VDC (DIAGNOSTICS)

VDC

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1. Basic Diagnostic Procedure

A: PROCEDURE

1. WITHOUT SUBARU SELECT MONITOR

Step	Check	Yes	No
 CHECK PRE-INSPECTION. Ask the customer when and how the trouble occurred using interview checklist. Ref. to VDC-6, Check List for Interview.> 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). Calling up diagnostic trouble code (DTC). <ref. subaru<br="" to="" vdc-24,="" without="">SELECT MONITOR, OPERATION, Read Diagnostic Trouble Code (DTC).></ref.>	Is diagnostic trouble code (DTC) readable?	Go to step 3.	Inspect using diag- nostic chart for warning light fail- ure. <ref. to="" vdc-<br="">34, Diagnostics Chart with Diagno- sis Connector.> NOTE: Call up diagnostic trouble code (DTC) again after inspect- ing warning light. <ref. to="" vdc-24,<br="">WITHOUT SUBARU SE- LECT MONITOR, OPERATION, Read Diagnostic Trouble Code (DTC).></ref.></ref.>
3 CHECK DIAGNOSTIC TROUBLE CODE (DTC). NOTE: Record all diagnostic trouble codes (DTCs).	Is only the start code issued?	Go to step 4.	Go to step 5.
 PERFORM THE GENERAL DIAGNOSTICS. 1) Inspect using "General Diagnostics Table' <ref. diagnostic<br="" general="" to="" vdc-249,="">Table.></ref.> 2) Perform the clear memory mode. <ref. to<br="">VDC-26, WITHOUT SUBARU SELECT MONITOR, OPERATION, Clear Memory Mode.></ref.> 3) Perform the inspection mode. <ref. to<br="">VDC-25, Inspection Mode.> Calling up the diagnostic trouble code (DTC). <ref. to="" vdc-24,="" without<br="">SUBARU SELECT MONITOR, OPERA- TION, Read Diagnostic Trouble Code (DTC).></ref.></ref.> 	Is only the start code issued?	Complete the diagnosis.	Go to step 5.

BASIC DIAGNOSTIC PROCEDURE

Step	Check	Yes	No
 5 PERFORM THE DIAGNOSIS. 1) Inspect using "Diagnostics Chart with Diagnostic Connector".<ref. chart="" connector".<ref.="" connector.="" diagnosis="" diagnostic="" diagnostics="" to="" vdc-34,="" with=""></ref.> NOTE: For diagnostic trouble code (DTC) list, refer to "List of Diagnostic Trouble Code (DTC)". <ref. (dtc).="" code="" diagnostic="" list="" list,="" monitor,="" of="" select="" subaru="" to="" trouble="" vdc-28,="" without=""></ref.> 2) Repair trouble cause. 3) Perform the clear memory mode. <ref. clear="" memory="" mode.="" monitor,="" operation,="" select="" subaru="" to="" vdc-26,="" without=""></ref.> 4) Perform the inspection mode. <ref. inspection="" mode.="" to="" vdc-25,=""></ref.> 5) Calling up the diagnostic trouble code (DTC). <ref. (dtc).="" code="" diagnostic="" monitor,="" opera-tion,="" read="" select="" subaru="" to="" trouble="" vdc-24,="" without=""></ref.> 	Is only the start code issued?	Complete the diagnosis.	Inspect using "Diagnostics Chart with Diagnostic Connector". <ref. to VDC-34, Diag- nostics Chart with Diagnosis Con- nector.></ref.

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. 1) Ask the customer when and how the trouble occurred using interview checklist. <ref. check="" for="" interview.="" list="" to="" vdc-6,=""></ref.> 2) Before performing diagnosis, inspect unit which might influence the VDC problem. <ref. description.="" general="" inspection,="" to="" vdc-9,=""></ref.> 	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. 1) Turn ignition switch to OFF. 2) Connect the SUBARU SELECT MONITOR to data link connector. 3) Turn ignition switch to ON and SUBARU SELECT MONITOR to ON. 4) Calling up the diagnostic trouble code (DTC). <ref. subaru<br="" to="" vdc-24,="" with="">SELECT MONITOR, OPERATION, Read Diagnostic Trouble Code (DTC).></ref.> 5) Record all diagnostic trouble codes (DTCs) and frame data. 	Is the corresponding DTC dis- played?	Go to step 3.	Go to step 4.
3	 PERFORM THE GENERAL DIAGNOSTICS. Inspect using "General Diagnostics Table". <ref. general<br="" inspection,="" to="" vdc-249,="">Diagnostic Table.></ref.> Perform the clear memory mode. <ref. to<br="">VDC-26, WITH SUBARU SELECT MONI- TOR, OPERATION, Clear Memory Mode.></ref.> Perform the inspection mode. <ref. to<br="">VDC-25, OPERATION, Inspection Mode.></ref.> Calling up the diagnostic trouble code (DTC). <ref. subaru<br="" to="" vdc-24,="" with="">SELECT MONITOR, OPERATION, Read Diagnostic Trouble Code (DTC).></ref.> 	Is no diagnostic trouble code (DTC) displayed or do VDC and ABS warning lights con- stantly remain on?	Complete the diagnosis.	Go to step 4.
	 PERFORM THE DIAGNOSIS. 1) Inspect using "Diagnostics Chart with Subaru Select Monitor".<ref. chart="" diagnostics="" monitor.="" select="" to="" vdc-122,="" with=""></ref.> NOTE: For diagnostic trouble code (DTC) list, refer to 'List of Diagnostic Trouble Code (DTC)". <ref. (dtc).="" code="" diagnostic="" list="" list,="" moni-tor,="" of="" select="" subaru="" to="" trouble="" vdc-30,="" with=""></ref.> 2) Repair trouble cause. 3) Perform the clear memory mode. <ref. clear="" memory="" mode.="" moni-tor,="" operation,="" select="" subaru="" to="" vdc-26,="" with=""></ref.> 4) Perform the inspection mode. <ref. inspection="" mode.="" operation,="" to="" vdc-25,=""></ref.> 5) Calling up the diagnostic trouble code (DTC). <ref. (dtc).="" code="" diagnostic="" moni-select="" monitor,="" operation,="" read="" select="" subaru="" to="" trouble="" vdc-24,="" with=""></ref.> 	Is no diagnostic trouble code (DTC) displayed or do VDC and ABS warning lights con- stantly remain on?	Complete the diagnosis.	Inspect using "Diagnostics Chart with Subaru Select Monitor". <ref. to<br="">VDC-122, Diag- nostics Chart with Select Monitor.></ref.>

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.						
	When / how long does it come on?:					
Ignition key position						
ignition noj poetien						
	ON (before starting engine)					
	□ START					
	On after starting (Engine running)					
Timing	□ Immediately after ignition is ON.					
	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		
	Given turning to right	Steering angle:		deg		
		Steering time:		sec		
	U When turning to left	Steering angle:		deg		
		Steering time:		sec		
	U When moving other electrical parts					
	Parts name:					
	Operating condition:					
2. STATE OF VDC	OFF INDICATOR LIGHT					
VDC OFF indicator	□ Always					
light comes on.						
U U	Only once					
	Does not come on					
	When / how long does it come on?:					
Ignition key position						
	On after starting (Engine is running)					
	□ On after starting (Engine is stop)					
Timing	□ Immediately after ignition is ON.					
0	L Immediately after ignition starts.					
	U When advancing		km/h to	km/h		
			MPH to	MPH		
	U While traveling at a constant speed	km/h		MPH		
	U When decelerating		km/h to	km/h		
			MPH to	MPH		
	When turning to right	Steering angle:		dea		
		Steering time		Ser		
	When turning to left	Steering angle:		den		
		Steering angle.		uey		
	When moving other electrical parts	Steering unie.		Sec		
	When moving other electrical parts Parts nome:					
	Pars name: Operating condition:					

3. STATE OF VDC OPERATION INDICATOR LIGHT

VDC operation indi-	□ Always			
cator light comes on.	□ Sometimes			
J	Only once			
	Does not come on			
	• When / how long does it come on?:			
Ignition key position				
5 51				
	ON (before starting engine)			
	□ START			
	On after starting (Engine running)			
	On after starting (Engine stopped)			
Timing	Immediately after ignition is ON.			
	Immediately after ignition starts.			
	When advancing		km/h to	km/h
			MPH to	MPH
	While traveling at a constant speed	km/h		MPH
	U When decelerating		km/h to	km/h
			MPH to	MPH
	When turning to right	Steering angle:		deg
		Steering time:		sec
	U When turning to left	Steering angle:		dea
		Steering time:		Sec
	When moving other electrical parts			
	Parts name:			
	• Operating condition:			
Environment	a) Weather	□ Fine		
Environment	a) Weather	□ Fine □ Cloudy □ Bainy		
Environment	a) Weather	□ Fine □ Cloudy □ Rainy □ Snowy		
Environment	a) Weather	 Fine Cloudy Rainy Snowy Various/Others: 		
Environment	a) Weather	 Fine Cloudy Rainy Snowy Various/Others: 		°C (°F)
Environment	a) Weather b) Ambient temperature	□ Fine □ Cloudy □ Rainy □ Snowy □ Various/Others:		°C (°F)
Environment	a) Weather b) Ambient temperature c) Road	Fine Cloudy Rainy Snowy Various/Others: Urban area Suburbs		°C (°F)
Environment	a) Weather b) Ambient temperature c) Road	□ Fine □ Cloudy □ Rainy □ Snowy □ Various/Others: □ Urban area □ Suburbs □ Highway		°C (°F)
Environment	a) Weather b) Ambient temperature c) Road	□ Fine □ Cloudy □ Rainy □ Snowy □ Various/Others: □ Urban area □ Suburbs □ Highway □ General road		°C (°F)
Environment	a) Weather b) Ambient temperature c) Road	□ Fine □ Cloudy □ Rainy □ Snowy □ Various/Others: □ Urban area □ Suburbs □ Highway □ General road □ Ascending slope		°C (°F)
Environment	a) Weather b) Ambient temperature c) Road	□ Fine □ Cloudy □ Rainy □ Snowy □ Various/Others: □ Urban area □ Suburbs □ Highway □ General road □ Ascending slope □ Descending slope		°C (°F)
Environment	a) Weather b) Ambient temperature c) Road	□ Fine □ Cloudy □ Rainy □ Snowy □ Various/Others: □ Urban area □ Suburbs □ Highway □ General road □ Ascending slope □ Descending slope □ Paved road		°C (°F)
Environment	a) Weather b) Ambient temperature c) Road	□ Fine □ Cloudy □ Rainy □ Snowy □ Various/Others: □ Urban area □ Suburbs □ Highway □ General road □ Ascending slope □ Descending slope □ Paved road □ Gravel road		°C (°F)
Environment	a) Weather b) Ambient temperature c) Road	□ Fine □ Cloudy □ Rainy □ Snowy □ Various/Others: □ Urban area □ Suburbs □ Highway □ General road □ Ascending slope □ Descending slope □ Descending slope □ Paved road □ Gravel road □ Gravel road		°C (°F)
Environment	a) Weather b) Ambient temperature c) Road	 Fine Cloudy Rainy Snowy Various/Others: Urban area Suburbs Highway General road Ascending slope Descending slope Paved road Gravel road Muddy road Sandy place 		°C (°F)
Environment	a) Weather b) Ambient temperature c) Road	 Fine Cloudy Rainy Snowy Various/Others: Urban area Suburbs Highway General road Ascending slope Descending slope Paved road Gravel road Muddy road Sandy place Straight 		°C (°F)
Environment	a) Weather b) Ambient temperature c) Road	 Fine Cloudy Rainy Snowy Various/Others: Urban area Suburbs Highway General road Ascending slope Descending slope Paved road Gravel road Gravel road Sandy place Straight Sharp curve 		°C (°F)
Environment	a) Weather b) Ambient temperature c) Road	 Fine Cloudy Rainy Snowy Various/Others: Urban area Suburbs Highway General road Ascending slope Descending slope Paved road Gravel road Gravel road Sandy place Straight Sharp curve Slow curve So sharped sume 		°C (°F)
Environment	a) Weather b) Ambient temperature c) Road	□ Fine □ Cloudy □ Rainy □ Snowy □ Various/Others: □ Urban area □ Suburbs □ Highway □ General road □ Ascending slope □ Descending slope □ Descending slope □ Descending slope □ Descending slope □ Descending slope □ Straight □ Straight □ Sharp curve □ Slow curve □ S-shaped curve □ Paved road		°C (°F)
Environment	a) Weather b) Ambient temperature c) Road	□ Fine □ Cloudy □ Rainy □ Snowy □ Various/Others: □ Urban area □ Suburbs □ Highway □ General road □ Ascending slope □ Descending slope □ Descending slope □ Paved road □ Gravel road □ Muddy road □ Sandy place □ Straight □ Sharp curve □ Slow curve □ Slow curve □ Solow curve □ Cothers:	n on each side	°C (°F)
Environment	a) Weather b) Ambient temperature c) Road	 Fine Cloudy Rainy Snowy Various/Others: Urban area Suburbs Highway General road Ascending slope Descending slope Paved road Gravel road Gravel road Sandy place Straight Sharp curve Slow curve S-shaped curve Road with inclination Others: 	n on each side	°C (°F)
Environment	a) Weather b) Ambient temperature c) Road d) Road surface	□ Fine □ Cloudy □ Rainy □ Snowy □ Various/Others: □ Urban area □ Urban area □ Suburbs □ Highway □ General road □ Ascending slope □ Descending slope □ Descending slope □ Descending slope □ Paved road □ Gravel road □ Muddy road □ Sandy place □ Straight □ Sharp curve □ Slow curve □ Slow curve □ S-shaped curve □ Cthers: □ Dry □ Wet	n on each side	°C (°F)
Environment	a) Weather b) Ambient temperature c) Road d) Road surface	 Fine Cloudy Rainy Snowy Various/Others: Urban area Suburbs Highway General road Ascending slope Descending slope Paved road Gravel road Gravel road Gravel road Straight Sharp curve Slow curve Schaped curve Schaped curve Schaped curve Cothers: Dry Wet New-fallen snow 	n on each side	°C (°F)
Environment	a) Weather b) Ambient temperature c) Road d) Road surface	 Fine Cloudy Rainy Snowy Various/Others: Urban area Suburbs Highway General road Ascending slope Descending slope Paved road Gravel road Gravel road Gravel road Straight Sharp curve Slow curve Schaped curve Road with inclination Others: Dry Wet New-fallen snow Compressed snow 	n on each side	°C (°F)
Environment	a) Weather b) Ambient temperature c) Road d) Road surface	 Fine Cloudy Rainy Snowy Various/Others: Urban area Suburbs Highway General road Ascending slope Descending slope Paved road Gravel road Gravel road Gravel road Sandy place Straight Sharp curve Slow curve S-shaped curve Road with inclination Others: Dry Wet New-fallen snow Compressed snow Frozen slope 	n on each side	°C (°F)

VDC (DIAGNOSTICS)

CHECK LIST FOR INTERVIEW

Condition	a) Brakes	Deceleration: g			
		Continuous / L Intermittent			
	b) Accelerator	Acceleration: g			
		Continuous / L Intermittent			
	c) Vehicle speed	km/h MPH			
		□ Advancing			
		Accelerating			
		Reducing speed			
	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			
		Slow turn			
		Straight-ahead operation			
		Returned slowly			
		C Returned quickly			
	g) Tire/wheel size				
	h) Tire type	Summer tire			
		Studiess tire (Brand name:)			
	i) Chain is passed around tires. : U Yes / U No				
	j) T tire is used. : Yes / No				
	k) Condition of suspension alignment:				
	I) 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, CHECK-ING 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.
5T22771AA030	22771AA030	SELECT MONI- TOR KIT	Troubleshooting for electrical systems. • English: 22771AA030 (Without printer) • German: 22771AA070 (Without printer) • French: 22771AA080 (Without printer) • 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
- Diagnosis connector (5)
- (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

ELECTRICAL COMPONENTS LOCATION

VDC (DIAGNOSTICS)



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.

CONTROL MODULE I/O SIGNAL

		Terminal	Input/Output signal
Contents		No. (+)—(–)	Measured value and measuring condition
Ignition switch		28—1	10 — 15 V when ignition switch is ON.
ABS sensor	Front left wheel	49—19	
(Wheel	Front right wheel	14—15	
speed sen-	Rear left wheel	16—17	0.12 — 1 V (When it is 20 Hz.)
sor)	Rear right wheel	18—46	
	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.
Yaw rate	Output (Yaw rate sensor)	65—64	Wave form <ref. measurement,<br="" to="" vdc-19,="" waveform,="">Control Module I/O Signal.></ref.>
and lateral	Reference (Yaw rate sensor)	66—64	2.1 — 2.9 V
G Sensor	Test	67—64	40 ms pulse signal with a cycle of 5 — 1 V <ref. to="" vdc-19,<br="">WAVEFORM, MEASUREMENT, Control Module I/O Signal.></ref.>
	Ground	64	
CAN commur	nication line (+)	81—1	2.5 — 1.5 V pulse signal <ref. mea-<br="" to="" vdc-19,="" waveform,="">SUREMENT, Control Module I/O Signal.></ref.>
CAN commur	nication line (-)	83—1	3.5 — 2.5 V pulse signal <ref. mea-<br="" to="" vdc-19,="" waveform,="">SUREMENT, Control Module I/O Signal.></ref.>
	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)
Engine	AEC	8—1	10 — 15 V (Ignition switch ON and vehicle at standstill)
module	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
	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.
Relay box	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)
	Front left inlet solenoid valve	24—1	
	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	
Hydraulic	Front right outlet solenoid valve	3—1	10 - 15 V when the valve is OFF and less than 1.5 V when the
control unit	Rear left outlet solenoid valve	4—1	valve is ON.
	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	
	Power supply	78—76	4.75 — 5.25 V when ignition switch is ON.
Pressure	Primary output	77—76	0.48 — 0.72 V (Brake pedal released)
sensor	Ground	76	_
	Secondary output	36—76	0.48 — 0.72 V (Brake pedal released)
VDC operatio	n 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)

CONTROL MODULE I/O SIGNAL

VDC (DIAGNOSTICS)

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	Terminal No. 8	13	—
connector	Terminal No. 5	74	—
Select moni-	Data is received.	11—1	Less than 1.5 V when no data is received.
tor	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. 0 V (While pushing the switch)
Ground		1	_
Ground		55	_

CONTROL MODULE I/O SIGNAL

VDC (DIAGNOSTICS)

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





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.





(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, PREPARA-TION 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 MAN-UAL.

• 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 dis- played.	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

 On the «Main Menu» display screen, select {2. Each System Check} and press the «YES» key.
 On the «System Select Menu» display screen, select {Brake System} and press the «YES» key.
 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 SUB-ARU 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. abs="" control.="" sequence="" to="" vdc-16,=""></ref.>
VDC check mode	Perform VDC sequence control by operating valve and pump motor sequentially.	<ref. control.="" sequence="" to="" vdc="" vdc-19,=""></ref.>
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. angle="" sensor.="" steering="" to="" vdc-26,=""></ref.>

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



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

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 de-

tect 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 • DTC is shown after start code. • Only start code is shown in normal condi- tion.		_	
21		Front right ABS sensor	<ref. (open="" 21="" abnormal="" abs="" circuit<br="" dtc="" sensor="" to="" vdc-48,="">OR INPUT VOLTAGE TOO HIGH) (FRONT RH), Diagnostics Chart with Diagnosis Connector.></ref.>	
23	Abnormal ABS sensor	Front left ABS sensor	<ref. (open="" 23="" abnormal="" abs="" circuit<br="" dtc="" sensor="" to="" vdc-48,="">OR INPUT VOLTAGE TOO HIGH) (FRONT LH), Diagnostics Chart with Diagnosis Connector.></ref.>	
25	input voltage too high)	input voltage too high)	Rear right ABS sensor	<ref. (open="" 25="" abnormal="" abs="" circuit<br="" dtc="" sensor="" to="" vdc-48,="">OR INPUT VOLTAGE TOO HIGH) (REAR RH), Diagnostics Chart with Diagnosis Connector.></ref.>
27		Rear left ABS sensor	<ref. (open="" 27="" abnormal="" abs="" circuit<br="" dtc="" sensor="" to="" vdc-50,="">OR INPUT VOLTAGE TOO HIGH) (REAR LH), Diagnostics Chart with Diagnosis Connector.></ref.>	
22		Front right ABS sensor	<ref. (abnormal="" (front="" 22="" abnormal="" abs="" chart="" connector.="" diagnosis="" diagnostics="" dtc="" rh),="" sensor="" signal)="" to="" vdc-54,="" with=""></ref.>	
24	Abnormal ABS	Front left ABS sensor	<ref. (abnormal="" (front="" 24="" abnormal="" abs="" chart="" connector.="" diagnosis="" diagnostics="" dtc="" lh),="" sensor="" signal)="" to="" vdc-54,="" with=""></ref.>	
26	sensor (Abnormal ABS sensor signal)	Rear right ABS sensor	<ref. (abnormal="" (rear="" 26="" abnormal="" abs="" chart="" connector.="" diagnosis="" diagnostics="" dtc="" rh),="" sensor="" signal)="" to="" vdc-54,="" with=""></ref.>	
28		Rear left ABS sensor	<ref. (abnormal="" (rear="" 28="" abnormal="" abs="" chart="" connector.="" diagnosis="" diagnostics="" dtc="" lh),="" sensor="" signal)="" to="" vdc-56,="" with=""></ref.>	
29		Any one of four	<ref. (any="" 29="" abnormal="" abs="" chart="" connector.="" diagnosis="" diagnostics="" dtc="" four),="" of="" one="" sensor="" signal="" to="" vdc-60,="" with=""></ref.>	

DTC No.	. Contents of diagnosis		Index No.
31		Front right inlet valve	<ref. 31="" abnormal="" and="" cut="" dtc="" inlet="" solenoid<br="" to="" vdc-63,="">VALVE CIRCUIT(S) (FRONT RH INLET), Diagnostics Chart with Diagno- sis Connector.></ref.>
32		Front right outlet valve	<ref. 32="" abnormal="" and="" dtc="" outlet="" sole-<br="" suction="" to="" vdc-68,="">NOID VALVE CIRCUIT(S) (FRONT RH OUTLET), Diagnostics Chart with Diagnosis Connector.></ref.>
33		Front left inlet valve	<ref. 33="" abnormal="" and="" cut="" dtc="" inlet="" solenoid<br="" to="" vdc-63,="">VALVE CIRCUIT(S) (FRONT LH INLET), Diagnostics Chart with Diagno- sis Connector.></ref.>
34		Front left outlet valve	<ref. 34="" abnormal="" and="" dtc="" outlet="" sole-<br="" suction="" to="" vdc-68,="">NOID VALVE CIRCUIT(S) (FRONT LH OUTLET), Diagnostics Chart with Diagnosis Connector.></ref.>
35		Rear right inlet valve	<ref. 35="" abnormal="" and="" cut="" dtc="" inlet="" solenoid<br="" to="" vdc-63,="">VALVE CIRCUIT(S) (REAR RH INLET), Diagnostics Chart with Diagnosis Connector.></ref.>
36	Abnormal sole-	Rear right outlet valve	<ref. 36="" abnormal="" and="" dtc="" outlet="" sole-<br="" suction="" to="" vdc-68,="">NOID VALVE CIRCUIT(S) (REAR RH OUTLET), Diagnostics Chart with Diagnosis Connector.></ref.>
37	- noid valve cir- cuit(s)	Rear left inlet valve	<ref. 37="" abnormal="" and="" cut="" dtc="" inlet="" solenoid<br="" to="" vdc-63,="">VALVE CIRCUIT(S) (REAR LH INLET), Diagnostics Chart with Diagnosis Connector.></ref.>
38		Rear left outlet valve	<ref. 38="" abnormal="" and="" dtc="" outlet="" sole-<br="" suction="" to="" vdc-68,="">NOID VALVE CIRCUIT(S) (REAR LH OUTLET), Diagnostics Chart with Diagnosis Connector.></ref.>
61		Primary cut valve	<ref. 61="" abnormal="" and="" cut="" dtc="" inlet="" solenoid<br="" to="" vdc-63,="">VALVE CIRCUIT(S) (PRIMARY CUT), Diagnostics Chart with Diagnosis Connector.></ref.>
62		Secondary cut valve	<ref. 62="" abnormal="" and="" cut="" dtc="" inlet="" solenoid<br="" to="" vdc-64,="">VALVE CIRCUIT(S) (SECONDARY CUT), Diagnostics Chart with Diag- nosis Connector.></ref.>
63		Primary suction valve	<ref. 63="" abnormal="" and="" dtc="" outlet="" sole-<br="" suction="" to="" vdc-68,="">NOID VALVE CIRCUIT(S) (PRIMARY SUCTION), Diagnostics Chart with Diagnosis Connector.></ref.>
64		Secondary suction valve	<ref. 64="" abnormal="" and="" dtc="" outlet="" sole-<br="" suction="" to="" vdc-70,="">NOID VALVE CIRCUIT(S) (SECONDARY SUCTION), Diagnostics Chart with Diagnosis Connector.></ref.>
41	Abnormal VDC co	ntrol module	<ref. 41="" abnormal="" chart="" connector.="" control="" diagnosis="" diagnostics="" dtc="" module,="" to="" vdc="" vdc-74,="" with=""></ref.>
42	Source voltage is	abnormal.	<ref. 42="" abnormal.,="" diag-<br="" dtc="" is="" source="" to="" vdc-76,="" voltage="">nostics Chart with Diagnosis Connector.></ref.>
43	Faulty VDCCM-EC	CM communication line	<ref. 43="" chart="" communication="" connector.="" diagnosis="" diagnostics="" dtc="" ecm="" faulty="" line,="" to="" vdc-78,="" vdccm="" with="" —=""></ref.>
44	A communication mal	with AT control abnor-	<ref. 44="" a="" abnormal,="" at="" chart="" communication="" connector.="" control="" diagnosis="" diagnostics="" dtc="" to="" vdc-82,="" with=""></ref.>
45	Control module out of specification		<ref. 45="" control="" dtc="" module="" of="" out="" specifica-<br="" to="" vdc-84,="">TION, Diagnostics Chart with Diagnosis Connector.></ref.>
46	Abnormal voltage of 5 V power supply		<ref. 46="" 5="" abnormal="" dtc="" of="" power="" sup-<br="" to="" v="" vdc-86,="" voltage="">PLY, Diagnostics Chart with Diagnosis Connector.></ref.>
47	Faulty CAN communication line		<ref. 47="" can="" chart="" communication="" connector.="" diagnosis="" diagnostics="" dtc="" faulty="" line,="" to="" vdc-88,="" with=""></ref.>
48	Faulty ECM-VDCCM communication line		<ref. 48="" communication<br="" dtc="" ecm="" faulty="" to="" vdc-92,="" vdccm="" —="">LINE, Diagnostics Chart with Diagnosis Connector.></ref.>
49	Abnormal engine speed signal		<ref. 49="" abnormal="" chart="" connector.="" diagnosis="" diagnostics="" dtc="" engine="" signal,="" speed="" to="" vdc-94,="" with=""></ref.>
51	Abnormal valve re	lay	<ref. 51="" abnormal="" chart="" connector.="" diagnosis="" diagnostics="" dtc="" relay,="" to="" valve="" vdc-96,="" with=""></ref.>

VDC (DIAGNOSTICS)

DTC No.	Contents of diagnosis	Index No.	
52	Abnormal motor and/or motor relay	<ref. 52="" abnormal="" and="" chart="" connector.="" diagnosis="" diagnostics="" dtc="" motor="" or="" relay,="" to="" vdc-102,="" with=""></ref.>	
71	Abnormal steering angle sensor	<ref. 71="" abnormal="" angle="" dtc="" sensor,<br="" steering="" to="" vdc-106,="">Diagnostics Chart with Diagnosis Connector.></ref.>	
72	Abnormal yaw rate sensor	<ref. 72="" abnormal="" diagnos-<br="" dtc="" rate="" sensor,="" to="" vdc-110,="" yaw="">tics Chart with Diagnosis Connector.></ref.>	
73	Abnormal lateral G sensor	<ref. 73="" abnormal="" diagnos-<br="" dtc="" g="" lateral="" sensor,="" to="" vdc-114,="">tics Chart with Diagnosis Connector.></ref.>	
74	Abnormal pressure sensor	<ref. 74="" abnormal="" diagnos-<br="" dtc="" pressure="" sensor,="" to="" vdc-118,="">tics Chart with Diagnosis Connector.></ref.>	

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. 46="" 5="" abnormal="" dtc="" of="" power="" sup-<br="" to="" v="" vdc-86,="" voltage="">PLY, Diagnostics Chart with Diagnosis Connector.></ref.>
44, 71	(F87) — No. 83 or 81 lead circuit is open.	<ref. 71="" abnormal="" angle="" dtc="" sensor,<br="" steering="" to="" vdc-106,="">Diagnostics Chart with Diagnosis Connector.></ref.>
51, 48, 71	(F87) — No. 27 lead circuit is open.	<ref. 71="" abnormal="" angle="" dtc="" sensor,<br="" steering="" to="" vdc-106,="">Diagnostics Chart with Diagnosis Connector.></ref.>
71, 51, 44	(F87) — No. 27 lead circuit is open.	<ref. 71="" abnormal="" angle="" dtc="" sensor,<br="" steering="" to="" vdc-106,="">Diagnostics Chart with Diagnosis Connector.></ref.>
72, 73	(F87) — No. 63 lead circuit is open.	<ref. 73="" abnormal="" diagnos-<br="" dtc="" g="" lateral="" sensor,="" to="" vdc-114,="">tics Chart with Diagnosis Connector.></ref.>

2. WITH SUBARU SELECT MONITOR

DTC No.	Display screen	Contents of diagnosis	Index No.
	Communication for ini- tializing impossible	Select monitor commu- nication failure	<ref. communication="" for="" initializing<br="" to="" vdc-122,="">IMPOSSIBLE (SELECT MONITOR COMMUNICATION FAIL- URE), Diagnostics Chart with Select Monitor.></ref.>
l	No trouble code	Although no diagnostic trouble code appears on the select monitor display, the ABS warn- ing light and/or VDC warning light and/or VDC operating indicator light and/or VDC OFF indicator light remains on.	<ref. chart="" connec-<br="" diagnosis="" diagnostics="" to="" vdc-34,="" with="">tor.></ref.>
_	No trouble code	Although no diagnostic trouble code appears on the select monitor display, the ABS warn- ing light and/or VDC warning light and/or VDC operating indicator light and/or VDC OFF indicator light remains off.	<ref. chart="" connector.="" diagnosis="" diagnostics="" to="" vdc-34,="" with=""></ref.>
21	Front right ABS sensor circuit open or shorted battery	Open or short circuit in front right ABS sensor circuit	<ref. 21="" abs="" cir-<br="" dtc="" front="" right="" sensor="" to="" vdc-125,="">CUIT OPEN OR SHORTED BATTERY, Diagnostics Chart with Select Monitor.></ref.>
22	Front right ABS sensor signal	Front right ABS sensor abnormal signal	<ref. 22="" abs="" dtc="" front="" right="" sensor="" sig-<br="" to="" vdc-130,="">NAL, Diagnostics Chart with Select Monitor.></ref.>

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. 23="" abs="" cir-<br="" dtc="" front="" left="" sensor="" to="" vdc-125,="">CUIT OPEN OR SHORTED BATTERY, Diagnostics Chart with Select Monitor.></ref.>
24	Front left ABS sensor signal	Front left ABS sensor abnormal signal	<ref. 24="" abs="" dtc="" front="" left="" sensor="" sig-<br="" to="" vdc-130,="">NAL, Diagnostics Chart with Select Monitor.></ref.>
25	Rear right ABS sensor circuit open or shorted battery	Open or short circuit in rear right ABS sensor circuit	<ref. 25="" abs="" cir-<br="" dtc="" rear="" right="" sensor="" to="" vdc-125,="">CUIT OPEN OR SHORTED BATTERY, Diagnostics Chart with Select Monitor.></ref.>
26	Rear right ABS sensor signal	Rear right ABS sensor abnormal signal	<ref. 26="" abs="" dtc="" rear="" right="" sensor="" sig-<br="" to="" vdc-130,="">NAL, Diagnostics Chart with Select Monitor.></ref.>
27	Rear left ABS sensor circuit open or shorted battery	Open or short circuit in rear left ABS sensor cir- cuit	<ref. 27="" abs="" cir-<br="" dtc="" left="" rear="" sensor="" to="" vdc-126,="">CUIT OPEN OR SHORTED BATTERY, Diagnostics Chart with Select Monitor.></ref.>
28	Rear left ABS sensor signal	Rear left ABS sensor abnormal signal	<ref. 28="" abs="" dtc="" left="" rear="" sensor="" sig-<br="" to="" vdc-132,="">NAL, Diagnostics Chart with Select Monitor.></ref.>
29	Any one of four ABS sensor signal	Abnormal ABS sensor signal on any one of four sensor	<ref. 29="" abs="" any="" chart="" diagnostics="" dtc="" four="" monitor.="" of="" one="" select="" sensor="" signal,="" to="" vdc-138,="" with=""></ref.>
31	FR hold valve malfunc- tion	Front right inlet solenoid valve	<ref. 31="" dtc="" fr="" hold="" malfunction<br="" to="" valve="" vdc-141,="">(FRONT RIGHT INLET VALVE MALFUNCTION), Diagnostics Chart with Select Monitor.></ref.>
32	FR pressure reducing valve malfunction	Front right outlet sole- noid valve malfunction	<ref. 32="" dtc="" fr="" pressure="" reducing<br="" to="" vdc-146,="">VALVE MALFUNCTION (FRONT RIGHT OUTLET VALVE MALFUNCTION), Diagnostics Chart with Select Monitor.></ref.>
33	FL hold valve malfunc- tion	Front left inlet solenoid valve malfunction	<ref. 33="" dtc="" fl="" hold="" malfunction<br="" to="" valve="" vdc-141,="">(FRONT LEFT INLET VALVE MALFUNCTION), Diagnostics Chart with Select Monitor.></ref.>
34	FL pressure reducing valve malfunction	Front left outlet solenoid valve	<ref. 34="" dtc="" fl="" pressure="" reducing<br="" to="" vdc-146,="">VALVE MALFUNCTION (FRONT LEFT OUTLET VALVE MAL- FUNCTION), Diagnostics Chart with Select Monitor.></ref.>
35	RR hold valve malfunc- tion	Rear right inlet solenoid valve malfunction	<ref. 35="" dtc="" hold="" malfunction<br="" rr="" to="" valve="" vdc-141,="">(REAR RIGHT INLET VALVE MALFUNCTION), Diagnostics Chart with Select Monitor.></ref.>
36	RR pressure reducing valve malfunction	Rear right outlet sole- noid valve	<ref. 36="" dtc="" pressure="" reducing<br="" rr="" to="" vdc-146,="">VALVE MALFUNCTION (REAR RIGHT OUTLET VALVE MAL- FUNCTION), Diagnostics Chart with Select Monitor.></ref.>
37	RL hold valve malfunc- tion	Rear left inlet solenoid valve malfunction	<ref. 37="" dtc="" hold="" malfunction<br="" rl="" to="" valve="" vdc-141,="">(REAR LEFT INLET VALVE MALFUNCTION), Diagnostics Chart with Select Monitor.></ref.>
38	RL pressure reducing valve malfunction	Rear left outlet solenoid valve	<ref. 38="" dtc="" pressure="" reducing<br="" rl="" to="" vdc-146,="">VALVE MALFUNCTION (REAR LEFT OUTLET VALVE MAL- FUNCTION), Diagnostics Chart with Select Monitor.></ref.>
41	Electrical control mod- ule	VDC control module malfunction	<ref. 41="" control="" dtc="" electrical="" module<br="" to="" vdc-152,="">(VDC CONTROL MODULE MALFUNCTION), Diagnostics Chart with Select Monitor.></ref.>
42	Power supply voltage low	Power supply voltage too low	<ref. 42="" dtc="" low,<br="" power="" supply="" to="" vdc-154,="" voltage="">Diagnostics Chart with Select Monitor.></ref.>
43	AET communication line malfunction	AET communication line malfunction	<ref. 43="" aet="" communication="" dtc="" line<br="" to="" vdc-156,="">MALFUNCTION, Diagnostics Chart with Select Monitor.></ref.>
43	AEB communication line malfunction	AEB communication line malfunction	<ref. 43="" aeb="" communication="" dtc="" line<br="" to="" vdc-160,="">MALFUNCTION, Diagnostics Chart with Select Monitor.></ref.>
43	AEC communication line malfunction	AEC communication line malfunction	<ref. 43="" aec="" communication="" dtc="" line<br="" to="" vdc-164,="">MALFUNCTION, Diagnostics Chart with Select Monitor.></ref.>
44	TCM communication circuit	TCM communication line malfunction	<ref. 44="" circuit,<br="" communication="" dtc="" tcm="" to="" vdc-168,="">Diagnostics Chart with Select Monitor.></ref.>
45	Incorrect VDC control module	Incorrect VDC control module	<ref. 45="" control<br="" dtc="" incorrect="" to="" vdc="" vdc-170,="">MODULE, Diagnostics Chart with Select Monitor.></ref.>

VDC (DIAGNOSTICS)

DTC No.	Display screen	Contents of diagnosis	Index No.
45	TCM malfunction speci- fications	TCM malfunction speci- fications	<ref. 45="" dtc="" malfunction="" specifica-<br="" tcm="" to="" vdc-171,="">TIONS, Diagnostics Chart with Select Monitor.></ref.>
46	Abnormal voltage of 5 V power supply	Abnormal voltage of 5 V power supply	<ref. 46="" 5="" abnormal="" dtc="" of="" to="" v<br="" vdc-172,="" voltage="">POWER SUPPLY, Diagnostics Chart with Select Monitor.></ref.>
47	Improper CAN commu- nication	CAN communication line malfunction	<ref. 47="" can="" communica-<br="" dtc="" improper="" to="" vdc-174,="">TION, Diagnostics Chart with Select Monitor.></ref.>
48	Improper EAC commu- nication	EAC communication line malfunction	<ref. 48="" communica-<br="" dtc="" eac="" improper="" to="" vdc-178,="">TION, Diagnostics Chart with Select Monitor.></ref.>
48	EAS communication line grounding shorted	EAS communication line grounding	<ref. 48="" communication="" dtc="" eas="" line<br="" to="" vdc-180,="">GROUNDING SHORTED, Diagnostics Chart with Select Moni- tor.></ref.>
48	Erroneous communica- tion from EGI to VDC	Faulty ECM-VDCCM communication line	<ref. 48="" communication<br="" dtc="" erroneous="" to="" vdc-182,="">FROM EGI TO VDC, Diagnostics Chart with Select Monitor.></ref.>
49	Abnormal engine speed signal	Abnormal engine speed signal	<ref. 49="" abnormal="" dtc="" engine="" sig-<br="" speed="" to="" vdc-184,="">NAL, Diagnostics Chart with Select Monitor.></ref.>
51	Valve relay	Valve relay malfunction	<ref. 51="" chart="" diagnostics="" dtc="" monitor.="" relay,="" select="" to="" valve="" vdc-186,="" with=""></ref.>
51	Valve relay ON failure	Valve relay ON failure	<ref. 51="" chart="" diagnostics="" dtc="" failure,="" monitor.="" on="" relay="" select="" to="" valve="" vdc-192,="" with=""></ref.>
52	Motor and motor relay OFF failure	Motor and motor relay OFF failure	<ref. 52="" and="" dtc="" motor="" off<br="" relay="" to="" vdc-196,="">FAILURE, Diagnostics Chart with Select Monitor.></ref.>
52	Motor and motor relay ON failure	Motor and motor relay ON failure	<ref. 52="" and="" chart="" diagnostics="" dtc="" failure,="" monitor.="" motor="" on="" relay="" select="" to="" vdc-200,="" with=""></ref.>
52	Motor malfunction	Motor malfunction	<ref. 52="" diagnos-<br="" dtc="" malfunction,="" motor="" to="" vdc-204,="">tics Chart with Select Monitor.></ref.>
61	Normal opening valve 2 malfunction	Primary cut valve mal- function	<ref. 2<br="" 61="" dtc="" normal="" opening="" to="" valve="" vdc-141,="">MALFUNCTION (PRIMARY CUT VALVE MALFUNCTION), Diagnostics Chart with Select Monitor.></ref.>
62	Normal opening valve 1 malfunction	Secondary cut valve malfunction	<ref. 1<br="" 62="" dtc="" normal="" opening="" to="" valve="" vdc-142,="">MALFUNCTION (SECONDARY CUT VALVE MALFUNCTION), Diagnostics Chart with Select Monitor.></ref.>
63	Normal closing valve 2 malfunction	Primary suction valve malfunction	<ref. 2="" 63="" closing="" dtc="" mal-<br="" normal="" to="" valve="" vdc-146,="">FUNCTION (PRIMARY SUCTION VALVE MALFUNCTION), Diagnostics Chart with Select Monitor.></ref.>
64	Normal closing valve 1 malfunction	Secondary suction valve malfunction	<ref. 1="" 64="" closing="" dtc="" mal-<br="" normal="" to="" valve="" vdc-148,="">FUNCTION (SECONDARY SUCTION VALVE MALFUNC- TION), Diagnostics Chart with Select Monitor.></ref.>
71	Steering angle sensor offset is too big.	Steering angle sensor offset is too big.	<ref. 71="" angle="" dtc="" off-<br="" sensor="" steering="" to="" vdc-208,="">SET IS TOO BIG., Diagnostics Chart with Select Monitor.></ref.>
71	Change range of steer- ing angle sensor is too big.	Change range of steer- ing angle sensor is too big.	<ref. 71="" change="" dtc="" of="" range="" steering<br="" to="" vdc-210,="">ANGLE SENSOR IS TOO BIG., Diagnostics Chart with Select Monitor.></ref.>
71	Steering angle sensor malfunction	Steering angle sensor malfunction	<ref. 71="" angle="" dtc="" mal-<br="" sensor="" steering="" to="" vdc-212,="">FUNCTION, Diagnostics Chart with Select Monitor.></ref.>
71	No signal from steering angle sensor	No signal from steering angle sensor	<ref. 71="" dtc="" from="" no="" signal="" steering<br="" to="" vdc-214,="">ANGLE SENSOR, Diagnostics Chart with Select Monitor.></ref.>
72	Abnormal yaw rate sen- sor output	Abnormal yaw rate sen- sor output	<ref. 72="" abnormal="" chart="" diagnostics="" dtc="" monitor.="" output,="" rate="" select="" sensor="" to="" vdc-218,="" with="" yaw=""></ref.>
72	Voltage inputted to yaw rate sensor exceeds specification.	Voltage inputted to yaw rate sensor exceeds specification.	<ref. 72="" dtc="" inputted="" to="" vdc-220,="" voltage="" yaw<br="">RATE SENSOR EXCEEDS SPECIFICATION., Diagnostics Chart with Select Monitor.></ref.>
72	Abnormal yaw rate sen- sor reference voltage	Abnormal yaw rate sen- sor reference voltage	<ref. 72="" abnormal="" dtc="" rate="" sensor<br="" to="" vdc-222,="" yaw="">REFERENCE VOLTAGE, Diagnostics Chart with Select Moni- tor.></ref.>
72	Change range of yaw rate sensor signal is too big.	Change range of yaw rate sensor signal is too big.	<ref. 72="" change="" dtc="" of="" range="" rate<br="" to="" vdc-226,="" yaw="">SENSOR SIGNAL IS TOO BIG., Diagnostics Chart with Select Monitor.></ref.>



DTC No.	Display screen	Contents of diagnosis	Index No.
73	Lateral G sensor offset	Lateral G sensor offset	<ref. 73="" dtc="" g="" is<="" lateral="" offset="" sensor="" td="" to="" vdc-229,=""></ref.>
75	is too big.	is too big.	TOO BIG., Diagnostics Chart with Select Monitor.>
72	Abnormal lateral G sen-	Abnormal lateral G sen-	<ref. 73="" abnormal="" dtc="" g="" lateral="" sensor<="" td="" to="" vdc-229,=""></ref.>
73	sor output	sor output	OUTPUT, Diagnostics Chart with Select Monitor.>
70	Change range of lateral	Change range of lat-	<ref. 73="" change="" dtc="" g<="" lateral="" of="" range="" td="" to="" vdc-229,=""></ref.>
73	G sensor is too big.	eral G sensor is too big.	SENSOR IS TOO BIG., Diagnostics Chart with Select Monitor.>
70	Excessive lateral G sen-	Excessive lateral G	<ref. 73="" dtc="" excessive="" g="" lateral="" sensor<="" td="" to="" vdc-230,=""></ref.>
73	sor signal	sensor signal	SIGNAL, Diagnostics Chart with Select Monitor.>
	Voltage inputted to lat-	Voltage inputted to lat-	<ref. 73="" dtc="" inputted="" lat-<="" td="" to="" vdc-232,="" voltage=""></ref.>
73	eral G sensor exceeds	eral G sensor exceeds specification.	ERAL G SENSOR EXCEEDS SPECIFICATION., Diagnostics
	specification.		Chart with Select Monitor.>
	Voltage inputted to	Voltage inputted to pri-	<ref. 74="" dtc="" inputted="" pres-<="" td="" to="" vdc-236,="" voltage=""></ref.>
74	nressure sensor 1	many prossure sensor	SURE SENSOR 1 EXCEEDS SPECIFICATION. (PRIMARY
7.4	exceeds specification	exceeds specification	PRESSURE SENSOR), Diagnostics Chart with Select Moni-
			tor.>
	Voltage inputted to	Voltage inputted to sec-	<ref. 74="" dtc="" inputted="" pres-<="" td="" to="" vdc-240,="" voltage=""></ref.>
74	pressure sensor 2 exceeds specification.	ondary pressure sensor exceeds specification.	SURE SENSOR 2 EXCEEDS SPECIFICATION. (SECOND-
			ARY PRESSURE SENSOR), Diagnostics Chart with Select
			Monitor.>
	Pressure sensor 1 off-	Primary pressure sen-	<ref. 1="" 74="" dtc="" offset<="" pressure="" sensor="" td="" to="" vdc-243,=""></ref.>
74	set is too big.		IS TOO BIG. (PRIMARY PRESSURE SENSOR), Diagnostics
			Chart with Select Monitor.>
74	Pressure sensor 2 off-	Secondary pressure	<ref. 2="" 74="" dtc="" offset<="" pressure="" sensor="" td="" to="" vdc-244,=""></ref.>
	set is too big.	sensor offset is too big.	IS TOO BIG. (SECONDARY PRESSURE SENSOR), Diagnos-
			tics Chart with Select Monitor.>
	Differential pressure of	Differential pressure of	<ref. 74="" differential="" dtc="" of<="" pressure="" td="" to="" vdc-246,=""></ref.>
74	pressure sensor is too	pressure sensor is too	PRESSURE SENSOR IS TOO BIG., Diagnostics Chart with
	big.	big.	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 74 Voltage inputted to pressure sensor 2 exceeds specification.	(F87) — No. 78, 68 or 69 lead circuit is shorted to ground or battery.	<ref. 46="" abnormal<br="" dtc="" to="" vdc-172,="">VOLTAGE OF 5 V POWER SUPPLY, Diagnostics Chart with Select Monitor.></ref.>
44 TCM communication circuit 71 No signal from steering angle sensor	(F87) — No. 83 or 81 lead circuit is open.	<ref. 71="" dtc="" no="" signal<br="" to="" vdc-214,="">FROM STEERING ANGLE SENSOR, Diagnostics Chart with Select Monitor.></ref.>
51 Valve relay 48 Improper EAC communication 71 No signal from steering angle sensor	(F87) — No. 27 lead circuit is open.	<ref. 71="" dtc="" no="" signal<br="" to="" vdc-214,="">FROM STEERING ANGLE SENSOR, Diagnostics Chart with Select Monitor.></ref.>
71 No signal from steering angle sensor 51 Valve relay 44 TCM communication circuit	(F87) — No. 27 lead circuit is open.	<ref. 71="" dtc="" no="" signal<br="" to="" vdc-214,="">FROM STEERING ANGLE SENSOR, Diagnostics Chart with Select Monitor.></ref.>
73 Voltage inputted to lateral G sensor exceeds specification.72 Voltage inputted to yaw rate sensor exceeds specifications.	(F87) — No. 23 lead circuit is open.	<ref. 73="" dtc="" excessive<br="" to="" vdc-230,="">LATERAL G SENSOR SIGNAL, Diagnos- tics Chart with Select Monitor.></ref.>

13.Diagnostics Chart with Diagnosis Connector

A: ABS WARNING LIGHT, VDC WARNING LIGHT, VDC OPERATING INDICA-TOR 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:

DIAGNOSTICS CHART WITH DIAGNOSIS CONNECTOR

VDC (DIAGNOSTICS)

WIRING DIAGRAM:





VDC00140
Ste	p	Check	Yes	No
1 CHECK IF OTHER ON. Turn ignition switch	WARNING LIGHTS TURN	Do other warning lights turn on?	Go to step 2.	Repair combina- tion meter. <ref. to IDI-13, Combi- nation Meter Assembly.></ref.
 CHECK LIGHT BU Turn ignition sw Remove combin Remove ABS w warning light bu light bulb or VD from combination 	ILB. ritch to OFF. nation meter. rarning light bulb, VDC raning light bulb, VDC operating indicator C OFF indicator light bulb on meter.	Is light bulb OK?	Go to step 3 .	Replace faulty light bulb. <ref. to<br="">IDI-13, DISAS- SEMBLY, Combi- nation Meter Assembly.></ref.>
 3 CHECK BATTERY NESS. 1) Disconnect VDO VDCCM. 2) Place a sheet o mm (0.059 in)] i connector. 3) Turn ignition sw 4) Measure voltag and chassis gro Connector & tern ABS warning li (F87) No. 54 (VDC warning li (F87) No. 53 (VDC operating (F87) No. 52 (VDC OFF indic (F87) No. 52 (4 CHECK WIRING H 1) Turn ignition sw 2) Install ABS warn nation meter. 3) Install combinati 4) Place a sheet o mm (0.059 in)] i connector. 5) Turn ignition sw 6) Measure voltag tor and chassis Connector & tern ABS warning li (F87) No. 54 ('SHORT OF LIGHT HAR- CCM connector from f thick paper [thickness 1.5 n switch area of VDCCM vitch to ON. e between VDC connector ound. minal ight +) — Chassis ground (-): indicator light +) — Chassis ground (-): identification light +) — Chassis ground (-): in switch area of VDCCM vitch to ON. e between VDCCM connec- ground. minal ight +) — Chassis ground (-): ight +) — Chassis ground (-): ight +) — Chassis ground (-): ight +) — Chassis ground (-):	Is the measured value more than 3 V? Is the measured value within 10 to 15 V?	Go to step 4 . Go to step 5 .	Repair light har- ness. Repair wiring har- ness.
VDC operating (F87) No. 32 (VDC OFF indic (F87) No. 52 (indicator light +) — Chassis ground (–): ator light (+) — Chassis ground (–):			
5 CHECK POOR CO Turn ignition switch	NTACT IN CONNECTORS. n to OFF.	Is there poor contact in con- nectors between combination meter and VDCCM?	Repair connector.	Go to step 6.
6 CHECK WARNING LIGHTS. 1) Connect connect 2) Turn ignition sw	AND INDICATOR ctor to VDCCM. vitch 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,<br="">VDC Control Mod- ule (VDCCM).></ref.>

VDC (DIAGNOSTICS)

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.





VDC00140

	Step	Check	Yes	No
1	CHECK INSTALLATION OF VDCCM CON- NECTOR. 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. Measure resistance between diagnosis termi- nals (B81) and chassis ground. <i>Terminals</i> <i>Diagnosis terminal (A) — Chassis</i> <i>ground:</i> <i>Diagnosis terminal (B) — Chassis</i> <i>ground:</i>	Is the measured value less than 0.5 Ω?	Go to step 3.	Repair diagnosis terminal harness.
3	 CHECK DIAGNOSIS LINE. 1) Turn ignition switch to OFF. 2) Connect diagnosis terminal (B81) to diagnosis connector (B82) No. 8. 3) Disconnect connector from VDCCM. 4) Measure resistance between VDCCM connector and chassis ground. Connector & terminal (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 con- nector.
4	 CHECK WIRING HARNESS. 1) Place a sheet of thick paper [thickness 1.5 mm (0.059 in)] in switch area of VDCCM connector. 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. 1) Turn ignition switch to OFF. 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,<br="">VDC Control Mod- ule (VDCCM).></ref.>	Go to step 6 .
6	 CHECK POWER SUPPLY OF VDCCM. 1) Disconnect connector from VDCCM. 2) Start engine. 3) Idle the engine. 4) Measure voltage between VDCCM connector and chassis ground. Connector & terminal (F87) No. 28 (+) — Chassis ground (-): 	Is the measured value within 10 to 15 V?	Go to step 7.	Repair VDCCM power supply cir- cuit.
7	CHECK POOR CONTACT IN VDCCM CON- NECTOR.	Is there poor contact in VDCCM connector?	Repair connector.	Replace VDCCM. <ref. to="" vdc-8,<br="">VDC Control Mod- ule (VDCCM).></ref.>

VDC (DIAGNOSTICS)

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:



VDC00140

VDC (DIAGNOSTICS)

	Step	Check	Yes	No
1	CHECK WIRING HARNESS.	Does the VDC operating indi-	Replace VDCCM.	Repair wiring har-
	 Turn ignition switch to OFF. 	cator light remain off?	<ref. td="" to="" vdc-8,<=""><td>ness.</td></ref.>	ness.
	Disconnect VDCCM connector from		VDC Control Mod-	
	VDCCM.		ule (VDCCM).>	
	Turn ignition switch to ON.			

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:





VDC00140

r			1	
	Step	Check	Yes	No
1	 OPERATE VDC OFF SWITCH. 1) Operate VDC OFF switch. 2) Turn ignition switch OFF, then turn ignition switch ON. 	Is VDC OFF indicator light off?	The VDC is nor- mal.	Go to step 2.
2	CHECK ENGINE COOLANT TEMPERA- TURE.	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 nor- mal.	Go to step 3.
3	CHECK VDC OFF SWITCH. Remove and check VDC OFF switch. <ref. off="" switch.="" to="" vdc="" vdc-32,=""></ref.>	Is VDC OFF switch OK?	Go to step 4.	Replace VDC OFF switch.
4	 CHECK WIRING HARNESS. 1) Turn ignition switch to OFF. 2) Disconnect VDCCM connector from VDCCM. 3) Turn ignition switch to ON. 	Does the VDC OFF indicator light remain off?	Go to step 5 .	Repair wiring har- ness.
5	 CHECK VDC OFF SWITCH LINE. 1) Disconnect fuse from VDC OFF switch. 2) Measure resistance between VDCCM connector and chassis ground. Connector & terminal (F87) No. 40 — Chassis ground: 	Is the measured value more than 1 M Ω ?	Replace VDCCM. <ref. to="" vdc-8,<br="">VDC Control Mod- ule (VDCCM).></ref.>	Repair VDC OFF switch circuit.

VDC (DIAGNOSTICS)

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

	<u> </u>			
	Step	Check	Yes	No
1	CHECK DIAGNOSIS TERMINAL. Measure resistance between diagnosis termi- nals (B81) and chassis ground. <i>Terminals</i> <i>Diagnosis terminal (A) — Chassis</i>	Is the measured value less than 0.5 Ω?	Go to step 2.	Repair diagnosis terminal harness.
	ground: Diagnosis terminal (B) — Chassis ground:			
2	 CHECK DIAGNOSIS LINE. 1) Turn ignition switch to OFF. 2) Connect diagnosis terminal (B81) to diagnosis connector (B82) No. 8. 3) Disconnect connector from VDCCM. 4) Measure resistance between VDCCM connector and chassis ground. Connector & terminal (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 con- nector.
3	CHECK POOR CONTACT IN VDCCM CON- NECTOR.	Is there poor contact in VDCCM connector?	Repair connector.	Replace VDCCM. <ref. to="" vdc-8,<br="">VDC Control Mod- ule (VDCCM).></ref.>

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:



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

VDC (DIAGNOSTICS)

-				
	Step	Check	Yes	No
5	CHECK BATTERY SHORT OF HARNESS. Measure voltage between VDCCM connector and chassis ground. <i>Connector & terminal</i> <i>DTC 21 / (F87) No. 14 (+) — Chassis</i> <i>ground (-):</i> <i>DTC 23 / (F87) No. 49 (+) — Chassis</i> <i>ground (-):</i> <i>DTC 25 / (F87) No. 18 (+) — Chassis</i> <i>ground (-):</i> <i>DTC 27 / (F87) No. 16 (+) — Chassis</i> <i>ground (-):</i>	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. 1) Turn ignition switch to ON. 2) Measure voltage between VDCCM connector and chassis ground. Connector & terminal DTC 21 / (F87) No. 14 (+) — Chassis ground (-): DTC 23 / (F87) No. 49 (+) — Chassis ground (-): DTC 25 / (F87) No. 18 (+) — Chassis ground (-): 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 sen- sor installation bolts securely.
8	CHECK ABS SENSOR GAP. 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. NOTE: Adjust the gap us- ing spacers (Part No. 26755AA000). If spacers cannot correct the gap, re- place worn sensor or worn tone wheel.
9	CHECK HUB AND TONE WHEEL RUNOUT. 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,<br="">Front ABS Sen- sor.> Rear <ref. to VDC-29, Rear ABS Sensor.></ref. </ref.>
10	CHECK POOR CONTACT IN CONNECTORS.	Is there poor contact in con- nectors between VDCCM and ABS sensor?	Repair connector.	Go to step 11.
11	 CHECK VDCCM. 1) Connect all connectors. 2) Erase the memory. 3) Perform inspection mode. 4) Read out the diagnostic trouble code. 	Is the same diagnostic trouble code as in the current diagno- sis still being output?	Replace VDCCM. <ref. to="" vdc-8,<br="">VDC Control Mod- ule (VDCCM).></ref.>	Go to step 12.

VDC (DIAGNOSTICS)

	Step	Check	Yes	No
12	CHECK ANY OTHER DIAGNOSTIC TROU- BLE CODES APPEARANCE.	Are other diagnostic trouble codes being output?	Proceed with the diagnosis corre- sponding to the diagnostic trouble code.	A temporary poor contact. NOTE: 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 (ABNOR-MAL 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 (ABNOR-MAL 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:



	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 sen- sor installation bolts securely.
2	CHECK ABS SENSOR GAP. 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. NOTE: Adjust the gap us- ing spacer (Part No. 26755AA000). If spacers cannot correct the gap, re- place 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. 1) Raise all four wheels of ground. 2) Turn ignition switch OFF. 3) Remove VDCCM connector cover. <ref. connector="" cover.="" to="" vdc-20,="" vdccm=""></ref.> 4) Connect the oscilloscope to the connector. 5) Turn ignition switch ON. 6) Rotate wheels and measure voltage at specified frequency. <ref. abs-15,="" control="" i="" module="" o="" signal.="" to="" waveform,=""></ref.> NOTE: When this inspection is completed, the VDCCM sometimes stores the DTC 29. Connector & terminal DTC 22 / (F87) No. 14 (+) — No. 15 (-): DTC 24 / (F87) No. 49 (+) — No. 19 (-): DTC 26 / (F87) No. 18 (+) — No. 46 (-): 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. Remove disc rotor from hub in accordance with diagnostic trouble code.	Is the ABS sensor pole piece or the tone wheel contami- nated by dirt or other foreign matter?	Thoroughly remove dirt or other foreign mat- ter.	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 sen- sor or tone wheel. Front <ref. to<br="">VDC-28, Front ABS Sensor.> and <ref. to="" vdc-30,<br="">Front Tone Wheel.> Rear <ref. to="" vdc-29,<br="">Rear ABS Sen- sor.> and <ref. to<br="">VDC-31, Rear Tone Wheel.></ref.></ref.></ref.></ref.>	Go to step 7.
7	CHECK TONE WHEEL RUNOUT. 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<br="">VDC-30, Front Tone Wheel.> Rear <ref. to<br="">VDC-31, Rear Tone Wheel.></ref.></ref.>

VDC (DIAGNOSTICS)

	Step	Check	Yes	No
8	 CHECK RESISTANCE OF ABS SENSOR. 1) Turn ignition switch OFF. 2) Disconnect connector from ABS sensor. 3) Measure resistance between ABS sensor connector terminals. Terminal Front RH No. 1 — No. 2: Front LH No. 1 — No. 2: Rear RH No. 1 — No. 2: 	Is the measured value within 1.0 to 1.5 kΩ?	Go to step 9 .	Replace ABS sen- sor. Front <ref. to<br="">VDC-28, Front ABS Sensor.> Rear <ref. to<br="">VDC-29, Rear ABS Sensor.></ref.></ref.>
9	CHECK GROUND SHORT OF ABS SENSOR. Measure resistance between ABS sensor and chassis ground. Terminal Front RH No. 1 — Chassis ground: Front LH No. 1 — Chassis ground: Rear RH No. 1 — Chassis ground: Rear LH No. 1 — Chassis ground:	Is the measured value more than 1 MΩ?	Go to step 10.	Replace ABS sen- sor. Front <ref. to<br="">VDC-28, Front ABS Sensor.> Rear <ref. to<br="">VDC-29, Rear ABS Sensor.></ref.></ref.>
10	 CHECK HARNESS/CONNECTOR BETWEEN VDCCM AND ABS SENSOR. 1) Connect connector to ABS sensor. 2) Disconnect connector from VDCCM. 3) Measure resistance at VDCCM connector terminals. Connector & terminal DTC 22 / (F87) No. 14 — No. 15: DTC 24 / (F87) No. 49 — No. 19: DTC 26 / (F87) No. 18 — No. 46: 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. Measure resistance between VDCCM connec- tor and chassis ground. Connector & terminal DTC 22 / (F87) No. 14 — Chassis ground: DTC 24 / (F87) No. 49 — Chassis ground: DTC 26 / (F87) No. 18 — Chassis ground: 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. Measure resistance between VDCCM and chassis ground. Connector & terminal (F87) No. 1 — Chassis ground: (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 con- nectors 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 trans- mitter.
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 har- ness.	Go to step 16.

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

VDC (DIAGNOSTICS)

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:



	Step	Check	Yes	No
1	CHECK IF THE WHEELS HAVE TURNED FREELY. Check if the wheels have been turned freely for more than one minute, such as when the vehi- cle 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 nor- mal. Erase the diagnostic trouble code. NOTE: When the wheels turn freely for a long time, such as when the vehicle is towed or jacked- up, or when steer- ing wheel is contin- uously turned all the way, this trou- ble code may sometimes occur.	Go to step 2.
2	CHECK TIRE SPECIFICATIONS.	Are the tire specifications cor- rect?	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 pres- sure.
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 sen- sor installation bolts securely.
6	CHECK ABS SENSOR GAP. 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. NOTE: Adjust the gap us- ing spacer (Part No. 26755AA000). If spacers cannot correct the gap, re- place 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. 1) Raise all four wheels of ground. 2) Turn ignition switch OFF. 3) Remove VDCCM connector cover. <ref. connector="" cover.="" to="" vdc-20,="" vdccm=""></ref.> 4) Connect the oscilloscope to the connector. 5) Turn ignition switch ON. 6) Rotate wheels and measure voltage at specified frequency. <ref. abs-15,="" control="" i="" module="" o="" signal.="" to="" waveform,=""></ref.> NOTE: When this inspection is completed, the VDCCM sometimes stores the DTC 29. Connector & terminal (F87) No. 14 (+) — No. 15 (-) (Front RH): (F87) No. 18 (+) — No. 46 (-) (Rear RH): (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. Remove disc rotor from hub.	Is the ABS sensor pole piece or the tone wheel contami- nated by dirt or other foreign matter?	Thoroughly remove dirt or other foreign mat- ter.	Go to step 10.

VDC (DIAGNOSTICS)

	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 sen- sor or tone wheel. Front <ref. to<br="">VDC-28, Front ABS Sensor.> and <ref. to="" vdc-30,<br="">Front Tone Wheel.> Rear <ref. to="" vdc-29,<br="">Rear ABS Sen- sor.> and <ref. to<br="">VDC-31, Rear Tone Wheel.></ref.></ref.></ref.></ref.>	Go to step 11.
11	CHECK TONE WHEEL RUNOUT. 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<br="">VDC-30, Front Tone Wheel.> Rear <ref. to<br="">VDC-31, Rear Tone Wheel.></ref.></ref.>
12	 CHECK VDCCM. 1) Turn ignition switch to OFF. 2) Connect all connectors. 3) Erase the memory. 4) Perform inspection mode. 5) Read out the diagnostic trouble code. 	Is the diagnostic same trouble code as in the current diagno- sis still being output?	Replace VDCCM. <ref. to="" vdc-8,<br="">VDC Control Mod- ule (VDCCM).></ref.>	Go to step 13.
13	CHECK ANY OTHER DIAGNOSTIC TROU- BLE CODES APPEARANCE.	Are other diagnostic trouble codes being output?	Proceed with the diagnosis corre- sponding 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 SOLE-NOID 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 SOLE-NOID 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 SOLE-NOID 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 SOLE-NOID VALVE CIRCUIT(S) (SECONDARY CUT), Diagnostics Chart with Diagnosis Connector.>

S: DTC 61 ABNORMAL INLET AND CUT SOLENOID VALVE CIRCUIT(S) (PRI-MARY CUT)

NOTE:

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

T: DTC 62 ABNORMAL INLET AND CUT SOLENOID VALVE CIRCUIT(S) (SEC-ONDARY CUT)

DIAGNOSIS:

- Faulty harness/connector
- Faulty solenoid valve in VDCH/U
- TROUBLE SYMPTOM:
- ABS does not operate.
- VDC does not operate.

WIRING DIAGRAM:







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

VDC (DIAGNOSTICS)

Sten	Check	Yes	No
		Co to stop F	
 CHECK BATTERY SHORT OF SOLENOID VALVE. Turn ignition switch to ON. Measure voltage between VDCH/U connector and chassis ground. Connector & terminal DTC 31/(VDC5) No. 5 (+) — Chassis ground (-): DTC 33/(VDC5) No. 8 (+) — Chassis ground (-): DTC 35/(VDC5) No. 7 (+) — Chassis 	Is the measured value less than 1 V?	Go to step 5.	Replace VDCH/U. <ref. to="" vdc-8,<br="">VDC Control Mod- ule (VDCCM).></ref.>
ground (-): DTC 37/(VDC5) No. 6 (+) — Chassis ground (-): DTC 61/(VDC5) No. 9 (+) — Chassis ground (-): DTC 62/(VDC5) No. 12 (+) — Chassis ground (-):			
5 CHECK BATTERY SHORT OF HARNESS.	Is the measured value less	Go to step 6.	Repair harness
 1) Turn ignition switch to OFF. 2) Measure voltage between VDCCM connector and chassis ground. Connector & terminal DTC 31/(F87) No. 30 (+) — Chassis ground (-): DTC 33/(F87) No. 24 (+) — Chassis ground (-): DTC 35/(F87) No. 23 (+) — Chassis ground (-): DTC 37/(F87) No. 31 (+) — Chassis ground (-): DTC 61/(F87) No. 25 (+) — Chassis ground (-): DTC 62/(F87) No. 26 (+) — Chassis ground (-): 	than 1 V?	Go to step 0 .	between VDCCM and VDCH/U.
 6 CHECK BATTERY SHORT OF HARNESS. 1) Turn ignition switch to ON. 2) Measure voltage between VDCCM connector and chassis ground. Connector & terminal DTC 31/(F87) No. 30 (+) — Chassis ground (-): DTC 33/(F87) No. 24 (+) — Chassis ground (-): DTC 35/(F87) No. 23 (+) — Chassis ground (-): DTC 37/(F87) No. 31 (+) — Chassis ground (-): DTC 61/(F87) No. 25 (+) — Chassis ground (-): 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.

	Sten	Check	Ves	No
7		Is the measured value more	Go to step 8	Renair harness
,	1) Turn ignition switch to OFF.	than 1 M Ω ?		between VDCCM
	2) Measure resistance between VDCCM con-			and VDCH/U.
	nector and chassis ground.			
	Connector & terminal			
	DTC 31/(F87) No. 30 — Chassis ground:			
	DTC 33/(F87) No. 24 — Chassis ground:			
	DTC 35/(F87) No. 23 — Chassis ground:			
	DTC 37/(F87) No. 31 — Chassis ground:			
	DTC 61/(F87) No. 25 — Chassis ground:			
	DTC 62/(F87) No. 26 — Chassis ground:			
8	CHECK HARNESS/CONNECTOR BETWEEN	Is the measured value within 7	Go to step 9.	Repair harness/
	VDCCM AND VDCH/U.	to 10 Ω?		connector
	 Connect connector (F91) to VDCH/U. 			between VDCCM
	2) Measure resistance between VDCCM con-			and VDCH/U.
	nector and VDCH/U connector.			
	Connector & terminal			
	DTC 31/(F87) No. 30 — (VDC2) No. 2:			
	DTC 33/(F87) No. 24 — (VDC2) No. 2:			
	DTC 35/(F87) No. 23 — (VDC2) No. 2:			
	DTC 37/(F87) No. 31— (VDC2) No. 2:			
	DTC 61/(F87) No. 25 — (VDC2) No. 2:			
	DTC 62/(F87) No. 26 — (VDC2) No. 2:			
9	CHECK POOR CONTACT IN CONNECTORS.	Is there poor contact in con-	Repair connector.	Go to step 10.
		nectors between VDCCM and		
		VDCH/U?		
10	CHECK VDCCM.	Is the same diagnostic trouble	Repair VDCCM.	Go to step 11.
	1) Connect all connectors.	code as in the current diagno-	<ref. td="" to="" vdc-8,<=""><td></td></ref.>	
	2) Erase the memory.	sis still being output?	VDC Control Mod-	
	3) Perform inspection mode.		ule (VDCCM).>	
	4) Read out the diagnostic trouble code.			
11	CHECK ANY OTHER DIAGNOSTIC TROU-	Are other diagnostic trouble	Proceed with the	A temporary poor
	BLE CODES APPEARANCE.	codes being output?	diagnosis corre-	contact.
			sponding to the	
			diagnostic trouble	
			code.	

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:





F87

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

VDC (DIAGNOSTICS)

Ston	Chaoli	Vaa	No	
Step	Спеск	res	NO	
 CHECK BATTERY SHORT OF SOLENOID VALVE. 1) Turn ignition switch to ON. 2) Measure voltage between VDCH/U connector and chassis ground. Connector & terminal DTC 32/(VDC5) No. 1 (+) — Chassis ground (-): DTC 34/(VDC5) No. 4 (+) — Chassis ground (-): DTC 36/(VDC5) No. 3 (+) — Chassis ground (-): DTC 38/(VDC5) No. 2 (+) — Chassis ground (-): DTC 63/(VDC5) No. 10 (+) — Chassis ground (-): 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,<br="">VDC Control Mod- ule (VDCCM).></ref.>	
	Is the measured value less	Go to stop 6	Popair barnoss	
 CHECK BATTERY SHORT OF HARNESS. 1) Turn ignition switch to OFF. 2) Measure voltage between VDCCM connetor and chassis ground. Connector & terminal DTC 32/(F87) No. 3 (+) — Chassis ground (-): DTC 34/(F87) No. 51 (+) — Chassis ground (-): DTC 36/(F87) No. 50 (+) — Chassis ground (-): DTC 38/(F87) No. 4 (+) — Chassis ground (-): DTC 63/(F87) No. 29 (+) — Chassis ground (-): DTC 64/(F87) No. 2 (+) — Chassis ground (-): 	C-	Go to step 6 .	Repair namess between VDCCM and VDCH/U.	
 6 CHECK BATTERY SHORT OF HARNESS. 1) Turn ignition switch to ON. 2) Measure voltage between VDCCM connector and chassis ground. Connector & terminal DTC 32/(F87) No. 3 (+) — Chassis ground (-): DTC 34/(F87) No. 51 (+) — Chassis ground (-): DTC 36/(F87) No. 50 (+) — Chassis ground (-): DTC 38/(F87) No. 4 (+) — Chassis ground (-): DTC 63/(F87) No. 29 (+) — Chassis ground (-): DTC 64/(F87) No. 2 (+) — Chassis ground (-): 	Is the measured value less than 1 V? c-	Go to step 7.	Repair harness between VDCCM and VDCH/U.	
	Step	Check	Yes	No
----	---	---	---	--
7	 CHECK GROUND SHORT OF HARNESS. 1) Turn ignition switch to OFF. 2) Measure resistance between VDCCM connector and chassis ground. Connector & terminal DTC 32/(F87) No. 3 — Chassis ground: DTC 34/(F87) No. 51 — Chassis ground: DTC 36/(F87) No. 50 — Chassis ground: DTC 38/(F87) No. 4 — Chassis ground: DTC 63/(F87) No. 29 — Chassis ground: 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. 1) Connect connector (F91) to VDCH/U. 2) Measure resistance between VDCCM connector and VDCH/U connector. Connector & terminal DTC 32/(F87) No. 3 — (VDC2) No. 1: DTC 34/(F87) No. 51 — (VDC2) No. 1: DTC 38/(F87) No. 50 — (VDC2) No. 1: DTC 38/(F87) No. 29 — (VDC2) No. 1: 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 con- nectors between VDCCM and VDCH/U?	Repair connector.	Go to step 10.
10	 CHECK VDCCM. 1) Connect all connectors. 2) Erase the memory. 3) Perform inspection mode. 4) Read out the diagnostic trouble code. 	Is the same diagnostic trouble code as in the current diagno- sis still being output?	Replace VDCCM. <ref. to="" vdc-8,<br="">VDC Control Mod- ule (VDCCM).></ref.>	Go to step 11.
11	CHECK ANY OTHER DIAGNOSTIC TROU- BLE CODES APPEARANCE.	Are other diagnostic trouble codes being output?	Proceed with the diagnosis corre- sponding 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.



	Step	Check	Yes	No
1	 CHECK GROUND CIRCUIT OF VDCCM. 1) Turn ignition switch to OFF. 2) Disconnect connector from VDCCM. 3) Measure resistance between VDCCM and chassis ground. Connector & terminal (F87) No. 1 — Chassis ground: (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 con- nectors between battery, igni- tion 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 trans- mitter.
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 har- ness.	Go to step 5.
5	 CHECK VDCCM. Connect all connectors. Erase the memory. Perform inspection mode. Read out the diagnostic trouble code. 	Is the same diagnostic trouble code as in the current diagno- sis still being output?	Replace VDCCM. <ref. to="" vdc-8,<br="">VDC Control Mod- ule (VDCCM).></ref.>	Go to step 6.
6	CHECK ANY OTHER DIAGNOSTIC TROU- BLE CODES APPEARANCE.	Are other diagnostic trouble codes being output?	Proceed with the diagnosis corre- sponding 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.



	Step	Check	Yes	No
1	 CHECK GENERATOR. 1) Start engine. 2) Idling after warm-up. 3) Measure voltage between generator B terminal and chassis ground. Terminal Generator B terminal — Chassis ground: 	Is the measured value within 10 to 15 V?	Go to step 2.	Repair generator.
2	CHECK BATTERY TERMINAL. 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. 1) Disconnect connector from VDCCM. 2) Run the engine at idle. 3) Measure voltage between VDCCM connector and chassis ground. Connector & terminal (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. 1) Turn ignition switch to OFF. 2) Measure resistance between VDCCM connector and chassis ground. Connector & terminal (F87) No. 1 — Chassis ground: (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 con- nectors between generator, battery and VDCCM?	Repair connector.	Go to step 6.
6	 CHECK VDCCM. Connect all connectors. Erase the memory. Perform inspection mode. Read out the diagnostic trouble code. 	Is the same diagnostic trouble code as in the current diagno- sis still being output?	Replace VDCCM. <ref. to="" vdc-8,<br="">VDC Control Mod- ule (VDCCM).></ref.>	Go to step 7.
7	CHECK ANY OTHER DIAGNOSTIC TROU- BLE CODES APPEARANCE.	Are other diagnostic trouble codes being output?	Proceed with the diagnosis corre- sponding to the diagnostic trouble code.	A temporary poor contact.

VDC (DIAGNOSTICS)

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.



Step	Check	Yes	No
 CHECK HARNESS/CONNECTOR BETWEEN VDCCM AND ECM. Turn ignition switch to OFF. Disconnect connector from VDCCM. Disconnect connector from ECM. Measure resistance between VDCCM connector and ECM. Connector & terminal (F87) No. 21 — (B134) No. 12: (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.
 CHECK GROUND SHORT OF HARNESS. Measure resistance between VDCCM connector and chassis ground. Connector & terminal (F87) No. 21 — Chassis ground: (F87) No. 43 — Chassis ground: (F87) No. 8 — Chassis ground: 	Is the measured value more than 1 MΩ?	Go to step 3 .	Repair harness/ connector between VDCCM and ECM.
 CHECK BATTERY SHORT OF HARNESS. Measure voltage between VDCCM connector and chassis ground. Connector & terminal (F87) No. 21 (+) — Chassis ground (-): (F87) No. 43 (+) — Chassis ground (-): (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.
 CHECK BATTERY SHORT OF HARNESS. 1) Turn ignition switch to ON. 2) Measure voltage between VDCCM connector and chassis ground. Connector & terminal (F87) No. 21 (+) — Chassis ground (-): (F87) No. 43 (+) — Chassis ground (-): (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. 1) Turn ignition switch to OFF. 2) Connect connector to ECM. 3) Turn ignition switch to ON. 4) Measure voltage between VDCCM connector and chassis ground. Connector & terminal (F87) No. 21 (+) — Chassis ground (-): (F87) No. 43 (+) — Chassis ground (-): (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 con- nectors between ECM and VDCCM?	Repair connector.	Go to step 7.
 7 CHECK VDCCM. 1) Turn ignition switch to OFF. 2) Connect all connectors. 3) Erase the memory. 4) Perform inspection mode. 5) Read out the diagnostic trouble code. 	Is the same diagnostic trouble code as in the current diagno- sis still being output?	Replace VDCCM. <ref. to="" vdc-8,<br="">VDC Control Mod- ule (VDCCM).></ref.>	Go to step 8.
8 CHECK ANY OTHER DIAGNOSTIC TROU- BLE CODES APPEARANCE.	Are other diagnostic trouble codes being output?	Proceed with the diagnosis corre- sponding to the diagnostic trouble code.	A temporary poor contact.

VDC (DIAGNOSTICS)

	Step	Check	Yes	No
9	 CHECK ECM. 1) Turn ignition switch to ON. 2) Measure voltage between ECM connector terminal and chassis ground. Connector & terminal (B134) No. 12 (+) — Chassis ground (-): (B134) No. 4 (+) — Chassis ground (-): (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 con- nector ECM?	Repair connector.	Go to step 11.
11	CHECK ENGINE.	Is the engine functioning nor- mally?	Replace ECM. <ref. to<br="">FU(H6DO)-46, Engine Control Module.></ref.>	Repair engine.

MEMO:

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

• Communication with AT control faults

TROUBLE SYMPTOM:

VDC does not operate.



	•	• •••••		
	Step	Check	Yes	No
1	 CHECK RESISTANCE OF HARNESS. 1) Turn ignition switch to OFF. 2) Disconnect two connectors from TCM. 3) Measure resistance between TCM connector terminals. 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. 1) Turn ignition switch to OFF. 2) Connect all connectors. 3) Erase the memory. 4) Perform inspection mode. 5) Read out the diagnostic trouble code. 	Is the same diagnostic trouble code as in the current diagno- sis still being output?	Replace TCM. <ref. 4at-79,<br="" to="">Transmission Con- trol Module (TCM).></ref.>	Go to step 4.
4	CHECK ANY OTHER DIAGNOSTIC TROU- BLE CODES APPEARANCE.	Are other diagnostic trouble codes being output?	Proceed with the diagnosis corre- sponding 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	I.	Is the same diagnostic trouble code as in the current diagno- sis still being output?	Go to step 2.	Proceed with the diagnosis corre- sponding to the diagnostic trouble code.
2 CHECK VDC Check the VE VDCCM ide P	CCM SPECIFICATIONS. DCCM identification mark. Entification mark	Does the VDCCM identification mark agree with the vehicle specifications?	Go to step 3 .	Replace VDCCM. <ref. to="" vdc-8,<br="">VDC Control Mod- ule (VDCCM).></ref.>
3 CHECK TCM Check the TC <i>TCM identi</i> <i>HN</i>	I SPECIFICATIONS. CM identification mark. fication mark	Does the TCM identification mark agree with the vehicle specifications?	Go to step 4.	Replace TCM. <ref. 4at-79,<br="" to="">Transmission Con- trol Module (TCM).></ref.>
4 CHECK TCM 1) Replace T sion Contr 2) Erase the 3) Perform ir 4) Read out	I. CCM. <ref. 4at-79,="" to="" transmis-<br="">rol Module (TCM).> memory. nspection mode. the diagnostic trouble code.</ref.>	Is the same diagnostic trouble code as in the current diagno- sis still being output?	Go to step 5 .	The original TCM has been faulty.
 5 CHECK VDC 1) Install orig 2) Replace V Control M 3) Erase the 4) Perform ir 5) Read out 	CM. ginal TCM. /DCCM. <ref. to="" vdc-8,="" vdc<br="">odule (VDCCM).> memory. nspection mode. the diagnostic trouble code.</ref.>	Is the same diagnostic trouble code as in the current diagno- sis still being output?	Go to step 6 .	The original VDCCM has been faulty.
6 CHECK VDC	CM.	Is the same diagnostic trouble code as in the current diagno- sis still being output?	Replace TCM. <ref. 4at-79,<br="" to="">Transmission Con- trol Module (TCM).></ref.>	Proceed with the diagnosis corre- sponding 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
 CHECK GROUND SHORT OF SENSOR AND HARNESS. Turn ignition switch OFF. Disconnect connector from VDCCM. Measure resistance between VDCCM connector and chassis ground. Connector & terminal	Is the measured value more than 1 MΩ?	Go to step 3.	Go to step 2.
 CHECK GROUND SHORT OF HARNESS. 1) Disconnect connector from faulty sensors. 2) Measure resistance between VDCCM and chassis ground. Connector & terminal (F87) No. 63 — Chassis ground (Lateral G sensor): (F87) No. 78 — Chassis ground (Pressure sensor): 	Is the measured value more than 1 MΩ?	Replace faulty sensors.	Repair or replace harness connec- tor between VDCCM and faulty sensor.
3 CHECK BATTERY SHORT OF SENSOR AND HARNESS. Measure voltage between VDCCM and chas- sis ground. <i>Connector & terminal</i> <i>(F87) No. 63 (+) — Chassis ground (–)</i> <i>(Lateral G sensor):</i> <i>(F87) No. 78 (+) — Chassis ground (–)</i> <i>(Pressure sensor):</i>	Is the measured value less than 0.5 V?	Go to step 4.	Go to step 5.
 CHECK BATTERY SHORT OF SENSOR AND HARNESS. 1) Turn ignition switch to ON. 2) Measure voltage between VDCCM connector and chassis ground. Connector & terminal (F87) No. 63 (+) — Chassis ground (-) (Lateral G sensor): (F87) No. 78 (+) — Chassis ground (-) (Pressure sensor): 	Is the measured value less than 0.5 V?	Replace VDCCM. <ref. to="" vdc-8,<br="">VDC Control Mod- ule (VDCCM).></ref.>	Go to step 5.
 5 CHECK BATTERY SHORT OF HARNESS. 1) Turn ignition switch to OFF. 2) Disconnect connector from faulty sensors. 3) Measure voltage between VDCCM and chassis ground. Connector & terminal (F87) No. 63 (+) — Chassis ground (-) (Lateral G sensor): (F87) No. 78 (+) — Chassis ground (-) (Pressure sensor): 	Is the measured value less than 0.5 V?	Go to step 6 .	Repair or replace harness connec- tor between VDCCM and faulty sensor.
 6 CHECK BATTERY SHORT OF HARNESS. 1) Turn ignition switch to ON. 2) Measure voltage between VDCCM and chassis ground. Connector & terminal (F87) No. 63 (+) — Chassis ground (-) (Lateral G sensor): (F87) No. 78 (+) — Chassis ground (-) (Pressure sensor): 	Is the measured value less than 0.5 V?	Replace faulty sensor.	Repair or replace harness connec- tor 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.



	Step	Check	Yes	No
1	CHECK HARNESS BETWEEN VDCCM,	Is the measured value less	Go to step 3.	Go to step 2.
	STEERING ANGLE SENSOR AND TCM.	than 0.5 Ω?		
	 Turn ignition switch OFF. 			
	2) Disconnect connector from VDCCM, TCM			
	and steering angle sensor.			
	3) Measure resistance between VDCCM,			
	I CM and steering angle sensor.			
	Connector & terminal (E97) No. 92 (RE6) No. 0:			
	(F07) NO. 03 — (B50) NO. 9. (E87) No. 81 — (B56) No. 18:			
	(F87) No. 83 — $(B231)$ No. 2.			
	(F87) No. 81 — (B231) No. 1:			
2	CHECK HARNESS BETWEEN STEERING	Is the measured value less	Repair or replace	Repair or replace
_	ANGLE SENSOR AND TCM.	than 0.5 Ω ?	harness connec-	harness connec-
	Measure resistance between TCM and steer-		tor between	tor between TCM
	ing angle sensor.		VDCCM and	and steering angle
	Connector & terminal		steering angle	sensor.
	(B56) No. 9 — (B231) No. 2:		sensor.	
	(B56) No. 18 — (B231) No. 1:			
3	CHECK GROUND SHORT OF HARNESS.	Is the measured value more	Go to step 4.	Repair or replace
	Measure resistance between VDCCM and	than 1 MΩ?		harness connec-
	chassis ground.			tor between
	Connector & terminal			VDCCM, TCM and
	(F87) No. 83 — Chassis ground:			steering angle
_	(F87) No. 81 — Chassis ground:			sensor.
4	CHECK BATTERY SHORT OF SENSOR.	Is the measured value less	Go to step 5.	Repair or replace
	Measure voltage between VDCCM and chas-	than 0.5 V?		harness connec-
	Connector & terminal			VDCCM TCM and
	(F87) No. 83 — Chassis around:			steering angle
	(F87) No. 81 — Chassis ground:			sensor.
5	CHECK BATTERY SHORT OF SENSOR.	Is the measured value less	Go to step 6.	Repair or replace
	 Turn ignition switch to ON. 	than 0.5 V?		harness connec-
	2) Measure voltage between VDCCM and			tor between
	chassis ground.			VDCCM, TCM and
	Connector & terminal			steering angle
	(F87) No. 83 — Chassis ground:			sensor.
	(F87) No. 81 — Chassis ground:			
6	CHECK STEERING ANGLE SENSOR.	Is the measured value within	Go to step 8.	Go to step 7.
	1) Turn ignition switch to OFF.	114 to 126 \$\Overline{2}?		
	2) Connect connector to steering angle sen-			
	3) Measure resistance between VDCCM con-			
	nector terminals			
	Connector & terminal			
	(F87) No. 83 — No. 81:			
7	CHECK POOR CONTACT IN CONNECTORS.	Is there poor contact in steer-	Replace steering	Repair or replace
		ing angle sensor?	angle sensor.	steering angle
			-	sensor connector.
8	CHECK VDCCM.	Is the measured value within	Go to step 10.	Go to step 9.
	 Connect connector to VDCCM. 	114 to 126 Ω?		
	2) Disconnect connector from steering angle			
	sensor.			
	3) Measure resistance between steering			
	angle sensor connector terminals.			
	Connector & terminal			
	(B231) No. 1 — No. 2:			

VDC (DIAGNOSTICS)

			1	1
	Step	Check	Yes	No
9	CHECK POOR CONTACT IN CONNECTORS.	Is there poor contact in steer- ing angle sensor?	Replace VDCCM. <ref. to="" vdc-8,<br="">VDC Control Mod- ule (VDCCM).></ref.>	Repair or replace VDCCM connec- tor.
10	 CHECK TCM. 1) Connect connector to TCM. 2) Disconnect connector from VDCCM. 3) Measure resistance between steering angle sensor terminals. 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 steer- ing angle sensor?	Replace TCM. <ref. 4at-79,<br="" to="">Transmission Con- trol Module (TCM).></ref.>	Repair or replace TCM connector.
12	 CHECK VDCCM. 1) Connect all connectors. 2) Erase the memory. 3) Perform inspection mode. 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 diagno- sis still being output?	Go to step 14.	Proceed with the diagnosis corre- sponding to the diagnostic trouble code.
14	CHECK AT SYSTEM DIAGNOSTIC TROU- BLE CODE.	Is the AT system diagnostic trouble code DTC 86?	Replace steering angle sensor.	Replace VDCCM. <ref. to="" vdc-8,<br="">VDC Control Mod- ule (VDCCM).></ref.>

MEMO:

VDC (DIAGNOSTICS)

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.



	Step	Check	Yes	No
1	 CHECK HARNESS BETWEEN ECM AND VD-CCM. 1) Turn ignition switch to OFF. 2) Disconnect connectors from VDCCM and ECM. 3) Measure resistance between VDCCM and ECM. Connector & terminal (F87) No. 75 — (B136) No. 11: (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. Measure resistance between VDCCM and ECM. Connector & terminal (F87) No. 75 — Chassis ground: (F87) No. 45 — Chassis ground:	Is the measured value more than 1 M Ω ?	Go to step 3 .	Repair or replace ground short cir- cuit between VDCCM and ECM.
3	 CHECK BATTERY SHORT OF HARNESS. 1) Turn ignition switch to ON. 2) Measure voltage between VDCCM and chassis ground. Connector & terminal (F87) No. 75 — Chassis ground: (F87) No. 45 — Chassis ground: 	Is the measured value less than 0.5 V?	Go to step 4 .	Repair or replace battery short cir- cuit between VDCCM and ECM.
4	 CHECK INPUT VOLTAGE TO ECM. 1) Turn ignition switch to OFF. 2) Connect connector to VDCCM. 3) Turn ignition switch to ON. 4) Measure voltage between ECM connector and chassis ground. Connector & terminal (B136) No. 11 (+) — Chassis ground (-): (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 CONNEC- TORS.	Is there poor contact in ECM connector?	Replace ECM. <ref. to<br="">FU(H6DO)-46, Engine Control Module.></ref.>	Repair or replace ECM connector.
6	ERASE MEMORY.1) Connect all connectors.2) Erase the memory.	Can the memory be erased?	Go to step 7.	Replace VDCCM. <ref. to="" vdc-8,<br="">VDC Control Mod- ule (VDCCM).></ref.>
7	CHECK DIAGNOSTIC TROUBLE CODE.1) Perform inspection mode.2) Read out the diagnostic trouble code.	Is the same diagnostic trouble code as in the current diagno- sis still being output?	Replace ECM. <ref. to<br="">FU(H6DO)-46, Engine Control Module.></ref.>	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.



	Step	Check	Yes	No
1	CHECK TACHOMETER OPERATION IN COMBINATION METER.	Does tachometer operate nor- mally?	Go to step 2.	Repair tachome- ter.
2	 CHECK HARNESS BETWEEN VDCCM AND ECM. 1) Turn ignition switch to OFF. 2) Disconnect connector from VDCCM and ECM. 3) Measure resistance between VDCCM con- nector and ECM. Connector & terminal (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 con- nectors between VDCCM and ECM?	Repair connector.	Go to step 4.
4	 CHECK VDCCM. Connect all connectors. Erase the memory. Perform inspection mode. Read out the diagnostic trouble code. 	Is the same diagnostic trouble code as in the current diagno- sis still being output?	Replace VDCCM. <ref. to="" vdc-8,<br="">VDC Control Mod- ule (VDCCM).></ref.>	Go to step 5 .
5	CHECK ANY OTHER DIAGNOSTIC TROU- BLE CODES APPEARANCE.	Are other diagnostic trouble codes being output?	Proceed with the diagnosis corre- sponding 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.





	Stop	Chook	Voc	No
4			fes	NU
1	1) Turn ignition quitten to OFF	Is the measured value within	Go to step 2.	Replace valve
	 Turn Ignition Switch to OFF. Demove value value from value have 	93 to 113 \$2?		relay.
	2) Remove valve relay from relay box.			
	5) Measure resistance between valve relay			
	Terminals.			
	No 85 - No 86			
2		Is the measured value less	Go to step 3	Benlace valve
~	LAY.	than 0.5.0?	do to step 5 .	relav
	1) Connect battery to valve relay terminals No.			l'olay.
	85 and No. 86.			
	2) Measure resistance between valve relay			
	terminals.			
	Terminals			
	No. 30 — No. 87:			
3	CHECK CONTACT POINT OF VALVE RE-	Is the measured value more	Go to step 4.	Replace valve
	LAY.	than 1 MΩ?		relay.
	Measure resistance between valve relay termi-			
	nals.			
	Terminals			
-	NO. 30 — NO. 8/a:			
4	CHECK CONTACT POINT OF VALVE RE-	Is the measured value more	Go to step 5.	Replace valve
	LAY.	than TMS2?		relay.
	 Disconnect battery from valve relay termi- nole 			
	2) Measure resistance between valve relav			
	terminals			
	Terminals			
	No. 30 — No. 87:			
5	CHECK CONTACT POINT OF VALVE RE-	Is the measured value less	Go to step 6.	Replace valve
	LAY.	than 0.5 Ω?		relay.
	Measure resistance between valve relay termi-			
	nals.			
	Terminals			
0				
6	CHECK SHORT OF VALVE RELAY.	Is the measured value more	Go to step 7.	Replace valve
	Measure resistance between valve relay termi-	than TMS2?		relay.
	Terminals			
	No $86 - No 87$			
	No. 86 — No. 87a:			
7	CHECK POWER SUPPLY FOR VALVE RE-	Is the measured value within	Go to step 8.	Repair harness
-	LAY.	10 to 15 V?		between battery
	1) Disconnect connector (F89) from relay box.			and relay box con-
	2) Measure voltage between relay box con-			nector. Check fuse
	nector and chassis ground.			No. 8.
	Connector & terminal			
	(F89) No. 1 (+) — Chassis ground (–):			
8	CHECK OPEN CIRCUIT AND GROUND	Is the measured value within	Go to step 9.	Replace relay box
	SHORT IN POWER SUPPLY CIRCUIT OF	10 to 15 V?		and check fuse
				No. 8.
	1) Disconnect connector (VDC1) from VDCH/			
	U. 2) Connect connector (E80) to relay box			
	3) Measure voltage of relay box			
	Connector & terminal			
	(VDC6) No. 87 (+) — Chassis ground (-			
):			

VDC (DIAGNOSTICS)

	Stop	Check	Vaa	No
_		Clieck	fes	
9	CHECK OPEN CIRCUIT IN CONTROL CIR-	Is the measured value less	Go to step 10.	Replace relay box.
	CUIL OF RELAY BOX.	than 0.5 Ω ?		
	1) Turn ignition switch to OFF.			
	2) Disconnect connector (F90) from relay box.			
	3) Measure resistance between relay box con-			
	nector and valve relay installing point.			
	Connector & terminal			
	(VDC4) No. 5 — (VDC6) No. 85:			
	(VDC4) No. 1 — (VDC6) No. 86:			
10	CHECK GROUND SHORT IN CONTACT	Is the measured value more	Go to step 11.	Replace relay box
	POINT CIRCUIT OF RELAY BOX.	than 1 MΩ?		and check fuse
	Measure resistance between relay box con-			No. 8.
	nector and chassis ground.			
	Connector & terminal			
	(VDC4) No. 5 — Chassis ground:			
	(VDC4) No. 1 — Chassis ground:			
11	CHECK BATTERY SHORT IN CONTACT	Is the measured value less	Go to step 12.	Replace relay box.
	POINT CIRCUIT OF RELAY BOX.	than 1 V?		Check fuse No. 8.
	Measure voltage between relay box connector			
	and chassis ground.			
	Connector & terminal			
	(VDC4) No. 5 (+) — Chassis ground (-):			
	(VDC4) No. 1 (+) — Chassis ground (-):			
12	CHECK BATTERY SHORT IN CONTACT	Is the measured value less	Go to sten 13	Replace relay box
12		than 1 V2		Check fuse No. 8
	1) Turn ignition switch to ON			
	2) Measure voltage between relay box con-			
	2) Measure voltage between relay box con-			
	Connector & terminal			
	(VDC4) No. 5 (1) Chassis ground ():			
	(VDC4) No. 1 (+) — Chassis ground (-):			
10			Cata stan 14	Densir harmasa
13	TEM HADNESS OF VALVE DELAY	then 0.5 02	Go to step 14.	Repair namess
	1) Turn ignition quitable of CE	man 0.5 12?		between VDCCM
	1) Turn ignition switch to OFF.			and relay box.
	2) Disconnect connector from VDCCIVI.			
	3) Measure resistance between VDCCM con-			
	Connector and relay box connector.			
	Connector & terminal			
	(F87) No. 47 — $(F90)$ No. 5:			
	(F87) NO. 27 — (F90) NO. 1:			D
14	CHECK GROUND SHORT IN CONTROL	Is the measured value more	Go to step 15.	Repair harness
	SYSTEM HARNESS OF VALVE RELAY.	than 1 MΩ?		between VDCCM
	Measure resistance between VDCCM connec-			and relay box and
	tor and chassis ground.			check all fuses.
	Connector & terminal			
	(F87) No. 47 — Chassis ground:			
	(F87) No. 27 — Chassis ground:			
15	CHECK BATTERY SHORT IN CONTROL	Is the measured value less	Go to step 16.	Repair harness
	SYSTEM HARNESS OF VALVE RELAY.	than 1 V?		between VDCCM
	Measure voltage between VDCCM connector			and relay box.
	and chassis ground.			
	Connector & terminal			
	(F87) No. 27 (+) — Chassis ground (–):			
	(F87) No. 47 (+) — Chassis ground (–):			

	Step	Check	Yes	No
16	 CHECK BATTERY SHORT IN CONTROL SYSTEM HARNESS OF VALVE RELAY. 1) Turn ignition switch to ON. 2) Measure voltage between VDCCM connector and chassis ground. Connector & terminal 	Is the measured value less than 1 V?	Go to step 17.	Repair harness between VDCCM and relay box.
	(F87) No. 27 (+) — Chassis ground (–): (F87) No. 47 (+) — Chassis ground (–):			
17	CHECK OPEN CIRCUIT IN CONTACT POINT CIRCUIT OF RELAY BOX. Measure resistance between VDCH/U connec- tor and valve relay installing point. Connector & terminal (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. Measure resistance between VDCH/U connec- tor and chassis ground. Connector & terminal (VDC1) No. 2 — Chassis ground:	Is the measured value more than 1 M Ω ?	Go to step 19.	Replace relay box and check fuse No. 8.
19	CHECK BATTERY SHORT IN CONTACT POINT CIRCUIT OF RELAY BOX. Measure voltage between VDCH/U connector and chassis ground. Connector & terminal (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. 1) Turn ignition switch to ON. 2) Measure voltage between VDCH/U connector and chassis ground. Connector & terminal (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. 1) Disconnect connector from VDCH/U. 2) Measure resistance between VDCH/U connector terminals. Connector & terminal (VDC5) No. 8 — (VDC2) No. 2: (VDC5) No. 5 — (VDC2) No. 2: (VDC5) No. 6 — (VDC2) No. 2: (VDC5) No. 6 — (VDC2) No. 2: (VDC5) No. 7 — (VDC2) No. 2: (VDC5) No. 9 — (VDC2) No. 2: (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,<br="">VDC Control Mod- ule (VDCCM).></ref.>
22	CHECK RESISTANCE OF OUTLET SOLE- NOID VALVE. Measure resistance between VDCH/U connec- tor terminals. <i>Connector & terminal</i> (VDC5) No. 4 — (VDC2) No. 2: (VDC5) No. 1 — (VDC2) No. 2: (VDC5) No. 2 — (VDC2) No. 2: (VDC5) No. 3 — (VDC2) No. 2: (VDC5) No. 10 — (VDC2) No. 2: (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,<br="">VDC Control Mod- ule (VDCCM).></ref.>

VDC (DIAGNOSTICS)

	Sten	Check	Ves	No
00			Co to stop 04	
23	VALVE	then 1 MO2	Go to step 24.	Replace VDCH/U
	VALVE. Maaaura raajatanaa hatugan VDCU/U aannaa			
	ter and chassis ground			
	tor and chassis ground.			VDC-8, VDC COn-
	(VDC2) No. 2 — Chassis ground:			
24	CHECK BATTERY SHORT OF SOLENOID	Is the measured value less	Go to step 25.	Replace VDCH/U
	VALVE.	than 1 V?		and check all
	Measure voltage between VDCH/U connector			tuses. <ret. th="" to<=""></ret.>
	and chassis ground.			VDC-8, VDC Con-
	Connector & terminal			trol Module
	(VDC2) No. 2 (+) — Chassis ground (–):			(VDCCM).>
25	CHECK BATTERY SHORT OF SOLENOID	Is the measured value less	Go to step 26.	Replace VDCH/U
	VALVE.	than 1 V?		and check all
	1) I urn ignition switch to ON.			tuses. <ret. th="" to<=""></ret.>
	2) Measure voltage between VDCH/U con-			VDC-8, VDC Con-
	nector and chassis ground.			trol Module
	Connector & terminal			(VDCCM).>
	(VDC2) No. 2 (+) — Chassis ground (–):			
26	CHECK BATTERY SHORT OF HARNESS.	Is the measured value less	Go to step 27.	Repair harness
	1) Turn ignition switch to OFF.	than 1 V?		between VDCH/U
	Disconnect connector from VDCCM.			and VDCCM and
	3) Measure voltage between VDCCM connec-			check all fuses.
	tor and chassis ground.			
	Connector & terminal			
	(F87) No. 30 (+) — Chassis ground (–):			
	(F87) No. 24 (+) — Chassis ground (–):			
	(F87) No. 23 (+) — Chassis ground (–):			
	(F87) No. 31 (+) — Chassis ground (–):			
	(F87) No. 26 $(+)$ — Chassis ground $(-)$:			
	(F87) No. 25 $(+)$ — Chassis ground $(-)$:			
	(F07) No. 3 $(+)$ — Chassis ground $(-)$:			
	(F07) No. 51 $(+)$ — Chassis ground $(-)$:			
	(F07) No. 50 $(+)$ — Chassis ground $(-)$:			
	(107) No. $(+)$ — Chassis ground (-):			
	(107) No. 2 (+) — Chassis ground (-).			
27		le the measured value less	Go to stop 28	Popair barnoss
21	1) Turn ignition switch to ON	than 1 V2	00 10 Step 20.	hetween VDCH/U
	2) Measure voltage between VDCCM connec-			and VDCCM and
	tor and chassis ground			check all fuses
	Connector & terminal			
	(F87) No. $30(+)$ — Chassis ground (–):			
	(F87) No. 24 (+) — Chassis ground (-):			
	(F87) No. 23 (+) — Chassis ground (-):			
	(F87) No. 31 (+) — Chassis ground (-):			
	(F87) No. 26 (+) — Chassis ground (-):			
	(F87) No. 25 (+) — Chassis ground (-):			
	(F87) No. 3 (+) — Chassis around (–):			
	(F87) No. 51 (+) — Chassis around (–):			
	(F87) No. 50 (+) — Chassis ground (–):			
	(F87) No. 4 (+) — Chassis around (–):			
	(F87) No. 2 (+) — Chassis ground (–):			
	(F87) No. 29 (+) — Chassis ground (–):			

		01	N	
	Step	Спеск	Yes	NO
28	 CHECK GROUND SHORT OF HARNESS. 1) Turn ignition switch to OFF. 2) Measure resistance between VDCCM connector and chassis ground. Connector & terminal (F87) No. 30 — Chassis ground: (F87) No. 24 — Chassis ground: (F87) No. 23 — Chassis ground: (F87) No. 31 — Chassis ground: (F87) No. 26 — Chassis ground: (F87) No. 25 — Chassis ground: (F87) No. 3 — Chassis ground: (F87) No. 51 — Chassis ground: (F87) No. 51 — Chassis ground: (F87) No. 50 — Chassis ground: (F87) No. 50 — Chassis ground: (F87) No. 4 — Chassis ground: (F87) No. 2 — Chassis ground: (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. 1) Connect connector (F91) to VDCH/U. 2) Measure resistance between VDCCM connector and VDCH/U connector. Connector & terminal (F87) No. 30 — (VDC2) No. 2: (F87) No. 24 — (VDC2) No. 2: (F87) No. 23 — (VDC2) No. 2: (F87) No. 31 — (VDC2) No. 2: (F87) No. 26 — (VDC2) No. 2: (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. Measure resistance between VDCCM connec- tor and VDCH/U connector. <i>Connector & terminal</i> (F87) No. 3 — (VDC2) No. 2: (F87) No. 51 — (VDC2) No. 2: (F87) No. 50 — (VDC2) No. 2: (F87) No. 2 — (VDC2) No. 2: (F87) No. 2 — (VDC2) No. 2: (F87) No. 29 — (VDC2) No. 2: (F87) No. 20 = (VDC2) No. 2: (F87) No. 29 — (VDC2) No. 2: (F87) No. 20 =	Is the measured value within 4.0 to 6.0 Ω?	Go to step 31.	Repair harness/ connector between VDCH/U and VDCCM. Go to step 32 .
		nector between VDCCM and VDCH/U?		
32	 CHECK VDCCM. 1) Connect all connectors. 2) Erase the memory. 3) Perform inspection mode. 4) Read out the diagnostic trouble code. 	Is the same diagnostic trouble code as in the current diagno- sis still being output?	Replace VDCCM. <ref. to="" vdc-8,<br="">VDC Control Mod- ule (VDCCM).></ref.>	Go to step 33.
33	CHECK ANY OTHER DIAGNOSTIC TROU- BLE CODES APPEARANCE.	Are other diagnostic trouble codes being output?	Proceed with the diagnosis corre- sponding 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:



VDC-102

Step	Check	Yes	No
 CHECK RESISTANCE OF MOTOR RELAY. Turn ignition switch to OFF. Remove motor relay from relay box. Measure resistance between motor relay terminals. Terminals 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 RE- LAY. Connect battery to motor relay terminals No. 85 and No. 86. Measure resistance between motor relay terminals. Terminals 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 RE- LAY. Disconnect battery from motor relay terminals. Measure resistance between motor relay terminals. Terminals 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. Measure resistance between motor relay ter- minals. <i>Terminals</i> <i>No. 85 — No. 30:</i> <i>No. 85 — No. 87:</i>	Is the measured value more than 1 M Ω ?	Go to step 5 .	Replace motor relay.
 5 CHECK INPUT VOLTAGE OF RELAY BOX. 1) Disconnect connector (F89) from relay box. 2) Disconnect connector from VDCCM. 3) Measure voltage between relay box connector and chassis ground. Connector & terminal (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 RE-LAY. 1) Connect connector (F89) to relay box. 2) Measure voltage between relay box and chassis ground. Connector & terminal (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. 1) Turn ignition switch to OFF. 2) Disconnect connectors (VDC2, F90) from relay box. 3) Measure resistance between relay box con- nector unit and motor relay installing por- tion. Connector & terminal (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 SYS- TEM CIRCUIT OF RELAY BOX. Measure resistance between relay box con- nector and motor relay installing point. Connector & terminal (VDC4) No. 6 — (VDC7) No. 30:	Is the measured value less than 0.5 Ω?	Go to step 9.	Replace relay box.

VDC (DIAGNOSTICS)

	Sten	Check	Ves	No
0			Co to otop 10	Deplace relay hav
9		than 0.5 O2		Replace relay box.
	Measure resistance between motor relay	(indi) 0.5 22!		
	installing point and relay box connector			
	Connector & terminal			
	(VDC4) No. 4 — (VDC7) No. 86:			
10	CHECK OPEN CIRCUIT IN CONTROL CIR-	Is the measured value less	Go to step 11.	Replace relay box.
	CUIT OF RELAY BOX.	than 0.5 Ω ?		
	1) Remove valve relay from relay box.			
	2) Measure resistance between motor relay			
	installing point and valve relay installing			
	point.			
	Connector & terminal			
	(VDC7) No. 85 — (VDC6) No. 30:			
11	CHECK GROUND SHORT IN CIRCUIT OF	Is the measured value more	Go to step 12.	Replace relay box.
	RELAY BOX.	than 1 MO?		
	neasure resistance between relay box con-			
	Connector & terminal			
	(VDC4) No. 4 — Chassis ground:			
	(VDC4) No. 6 — Chassis ground:			
12	CHECK BATTERY SHORT IN CIRCUIT OF	Is the measured value less	Go to step 13.	Replace relay box.
	RELAY BOX.	than 1 V?		- F - - -
	Measure voltage between relay box connector			
	and chassis ground.			
	Connector & terminal			
	(VDC4) No. 4 (+) — Chassis ground (–):			
	(VDC4) No. 6 (+) — Chassis ground (–):			
13	CHECK BATTERY SHORT IN CIRCUIT OF	Is the measured value less	Go to step 14.	Replace relay box.
	1) Turn ignition switch to ON			
	2) Measure voltage between relay box con-			
	nector and chassis ground.			
	Connector & terminal			
	(VDC4) No. 4 (+) — Chassis ground (–):			
	(VDC4) No. 6 (+) — Chassis ground (–):			
14	CHECK OPEN CIRCUIT IN RELAY CON-	Is the measured value less	Go to step 15.	Repair harness
	TROL SYSTEM HARNESS.	than 0.5 Ω?		connector
	1) I urn ignition switch to OFF.			between VDCCM
	2) Measure resistance between VDCCM con-			and relay box.
	Connector & terminal			
	(F87) No 22 — $(F90)$ No 4.			
	(F87) No. 10 — (F90) No. 6:			
15	CHECK GROUND SHORT IN HARNESS BE-	Is the measured value more	Go to step 16.	Repair harness
	TWEEN RELAY BOX AND VDCCM.	than 1 MΩ?	•	between VDCCM
	Measure resistance between VDCCM connec-			and relay box.
	tor and chassis ground.			Check fuse SBF
	Connector & terminal			holder.
	(F87) No. 22 — Chassis ground:			
16	(rol) NO. IU - Chassis ground:		Co to stor 17	Denoir barrass
10		than 1 V?		hepair namess
	Measure voltage between VDCCM connector			and relay box.
	and chassis ground.			Check fuse SBF
	Connector & terminal			holder.
	(F87) No. 22 (+) — Chassis ground (–):			
	(F87) No. 10 (+) — Chassis ground (–):			

	Step	Check	Yes	No
17	 CHECK BATTERY SHORT IN HARNESS BE- TWEEN RELAY BOX AND VDCCM. 1) Turn ignition switch to ON. 2) Measure voltage between VDCCM connec- tor and chassis ground. Connector & terminal (F87) No. 22 (+) — Chassis ground (-): (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. <i>Tightening torque:</i> <i>32±10 N·m (3.3±1.0 kgf-m, 24±7 ft-lb)</i>	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. 1) Turn ignition switch OFF. 2) Remove VDC connector cover. <ref. to<br="">VDC-20, REMOVE, VDCCM Connector Cover.></ref.> 3) Connect all connectors. 4) Install motor relay and valve relay to relay box. 5) Operate the ABS check sequence. <ref. to<br="">VDC-16, ABS Sequence Control.></ref.> 6) Measure voltage between VDCCM connec- tor terminals. Connector & terminal (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 car- rying out the check sequence?	Go to step 20 .	Replace VDCCM. <ref. to="" vdc-8,<br="">VDC Control Mod- ule (VDCCM).></ref.>
20	CHECK MOTOR OPERATION. Operate the check sequence. <ref. to="" vdc-<br="">19, VDC Sequence Control.></ref.>	Can motor revolution noise (buzz) be heard when carrying out the check sequence?	Go to step 21.	Replace VDCH/U. <ref. to="" vdc-8,<br="">VDC Control Mod- ule (VDCCM).></ref.>
21	CHECK POOR CONTACT IN CONNECTORS. Turn ignition switch to OFF.	Is there poor contact in con- nector between VDCH/U, relay box and VDCCM?	Repair connector.	Go to step 22.
22	 CHECK VDCCM. Connect all connectors. Erase the memory. Perform inspection mode. Read out the diagnostic trouble code. 	Is the same diagnostic trouble code as in the current diagno- sis still being output?	Replace VDCCM. <ref. to="" vdc-8,<br="">VDC Control Mod- ule (VDCCM).></ref.>	Go to step 23.
23	CHECK ANY OTHER DIAGNOSTIC TROU- BLE CODES APPEARANCE.	Are other diagnostic trouble codes being output?	Proceed with the diagnosis corre- sponding 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.



Step		Check	Yes	No
1CHECK THE STEERING WHEEL1)Drive the vehicle on a flat road.2)Stop the vehicle in a straight lin3)Check the angle of steering wh	ie. eel.	Is the angle of steering wheel alignment less than 5° from the straight-ahead position?	Go to step 2.	Perform centering alignment of steer- ing.
2 CHECK RUNNING FIELD. Check if the vehicle was driven on the surfaces or sandy surfaces (not dir faces).	banked road t road sur-	Was the vehicle driven on banked road surfaces or sandy surfaces (not dirt road sur- faces)?	Driving on banked road surfaces or sandy surfaces (not dirt road sur- faces) sometimes results in a VDCCM memory trouble code.	Go to step 3.
 3 CHECK POWER SUPPLY OF STE GLE SENSOR. 1) Turn ignition switch to OFF. 2) Disconnect connector from stee sensor. 3) Turn ignition switch to ON. 4) Measure voltage between stee sensor and chassis ground. Connector & terminal (B231) No. 4 — Chassis grout 	EERING AN- ering angle ring angle und:	Is the measured value within 10 to 15 V?	Go to step 6 .	Go to step 4.
 4 CHECK OUTPUT VOLTAGE OF V Turn ignition switch to OFF. Disconnect connector from VDC Remove cover for VDCCM con Ref. to VDC-20, REMOVE, VI nector Cover.> 4) Connect connector to VDCCM. Turn ignition switch to ON. Measure voltage between VDC chassis ground. Connector & terminal (F87) No. 27 — Chassis grout 	VDCCM. CCM. nector. DCCM Con- CCM and	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 CON	INECTORS.	Is there poor contact in yaw rate sensor connector?	Repair or replace VDCCM connec- tor.	Replace VDCCM. <ref. to="" vdc-8,<br="">VDC Control Mod- ule (VDCCM).></ref.>
6 CHECK GROUND CIRCUIT OF S ANGLE SENSOR. Measure resistance between steer and chassis ground. <i>Connector & terminal</i> (B231) No. 3 — Chassis grou	TEERING ing sensor und:	Is the measured value less than 0.5 $\Omega?$	Go to step 7.	Repair steering angle sensor ground harness.
 7 CHECK HARNESS OF STEERING SENSOR. 1) Connect connector to steering a sor. 2) Disconnect connector from VDC 3) Measure resistance between V nector terminals. Connector & terminal (F87) No. 81 — No. 83: 	G ANGLE angle sen- CCM. DCCM con-	ls the measured value within 114 to 126 Ω?	Repair harness between steering angle sensor and VDCCM.	Go to step 8 .
 8 CHECK STEERING ANGLE SENS 1) Turn ignition switch to OFF. 2) Connect all connectors. 3) Erase the memory. 4) Perform inspection mode. 5) Read out the diagnostic trouble 	SOR.	Is the same diagnostic trouble code as in the current diagno- sis still being output?	Go to step 10.	Go to step 9.

VDC (DIAGNOSTICS)

	Step	Check	Yes	No
9	CHECK ANY OTHER DIAGNOSTIC TROU- BLE CODES APPEARANCE.	Are other diagnostic trouble codes being output?	Proceed with the diagnosis corre- sponding to the diagnostic trouble code.	A temporary poor contact.
10	 CHECK VDCCM. 1) Turn ignition switch to OFF. 2) Replace steering angle sensor. 3) Erase the memory. 4) Perform inspection mode. 5) Read out the diagnostic trouble code. 	Is the same diagnostic trouble code as in the current diagno- sis still being output?	Replace VDCCM. <ref. to="" vdc-8,<br="">VDC Control Mod- ule (VDCCM).></ref.>	Go to step 11.
11	CHECK ANY OTHER DIAGNOSTIC TROU- BLE CODES APPEARANCE.	Are other diagnostic trouble codes being output?	Proceed with the diagnosis corre- sponding to the diagnostic trouble code.	The original steer- ing 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:





Step	Check	Yes	No
 CHECK THE STEERING WHEEL. 1) Drive the vehicle on a flat road. 2) Stop the vehicle in a straight line. 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 steer- ing.
2 CHECK RUNNING FIELD.	Was the vehicle driven on banked road surfaces or sandy surfaces (not dirt road sur- faces) or surfaces with holes or bumps at high speeds?	Driving on banked road surfaces or sandy surfaces (not dirt road sur- faces) or surfaces with holes or bumps at high speeds, some- times results in a VDCCM memory trouble code.	Go to step 3.
3 CHECK INSTALLATION OF YAW RATE AND LATERAL G SENSOR. 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 sen- sor securely.
 CHECK POWER SUPPLY OF YAW RATE AND LATERAL G SENSOR. Turn ignition switch OFF. Disconnect connector from yaw rate and lateral G sensor. Turn ignition switch to ON. Measure voltage between yaw rate and lateral G sensor and chassis ground. Connector & terminal (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. 1) Turn ignition switch to OFF. 2) Disconnect connector from VDCCM. 3) Remove cover for VDCCM connector. <ref. connector="" cover.="" remove,="" to="" vdc-20,="" vdccm=""></ref.> 4) Connect connector to VDCCM. 5) Turn ignition switch to ON. 6) Measure voltage between VDCCM connector and chassis ground. Connector & terminal (F87) No. 63 — Chassis ground: 	Is the measured value within 10 to 15 V?	Repair harness between yaw rate and lateral G sen- sor and VDCCM.	Go to step 6 .
6 CHECK POOR CONTACT IN CONNECTORS.	Is there poor contact in yaw rate and lateral G sensor con- nector?	Repair or replace VDCCM connec- tor.	Replace VDCCM. <ref. to="" vdc-8,<br="">VDC Control Mod- ule (VDCCM).></ref.>
7 CHECK GROUND CIRCUIT OF YAW RATE AND LATERAL G SENSOR. Measure resistance between yaw rate and lat- eral G sensor and chassis ground. Connector & terminal (R100) No. 6 — Chassis ground:	Is the measured value less than 0.5 Ω?	Go to step 10.	Go to step 8.

	0.			
	Step	Check	Yes	No
8	 CHECK GROUND CIRCUIT OF VDCCM. 1) Disconnect connector from VDCCM. 2) Remove cover from VDCCM connector. <ref. connector="" cover.="" remove,="" to="" vdc-20,="" vdccm=""></ref.> 3) Connect connector to VDCCM. 	Is the measured value less than 0.5 Ω?	Repair harness between yaw rate and lateral G sen- sor and VDCCM.	Go to step 9 .
	 4) Measure resistance between VDCCM connector and chassis ground. Connector & terminal (F87) No. 64 — Chassis ground: 			
9	CHECK POOR CONTACT IN CONNECTORS.	Is there poor contact in VDCCM connector?	Repair or replace VDCCM connec- tor.	Replace VDCCM. <ref. to="" vdc-8,<br="">VDC Control Mod- ule (VDCCM).></ref.>
10	 CHECK HARNESS OF YAW RATE AND LATERAL G SENSOR. 1) Disconnect connector from VDCCM. 2) Measure resistance between VDCCM and yaw rate and lateral G sensor. Connector & terminal (F87) No. 65 — (R100) No. 4: (F87) No. 66 — (R100) No. 1: (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 sen- sor and VDCCM.
11	CHECK GROUND SHORT OF HARNESS. Measure resistance between VDCCM connec- tor and chassis ground. <i>Connector & terminal</i> (F87) No. 65 — Chassis ground: (F87) No. 66 — Chassis ground: (F87) No. 67 — Chassis ground:	Is the measured value more than 1 M Ω ?	Go to step 12.	Repair harness between yaw rate and lateral G sen- sor and VDCCM.
12	CHECK BATTERY SHORT OF HARNESS. Measure voltage between VDCCM connector and chassis ground. <i>Connector & terminal</i> (F87) No. 65 (+) — Chassis ground (–): (F87) No. 66 (+) — Chassis ground (–): (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 sen- sor and VDCCM.
13	 CHECK BATTERY SHORT OF HARNESS. 1) Turn ignition switch to ON. 2) Measure voltage between VDCCM and chassis ground. Connector & terminal (F87) No. 65 (+) — Chassis ground (-): (F87) No. 66 (+) — Chassis ground (-): (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 sen- sor and VDCCM.
14	 CHECK YAW RATE AND LATERAL G SEN-SOR. 1) Turn ignition switch to OFF. 2) Install yaw rate and lateral G sensor to body. 3) Connect all connectors. 4) Turn ignition switch to ON. 5) Measure voltage between VDCCM connector terminals. Connector & terminal (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 sen- sor. <ref. to="" vdc-<br="">22, Yaw Rate and Lateral G Sensor.></ref.>

	Step	Check	Yes	No
15	 CHECK YAW RATE AND LATERAL G SENSOR. 1) Turn ignition switch to ON. 2) Check oscilloscope signal pattern between VDCCM connector terminals.<ref. control="" i="" measurement,="" module="" o="" signal.="" to="" vdc-19,="" waveform,=""></ref.> Connector & terminal (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,<br="">VDC Control Mod- ule (VDCCM).></ref.>
16	CHECK YAW RATE SENSOR. Check oscilloscope pattern between yaw rate and lateral G sensor terminals. <ref. to="" vdc-<br="">19, WAVEFORM, MEASUREMENT, Control Module I/O Signal.> Connector & terminal (F87) No. 65 (+) — No. 64 (-):</ref.>	Is the oscilloscope pattern the same as shown in the figure?	Replace VDCCM. <ref. to="" vdc-8,<br="">VDC Control Mod- ule (VDCCM).></ref.>	Replace yaw rate and lateral G sen- sor. <ref. to="" vdc-<br="">8, VDC Control Module (VDCCM).></ref.>

AN:DTC 73 ABNORMAL LATERAL G SENSOR *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 LATERAL G	Is the yaw rate and lateral G	Go to step 2.	Install yaw rate
	SENSOR.	sensor fixed securely?		and lateral G sen-
	Check installation of lateral G sensor.			sor securely.
2	CHECK INPUT VOLTAGE OF G SENSOR.	Is the measured value within	Go to step 3.	Repair harness/
	 Turn ignition switch to OFF. 	10 to 15 V?		connector
	2) Remove console box.			between yaw rate
	3) Disconnect connector from yaw rate and			and lateral G sen-
	lateral G sensor.			sor and VDCCM.
	4) I urn ignition switch to ON.			
	5) Measure voltage between yaw rate and lat-			
	(R100) No. 3 (4) — No. 6 ():			
2	$\frac{(1100)}{(100)} = \frac{1}{(100)} = \frac{1}{(100$	le the measured value within	Co to stop 4	Doplogo your roto
3	CHECK YAW RATE AND LATERAL G SEN-	A 2 to 4.0 kO2	Go to step 4.	Replace yaw rate
	1) Turn ignition switch to OFF	4.3 10 4.9 822?		cor Pof to VDC
	2) Measure resistance between yaw rate and			22 Vaw Bate and
	lateral G sensor terminals			Lateral G Sensor >
	Terminals			
	No. 3 — No. 5:			
4	CHECK OPEN CIBCUIT IN YAW BATE AND	Is the measured value within	Go to step 5.	Repair harness/
·	LATERAL G SENSOR OUTPUT HARNESS	4.3 to 4.9 k Ω ?		connector
	AND GROUND HARNESS.			between vaw rate
	1) Connect connector to yaw rate and lateral			and lateral G sen-
	G sensor.			sor and VDCCM.
	Disconnect connector from VDCCM.			
	3) Measure resistance between VDCCM con-			
	nector terminals.			
	Connector & terminal			
	(F87) No. 63 — No. 70:			
5	CHECK GROUND SHORT IN YAW RATE	Is the measured value more	Go to step 6.	Repair harness
	AND LATERAL G SENSOR HARNESS.	than 1 MΩ?		between yaw rate
	1) Disconnect connector from yaw rate and			and lateral G sen-
	lateral G sensor.			sor and VDCCM.
	2) Measure resistance between VDCCM con-			
	(E87) No. 63 — Chassis around:			
	(F87) No. 70 — Chassis ground:			
	(F87) No. 64 — Chassis ground:			
6	CHECK BATTERY SHORT OF HARNESS	Is the measured value less	Go to step 7.	Repair harness
Ŭ	Measure voltage between VDCCM connector	than 1 V?		between vaw rate
	and chassis ground.			and lateral G sen-
	Connector & terminal			sor and VDCCM.
	(F87) No. 63 (+) — Chassis ground (–):			
	(F87) No. 70 (+) — Chassis ground (–):			
	(F87) No. 64 (+) — Chassis ground (–):			
7	CHECK BATTERY SHORT OF HARNESS.	Is the measured value less	Go to step 8.	Repair harness
	 Turn ignition switch to ON. 	than 1 V?		between yaw rate
	Measure voltage between VDCCM connec-			and lateral G sen-
	tor and chassis ground.			sor and VDCCM.
	Connector & terminal			
	(F87) No. 63 (+) — Chassis ground (–):			
	(F87) No. $70(+)$ — Chassis ground (–):			
	(rø/) 1vo. 04 (+) — Chassis ground (–):			

	Step	Check	Yes	No
8	 CHECK LATERAL G SENSOR. Turn ignition switch to OFF. Remove yaw rate and lateral G sensor from vehicle. Connect connector to yaw rate and lateral G sensor. Connect connector to VDCCM. Turn ignition switch to ON. Measure voltage between yaw rate and lateral areal G sensor connector terminals. Connector & terminal (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 sen- sor. <ref. to="" vdc-<br="">22, Yaw Rate and Lateral G Sensor.></ref.>
9	CHECK YAW RATE AND LATERAL G SEN- SOR. Measure voltage between yaw rate and lateral G sensor connector terminals. Connector & terminal (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 sen- sor. <ref. to="" vdc-<br="">22, Yaw Rate and Lateral G Sensor.></ref.>
10	CHECK YAW RATE AND LATERAL G SEN- SOR. Measure voltage between yaw rate and lateral G sensor connector terminals. <i>Connector & terminal</i> (<i>R100</i>) 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 sen- sor. <ref. to="" vdc-<br="">22, Yaw Rate and Lateral G Sensor.></ref.>
11	CHECK POOR CONTACT IN CONNECTORS.	Is there poor contact in con- nector between VDCCM and yaw rate and lateral G sensor?	Repair connector.	Go to step 12.
12	 CHECK VDCCM. Connect all connectors. Erase the memory. Perform inspection mode. Read out the diagnostic trouble code. 	Is the same diagnostic trouble code as in the current diagno- sis still being output?	Replace VDCCM. <ref. to="" vdc-8,<br="">VDC Control Mod- ule (VDCCM).></ref.>	Go to step 13.
13	CHECK ANY OTHER DIAGNOSTIC TROU- BLE CODES APPEARANCE.	Are other diagnostic trouble codes being output?	Proceed with the diagnosis corre- sponding 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:



	Sten	Check	Vaa	No
	Step	Спеск	res	INO
1	CHECK GROUND CIRCUIT OF PRESSURE	Is the measured value less	Go to step 4.	Go to step 2.
	SENSOR.	than 0.5 \$2?		
	 Turn ignition switch to OFF. Disconnect connector (E01) from VDCH/U. 			
	3) Measure resistance between VDCH/U con-			
	nector and chassis ground.			
	Connector & terminal			
	(F91) No. 15 — Chassis ground:			
2	CHECK GROUND CIRCUIT OF VDCCM.	Is the measured value less	Replace harness	Go to step 3.
	 Disconnect connector from VDCCM. 	than 0.5 Ω?	between VDCH/U	
	2) Remove cover from VDCCM. <ref. td="" to<=""><td></td><td>and VDCCM.</td><td></td></ref.>		and VDCCM.	
	VDC-20, REMOVE, VDCCM Connector			
	3) Connect connector to VDCCM			
	4) Measure resistance between VDCCM and			
	chassis ground.			
	Connector & terminal			
	(F87) No. 76 — Chassis ground:			
3	CHECK POOR CONTACT IN CONNECTORS.	Is there poor contact in	Repair or replace	Replace VDCCM.
		VDCCM connector?	VDCCM connec-	<ref. td="" to="" vdc-8,<=""></ref.>
			lor.	
4	CHECK POWER SUPPLY OF PRESSURE	Is the measured value within	Go to step 7	Go to step 5
-	SENSOR.	4.75 to 5.25 V?		
	NOTE:			
	When this inspection is carried out, DTC 51 AB-			
	NORMAL VALVE RELAY is memorized, but			
	this does not indicate valve relay malfunction.			
	1) Turn ignition switch to ON.			
	2) Measure voltage between VDCH/U con-			
	Connector & terminal			
	(F91) No. 16 (+) — No. 15 (–):			
5	CHECK POWER SUPPLY OF VDCCM.	Is the measured value within	Repair harness	Go to step 6.
-	1) Turn ignition switch to OFF.	4.75 to 5.25 V?	between VDCH/U	
	2) Disconnect connector from VDCCM.		and VDCCM.	
	3) Remove cover from VDCCM. <ref. td="" to<=""><td></td><td></td><td></td></ref.>			
	VDC-20, REMOVE, VDCCM Connector			
	4) Connect connector to VDCCM			
	5) Turn ignition switch to ON			
	6) Measure voltage between VDCCM connec-			
	tor terminals.			
	Connector & terminal			
	(F87) No. 78 (+) — No. 76 (–):			
6	CHECK POOR CONTACT IN CONNECTORS.	Is there poor contact in	Repair or replace	Replace VDCCM.
		VDCCIVI connector?	VDCCM connec-	<rei. 10="" td="" vdc-8,<=""></rei.>
				ule (VDCCM).>
7	CHECK GROUND SHORT OF HARNESS.	Is the measured value more	Go to step 8.	Repair harness
	1) Turn ignition switch to OFF.	than 1 M Ω ?	· · · · · · · · · · · ·	between VDCH/U
	2) Disconnect connector from VDCCM.			and VDCCM.
	3) Measure resistance between VDCH/U con-			
	nector and chassis ground.			
	Connector & terminal			
	(F91) No. 14 — Chassis ground:			
1	· · · · · · · · · · · · · · · · · · ·		1	

	Step	Check	Yes	No
8	CHECK BATTERY SHORT OF HARNESS. Measure voltage between VDCH/U connector and chassis ground. Connector & terminal (F91) No. 13 (+) — Chassis ground (–): (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. 1) Turn ignition switch to ON. 2) Measure voltage between VDCH/U connector and chassis ground. Connector & terminal (F91) No. 13 (+) — Chassis ground (-): (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. 1) Turn ignition switch to OFF. 2) Disconnect connector from VDCCM. 3) Remove cover from VDCCM. <ref. to<br="">VDC-20, REMOVE, VDCCM Connector Cover.></ref.> 4) Connect connector to VDCCM. 5) Connect all connectors. 6) Turn ignition switch to ON. 7) Do not depress brake pedal. 8) Measure voltage between VDCCM connector tor terminals. Connector & terminal (F87) No. 77 (+) — No. 76 (-): (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,<br="">VDC Control Mod- ule (VDCCM).></ref.>
11	CHECK BRAKE FLUID LEAKAGE. 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. Inspect brake master cylinder hydraulic pres- sure. <ref. br-29,="" check<br="" operation="" to="">(WITH GAUGES), INSPECTION, Brake Booster.></ref.>	Is hydraulic pressure normal?	Go to step 13.	Replace master cylinder.
13	CHECK BRAKE PEDAL STROKE. 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. 1) Depress the brake pedal with 50 kg (110 lb). 2) Measure voltage between VDCCM connector terminals. Connector & terminal A (F87) No. 77 (+) — No. 76 (-): 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,<br="">VDC Control Mod- ule (VDCCM).></ref.>
15	CHECK POOR CONTACT IN CONNECTORS.	Is there poor contact in con- nector between VDCCM and pressure sensor?	Repair connector.	Go to step 16.
16	 CHECK VDCCM. 1) Connect all connectors. 2) Erase the memory. 3) Perform inspection mode. 4) Read out the diagnostic trouble code. 	Is the same diagnostic trouble code as in the current diagno- sis still being output?	Replace VDCCM. <ref. to="" vdc-8,<br="">VDC Control Mod- ule (VDCCM).></ref.>	Go to step 17.

	Step	Check	Yes	No
17	CHECK ANY OTHER DIAGNOSTIC TROU-	Are other diagnostic trouble	Proceed with the	A temporary poor
	BLE CODES APPEARANCE.	codes being output?	diagnosis corre-	contact.
			sponding to the	
			diagnostic trouble	
			code.	

VDC (DIAGNOSTICS)

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:



	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. 1) Turn ignition switch to OFF. 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. 1) Turn ignition switch to ON. 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. 1) Turn ignition switch to OFF. 2) Disconnect VDCCM connector. 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. 1) Turn ignition switch to OFF. 2) Connect VDCCM module connector. 3) Disconnect cruise control module connector. 4) Check whether communication to other systems can be executed normally. NOTE: 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 con- trol module.	Go to step 7.
7	 CHECK HARNESS CONNECTOR BETWEEN EACH CONTROL MODULE AND DATA LINK CONNECTOR. 1) Turn ignition switch to OFF. 2) Disconnect VDCCM, and cruise control module connectors. 3) Measure resistance between data link con- nector and chassis ground. Connector & terminal (B40) No. 5 — Chassis ground: (B40) No. 4 — Chassis ground: 	Is the measured value more than 1 MΩ?	Go to step 8.	Repair harness and connector between each con- trol module and data link connec- tor.
8	 CHECK OUTPUT SIGNAL FOR VDCCM. 1) Turn ignition switch to ON. 2) Measure voltage between data link connector and chassis ground. Connector & terminal (B40) No. 5 — Chassis ground: (B40) No. 4 — Chassis ground: 	Is the measured value less than 1 V?	Repair harness and connector between each con- trol module and data link connec- tor.	Go to step 9.
9	CHECK HARNESS/CONNECTOR BETWEEN VDCCM AND DATA LINK CONNECTOR. Measure resistance between VDCCM connec- tor and data link connector. Connector & terminal (F87) No. 11 — (B40) No. 5: (F87) No. 38 — (B40) No. 4:	Is the measured value more than 0.5 Ω?	Repair harness and connector between VDCCM and data link con- nector.	Go to step 10.

	Step	Check	Yes	No
10	CHECK INSTALLATION OF VDCCM CON- NECTOR. 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. 1) Turn ignition switch to ON (engine OFF). 2) Measure ignition power supply voltage between VDCCM connector and chassis ground. Connector & terminal (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. 1) Turn ignition switch to OFF. 2) Disconnect connector from VDCCM and transmission. 3) Measure resistance of harness between VDCCM and chassis ground. Connector & terminal (F87) No. 1 — Chassis ground: (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 connec- tor.
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,<br="">VDC Control Mod- ule (VDCCM).></ref.>

B: DTC 21 FRONT RIGHT ABS SENSOR CIRCUIT OPEN OR SHORTED BAT-TERY

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 BAT-TERY

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 BAT-TERY

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:



	Step	Check	Yes	No
1		Does the speed indicated on	Go to step 2	Go to step 9
	 SELECT MONITOR. Select "Current data display & Save" on the select monitor. Read the ABS sensor output corresponding to the faulty system in the select monitor data display mode. 	the display change in response to the speedometer reading during acceleration/decelera- tion when the steering wheel is in the straight-ahead position?	Cit to step 2.	uo 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 sen- sor installation bolts securely.
3	CHECK ABS SENSOR GAP. 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. NOTE: Adjust the gap us- ing spacers (Part No. 26755AA000). If spacers cannot correct the gap, re- place worn sensor or worn tone wheel.
4	CHECK TONE WHEEL RUNOUT. 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<br="">VDC-30, Front Tone Wheel.> Rear <ref. to<br="">VDC-31, Rear Tone Wheel.></ref.></ref.>
5	CHECK POOR CONTACT IN CONNECTORS. Turn ignition switch to OFF.	Is there poor contact in con- nectors between VDCCM and ABS sensor?	Repair connector.	Go to step 6.
6	 CHECK VDCCM. 1) Connect all connectors. 2) Erase the memory. 3) Perform inspection mode. 4) Read out the diagnostic trouble code. 	Is the same diagnostic trouble code as in the current diagno- sis still being output?	Replace VDCCM. <ref. to="" vdc-8,<br="">VDC Control Mod- ule (VDCCM).></ref.>	Go to step 7.
7	CHECK ANY OTHER DIAGNOSTIC TROU- BLE CODES APPEARANCE.	Are other diagnostic trouble codes being output?	Proceed with the diagnosis corre- sponding to the diagnostic trouble code.	A temporary poor contact. NOTE: Check harness and connectors between VDCCM and ABS sensor.
8	 CHECK ABS SENSOR. 1) Turn ignition switch to OFF. 2) Disconnect connector from ABS sensor. 3) Measure resistance of ABS sensor connector terminals. Terminal Front RH No. 1 — No. 2: Front LH No. 1 — No. 2: Rear RH No. 1 — No. 2: Rear LH No. 1 — No. 2: 	Is the measured value within 1.0 to 1.5 kΩ?	Go to step 9 .	Replace ABS sen- sor. Front <ref. to<br="">VDC-28, Front ABS Sensor.> Rear <ref. to<br="">VDC-29, Rear ABS Sensor.></ref.></ref.>

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

			r	
	Step	Check	Yes	No
13	 CHECK BATTERY SHORT OF HARNESS. 1) Turn ignition switch to ON. 2) Measure voltage between VDCCM connector and chassis ground. Connector & terminal DTC 21 / (F87) No. 14 (+) — Chassis ground (-): DTC 23 / (F87) No. 49 (+) — Chassis ground (-): DTC 25 / (F87) No. 18 (+) — Chassis ground (-): 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 sen- sor installation bolts securely.
15	CHECK ABS SENSOR GAP. 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. NOTE: Adjust the gap us- ing spacers (Part No. 26755AA000). If spacers cannot correct the gap, re- place worn sensor or worn tone wheel.
16	CHECK HUB AND TONE WHEEL RUNOUT. 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,<br="">Front ABS Sen- sor.> Rear <ref. to VDC-29, Rear ABS Sensor.></ref. </ref.>
17	CHECK POOR CONTACT IN CONNECTORS.	Is there poor contact in con- nectors between VDCCM and ABS sensor?	Repair connector.	Go to step 18.
18	 CHECK VDCCM. Connect all connectors. Erase the memory. Perform inspection mode. Read out the diagnostic trouble code. 	Is the same diagnostic trouble code as in the current diagno- sis still being output?	Replace VDCCM. <ref. to="" vdc-8,<br="">VDC Control Mod- ule (VDCCM).></ref.>	Go to step 19.
19	CHECK ANY OTHER DIAGNOSTIC TROU- BLE CODES APPEARANCE.	Are other diagnostic trouble codes being output?	Proceed with the diagnosis corre- sponding to the diagnostic trouble code.	A temporary poor contact. NOTE: Check harness and connectors between VDCCM and ABS sensor.

VDC (DIAGNOSTICS)

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:



Sten	Check	Ves	No
 CHECK OUTPUT OF ABS SENSOR USING SELECT MONITOR. Select "Current data display & Save" on the select monitor. 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/decelera- tion when the steering wheel is in the straight-ahead position?	Go to step 2.	Go to step 8.
2 CHECK POOR CONTACT IN CONNECTORS. Turn ignition switch to OFF.	Is there poor contact in con- nectors 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 trans- mitter.
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 har- ness.	Go to step 5 .
 5 CHECK SHIELD CIRCUIT. Turn ignition switch to OFF. Connect all connectors. Measure resistance between shield connector and chassis ground. Connector & terminal DTC 22 / (F45) No. 1 — Chassis ground: DTC 24 / (F45) No. 10 — Chassis ground: NOTE: 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 har- ness.
 6 CHECK VDCCM. 1) Connect all connectors. 2) Erase the memory. 3) Perform inspection mode. 4) Read out the diagnostic trouble code. 	Is the same diagnostic trouble code as in the current diagno- sis still being output?	Replace VDCCM. <ref. to="" vdc-8,<br="">VDC Control Mod- ule (VDCCM).></ref.>	Go to step 7.
7 CHECK ANY OTHER DIAGNOSTIC TROU- BLE CODES APPEARANCE.	Are other diagnostic trouble codes being output?	Proceed with the diagnosis corre- sponding 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 sen- sor installation bolts securely.
 9 CHECK ABS SENSOR GAP. Measure tone wheel to pole piece gap over entire perimeter of the wheel. 10 CHECK OSCILLOSCOPE. 	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. NOTE: Adjust the gap us- ing spacer (Part No. 26755AA000). If spacers cannot correct the gap, re- place worn sensor or worn tone wheel. Go to step 12 .

	Step	Check	Yes	No
11	 CHECK ABS SENSOR SIGNAL. 1) Raise all four wheels of ground. 2) Turn ignition switch OFF. 3) Remove VDCCM connector cover. <ref. connector="" cover.="" to="" vdc-20,="" vdccm=""></ref.> 4) Connect the oscilloscope to the connector. 5) Turn ignition switch ON. 6) Rotate wheels and measure voltage at specified frequency. NOTE: When this inspection is completed, the VDCCM sometimes stores the DTC 29. Connector & terminal DTC 22 / (F87) No. 14 (+) — No. 15 (-): DTC 24 / (F87) No. 18 (+) — No. 46 (-): DTC 28 / (F87) No. 18 (+) — 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. Remove disc rotor from hub in accordance with diagnostic trouble code.	Is the ABS sensor pole piece or the tone wheel contami- nated by dirt or other foreign matter?	Thoroughly remove dirt or other foreign mat- ter.	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 sen- sor or tone wheel. Front <ref. to<br="">VDC-28, Front ABS Sensor.> and <ref. to="" vdc-30,<br="">Front Tone Wheel.> Rear <ref. to="" vdc-29,<br="">Rear ABS Sen- sor.> and <ref. to<br="">VDC-31, Rear Tone Wheel.></ref.></ref.></ref.></ref.>	Go to step 14.
14	CHECK TONE WHEEL RUNOUT. 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<br="">VDC-30, Front Tone Wheel.> Rear <ref. to<br="">VDC-31, Rear Tone Wheel.></ref.></ref.>
15	 CHECK RESISTANCE OF ABS SENSOR. 1) Turn ignition switch OFF. 2) Disconnect connector from ABS sensor. 3) Measure resistance between ABS sensor connector terminals. Terminal Front RH No. 1 — No. 2: Front LH No. 1 — No. 2: Rear RH No. 1 — No. 2: Rear LH No. 1 — No. 2: 	Is the measured value within 1.0 to 1.5 kΩ?	Go to step 16.	Replace ABS sen- sor. Front <ref. to<br="">VDC-28, Front ABS Sensor.> Rear <ref. to<br="">VDC-29, Rear ABS Sensor.></ref.></ref.>
16	CHECK GROUND SHORT OF ABS SENSOR. Measure resistance between ABS sensor and chassis ground. Terminal Front RH No. 1 — Chassis ground: Front LH No. 1 — Chassis ground: Rear RH No. 1 — Chassis ground: Rear LH No. 1 — Chassis ground:	Is the measured value more than 1 MΩ?	Go to step 17.	Replace ABS sen- sor. Front <ref. to<br="">VDC-28, Front ABS Sensor.> Rear <ref. to<br="">VDC-29, Rear ABS Sensor.></ref.></ref.>

	Step	Check	Yes	No
17	 CHECK HARNESS/CONNECTOR BETWEEN VDCCM AND ABS SENSOR. 1) Connect connector to ABS sensor. 2) Disconnect connector from VDCCM. 3) Measure resistance at VDCCM connector terminals. Connector & terminal DTC 22 / (F87) No. 14 — No. 15: DTC 24 / (F87) No. 49 — No. 19: DTC 26 / (F87) No. 18 — No. 46: 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. Measure resistance between VDCCM connec- tor and chassis ground. Connector & terminal DTC 22 / (F87) No. 14 — Chassis ground: DTC 24 / (F87) No. 49 — Chassis ground: DTC 26 / (F87) No. 18 — Chassis ground: 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. Measure resistance between VDCCM and chassis ground. Connector & terminal (F87) No. 1 — Chassis ground: (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 con- nectors 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 trans- mitter.
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 har- ness.	Go to step 23.
23	 CHECK SHIELD CIRCUIT. 1) Connect all connectors. 2) Measure resistance between shield connector and chassis ground. Connector & terminal DTC 22 / (F45) No. 1 — Chassis ground: DTC 24 / (F45) No. 10 — Chassis ground: NOTE: 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 har- ness.
24	 CHECK VDCCM. 1) Connect all connectors. 2) Erase the memory. 3) Perform inspection mode. 4) Read out the diagnostic trouble code. 	Is the same diagnostic trouble code as in the current diagno- sis still being output?	Replace VDCCM. <ref. to="" vdc-8,<br="">VDC Control Mod- ule (VDCCM).></ref.>	Go to step 25.

	Step	Check	Yes	No
25	CHECK ANY OTHER DIAGNOSTIC TROU-	Are other diagnostic trouble	Proceed with the	A temporary noise
	BLE CODES APPEARANCE.	codes being output?	diagnosis corre-	interference.
			sponding to the	
			diagnostic trouble	
			code.	

MEMO:

VDC (DIAGNOSTICS)

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:



	Step	Check	Yes	No
1	CHECK IF THE WHEELS HAVE TURNED FREELY. Check if the wheels have been turned freely for more than one minute, such as when the vehi- cle 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 nor- mal. Erase the diagnostic trouble code. NOTE: 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 cor- rect?	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 pres- sure.
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 sen- sor installation bolts securely.
6	CHECK ABS SENSOR GAP. 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. NOTE: Adjust the gap us- ing spacer (Part No. 26755AA000). If spacers cannot correct the gap, re- place 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. 1) Raise all four wheels of ground. 2) Turn ignition switch OFF. 3) Remove VDCCM connector cover. <ref. connector="" cover.="" remove,="" to="" vdc-20,="" vdccm=""></ref.> 4) Connect the oscilloscope to the connector. 5) Turn ignition switch ON. 6) Rotate wheels and measure voltage at specified frequency. <ref. abs-15,="" control="" i="" module="" o="" signal.="" to="" waveform,=""></ref.> NOTE: When this inspection is completed, the VDCCM sometimes stores the DTC 29. Connector & terminal (F49) No. 14 (+) — No. 15 (-) (Front RH): (F49) No. 18 (+) — No. 46 (-) (Rear RH): (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. Remove disc rotor from hub.	Is the ABS sensor pole piece or the tone wheel contami- nated by dirt or other foreign matter?	Thoroughly remove dirt or other foreign mat- ter.	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 sen- sor or tone wheel. Front <ref. to<br="">VDC-28, Front ABS Sensor.> and <ref. to="" vdc-30,<br="">Front Tone Wheel.> Rear <ref. to="" vdc-29,<br="">Rear ABS Sen- sor.> and <ref. to<br="">VDC-31, Rear Tone Wheel.></ref.></ref.></ref.></ref.>	Go to step 11.
11	CHECK TONE WHEEL RUNOUT. 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<br="">VDC-30, Front Tone Wheel.> Rear <ref. to<br="">VDC-31, Rear Tone Wheel.></ref.></ref.>
12	 CHECK VDCCM. 1) Turn ignition switch to OFF. 2) Connect all connectors. 3) Erase the memory. 4) Perform inspection mode. 5) Read out the diagnostic trouble code. 	Is the same diagnostic trouble code as in the current diagno- sis still being output?	Replace VDCCM. <ref. to="" vdc-8,<br="">VDC Control Mod- ule (VDCCM).></ref.>	Go to step 13.
13	CHECK ANY OTHER DIAGNOSTIC TROU- BLE CODES APPEARANCE.	Are other diagnostic trouble codes being output?	Proceed with the diagnosis corre- sponding 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 MAL-FUNCTION (SECONDARY CUT VALVE MALFUNCTION), Diagnostics Chart with Select Monitor.>

L: DTC 33 FL HOLD VALVE MALFUNCTION (FRONT LEFT INLET VALVE MAL-FUNCTION)

NOTE:

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

M: DTC 35 RR HOLD VALVE MALFUNCTION (REAR RIGHT INLET VALVE MAL-FUNCTION)

NOTE:

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

N: DTC 37 RL HOLD VALVE MALFUNCTION (REAR LEFT INLET VALVE MAL-FUNCTION)

NOTE:

For diagnostic procedure, refer to DTC 62. <Ref. to VDC-142, DTC 62 NORMAL OPENING VALVE 1 MAL-FUNCTION (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 MAL-FUNCTION (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:





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	Step	Check	Yes	No
1	 CHECK RESISTANCE OF SOLENOID VALVE. 1) Turn ignition switch to OFF. 2) Disconnect two connectors (VDC1, F91) from VDCH/U. 3) Measure resistance between VDCH/U connector terminals. Connector & terminal DTC 31/(VDC5) No. 5 — (VDC2) No. 2: DTC 35/(VDC5) No. 6 — (VDC2) No. 2: DTC 37/(VDC5) No. 6 — (VDC2) No. 2: DTC 61/(VDC5) No. 9 — (VDC2) No. 2: 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,<br="">VDC Control Mod- ule (VDCCM).></ref.>
2	CHECK GROUND SHORT OF SOLENOID VALVE. Measure resistance between VDCH/U connec- tor and chassis ground. Connector & terminal DTC 31/(VDC5) No. 5 — Chassis ground: DTC 33/(VDC5) No. 8 — Chassis ground: DTC 35/(VDC5) No. 7 — Chassis ground: DTC 37/(VDC5) No. 6 — Chassis ground: DTC 61/(VDC5) No. 9 — Chassis ground: 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,<br="">VDC Control Mod- ule (VDCCM).></ref.>
3	 CHECK BATTERY SHORT OF SOLENOID VALVE. 1) Disconnect connector from VDCCM. 2) Measure voltage between VDCH/U connector and chassis ground. Connector & terminal DTC 31/(VDC5) No. 5 (+) — Chassis ground (-): DTC 33/(VDC5) No. 8 (+) — Chassis ground (-): DTC 35/(VDC5) No. 7 (+) — Chassis ground (-): DTC 37/(VDC5) No. 6 (+) — Chassis ground (-): DTC 61/(VDC5) No. 9 (+) — Chassis ground (-): 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,<br="">VDC Control Mod- ule (VDCCM).></ref.>

	Sten	Check	Ves	No
4			Co to stop 5	
4	VALVE	than 1 V2	Go to step 5 .	-Ref to VDC-8
	1) Turn ignition switch to ON			VDC Control Mod-
	2) Measure voltage between VDCH/LL con-			
	nector and chassis ground			
	Connector & terminal			
	DTC 31/(VDC5) No. 5 (\pm) — Chassis			
	around $(-)$:			
	DTC 33/(VDC5) No. 8 (\pm) — Chassis			
	around (_):			
	DTC 35/(VDC5) No. 7 (+) — Chassis			
	around (-):			
	DTC 37/(VDC5) No. 6 (+) — Chassis			
	around (-):			
	DTC 61/(VDC5) No. 9 (+) — Chassis			
	around (-):			
	DTC 62/(VDC5) No. 12 (+) — Chassis			
	ground (-):			
5	CHECK BATTERY SHORT OF HARNESS.	Is the measured value less	Go to step 6.	Repair harness
•	1) Turn ignition switch to OFF.	than 1 V?		between VDCCM
	2) Measure voltage between VDCCM connec-			and VDCH/U.
	tor and chassis ground.			
	Connector & terminal			
	DTC 31/(F87) No. 30 (+) — Chassis			
	ground (_):			
	DTC 33/(F87) No. 24 (+) — Chassis			
	ground (–):			
	DTC 35/(F87) No. 23 (+) — Chassis			
	ground (–):			
	DTC 37/(F87) No. 31 (+) — Chassis			
	ground (–):			
	DTC 61/(F87) No. 25 (+) — Chassis			
	ground (–):			
	DTC 62/(F87) No. 26 (+) — Chassis			
	ground (–):			
6	CHECK BATTERY SHORT OF HARNESS.	Is the measured value less	Go to step 7.	Repair harness
	 Turn ignition switch to ON. 	than 1 V?		between VDCCM
	2) Measure voltage between VDCCM connec-			and VDCH/U.
	tor and chassis ground.			
	Connector & terminal			
	DTC 31/(F87) No. 30 (+) — Chassis			
	ground (–):			
	DTC 33/(F87) No. 24 (+) — Chassis			
	ground (–):			
	DTC 35/(F87) No. 23 (+) — Chassis			
	ground (–):			
	DTC 37/(F87) No. 31 (+) — Chassis			
	ground (–):			
	DTC 61/(F87) No. 25 (+) — Chassis			
	ground (–):			
	DTC 62/(F87) No. 26 (+) — Chassis			
1	ground (–):			
	Step	Check	Yes	No
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7	 CHECK GROUND SHORT OF HARNESS. 1) Turn ignition switch to OFF. 2) Measure resistance between VDCCM connector and chassis ground. Connector & terminal DTC 31/(F87) No. 30 — Chassis ground: DTC 33/(F87) No. 24 — Chassis ground: DTC 35/(F87) No. 23 — Chassis ground: DTC 37/(F87) No. 31 — Chassis ground: DTC 61/(F87) No. 25 — Chassis ground: 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. 1) Connect connector (F91) to VDCH/U. 2) Measure resistance between VDCCM connector and VDCH/U connector. Connector & terminal DTC 31/(F87) No. 30 — (VDC2) No. 2: DTC 33/(F87) No. 24 — (VDC2) No. 2: DTC 35/(F87) No. 23 — (VDC2) No. 2: DTC 37/(F87) No. 31 — (VDC2) No. 2: DTC 61/(F87) No. 25 — (VDC2) No. 2: 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 con- nectors between VDCCM and VDCH/U?	Repair connector.	Go to step 10.
10	 CHECK VDCCM. 1) Connect all connectors. 2) Erase the memory. 3) Perform inspection mode. 4) Read out the diagnostic trouble code. 	Is the same diagnostic trouble code as in the current diagno- sis still being output?	Repair VDCCM. <ref. to="" vdc-8,<br="">VDC Control Mod- ule (VDCCM).></ref.>	Go to step 11.
11	CHECK ANY OTHER DIAGNOSTIC TROU- BLE CODES APPEARANCE.	Are other diagnostic trouble codes being output?	Proceed with the diagnosis corre- sponding to the diagnostic trouble code.	A temporary poor contact.

VDC (DIAGNOSTICS)

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 MAL-FUNCTION (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 MAL-FUNCTION (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 MAL-FUNCTION (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 MAL-FUNCTION (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 MAL-FUNCTION (SECONDARY SUCTION VALVE MALFUNCTION), Diagnostics Chart with Select Monitor.> MEMO:

V: DTC 64 NORMAL CLOSING VALVE 1 MALFUNCTION (SECONDARY SUC-TION VALVE MALFUNCTION)

DIAGNOSIS:

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

TROUBLE SYMPTOM:

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

WIRING DIAGRAM:







VDC-148

	Step	Check	Yes	No
1	 CHECK RESISTANCE OF SOLENOID VALVE. 1) Turn ignition switch to OFF. 2) Disconnect two connectors (VDC1, F91) from VDCH/U. 3) Measure resistance between VDCH/U connector terminals. Connector & terminal DTC 32/(VDC5) No. 1 — (VDC2) No. 2: DTC 34/(VDC5) No. 3 — (VDC2) No. 2: DTC 38/(VDC5) No. 2 — (VDC2) No. 2: DTC 38/(VDC5) No. 10 — (VDC2) No. 2: DTC 63/(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,<br="">VDC Control Mod- ule (VDCCM).></ref.>
2	CHECK GROUND SHORT OF SOLENOID VALVE. Measure resistance between VDCH/U connec- tor and chassis ground. Connector & terminal DTC 32/(VDC5) No. 1 — Chassis ground: DTC 34/(VDC5) No. 4 — Chassis ground: DTC 36/(VDC5) No. 3 — Chassis ground: DTC 38/(VDC5) No. 2 — Chassis ground: DTC 63/(VDC5) No. 10 — Chassis ground: 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,<br="">VDC Control Mod- ule (VDCCM).></ref.>
3	 CHECK BATTERY SHORT OF SOLENOID VALVE. 1) Disconnect connector from VDCCM. 2) Measure voltage between VDCH/U connector and chassis ground. Connector & terminal DTC 32/(VDC5) No. 1 (+) — Chassis ground (-): DTC 34/(VDC5) No. 4 (+) — Chassis ground (-): DTC 36/(VDC5) No. 3 (+) — Chassis ground (-): DTC 38/(VDC5) No. 2 (+) — Chassis ground (-): DTC 63/(VDC5) No. 10 (+) — Chassis ground (-): 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,<br="">VDC Control Mod- ule (VDCCM).></ref.>

VDC (DIAGNOSTICS)

	Sten	Check	Ves	No
4			Co to stop F	
4	VALVE	then 1 V2	Go to step 5.	
	1) Turn ignition switch to ON			VDC Control Mod-
	2) Measure voltage between VDCH/LLcon-			
	2) Measure voltage between vDOI//0 coll-			
	Connector & terminal			
	DTC $32/(VDC5)$ No $1/(+)$ — Chassis			
	around (-):			
	DTC 34/(VDC5) No. 4 (\pm) — Chassis			
	around $(-)$:			
	DTC 36/(VDC5) No. 3 (+) — Chassis			
	around (-):			
	DTC 38/(VDC5) No. 2 (+) — Chassis			
	ground (_):			
	DTC 63/(VDC5) No. 10 (+) — Chassis			
	ground (_):			
	DTC 64/(VDC5) No. 11 (+) — Chassis			
	ground (–):			
5	CHECK BATTERY SHORT OF HARNESS.	Is the measured value less	Go to step 6.	Repair harness
	1) Turn ignition switch to OFF.	than 1 V?	, i	between VDCCM
	2) Measure voltage between VDCCM connec-			and VDCH/U.
	tor and chassis ground.			
	Connector & terminal			
	DTC 32/(F87) No. 3 (+) — Chassis			
	ground (–):			
	DTC 34/(F87) No. 51 (+) — Chassis			
	ground (–):			
	DTC 36/(F87) No. 50 (+) — Chassis			
	ground (–):			
	DTC 38/(F87) No. 4 (+) — Chassis			
	ground (–):			
	DTC 63/(F87) No. 29 (+) — Chassis			
	ground (–):			
	DTC 64/(F87) No. 2 (+) — Chassis			
_	ground (–):		a -	D
6	CHECK BATTERY SHORT OF HARNESS.	Is the measured value less	Go to step 7.	Repair harness
	1) Turn ignition switch to ON.	than 1 V?		between VDCCM
	2) Measure voltage between VDCCM connec-			and VDCH/U.
	tor and chassis ground.			
	Connector & terminal			
	DTC 32/(F07) NO. 3 (+) - Chassis			
	ground (-). DTC 34/(E87) No. 51 (+) Chassis			
	around (-)			
	DTC 36/(F87) No 50 (+) — Chassis			
	around (-):			
	DTC 38/(F87) No. 4 (+) — Chassis			
	around (–):			
	DTC 63/(F87) No. 29 (+) — Chassis			
	ground (-):			
	DTC 64/(F87) No. 2 (+) — Chassis			
	ground (–):			

	Step	Check	Yes	No
7	 CHECK GROUND SHORT OF HARNESS. 1) Turn ignition switch to OFF. 2) Measure resistance between VDCCM connector and chassis ground. Connector & terminal DTC 32/(F87) No. 3 — Chassis ground: DTC 34/(F87) No. 51 — Chassis ground: DTC 36/(F87) No. 50 — Chassis ground: DTC 38/(F87) No. 29 — Chassis ground: 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. 1) Connect connector (F91) to VDCH/U. 2) Measure resistance between VDCCM connector and VDCH/U connector. Connector & terminal DTC 32/(F87) No. 3 — (VDC2) No. 1: DTC 34/(F87) No. 51 — (VDC2) No. 1: DTC 36/(F87) No. 50 — (VDC2) No. 1: DTC 38/(F87) No. 29 — (VDC2) No. 1: 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 con- nectors between VDCCM and VDCH/U?	Repair connector.	Go to step 10.
10	 CHECK VDCCM. 1) Connect all connectors. 2) Erase the memory. 3) Perform inspection mode. 4) Read out the diagnostic trouble code. 	Is the same diagnostic trouble code as in the current diagno- sis still being output?	Replace VDCCM. <ref. to="" vdc-8,<br="">VDC Control Mod- ule (VDCCM).></ref.>	Go to step 11.
11	CHECK ANY OTHER DIAGNOSTIC TROU- BLE CODES APPEARANCE.	Are other diagnostic trouble codes being output?	Proceed with the diagnosis corre- sponding to the diagnostic trouble code.	A temporary poor contact.

W: DTC 41 ELECTRICAL CONTROL MODULE (VDC CONTROL MODULE MAL-FUNCTION)

DIAGNOSIS:

Faulty VDCCM

TROUBLE SYMPTOM:

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



	Step	Check	Yes	No
1	 CHECK GROUND CIRCUIT OF VDCCM. 1) Turn ignition switch to OFF. 2) Disconnect connector from VDCCM. 3) Measure resistance between VDCCM and chassis ground. Connector & terminal (F87) No. 1 — Chassis ground: (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 con- nectors between battery, igni- tion 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 trans- mitter.
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 har- ness.	Go to step 5.
5	 CHECK VDCCM. 1) Connect all connectors. 2) Erase the memory. 3) Perform inspection mode. 4) Read out the diagnostic trouble code. 	Is the same diagnostic trouble code as in the current diagno- sis still being output?	Replace VDCCM. <ref. to="" vdc-8,<br="">VDC Control Mod- ule (VDCCM).></ref.>	Go to step 6.
6	CHECK ANY OTHER DIAGNOSTIC TROU- BLE CODES APPEARANCE.	Are other diagnostic trouble codes being output?	Proceed with the diagnosis corre- sponding 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.



	Step	Check	Yes	No
1	 CHECK GENERATOR. 1) Start engine. 2) Idling after warm-up. 3) Measure voltage between generator B terminal and chassis ground. Terminal Generator B terminal — Chassis ground: 	Is the measured value within 10 to 15 V?	Go to step 2.	Repair generator.
2	CHECK BATTERY TERMINAL. 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. 1) Disconnect connector from VDCCM. 2) Run the engine at idle. 3) Measure voltage between VDCCM connector and chassis ground. Connector & terminal (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. 1) Turn ignition switch to OFF. 2) Measure resistance between VDCCM and chassis ground. Connector & terminal (F87) No. 1 — Chassis ground: (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 con- nectors between generator, battery and VDCCM?	Repair connector.	Go to step 6.
6	 CHECK VDCCM. 1) Connect all connectors. 2) Erase the memory. 3) Perform inspection mode. 4) Read out the diagnostic trouble code. 	Is the same diagnostic trouble code as in the current diagno- sis still being output?	Replace VDCCM. <ref. to="" vdc-8,<br="">VDC Control Mod- ule (VDCCM).></ref.>	Go to step 7.
7	CHECK ANY OTHER DIAGNOSTIC TROU- BLE CODES APPEARANCE.	Are other diagnostic trouble codes being output?	Proceed with the diagnosis corre- sponding 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.



	Step	Check	Yes	No
1	 CHECK HARNESS/CONNECTOR BETWEEN VDCCM AND ECM. 1) Turn ignition switch to OFF. 2) Disconnect connector from VDCCM. 3) Disconnect connector from ECM. 4) Measure resistance between VDCCM connector and ECM. Connector & terminal (E87) 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. Measure resistance between VDCCM connector and chassis ground. Connector & terminal (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. Measure voltage between VDCCM connector and chassis ground. <i>Terminal</i> (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. 1) Turn ignition switch to ON. 2) Measure voltage between VDCCM connector and chassis ground. Terminal (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. 1) Turn ignition switch to OFF. 2) Connect connector to ECM. 3) Turn ignition switch to ON. 4) Measure voltage between VDCCM connector and chassis ground. Connector & terminal (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 con- nectors between ECM and VDCCM?	Repair connector.	Go to step 7.
7	 CHECK VDCCM. 1) Turn ignition switch to OFF. 2) Connect all connectors. 3) Erase the memory. 4) Perform inspection mode. 5) Read out the diagnostic trouble code. 	Is the same diagnostic trouble code as in the current diagno- sis still being output?	Replace VDCCM. <ref. to="" vdc-8,<br="">VDC Control Mod- ule (VDCCM).></ref.>	Go to step 8 .
8	CHECK ANY OTHER DIAGNOSTIC TROU- BLE CODES APPEARANCE.	Are other diagnostic trouble codes being output?	Proceed with the diagnosis corre- sponding to the diagnostic trouble code.	A temporary poor contact.
9	 CHECK ECM. 1) Turn ignition switch to ON. 2) Measure voltage between ECM connector terminal and chassis ground. Connector & terminal (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 con- nector ECM?	Repair connector.	Go to step 11.

VDC (DIAGNOSTICS)

	Step	Check	Yes	No
11	CHECK ENGINE.	Is the engine functioning nor- mally?	Replace ECM. <ref. to<br="">FU(H6DO)-46, Engine Control Module.></ref.>	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.



	Step	Check	Yes	No
1 Cl VI 1) 2) 3) 4)	HECK HARNESS/CONNECTOR BETWEEN DCCM AND ECM. Turn ignition switch to OFF. Disconnect connector from VDCCM. Disconnect connector from ECM. Measure resistance between VDCCM con- nector and ECM. Connector & terminal (E87) 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 Cl M to	HECK GROUND SHORT OF HARNESS. easure resistance between VDCCM connec- or and chassis ground. Connector & terminal (F87) No. 43 — Chassis ground:	Is the measured value more than 1 M Ω ?	Go to step 3.	Repair harness/ connector between VDCCM and ECM.
3 Cl M ar	HECK BATTERY SHORT OF HARNESS. easure voltage between VDCCM connector nd chassis ground. Connector & terminal (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 Cl 1) 2)	HECK BATTERY SHORT OF HARNESS. Turn ignition switch to ON. Measure voltage between VDCCM connec- tor and chassis ground. Connector & terminal (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 Cl VI 1) 2) 3) 4)	HECK HARNESS/CONNECTOR BETWEEN DCCM AND ECM. Turn ignition switch to OFF. Connect connector to ECM. Turn ignition switch to ON. Measure voltage between VDCCM connec- tor and chassis ground. Connector & terminal (F87) No. 43 (+) — Chassis ground (–):	Is the measured value within 10 to 15 V?	Go to step 6.	Go to step 9 .
6 C	HECK POOR CONTACT IN CONNECTORS.	Is there poor contact in con- nectors between ECM and VDCCM?	Repair connector.	Go to step 7.
7 Cl 1) 2) 3) 4) 5)	HECK VDCCM. Turn ignition switch to OFF. Connect all connectors. Erase the memory. Perform inspection mode. Read out the diagnostic trouble code.	Is the same diagnostic trouble code as in the current diagno- sis still being output?	Replace VDCCM. <ref. to="" vdc-8,<br="">VDC Control Mod- ule (VDCCM).></ref.>	Go to step 8 .
8 Ci Bi	HECK ANY OTHER DIAGNOSTIC TROU- LE CODES APPEARANCE.	Are other diagnostic trouble codes being output?	Proceed with the diagnosis corre- sponding to the diagnostic trouble code.	A temporary poor contact.
9 Cl 1) 2)	HECK ECM. Turn ignition switch to ON. Measure voltage between ECM connector terminal and chassis ground. Connector & terminal (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 C	HECK POOR CONTACT IN CONNECTORS.	Is there poor contact in con- nector ECM?	Repair connector.	Go to step 11.

VDC (DIAGNOSTICS)

	Step	Check	Yes	No
11	CHECK ENGINE.	Is the engine functioning nor- mally?	Replace ECM. <ref. to<br="">FU(H6DO)-46, Engine Control Module.></ref.>	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.



Step		Check	Yes	No
I CHECK HARNESS/CONNECTON VDCCM AND ECM. 1) 1) Turn ignition switch to OFF. 2) Disconnect connector from V 3) Disconnect connector from E 4) Measure resistance between nector and ECM. Connector & terminal	DR BETWEEN DCCM. CM. VDCCM con-	Is the measured value less than 0.5 Ω?	Go to step 2.	Repair harness/ connector between VDCCM and ECM.
(F87) No. 8 — (B134) No. 1		Is the measured value more	Go to stop 3	Popair barposs/
Measure resistance between VD tor and chassis ground. Connector & terminal (F87) No. 8 — Chassis gro	CCM connec-	than 1 M Ω ?	uo to step 3 .	connector between VDCCM and ECM.
3 CHECK BATTERY SHORT OF Measure voltage between VDCC and chassis ground. Connector & terminal (F87) No. 8 (+) — Chassis	HARNESS. CM connector ground ():	Is the measured value less than 0.5 V?	Go to step 4.	Repair harness/ connector between VDCCM and ECM.
 CHECK BATTERY SHORT OF Turn ignition switch to ON. Measure voltage between VE tor and chassis ground. Connector & terminal	HARNESS. DCCM connec- ground ():	Is the measured value less than 1 V?	Go to step 5.	Repair harness/ connector between VDCCM and ECM.
 5 CHECK HARNESS/CONNECTO VDCCM AND ECM. 1) Turn ignition switch to OFF. 2) Connect connector to ECM. 3) Turn ignition switch to ON. 4) Measure voltage between VE tor and chassis ground. Connector & terminal (F87) No. 8 (+) — Chassis 	DR BETWEEN DCCM connec- ground ():	Is the measured value within 10 to 15 V?	Go to step 6 .	Go to step 9 .
6 CHECK POOR CONTACT IN CO	ONNECTORS.	Is there poor contact in con- nectors between ECM and VDCCM?	Repair connector.	Go to step 7.
 7 CHECK VDCCM. 1) Turn ignition switch to OFF. 2) Connect all connectors. 3) Erase the memory. 4) Perform inspection mode. 5) Read out the diagnostic troub 	ble code.	Is the same diagnostic trouble code as in the current diagno- sis still being output?	Replace VDCCM. <ref. to="" vdc-8,<br="">VDC Control Mod- ule (VDCCM).></ref.>	Go to step 8 .
8 CHECK ANY OTHER DIAGNOS BLE CODES APPEARANCE.	STIC TROU-	Are other diagnostic trouble codes being output?	Proceed with the diagnosis corre- sponding to the diagnostic trouble code.	A temporary poor contact.
 9 CHECK ECM. 1) Turn ignition switch to ON. 2) Measure voltage between EC terminal and chassis ground. Connector & terminal (B134) No. 11 (+) - Chass 	CM connector <i>is ground (–):</i>	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 CO	ONNECTORS.	Is there poor contact in con- nector ECM?	Repair connector.	Go to step 11.

VDC (DIAGNOSTICS)

	Step	Check	Yes	No
11	CHECK ENGINE.	Is the engine functioning nor- mally?	Replace ECM. <ref. to<br="">FU(H6DO)-46, Engine Control Module.></ref.>	Repair engine.

MEMO:

AB:DTC 44 TCM COMMUNICATION CIRCUIT

DIAGNOSIS:

• Communication with AT control faults

TROUBLE SYMPTOM:

VDC does not operate.



	A :			
	Step	Check	Yes	NO
1	 CHECK RESISTANCE OF HARNESS. 1) Turn ignition switch to OFF. 2) Disconnect two connectors from TCM. 3) Measure resistance between TCM connector terminals. 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. 1) Turn ignition switch to OFF. 2) Connect all connectors. 3) Erase the memory. 4) Perform inspection mode. 5) Read out the diagnostic trouble code. 	Is the same diagnostic trouble code as in the current diagno- sis still being output?	Replace TCM. <ref. 4at-79,<br="" to="">Transmission Con- trol Module (TCM).></ref.>	Go to step 4.
4	CHECK ANY OTHER DIAGNOSTIC TROU- BLE CODES APPEARANCE.	Are other diagnostic trouble codes being output?	Proceed with the diagnosis corre- sponding 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. Check the VDCCM identification mark. VDCCM identification mark P	Does the VDCCM identification mark agree with the vehicle specifications?	Go to step 2.	Replace VDCCM. <ref. to="" vdc-8,<br="">VDC Control Mod- ule (VDCCM).></ref.>
2	CHECK TCM SPECIFICATIONS. Check the TCM identification mark. TCM identification mark HN	Does the TCM identification mark agree with the vehicle specifications?	Go to step 3.	Replace TCM. <ref. 4at-79,<br="" to="">Transmission Con- trol Module (TCM).></ref.>
3	 CHECK TCM. 1) Replace TCM. <ref. (tcm).="" 4at-79,="" control="" module="" to="" transmission=""></ref.> 2) Erase the memory. 3) Perform inspection mode. 4) Read out the diagnostic trouble code. 	Is the same diagnostic trouble code as in the current diagno- sis 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 diagno- sis still being output?	Go to step 5 .	Proceed with the diagnosis corre- sponding to the diagnostic trouble code.
5	 CHECK VDCCM. 1) Install original TCM. 2) Replace VDCCM. <ref. to="" vdc-8,="" vdc<br="">Control Module (VDCCM).></ref.> 3) Erase the memory. 4) Perform inspection mode. 5) Read out the diagnostic trouble code. 	Is the same diagnostic trouble code as in the current diagno- sis 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 diagno- sis still being output?	Replace TCM. <ref. 4at-79,<br="" to="">Transmission Con- trol Module (TCM).></ref.>	Proceed with the diagnosis corre- sponding 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.	Is the AT system diagnostic	Repair AT system.	Replace VDCCM.
	 Start the engine. 	trouble code is same with the		<ref. th="" to="" vdc-8,<=""></ref.>
	2) Check AT system diagnostic trouble code.	specification?		VDC Control Mod-
				ule (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 Undex res No 1 CHECK GROUND SHORT OF SENSOR AND IN Turn ignition switch OFF. is the measured value more than 1 MΩ? is the measured value more than 1 MΩ? Go to step 3. Go to step 2. 1 Turn ignition switch OFF. Disconnect connector from fully sensors. is the measured value more than 1 MΩ? Go to step 3. Go to step 2. 2 CHECK GROUND SHORT OF HARNESS. Is the measured value more (F87) No. 63 – Chassis ground (Lateral G sensor): Is the measured value more than 1 MΩ? Replace faulty sensors. Replace faulty sensors. Replace faulty sensors. Replace faulty sensors. 2 CHECK GROUND SHORT OF HARNESS. Is the measured value less than 0.5 V? Is the measured value less than 0.5 V? Go to step 4. Go to step 5. 3 CHECK BATTERY SHORT OF SENSOR AND (F87) No. 32 (+) — Chassis ground (-) ((F87) No. 32 (+) — Chassis ground (-) ((F87) No. 32 (+) — Chassis ground (-) ((F87) No. 53 (+) — Chassis ground (-) ((F87) No. 53 (+) — Chassis ground (-) ((F87) No. 53 (+) — Chassis ground (-) ((Lateral G sensor); (F87) No. 78 (+) — Chassis ground (-) ((Lateral G sensor); (F87) No. 78 (+) — Chassis ground (-) ((Lateral G sensor); (F87) No. 78 (+) — Chassis ground (-) ((Lateral G sensor); (F87) No. 53 (+) — Chassis ground (-) ((Lateral G sensor); (F87) No. 53 (+) = - Chassis ground (-) ((Lateral G sensor); (F87) No. 53 (+) = - Chassis ground (-) ((Lateral G sensor); (F87) No. 53 (+) = - Chassis ground (-) ((Lateral		Otara	Observis	Vaa	NL-
1 CHECK GROUND SHORT OF SENSOR AND Is the measured value more than 1 MΩ? Go to step 3. Hames 3. Go to step 4. Ho step 5. Hames 3. Hames 3. Hames 3. Go to step 5. Hames 3. Hames		Step	Спеск	Yes	NO
 In Turn ignition switch OFF. I) Turn ignition switch OFF. I) Exconnect connector for MUDCCM. Stassure resistance between VDCCM connector & terminal (F87) No. 63 – Chassis ground (Lateral G sensor); CHECK GROUND SHORT OF HARNESS. Is the measured value more than 1 Mu2? Is the measured value more than 1 Mu2? Replace faulty sensor. Is the measured value more than 1 Mu2? Replace faulty sensor. Is the measured value less than 0.5 V? Go to step 4. Go to step 5. Replace VDCCM and faulty sensor. Is the measured value less than 0.5 V? Go to step 5. Turn ignition switch to 0N. Is the measured value less than 0.5 V? Go to step 6. Replace faulty sensor. (F87) No. 53 (+) - Chassis ground (-) (Lateral G sensor); (F87) No. 76 (+) - Chassis ground (-) (Lateral G sensor); (F87) No. 76 (+) - Chassis ground (-) (Lateral G sensor); (F87) No. 76 (+) - Chassis ground (-) (Lateral G sensor); (F87) No. 76 (+) - Chassis ground (-) (Lateral G sensor); (F87) No. 76 (+) - Chassis ground (-) (Lateral G sensor); (F87) No. 76 (+) - Chassis ground (-) (Lateral G sensor); (F87) No. 76 (+) - Chassis ground (-) (Late	1	CHECK GROUND SHORT OF SENSOR AND	Is the measured value more	Go to step 3.	Go to step 2.
1) Turn grintal switch of Your COCM. 2) Disconnect or from VOCCM connector from VOCCM connector A terminal (F87) No. 53 - Chassis ground (Lateral G sensor); (F87) No. 73 - Chassis ground (Pressure sensor): Is the measured value more than 1 MG2 Replace faulty sensors. 2) Measure resistance between VDCCM and chassis ground. Is the measured value more than 1 MG2 Replace faulty sensors. 1) Disconnect or terminal (F87) No. 53 - Chassis ground (Lateral G sensor); Is the measured value more sensors. Replace faulty sensors. 2) Measure resistance between VDCCM and chassis ground. Is the measured value less than 0.5 V? Replace VDCCM. 3) CHECK BATTERY SHORT OF SENSOR AND Is the measured value less is ground. Is the measured value less than 0.5 V? Go to step 5. 4) CHECK BATTERY SHORT OF SENSOR AND Is the measured value less is ground. Is the measured value less than 0.5 V? Replace VDCCM. Go to step 5. 1) Turn ignition switch to ON. Is the measured value less than 0.5 V? Replace VDCCM. Go to step 5. 1) Turn ignition switch to OF. Is the measured value less than 0.5 V? Replace VDCCM. Go to step 5. 1) Turn ignition switch to OF. Is the measured value less than 0.5 V? Replace VDCCM. Go to step 6. 1) Turn ignition switch to OF. Is the measured value less than 0.5 V? Is the measured value less than 0.5 V?		1) Turn ignition quitab OFF	than T MS2?		
 2) Discontect control full (Lateral G sensor); 3) Measure resistance between VDCCM connector A terminal (F87) No. 78 – Chassis ground (Pressure sensor); 4) CHECK GROUND SHORT OF HARNESS. Harness Connector from faulty sensors. (F87) No. 78 – Chassis ground (Lateral G sensor); 3) CHECK BATTERY SHORT OF SENSOR AND HARNESS.		1) Turn ignition switch OFF. 2) Disconnect connector from VDCCM			
0) Measure instantials ground. Connector & terminal (F27) No. 53 — Chassis ground (Lateral G sensor); (F87) No. 78 — Chassis ground (Pressure sensor); 2 CHECK GROUND SHORT OF HARNESS. Is the measured value more 1) Disconnect connector from faulty sensors. Is the measured value more 2) Measure resistance between VDCCM and chassis ground. Is the measured value more 4 CHECK BATTERY SHORT OF SENSOR AND 5 CHECK BATTERY SHORT OF SENSOR AND 4 CHECK BATTERY SHORT OF SENSOR AND 4 CHECK BATTERY SHORT OF SENSOR AND 5 CHECK BATTERY SHORT OF SENSOR AND 6 Check BATTERY SHORT OF SENSOR AND 4 CHECK BATTERY SHORT OF SENSOR AND 4 CHECK BATTERY SHORT OF SENSOR AND 5 CHECK BATTERY SHORT OF SENSOR AND 6 Its the measured value less than 0.5 V? Go to step 5. 4 CHECK BATTERY SHORT OF HARNESS. 1) Turm ignition switch to ON. Is the measured value less 2) Measure voltage between VDCCM and chase is ground (-) (Lateral G sensor); 5 CHECK BATTERY SHORT OF HARNESS. 1) Turm ignition switch to OF. Is the measured value le		 2) Disconnecti connector from vDCCivi. 3) Measure resistance between VDCCM con- 			
Connector & terminal (F87) No. 63 - Chassis ground (Lateral G sensor): Is the measured value more (F87) No. 78 - Chassis ground (Pres- sure sensor): Replace faulty sensors. Replace faulty sensors. 2 CHECK GROUND SHORT OF HARNESS. (PR7) No. 63 - Chassis ground (Lateral G sensor): Is the measured value more than 1 MΩ? Replace faulty sensors. Replace faulty sensors. 3 CHECK BATTERY SHORT OF SENSOR AND HARNESS. Is the measured value less than 0.5 V? Go to step 4. Go to step 5. 4 Connector & terminal (F87) No. 78 (+) - Chassis ground (-) (Lateral G sensor): (F87) No. 78 (+) - Chassis ground (-) (Pressure sensor): Is the measured value less than 0.5 V? Replace VDCCM. Go to step 5. Go to step 5. 4 CHECK BATTERY SHORT OF SENSOR AND Is the measured value less than 0.5 V? Is the measured value less than 0.5 V? Replace VDCCM. Go to step 5. Go to step 5. 4 CHECK BATTERY SHORT OF HARNESS. 1) Turn ignition switch to ON. 2) Measure voltage between VDCCM connec- tor and chassis ground (-) (Lateral G sensor): (F87) No. 78 (+) - Chassis ground (-) (Lateral G sensor): (F87) No. 78 (+) - Chassis ground (-) (Lateral G sensor): (F87) No. 78 (+) - Chassis ground (-) (Pressure sensor): 5 Is the measured value less than 0.5 V? Go to step 6. Replace taulty sensor. 5 CHECK BATTERY SHORT OF HARNESS. 1) Turn ignition switch to ON. 2) Measure voltage between VDCCM and chassis ground. Is the measured value less than 0.5 V? Repla		nector and chassis ground			
(FB7) No. 63 — Chassis ground (Lateral G sensor): (F87) No. 78 — Chassis ground (Pres- sure sensor): Replace faulty sensors. Replace faulty sensor. Replace faulty sensor		Connector & terminal			
G sensor); (F87) No. 78 — Chassis ground (Pressure sensor); Is the measured value more than 1 MΩ? Replace faulty sensors. 2 CHECK GROUND SHORT OF HARNESS. (1) Disconnect connector from faulty sensors. Is the measured value more than 1 MΩ? Replace faulty sensors. 2 Measure resistance between VDCCM and chassis ground. Is the measured value less than 0.5 V? Replace faulty sensors. 3 CHECK BATTERY SHORT OF SENSOR AND is the measured value less than 0.5 V? Go to step 4. Go to step 5. 4 CHECK BATTERY SHORT OF SENSOR AND is the measured value less than 0.5 V? Is the measured value less than 0.5 V? Go to step 5. 4 CHECK BATTERY SHORT OF SENSOR AND is the measured value less than 0.5 V? Is the measured value less than 0.5 V? Go to step 5. 4 CHECK BATTERY SHORT OF SENSOR AND is the measured value less than 0.5 V? Is the measured value less than 0.5 V? Replace VDCCM. Go to step 5. Go to step 5. 4 CHECK BATTERY SHORT OF HARNESS. 1) Turn ignition switch to ON. Is the measured value less than 0.5 V? Replace VDCCM. Go to step 5. Go to step 6. Repair or replace harness connector tor and chassis ground (-) (Lateral 6 sensor); (F87) No. 78 (+) - Chassis ground (-) (Lateral 6 sensor); (F87) No. 78 (+) - Chassis ground (-) (Lateral 6 sensor); (F87) No. 78 (+) - Chassis ground (-) (Lateral 6 sensor); (F87) No. 78 (+) - Chassis ground (-) (Lateral 6 sensor); (F87) No. 78 (+) - Chassis		(F87) No. 63 — Chassis ground (Lateral			
(F87) No. 78 - Chassis ground (Pressure sensor): 2 CHECK GROUND SHORT OF HARNESS. 1) Disconnect connector from faulty sensors. 2) Measure resistance between VDCCM and chassis ground. Connector & terminal (F87) No. 63 - Chassis ground (Lateral G sensor): 3 CHECK BATTERY SHORT OF SENSOR AND ILST (F87) No. 78 - Chassis ground (Chassis ground. Connector & terminal (F87) No. 63 - Chassis ground (Chassis ground. Connector & terminal (F87) No. 63 (-) - Chassis ground (-) (Lateral G sensor): (F87) No. 78 (-) - Chassis ground (-) (Lateral G sensor): (F87) No. 78 (-) - Chassis ground (-) (Lateral G sensor): (F87) No. 78 (-) - Chassis ground (-) (Lateral G sensor): (F87) No. 78 (-) - Chassis ground (-) (Lateral G sensor): (F87) No. 78 (-) - Chassis ground (-) (Lateral G sensor): (F87) No. 78 (-) - Chassis ground (-) (Lateral G sensor): (F87) No. 78 (-) - Chassis ground (-) (Lateral G sensor): (F87) No. 78 (-) - Chassis ground (-) (Lateral G sensor): (F87) No. 78 (-) - Chassis ground (-) (Lateral G sensor): (F87) No. 78 (-) - Chassis ground (-) (Lateral G sensor): (F87) No. 78 (-) - Chassis ground (-) (Lateral G sensor): (F87) No. 78 (-) - Chassis ground (-) (Lateral G sensor): (F87) No. 78 (-) - Chassis ground (-) (Lateral G sensor): (F87) No. 78 (-) - Chassis		G sensor):			
sure sensor): Is the measured value more than 1 MΩ? Replace faulty sensors. Repair or replace harness onnector both the measured value more than 1 MΩ? 2 CHECK GROUND SHORT OF HARNESS. Is the measured value more than 1 MΩ? Replace faulty sensors. Repair or replace harness onnector both the measured value more than 1 MΩ? Replace faulty sensors. 3 CHECK BATTERY SHORT OF SENSOR AND HARNESS. Is the measured value less than 0.5 V? Go to step 4. Go to step 5. Go to step 5. 4 CHECK BATTERY SHORT OF SENSOR AND IC (Lateral G sensor): (F87) No. 51 (+) — Chassis ground (-) (Lateral G sensor): (F87) No. 51 (+) — Chassis ground (-) (Lateral G sensor): (F87) No. 78 (+) — Chassis ground (-) (Lateral G sensor): (F87) No. 78 (+) — Chassis ground (-) (Lateral G sensor): (F87) No. 78 (+) — Chassis ground (-) (Lateral G sensor): (F87) No. 78 (+) — Chassis ground (-) (Lateral G sensor): (F87) No. 78 (+) — Chassis ground (-) (Lateral G sensor): (F87) No. 78 (+) — Chassis ground (-) (Lateral G sensor): (F87) No. 78 (+) — Chassis ground (-) (Lateral G sensor): (F87) No. 78 (+) — Chassis ground (-) (Lateral G sensor): (F87) No. 78 (+) — Chassis ground (-) (Lateral G sensor): (F87) No. 78 (+) — Chassis ground (-) (Lateral G sensor): (F87) No. 78 (+) — Chassis ground (-) (Lateral G sensor): (F87) No. 78 (+) — Chassis ground (-) (Lateral G sensor): (F87) No.		(F87) No. 78 — Chassis ground (Pres-			
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chassis ground. Connector & terminal VDCCM and faulty sensor. (F87) No. 63 — Chassis ground (Lateral G sensor); (F87) No. 78 — Chassis ground (Pressure sensor); Is the measured value less than 0.5 V? Go to step 4. 3 CHECK BATTERY SHORT OF SENSOR AND HARNESS. Is the measured value less than 0.5 V? Go to step 4. (F87) No. 78 (-) — Chassis ground (-) (Lateral G sensor); (F87) No. 78 (-) — Chassis ground (-) Is the measured value less than 0.5 V? Go to step 5. (F87) No. 78 (-) — Chassis ground (-) (Lateral G sensor); (F87) No. 78 (-) — Chassis ground (-) Is the measured value less than 0.5 V? Replace VDCCM. Go to step 5. 4 CHECK BATTERY SHORT OF SENSOR AND MARKESS. Is the measured value less than 0.5 V? Replace VDCCM. Go to step 5. 4 CHECK BATTERY SHORT OF HARNESS. Is the measured value less than 0.5 V? Replace TOC-8, VDC Control Module (VDCCM).> Go to step 6. Repair or replace harness connector batween VDCCM and chasts ground. 7 Turn ignition switch to OFF. Disconnect connector from faulty sensors. Is the measured value less than 0.5 V? Go to step 6. Repair or replace harness connector batween VDCCM and chasts ground. Connector & terminal (F87) No. 63 (+) — Chassis ground (-) (Lateral G sensor); If Turn ignition switch to OK. Is the measured value less than 0.5		2) Measure resistance between VDCCM and			tor between
Connector & terminal (F87) No. 63 — Chassis ground (Lateral G sensor): (F87) No. 78 — Chassis ground (Pres- sure sensor): Is the measured value less than 0.5 V? Go to step 4. Go to step 5. 3 CHECK BATTERY SHORT OF SENSOR AND HARNESS. Measure voltage between VDCCM and chas- sis ground. Connector & terminal (F87) No. 78 (+) — Chassis ground (-) (Lateral G sensor): (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. 1) Turn ignition switch to ON. Is the measured value less than 0.5 V? Replace VDCCM. Ule (VDCCM).> Go to step 5. 4 CHECK BATTERY SHORT OF SENSOR AND HARNESS. 1) Turn ignition switch to ON. Is the measured value less than 0.5 V? Replace VDCCM. Ule (VDCCM).> Go to step 5. 5 CHECK BATTERY SHORT OF HARNESS. 1) Turn ignition switch to OFF. 2) Disconnect connector from faulty sensors. 3) Measure voltage between VDCCM and chassis ground. Connector & terminal (F87) No. 63 (+) — Chassis ground (-) (Lateral G sensor): 6 Is the measured value less than 0.5 V? Go to step 6. Repair or replace harness connec- tor between VDCCM and faulty sensor. 6 CHECK BATTERY SHORT OF HARNESS. 1) Turn ignition switch to ON. 2) Measure voltage between VDCCM and chassis ground. Connector & terminal (F87) No. 63 (+) — Chassis ground (-) (Lateral G sensor): Is the measured value less than 0.5 V? Replace faulty sensor. Repair or replace harness connec- tor between VDCCM and faulty sen		chassis ground.			VDCCM and faulty
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G sensor): (F87) No. 78 - Chassis ground (Pressure sensor): 3 CHECK BATTERY SHORT OF SENSOR AND MARNESS. Measure voltage between VDCCM and chassis ground. Connector & terminal (F87) No. 53 (+) - Chassis ground (-) (Lateral G sensor): (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 (Pressure sensor): (F87) No. 78 (+) - Chassis ground (-) (Lateral G sensor): (F87) No. 53 (+) - Chassis ground (-) (Lateral G sensor): (F87) No. 78 (+) - Chassis ground (-) (Lateral G sensor): (F87) No.		(F87) No. 63 — Chassis ground (Lateral			
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HARNESS. Measure voltage between VDCCM and chassis ground. Connector & terminal (F87) No. 63 (+) - Chassis ground (-) (F87) No. 78 (+) - Chassis ground (-) (Pressure sensor): 4 CHECK BATTERY SHORT OF SENSOR AND HARNESS. Is the measured value less 1) Turn ignition switch to ON. Is the measured value less Replace VDCCM. 2) Measure voltage between VDCCM connector tor and chassis ground. Is the measured value less Replace Control Module (VDCCM).> (F87) No. 63 (+) - Chassis ground (-) (F87) No. 73 (+) - Chassis ground (-) Is the measured value less Go to step 6. (F87) No. 73 (+) - Chassis ground (-) (Pressure sensor): Is the measured value less Go to step 6. 5 CHECK BATTERY SHORT OF HARNESS. Is the measured value less Go to step 6. Repair or replace 1) Turn ignition switch to OFF. Ib than 0.5 V? Disconnect connector from faulty sensors. Is the measured value less Go to step 6. Repair or replace (F87) No. 78 (+) - Chassis ground (-) (Lateral G sensor): Is the measured value less Replace faulty sensor. (F87) No. 78 (+) - Chassis ground (-) (Lateral G sensor): Is the measured value less Replace faulty sensor. 1) Turn	3	CHECK BATTERY SHORT OF SENSOR AND	Is the measured value less	Go to step 4.	Go to step 5.
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Sis ground. Connector & terminal (F87) No. 63 (+) - Chassis ground (-) Replace VDCCM. Go to step 5. (F87) No. 78 (+) - Chassis ground (-) (Pressure sensor): Replace VDCCM. Go to step 5. 4 CHECK BATTERY SHORT OF SENSOR AND Is the measured value less than 0.5 V? Replace VDCCM. Go to step 5. 1) Turn ignition switch to ON. 2) Measure voltage between VDCCM connector to rand chassis ground. Sconnector & terminal Go to step 6. Replace VDCCM. (F87) No. 63 (+) - Chassis ground (-) (F87) No. 63 (+) - Chassis ground (-) Is the measured value less than 0.5 V? Go to step 6. Repair or replace harmess connector for batters 5 CHECK BATTERY SHORT OF HARNESS. Is the measured value less than 0.5 V? Go to step 6. Repair or replace harmess connector for batters 1) Turn ignition switch to OFF. 2) Disconnect connector from faulty sensors. Is the measured value less than 0.5 V? Go to step 6. Repair or replace harmess connector for batters (F87) No. 78 (+) - Chassis ground (-) (Lateral G sensor): Is the measured value less than 0.5 V? Go to step 6. Repair or replace harmess connector for batters 1) Turn ignition switch to ON. 2) Measure voltage between VDCCM and chassis ground (-) Replace faulty sensor. Repair or replace harmess connector		Measure voltage between VDCCM and chas-			
(F87) No. 63 (+) — Chassis ground (-) (Lateral G sensor): (F87) No. 78 (+) — Chassis ground (-) (Pressure sensor): Replace VDCCM. Go to step 5. 4 CHECK BATTERY SHORT OF SENSOR AND HARNESS. Is the measured value less than 0.5 V? Replace VDCCM. Go to step 5. 1) Turn ignition switch to ON. Weasure voltage between VDCCM connec- tor and chassis ground. Is the measured value less than 0.5 V? Replace VDCCM. Go to step 5. (F87) No. 78 (+) — Chassis ground (-) (Lateral G sensor): (F87) No. 78 (+) — Chassis ground (-) (Pressure sensor): Is the measured value less than 0.5 V? Replace vDCCM. Replace vDCCM. 5 CHECK BATTERY SHORT OF HARNESS. Is the measured value less than 0.5 V? Go to step 6. Repair or replace harness connec- tor between VDCCM and faulty sensor. 3) Measure voltage between VDCCM and chassis ground. Is the measured value less than 0.5 V? Go to step 6. Repair or replace harness connec- tor between VDCCM and faulty sensor. 6 CHECK BATTERY SHORT OF HARNESS. Is the measured value less than 0.5 V? Replace faulty sensor. Repair or replace harness connec- tor between VDCCM and faulty sensor. 2) Measure voltage between VDCCM and chassis ground. Is the measured value less than 0.5 V? Replace faulty sensor. Repair or replace harness connec- tor between VDCCM and faulty sensor. 2) Measure voltage between VDCCM and chassis gro		sis ground.			
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 (F87) No. 78 (+) — Chassis ground (-) (Pressure sensor): 6 CHECK BATTERY SHORT OF HARNESS. 1) Turn ignition switch to ON. 2) Measure voltage between VDCCM and chassis ground. Connector & terminal (F87) No. 63 (+) — Chassis ground (-) (Lateral G sensor): Is the measured value less than 0.5 V? Is the measured value less than 0.5 V? Replace faulty sensor. Repair or replace harness connec- tor between VDCCM and faulty sensor. 		(Lateral G sensor):			
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2) Measure voltage between VDCCM and chassis ground. Connector & terminal (F87) No. 63 (+) — Chassis ground (-) (Lateral G sensor):		 Turn ignition switch to ON. 	than 0.5 V?	sensor.	harness connec-
chassis ground. VDCCM and faulty Connector & terminal sensor. (F87) No. 63 (+) — Chassis ground (-) (Lateral G sensor): (Lateral G control = Control		2) Measure voltage between VDCCM and			tor between
Connector & terminal sensor. (F87) No. 63 (+) — Chassis ground (–) (Lateral G sensor):		chassis ground.			VDCCM and faulty
(F87) No. 63 (+) — Chassis ground (–) (Lateral G sensor):		Connector & terminal			sensor.
(Lateral & sensor):		(FS/) NO. 53 (+) — Chassis ground (–)			
$(F87)$ No 78 (\pm) — ("bassis around (")		(Lateral G sensor): (E87) No. 78 (\pm) — Chassis ground ()			
(Pressure sensor):		(Pressure 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.



	Step	Check	Yes	No
1	 CHECK HARNESS BETWEEN VDCCM, STEERING ANGLE SENSOR AND TCM. 1) Turn ignition switch OFF. 2) Disconnect connector from VDCCM, TCM and steering angle sensor. 3) Measure resistance between VDCCM, TCM and steering angle sensor. Connector & terminal (F87) No. 83 — (B56) No. 9: (F87) No. 81 — (B56) No. 18: (F87) No. 83 — (B231) No. 2: (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. Measure resistance between TCM and steer- ing angle sensor. Connector & terminal (B56) No. 9 — (B231) No. 2: (B56) No. 18 — (B231) No. 1:	Is the measured value less than 0.5 Ω?	Repair or replace harness connec- tor between VDCCM and steering angle sensor.	Repair or replace harness connec- tor between TCM and steering angle sensor.
3	CHECK GROUND SHORT OF HARNESS. Measure resistance between VDCCM and chassis ground. Connector & terminal (F87) No. 83 — Chassis ground: (F87) No. 81 — Chassis ground:	Is the measured value more than 1 M Ω ?	Go to step 4.	Repair or replace harness connec- tor between VDCCM, TCM and steering angle sensor.
4	CHECK BATTERY SHORT OF SENSOR. Measure voltage between VDCCM and chas- sis ground. Connector & terminal (F87) No. 83 — Chassis ground: (F87) No. 81 — Chassis ground:	Is the measured value less than 0.5 V?	Go to step 5.	Repair or replace harness connec- tor between VDCCM, TCM and steering angle sensor.
5	 CHECK BATTERY SHORT OF SENSOR. 1) Turn ignition switch to ON. 2) Measure voltage between VDCCM and chassis ground. Connector & terminal (F87) No. 83 — Chassis ground: (F87) No. 81 — Chassis ground: 	Is the measured value less than 0.5 V?	Go to step 6 .	Repair or replace harness connec- tor between VDCCM, TCM and steering angle sensor.
6	 CHECK STEERING ANGLE SENSOR. 1) Turn ignition switch to OFF. 2) Connect connector to steering angle sensor. 3) Measure resistance between VDCCM connector terminals. Connector & terminal (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 steer- ing angle sensor?	Replace steering angle sensor.	Repair or replace steering angle sensor connector.
8	 CHECK VDCCM. 1) Connect connector to VDCCM. 2) Disconnect connector from steering angle sensor. 3) Measure resistance between steering angle sensor connector terminals. Connector & terminal (B231) No. 1 - No. 2: 	Is the measured value within 114 to 126 Ω?	Go to step 10.	Go to step 9.

VDC (DIAGNOSTICS)

	Step	Check	Yes	No
9	CHECK POOR CONTACT IN CONNECTORS.	Is there poor contact in steer- ing angle sensor?	Replace VDCCM. <ref. to="" vdc-8,<br="">VDC Control Mod- ule (VDCCM).></ref.>	Repair or replace VDCCM connec- tor.
10	 CHECK TCM. 1) Connect connector to TCM. 2) Disconnect connector from VDCCM. 3) Measure resistance between steering angle sensor terminals. 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 steer- ing angle sensor?	Replace TCM. <ref. 4at-79,<br="" to="">Transmission Con- trol Module (TCM).></ref.>	Repair or replace TCM connector.
12	 CHECK VDCCM. 1) Connect all connectors. 2) Erase the memory. 3) Perform inspection mode. 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 diagno- sis still being output?	Go to step 14.	Proceed with the diagnosis corre- sponding to the diagnostic trouble code.
14	CHECK AT SYSTEM DIAGNOSTIC TROU- BLE CODE.	Is the AT system diagnostic trouble code DTC 86?	Replace steering angle sensor.	Replace VDCCM. <ref. to="" vdc-8,<br="">VDC Control Mod- ule (VDCCM).></ref.>

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.



	Step	Check	Yes	No
1	 CHECK HARNESS BETWEEN ECM AND VD-CCM. 1) Turn ignition switch to OFF. 2) Disconnect connector from VDCCM and ECM. 3) Measure resistance between VDCCM and ECM. Connector & terminal (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. Measure resistance between VDCCM and ECM. Connector & terminal (F87) No. 45 — Chassis ground:	Is the measured value more than 1 M Ω ?	Go to step 3.	Repair or replace ground short cir- cuit between VDCCM and ECM.
3	 CHECK BATTERY SHORT OF HARNESS. 1) Turn ignition switch to ON. 2) Measure voltage between VDCCM and chassis ground. Connector & terminal (F87) No. 45 — Chassis ground: 	Is the measured value less than 0.5 V?	Go to step 4.	Repair or replace battery short cir- cuit between VDCCM and ECM.
4	 CHECK INPUT VOLTAGE FROM ECM. 1) Turn ignition switch to OFF. 2) Connect connector to VDCCM. 3) Turn ignition switch to ON. 4) Measure voltage between ECM and chassis ground. Connector & terminal (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 CONNEC- TORS.	Is there poor contact in ECM connector?	Replace ECM. <ref. to<br="">FU(H6DO)-46, Engine Control Module.></ref.>	Repair or replace ECM connector.
6	ERASE MEMORY.1) Connect all connectors.2) Erase the memory.	Can the memory be erased?	Go to step 7.	Replace VDCCM. <ref. to="" vdc-8,<br="">VDC Control Mod- ule (VDCCM).></ref.>
7	 CHECK DIAGNOSTIC TROUBLE CODE. 1) Perform inspection mode. 2) Read out the diagnostic trouble code. 	Is the same diagnostic trouble code as in the current diagno- sis still being output?	Replace ECM. <ref. to<br="">FU(H6DO)-46, Engine Control Module.></ref.>	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.


-				
	Step	Check	Yes	No
1	 CHECK GROUND SHORT OF HARNESS. 1) Turn ignition switch to OFF. 2) Disconnect connector from VDCCM and ECM. 3) Measure resistance between VDCCM and ECM. Connector & terminal (F87) No. 75 — Chassis ground: 	Is the measured value more than 1 MΩ?	Go to step 2.	Repair or replace ground short cir- cuit between VDCCM and ECM.
2	 CHECK INPUT VOLTAGE FROM ECM. 1) Connect connector to VDCCM. 2) Turn ignition switch to ON. 3) Measure voltage between ECM and chassis ground. Connector & terminal (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 CONNEC- TORS.	Is there poor contact in ECM connector?	Replace ECM. <ref. to<br="">FU(H6DO)-46, Engine Control Module.></ref.>	Repair or replace ECM connector.
4	ERASE MEMORY.1) Connect all connectors.2) Erase the memory.	Can the memory be erased?	Go to step 5.	Replace VDCCM. <ref. to="" vdc-8,<br="">VDC Control Mod- ule (VDCCM).></ref.>
5	 CHECK DIAGNOSTIC TROUBLE CODE. 1) Perform inspection mode. 2) Read out the diagnostic trouble code. 	Is the same diagnostic trouble code as in the current diagno- sis still being output?	Replace ECM. <ref. to<br="">FU(H6DO)-46, Engine Control Module.></ref.>	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.



	Step	Check	Yes	No
1	 CHECK HARNESS BETWEEN ECM AND VD-CCM. 1) Turn ignition switch to OFF. 2) Disconnect connector from VDCCM and ECM. 3) Measure resistance between VDCCM and ECM. Connector & terminal (F87) No. 75 — (B136) No. 11: (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. 1) Turn ignition switch to ON. 2) Measure voltage between VDCCM and chassis ground. Connector & terminal (F87) No. 75 — Chassis ground: (F87) No. 45 — Chassis ground: 	Is the measured value less than 0.5 V?	Go to step 3 .	Repair or replace battery short cir- cuit between VDCCM and ECM.
3	 CHECK INPUT VOLTAGE FROM ECM. 1) Turn ignition switch to OFF. 2) Connect connector to VDCCM. 3) Turn ignition switch to ON. 4) Measure voltage between ECM and chassis ground. Connector & terminal (B136) No. 11 (+) — Chassis ground (-): (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 CONNEC- TORS.	Is there poor contact in ECM connector?	Replace ECM. <ref. to<br="">FU(H6DO)-46, Engine Control Module.></ref.>	Repair or replace ECM connector.
5	ERASE MEMORY.1) Connect all connectors.2) Erase the memory.	Can the memory be erased?	Go to step 6.	Replace VDCCM. <ref. to="" vdc-8,<br="">VDC Control Mod- ule (VDCCM).></ref.>
6	 CHECK DIAGNOSTIC TROUBLE CODE. 1) Perform inspection mode. 2) Read out the diagnostic trouble code. 	Is the same diagnostic trouble code as in the current diagno- sis still being output?	Replace ECM. <ref. to<br="">FU(H6DO)-46, Engine Control Module.></ref.>	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.



	Stop	Chaok	Vaa	No
	Step	Check	Tes	INU
1	CHECK TACHOMETER OPERATION IN	Does tachometer operate nor-	Go to step 2.	Repair tachome-
	COMBINATION METER.	mally?		ter.
2	 CHECK HARNESS BETWEEN VDCCM AND ECM. 1) Turn ignition switch to OFF. 2) Disconnect connector from VDCCM and ECM. 3) Measure resistance between VDCCM connector and ECM. Connector & terminal 	Is the measured value less than 0.5 Ω?	Go to step 3.	Repair harness connector between VDCCM and ECM.
	(F87) No. 9 — (B136) No. 9:			
3	CHECK POOR CONTACT IN CONNECTORS.	Is there poor contact in con- nectors between VDCCM and ECM?	Repair connector.	Go to step 4.
4	 CHECK VDCCM. 1) Connect all connectors. 2) Erase the memory. 3) Perform inspection mode. 4) Read out the diagnostic trouble code. 	Is the same diagnostic trouble code as in the current diagno- sis still being output?	Replace VDCCM. <ref. to="" vdc-8,<br="">VDC Control Mod- ule (VDCCM).></ref.>	Go to step 5 .
5	CHECK ANY OTHER DIAGNOSTIC TROU- BLE CODES APPEARANCE.	Are other diagnostic trouble codes being output?	Proceed with the diagnosis corre- sponding to the diagnostic trouble code.	A temporary poor contact.

VDC (DIAGNOSTICS)

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:



VDC-186

	<u>.</u>			
	Step	Check	Yes	No
1	CHECK RESISTANCE OF VALVE RELAY.	Is the measured value within	Go to step 2.	Replace valve
	 Turn ignition switch to OFF. 	93 to 113 Ω?		relay.
	2) Remove valve relay from relay box.			
	3) Measure resistance between valve relay			
	terminals.			
	Terminals			
	No. 85 — No. 86:			
2	CHECK CONTACT POINT OF VALVE BE-	Is the measured value less	Go to step 3	Benlace valve
-		than $0.5 \Omega^2$	do to step 0 .	relav
	1) Connect battery to valve relay terminals No			l'olay.
	85 and No. 86			
	2) Measure resistance between valve relav			
	torminale			
	No 20 No 97:			
0			O a ta atam A	Daulaaa
3	CHECK CONTACT POINT OF VALVE RE-	Is the measured value more	Go to step 4.	Replace valve
		than T ML2?		relay.
	Measure resistance between valve relay termi-			
	nais.			
	Terminais			
	NO. 30 — NO. 87a:			
4	CHECK CONTACT POINT OF VALVE RE-	Is the measured value more	Go to step 5.	Replace valve
	LAY.	than 1 MΩ?		relay.
	 Disconnect battery from valve relay termi- 			
	nals.			
	2) Measure resistance between valve relay			
	terminals.			
	Terminals			
	No. 30 — No. 87:			
5	CHECK CONTACT POINT OF VALVE RE-	Is the measured value less	Go to step 6.	Replace valve
	LAY.	than 0.5 Ω?		relay.
	Measure resistance between valve relay termi-			
	nals.			
	Terminals			
	No. 30 — No. 87a:			
6	CHECK SHORT OF VALVE RELAY.	Is the measured value more	Go to step 7.	Replace valve
	Measure resistance between valve relay termi-	than 1 MΩ?		relay.
	nals.			
	Terminals			
	No. 86 — No. 87:			
	No. 86 — No. 87a:			
7	CHECK POWER SUPPLY FOR VALVE RE-	Is the measured value within	Go to step 8.	Repair harness
-	LAY.	10 to 15 V?		between battery
	1) Disconnect connector (E89) from relay box			and relay box con-
	2) Turn ignition switch to ON.			nector. Check fuse
	3) Measure voltage between relay box con-			No. 8.
	nector and chassis ground.			
	Connector & terminal			
	(F89) No. 1 (+) — Chassis around (–):			
8		Is the measured value within	Go to step 9	Benlace relay box
Ŭ	SHORT IN POWER SUPPLY CIRCUIT OF	10 to 15 V2	00 10 Step 3 .	and check fuse
	BELAY BOX			
	1) Disconnect connector (VDC1) from VDCH/			140. 0.
	2) Connect connector (F89) to relay box			
	3) Turn ignition switch to ON			
	 Measure voltage of relay box 			
	Connector & terminal			
	(VDC6) No. 87 — Chassis ground:			
	(1	1	1

VDC (DIAGNOSTICS)

	Step	Check	Yes	No
9	CHECK OPEN CIRCUIT IN CONTROL CIR-	Is the measured value less	Go to step 10.	Replace relay box.
	CUIT OF RELAY BOX.	than 0.5 Ω?		
	 Turn ignition switch to OFF. 			
	2) Disconnect connector (F90) from relay box.			
	 Measure resistance between relay box con- 			
	nector and valve relay installing point.			
	Connector & terminal			
	(VDC4) No. 5 — $(VDC6)$ No. 85: (VDC4) No. 1 (VDC6) No. 86:			
10		Is the measured value more	Go to step 11	Benlace relay box
10		than 1 MO2		and check fuse
	Measure resistance between relay box con-			SBF6.
	nector and chassis ground.			
	Connector & terminal			
	(VDC4) No. 5 — Chassis ground:			
	(VDC4) No. 1 — Chassis ground:			
11	CHECK OPEN CIRCUIT IN CONTROL SYS-	Is the measured value less	Go to step 12.	Repair harness
	TEM HARNESS OF VALVE RELAY.	than 0.5 Ω ?		between VDCCM
	1) Turn ignition switch to UFF.			and relay box.
	 Z) Disconnect connector from vDCCM. Anasura resistance between VDCCM con- 			
	nector and relay box connector			
	Connector & terminal			
	(F87) No. 47 — (F90) No. 5:			
	(F87) No. 27 — (F90) No. 1:			
12	CHECK GROUND SHORT IN CONTROL	Is the measured value more	Go to step 13.	Repair harness
	SYSTEM HARNESS OF VALVE RELAY.	than 1 MΩ?		between VDCCM
	Measure resistance between VDCCM connec-			and relay box.
	tor and chassis ground.			
	(F87) No. 47 — Chassis around:			
	(F87) No. 27 — Chassis ground:			
13		Is the measured value less	Go to step 14	Replace relay box
	CIRCUIT OF RELAY BOX.	than 0.5 Ω ?		ropidee relay bear
	Measure resistance between VDCH/U connec-			
	tor and valve relay installing point.			
	Connector & terminal			
	(VDC1) No. 2 — (VDC6) No. 30:			
14	CHECK GROUND SHORT IN CONTACT	Is the measured value more	Go to step 15.	Replace relay box
	POINT CIRCUIT OF RELAY BOX.	than 1 MO?		and check fuse
	tor and chassis ground			NU. 0.
	Connector & terminal			
	(VDC1) No. 2 — Chassis ground:			
15	CHECK RESISTANCE OF INLET AND CUT	Is the measured value within	Go to step 16.	Replace VDCH/U.
	SOLENOID VALVES.	8.04 to 9.04 Ω?		<ref. td="" to="" vdc-8,<=""></ref.>
	 Disconnect connector from VDCH/U. 			VDC Control Mod-
	2) Measure resistance between VDCH/U con-			ule (VDCCM).>
	nector terminals.			
	Connector & terminal			
	(VDC5) NO. 6 - (VDC2) NO. 2:			
	(VDC5) No. 5 - (VDC2) No. 2: (VDC5) No. 6 - (VDC2) No. 2:			
	(VDC5) No. 7 — $(VDC2)$ No. 2.			
	(VDC5) No. 9 — (VDC2) No. 2:			
	(VDC5) No. 12 — (VDC2) No. 2:			

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

VDC (DIAGNOSTICS)

	Step	Check	Yes	No
22	 CHECK VDCCM. 1) Connect all connectors. 2) Erase the memory. 3) Perform inspection mode. 4) Read out the diagnostic trouble code. 	Is the same diagnostic trouble code as in the current diagno- sis still being output?	Replace VDCCM. <ref. to="" vdc-8,<br="">VDC Control Mod- ule (VDCCM).></ref.>	Go to step 23.
23	CHECK ANY OTHER DIAGNOSTIC TROU- BLE CODES APPEARANCE.	Are other diagnostic trouble codes being output?	Proceed with the diagnosis corre- sponding to the diagnostic trouble code.	A temporary poor contact.

MEMO:

VDC (DIAGNOSTICS)

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.



			Ť	1
	Step	Check	Yes	No
1	 CHECK CONTACT POINT OF VALVE RE- LAY. 1) Turn ignition switch to OFF. 2) Remove valve relay from relay box. 3) Connect battery to valve relay terminals No. 85 and No. 86. 4) Measure resistance between valve relay terminals. Terminals 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 RE- LAY. Measure resistance between valve relay termi- nals. <i>Terminals</i> <i>No. 30 — No. 87a:</i>	Is the measured value more than 1 M Ω ?	Go to step 3 .	Replace valve relay.
3	 CHECK CONTACT POINT OF VALVE RE- LAY. 1) Disconnect battery from valve relay terminals. 2) Measure resistance between valve relay terminals. Terminals. 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 RE- LAY. Measure resistance between valve relay termi- nals. <i>Terminals</i> <i>No. 30 — No. 87a:</i>	Is the measured value less than 0.5 Ω?	Go to step 5.	Replace valve relay.
5	CHECK SHORT OF VALVE RELAY. Measure resistance between valve relay termi- nals. <i>Terminals</i> <i>No. 86 — No. 87:</i> <i>No. 86 — No. 87a</i> :	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. 1) Disconnect connector (F90) from relay box. 2) Measure voltage between relay box connector and chassis ground. Connector & terminal (VDC4) No. 5 (+) — Chassis ground (-): (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. 1) Turn ignition switch to ON. 2) Measure voltage between VDCH/U connector and chassis ground. Connector & terminal (VDC4) No. 5 (+) — Chassis ground (-): (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.

VDC (DIAGNOSTICS)

	Step	Check	Yes	No
8	 CHECK BATTERY SHORT IN CONTROL SYSTEM HARNESS OF VALVE RELAY. 1) Turn ignition switch to OFF. 2) Disconnect connector from VDCCM. 3) Disconnect connector from VDCH/U. 4) Measure voltage between VDCCM connector and chassis ground. Connector & terminal (F87) No. 27 (+) — Chassis ground (-): (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. 1) Turn ignition switch to ON. 2) Measure voltage between VDCCM connector and chassis ground. Connector & terminal (F87) No. 27 (+) — Chassis ground (-): (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. 1) Disconnect connector VDC1 from relay box. 2) Measure voltage between VDCH/U con- nector and chassis ground. <i>Connector & terminal</i> (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. 1) Turn ignition switch to ON. 2) Measure voltage between VDCH/U connector and chassis ground. Connector & terminal (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. 1) Turn ignition switch to OFF. 2) Measure voltage between VDCH/U connector and chassis ground. Connector & terminal (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<br="">VDC-8, VDC Con- trol Module (VDCCM).></ref.>
13	 CHECK BATTERY SHORT OF SOLENOID VALVE. 1) Turn ignition switch to ON. 2) Measure voltage between VDCH/U connector and chassis ground. Connector & terminal (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<br="">VDC-8, VDC Con- trol Module (VDCCM).></ref.>

	Stor	Check	Vee	Ne
	Siep	Uneck	res	
14	 CHECK BATTERY SHORT OF HARNESS. 1) Turn ignition switch to OFF. 2) Measure voltage between VDCCM connector and chassis ground. Connector & terminal (F87) No. 30 (+) — Chassis ground (-): (F87) No. 24 (+) — Chassis ground (-): (F87) No. 23 (+) — Chassis ground (-): (F87) No. 23 (+) — Chassis ground (-): (F87) No. 26 (+) — Chassis ground (-): (F87) No. 25 (+) — Chassis ground (-): (F87) No. 51 (+) — Chassis ground (-): (F87) No. 50 (+) — Chassis ground (-): (F87) No. 4 (+) — Chassis ground (-): (F87) No. 2 (+) — 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. 1) Turn ignition switch to ON. 2) Measure voltage between VDCCM connector and chassis ground. Connector & terminal (F87) No. 30 (+) — Chassis ground (-): (F87) No. 24 (+) — Chassis ground (-): (F87) No. 23 (+) — Chassis ground (-): (F87) No. 26 (+) — Chassis ground (-): (F87) No. 25 (+) — Chassis ground (-): (F87) No. 51 (+) — Chassis ground (-): (F87) No. 50 (+) — Chassis ground (-): (F87) No. 4 (+) — Chassis ground (-): (F87) No. 2 (+) — Chassis ground (-): (F87) No. 50 (+) — Chassis ground (-): (F87) No. 50 (+) — Chassis ground (-): (F87) No. 2 (+) — Chassis ground (-): (F87) No. 2 (+) — Chassis ground (-): (F87) No. 2 (+) — 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. Turn ignition switch to OFF.	Is there poor contact in con- nector between VDCCM and VDCH/U?	Repair connector.	Go to step 17.
17	 CHECK VDCCM. 1) Connect all connectors. 2) Erase the memory. 3) Perform inspection mode. 4) Read out the diagnostic trouble code. 	Is the same diagnostic trouble code as in the current diagno- sis still being output?	Replace VDCCM. <ref. to="" vdc-8,<br="">VDC Control Mod- ule (VDCCM).></ref.>	Go to step 18.
18	CHECK ANY OTHER DIAGNOSTIC TROU- BLE CODES APPEARANCE.	Are other diagnostic trouble codes being output?	Proceed with the diagnosis corre- sponding 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

VDC-196

	Step	Check	Yes	No
1	CHECK CONTACT POINT OF MOTOR RE-	Is the measured value more	Go to step 2.	Replace motor
	LAY.	than 1 MΩ?		relay.
	1) Turn ignition switch to OFF.			
	2) Remove motor relay from relay box.			
	3) Measure resistance between motor relay			
	Terminals.			
	No. 30 — No. 87:			
2	CHECK SHORT OF MOTOR RELAY.	Is the measured value more	Go to step 3.	Replace motor
	Measure resistance between motor relay ter-	than 1 M Ω ?		relay.
	minals.			
	lerminals			
	NO. 85 - NO. 87:			
3	CHECK GROUND SHORT IN CIRCUIT OF	Is the measured value more	Go to step 4	Replace relay box
Ŭ	RELAY BOX.	than 1 M Ω ?		riopidoo rolay box.
	1) Disconnect connector (F90) from relay box.			
	2) Measure resistance between relay box con-			
	nector unit and chassis ground.			
	Connector & terminal			
4		In the management value lage	Co to oton F	Daplace relay hav
4	RELAY BOX	than 1 V2	Go to step 5.	Replace relay box.
	Measure voltage between relay box connector			
	and chassis ground.			
	Connector & terminal			
	(VDC4) No. 6 (+) — Chassis ground (–):			
5	CHECK BATTERY SHORT IN CIRCUIT OF	Is the measured value less	Go to step 6.	Replace relay box.
	RELAY BOX.	than 1 V?		
	 1) Turn ignition switch to ON. 2) Measure voltage between relay box con- 			
	nector and chassis ground.			
	Connector & terminal			
	(VDC4) No. 6 (+) — Chassis ground (–):			
6	CHECK GROUND SHORT IN HARNESS BE-	Is the measured value more	Go to step 7.	Repair harness
	TWEEN RELAY BOX AND VDCCM.	than 1 MΩ?		between VDCCM
	1) Turn ignition switch to OFF.			and relay box.
	 Bisconnect connector from vDCCM. Measure resistance between VDCCM con- 			holder
	nector and chassis ground.			
	Connector & terminal			
	(F87) No. 22 — Chassis ground:			
7	CHECK BATTERY SHORT IN HARNESS BE-	Is the measured value less	Go to step 8.	Repair harness
	TWEEN RELAY BOX AND VDCCM.	than 1 V?		between VDCCM
	and chassis ground			and relay box.
	Connector & terminal			
	(F87) No. 10 (+) — Chassis ground (–):			
8	CHECK BATTERY SHORT IN HARNESS BE-	Is the measured value less	Go to step 9.	Repair harness
	TWEEN RELAY BOX AND VDCCM.	than 1 V?		between VDCCM
	1) Turn ignition switch to ON.			and relay box.
	 vieasure voitage between VDCCM connec- tor and chassis ground 			
	Connector & terminal			
	(F87) No. 10 (+) — Chassis ground (–):			
9	CHECK POOR CONTACT IN CONNECTORS.	Is there poor contact in con-	Repair connector.	Go to step 10.
	Turn ignition switch to OFF.	nector between VDCH/U, relay		
		box and VDCCM?		

VDC (DIAGNOSTICS)

	Step	Check	Yes	No
10	 CHECK VDCCM. 1) Connect all connectors. 2) Erase the memory. 3) Perform inspection mode. 4) Read out the diagnostic trouble code. 	Is the same diagnostic trouble code as in the current diagno- sis still being output?	Replace VDCCM. <ref. to="" vdc-8,<br="">VDC Control Mod- ule (VDCCM).></ref.>	Go to step 11.
11	CHECK ANY OTHER DIAGNOSTIC TROU- BLE CODES APPEARANCE.	Are other diagnostic trouble codes being output?	Proceed with the diagnosis corre- sponding 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

VDC-200

	Step	Check	Yes	No
1 CHECK RESIS 1) Turn ignition 2) Remove mo 3) Measure re terminals. Terminals No. 85 —	TANCE OF MOTOR RELAY. In switch to OFF. otor relay from relay box. sistance between motor relay No. 86:	Is the measured value within 70 to 90 Ω?	Go to step 2.	Replace motor relay.
 2 CHECK CONT LAY. 1) Connect ba No. 85 and 2) Measure re terminals. Terminals No. 30 — 	ACT POINT OF MOTOR RE- ttery to motor relay terminals No. 86. sistance between motor relay No. 87:	Is the measured value less than 0.5 Ω?	Go to step 3.	Replace motor relay.
3 CHECK SHOR Measure resist minals. <i>Terminals</i> <i>No. 85 —</i> <i>No. 85 —</i>	TOF MOTOR RELAY. ance between motor relay ter- <i>No. 30:</i> <i>No. 87:</i>	Is the measured value more than 1 M Ω ?	Go to step 4.	Replace motor relay.
4 CHECK INPUT 1) Disconnect 2) Disconnect 3) Turn ignition 4) Measure von nector and a <i>Connector &</i> (F89) No.	VOLTAGE OF RELAY BOX. connector (F89) from relay box. connector from VDCCM. n switch to ON. litage between relay box con- chassis ground. terminal 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 LAY. 1) Turn ignition 2) Connect co 3) Turn ignition 4) Measure vo chassis gro <i>Connector &</i> (VDC7) No):	NOLTAGE OF MOTOR RE- n switch to OFF. nnector (F89) to relay box. n switch to ON. litage between relay box and und. terminal o. 87 (+) — Chassis ground (–	Is the measured value within 10 to 15 V?	Go to step 6.	Replace relay box.
 6 CHECK OPEN CIRCUIT OF R 1) Turn ignition 2) Disconnect relay box. 3) Measure re- nector unit a tion. Connector & (VDC1) Na 	CIRCUIT IN CONTACT POINT ELAY BOX. In switch to OFF. connectors (VDC2, F90) from sistance between relay box con- and motor relay installing por- terminal p. 1 — (VDC7) No. 30:	Is the measured value less than 0.5 Ω?	Go to step 7.	Replace relay box.
7 CHECK OPEN TEM CIRCUIT Measure resist nector and mot <i>Connector &</i> (VDC4) No	CIRCUIT IN MONITOR SYS- OF RELAY BOX. ance between relay box con- cor relay installing point. terminal b. 6 — (VDC7) No. 30:	Is the measured value less than 0.5 Ω?	Go to step 8.	Replace relay box.

VDC (DIAGNOSTICS)

	Step	Check	Yes	No
8	CHECK OPEN CIRCUIT IN CONTROL CIR- CUIT OF RELAY BOX. Measure resistance between motor relay installing point and relay box connector. Connector & terminal (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 CIR- CUIT OF RELAY BOX. 1) Remove valve relay from relay box. 2) Measure resistance between motor relay installing point and valve relay installing point. Connector & terminal (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. Measure resistance between relay box con- nector and chassis ground. Connector & terminal (VDC4) No. 4 — Chassis ground: (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. Measure voltage between relay box connector and chassis ground. Connector & terminal (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. 1) Turn ignition switch to ON. 2) Measure voltage between relay box connector and chassis ground. Connector & terminal (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 CON- TROL SYSTEM HARNESS. Measure resistance between VDCCM connec- tor and relay box connector. Connector & terminal (F87) No. 22 — (F90) No. 4: (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 BE- TWEEN RELAY BOX AND VDCCM. Measure resistance between VDCCM connec- tor and chassis ground. Connector & terminal (F87) No. 22 — Chassis ground: (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 BE- TWEEN RELAY BOX AND VDCCM. Measure voltage between VDCCM connector and chassis ground. Connector & terminal (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.

	Sten	Check	Voc	No
	Step	Check	ies	NO
16	 CHECK BATTERY SHORT IN HARNESS BE- TWEEN RELAY BOX AND VDCCM. 1) Turn ignition switch to ON. 2) Measure voltage between VDCCM connector and chassis ground. Connector & terminal (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. Turn ignition switch to OFF.	Is there poor contact in con- nector between VDCH/U, relay box and VDCCM?	Repair connector.	Go to step 18.
18	 CHECK VDCCM. Connect all connectors. Erase the memory. Perform inspection mode. Read out the diagnostic trouble code. 	Is the same diagnostic trouble code as in the current diagno- sis still being output?	Replace VDCCM. <ref. to="" vdc-8,<br="">VDC Control Mod- ule (VDCCM).></ref.>	Go to step 19.
19	CHECK ANY OTHER DIAGNOSTIC TROU- BLE CODES APPEARANCE.	Are other diagnostic trouble codes being output?	Proceed with the diagnosis corre- sponding to the diagnostic trouble code.	A temporary poor contact.

VDC (DIAGNOSTICS)

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:



VDC-204

	Step	Check	Yes	No
1	CHECK CONTACT POINT OF MOTOR RE-	Is the measured value less	Go to step 2.	Replace motor
2	 LAY. Turn ignition switch to OFF. Remove motor relay from relay box. Connect battery to motor relay terminals No. 85 and No. 86. Measure resistance between motor relay terminals. Terminals No. 30 - No. 87: CHECK CONTACT POINT OF MOTOR BE- 	than 0.5 Ω?	Go to step 3	relay.
-	 LAY. 1) Disconnect battery from motor relay terminals. 2) Measure resistance between motor relay terminals. <i>Terminals</i> <i>No. 30 - No. 87:</i> 	than 1 MΩ?		relay.
3	 CHECK INPUT VOLTAGE OF RELAY BOX. 1) Disconnect connector (F89) from relay box. 2) Disconnect connector from VDCCM. 3) Turn ignition switch to ON. 4) Measure voltage between relay box connector and chassis ground. Connector & terminal (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 RE-LAY. 1) Turn ignition switch to OFF. 2) Connect connector (F89) to relay box. 3) Turn ignition switch to ON. 4) Measure voltage between relay box and chassis ground. Connector & terminal (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.
7	 CHECK VDCCM MOTOR DRIVE TERMINAL. 1) Turn ignition switch OFF. 2) Remove VDC connector cover. <ref. to<br="">VDC-20, REMOVE, VDCCM Connector Cover.></ref.> 3) Connect all connectors. 4) Install motor relay. 5) Operate the ABS check sequence. <ref. to<br="">VDC-16, ABS Sequence Control.></ref.> 6) Measure voltage between VDCCM connec- tor terminals. Connector & terminal (F87) No. 22 (+) — No. 1 (-): CHECK MOTOR OPERATION. Operate the check sequence. <ref. to="" vdc-<br="">19, VDC Sequence Control.></ref.> 	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 car- rying out the check sequence? Can motor revolution noise (buzz) be heard when carrying out the check sequence?	Go to step 7 . Go to step 8 .	Replace VDCCM. <ref. to="" vdc-8,<br="">VDC Control Mod- ule (VDCCM).> Replace VDCH/U. <ref. to="" vdc-8,<br="">VDC Control Mod-</ref.></ref.>
8	CHECK POOR CONTACT IN CONNECTORS.	Is there poor contact in con-	Repair connector.	ule (VDCCM).> Go to step 9.
	Turn ignition switch to OFF.	nector between VDCH/U, relay box and VDCCM?		

VDC-205

VDC (DIAGNOSTICS)

	Step	Check	Yes	No
9	 CHECK VDCCM. 1) Connect all connectors. 2) Erase the memory. 3) Perform inspection mode. 4) Read out the diagnostic trouble code. 	Is the same diagnostic trouble code as in the current diagno- sis still being output?	Replace VDCCM. <ref. to="" vdc-8,<br="">VDC Control Mod- ule (VDCCM).></ref.>	Go to step 10 .
10	CHECK ANY OTHER DIAGNOSTIC TROU- BLE CODES APPEARANCE.	Are other diagnostic trouble codes being output?	Proceed with the diagnosis corre- sponding 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.



	Step	Check	Yes	No
1	 CHECK THE STEERING WHEEL. 1) Drive the vehicle on a flat road. 2) Stop the vehicle in a straight line. 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 steer- ing wheel.
2	 CHECK VDCCM. 1) Turn ignition switch to OFF. 2) Connect all connectors. 3) Erase the memory. 4) Perform inspection mode. 5) Read out the diagnostic trouble code. 	Is the same diagnostic trouble code as in the current diagno- sis still being output?	Replace VDCCM. <ref. to="" vdc-8,<br="">VDC Control Mod- ule (VDCCM).></ref.>	Go to step 3.
3	CHECK ANY OTHER DIAGNOSTIC TROU- BLE CODES APPEARANCE.	Are other diagnostic trouble codes being output?	Proceed with the diagnosis corre- sponding 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.



	Step	Check	Yes	No
1	 CHECK VDCCM. 1) Turn ignition switch to OFF. 2) Connect all connectors. 3) Erase the memory. 4) Perform inspection mode. 5) Read out the diagnostic trouble code. 	Is the same diagnostic trouble code as in the current diagno- sis still being output?	Replace VDCCM. <ref. to="" vdc-8,<br="">VDC Control Mod- ule (VDCCM).></ref.>	Go to step 2.
2	CHECK ANY OTHER DIAGNOSTIC TROU- BLE CODES APPEARANCE.	Are other diagnostic trouble codes being output?	Proceed with the diagnosis corre- sponding 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.



	Step	Check	Yes	No
1	 CHECK THE STEERING WHEEL. 1) Drive the vehicle on a flat road. 2) Stop the vehicle in a straight line. 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 steer- ing.
2	 CHECK OUTPUT OF STEERING ANGLE SENSOR USING SELECT MONITOR. 1) Select "Current data display & Save" on the select monitor. 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. Check if the vehicle was driven on banked road surfaces or sandy surfaces (not dirt road sur- faces).	Was the vehicle driven on banked road surfaces or sandy surfaces (not dirt road sur- faces)?	Driving on banked road surfaces or sandy surfaces (not dirt road sur- faces) sometimes results in a VDCCM memory trouble code.	Go to step 4.
4	 CHECK VDCCM. 1) Turn ignition switch to OFF. 2) Connect all connectors. 3) Erase the memory. 4) Perform inspection mode. 5) Read out the diagnostic trouble code. 	Is the same diagnostic trouble code as in the current diagno- sis still being output?	Replace VDCCM. <ref. to="" vdc-8,<br="">VDC Control Mod- ule (VDCCM).></ref.>	Go to step 5.
5	CHECK ANY OTHER DIAGNOSTIC TROU- BLE CODES APPEARANCE.	Are other diagnostic trouble codes being output?	Proceed with the diagnosis corre- sponding 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.



	Step	Check	Yes	No
1 (CHECK POWER SUPPLY OF STEERING AN- GLE SENSOR.	Is the measured value within 10 to 15 V?	Go to step 4.	Go to step 2.
1	 Turn ignition switch to OFF. Disconnect connector from steering angle sensor. 			
2	 B) Turn ignition switch to ON. I) Measure voltage between steering angle sensor and chassis ground. 			
	Connector & terminal (B231) No. 4 — Chassis ground:			
2 (1 2 3 2 5 6	 CHECK OUTPUT VOLTAGE OF VDCCM. Turn ignition switch to OFF. Disconnect connector from VDCCM. Remove cover for VDCCM connector. <ref. control.="" sequence="" to="" vdc="" vdc-19,=""></ref.> Connect connector to VDCCM. Turn ignition switch to ON. Measure voltage between VDCCM and chassis ground. Connector & terminal (E87) 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 connec- tor.	Replace VDCCM. <ref. to="" vdc-8,<br="">VDC Control Mod- ule (VDCCM).></ref.>
4 () N a	CHECK GROUND CIRCUIT OF STEERING ANGLE SENSOR. Measure resistance between steering sensor and chassis ground. Connector & terminal (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 (1 2 3	 CHECK HARNESS OF STEERING ANGLE SENSOR. Connect connector to steering angle sensor. Disconnect connector from VDCCM. Measure resistance between VDCCM connector terminals. Connector & terminal (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 (1 2 3 2 5	 CHECK STEERING ANGLE SENSOR.) Turn ignition switch to OFF. 2) Connect all connectors. 3) Erase the memory. 4) Perform inspection mode. 5) Read out the diagnostic trouble code. 	Is the same diagnostic trouble code as in the current diagno- sis still being output?	Go to step 8.	Go to step 7.
7 (E	CHECK ANY OTHER DIAGNOSTIC TROU- BLE CODES APPEARANCE.	Are other diagnostic trouble codes being output?	Proceed with the diagnosis corre- sponding to the diagnostic trouble code.	A temporary poor contact.
8 () 1 2 3 2 5	 CHECK VDCCM. Turn ignition switch to OFF. Replace steering angle sensor. Erase the memory. Perform inspection mode. Read out the diagnostic trouble code. 	Is the same diagnostic trouble code as in the current diagno- sis still being output?	Replace VDCCM. <ref. to="" vdc-8,<br="">VDC Control Mod- ule (VDCCM).></ref.>	Go to step 9 .

	Step	Check	Yes	No
9	CHECK ANY OTHER DIAGNOSTIC TROU-	Are other diagnostic trouble	Proceed with the	The original steer-
	BLE CODES APPEARANCE.	codes being output?	diagnosis corre-	ing angle sensor
			sponding to the	has been faulty.
			diagnostic trouble	
			code.	
MEMO:

VDC (DIAGNOSTICS)

AT:DTC 72 ABNORMAL YAW RATE SENSOR OUTPUT DIAGNOSIS: • Faulty yaw rate sensor TROUBLE SYMPTOM:

• VDC does not operate.

WIRING DIAGRAM:





																(F87)													
Γ	1	2	3		4	5	(6	7	8	3 9) 1	0 1	1	2 1	3 1	4 1	5 1	6 1	7 1	18 1	9 2	20 2	1	22	23	24	25	26	27	28
	$\langle 2$	29	30	31	32	2	33	34	3	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	5	1 5	2 5	3 5	4	55 🗙
Γ	\times	56 5	7 58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82 83		V	V	

VDC00151

Step	Check	Yes	No
1 CHECK RUNNING FIELD.	Was the vehicle driven on banked road surfaces or sandy surfaces (not dirt road sur- faces)?	Driving on banked road surfaces or sandy surfaces (not dirt road sur- faces) sometimes results in a VDCCM memory diagnostic trouble code.	Go to step 2.
2 CHECK INSTALLATION OF YAW RATE AND LATERAL G SENSOR. 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 sen- sor securely.
 3 CHECK OUTPUT OF YAW RATE AND LAT- ERAL G SENSOR USING SELECT MONI- TOR. 1) Drive the vehicle on a flat road. 2) Stop the vehicle in a straight line. 3) Select "Current data display & Save" on the select monitor. 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 sen- sor. <ref. to="" vdc-<br="">22, Yaw Rate and Lateral G Sensor.></ref.>
 CHECK OUTPUT OF STEERING ANGLE SENSOR USING SELECT MONITOR. Drive the vehicle on a flat road. Stop the vehicle in a straight line. Select "Current data display & Save" on the select monitor. 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 steer- ing wheel.
 5 CHECK YAW RATE AND LATERAL G SEN- SOR. 1) Turn ignition switch to OFF. 2) Connect all connectors. 3) Erase the memory. 4) Perform inspection mode. 5) Read out the diagnostic trouble code. 	Is the same diagnostic trouble code as in the current diagno- sis still being output?	Go to step 6 .	Go to step 7.
6 CHECK ANY OTHER DIAGNOSTIC TROU- BLE CODES APPEARANCE.	Are other diagnostic trouble codes being output?	Proceed with the diagnosis corre- sponding to the diagnostic trouble code.	A temporary poor contact.
 7 CHECK VDCCM. 1) Turn ignition switch to OFF. 2) Replace yaw rate and lateral G sensor. 3) Erase the memory. 4) Perform inspection mode. 5) Read out the diagnostic trouble code. 	Is the same diagnostic trouble code as in the current diagno- sis still being output?	Replace VDCCM. <ref. to="" vdc-8,<br="">VDC Control Mod- ule (VDCCM).></ref.>	Go to step 8.
8 CHECK ANY OTHER DIAGNOSTIC TROU- BLE CODES APPEARANCE.	Are other diagnostic trouble codes being output?	Proceed with the diagnosis corre- sponding to the diagnostic trouble code.	The original yaw rate and lateral G sensor has been faulty.

VDC (DIAGNOSTICS)

AU:DTC 72 VOLTAGE INPUTTED TO YAW RATE SENSOR EXCEEDS SPECIFI-CATION. DIAGNOSIS:

Faulty yaw rate sensor *TROUBLE SYMPTOM:*VDC does not operate.
WIRING DIAGRAM:





VDC00151

		1	1	7
	Step	Check	Yes	No
1	 CHECK POWER SUPPLY OF YAW RATE AND LATERAL G SENSOR. 1) Turn ignition switch OFF. 2) Disconnect connector from yaw rate and lateral G sensor. 3) Turn ignition switch to ON. 4) Measure voltage between yaw rate and lat- eral G sensor and chassis ground. <i>Connector & terminal</i> (<i>R100</i>) 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. 1) Turn ignition switch to OFF. 2) Disconnect connector from VDCCM. 3) Remove cover for VDCCM connector. <ref. connector<br="" to="" vdc-20,="" vdccm="">Cover.></ref.> 4) Connect connector to VDCCM. 5) Turn ignition switch to ON. 6) Measure voltage between VDCCM and chassis ground. Connector & terminal (F87) No. 63 — Chassis ground: 	Is the measured value within 10 to 15 V?	Repair harness between yaw rate and lateral G sen- sor and VDCCM.	Go to step 3.
3	CHECK POOR CONTACT IN CONNECTORS.	Is there poor contact in yaw rate and lateral G sensor con- nector?	Repair or replace VDCCM connec- tor.	Replace VDCCM. <ref. to="" vdc-8,<br="">VDC Control Mod- ule (VDCCM).></ref.>
4	 CHECK HARNESS OF YAW RATE AND LATERAL G SENSOR. 1) Turn ignition switch OFF. 2) Disconnect connector from VDCCM. 3) Measure resistance between VDCCM and yaw rate and lateral G sensor. Connector & terminal (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 sen- sor and VDCCM.
5	CHECK GROUND SHORT OF HARNESS. Measure resistance between VDCCM and chassis ground. Connector & terminal (F87) No. 65 — Chassis ground:	Is the measured value more than 1 M Ω ?	Go to step 6 .	Repair harness between yaw rate and lateral G sen- sor and VDCCM.
6	CHECK BATTERY SHORT OF HARNESS. Measure voltage between VDCCM and chas- sis ground. Connector & terminal (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 sen- sor and VDCCM.
7	 CHECK BATTERY SHORT OF HARNESS. 1) Turn ignition switch to ON. 2) Measure voltage between VDCCM and chassis ground. Connector & terminal (F87) No. 65 (+) — Chassis ground (-): 	Is the measured value less than 0.5 V?	Replace yaw rate and lateral G sen- sor. <ref. to="" vdc-<br="">22, Yaw Rate and Lateral G Sensor.></ref.>	Repair harness between yaw rate and lateral G sen- sor and VDCCM.

AV:DTC 72 ABNORMAL YAW RATE SENSOR REFERENCE VOLTAGE DIAGNOSIS: Faulty yaw rate sensor TROUBLE SYMPTOM:

VDC does not operate.

WIRING DIAGRAM:





															(F87)													
ſ	1 2	3	3	4	5	6		7	8	; 9) 1	0 1	1	12 1	13 1	4 1	15 1	16	17 1	18 1	9 2	0 2	1 2	22 2	3 2	24	25	26	27 2	8
	29	30	31	32	3	33	34	3	5	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	${ imes}$
ſ	>>56	7 5	8 59	9 60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80 8	1 82	83	$\langle \rangle$	\geq	\sim	

VDC00151

				*
	Step	Check	Yes	No
1	 CHECK POWER SUPPLY OF YAW RATE AND LATERAL G SENSOR. 1) Turn ignition switch OFF. 2) Disconnect connector from yaw rate and lateral G sensor. 3) Turn ignition switch to ON. 4) Measure voltage between yaw rate and lat- eral G sensor and chassis ground. Connector & terminal (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. 1) Turn ignition switch to OFF. 2) Disconnect connector from VDCCM. 3) Remove cover for VDCCM connector. <ref. connector="" cover.="" remove,="" to="" vdc-20,="" vdccm=""></ref.> 4) Connect connector to VDCCM. 5) Turn ignition switch to ON. 6) Measure voltage between VDCCM and chassis ground. Connector & terminal (F87) No. 63 — Chassis ground: 	Is the measured value within 10 to 15 V?	Repair harness between yaw rate and lateral G sen- sor and VDCCM.	Go to step 3.
3	CHECK POOR CONTACT IN CONNECTORS.	Is there poor contact in yaw rate and lateral G sensor con- nector?	Repair or replace VDCCM connec- tor.	Replace VDCCM. <ref. to="" vdc-8,<br="">VDC Control Mod- ule (VDCCM).></ref.>
4	 CHECK HARNESS OF YAW RATE AND LATERAL G SENSOR. 1) Disconnect connector from VDCCM. 2) Measure resistance between VDCCM and yaw rate and lateral G sensor. Connector & terminal (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 sen- sor and VDCCM.
5	CHECK GROUND SHORT OF HARNESS. Measure resistance between VDCCM and chassis ground. Connector & terminalDoes the measured value exceed the specified value? (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 sen- sor and VDCCM.
6	CHECK BATTERY SHORT OF HARNESS. Measure voltage between VDCCM and chas- sis ground. Connector & terminal (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 sen- sor and VDCCM.
7	 CHECK BATTERY SHORT OF HARNESS. 1) Turn ignition switch to ON. 2) Measure voltage between VDCCM and chassis ground. Connector & terminal (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 sen- sor and VDCCM.

	Step	Check	Yes	No
8	CHECK YAW RATE AND LATERAL G SEN-	Is the measured value within	Replace VDCCM.	Replace yaw rate
	SOR.	2.1 to 2.9 V?	<ref. th="" to="" vdc-8,<=""><th>and lateral G sen-</th></ref.>	and lateral G sen-
	 Turn ignition switch to OFF. 		VDC Control Mod-	sor. <ref. th="" to="" vdc-<=""></ref.>
	2) Install yaw rate and lateral G sensor to		ule (VDCCM).>	22, Yaw Rate and
	body.			Lateral G Sensor.>
	3) Remove VDCCM connector cover. < Ref. to			
	VDC-20, VDCCM Connector Cover.>			
	Connect all connectors.			
	5) Turn ignition switch to ON.			
	6) Measure voltage between VDCCM connec-			
	tor terminals.			
	Connector & terminal			
	(F87) No. 66 (+) — No. 64 (–):			

MEMO:

VDC (DIAGNOSTICS)

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:





																	F 87)													
Г	1	2	3	4		5	6	6	7	8	9) 1	0 1	1	2 1	3	14 1	5 1	6 1	7 1	18 1	9 2	0 2	1 2	22	23	24	25	26	27	28
\square	2	29 3	30	31	32	;	33	34	3	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	5	1 5	2 5	53 5	54	55 🗙
D	\times	56 57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82 83		>	V	\leq

VDC00151

Step	Check	Yes	No
1 CHECK RUNNING FIELD.	Was the vehicle driven on sur- faces with holes or bumps at high speeds?	When driving on surfaces with holes or bumps at high speeds, VDCCM some- times records trou- ble codes in memory.	Go to step 2.
2 CHECK INSTALLATION OF YAW RATE AND LATERAL G SENSOR. 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 sen- sor securely.
 3 CHECK POWER SUPPLY OF YAW RATE AND LATERAL G SENSOR. Turn ignition switch OFF. Disconnect connector from yaw rate and lateral G sensor. Turn ignition switch to ON. Measure voltage between yaw rate and lat eral G sensor and chassis ground. Connector & terminal (R100) No. 3 — Chassis ground: 	Is the measured value within 10 to 15 V?	Go to step 6 .	Go to step 4.
 CHECK OUTPUT VOLTAGE OF VDCCM. Turn ignition switch to OFF. Disconnect connector from VDCCM. Remove cover for VDCCM connector. <ref. connector="" cover.="" remove,="" to="" vdc-20,="" vdccm=""></ref.> Connect connector to VDCCM. Turn ignition switch to ON. Measure voltage between VDCCM and chassis ground. Connector & terminal (F87) No. 63 — Chassis ground: 	Is the measured value within 10 to 15 V?	Repair harness between yaw rate and lateral G sen- sor and VDCCM.	Go to step 5 .
5 CHECK POOR CONTACT IN CONNECTORS	Is there poor contact in yaw rate and lateral G sensor con- nector?	Repair or replace VDCCM connec- tor.	Replace VDCCM. <ref. to="" vdc-8,<br="">VDC Control Mod- ule (VDCCM).></ref.>
6 CHECK GROUND CIRCUIT OF YAW RATE AND LATERAL G SENSOR. Measure resistance between yaw rate and lat- eral G sensor and chassis ground. <i>Connector & terminal</i> (R100) No. 6 — Chassis ground:	Is the measured value less than 0.5 Ω?	Go to step 9 .	Go to step 7.
 CHECK GROUND CIRCUIT OF VDCCM. Disconnect connector from VDCCM. Remove cover from VDCCM connector. <ref. connector<br="" to="" vdc-20,="" vdccm="">Cover.></ref.> Connect connector to VDCCM. Measure resistance between VDCCM and chassis ground. Connector & terminal (F87) No. 64 — Chassis ground: 	Is the measured value less than 0.5 Ω?	Repair harness between yaw rate and lateral G sen- sor and VDCCM.	Go to step 8.
8 CHECK POOR CONTACT IN CONNECTORS	Is there poor contact in VDCCM connector?	Repair or replace VDCCM connec- tor.	Replace VDCCM. <ref. to="" vdc-8,<br="">VDC Control Mod- ule (VDCCM).></ref.>

VDC (DIAGNOSTICS)

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

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 SEN-SOR SIGNAL, Diagnostics Chart with Select Monitor.> VDC (DIAGNOSTICS)

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

	<u>.</u>			
	Step	Check	Yes	NO
1	CHECK INSTALLATION OF YAW RATE AND LATERAL G SENSOR. 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 sen- sor securely.
2	 CHECK OUTPUT OF LATERAL G SENSOR USING SELECT MONITOR. 1) Stop the vehicle on a flat road. 2) Select "Current data display & Save" on the select monitor. 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 sen- sor. <ref. to="" vdc-<br="">22, Yaw Rate and Lateral G Sensor.></ref.>
3	CHECK POOR CONTACT IN CONNECTORS. Turn ignition switch to OFF.	Is there poor contact in con- nector between VDCCM and yaw rate and lateral G sensor?	Repair connector.	Go to step 4.
4	 CHECK VDCCM. 1) Connect all connectors. 2) Erase the memory. 3) Perform inspection mode. 4) Read out the diagnostic trouble code. 	Is the same diagnostic trouble code as in the current diagno- sis still being output?	Replace VDCCM. <ref. to="" vdc-8,<br="">VDC Control Mod- ule (VDCCM).></ref.>	Go to step 5 .
5	CHECK ANY OTHER DIAGNOSTIC TROU- BLE CODES APPEARANCE.	Are other diagnostic trouble codes being output?	Proceed with the diagnosis corre- sponding to the diagnostic trouble code.	A temporary poor contact.

BB:DTC 73 VOLTAGE INPUTTED TO LATERAL G SENSOR EXCEEDS SPECIFI-CATION. DIAGNOSIS:

• Faulty lateral G sensor **TROUBLE SYMPTOM**:

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

WIRING DIAGRAM:





	Step	Check	Yes	No
1	CHECK OUTPUT OF YAW RATE AND LAT-	Is the measured value within	Go to step 2.	Go to step 5.
	ERAL G SENSOR USING SELECT MONI-	2.3 to 2.7 V?		
	TOR.			
	 Stop the vehicle on a flat road. Select "Current data display & Save" on the 			
	select monitor.			
	3) Read yaw rate and lateral G sensor output			
	on the select monitor display.			
2	CHECK POOR CONTACT IN CONNECTORS.	Is there poor contact in con-	Repair connector.	Go to step 3.
	Turn ignition switch to OFF.	nector between VDCCM and		
3		le the same diagnostic trouble		Go to step 1
5	1) Connect all connectors.	code as in the current diagno-	<ref. td="" to="" vdc-8.<=""><td>do to step 4.</td></ref.>	do to step 4.
	2) Erase the memory.	sis still being output?	VDC Control Mod-	
	3) Perform inspection mode.		ule (VDCCM).>	
	4) Read out the diagnostic trouble code.			
4	CHECK ANY OTHER DIAGNOSTIC TROU-	Are other diagnostic trouble	Proceed with the	A temporary poor
	BLE CODES APPEARANCE.	codes being output?	sponding to the	contact.
			diagnostic trouble	
			code.	
5	CHECK INPUT VOLTAGE OF YAW RATE	Is the measured value within	Go to step 6.	Repair harness/
	AND LATERAL G SENSOR.	10 to 15 V?		connector
	1) Turn ignition switch to OFF.			between yaw rate
	a) Disconnect connector from vaw rate and			sor and VDCCM.
	lateral G sensor.			
	4) Turn ignition switch to ON.			
	5) Measure voltage between yaw rate and lat-			
	eral G sensor connector terminals.			
	(R100) No. 3 (+) — No. 6 (–):			
6	CHECK YAW RATE AND LATERAL G SEN-	Is the measured value within	Go to step 7.	Replace yaw rate
	SOR.	4.3 to 4.9 kΩ?		and lateral G sen-
	1) Turn ignition switch to OFF.			sor. <ref. td="" to="" vdc-<=""></ref.>
	2) Measure resistance between yaw rate and lateral G sensor terminals			1 ateral G Sensor >
	Terminals			
	No. 3 — No. 5:			
7	CHECK OPEN CIRCUIT IN YAW RATE AND	Is the measured value within	Go to step 8.	Repair harness/
	LATERAL G SENSOR OUTPUT HARNESS	4.3 to 4.9 kΩ?		connector
	1) Connect connector to yaw rate and lateral			and lateral G sen-
	G sensor.			sor and VDCCM.
	2) Disconnect connector from VDCCM.			
	3) Measure resistance between VDCCM con-			
	nector terminals.			
	(F87) No. 70 — No. 64:			
8	CHECK GROUND SHORT IN YAW RATE	Is the measured value more	Go to step 9.	Repair harness
	AND LATERAL G SENSOR HARNESS.	than 1 MΩ?		between yaw rate
	1) Disconnect connector from yaw rate and			and lateral G sen-
	aleral G sensor.			SOF and VDCCM.
	nector and chassis around.			
	Connector & terminal			
	(F87) No. 63 — Chassis ground:			
	(F87) No. 70 — Chassis ground:			
	(F87) NO. 64 — Chassis ground:			

VDC (DIAGNOSTICS)

	Step	Check	Yes	No
9	 CHECK YAW RATE AND LATERAL G SENSOR. 1) Turn ignition switch to OFF. 2) Remove yaw rate and lateral G sensor from vehicle. 3) Connect connector to yaw rate and lateral G sensor. 4) Connect connector to VDCCM. 5) Turn ignition switch to ON. 6) Measure voltage between yaw rate and lateral G sensor connector terminals. Connector & terminal (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 sen- sor. <ref. to="" vdc-<br="">22, Yaw Rate and Lateral G Sensor.></ref.>
10	CHECK YAW RATE AND LATERAL G SEN- SOR. Measure voltage between yaw rate and lateral G sensor connector terminals. Connector & terminal (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 sen- sor. <ref. to="" vdc-<br="">22, Yaw Rate and Lateral G Sensor.></ref.>
11	CHECK YAW RATE AND LATERAL G SEN- SOR. Measure voltage between yaw rate and lateral G sensor connector terminals. Connector & terminal (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 sen- sor. <ref. to="" vdc-<br="">22, Yaw Rate and Lateral G Sensor.></ref.>
12	CHECK POOR CONTACT IN CONNECTORS.	Is there poor contact in con- nector between VDCCM and yaw rate and lateral G sensor?	Repair connector.	Go to step 13.
13	 CHECK VDCCM. 1) Connect all connectors. 2) Erase the memory. 3) Perform inspection mode. 4) Read out the diagnostic trouble code. 	Is the same diagnostic trouble code as in the current diagno- sis still being output?	Replace VDCCM. <ref. to="" vdc-8,<br="">VDC Control Mod- ule (VDCCM).></ref.>	Go to step 14.
14	CHECK ANY OTHER DIAGNOSTIC TROU- BLE CODES APPEARANCE.	Are other diagnostic trouble codes being output?	Proceed with the diagnosis corre- sponding to the diagnostic trouble code.	A temporary poor contact.

MEMO:

BC:DTC 74 VOLTAGE INPUTTED TO PRESSURE SENSOR 1 EXCEEDS SPECI-FICATION. (PRIMARY PRESSURE SENSOR)

DIAGNOSIS:

• Faulty primary pressure sensor *TROUBLE SYMPTOM:*

ABS does not operate.

VDC does not operate.

WIRING DIAGRAM:



Step	Check	Yes	No
 CHECK GROUND CIRCUIT OF PRESSURE SENSOR. 1) Turn ignition switch to OFF. 2) Disconnect connector (F91) from VDCH/U. 3) Measure resistance between VDCH/U connector and chassis ground. Connector & terminal (F91) No. 15 — Chassis ground: 	Is the measured value less than 0.5 Ω?	Go to step 4.	Go to step 2.
 CHECK GROUND CIRCUIT OF VDCCM. 1) Disconnect connector from VDCCM. 2) Remove cover from VDCCM. <ref. to<br="">VDC-20, VDCCM Connector Cover.></ref.> 3) Connect connector to VDCCM. 4) Measure resistance between VDCCM and chassis ground. Connector & terminal (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 connec- tor.	Replace VDCCM. <ref. to="" vdc-8,<br="">VDC Control Mod- ule (VDCCM).></ref.>
 CHECK POWER SUPPLY OF PRESSURE SENSOR. NOTE: When this inspection is carried out, DTC 51 AB- NORMAL VALVE RELAY is memorized, but this does not indicate valve relay malfunction. 1) Turn ignition switch to ON. 2) Measure voltage between VDCH/U con- nector terminals. Connector & terminal (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. 1) Turn ignition switch to OFF. 2) Disconnect connector from VDCCM. 3) Remove cover from VDCCM. <ref. to<br="">VDC-20, REMOVE, VDCCM Connector Cover.></ref.> 4) Connect connector to VDCCM. 5) Turn ignition switch to ON. 6) Measure voltage between VDCCM connector tor terminals. Connector & terminal (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 connec- tor.	Replace VDCCM. <ref. to="" vdc-8,<br="">VDC Control Mod- ule (VDCCM).></ref.>
 7 CHECK GROUND SHORT OF HARNESS. 1) Turn ignition switch to OFF. 2) Disconnect connector from VDCCM. 3) Measure resistance between VDCH/U connector and chassis ground. Connector & terminal (F91) No. 13 — Chassis ground: 	Is the measured value more than 1 MΩ?	Go to step 8 .	Repair harness between VDCH/U and VDCCM.

VDC (DIAGNOSTICS)

	Step	Check	Yes	No
8	CHECK BATTERY SHORT OF HARNESS. Measure voltage between VDCH/U connector and chassis ground. Connector & terminal (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. 1) Turn ignition switch to ON. 2) Measure voltage between VDCH/U connector and chassis ground. Connector & terminal (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. 1) Turn ignition switch to OFF. 2) Disconnect connector from VDCCM. 3) Remove cover from VDCCM. <ref. to<br="">VDC-20, REMOVE, VDCCM Connector Cover.></ref.> 4) Connect connector to VDCCM. 5) Connect all connectors. 6) Turn ignition switch to ON. 7) Do not depress brake pedal. 8) Measure voltage between VDCCM connec- tor terminals. Connector & terminal (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,<br="">VDC Control Mod- ule (VDCCM).></ref.>
11	CHECK POOR CONTACT IN CONNECTORS.	Is there poor contact in con- nector between VDCCM and pressure sensor?	Repair connector.	Go to step 12.
12	 CHECK VDCCM. 1) Connect all connectors. 2) Erase the memory. 3) Perform inspection mode. 4) Read out the diagnostic trouble code. 	Is the same diagnostic trouble code as in the current diagno- sis still being output?	Replace VDCCM. <ref. to="" vdc-8,<br="">VDC Control Mod- ule (VDCCM).></ref.>	Go to step 13.
13	CHECK ANY OTHER DIAGNOSTIC TROU- BLE CODES APPEARANCE.	Are other diagnostic trouble codes being output?	Proceed with the diagnosis corre- sponding to the diagnostic trouble code.	A temporary poor contact.

MEMO:

BD:DTC 74 VOLTAGE INPUTTED TO PRESSURE SENSOR 2 EXCEEDS SPECI-FICATION. (SECONDARY PRESSURE SENSOR)

DIAGNOSIS:

• Faulty secondary pressure sensor *TROUBLE SYMPTOM:*

ABS does not operate.

VDC does not operate.

• VDC does not opena WIRING DIAGRAM:



Step		Check	Yes	No	
1	CHECK GROUND CIRCUIT OF PRESSURE	Is the measured value less	Go to step 4.	Go to step 2.	
-	SENSOR.	than 0.5 Ω ?			
	1) Turn ignition switch to OFF.				
	2) Disconnect connector (F91) from VDCH/U.				
	3) Measure resistance between VDCH/U con-				
	nector and chassis ground.				
	Connector & terminal				
	(F91) No. 15 — Chassis ground:				
2	CHECK GROUND CIRCUIT OF VDCCM.	Is the measured value less	Replace harness	Go to step 3.	
	 Disconnect connector from VDCCM. Remove cover from VDCCM. 	man 0.5 12?			
	VDC-20 BEMOVE VDCCM Connector				
	Cover.>				
	3) Connect connector to VDCCM.				
	4) Measure resistance between VDCCM and				
	chassis ground.				
	Connector & terminal				
	(F87) No. 76 — Chassis ground:				
3	CHECK POOR CONTACT IN CONNECTORS.	Is there poor contact in	Repair or replace	Replace VDCCM.	
		VDCCM connector?	VDCCM connec-	<ref. td="" to="" vdc-8,<=""></ref.>	
			lor.		
4		le the measured value within	Go to stop 7	Ge te step 5	
7	SENSOR	4 75 to 5 25 V?		do to step J .	
	NOTE	1.70 10 0.20 V			
	When this inspection is carried out, DTC 51 AB-				
	NORMAL VALVE RELAY is memorized, but				
	this does not indicate valve relay malfunction.				
	1) Turn ignition switch to ON.				
	Measure voltage between VDCH/U con-				
	nector terminals.				
	Connector & terminal				
5	(F91) NO. 16 (+) — NO. 15 (-):	In the management value within	Densir harness	Co to stan 6	
5	1) Turn ignition switch to OEE	4 75 to 5 25 V2	hetween VDCH/U	Go to step 6.	
	2) Disconnect connector from VDCCM	4.75 10 5.25 V?	and VDCCM		
	3) Remove cover from VDCCM. <ref. td="" to<=""><td></td><td></td><td></td></ref.>				
	VDC-20, VDCCM Connector Cover.>				
	Connect connector to VDCCM.				
	5) Turn ignition switch to ON.				
	6) Measure voltage between VDCCM connec-				
	tor terminals.				
	Connector & terminal $(E87) No. 78 (+) - No. 76 (-)$				
6		Is there noor contact in	Benair or replace		
ľ	CHECKI CONCONTACT IN CONNECTORS.	VDCCM connector?	VDCCM connec-	<ref. td="" to="" vdc-8.<=""></ref.>	
			tor.	VDC Control Mod-	
				ule (VDCCM).>	
7	CHECK GROUND SHORT OF HARNESS.	Is the measured value more	Go to step 8.	Repair harness	
	1) Turn ignition switch to OFF.	than 1 MΩ?		between VDCH/U	
	2) Disconnect connector from VDCCM.			and VDCCM.	
	3) Measure resistance between VDCH/U con-				
	nector and chassis ground.				
	(F91) No 14 - Chassis around				
1		1	1		

VDC (DIAGNOSTICS)

	Step	Check	Yes	No
8	CHECK BATTERY SHORT OF HARNESS. Measure voltage between VDCH/U connector and chassis ground. Connector & terminal (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. 1) Turn ignition switch to ON. 2) Measure voltage between VDCH/U connector and chassis ground. Connector & terminal (F91) No. 13 (+) — Chassis ground (-): (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. 1) Turn ignition switch to OFF. 2) Disconnect connector from VDCCM. 3) Remove cover from VDCCM. <ref. to<br="">VDC-20, REMOVE, VDCCM Connector Cover.></ref.> 4) Connect connector to VDCCM. 5) Connect all connectors. 6) Turn ignition switch to ON. 7) Do not depress brake pedal. 8) Measure voltage between VDCCM connec- tor terminals. Connector & terminal (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,<br="">VDC Control Mod- ule (VDCCM).></ref.>
11	CHECK POOR CONTACT IN CONNECTORS.	Is there poor contact in con- nector between VDCCM and pressure sensor?	Repair connector.	Go to step 12.
12	 CHECK VDCCM. 1) Connect all connectors. 2) Erase the memory. 3) Perform inspection mode. 4) Read out the diagnostic trouble code. 	Is the same diagnostic trouble code as in the current diagno- sis still being output?	Replace VDCCM. <ref. to="" vdc-8,<br="">VDC Control Mod- ule (VDCCM).></ref.>	Go to step 13.
13	CHECK ANY OTHER DIAGNOSTIC TROU- BLE CODES APPEARANCE.	Are other diagnostic trouble codes being output?	Proceed with the diagnosis corre- sponding 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 PRES-SURE 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. Check the driver's technic.	Are the accelerator and brake pedals depressed simulta- neously while driving?	The VDC is nor- mal. Erase the diagnostic trouble code. NOTE: Driving the vehicle with both the ac- celerator 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. 1) Select "Current data display & Save" on the select monitor. 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,<br="">VDC Control Mod- ule (VDCCM).></ref.>
3	 CHECK VDCCM. 1) Connect all connectors. 2) Erase the memory. 3) Perform inspection mode. 4) Read out the diagnostic trouble code. 	Is the same diagnostic trouble code as in the current diagno- sis still being output?	Replace VDCCM. <ref. to="" vdc-8,<br="">VDC Control Mod- ule (VDCCM).></ref.>	Go to step 4.
4	CHECK ANY OTHER DIAGNOSTIC TROU- BLE CODES APPEARANCE.	Are other diagnostic trouble codes being output?	Proceed with the diagnosis corre- sponding 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. 1) Turn ignition switch to OFF. 2) Disconnect connector from VDCCM. 3) Disconnect connector (F91) from VDCH/U. 4) Measure resistance between VDCH/U connector and chassis ground. Connector & terminal 	Is the measured value more than 1 MΩ?	Go to step 2.	Repair harness between VDCH/U and VDCCM.
	(F91) No. 13 — Chassis ground: (F91) No. 14 — Chassis ground:			
2	CHECK BATTERY SHORT OF HARNESS. Measure voltage between VDCH/U connector and chassis ground. Connector & terminal (F91) No. 13 (+) — Chassis ground (–): (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. 1) Turn ignition switch to ON. 2) Measure voltage between VDCH/U connector and chassis ground. Connector & terminal (F91) No. 13 (+) — Chassis ground (-): (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. 1) Turn ignition switch to OFF. 2) Disconnect connector from VDCCM. 3) Remove cover from VDCCM. <ref. to<br="">VDC-20, REMOVE, VDCCM Connector Cover.></ref.> 4) Connect connector to VDCCM. 5) Connect all connectors. 6) Turn ignition switch to ON. 7) Do not depress brake pedal. 8) Measure voltage between VDCCM connector tor terminals. Connector & terminal (F87) No. 77 (+) — No. 76 (-): (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,<br="">VDC Control Mod- ule (VDCCM).></ref.>
5	CHECK BRAKE FLUID LEAKAGE. 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. Inspect brake master cylinder hydraulic pres- sure. <ref. br-29,="" check<br="" operation="" to="">(WITH GAUGES), INSPECTION, Brake Booster.></ref.>	Is hydraulic pressure normal?	Go to step 7.	Replace master cylinder.
7	CHECK BRAKE PEDAL STROKE. 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 sys- tem.
8	 CHECK INPUT VOLTAGE OF PRESSURE SENSOR. 1) Depress the brake pedal with 50 kg (110 lb). 2) Measure voltage between VDCCM connector terminals. Connector & terminal A (F87) No. 77 (+) — No. 76 (-): 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,<br="">VDC Control Mod- ule (VDCCM).></ref.>

VDC (DIAGNOSTICS)

	Step	Check	Yes	No
9	CHECK POOR CONTACT IN CONNECTORS.	Is there poor contact in con- nector between VDCCM and pressure sensor?	Repair connector.	Go to step 10.
10	 CHECK VDCCM. 1) Connect all connectors. 2) Erase the memory. 3) Perform inspection mode. 4) Read out the diagnostic trouble code. 	Is the same diagnostic trouble code as in the current diagno- sis still being output?	Replace VDCCM. <ref. to="" vdc-8,<br="">VDC Control Mod- ule (VDCCM).></ref.>	Go to step 11.
11	CHECK ANY OTHER DIAGNOSTIC TROU- BLE CODES APPEARANCE.	Are other diagnostic trouble codes being output?	Proceed with the diagnosis corre- sponding 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 VDCCM Brake pads Air in brake line Tire specifications, wear and pressures Incorrect wiring or piping	Faulty ABS sensor or sensor gap Faulty steering angle sensor or improper neutral position Faulty yaw rate and lateral G sensor or improper installation Proportioning valve Master cylinder Brake caliper Disc rotor Brake pipe Brake booster
	Wheel locks	VDCH/U VDCCM Faulty ABS sensor or sensor gap Incorrect wiring or piping	Faulty steering angle sensor or improper neutral position Faulty yaw rate and lateral G sensor or improper installation Proportioning valve Brake caliper Brake pipe
	Brake dragging	VDCH/U VDCCM Faulty ABS sensor or sensor gap Master cylinder Brake caliper Parking brake Axle & wheels Brake pedal play	Faulty steering angle sensor or improper neutral position Faulty yaw rate and lateral G sensor or improper installation Brake pads Brake pipe
	Long brake pedal stroke	Air in brake line Brake pedal play	VDCH/U Proportioning valve Master cylinder Brake caliper Brake pads Brake pipe Brake booster
	Vehicle pitching	VDCH/U VDCCM Uneven road Suspension play or fatigue (reduced damping) Incorrect wiring or piping	Faulty ABS sensor or sensor gap Faulty steering angle sensor or improper neutral position Faulty yaw rate and lateral G sensor or improper installation
	Unstable or uneven braking	VDCH/U VDCCM Faulty ABS sensor or sensor gap Brake caliper Brake pads Uneven road Tire specifications, wear and pressures Incorrect wiring or piping	Faulty ABS sensor or sensor gap Faulty steering angle sensor or improper neutral position Faulty yaw rate and lateral G sensor or improper installation Master cylinder Disc rotor Brake pipe Axle & wheels Crowned road or banked road Suspension play or fatigue (reduced damping)

VDC (DIAGNOSTICS)

GENERAL DIAGNOSTIC TABLE

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

GENERAL DIAGNOSTIC TABLE

VDC (DIAGNOSTICS)

Sym	ptom	Primary probable cause	Secondary probable cause
Poor TCS's	Deviation in	VDCH/U	Proportioning valve
directional	either left or	VDCCM	Disc rotor
operation stabil-	right direction	Faulty ABS sensor or sensor gap	Brake pipe
ity		Faulty steering angle sensor or improper	Axle & wheels
		neutral position	Suspension play or fatigue (reduced damping)
		Faulty yaw rate and lateral G sensor or	
		Improper installation	
		Brake caliper	
		Wheel alignment	
		Uneven road	
		Crowned road or banked road	
		Tire specifications, wear and pressures	
		Incorrect wiring or piping	
	Vehicle spin	VDCH/U	Proportioning valve
		VDCCM	Brake caliper
		Faulty ABS sensor or sensor gap	Brake pipe
		Faulty steering angle sensor or improper	
		neutral position	
		Faulty yaw rate and lateral G sensor or	
		improper installation	
		Brake pads	
		Incorrect wiring or piping	
Steering wheel d	rage during oper-		Brake caliper
ation	rags during oper-	VDCCM	Brake nads
allon.		Faulty ABS sensor or sensor gap	Disc rotor
		Faulty steering angle sensor or improper	Wheel alignment
		neutral position	Uneven road
		Faulty yaw rate and lateral G sensor or	Crowned road or banked road
		improper installation	Suspension play or fatigue (reduced damping)
		Incorrect wiring or piping connections	Tire specifications, wear and pressures
		Power steering system	
VDC activates du	uring ordinary	VDCH/U	
driving.			
		Faulty ABS sensor or sensor gap	
		neutral position	
		Faulty yaw rate and lateral G sensor or	
		improper installation	
		Wheel alignment	
		Uneven road	
		Crowned road or banked road	
		Suspension play or fatigue (reduced	
		damping)	
		Tire specifications, wear and pressures	
		Incorrect wiring or piping	
		Power steering system	
VDC OFF Indicat	for light does not	Harness	
is pushed	DC OFF Switch		
IS PUSNEO.			
When pushing the VDC OFF			
switch for 10 s	econds or more		
while revving the engine, the VDC			
OFF indicator lig	ght goes off and		
operations cann	ot be continued.		
Turn ignition sw	itch from OFF to		
ON again to reco	over the previous		
condition.			

MEMO: