■ Purpose/overview of guidance

This "guidance" describes the attitude and basic knowledge that you should know in advance of any maintenance.
The purpose of this guidance is to improve the maintenance quality and the customers' satisfaction by understanding the attitude and basic knowledge as a mechanic.

■ Before working

1. The vehicle you are doing the maintenance/repair on is the customers property.

Every vehicle you work on is a customer's beloved car. You may forget such a matter when you handle many vehicles in your daily work.
Reliable and accurate work after understanding the intentions of the customer's complaints will eliminate the customer's "worries" and provide them "reassurance".
You should always be aware of the fact that you are entrusted with the repair/maintenance of the customer's beloved car.

2. Differences and ways of thinking between maintenance and repair

Maintenance・・・ Replace consumables, remove factors that may cause deterioration of vehicle performance or inconvenience in function, and maintain/recover of performance/function
Repair・・・・・・・・ Restore/replace the broken parts and recover the function of the vehicle

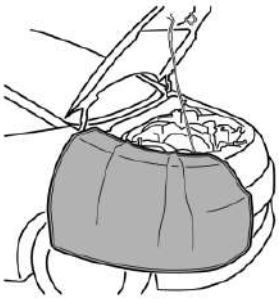
Understand the meaning of each work, check the interview sheet, think about what procedures are necessary for the vehicle, what service the customer wants, and try to do the work properly.

3. Treat the customer's vehicle with great care

It is important to take preventive actions by using steering wheel covers, seat covers, floor papers, fender covers, etc. to protect the customer's vehicle from scratches and dirt.

● **Steering wheel cover, Seat cover, Floor paper**

● **Fender cover**



■ When working

1. Good work comes with safety, certainty and practicality

Safety is a top priority in all operations. A major disaster may lead to problems related to the company's credibility. If each technician works reasonably, and does the method described in the service manual, he/she will be able to work safely, quickly, and efficiently. You can check the standard operation time in the parts catalog.

2. Organize/order

Organize: Divide things into necessary and unnecessary items and dispose the unnecessary items.
Order: Arrange what you need so that anyone can carry out the task any time.

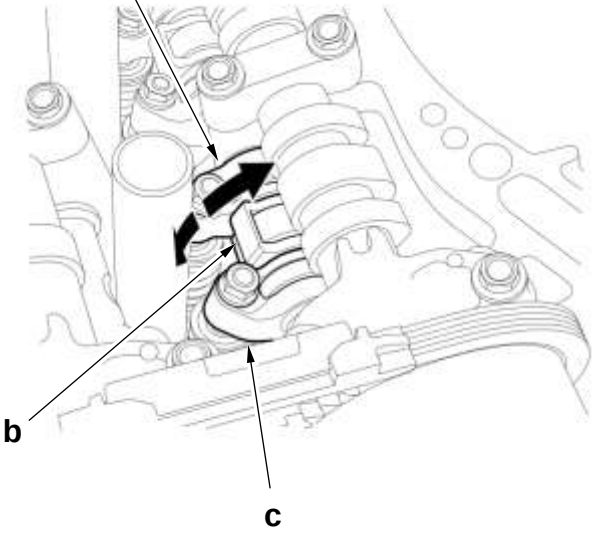
It is important to organize first, then order. Organizing and ordering are effective not only in preventing disasters but also in improving work efficiency.

3. Examples of wearing proper protective equipment (dust mask, protective glasses, safety shoes, etc.)

Proper protective equipment should be worn to ensure safety while doing each task or when using specific tools.
The following are examples:

Protective equipment for basic work ・・・uniform, work cap, safety shoes

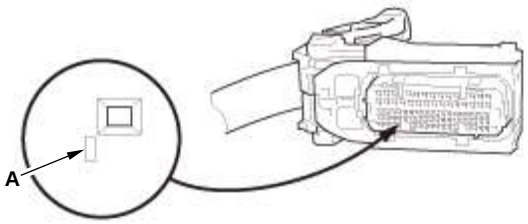
Impact wrench ・・・Protective glasses, earplugs



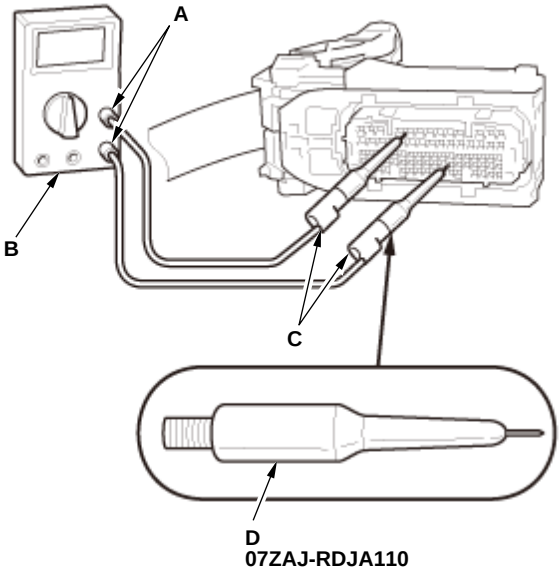
■ Result

- If it is abnormal, check that the pistons in the rocker arms move smoothly. If any rocker arm needs replacing, **replace the rocker arm assembly**.

3. When diagnosis/troubleshooting is done at the PCM connectors, use the terminal test port (A) above the terminal you need to check.



4. Connect one side of the patch cord terminals (A) to a commercially available digital multimeter (B), and connect the other side of the terminal (C) to the pin probe male (07ZAJ-RDJA110) (D).



5. Gently contact the pin probe (male) at the terminal test port from the terminal side. Do not force the tips into the terminals.

NOTICE

- For accurate results, always use the pin probe (male).
- To prevent damage to the connector terminals, do not insert test equipment probes, paper clips, or other substitutes as they can damage the terminals. Damaged terminals cause a poor connection and an incorrect measurement.
- Do not puncture the insulation on a wire. Punctures can cause or eventually lead to poor or intermittent electrical connections.

OBD Status

The OBD status shows the current system status of each DTC and all of the parameters. This function is used to see if the repair was successfully completed. The results of diagnostic tests for the DTC are displayed as:

- PASSED: The on-board diagnosis is successfully finished.
- FAILED: The on-board diagnosis has finished but failed.
- EXECUTING: The vehicle is in enable criteria conditions of the DTC, and the on board diagnosis is running.
- NOT COMPLETED: The on-board diagnosis was running but is out of the enable conditions of the DTC.
- OUT OF CONDITION: The vehicle has stayed out of the enable conditions of the DTC.

Probable cause(s)

- Low transmission fluid (HCF-2) level
- Transmission fluid (HCF-2) deteriorated
- Transmission fluid strainer or CVTF warmer strainer clogged
- Transmission fluid pump worn, binding, or foreign material in transmission fluid pump
- Valve body assembly defective
- Joint pipes defective

Inspection items

Check the transmission fluid (HCF-2) level.

[How to use this manual](#).

NOTE:

- Unless otherwise indicated, illustrations used in the procedure are for RHD model.
- The LaneWatch camera switch is a part of the combination light switch, and it cannot be replaced by itself.

1. LaneWatch Camera Switch - Test

■ Preconditions

- [Combination Light Switch Removed](#)

■ Procedure/Specifications

- Check the LaneWatch camera switch (a) according to the table. (Figure 1 and 2)

Figure 1

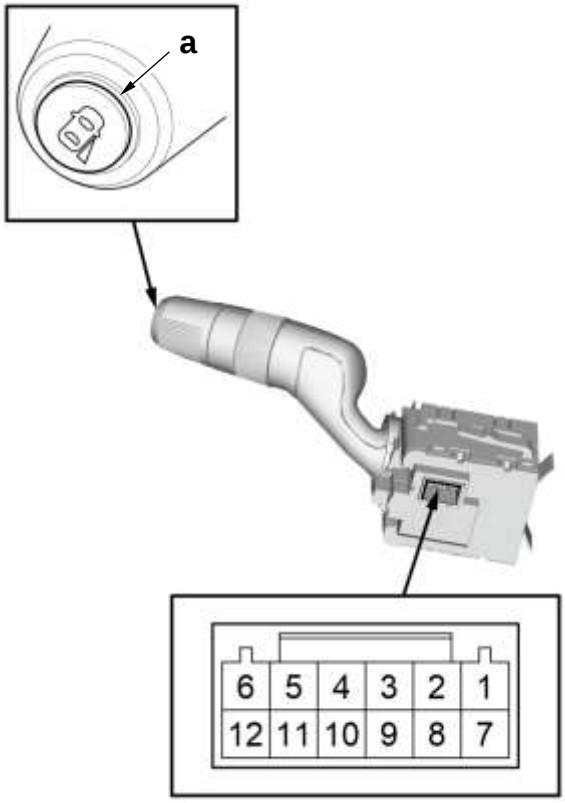


Figure 2

Connector:① (male terminal) / Position	4		12
Pressed and held	○	—	○

Outside air temperature indicator does not change

How to use this manual.

NOTICE

Before you troubleshoot, review the How to Troubleshoot.

NOTE:

- Before troubleshooting, check the B-CAN DTCs. If any DTC is indicated, troubleshoot the indicated DTC first.
- Outside air temperature is indicated based on the measurement value of the outside air temperature sensor located behind the center of the front bumper. Because of the location of the sensor, it may be affected by heat reflection from the road, engine and radiator heat, or hot exhaust from surrounding traffic. To display the outside air temperature, the gauge control module has an indication mode based on engine coolant temperature and vehicle speed. Some modes do not raise the temperature indication, so the outside air temperature indication may not change when the mode continues.

Outside Air Temperature Indication Mode			
Indication Mode	**Indication Temperature Increase**	**Indication Temperature Decrease**	**Notes**
Initial Indication	——	——	• If the current outside air temperature is higher than the indicated outside air temperature since the last time the vehicle was turned OFF (LOCK) mode, and the engine coolant temperature is higher than 140 °F (60 °C): The last outside air temperature that was indicated before the vehicle OFF (LOCK) mode is displayed. • If the current outside air temperature is higher than the indicated outside air temperature since the last time the vehicle was turned OFF (LOCK) mode, and the engine coolant temperature is less than 140 °F (60 °C): The current temperature measured by the outside air temperature sensor is indicated. • If the current outside air temperature is lower than the indicated outside air temperature since the last time the vehicle was turned OFF (LOCK) mode: The current temperature measured by the outside air temperature sensor is indicated.
Garage Mode	Increases 1 °F every 1 second (or 1 °C every 2 seconds) to the current outside air temperature.	Decreases 1 °F every 1 second (or 1 °C every 2 seconds) to the current outside air temperature.	If the engine coolant temperature is less than 140 °F (60 °C) when the vehicle is ON mode, the mode shifts to the garage mode.
Traffic Jam Mode	——	If the outside air temperature is less than the indicated temperature, the temperature decreases by 1 °F per 1 second (or 1 °C per 2 seconds).	If the engine coolant temperature is 140 °F (60 °C) or more, the mode shifts to the traffic jam mode. NOTE: Once entering to the traffic jam mode, the mode does not shift to garage mode, even after the engine coolant temperature is below 140 °F (60 °C) or the vehicle speed is below 1.2 mph (2 km/h).
Stable Run Mode	Increases 1 °F every 17 seconds (or 1 °C every 30 seconds) to the current outside air temperature.	Decreases 1 °F every 1 second (or 1 °C every 2 seconds) to the current outside air temperature.	If the vehicle speed is at 19 mph (30 km/h) for more than 58 seconds, the mode shifts to stable run mode.

■ Inspection Outline

- Troubleshoot any DTCs listed or indicated systems below first.
  - HVAC [AC]: DTC B1227, B1228

Inspection items	Work Items
Outside Air Temperature Sensor	Do the Outside Air Temperature Sensor Test

■ Related information

- Component Location Index
  - Outside Air Temperature Sensor

- Circuit Diagram
- Gauge Control Module Connector for Inputs and Outputs

DTC B18DB: Left Side BSI Radar Unit Received The Audio/Navigation Unit Failure Information

How to use this manual.

NOTICE

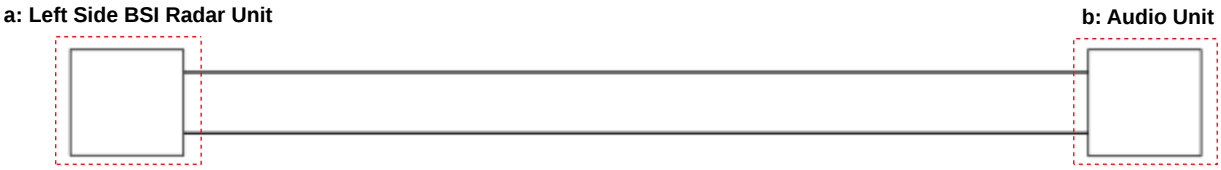
Before you troubleshoot, review the How to Troubleshoot.

■ Overview

- If the left side BSI radar unit receives a malfunction information of the audio/navigation unit, the left side BSI radar unit determines an abnormality and stores the DTC.

■ Inspection Outline

- The components to be tested are indicated by a dotted line.



Inspection Items		Work Items
a	Left Side BSI Radar Unit	Left Side BSI Radar Unit Circuit Connector and Terminal Inspection
		Left Side BSI Radar Unit Inspection
b	Audio and Visual System	Go to the Audio and Visual System Troubleshooting

■ Confirmation Procedure

1. Turn the vehicle to the ON mode, then wait for at least 5 seconds.

■ Related Information

- Component Location Index
  - Left Side BSI Radar Unit

- Circuit Diagram
- BSI Radar Unit Connector for Inputs and Outputs

■ HDS Function

DTC (BSI) | Clear DTC (BSI)

DTC P0096: IAT Sensor 2 Circuit Range/Performance Problem

How to use this manual.

NOTICE

Before you troubleshoot, review the How to Troubleshoot.

■ Overview

- If the intake air temperature is higher than a specified value, the PCM determines an abnormality and stores the DTC.

■ Inspection Outline

Inspection Items	Work Items
Connectors	Connector Visual Inspection
IAT Sensor 2	IAT Sensor 2 Inspection (Low Temperature)
	IAT Sensor 2 Inspection (High Temperature)

■ Confirmation Procedure

1. Turn the vehicle to the ON mode.

■ Related Information

- Component Location Index
  - IAT Sensor 2

- Circuit Diagram
- PCM Connector for Inputs and Outputs
- Advanced Diagnostic

■ HDS Function

DTC (PGM-FI) | Clear DTC (PGM-FI)

PGM-FI > Data List

Signal	Current conditions (Values)	Current conditions (Unit)
IAT Sensor (2)		

DTC P0617: Starter Cut Relay Diagnosis Circuit High Voltage

How to use this manual.

NOTICE

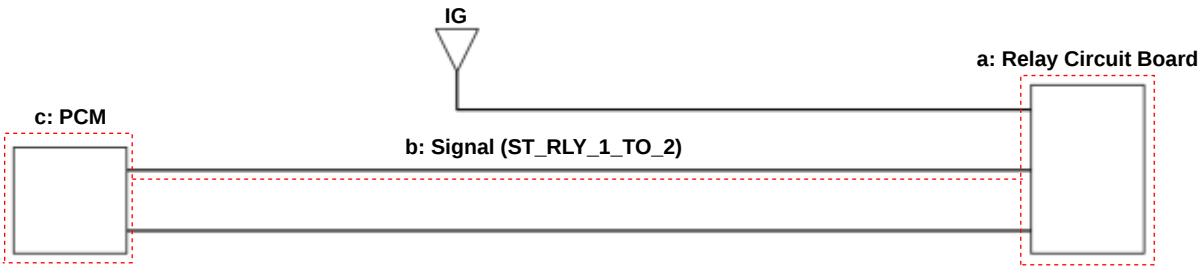
Before you troubleshoot, review the How to Troubleshoot.

■ Overview

- If the starter cut relay diagnosis line input voltage is higher than a specified value when the starter is OFF, the PCM determines an abnormality and stores the DTC.

■ Inspection Outline

- The components to be tested are indicated by a dotted line.



Inspection Items		Work Items
a	Relay Circuit Board	Do the Relay Circuit Board Test (Starter Cut Relay 1 Circuit)
b	External Circuit	ST_RLY_1_TO_2 Shorted Wire Inspection
c	PCM	PCM Inspection

■ Confirmation Procedure

1. Turn the vehicle to the ON mode.

2. If the HDS [Starter Cut Relay] value is more than 3.2 V, the failure is duplicated.

■ Related Information

- Component Location Index
  - Relay Circuit Board (includes Starter Cut Relay 1 Circuit)
  - PCM

- Circuit Diagram
- PCM Connector for Inputs and Outputs
- Advanced Diagnostic

■ HDS Function

DTC (PGM-FI) | Clear DTC (PGM-FI)

SCS Short | SCS Open

PGM-FI > Data List

Signal	Current conditions (Values)	Current conditions (Unit)
Starter Cut Relay		

DTC	Detection Item	Troubleshooting	Advanced Diagnostics	Note
P04F1	Evaporative Emission (EVAP) System Low Purge Flow Detected	TRS	AD	
P0500	Vehicle Speed Sensor A No Signal	TRS	AD	
P0506	Idle Control System RPM Lower Than Expected	TRS	AD	
P0507	Idle Control System RPM Higher Than Expected	TRS	AD	
P050A	Cold Start Idle Air Control System Performance Problem	TRS	AD	
P050D	Cold Start Ignition Timing Control System Performance Problem	TRS	AD	
P0522	Engine Oil Pressure Sensor Circuit Low Voltage	TRS	AD	
P0523	Engine Oil Pressure Sensor Circuit High Voltage	TRS	AD	
P0532	A/C Pressure Sensor Circuit Low Voltage	TRS	AD	
P0533	A/C Pressure Sensor Circuit High Voltage	TRS	AD	
P0560	Powertrain Control Module (PCM) Power Source Circuit Unexpected Voltage	TRS	AD	
P0562	Charging System Low Voltage	TRS	AD	
P0571	Brake Pedal Position Switch Circuit Malfunction	TRS	AD	
P0606	Powertrain Control Module (PCM) Processor Malfunction	TRS	AD	
P0607	Powertrain Control Module (PCM) Internal Circuit Malfunction	TRS	AD	
P060C	Powertrain Control Module (PCM) Internal Control Module Malfunction	TRS	AD	
P060D	Powertrain Control Module (PCM) Internal Control Module Malfunction	TRS	AD	
P0615	Starter Cut Relay Diagnosis Circuit Malfunction	TRS	AD	
P0616	Starter Cut Relay Diagnosis Circuit Low Voltage	TRS	AD	
P0617	Starter Cut Relay Diagnosis Circuit High Voltage	TRS	AD	
P0630	VIN Not Programmed or Mismatch	TRS	AD	
P0641	Sensor Reference Voltage A Malfunction	TRS	AD	
P065A	ACG No Charging Malfunction	TRS	AD	
P0685	Air Fuel Ratio (A/F) Sensor (Sensor 1) Heater Power Source Circuit Open	TRS	AD	
P0686	Air Fuel Ratio (A/F) Sensor (Sensor 1) Heater Power Source Circuit Short to Ground	TRS	AD	
P0687	Air Fuel Ratio (A/F) Sensor (Sensor 1) Heater Power Source Circuit Short to Power	TRS	AD	
P068A	Powertrain Control Module (PCM) Power Source Circuit Unexpected Voltage	TRS	AD	
P068B	Powertrain Control Module (PCM) Power Source Circuit Unexpected Voltage	TRS	AD	
P0703	Brake Pedal Position Switch (NC) Malfunction	TRS	AD	
P0715	Input Shaft (Mainshaft) Speed Sensor Circuit Malfunction	TRS	AD	
P0720	Output Shaft (Countershaft) Speed Sensor Circuit Malfunction	TRS	AD	
P0721	Output Shaft (Countershaft) Speed Sensor Out of Range	TRS	AD	
P0831	Clutch Pedal Position Switch A Circuit High Voltage	TRS	AD	
P0850	Neutral Position Sensor A/B Incorrect Voltage Correlation	TRS	AD	
P0851	Neutral Position Sensor A Circuit Low Voltage	TRS	AD	
P0852	Neutral Position Sensor A Circuit High Voltage	TRS	AD	
P08A8	Clutch Pedal Position Sensor A Circuit Range/Performance	TRS	AD	
P08A9	Clutch Pedal Position Sensor A Circuit Low	TRS	AD	
P08AA	Clutch Pedal Position Sensor A Circuit High	TRS	AD	
P08B5	Clutch Pedal Position Sensor B Circuit Range/Performance	TRS	AD	
P08B6	Clutch Pedal Position Sensor B Circuit Low	TRS	AD	
P08B7	Clutch Pedal Position Sensor B Circuit High	TRS	AD	
P08B9	Clutch Pedal Position Sensor A/B Correlation	TRS	AD	
P134B	Crankshaft Signal Diagnose	TRS	AD	
P1549	Charging System High Voltage	TRS	AD	
P154A	Battery Sensor Internal Failure	TRS	AD	
P1683	Throttle Valve Default Position Spring Performance Problem	TRS	AD	
P1684	Throttle Valve Return Spring Performance Problem	TRS	AD	
P16BB	Alternator B Terminal Circuit Low Voltage	TRS	AD	
P16E2	PGM-FI-ACG LIN Communication Error	TRS	AD	
P16E3	PGM-FI-Battery Sensor LIN Communication Error	TRS	AD	
P16E4	ACG High-temperature	TRS	AD	
P16EB	LIN Communication Error (Powertrain Control Module (PCM)-Active Exhaust)	TRS	AD	
P16F3	Starter Cut Relay 1 Control Circuit Low Voltage	TRS	AD	
P16F4	Starter Cut Relay 2 Control Circuit Low Voltage	TRS	AD	
P16F5	Starter Cut Relay 1 Control Circuit High Voltage	TRS	AD	
P16F6	Starter Cut Relay 2 Control Circuit High Voltage	TRS	AD	
P1701	Back-Up Light Switch Malfunction	TRS	AD	
P1707	Neutral Position Sensor B Circuit Low Voltage	TRS	AD	
P1708	Neutral Position Sensor B Circuit High Voltage	TRS	AD	
P2096	Post Catalyst Fuel Trim System Too Lean	TRS	AD	
P2097	Post Catalyst Fuel Trim System Too Rich	TRS	AD	
P2101	Electronic Throttle Control System (ETCS) Malfunction	TRS	AD	
P2118	Throttle Actuator Current Range/Performance Problem	TRS	AD	
P2119	Throttle Actuator Range	TRS	AD	

DTC B2A60-54: Camera Aiming Incomplete

How to use this manual.

NOTICE

Before you troubleshoot, review the How to Troubleshoot.

NOTE:

- If the DTC is recorded again after problem verification, perform the multipurpose camera aiming.
- The functions of the monocular camera driver support system that will be temporarily canceled when this DTC is recorded can be confirmed with the DTC troubleshooting index.

■ Overview

- If the multipurpose camera unit detects incomplete or not yet performed multipurpose camera unit adjustment, the multipurpose camera unit determines an abnormality and stores the DTC.

■ Inspection Outline

Inspection Items	Work Items
Multipurpose Camera Unit	Do the Multipurpose Camera Aiming

■ Confirmation Procedure

1. Turn the vehicle to the ON mode, then wait for at least 6 seconds.

■ Related Information

- Component Location Index
  - Multipurpose Camera Unit

- Circuit Diagram
- Multipurpose Camera Unit Connector for Inputs and Outputs

■ HDS Function

DTC (IDAS) Clear DTC (IDAS)

DTC B1085: Head Light Low Beam Power Source Abnormality

How to use this manual.

NOTICE

Before you troubleshoot, review the How to Troubleshoot.

NOTE: If you are troubleshooting multiple DTCs, be sure to follow the instructions in B-CAN System Diagnosis Test Mode A.

■ Overview

- If a unit abnormality signal is input from the headlight to the relay control module, the relay control module determines an abnormality and stores the DTC.

■ Inspection Outline

- Troubleshoot any DTCs listed or indicated systems below first.
  - Lighting [Left Front Lighting Control Unit]: DTC B2751, B2756
  - Lighting [Right Front Lighting Control Unit]: DTC B2761, B2766

Inspection Items	Work Items
Relay Control Module	Replace the Relay Control Module

■ Confirmation Procedure

1. Turn the vehicle to the ON mode.

2. Turn the combination light switch to the ON position.

3. Wait for at least 6 seconds.

■ Related Information

- Component Location Index
  - Relay Control Module

- Circuit Diagram
- Relay Control Module Connector for Inputs and Outputs

■ HDS Function

DTC (Relay Control Module) | Clear DTC (Relay Control Module)

DTC U0038: PT-CAN Malfunction (Bus-Off)

How to use this manual.

NOTICE

Before you troubleshoot, review the How to Troubleshoot.

■ Overview

- If the TCM cannot send a signal to the other unit via the PT-CAN, the TCM determines an abnormality and stores the DTC.

■ Inspection Outline

- Refer to the troubleshooting for F-CAN BUS OFF (CAN BUS without Connection to CAN Gateway).

■ Confirmation Procedure

1. Turn the vehicle to the ON mode.

■ Related Information

- How to Troubleshoot the Network Communications.
- Component Location Index
  - TCM

- Circuit Diagram
- TCM Connector for Inputs and Outputs
- Advanced Diagnostic

■ HDS Function

DTC (AT) Clear DTC (AT)

DTC C0040-62: Brake Lamp Switch Failure (Stuck)

How to use this manual.

NOTICE

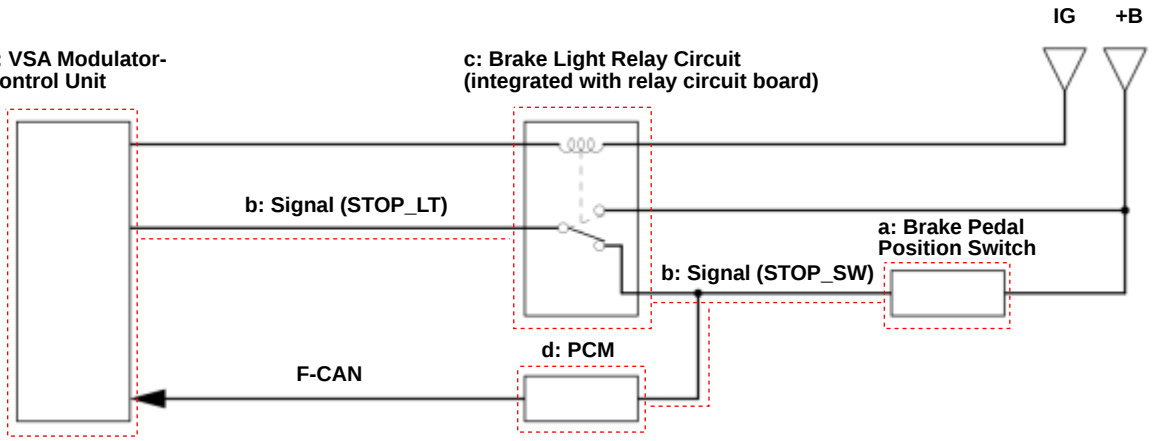
Before you troubleshoot, review the How to Troubleshoot.

■ Overview

- If the information from the pressure sensor inside the VSA modulator-control unit does not match the brake pedal position switch signal received from the PCM via F-CAN, the VSA modulator-control unit determines an abnormality and stores the DTC.

■ Inspection Outline

- The components to be tested are indicated by a dotted line.



- Troubleshoot any DTCs listed or indicated systems below first.
  - VSA System [VSA]: Go to the indicated except C0040- 62 DTC's troubleshooting.
  - Fuel and Emissions Systems [PGM-FI]: Go to the indicated DTC's troubleshooting.

NOTICE

For more efficient troubleshooting, you may be able to eliminate some inspection items as potential failures based on the conditions of the failure and vehicle.

- Check the brake lights according to the brake pedal pressed with disconnect the VSA modulator-control unit connector.
  - Light on: A
  - Light off: B

Inspection Items		Work Items	A	B
a	Brake Pedal Position Switch	Brake Pedal Position Switch Circuit Inspection	○	○
b	External Circuit	STOP_SW Shorted Wire Inspection		○
		STOP_LT Shorted Wire Inspection		○
c	Brake Light Relay Circuit	Relay Circuit Board (Built-in Brake Light Relay) Inspection		○
d	PCM	PCM Inspection	○	
e	VSA Modulator-Control Unit	VSA Modulator-Control Unit Inspection	○	

■ Confirmation Procedure

1. Start the engine.

Body Repair

Upper Body Measuring Dimensions - Windshield and Door Openings- Body Repair

1. Windshield and Door Openings Dimension - Measure

Unit: mm (in)

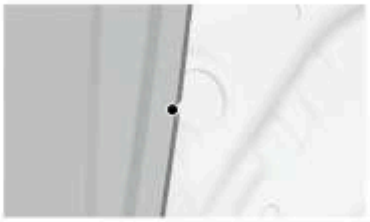
A
Windshield Lower Dashboard Installing Center Guide Pin

B, b
Windshield Opening Flange Notch (2 places)

C
Roof Panel Opening Flange Notch

D, H
Outer Panel Roof Opening Flange Notch (4 places)

E, e, G, g, I, K, k
Outer Panel Door Opening Flange Notch (8 places)



F, J
Outer Panel Door Ope
Flange Notch (4 place