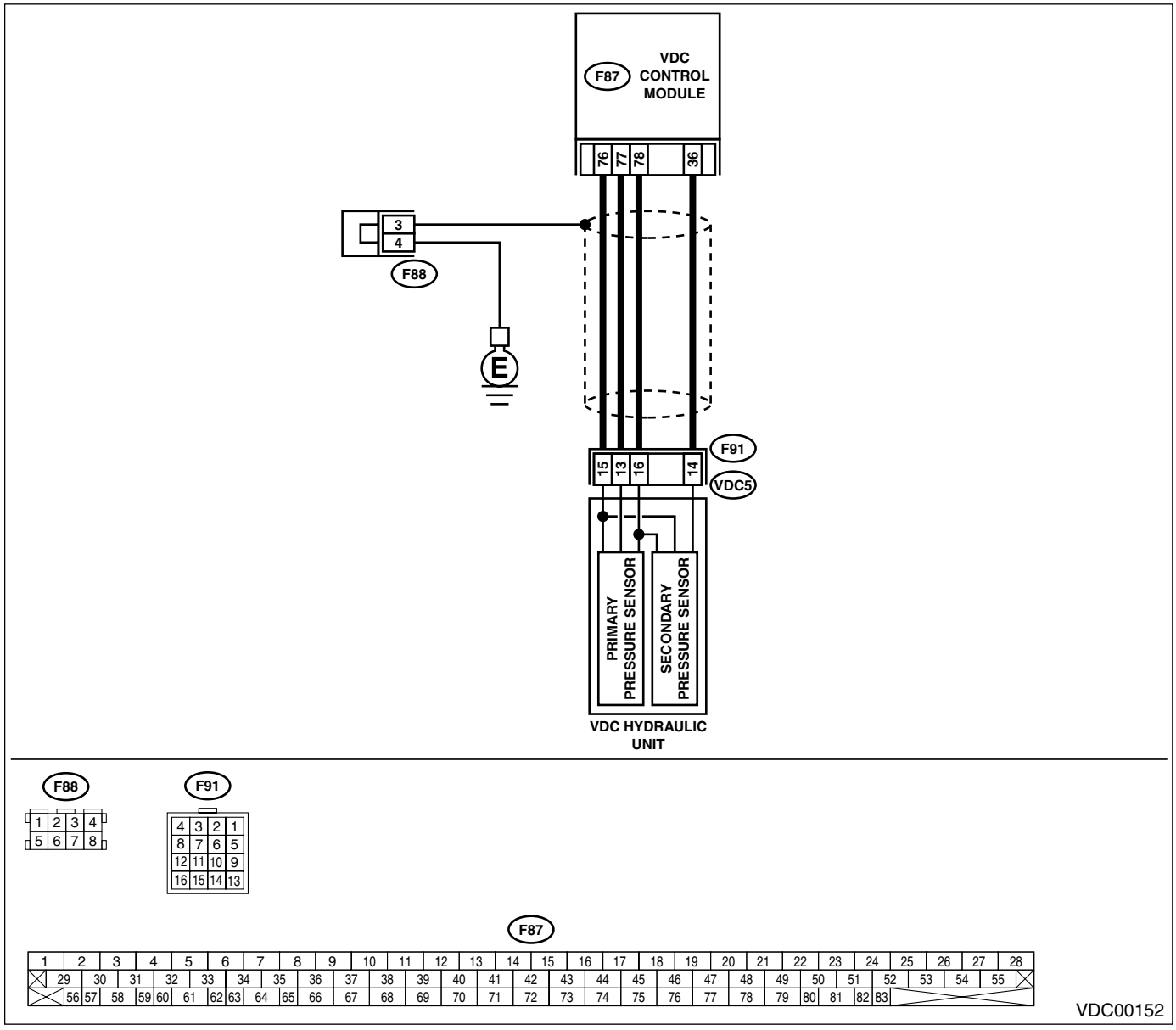
***DIAGNOSIS:***

- Faulty pressure sensor

***TROUBLE SYMPTOM:***

- ABS does not operate.
- VDC does not operate.

**WIRING DIAGRAM:**



| | Step | Check | Yes | No |
|---|---|---|---|---|
| 1 | **CHECK DRIVING TECHNIC.**<br>Check the driver's technic. | Are the accelerator and brake pedals depressed simultaneously while driving? | The VDC is normal. Erase the diagnostic trouble code.<br>NOTE:<br>Driving the vehicle with both the accelerator pedal and brake pedal depressed may store a diagnostic trouble code in the memory. | Go to step **2.** |
| 2 | **CHECK OUTPUT OF PRESSURE SENSOR USING SELECT MONITOR.**<br>1) Select “Current data display & Save” on the select monitor.<br>2) Read pressure sensor output on the select monitor display. | Is the measured value within 0.48 to 0.72 V when brake pedal is depressed? | Go to step **3.** | Replace VDCH/U. <Ref. to VDC-8, VDC Control Module (VDCCM).> |
| 3 | **CHECK VDCCM.**<br>1) Connect all connectors.<br>2) Erase the memory.<br>3) Perform inspection mode.<br>4) Read out the diagnostic trouble code. | Is the same diagnostic trouble code as in the current diagnosis still being output? | Replace VDCCM. <Ref. to VDC-8, VDC Control Module (VDCCM).> | Go to step **4.** |
| 4 | **CHECK ANY OTHER DIAGNOSTIC TROUBLE CODES APPEARANCE.** | Are other diagnostic trouble codes being output? | Proceed with the diagnosis corresponding to the diagnostic trouble code. | A temporary poor contact. |

## BG:DTC 74 DIFFERENTIAL PRESSURE OF PRESSURE SENSOR IS TOO BIG.

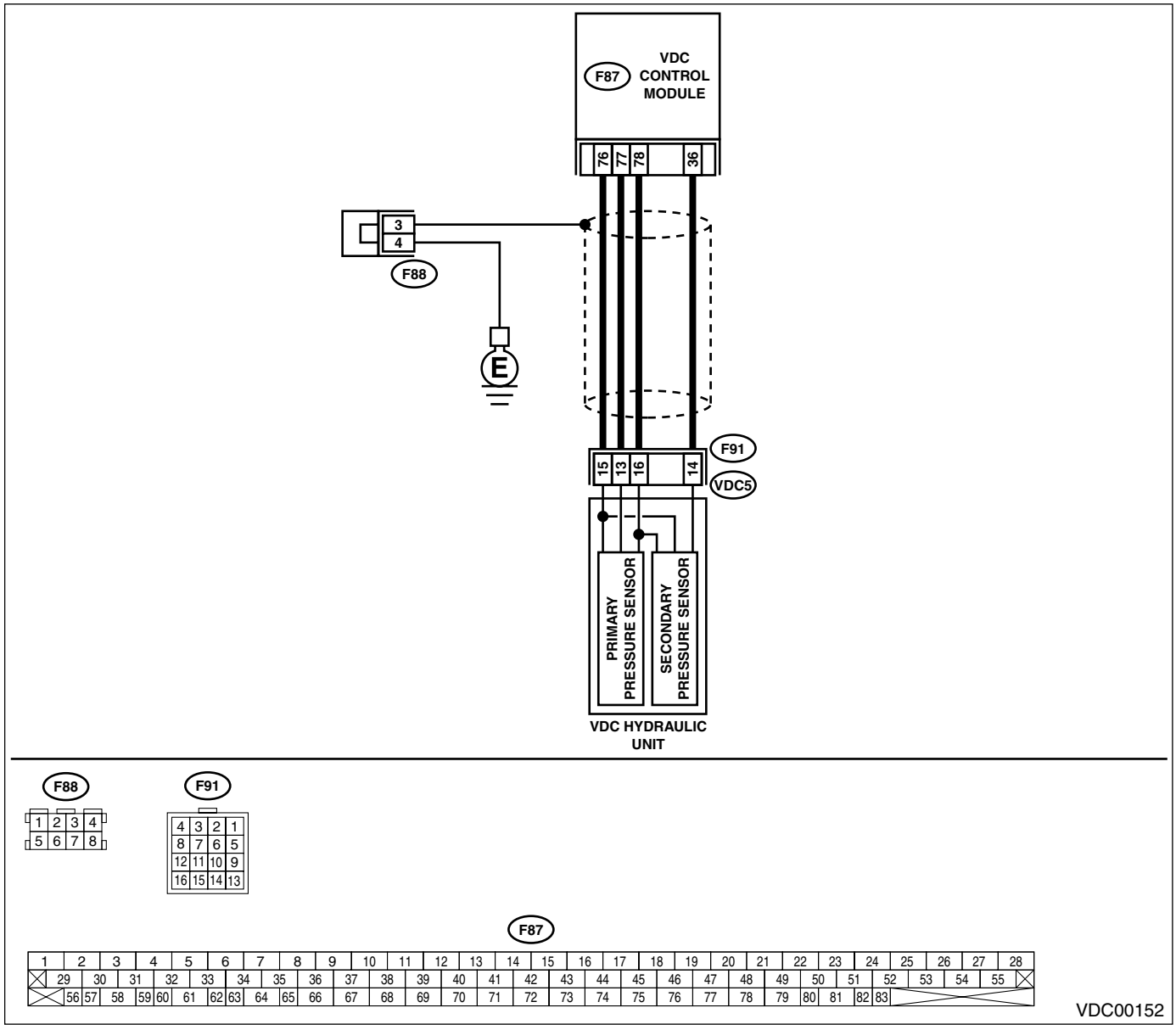
***DIAGNOSIS:***

- Faulty pressure sensor

***TROUBLE SYMPTOM:***

- ABS does not operate.
- VDC does not operate.

**WIRING DIAGRAM:**



| | Step | Check | Yes | No |
|---|---|---|---|---|
| 1 | **CHECK GROUND SHORT OF HARNESS.**<br>1) Turn ignition switch to OFF.<br>2) Disconnect connector from VDCCM.<br>3) Disconnect connector (F91) from VDCH/U.<br>4) Measure resistance between VDCH/U connector and chassis ground.<br>***Connector & terminal***<br>***(F91) No. 13 — Chassis ground:***<br>***(F91) No. 14 — Chassis ground:*** | Is the measured value more than 1 MΩ? | Go to step **2.** | Repair harness between VDCH/U and VDCCM. |
| 2 | **CHECK BATTERY SHORT OF HARNESS.**<br>Measure voltage between VDCH/U connector and chassis ground.<br>***Connector & terminal***<br>***(F91) No. 13 (+) — Chassis ground (–):***<br>***(F91) No. 14 (+) — Chassis ground (–):*** | Is the measured value less than 0.5 V? | Go to step **3.** | Repair harness between VDCH/U and VDCCM. |
| 3 | **CHECK BATTERY SHORT OF HARNESS.**<br>1) Turn ignition switch to ON.<br>2) Measure voltage between VDCH/U connector and chassis ground.<br>***Connector & terminal***<br>***(F91) No. 13 (+) — Chassis ground (–):***<br>***(F91) No. 14 (+) — Chassis ground (–):*** | Is the measured value less than 0.5 V? | Go to step **4.** | Repair harness between VDCH/U and VDCCM. |
| 4 | **CHECK INPUT VOLTAGE OF PRESSURE SENSOR.**<br>1) Turn ignition switch to OFF.<br>2) Disconnect connector from VDCCM.<br>3) Remove cover from VDCCM. <Ref. to VDC-20, REMOVE, VDCCM Connector Cover.><br>4) Connect connector to VDCCM.<br>5) Connect all connectors.<br>6) Turn ignition switch to ON.<br>7) Do not depress brake pedal.<br>8) Measure voltage between VDCCM connector terminals.<br>***Connector & terminal***<br>***(F87) No. 77 (+) — No. 76 (–):***<br>***(F87) No. 36 (+) — No. 76 (–):*** | Is the measured value within 0.48 to 0.72 V? | Go to step **5.** | Replace VDCH/U. <Ref. to VDC-8, VDC Control Module (VDCCM).> |
| 5 | **CHECK BRAKE FLUID LEAKAGE.**<br>Inspect fluid leakage between brake master cylinder and VDCH/U. | Does brake fluid leak? | Retighten or replace. | Go to step **6.** |
| 6 | **CHECK BRAKE MASTER CYLINDER.**<br>Inspect brake master cylinder hydraulic pressure. <Ref. to BR-29, OPERATION CHECK (WITH GAUGES), INSPECTION, Brake Booster.> | Is hydraulic pressure normal? | Go to step **7.** | Replace master cylinder. |
| 7 | **CHECK BRAKE PEDAL STROKE.**<br>Measure the stroke between non-forced pedal position and forced pedal position with 50 kg (110 lb). | Is the measured value less than 95 mm (3.74 in)? | Go to step **8.** | Perform bleeding from brake system. |
| 8 | **CHECK INPUT VOLTAGE OF PRESSURE SENSOR.**<br>1) Depress the brake pedal with 50 kg (110 lb).<br>2) Measure voltage between VDCCM connector terminals.<br>***Connector & terminal***<br>***A (F87) No. 77 (+) — No. 76 (–):***<br>***B (F87) No. 36 (+) — No. 76 (–):*** | Is the voltage difference between A and B more than 0.2 V? | Go to step **9.** | Replace VDCH/U. <Ref. to VDC-8, VDC Control Module (VDCCM).> |

| | Step | Check | Yes | No |
|---|---|---|---|---|
| 9 | **CHECK POOR CONTACT IN CONNECTORS.** | Is there poor contact in connector between VDCCM and pressure sensor? | Repair connector. | Go to step **10.** |
| 10 | **CHECK VDCCM.**<br>1) Connect all connectors.<br>2) Erase the memory.<br>3) Perform inspection mode.<br>4) Read out the diagnostic trouble code. | Is the same diagnostic trouble code as in the current diagnosis still being output? | Replace VDCCM. <Ref. to VDC-8, VDC Control Module (VDCCM).> | Go to step **11.** |
| 11 | **CHECK ANY OTHER DIAGNOSTIC TROUBLE CODES APPEARANCE.** | Are other diagnostic trouble codes being output? | Proceed with the diagnosis corresponding to the diagnostic trouble code. | A temporary poor contact. |

# 15.General Diagnostic Table

## A: INSPECTION

| Symptom | | Primary probable cause | Secondary probable cause |
|---|---|---|---|
| Poor braking effectiveness | Long braking distance | VDCH/U<br>VDCCM<br>Brake pads<br>Air in brake line<br>Tire specifications, wear and pressures<br>Incorrect wiring or piping | Faulty ABS sensor or sensor gap<br>Faulty steering angle sensor or improper neutral position<br>Faulty yaw rate and lateral G sensor or improper installation<br>Proportioning valve<br>Master cylinder<br>Brake caliper<br>Disc rotor<br>Brake pipe<br>Brake booster |
| | Wheel locks | VDCH/U<br>VDCCM<br>Faulty ABS sensor or sensor gap<br>Incorrect wiring or piping | Faulty steering angle sensor or improper neutral position<br>Faulty yaw rate and lateral G sensor or improper installation<br>Proportioning valve<br>Brake caliper<br>Brake pipe |
| | Brake dragging | VDCH/U<br>VDCCM<br>Faulty ABS sensor or sensor gap<br>Master cylinder<br>Brake caliper<br>Parking brake<br>Axle & wheels<br>Brake pedal play | Faulty steering angle sensor or improper neutral position<br>Faulty yaw rate and lateral G sensor or improper installation<br>Brake pads<br>Brake pipe |
| | Long brake pedal stroke | Air in brake line<br>Brake pedal play | VDCH/U<br>Proportioning valve<br>Master cylinder<br>Brake caliper<br>Brake pads<br>Brake pipe<br>Brake booster |
| | Vehicle pitching | VDCH/U<br>VDCCM<br>Uneven road<br>Suspension play or fatigue (reduced damping)<br>Incorrect wiring or piping | Faulty ABS sensor or sensor gap<br>Faulty steering angle sensor or improper neutral position<br>Faulty yaw rate and lateral G sensor or improper installation |
| | Unstable or uneven braking | VDCH/U<br>VDCCM<br>Faulty ABS sensor or sensor gap<br>Brake caliper<br>Brake pads<br>Uneven road<br>Tire specifications, wear and pressures<br>Incorrect wiring or piping | Faulty ABS sensor or sensor gap<br>Faulty steering angle sensor or improper neutral position<br>Faulty yaw rate and lateral G sensor or improper installation<br>Master cylinder<br>Disc rotor<br>Brake pipe<br>Axle & wheels<br>Crowned road or banked road<br>Suspension play or fatigue (reduced damping) |

# GENERAL DIAGNOSTIC TABLE

| Symptom | | Primary probable cause | Secondary probable cause |
|---|---|---|---|
| Vibration and/or noise<br>• During abrupt braking<br>• During rapid acceleration<br>• During slippery road driving | Excessive brake pedal vibration | Uneven road<br>Incorrect wiring or piping | VDCH/U<br>Proportioning valve<br>Brake booster<br>Suspension play or fatigue (reduced damping) |
| | Noise from VDCH/U | VDCH/U (mount bushing)<br>Faulty ABS sensor or sensor gap<br>Brake pipe | VDCCM<br>Faulty steering angle sensor or improper neutral position<br>Faulty yaw rate and lateral G sensor or improper installation |
| | Noise from front of vehicle | VDCH/U (mount bushing)<br>Faulty ABS sensor or sensor gap<br>Master cylinder<br>Brake caliper<br>Brake pads<br>Disc rotor<br>Brake pipe<br>Brake booster<br>Suspension play or fatigue (reduced damping) | Axle & wheels<br>Tire specifications, wear and pressures |
| | Noise inside passenger compartment | | VDCCM<br>Faulty steering angle sensor or improper neutral position<br>Faulty yaw rate and lateral G sensor or improper installation |
| | Noise from rear of vehicle | Faulty ABS sensor or sensor gap<br>Brake caliper<br>Brake pads<br>Disc rotor<br>Parking brake<br>Brake pipe<br>Suspension play or fatigue (reduced damping) | Axle & wheels<br>Tire specifications, wear and pressures |
| Engine does not accelerate or engine stalls during rapid acceleration or on slippery roads. | | VDCH/U<br>VDCCM<br>Faulty ABS sensor or sensor gap<br>Master cylinder<br>Brake caliper<br>Parking brake<br>Incorrect wiring or piping | Faulty steering angle sensor or improper neutral position<br>Faulty yaw rate and lateral G sensor or improper installation<br>Brake pads<br>Brake pipe |

| Symptom | | Primary probable cause | Secondary probable cause |
|---|---|---|---|
| Poor TCS's directional operation stability | Deviation in either left or right direction | VDCH/U<br>VDCCM<br>Faulty ABS sensor or sensor gap<br>Faulty steering angle sensor or improper neutral position<br>Faulty yaw rate and lateral G sensor or improper installation<br>Brake caliper<br>Brake pads<br>Wheel alignment<br>Uneven road<br>Crowned road or banked road<br>Tire specifications, wear and pressures<br>Incorrect wiring or piping | Proportioning valve<br>Disc rotor<br>Brake pipe<br>Axle & wheels<br>Suspension play or fatigue (reduced damping) |
| | Vehicle spin | VDCH/U<br>VDCCM<br>Faulty ABS sensor or sensor gap<br>Faulty steering angle sensor or improper neutral position<br>Faulty yaw rate and lateral G sensor or improper installation<br>Brake pads<br>Tire specifications, wear and pressures<br>Incorrect wiring or piping | Proportioning valve<br>Brake caliper<br>Brake pipe |
| Steering wheel drags during operation. | | VDCH/U<br>VDCCM<br>Faulty ABS sensor or sensor gap<br>Faulty steering angle sensor or improper neutral position<br>Faulty yaw rate and lateral G sensor or improper installation<br>Incorrect wiring or piping connections<br>Power steering system | Brake caliper<br>Brake pads<br>Disc rotor<br>Wheel alignment<br>Uneven road<br>Crowned road or banked road<br>Suspension play or fatigue (reduced damping)<br>Tire specifications, wear and pressures |
| VDC activates during ordinary driving. | | VDCH/U<br>VDCCM<br>Faulty ABS sensor or sensor gap<br>Faulty steering angle sensor or improper neutral position<br>Faulty yaw rate and lateral G sensor or improper installation<br>Wheel alignment<br>Uneven road<br>Crowned road or banked road<br>Suspension play or fatigue (reduced damping)<br>Tire specifications, wear and pressures<br>Incorrect wiring or piping<br>Power steering system | |
| VDC OFF indicator light does not illuminate when VDC OFF switch is pushed.<br>NOTE:<br>When pushing the VDC OFF switch for 10 seconds or more while revving the engine, the VDC OFF indicator light goes off and operations cannot be continued. Turn ignition switch from OFF to ON again to recover the previous condition. | | Harness<br>Indicator light bulb<br>VDC OFF switch | |

# GENERAL DIAGNOSTIC TABLE

**MEMO:**