

FOREWORD

- This is Volume 1 of the 2010 PRIUS manual. There are four volumes to this manual. The sections included in each volume are indicated by black type in the Section Index. Use the Section Index of each volume to find the volume with the section you need.
- This manual applies to the models listed below. It covers all information in the previously issued Pub. No. RM1290U, and includes all production changes effective August, 2009 or later.

Applicable models	ZVW30 series
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- Please note that the publications below have also been prepared as relevant service manuals for the components and system in these vehicles.

Manual Name	Pub. No.
2010 PRIUS Electrical Wiring Diagram	EM1291U
2010 PRIUS New Car Features	NM1291U

- All information in this manual is based on the latest product information at the time of publication. However, specifications and procedures are subject to change without notice. For the most current information available, refer to the Toyota Technical Information System (TIS) online at dealership locations or on the Internet at <http://techinfo.toyota.com>.

- If you find any failures in this manual, you are kindly requested to inform us by using the report form on the next page.

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- Repair Manual Quality Report

Att.) Service Manager, Your Distributor

Pub. No.	Issue Date
Name of Dealer	Name of Reporter
Subject	
Problem Description	
Correction Proposal	

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CAUTION

- This contents does not include all the necessary items about repair and service. This manual is made for the use of persons who have special techniques and certifications. If non-specialized or uncertified technicians perform repairs or service only using this manual or without proper equipment or tools, this may cause severe injury to you or other persons nearby and also cause damage to your customer's vehicle.
 - In order to prevent dangerous operation and damage to your customer's vehicle, be sure to follow the instructions shown below.
- This contents must be read thoroughly. It is especially important to have a good understanding of all the contents written in the PRECAUTION of "INTRODUCTION" section.
 - The service method written in this manual is very effective to perform repair and service. When performing the operations following the procedures using this manual, be sure to use tools specified and recommended. If using non-specified or tools other than recommended tools and service methods, be sure to confirm the safety of the technicians and that there is no possibility of causing personal injury or damage to the customer's vehicle before starting the operation.
 - If part replacement is necessary, the part must be replaced with the same part number or equivalent part. Do not replace it with an inferior quality part.
 - It is important to note that this manual contains various "Cautions" and "Notices" that must be carefully observed in order to reduce the risk of personal injury during service or repair, or reduce the possibility that improper service or repair may damage the vehicle or render it unsafe. It is also important to understand that these "Cautions" and "Notices" are not exaggerations and are possible hazardous consequences that might result from failure to follow these instructions.

INTRODUCTION: HOW TO TROUBLESHOOT ECU CONTROLLED SYSTEMS: GENERAL INFORMATION (2010 Prius)

GENERAL INFORMATION

• A large number of ECU controlled systems are used in this vehicle. In general, ECU controlled systems are considered to be very intricate, requiring a high level of technical knowledge to troubleshoot. However, most problem checking procedures only involve inspecting the ECU controlled system circuits one by one. An adequate understanding of the system and a basic knowledge of electricity is enough to perform effective troubleshooting, accurate diagnosis and necessary repairs.

- (For using the Techstream*)

HINT:

*: The Techstream is the name for the diagnostic tester in North America.

- Before using the Techstream, read the operator's manual thoroughly.
- If the Techstream cannot communicate with the ECU controlled systems when connected to the DLC3 with the power switch on (IG) and the Techstream turned on, there is a problem on the vehicle side or the Techstream side.
 - i. If communication is possible when the Techstream is connected to another vehicle, inspect the diagnosis data link line (bus (+) line), CANH and CANL lines, and the power circuits for the vehicle ECUs.
 - ii. If communication is still not possible when the Techstream is connected to another vehicle, the problem is probably in the Techstream itself. Perform the Self Test procedure outlined in the Techstream operator's manual.

1. TROUBLESHOOTING PROCEDURES

- The troubleshooting procedures consist of diagnosis procedures for when a DTC is stored and diagnosis procedures for when no DTC is stored. The basic idea is explained in the following table.

Procedure Type	Details	Troubleshooting Method
DTC Based Diagnosis	The diagnosis procedure is based on the DTC that is stored.	The malfunctioning part is identified based on the DTC detection conditions using a process of elimination. The possible trouble areas are eliminated one-by-one by use of the Techstream and inspection of related parts.
Symptom Based Diagnosis (No DTCs stored)	The diagnosis procedure is based on problem symptoms.	The malfunctioning part is identified based on the problem symptoms using a process of elimination. The possible trouble areas are eliminated one-by-one by use of the Techstream and inspection of related parts.

- Vehicle systems are complex and use many ECUs that are difficult to inspect independently. Therefore, a process of elimination is used, where components that can be inspected individually are inspected, and if no problems are found in these components, the related ECU is identified as the problem and replaced.
- It is extremely important to ask the customer about the environment and the conditions present when the problem occurred (Customer Problem Analysis). This makes it possible to simulate the conditions and

confirm the symptom. If the symptom cannot be confirmed or the DTC does not recur, the malfunctioning part may not be identified using the troubleshooting procedure, and the ECU for the related system may be replaced even though it is not defective. If this happens, the original problem will not be solved.

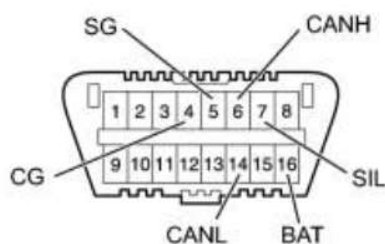
- In order to prevent endless expansion of troubleshooting procedures, the troubleshooting procedures are written with the assumption that multiple malfunctions do not occur simultaneously for a single problem symptom.
- To identify the malfunctioning part, troubleshooting procedures narrow down the target by separating components, ECUs and wire harnesses during the inspection. If the wire harness is identified as the cause of the problem, it is necessary to inspect not only the connections to components and ECUs but also all of the wire harness connectors between the component and the ECU.

2. DESCRIPTION

(a) Each system data and the Diagnostic Trouble Codes (DTCs) can be read from the Data Link Connector 3 (DLC3) of the vehicle. When the system seems to be malfunctioning, use the Techstream to check for malfunctions and perform repairs.

3. CHECK DLC3

(a) The vehicle ECUs use ISO 15765-4 communication protocol. The terminal arrangement of the DLC3 complies with SAE J1962 and matches the ISO 15765-4 format.



Symbol	Terminal No.	Name	Reference Terminal	Result	Condition
SIL	7	Bus "+" line	5 - Signal ground	Pulse generation	During transmission
CG	4	Chassis ground	Body ground	1 Ω or less	Always
SG	5	Signal ground	Body ground	1 Ω or less	Always
BAT	16	Battery positive	Body ground	11 to 14 V	Always
CANH	6	CAN "High" line	14 - CANL	54 to 69 Ω	Power switch off*
			Battery positive	6 k Ω or higher	Power switch off*
			4 - CG	200 Ω or higher	Power switch off*
CANL	14	CAN "Low" line	Battery positive	6 k Ω or higher	Power switch off*
			4 - CG	200 Ω or higher	Power switch off*

NOTICE:

*: Before measuring the resistance, leave the vehicle as is for at least 1 minute and do not operate the power switch, any other switches or the doors.

If the result is not as specified, the DLC3 may have a malfunction. Repair or replace the harness and connector.

ELECTRONIC CIRCUIT INSPECTION PROCEDURE

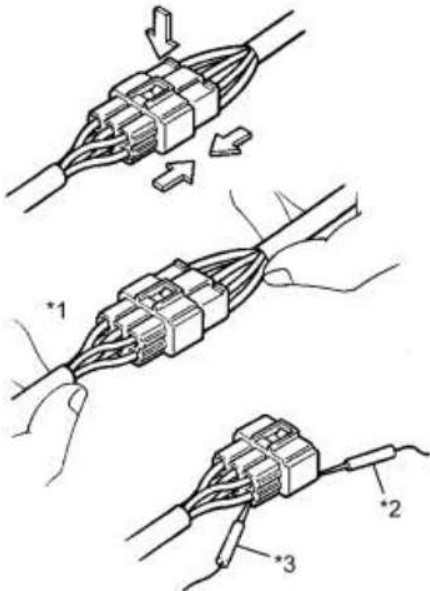
1. BASIC INSPECTION

(a) WHEN MEASURING RESISTANCE OF ELECTRONIC PARTS

(1) Unless otherwise stated, all resistance measurements are standard values measured at an ambient temperature of 20°C (68°F). Resistance measurements may be inaccurate if measured at high temperatures, i.e. immediately after the vehicle has been running. Measurements should be made after the engine has cooled down.

(b) HANDLING CONNECTORS

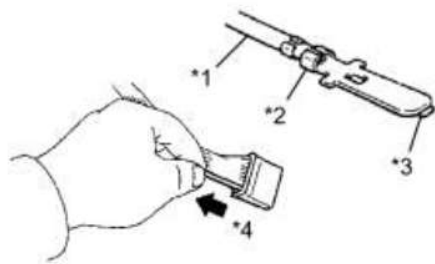
Text in Illustration



*1	INCORRECT
*2	INCORRECT
*3	CORRECT

- (1) When disconnecting a connector, first squeeze the mating connector housing halves tightly together to release the lock, and then press the lock claw and separate the connector.
- (2) When disconnecting a connector, do not pull on the harnesses. Grasp the connector directly and separate it.
- (3) Before connecting a connector, check that there are no deformations, damage, looseness or missing terminals.
- (4) When connecting a connector, press firmly until it locks with a "click" sound.
- (5) If checking a connector with a TOYOTA electrical tester, check the connector from the backside (harness side) using a mini test lead.
- As a waterproof connector cannot be checked from the backside, check it by connecting a sub-harness.
 - Do not damage the terminals by moving the inserted tester needle.

(c) CHECKING CONNECTORS

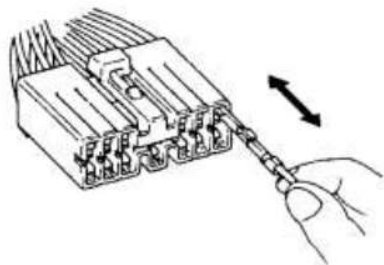


Text in Illustration

*1	Core Wire
*2	Looseness of Crimping
*3	Terminal Deformation
*4	Pull Lightly

(1) Checking when a connector is connected: Squeeze the connectors together to confirm that they are fully connected and locked.

(2) Checking when a connector is disconnected: Check by pulling the wire harness lightly from the backside of the connector. Look for unlatched terminals, missing terminals, loose crimps or broken conductor wires. Visually check for corrosion, metallic or foreign matter and water, and bent, rusted, overheated, contaminated or deformed terminals.



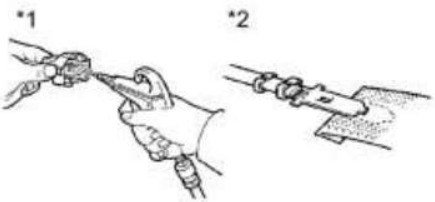
(3) Checking the contact pressure of the terminal: Prepare a spare male terminal. Insert it into a female terminal, and check for ample tension when inserting and after full engagement.

NOTICE:

When testing a gold-plated female terminal, always use a gold-plated male terminal.

(d) CONNECTOR TERMINAL REPAIR METHOD

Text in Illustration



*1	CORRECT
*2	INCORRECT

(1) If there is any foreign matter on the terminal, clean the contact point with compressed air or a cloth. Never rub the contact point using sandpaper as the plating may come off.

(2) If there is abnormal contact pressure, replace the female terminal. If

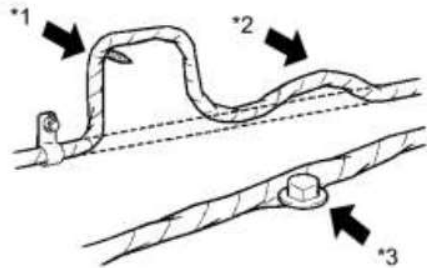
the male terminal is gold-plated (gold color), use a gold-plated female terminal; if it is silver-plated (silver color), use a silver-plated female terminal.

(3) Damaged, deformed or corroded terminals should be replaced. If the terminal does not lock into the housing, the housing may have to be replaced.

(e) WIRE HARNESS HANDLING

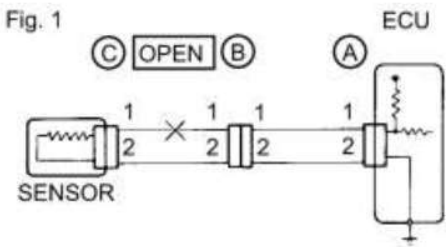
Text in Illustration

*1	INCORRECT
*2	INCORRECT
*3	INCORRECT



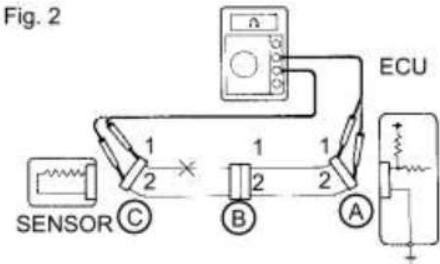
- (1) If removing a wire harness, check the wiring and clamps before proceeding so that it can be restored in the same way.
- (2) Never twist, pull or slacken the wire harness more than necessary.
- (3) The wire harness should never come into contact with any high temperature part, rotating, moving, vibrating or sharp-edged parts. Avoid contact with panel edges, screw tips and other sharp items.
- (4) When installing parts, never pinch the wire harness.
- (5) Never cut or break the cover of the wire harness. If it is cut or broken, repair it with insulating tape or replace the wire harness.

2. CHECK FOR OPEN CIRCUIT



(a) For an open circuit in the wire harness in Fig. 1, measure the resistance and voltage as follows:

(b) Check the resistance.



(1) Disconnect connectors A and C and measure the resistance between the terminals of the connectors.

Standard Resistance (Fig. 2):

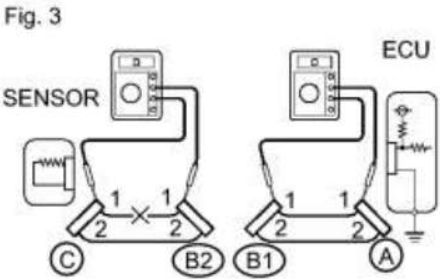
Tester Connection	Specified Condition
Connector A terminal 1 - Connector C terminal 1	10 kΩ or higher
Connector A terminal 2 - Connector C terminal 2	Below 1 Ω

HINT:

Measure the resistance while lightly shaking the wire harness vertically and horizontally.

- If the results match the values specified above, an open circuit exists between terminal 1 of connector A and terminal 1 of connector C.

(2) Disconnect connector B and measure the resistance between the terminals of the connectors.

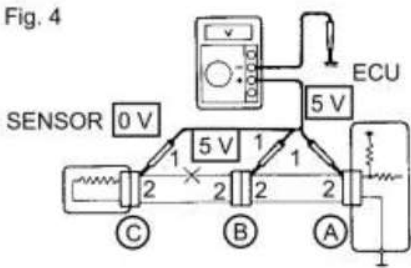


Standard Resistance (Fig. 3):

Tester Connection	Specified Condition
Connector A terminal 1 - Connector B1 terminal 1	Below 1 Ω
Connector B2 terminal 2 - Connector C terminal 2	10 kΩ or higher

If the results match the values specified above, an open circuit exists between terminal 1 of connector B2 and terminal 1 of connector C.

(c) Check the voltage.



(1) In a circuit in which voltage is applied to the ECU connector terminal, an open circuit can be checked by conducting a voltage check.

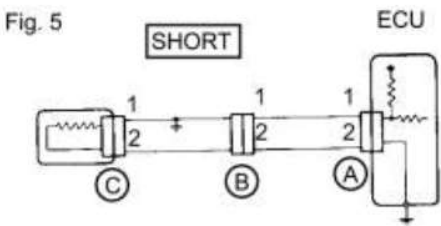
With each connector still connected, measure the voltage between body ground and the following terminals (in this order): 1) terminal 1 of connector A, 2) terminal 1 of connector B, and 3) terminal 1 of connector C.

Standard Voltage (Fig. 4):

Tester Connection	Specified Condition
Connector A terminal 1 - Body ground	5 V
Connector B terminal 1 - Body ground	5 V
Connector C terminal 1 - Body ground	Below 1 V

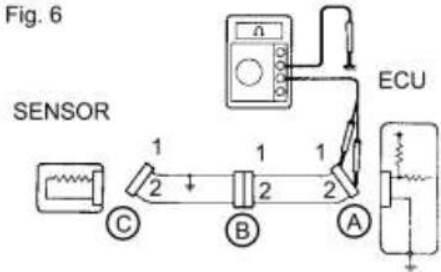
If the results match the values specified above, an open circuit exists in the wire harness between terminal 1 of connector B and terminal 1 of connector C.

3. CHECK FOR SHORT CIRCUIT



(a) If a wire in the harness is shorted to ground (Fig. 5), locate the shorted section by measuring the resistance as follows:

(b) Check the resistance to body ground.



(1) Disconnect connectors A and C and measure the resistance.

Standard Resistance (Fig. 6):

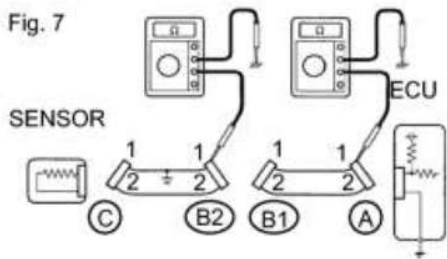
Tester Connection	Specified Condition
Connector A terminal 1 - Body ground	Below 1 Ω
Connector A terminal 2 - Body ground	10 k Ω or higher

HINT:

Measure the resistance while lightly shaking the wire harness vertically and horizontally.

- If the results match the values specified above, a short circuit exists between terminal 1 of connector A and terminal 1 of connector C.

(2) Disconnect connector B and measure the resistance.



Standard Resistance (Fig. 7):

Tester Connection	Specified Condition
Connector A terminal 1 - Body ground	10 kΩ or higher
Connector B2 terminal 2 - Body ground	Below 1 Ω

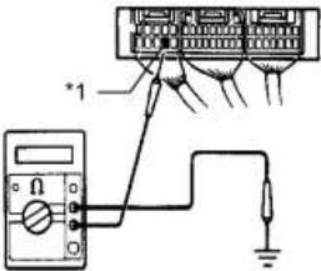
If the results match the values specified above, a short circuit exists between terminal 1 of connector B2 and terminal 1 of connector C.

4. CHECK AND REPLACE ECU

NOTICE:

- The connector should not be disconnected from the ECU. Perform the inspection from the backside of the connector on the wire harness side.
- When no measuring condition is specified, perform the inspection with the engine stopped and the power switch on (IG).
- Check that the connectors are fully seated. Check for loose, corroded or broken wires.

(a) First, check the ECU ground circuit. If it is faulty, repair it. If it is normal, the ECU could be faulty. Temporarily replace the ECU with a normally functioning one and check if the symptoms occur. If the trouble symptoms disappear, replace the original ECU.



(1) Measure the resistance between the ECU ground terminal and body ground.

Text in Illustration

*1	Ground
----	--------

Standard resistance:

Below 1 Ω

(2) Disconnect the ECU connector. Check the ground terminals on the ECU side and wire harness side for bent terminals, corrosion or foreign matter. Lastly, check the contact pressure of the female terminals.

Text in Illustration

*1	Component without harness connected (ECU)
----	--

*2	Ground
*3	Front view of wire harness connector (to ECU)
*4	Ground

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HOW TO PROCEED WITH TROUBLESHOOTING

1. OPERATION FLOW

HINT:

Perform troubleshooting in accordance with the procedure below. The following is an outline of basic troubleshooting procedure. Confirm the troubleshooting procedure for the circuit you are working on before beginning troubleshooting.

1. VEHICLE BROUGHT TO WORKSHOP

NEXT



2. CUSTOMER PROBLEM ANALYSIS

(a) Ask the customer about the conditions and environment when the problem occurred.

NEXT



3. INSPECT BATTERY VOLTAGE

Standard voltage:

11 to 14 V

If the voltage is below 11 V, recharge or replace the battery before proceeding to the next step.

NEXT



4. SYMPTOM CONFIRMATION AND DTC (AND FREEZE FRAME DATA) CHECK

(a) Visually check the wire harnesses, connectors and fuses for open and short circuits.

(b) Warm up the engine to the normal operating temperature.

(c) Confirm the problem symptoms and conditions, and check for DTCs.

Result:

Result	Proceed to
DTC is output	A
DTC is not output	B

B ► GO TO STEP 6

A



5. DTC CHART

(a) Find the output DTC in the DTC chart. Look at the Trouble Area column for a list of potentially malfunctioning circuits and/or parts.

NEXT ► GO TO STEP 7

6.	PROBLEM SYMPTOMS CHART
----	------------------------

(a) Find the problem symptoms in the problem symptoms table. Look at the Suspected Area column for a list of potentially malfunctioning circuits and/or parts.

NEXT

7.	CIRCUIT INSPECTION OR PARTS INSPECTION
----	--

(a) Identify the malfunctioning circuit or part.

NEXT

8.	ADJUST, REPAIR OR REPLACE
----	---------------------------

(a) Adjust, repair or replace the malfunctioning circuit or parts.

NEXT

9.	CONFIRMATION TEST
----	-------------------

(a) After the adjustment, repairs or replacement of components, confirm that the malfunction no longer exists. If the malfunction does not recur, perform a confirmation test under the same conditions and in the same environment as when the malfunction first occurred.

NEXT ► END

2. CUSTOMER PROBLEM ANALYSIS

HINT:

- When troubleshooting, confirm that the problem symptoms have been accurately identified. Preconceptions should be discarded in order to make an accurate judgment. To clearly understand what the problem symptoms are, it is extremely important to ask the customer about the problem and the conditions at the time the malfunction occurred.
- Gather as much information as possible for reference. Past problems that seem unrelated may also help in some cases.
- The following 5 items are important points for problem analysis:

What	Vehicle model, system name
When	Date, time, occurrence frequency
Where	Road conditions

Under what conditions?	Driving conditions, weather conditions
How did it happen?	Problem symptoms

3. SYMPTOM CONFIRMATION AND DIAGNOSTIC TROUBLE CODE

HINT:

The diagnostic system in this vehicle has various functions.

- The first function is the Diagnostic Trouble Code (DTC) check. A DTC is a code stored in the ECU memory whenever a malfunction in the signal circuits to the ECU occurs. In a DTC check, a previous malfunction's DTC can be checked by a technician during troubleshooting.
- Another function is the Input Signal Check, which checks if the signals from various switches are sent to the ECU correctly.

By using these functions, the problem areas can be narrowed down and troubleshooting can be more effective. Diagnostic functions are incorporated in the following systems of this vehicle.

System	Symptom Confirmation and Diagnostic Trouble Code				
	DTC Check (Normal Mode)	DTC Check (Check Mode)	Sensor Check/Test Mode (Input Signal Check)	Data List	Active Test
SFI System (2ZR-FXE)	○	○	-	○	○
Hybrid Control System	○	-	-	○	○
Hybrid Battery System	○	-	-	○	○
Cruise Control System	○	-	-	○	○
Dynamic Radar Cruise Control System	○	-	-	○	○
Lane-Keeping Assist System	○	-	-	○	○
Electronic Shift Lever System	○	-	-	○	-
Tire Pressure Warning System	○	-	-	○	○
Electronically Controlled Brake System	○	-	○	○	○
Power Steering System (for Brushless Type Motor)	○	-	○	○	-
Power Steering System (for Brush Type Motor)	○	-	○	○	-
Audio and Visual System	○	-	-	-	-
Navigation System	○	-	-	-	-
Advanced Parking Guidance System	○	-	-	○	-

System	Symptom Confirmation and Diagnostic Trouble Code				
	DTC Check (Normal Mode)	DTC Check (Check Mode)	Sensor Check/Test Mode (Input Signal Check)	Data List	Active Test
Rear View Monitor System (w/ Navigation System)	○	-	-	-	-
Rear View Monitor System (w/o Navigation System)	-	-	-	-	-
Garage Door Opener System	-	-	-	-	-
Safety Connect System	○	-	-	○	-
LIN Communication System	○	-	-	○	-
CAN Communication System	○	-	-	-	-
Power Door Lock Control System	-	-	-	○	○
Wireless Door Lock Control System	○	-	-	○	○
Smart Key System (for Entry Function)	○	-	-	○	○
Smart Key System (for Start Function)	-	-	-	○	○
Engine Immobilizer System	○	-	-	○	○
Lighting System (Interior)	-	-	-	○	○
Meter / Gauge System	○	-	-	○	○
Clock System	-	-	-	-	-
Airbag System	○	○	-	○	-
Occupant Classification System	○	-	-	○	-
Pre-Collision System	○	-	-	○	○
Front Power Seat Control System	-	-	-	-	-
Seat Heater System	-	-	-	-	-
Seat Belt Warning System	-	-	-	○	○
Air Conditioning System	○	-	-	○	○
Solar Ventilation System	-	-	-	○	-
Power Window Control System	○	-	-	○	○
Window Defogger System	-	-	-	○	○
Sliding Roof System	○	-	-	○	○
Power Mirror Control System	-	-	-	-	-
Wiper and Washer System	-	-	-	-	-
Lighting System (Exterior)	○	-	-	○	○
Horn System	-	-	-	-	-

- In the DTC check, it is very important to determine whether the problem indicated by the DTC either: 1) still occurs, or 2) occurred in the past but has returned to normal. In addition, the DTC should be compared to the problem symptom to see if they are related. For this reason, DTCs should be checked before and after confirmation of symptoms (i.e., whether or not problem symptoms exist) to determine current system conditions, as shown in the flowchart below.
- Never skip the DTC check. Failing to check for DTCs, depending on the case, may result in unnecessary troubleshooting for systems operating normally or lead to repairs not related to the problem. Follow the procedure listed in the flowchart in the correct order.
- The following flowchart shows how to proceed with troubleshooting using the DTC check. Directions from the flowchart will indicate how to proceed either to DTC troubleshooting or to the troubleshooting of each problem symptom.

1.	DTC CHECK
----	-----------

NEXT



2.	MAKE A NOTE OF DTC DISPLAYED AND THEN CLEAR MEMORY
----	--

NEXT



3.	SYMPTOM CONFIRMATION
----	----------------------

Result:

Result	Proceed to
No symptoms exist	A
Symptoms exist	B

B ► GO TO STEP 5

A



4.	SIMULATION TEST USING SYMPTOM SIMULATION METHODS
----	--

NEXT



5.	DTC CHECK
----	-----------

Result:

Result	Proceed to
DTC is not output	A
DTC is output	B

B ► TROUBLESHOOT FOR PROBLEM INDICATED BY DTC

A



6.	SYMPTOM CONFIRMATION
----	----------------------

Result:

Result	Proceed to
No symptoms exist	A
Symptoms exist	B

If a DTC was displayed in the initial DTC check, the problem may have occurred in a wire harness or connector in that circuit in the past. Check the wire harness and connectors.

B ▶ END

A ▶ TROUBLESHOOT FOR EACH PROBLEM SYMPTOM

The problem still occurs in a place other than the diagnostic circuit (the DTC displayed first is either for a past problem or a secondary problem).

4. SYMPTOM SIMULATION

HINT:

The most difficult case in troubleshooting is when no problem symptoms occur. In such a case, a thorough problem analysis must be carried out. A simulation of the same or similar conditions and environment in which the problem occurred in the customer's vehicle should be carried out. No matter how much skill or experience a technician has, troubleshooting without confirming the problem symptoms will lead to important repairs being overlooked and mistakes or delays.

For example:

With a problem that only occurs when the engine is cold or as a result of vibration caused by the road during driving, the problem can never be determined if the symptoms are being checked on a stationary vehicle or a vehicle with a warmed-up engine. Vibration, heat or water penetration (moisture) is difficult to reproduce. The following symptom simulation tests are effective substitutes for the conditions and can be applied to a stationary vehicle. Important points in the symptom simulation test:

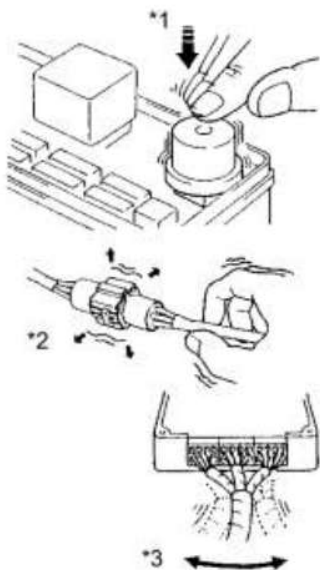
In the symptom simulation test, the problem symptoms as well as the problem area or parts must be confirmed. First, narrow down the possible problem circuits according to the symptoms. Then, connect the tester and carry out the symptom simulation test, judging whether the circuit being tested is defective or normal. Also, confirm the problem symptoms at the same time. Refer to Problem Symptoms Table for each system to narrow down the possible causes.

To reproduce DTCs, it is necessary to satisfy the respective DTC detection conditions.

(a) VIBRATION METHOD: When a malfunction seems to occur as a result of vibration.

Text in Illustration

*1	Vibrate Slightly
*2	Shake Slightly



*3

Vibrate Slightly

(1) PART AND SENSOR

Apply slight vibration with a finger to the part of the sensor suspected to be the cause of the problem, and check whether the malfunction occurs.

NOTICE:

Applying strong vibration to relays may open the relays.

(2) CONNECTORS

Slightly shake the connector vertically and horizontally.

(3) WIRE HARNESS

Slightly shake the wire harness vertically and horizontally.

HINT:

The connector joint and fulcrum of the vibration are the major areas that should be checked thoroughly.

(b) **HEAT METHOD:** When a malfunction seems to occur when the area in question is heated.

(1) Heat the component that is the possible cause of the malfunction with a hair dryer or similar device. Check if the malfunction occurs.

NOTICE:

- Do not heat components to more than 60°C (140°F). Exceeding this temperature may damage the components.
- Do not apply heat directly to parts in an ECU.

(c) **WATER SPRINKLING METHOD:** When a malfunction seems to occur on a rainy day or in high-humidity.

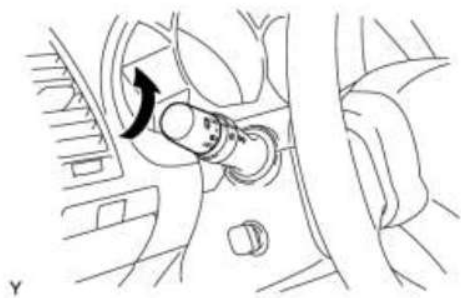
(1) Sprinkle water onto the vehicle and check if the malfunction occurs.



- Never sprinkle water directly into the engine compartment. Indirectly change the temperature and humidity by spraying water onto the front of the radiator.
- Never apply water directly onto the electronic components.

HINT:

If the vehicle has or had a water leak problem, the leak may have damaged the ECU or connections. Look for evidence of corrosion or short circuits. Proceed with caution during water tests.



(d) **HIGH ELECTRICAL LOAD METHOD:** When a malfunction seems to occur when the electrical load is high.

(1) Turn on the heater blower, headlights, rear window defogger and all other electrical loads. Check if the malfunction recurs.

5. DIAGNOSTIC TROUBLE CODE CHART

Look for output Diagnostic Trouble Codes (DTCs) (from the DTC checks) in the appropriate section's Diagnostic Trouble Code Chart. Use the chart to determine the trouble area and the proper inspection procedure. A description of each of the chart's columns is shown in the table below.

Item	Description
DTC No.	Indicates the diagnostic trouble code.
Detection Item	Indicates the system or details of the problem.
Trouble Area	Indicates the suspected areas of the problem.
See page	Indicates the page where the inspection procedure for each circuit is to be found, or gives instruction for checking and repairs.

6. PROBLEM SYMPTOMS TABLE

When no DTC is output but the problem still occurs, use the Problem Symptoms Table. The suspected areas (circuits or parts) for each problem symptom are shown in the table. The suspected areas are listed in order of probability. A description of each of the table columns is shown in the following table.

HINT:

In some cases, the problem is not detected by the diagnostic system even though a problem symptom occurs. It is possible that the problem occurs outside the detection range of the diagnostic system, or that the problem occurs in a completely different system.

Item	Description
Symptom	-
Suspected Area	Indicates the circuit or part which needs to be checked.
See page	Indicates the page where the inspection procedure is located.

7. INSPECTION

A description of the main points for inspection of suspected areas is shown in the following table.

Item	Description
------	-------------

Item	Description
Description	The major role and operation of the circuit or system and its component parts are explained.
DTC No., DTC Detection Condition and Trouble Area	Indicates the diagnostic trouble codes, DTC detection conditions and suspected areas for a problem.
Wiring Diagram	This is a wiring diagram for the circuit or system. This diagram can be used together with the Electrical Wiring Diagram to thoroughly understand the circuit. Wire colors are indicated by alphabetical codes. B = Black, L = Blue, R = Red, BR = Brown, LG = Light Green, V = Violet, G = Green, O = Orange, W = White, GR = Gray, P = Pink, Y = Yellow, SB = Sky Blue The first letter indicates the basic wire color and the second letter indicates the color of the stripe.
Inspection Procedure	This shows the procedure not only to determine whether the circuit is normal or abnormal, but also to determine whether the problem is located in the sensors, actuators, wire harness or ECU.
Illustration of the ECU connector during the check	The illustration shows whether the connector being checked is connected or disconnected. The connections for an electrical tester are indicated by (+) or (-) after the terminal name. For inspections between a connector and body ground, information about the ground is not shown in the illustration.

GENERAL INFORMATION

1. GENERAL DESCRIPTION

- (a) This manual is written in accordance with SAE J2008.
- (b) Repair operations can be separated mainly into the following 3 processes:
 - (1) Diagnosis
 - (2) Removing / Installing, Replacing, Disassembling / Reassembling, Checking and Adjusting
 - (3) Final Inspection
- (c) The following procedure is omitted from this manual. However, this procedure must be performed.
 - (1) Use a jack or lift to perform operations.
 - (2) Clean all removed parts.
 - (3) Perform a visual check before and after performing any work.

2. INDEX

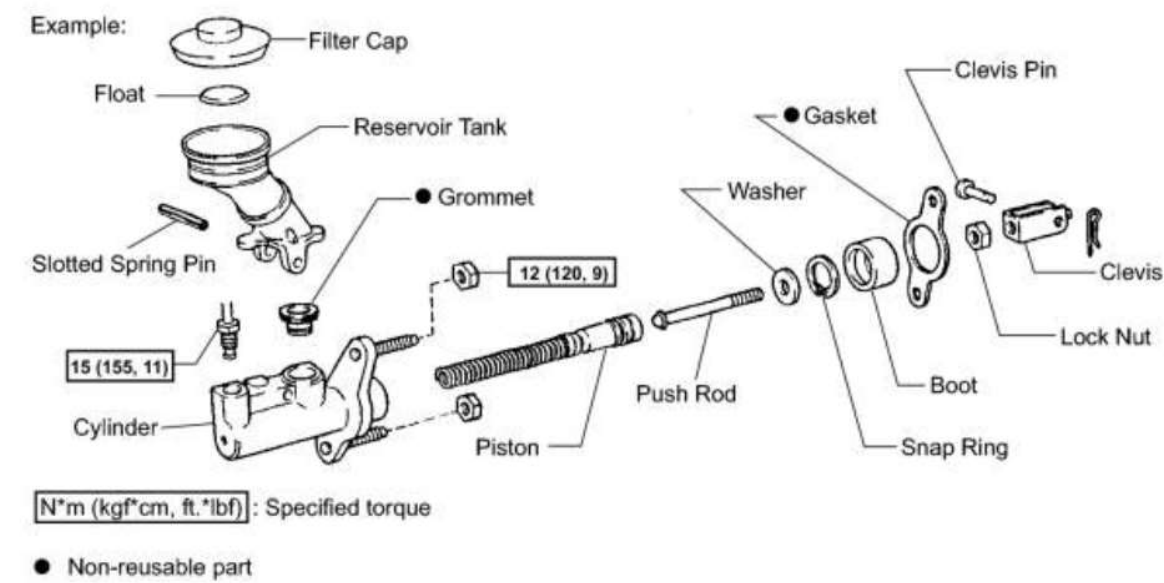
- (a) An alphabetical INDEX section is provided at the end of the manual as a reference to help find the item to be repaired.

3. PREPARATION

- (a) Use of Special Service Tools (SST) and Special Service Materials (SSM) may be required, depending on the repair procedure. Be sure to use SST and SSM when they are required and follow the work procedure properly. A list of SST and SSM is in the "Preparation" section of this manual.

4. REPAIR PROCEDURES

- (a) A component illustration is placed under the title where necessary.
- (b) Non-reusable parts, grease application areas, precoated parts and torque specifications are noted in the component illustrations.
 - The following illustration is an example.



(c) Torque specifications, grease application areas and non-reusable parts are emphasized in the procedures.

HINT:

There are cases where such information can only be explained by using an illustration. In these cases, torque, oil and other information are described in the illustration.

(d) Only items with key points are described in the text. What to do and other details are explained using illustrations next to the text. Both the text and illustrations are accompanied by standard values and notices.

Illustration	What to do and where to do it
Task heading	What work will be performed
Explanation text	- How to perform the task - Information such as specifications and warnings, which are written in boldface text

(e) Illustrations of similar vehicle models are sometimes used. In these cases, minor details may be different from the actual vehicle.

(f) Procedures are presented in a step-by-step format.

5. SERVICE SPECIFICATIONS

(a) Specifications are presented in boldface text throughout the manual. The specifications are also found in the "Service Specifications" section for reference.

6. TERM DEFINITIONS

CAUTION	Possibility of injury to you or other people.
---------	---

NOTICE	Possibility of damage to components being repaired.
HINT	Provides additional information to help you perform repairs.

7. INTERNATIONAL SYSTEM OF UNITS

(a) The units used in this manual comply with the International System of Units (SI UNIT) standard. Other units from the metric system and the English systems are also provided.

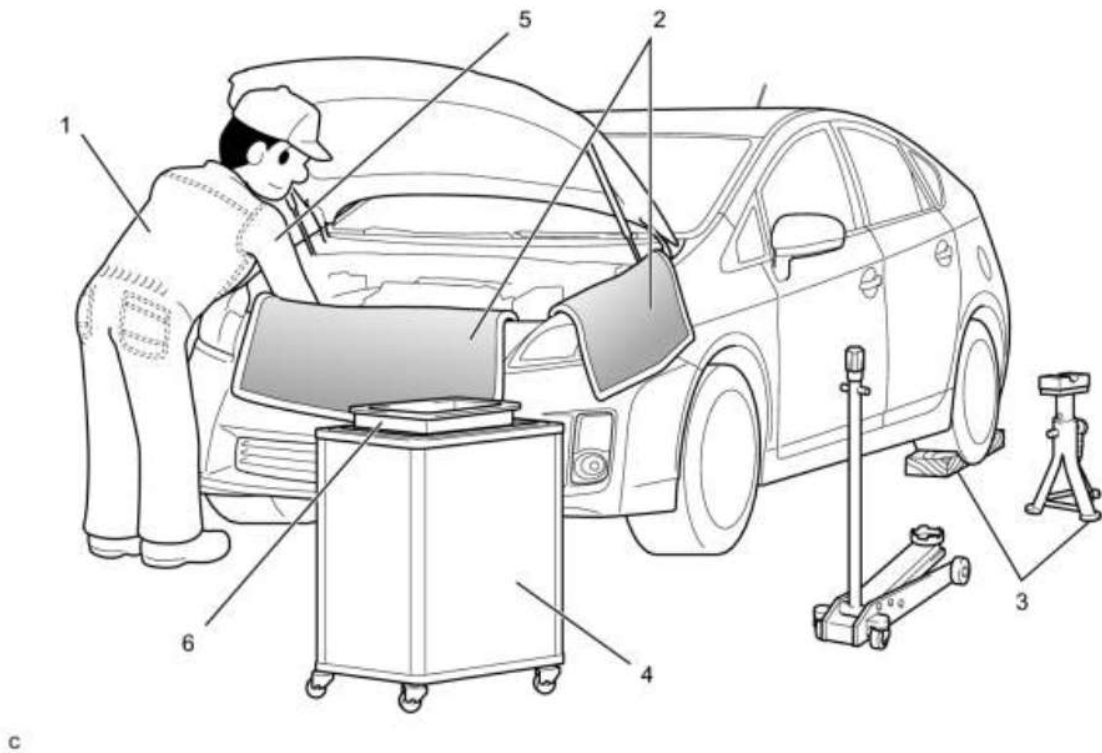
- Example:

Torque: **30 N·m (310 kgf·cm, 22ft·lbf)**

PRECAUTION

1. BASIC REPAIR HINT

(a) HINTS ON OPERATIONS



1	Attire	• Always wear a clean uniform. • A hat and safety shoes must be worn.
2	Vehicle protection	Prepare a grille cover, fender cover, seat cover and floor mat before starting work.
3	Safety procedures	• When working with 2 or more persons, be sure to check the safety of one another. • When working with the engine running, make sure to provide ventilation for exhaust fumes in the workshop. • If working on high temperature, high pressure, rotating, moving, or vibrating parts, wear appropriate safety equipment and take extra care not to injure yourself or others. • When jacking up the vehicle, be sure to support the specified locations with safety stands. • When lifting up the vehicle, use appropriate safety equipment.
4	Preparation of tools and measuring equipment	Before starting work, prepare a tool stand, SST, measuring equipment, oil, and any replacement parts required.
5	Removal and installation, disassembly and	• Diagnose with a thorough understanding of proper procedures and of the reported problem.

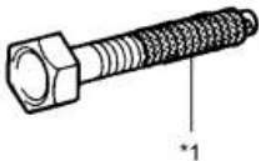
assembly operations	• Before removing any parts, check the general condition of the assembly and for deformation and damage. • If the procedure is complicated, take notes. For example, note the total number of electrical connections, bolts, or hoses removed. Add matchmarks to ensure reassembly of components in the original positions. Temporarily mark hoses and their fittings if needed. • Clean and wash the removed parts if necessary and assemble them after a thorough check.
6 Removed parts	• Place the removed parts in a separate box to avoid mixing them up with new parts or contaminating the new parts. • For non-reusable parts such as gaskets, O-rings and self-locking nuts, replace them with new ones as instructed in this manual. • Retain the removed parts for customer inspection, if requested.

(b) JACKING UP AND SUPPORTING VEHICLE

(1) Care must be taken when jacking up and supporting the vehicle. Be sure to lift and support the vehicle at the proper locations.

(c) PRECOATED PARTS

Text in Illustration



*1	Seal Lock Adhesive
----	--------------------

- (1) Precoated parts are bolts and nuts that are coated with seal lock adhesive at the factory.
- (2) If a precoated part is retightened, loosened or moved in any way, it must be recoated with the specified adhesive.
- (3) When reusing a precoated part, clean off the old adhesive and dry the part with compressed air. Then apply new seal lock adhesive appropriately to that part.
- (4) Some seal lock agents harden slowly. You may have to wait for the seal lock adhesive to harden.

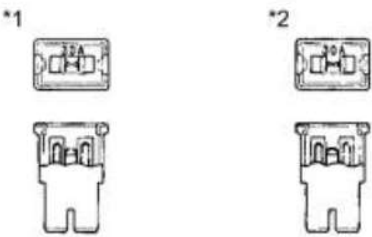
(d) GASKETS

(1) When necessary, use a sealer on gaskets to prevent leaks.

(e) BOLTS, NUTS AND SCREWS

(1) Carefully follow all the specifications for tightening torque. Always use a torque wrench.

(f) FUSES



Text in Illustration

*1	INCORRECT
*2	CORRECT

- (1) When inspecting a fuse, check that the wire of the fuse is not broken.
- (2) If the wire of a fuse is broken, confirm that there are no shorts in its circuit.
- (3) When a fuse is replaced, a fuse with the same amperage rating must be used.

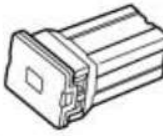
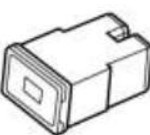
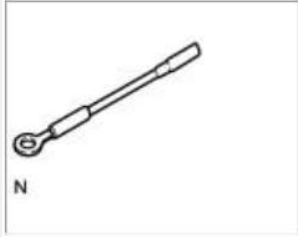
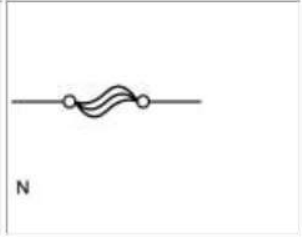
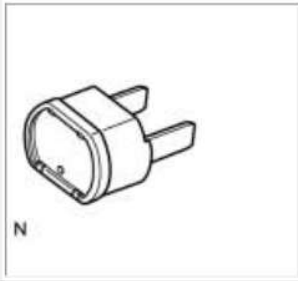
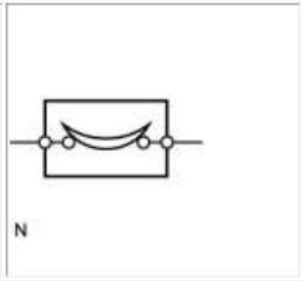
Illustration	Symbol	Part Name	Abbreviation
 N	 N	FUSE	FUSE
 N	 N	MEDIUM CURRENT FUSE	M-FUSE
 N	 N	HIGH CURRENT FUSE	H-FUSE
		FUSIBLE LINK	FL

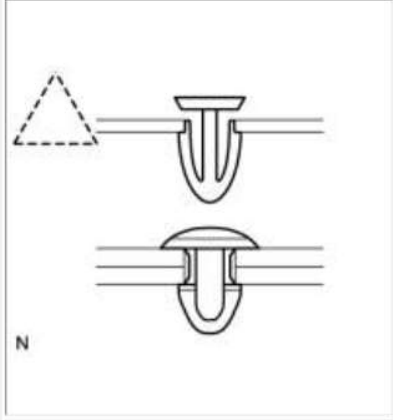
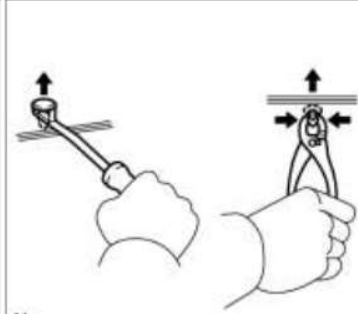
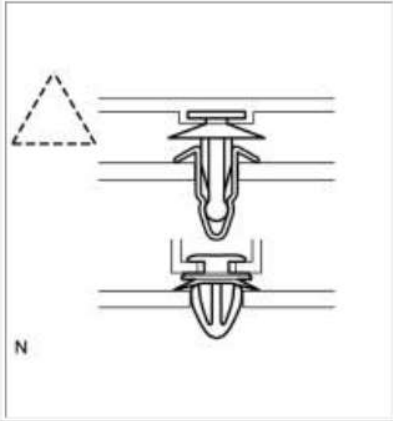
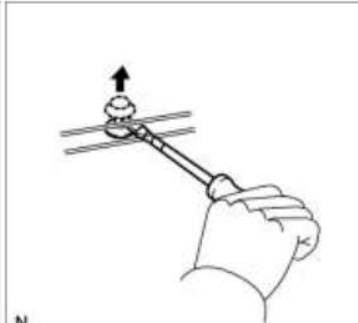
Illustration	Symbol	Part Name	Abbreviation
 N	 N		
 N	 N	CIRCUIT BREAKER	CB

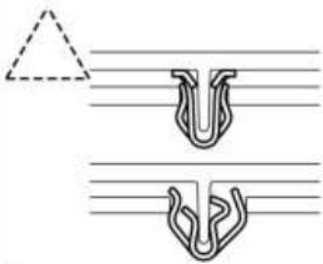
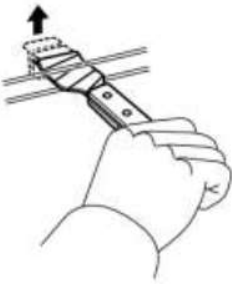
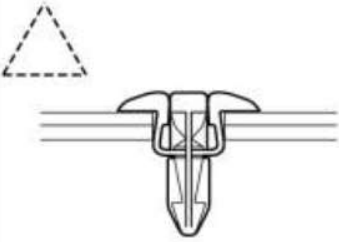
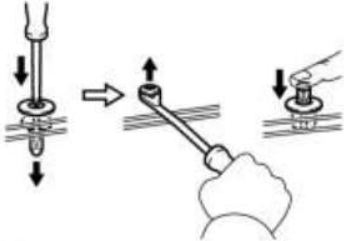
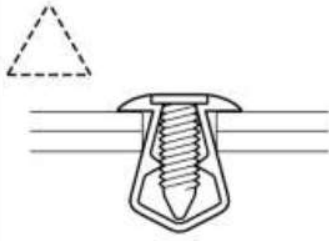
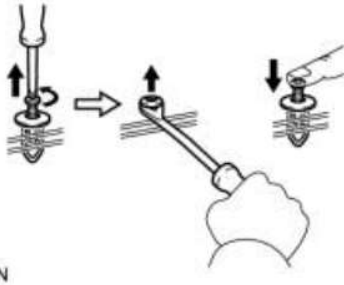
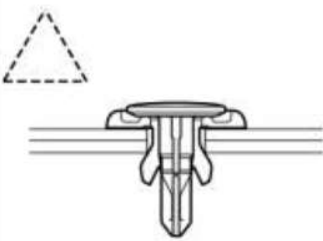
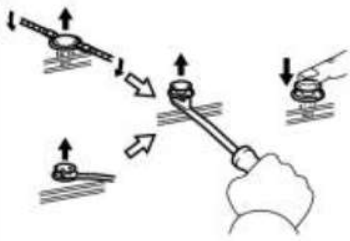
(g) CLIPS

(1) The removal and installation methods of typical clips used for vehicle body parts are shown in the table below.

HINT:

If clips are damaged during a procedure, always replace the damaged clips with new ones.

Shape (Example)	Removal/Installation
 N	 N Remove the clips with a clip remover or pliers.
 N	 N Remove the clips with a clip remover or screwdriver.

Shape (Example)	Removal/Installation
 N	 N Remove the clips with a wide scraper to prevent panel damage.
 N	 N Remove the clips by pushing the center pin through and prying out the shell.
 N	 N Remove the clips by unscrewing the center pin and prying out the shell.
 N	 N Remove the clips by prying out the pin and then prying out the shell.

(h) CLAWS

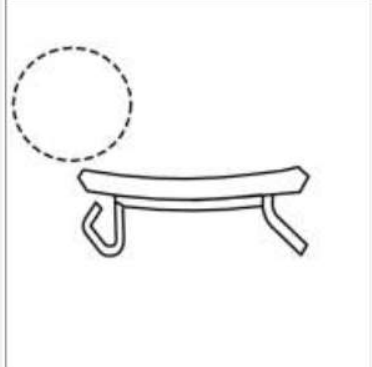
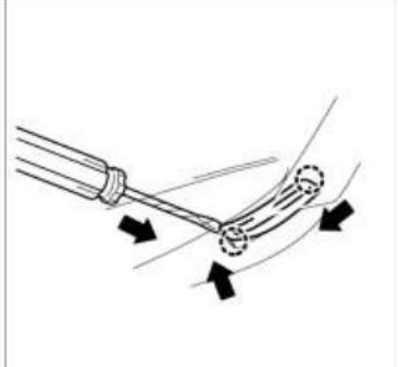
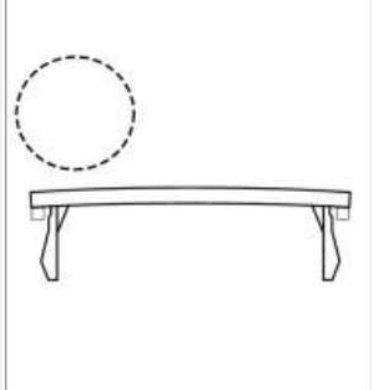
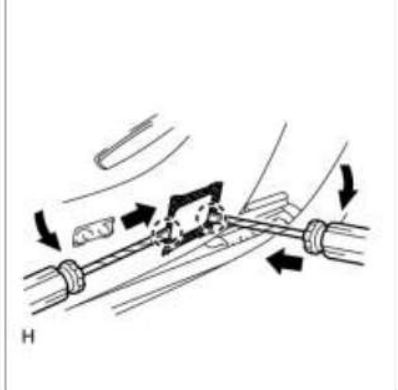
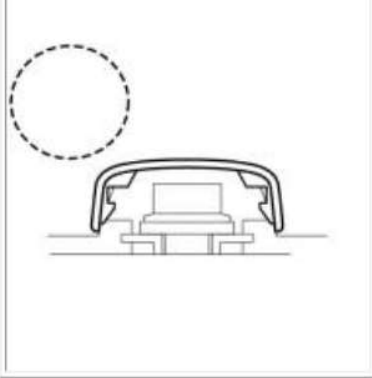
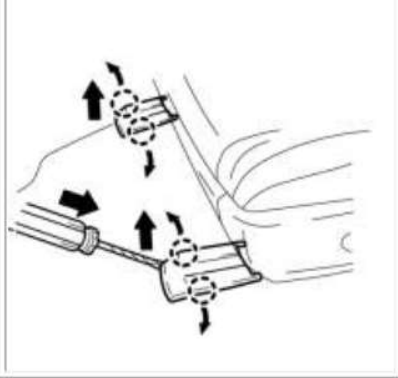
2010 Toyota Prius

Repair Manual

(1) The removal and installation methods of typical claws used for vehicle body parts are shown in the table below.

HINT:

If claws are damaged during a procedure, always replace the cap or cover that has damaged claws with a new one.

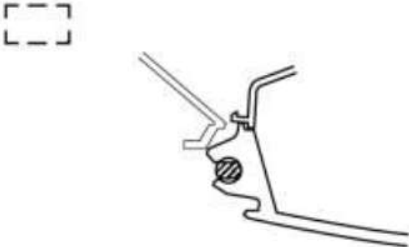
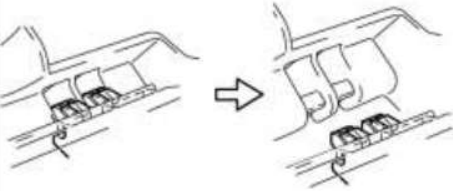
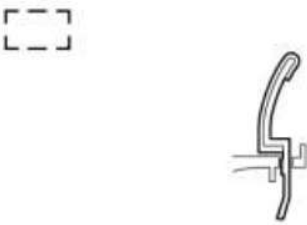
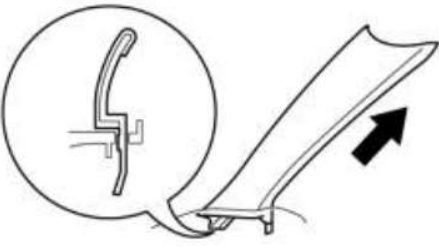
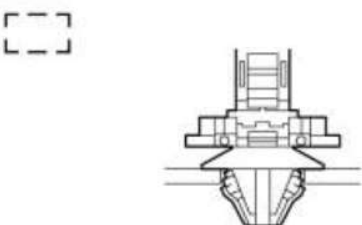
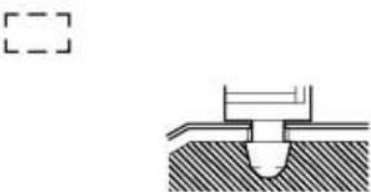
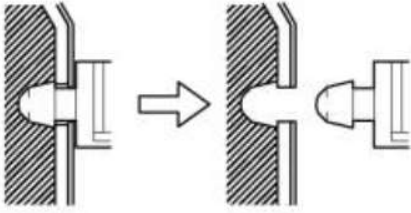
Shape (Example)	Illustration	Procedure
		Using a screwdriver, disengage the claws and remove the cap or cover.
		Using a screwdriver, disengage the claws and remove the cap or cover.
		Using a screwdriver, detach the claws and remove the cap or cover.

(i) HINGES, GUIDES, CLAMPS, PINS, ETC.

(1) The removal and installation methods of typical hinges, guides, clamps and pins used for vehicle body parts are shown in the table below.

HINT:

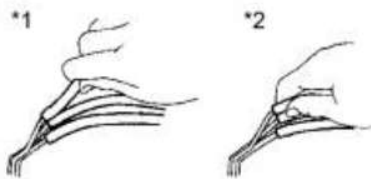
If clamps are damaged during a procedure, always replace the cap or cover that has damaged clamps with a new one.

Shape (Example)	Removal/Installation
	Pull away from the pins to disengage. 
	Disengage the pins by pulling. 
	Remove the clamps with pliers. 
	Disengage the pins by pulling. 

(j) REMOVAL AND INSTALLATION OF VACUUM HOSES

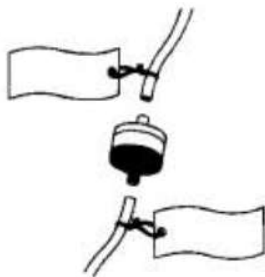
- (1) To disconnect a vacuum hose, pull and twist it from the end of the hose. Do not pull it from the middle of the hose as this may damage the

hose.



Text in Illustration

*1	INCORRECT
*2	CORRECT

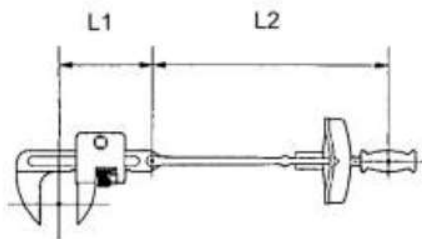
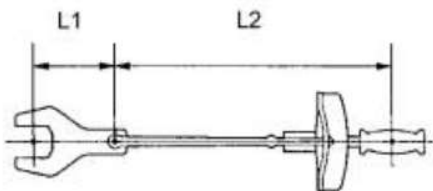


(2) When disconnecting vacuum hoses, use tags to identify where they should be reconnected.

(3) After completing any hose related repairs, double-check that the vacuum hoses are properly connected. The label under the hood shows the proper layout.

(4) When using a vacuum gauge, never force the hose onto a connector that is too large. If a hose has been stretched, air may leak. Use a step-down adapter if necessary.

(k) TORQUE WHEN USING TORQUE WRENCH WITH EXTENSION TOOL



(1) Use the formula below to calculate special torque values for situations where SST or an extension tool is combined with a torque wrench.

Formula

$T' = (L2 / (L1 + L2)) * T$

T'	Reading of torque wrench {N*m (kgf*cm, ft.*lbf)}
T	Torque {N*m (kgf*cm, ft.*lbf)}
L1	Length of SST or extension tool {cm (in.)}

L2	Length of torque wrench {cm (in.)}
----	------------------------------------

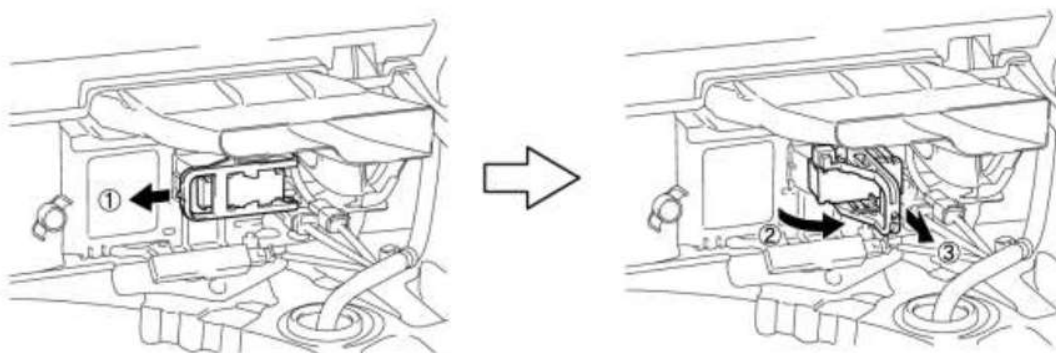
NOTICE:

If an extension tool or SST is combined with a torque wrench and used to tighten to a torque specification in this manual, the actual torque will be excessive and parts will be damaged.

2. PRECAUTIONS FOR HIGH-VOLTAGE CIRCUIT INSPECTION AND SERVICE**CAUTION:**

The vehicle has a hybrid system that operates at voltages up to 650 V. The hybrid system uses an HV battery that contains an electrolyte which is a strong alkali solution that includes potassium hydroxide. Be sure to follow the instructions in this manual to handle the system correctly. Failure to do so may result in serious injury or electrocution.

- (a) Technicians must undergo special training to be able to service and inspect the high-voltage system.
- (b) All high-voltage wire harnesses and connectors are colored orange. The HV battery and other high-voltage components have "High Voltage" caution labels. Do not carelessly touch these wires or components.
- (c) When there is a problem with the wire harness or connector of a high-voltage circuit, repairs to the harness or connector should not be attempted. Replace damaged or malfunctioning high voltage cables or connectors.
- (d) Before inspecting or servicing the high-voltage system, be sure to follow all safety measures, such as wearing insulated gloves and removing the service plug to prevent electrocution. Carry the removed service plug in your pocket to prevent other technicians from accidentally reconnecting it while you are servicing the vehicle.



c

NOTICE:

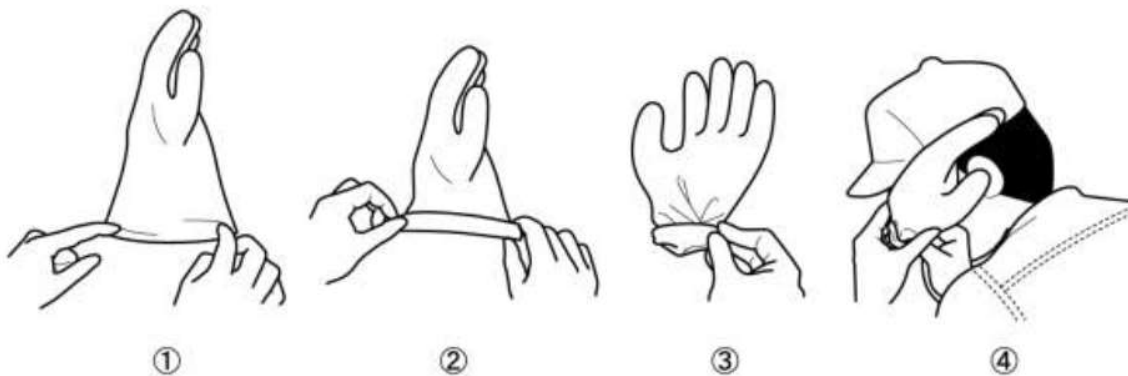
After removing the service plug grip, do not turn the power switch on (READY), unless instructed by the repair manual because this may cause a malfunction.

(e) After removing the service plug, wait 10 minutes before touching any of the high-voltage connectors and terminals.

HINT:

Waiting for at least 10 minutes is required to discharge the high-voltage capacitor inside the inverter with converter assembly.

(f) Before using insulated gloves, be sure to check them for cracks, tears and other types of damage by performing the following procedure.

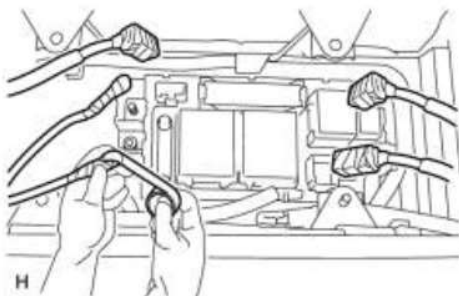


T

1. Place the glove on its side.
2. Roll the opening up 2 or 3 times.
3. Fold the opening in half to close it.
4. Confirm that there are no air leaks.

(g) When servicing the vehicle, do not carry metal objects like mechanical pencils or rulers that can be dropped accidentally and cause a short circuit.

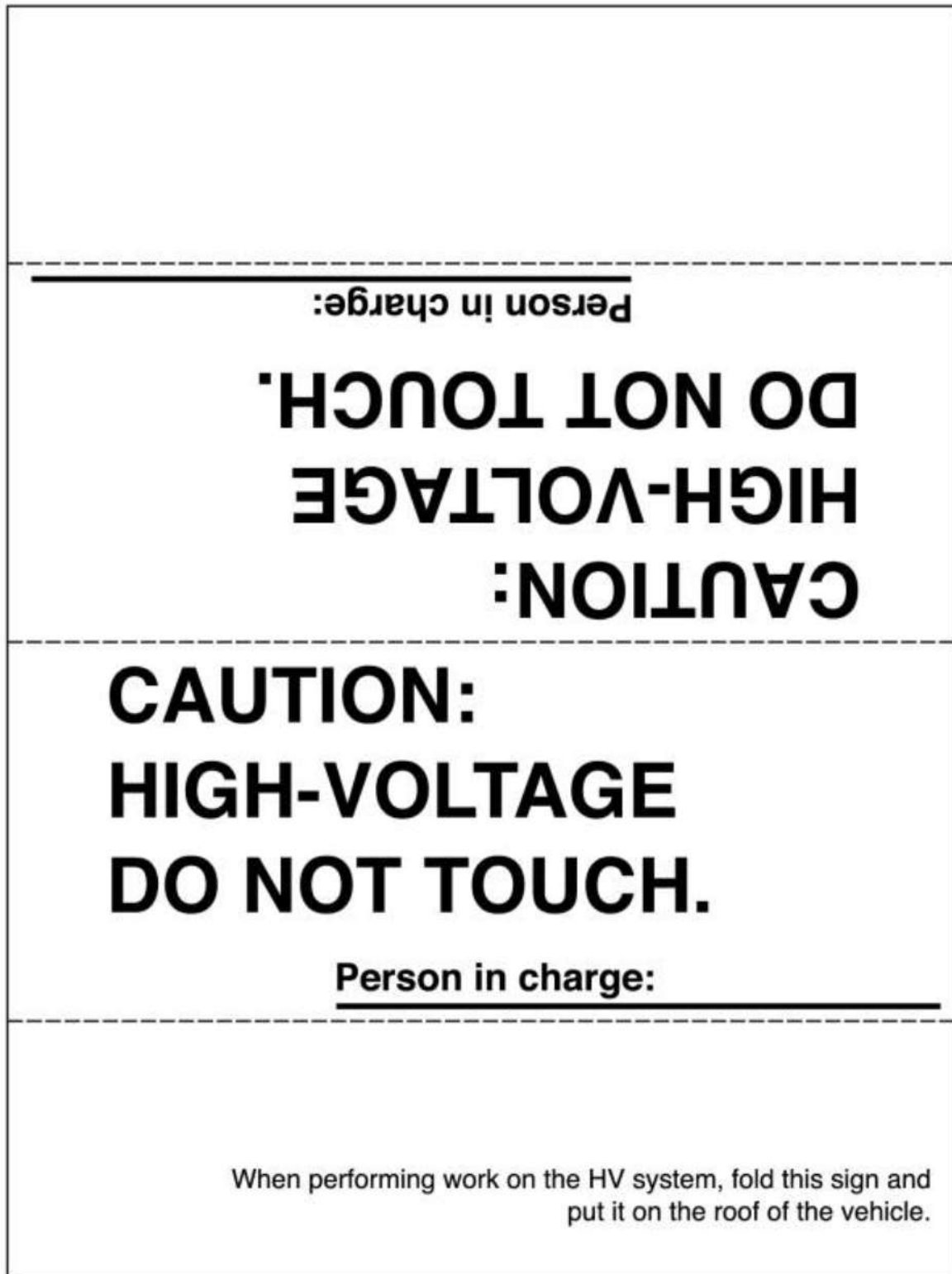
(h) Before touching a bare high-voltage terminal, wear insulated gloves and use a tester to make sure that the terminal voltage is 0 V.



(i) After disconnecting or exposing a high-voltage connector or terminal, insulate it immediately using insulating tape.

(j) Bolts and nuts for high-voltage terminals should be tightened firmly to the specified torque. Both insufficient and excessive torque can cause failure.

(k) Use the "CAUTION: HIGH VOLTAGE DO NOT TOUCH" sign to notify other technicians that the high-voltage system is being inspected and/or repaired.



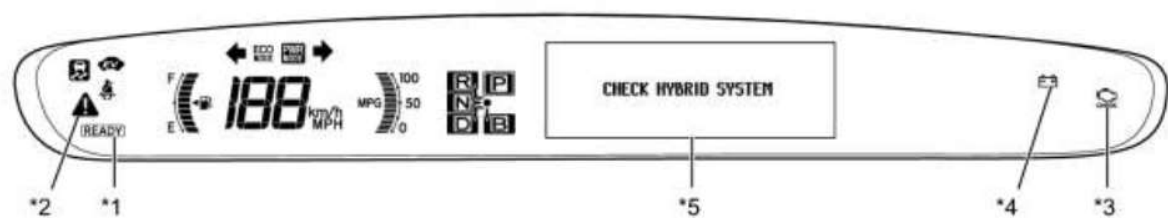
P

- (l) After servicing the high-voltage system and before reinstalling the service plug, check again that you have not left a part or tool inside, that the high-voltage terminals are firmly tightened, and that the connectors are correctly connected.
- (m) When installing hybrid system components such as the HV battery, make sure that the polarity of all connections is correct.

3. PRECAUTIONS TO BE OBSERVED WHEN INSPECTING OR SERVICING ENGINE COMPARTMENT

- (a) The vehicle automatically turns the engine on and off when the READY light on the instrument panel is illuminated. To avoid injury, make sure that both the indicator on the power switch and the READY light on the meter are off.

4. ACTIONS TO BE TAKEN WHEN A WARNING LIGHT IS LIT



Text in Illustration

*1	READY Light	*2	Master Warning Light
*3	MIL	*4	Charge Warning Light
*5	Multi-information Display	-	-

- (a) If one of the warning lights (2) to (4) illuminates, connect the Techstream to the DLC3 to check the DTCs (Diagnostic Trouble Codes). Then, refer to the applicable troubleshooting steps in this manual to inspect and repair the affected area. The foregoing actions are also required if the READY light does not illuminate when attempting to turn the power switch on (READY).

Indicator Light	Vehicle Condition
(1) READY (TO DRIVE)	Illuminates when the power switch is turned on (READY), indicating that the vehicle is ready to be driven.
(2) Master Warning Light	The master warning light comes on or flashes to indicate that a warning is currently being displayed on the multi-information display. Depending on the warning, the buzzer may also sound.

Indicator Light	Vehicle Condition
	When any malfunction occurs in the hybrid system or hybrid battery system, the master warning light comes on or flashes along with a buzzer, and a warning, "CHECK HYBRID SYSTEM", is displayed on the multi-information display.
(3) MIL	Illuminates when there is a malfunction in the engine control system. (Also illuminates when the power switch is turned on.)
(4) Charge Warning Light	Illuminates when there is a malfunction in the charging system. (Be sure to check the DTC (Diagnostic Trouble Code) if this light illuminates together with the master warning light.)

5. ACTIONS TO BE TAKEN WHEN BATTERIES ARE DISCHARGED

HINT:

The vehicle uses a 12 V auxiliary and a 201.6 V hybrid vehicle battery. Therefore, there are two recharging methods when the batteries are discharged.

(a) Perform this procedure when the auxiliary battery is fully discharged.

HINT:

The following problems indicate that the auxiliary battery is discharged:

- No display appears on the instrument panel when the power switch is turned on (IG).
- The hybrid system does not start.
- The headlights are dim.
- The sound from the horn is weak.
- Park (P) cannot be disengaged.

NOTICE:

Never use a quick charger.

(1) Engage the parking brake.

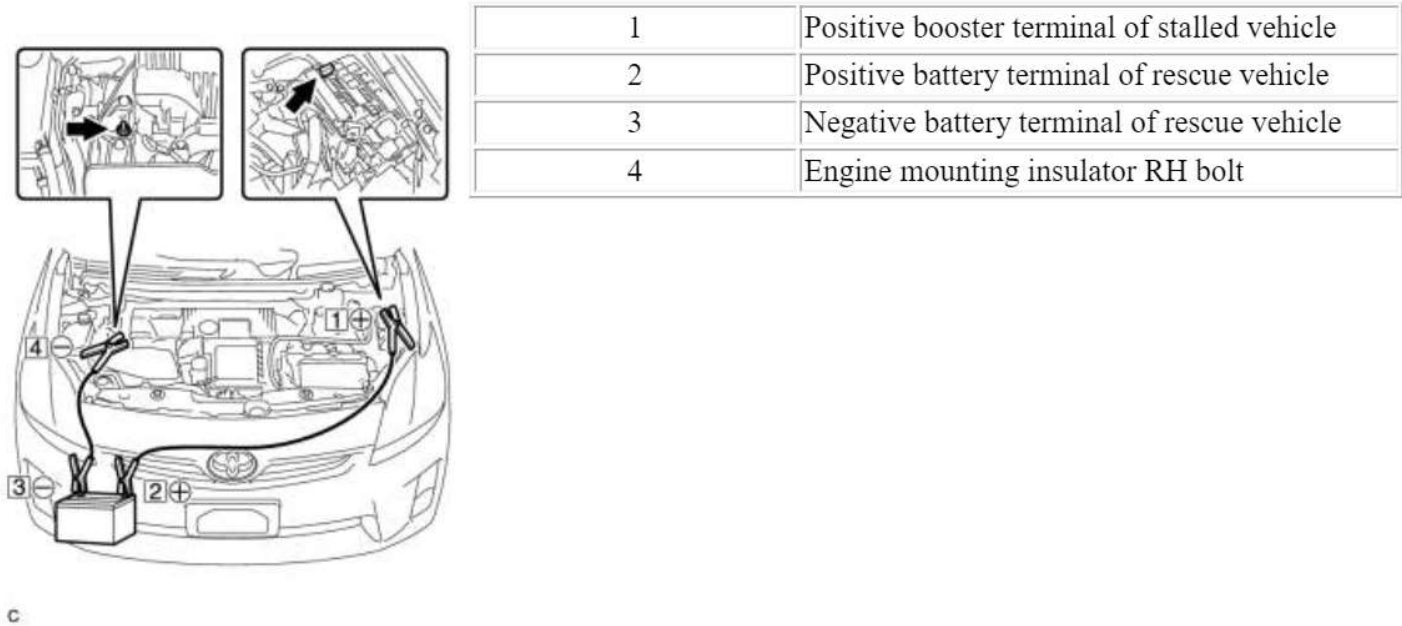
(2) Turn the power switch off and remove the key from the interior detection area.

(3) Using booster cables, connect the 12 V battery of the rescue vehicle and the auxiliary battery of the stalled vehicle as shown in the illustration.

HINT:

Use the booster terminal in the engine compartment.

Connecting Sequence	Connecting Location
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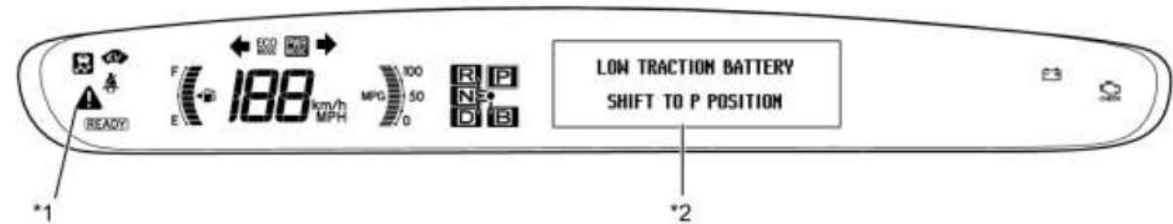
c

- (4) Start the engine of the rescue vehicle and run the engine at a speed slightly higher than usual.
- (5) Turn the power switch on (READY).

NOTICE:

Immediately disconnect the booster cables in the reverse order of connection after the hybrid system have started. Do not leave the booster cables connected because they are not designed for recharging purposes.

If the hybrid system fails to start and the HV battery warning illuminates, the HV battery may be discharged.



Text in Illustration

*1	Master Warning Light	*2	Multi-information Display
----	----------------------	----	---------------------------

(b) When the hybrid vehicle battery is discharged:
2010 Toyota Prius

(1) Using the THS charger, charge the hybrid vehicle battery.

HINT:

Perform this operation when the hybrid vehicle battery is discharged or low, or if Low Traction Battery is displayed and DTC P3000-388 or 389 is stored in the power management control ECU (HV CPU).

6. ACTIONS TO BE TAKEN FOR VEHICLES DAMAGED BY IMPACT

CAUTION:

The vehicle has a hybrid system that operates at voltages of up to 650 V. The hybrid system uses an HV battery that contains an electrolyte which is a strong alkali solution that includes potassium hydroxide. Be sure to follow the instructions in this manual to handle the system correctly. Failure to do so may result in serious injury or electrocution.

(a) Items to be prepared for the accident site

- Protective clothing (insulated gloves, rubber gloves, goggles, and safety shoes)
- Saturated boric acid solution 20 liter (21.1 US qts, 17.6 Imp.qts) (obtain 800 g (1.7 lb) of boric acid powder, put it into a container, and dissolve it in water)
- Red litmus paper
- ABC fire extinguisher (effective against both oil flames and electrical flames)
- A shop rag or piece of cloth (for wiping off the electrolyte)
- Insulating tape (for insulating cable)
- Electrical tester

(b) Actions to be taken at the accident site

CAUTION:

- Do not touch any bare cables that may have high-voltage. If a cable must be touched or if accidental contact is possible, wear insulated gloves and insulate the cable using insulating tape.
- If the vehicle catches on fire, use an ABC fire extinguisher to extinguish the fire. Trying to extinguish a fire using only a small amount of water can be more dangerous than effective. Use a substantial amount of water or wait for firefighters.
- Visually check the HV battery and the immediate area for any electrolyte leakage. Do not touch any leaked liquid because it could be highly alkaline electrolyte.
- Work on the vehicle only after the vehicle has been pulled out of the water.

(1) Check the vicinity of the hybrid vehicle battery for any leakage of the electrolyte.

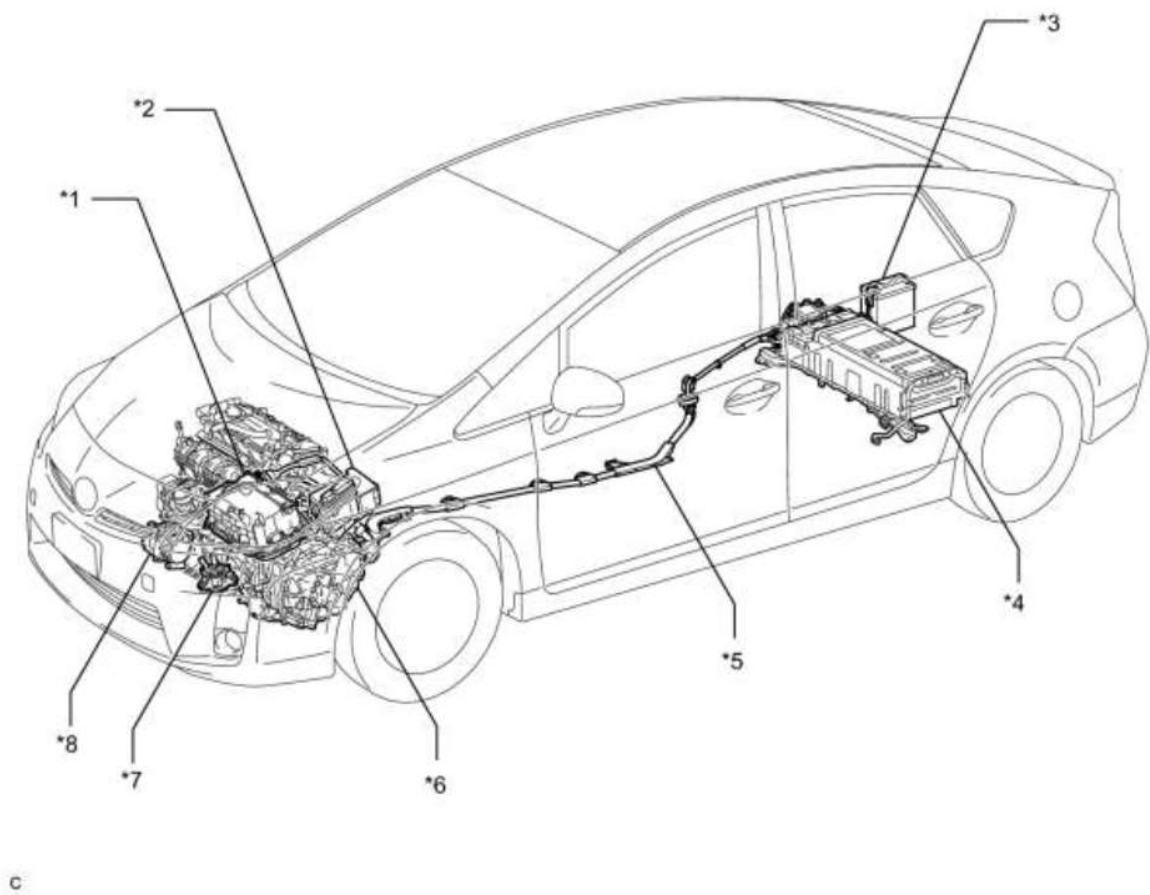
CAUTION:

Do not touch any leaked liquid because it could be highly alkaline electrolyte. Wear rubber gloves and goggles, neutralize the liquid with saturated boric acid solution, and then apply red litmus paper to the liquid. Check that the paper does not turn blue. Wipe the neutralized liquid with a shop rag or piece of cloth.

(2) If damage to any of the high-voltage components and cables is suspected, cut the high-voltage circuit using the following procedure.

CAUTION:

Be sure to wear insulated gloves, goggles, and safety shoes.



Text in Illustration

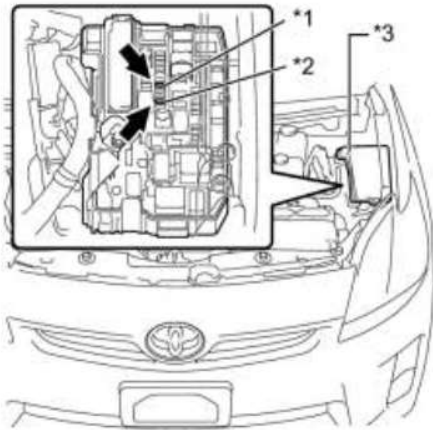
*1	Inverter with Converter Assembly	*2	Engine Room Junction Block Assembly
*3	Auxiliary Battery	*4	HV battery Assembly
*5	No. 3 Wire Frame	*6	Hybrid Vehicle Transaxle Assembly
*7	Water Pump with Motor Assembly	*8	Compressor with Motor Assembly

(3) Turn the power switch off.

Text in Illustration

*1	AM2 Fuse
*2	IGCT Fuse
*3	Engine Room Junction Block Assembly

HINT:



If the power switch cannot be turned off, remove the IGCT fuse and AM2 fuse from the engine room junction block assembly. Confirm that the READY light is off.

(4) Disconnect the cable from the negative terminal of the auxiliary battery.

(5) Wear insulated gloves, and then remove the service plug.

NOTICE:

After removing the service plug grip, do not turn the power switch on (READY), unless instructed by the repair manual because this may cause a malfunction.

(c) Moving the damaged vehicle

If any of the following conditions is met, tow the vehicle away using a tow truck.

- One or more of the high-voltage components and cables are damaged.
- Components related to driving, the transaxle, or the fuel system are damaged.
- The master warning light is on.
- The READY light does not come on when attempting to turn the power switch on (READY).

CAUTION:

Before towing the vehicle away using a tow truck, disconnect the cable from the negative (-) terminal of the auxiliary battery and remove the service plug.

NOTICE:

Perform the procedure below if the READY light turns off, or there are abnormal noises, unusual smells, or strong vibrations while driving:

- (1) Park the vehicle in a safe place.
- (2) Push the P position switch, and apply the parking brake.
- (3) Turn the power switch off, and disconnect the cable from the negative (-) terminal of the auxiliary battery.
- (4) Remove the service plug while wearing insulated gloves.

(d) Actions required after moving the damaged vehicle

(1) Procedure

If you see any liquid on the road surface, it could be highly alkaline electrolyte leakage.

Wear rubber gloves and goggles, neutralize the liquid with saturated boric acid solution, and then apply red litmus paper to the liquid. Check that the paper does not turn blue. Wipe the neutralized liquid with a shop rag or piece of cloth.

(e) Items to be prepared (when repairing a damaged vehicle)

- Protective clothing (insulated gloves, rubber gloves, goggles, and safety shoes)
- Saturated boric acid solution 20 liter (21.1 US qts, 17.6 Imp.qts) (obtain 800 g (1.7 lb) of boric acid powder, put it into a container, and dissolve it in water)
- Red litmus paper
- A shop rag or piece of cloth (for wiping off the electrolyte)
- Insulating tape (for insulating cables)
- Electrical tester

(f) Precautions to be observed when servicing a damaged vehicle

CAUTION:

Always follow instructions to ensure safety.

(1) Wear insulated or rubber gloves, goggles, and safety shoes.

(2) Check the HV battery and immediate area for any electrolyte leakage.

CAUTION:

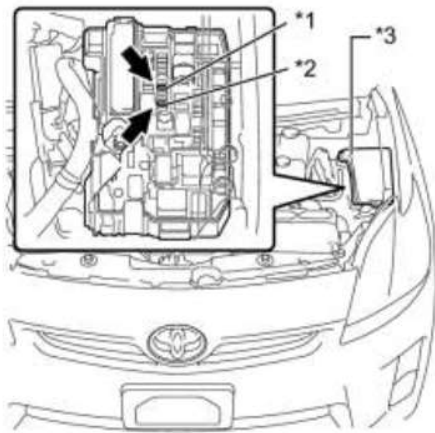
- Do not touch any leaked liquid because it could be highly alkaline electrolyte. Wear rubber gloves and goggles, neutralize the liquid with saturated boric acid solution, and then apply red litmus paper to the liquid. Check that the paper does not turn blue. Wipe the neutralized liquid with a shop rag or piece of cloth.
- If the electrolyte comes in contact with your skin, use a saturated boric acid solution or a large amount of water to wash it off. If the electrolyte comes in contact with an article of clothing, take it off immediately.
- If the electrolyte comes in contact with your eyes, call out loudly for help. Do not rub your eyes. Wash them immediately with a large amount of water and seek medical care.

(3) Do not touch any bare cables that could be high voltage cables. If a cable must be touched or if accidental contact is possible, follow the following instructions: 1) wear insulated gloves and goggles, 2) measure the voltage between the cable and body ground using an electrical tester, and 3) insulate the cable using insulating tape.

(4) If damage to any of the high-voltage components and cables is suspected, cut the high-voltage circuit using the procedure below.

CAUTION:

Do not touch any bare cables that may have high-voltage. If a cable must be touched or if accidental contact is possible, wear insulated gloves and insulate the cable using insulating tape.



(5) Turn the power switch off.

Text in Illustration

*1	AM2 Fuse
*2	IGCT Fuse
*3	Engine Room Junction Block Assembly

HINT:
If the power switch cannot be turned off, remove the IGCT fuse and AM2 fuse from the engine room junction block assembly. Confirm that the READY light is off.

(6) Disconnect the cable from the negative terminal of the auxiliary battery.

(7) Wear insulated gloves, and then remove the service plug.

NOTICE:

After removing the service plug grip, do not turn the power switch on (READY), unless instructed by the repair manual because this may cause a malfunction.

(g) Precautions to be taken when disposing of the vehicle

(1) Disposing of HV battery

When scrapping the vehicle, remove the HV battery from the vehicle and return it to the location specified by the manufacturer. Any damaged HV battery should also be returned to the specified location.

CAUTION:

- After removing the HV battery, keep it away from water. Water may heat the battery, resulting in a fire.
- Accidents such as electric shocks could result if the vehicle and its HV battery are disposed of improperly or abandoned. Therefore, make sure to return any HV battery using the prescribed recovery route through a TOYOTA dealer.

(h) Precautions to be observed when towing

(1) Tow the damaged vehicle with its front and rear wheels lifted off the ground.

CAUTION:

Towing the damaged vehicle with its front wheels on the ground will cause the motor to generate electricity. This electricity could, depending on the nature of the damage, leak and cause a fire.

(i) Towing with the 4 wheels on the ground

CAUTION:

- If the vehicle needs to be towed using a rope with all 4 wheels on the ground, do not exceed 30 km/h (19 mph) and tow only for a short distance and then have the vehicle towed by a truck.
- Turn the power switch on (IG) and move the selector lever to N.
- If any abnormality is present in the damaged vehicle during towing, stop towing immediately.

HINT:

Neutral (N) cannot be selected if the auxiliary battery is disconnected.

7. FOR VEHICLES EQUIPPED WITH SRS AIRBAG AND SEAT BELT PRETENSIONER

This vehicle is equipped with a Supplemental Restraint System (SRS).

CAUTION:

- Before performing pre-disposal deployment of any SRS component, review and closely follow all applicable environmental and hazardous material regulations. Pre-disposal deployment may be considered hazardous material treatment.
- Failure to carry out the service operations in the correct sequence could cause the SRS to unexpectedly deploy during servicing and lead to serious injury. Furthermore, if a mistake is made when servicing the SRS, it is possible that the SRS may fail to operate properly. Before servicing (including removal or installation of parts, inspection or replacement), be sure to read the following section carefully.

(a) GENERAL NOTICE

(1) As malfunctions of the SRS are difficult to confirm, the Diagnostic Trouble Codes (DTCs) become the most important source of information when troubleshooting. When troubleshooting the SRS, always check for DTCs before disconnecting the battery.

(2) Work must be started at least 90 seconds after the power switch is turned off and after the cable is disconnected from the negative (-) battery terminal.

The SRS is equipped with a back-up power source. If work is started within 90 seconds after turning the power switch off and disconnecting the cable from the negative (-) battery terminal, the SRS may deploy.

When the cable is disconnected from the negative (-) battery terminal, the clock and audio system memory will be cleared. Before starting work, make a note of the settings of each memory system. When work is finished, reset the clock and audio system as before.

CAUTION:

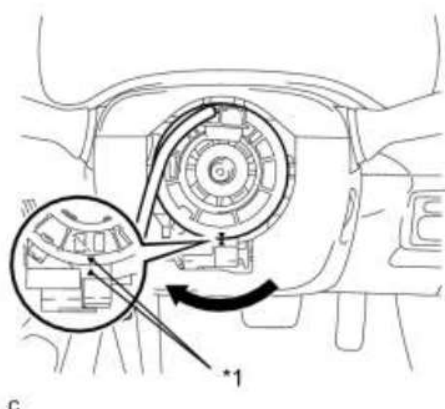
Never use a back-up power source (battery or other) to avoid clearing the system memory. The back-up power source may inadvertently power the SRS and cause it to deploy.

(3) If the vehicle has been involved in a minor collision where the SRS does not deploy, the steering pad, front passenger airbag assembly, knee airbag assembly, seat side airbag assembly, curtain shield airbag assembly and seat outer belt assembly should be inspected before further use of the vehicle.

- (4) Never use SRS parts from another vehicle. When replacing parts, use new parts.
- (5) Before repairs, remove the airbag sensor assemblies if impacts are likely to be applied to the sensor during repairs.
- (6) Never disassemble and attempt to repair any airbag sensor assemblies or airbag assemblies.
1. Steering pad
 2. Front passenger airbag assembly
 3. Knee airbag assembly
 4. Seat side airbag assembly
 5. Curtain shield airbag assembly
 6. Front seat outer belt assembly
- (7) Replace the airbag sensor assemblies and the airbag assemblies if: 1) damage has occurred from being dropped, or 2) cracks, dents or other defects in the case, bracket or connector are present.
- (8) Do not directly expose the airbag sensor assemblies or airbag assemblies to hot air or flames.
- (9) Use a voltmeter/ohmmeter with high impedance (minimum = 10 kΩ) for troubleshooting electrical circuits.
- (10) Information labels are attached to the SRS components. Follow the instructions on the labels.
- (11) After work on the SRS is completed, check the SRS warning light.

(b) SPIRAL CABLE

Text in Illustration

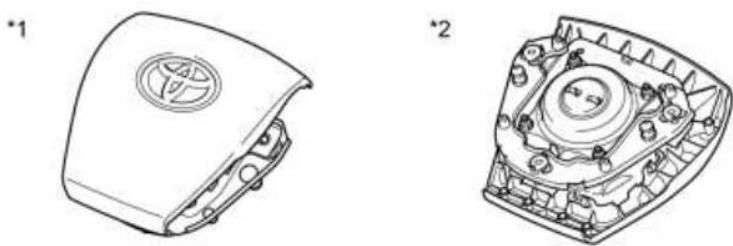


*1	Alignment Mark
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- (1) The steering wheel must be fitted correctly to the steering column with the spiral cable at the neutral position. Otherwise, cable damage and other problems may occur. Refer to the information about correct installation of the steering wheel [INFO](#).

(c) STEERING PAD

- (1) Always place a removed or new steering pad with the surface facing upward as shown in the illustration. Placing the steering pad with the pad surface facing downward could cause a serious accident if the airbag deploys. Also, do not place anything on top of the steering pad.

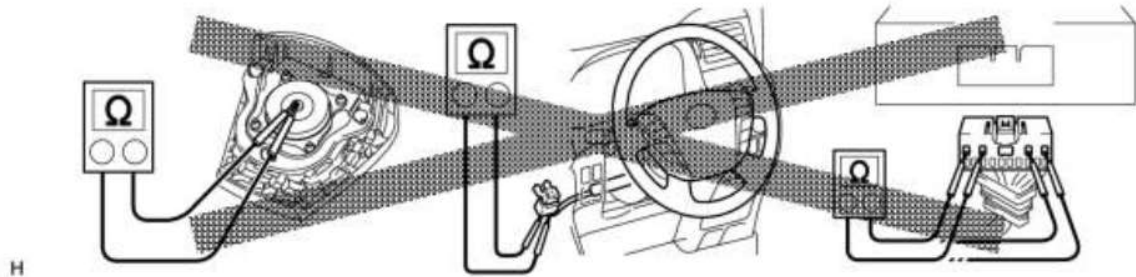


c

Text in Illustration

*1	CORRECT	*2	INCORRECT
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(2) Never measure the resistance of the airbag squib. This may cause the airbag to deploy, which could cause serious injury.

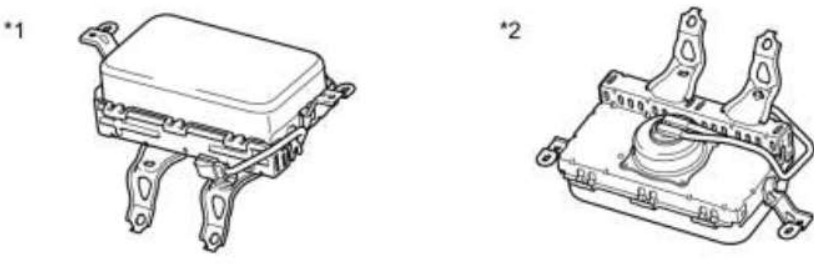


H

- (3) Grease or detergents of any kind should not be applied to the steering pad.
- (4) Store the steering pad in an area where the ambient temperature is below 93°C (200°F), the humidity is not high and there is no electrical noise.
- (5) Before using an electric welder anywhere on the vehicle, disconnect the center airbag sensor assembly connectors. These connectors contain shorting springs. This feature reduces the possibility of the airbag deploying due to current entering the squib wiring.
- (6) When disposing of the vehicle or the steering pad by itself, the airbag should be deployed using SST before disposal INFO. Deploy the airbag in a safe place away from electrical noise.

(d) FRONT PASSENGER AIRBAG ASSEMBLY

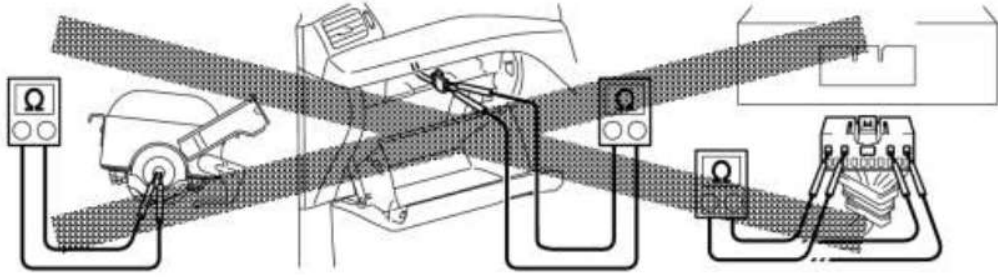
(1) Always place a removed or new front passenger airbag assembly with the pad surface facing upward as shown in the illustration. Placing the airbag assembly with the airbag deployment direction facing downward could cause a serious accident if the airbag deploys.



Text in Illustration

*1	CORRECT	*2	INCORRECT
----	---------	----	-----------

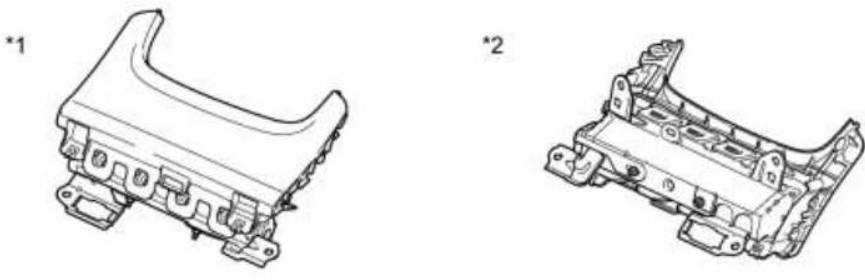
(2) Never measure the resistance of the airbag squib. This may cause the airbag to deploy, which could cause serious injury.



- (3) Grease or detergents of any kind should not be applied to the front passenger airbag assembly.
- (4) Store the airbag assembly in an area where the ambient temperature is below 93°C (200°F), the humidity is not high and there is no electrical noise.
- (5) Before using an electric welder anywhere on the vehicle, disconnect the center airbag sensor assembly connectors. These connectors contain shorting springs. This feature reduces the possibility of the airbag deploying due to current entering the squib wiring.
- (6) When disposing of the vehicle or the airbag assembly unit by itself, the airbag should be deployed using SST before disposal INFO. Deploy the airbag in a safe place away from electrical noise.

(e) KNEE AIRBAG ASSEMBLY

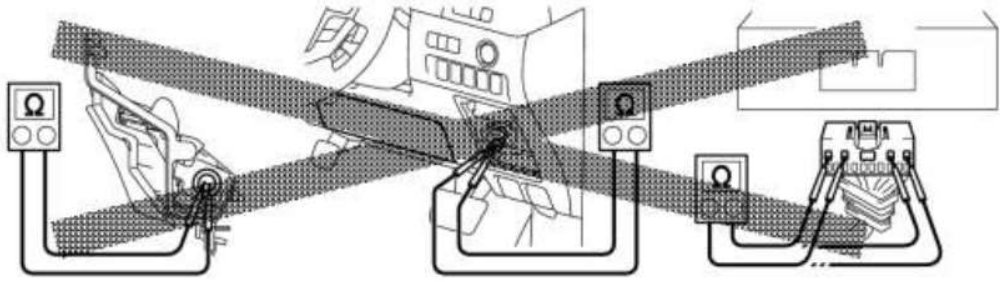
(1) Always place a removed or new knee airbag assembly with the airbag deployment direction facing upward as shown in the illustration. Placing the airbag assembly with the airbag deployment direction facing downward could cause a serious accident if the airbag deploys.



Text in Illustration

*1	CORRECT	*2	INCORRECT
----	---------	----	-----------

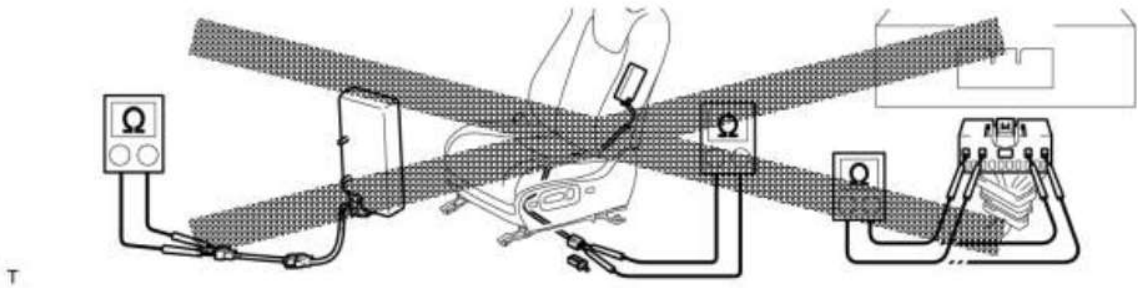
(2) Never measure the resistance of the airbag squib. This may cause the airbag to deploy, which could cause serious injury.



- (3) Grease or detergents of any kind should not be applied to the knee airbag assembly.
- (4) Store the knee airbag assembly in an area where the ambient temperature is below 93°C (200°F), the humidity is not high and there is no electrical noise.
- (5) Before using an electric welder anywhere on the vehicle, disconnect the center airbag sensor assembly connectors. These connectors contain shorting springs. This feature reduces the possibility of the airbag deploying due to current entering the squib wiring.
- (6) When disposing of a vehicle or knee airbag assembly unit by itself, the airbag should be deployed using SST before disposal INFO. Deploy the airbag in a safe place away from electrical noise.

(f) SEAT SIDE AIRBAG ASSEMBLY

- (1) Always place a removed or new seat side airbag assembly with the airbag deployment direction facing upward.
- (2) Never measure the resistance of the airbag squib. This may cause the airbag to deploy, which could cause serious injury.



- (3) Grease or detergents of any kind should not be applied to the seat side airbag assembly.
- (4) Store the airbag assembly in an area where the ambient temperature is below 93°C (200°F), the humidity is not high and there is no electrical noise.
- (5) Before using an electric welder anywhere on the vehicle, disconnect the center airbag sensor assembly connectors. These connectors contain shorting springs. This feature reduces the possibility of the airbag deploying due to current entering the squib wiring.
- (6) When disposing of a vehicle or the airbag assembly unit by itself, the airbag should be deployed using SST before disposal INFO. Deploy the airbag in a safe place away from electrical noise.

(g) CURTAIN SHIELD AIRBAG ASSEMBLY

- (1) Always place a removed or new curtain shield airbag assembly in a clear plastic bag, and keep it in a safe place.



Text in Illustration

*1	CORRECT	*2	INCORRECT
*3	Clear Plastic Bag	-	-

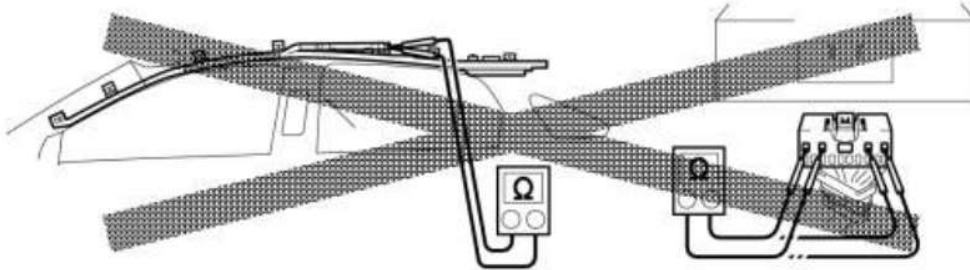
CAUTION:

The plastic bag should be disposed of after use.

NOTICE:

Never disassemble the curtain shield airbag assembly.

(2) Never measure the resistance of the airbag squib. This may cause the airbag to deploy, which could cause serious injury.



(3) Grease or detergents of any kind should not be applied to the curtain shield airbag assembly.

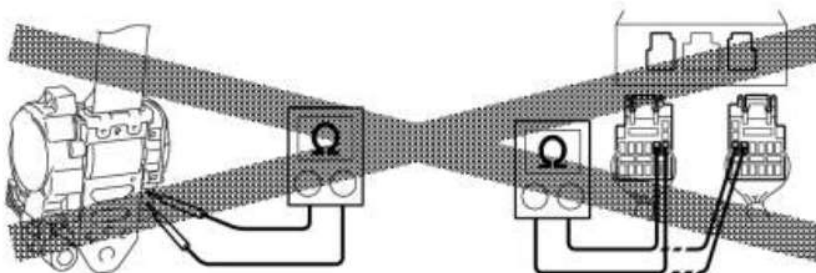
(4) Store the airbag assembly in an area where the ambient temperature is below 93°C (200°F), the humidity is not high and there is no electrical noise.

(5) Before using an electric welder anywhere on the vehicle, disconnect the center airbag sensor assembly connectors. These connectors contain shorting springs. This feature reduces the possibility of the airbag deploying due to current entering the squib wiring.

(6) When disposing of a vehicle or the airbag assembly unit by itself, the airbag should be deployed using SST before disposal INFO. Deploy the airbag in a safe place away from electrical noise.

(h) FRONT SEAT OUTER BELT ASSEMBLY (SEAT BELT PRETENSIONER)

(1) Never measure the resistance of the front seat outer belt assembly. This may cause the pretensioner of the front seat outer belt assembly to activate, which could cause serious injury.



(2) Never disassemble the front seat outer belt assembly.

(3) Never install the front seat outer belt assembly on another vehicle.

- (4) Store the front seat outer belt assembly in an area where the ambient temperature is below 80°C (176°F), the humidity is not high and there is no electrical noise.
- (5) Before using an electric welder anywhere on the vehicle, disconnect the center airbag sensor assembly connectors. These connectors contain shorting springs. This feature reduces the possibility of the airbag deploying due to current entering the squib wiring.
- (6) When disposing of a vehicle or the front seat outer belt assembly unit by itself, the front seat outer belt assembly should be activated before disposal INFO. Activate the front seat outer belt assembly in a safe place away from electrical noise.
- (7) As the front seat outer belt assembly is hot after being activated, allow some time for it to cool down sufficiently before disposal. Never apply water to cool down the front seat outer belt assembly.
- (8) Grease, detergents, oil or water should not be applied to the front seat outer belt assembly.

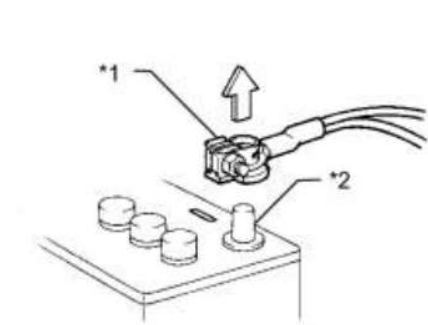
(i) CENTER AIRBAG SENSOR ASSEMBLY

- (1) Never reuse a center airbag sensor assembly that has been involved in a collision where the SRS has deployed.
- (2) The connectors to the center airbag sensor assembly should be connected or disconnected with the sensor installed to the vehicle. If the connectors are connected or disconnected while the center airbag sensor assembly is not installed, the SRS may activate.
- (3) Work must be started at least 90 seconds after the power switch is turned off and the cable is disconnected from the negative (-) battery terminal, even if only loosening the bolts of the center airbag sensor assembly.

(j) WIRE HARNESS AND CONNECTOR

- (1) All the connectors in the system are a standard yellow color. If an SRS wire harness has an open circuit or a connector is broken, replace it.

8. ELECTRONIC CONTROL



Text in Illustration

*1	Cable
*2	Negative (-) Battery Terminal

NOTICE:

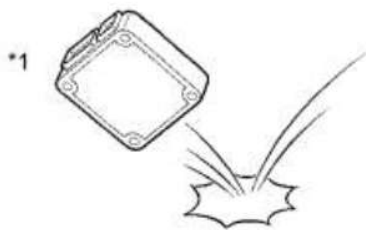
- Certain systems need to be initialized after disconnecting and reconnecting the cable from the negative (-) battery terminal.
- When the auxiliary battery is replaced or the cable is disconnected from its negative (-) battery terminal, the ISC learning value will be initialized and symptoms as a loud rattle from the hybrid vehicle transaxle assembly may occur until ISC learning is performed. Therefore, perform ISC learning when the auxiliary battery is replaced or the cable is disconnected from the negative (-) terminal of the auxiliary battery INFO.

(a) DISCONNECTING AND RECONNECTING NEGATIVE BATTERY CABLE

- (1) Before performing work on electronic components, disconnect the cable from the negative (-) battery terminal to prevent damage to the electrical system or components.
- (2) When disconnecting the cable, turn the power switch and headlight switch off and loosen the cable nut completely. Perform these operations without twisting or prying the cable. Then, disconnect the cable.
- (3) Clock settings, radio settings, audio system memory, DTCs and other data will be cleared when the cable is disconnected from the negative (-) battery terminal. Write down any necessary data before disconnecting the cable.

(b) HANDLING OF ELECTRONIC PARTS**Text in Illustration**

*1	INCORRECT
----	-----------



- (1) Do not open the cover or case of the ECU unless absolutely necessary. If the IC terminals are touched, the IC may be rendered inoperative by static electricity.
- (2) Do not pull on the wires when disconnecting electronic connectors. Pull on the connector itself.
- (3) Do not drop electronic components, such as sensors or relays. If they are dropped on a hard surface, they should be replaced.
- (4) When cleaning the engine compartment with steam, protect the electronic components, air filter and emission-related components from water.
- (5) Never use an impact wrench to remove or install temperature switches or temperature sensors.
- (6) When measuring the resistance between terminals of a wire connector, insert the tester probe carefully to prevent the terminals from bending.

9. FOR VEHICLES EQUIPPED WITH REMOTE AIR CONDITIONING SYSTEM AND SOLAR VENTILATION SYSTEM

(a) Vehicles with the remote air conditioning system have the following risks that it is necessary to be aware of when performing repairs. Therefore, make sure to take care of the key (electrical transmitter) carefully so that the remote air conditioning system is not operated unexpectedly.

Risks

The electrical fan and other items in the engine compartment may operate resulting in various hazards.
The wipers may operate if the wiper switch is in the on position when the remote air conditioning system is activated. If this occurs, there is the potential for damage to the glass, wipers or injury.
When the light control switch is in the tail, head or AUTO position, the headlights may turn on.
Short circuits may occur if electrical inspections are being performed when the remote air conditioning system is turned on, because the IG circuit is powered at this time.

CAUTION:

Failure to take proper care with the key (electrical transmitter) may cause the system to be accidentally operated. This can lead to an accident and damage to parts or a serious injury.

HINT:

- Make sure to store the key (electrical transmitter) in a box with the switch side facing up, and place the box where it can be monitored so that no one cannot operate the remote A/C switch.
- For operating condition of the remote air conditioning system, refer to System Description INFO.

(b) When performing repairs on vehicles with the solar ventilation system, turn the solar ventilation switch off.

CAUTION:

Depending on the environment around the vehicle, performing repairs with the solar ventilation switch on may cause the blower motor to operate unexpectedly, resulting in various hazards. This can lead to damage to parts or a serious injury.

10. REMOVAL AND INSTALLATION OF FUEL CONTROL PARTS

(a) PLACE FOR REMOVING AND INSTALLING FUEL SYSTEM PARTS

- (1) Work in a location with good air ventilation that does not have welders, grinders, drills, electric motors, stoves, or any other ignition sources nearby.
- (2) Never work in a pit or near a pit as fuel vapors will collect there.

(b) REMOVING AND INSTALLING FUEL SYSTEM PARTS

- (1) Prepare a fire extinguisher before starting work.
- (2) To prevent static electricity, install a ground wire between the fuel changer and vehicle, and do not spray the surrounding area with water. Be careful when performing work in this area, as the floor surface will become slippery. Do not clean up gasoline spills with water, as this may cause the gasoline to spread, and possibly create a fire hazard.

- (3) Avoid using electric motors, work lights and other electric equipment that can cause sparks or high temperatures.
- (4) Avoid using iron hammers as they may create sparks.
- (5) Dispose of fuel-contaminated cloth separately using a fire resistant container.

11. REMOVAL AND INSTALLATION OF ENGINE INTAKE PARTS



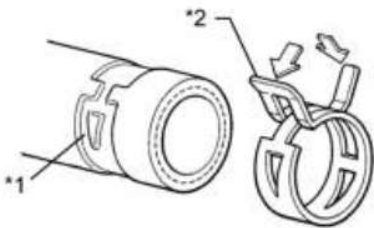
(a) If any metal particles enter intake system parts, this may damage the engine.

- (b) When removing and installing intake system parts, cover the openings of the removed parts and engine openings. Use adhesive tape or other suitable materials.
- (c) When installing intake system parts, check that no metal particles have entered the engine or installed parts.

12. HANDLING OF HOSE CLAMPS

Text in Illustration

*1	Clamp Track
*2	Spring Type Clamp



- (a) Before removing a hose, check the clamp position so that it can be reinstalled in the same position.
- (b) Replace any deformed or dented clamps with new ones.
- (c) When reusing a hose, attach the clamp on the clamp track portion of the hose.
- (d) For a spring type clamp, it may be necessary to spread the tabs slightly after installation by pushing them in the direction of the arrows as shown in the illustration.

13. FOR VEHICLES EQUIPPED WITH MOBILE COMMUNICATION SYSTEMS

- (a) Install an antenna as far away from the ECU and sensors of the vehicle electronic systems as possible.



(b) Install an antenna and feeder at least 20 cm (7.87 in.) away from the ECU and sensors of the vehicle electronic systems. For details about ECU and sensor locations, refer to the section on the applicable components.

(c) Keep the antenna and feeder separate from other wiring as much as possible. This will prevent signals sent from the communication equipment from affecting vehicle equipment and vice versa.

(d) Check that the antenna and feeder are correctly adjusted.

(e) Do not install a high-powered mobile communication system.

14. HEADLIGHT INSPECTION OR MAINTENANCE

*1



(a) When the headlights are illuminated, do not cover the headlights for 3 minutes or more.

Text in Illustration

*1 Illumination for 3 minutes or more prohibited if covered

NOTICE:

As the headlight outer lens is made of resin, the resulting heat created when covering the headlight for an extended period of time may deform the headlight.

15. FOR VEHICLES EQUIPPED WITH TRACTION CONTROL (TR(A)C) AND VEHICLE STABILITY CONTROL (VSC) SYSTEMS

(a) NOTICES FOR WHEN TESTING WITH DRUM TESTER

(1) When testing with a 2-wheel drum tester such as a speedometer tester, a combination speedometer and brake tester, or a chassis dynamometer, perform the following procedure to enter inspection mode and disable the TR(A)C and VSC systems .

NOTICE:

- If the vehicle is tested in normal mode on the tester, TR(A)C and VSC operation may cause the vehicle to jump off of the tester.
- Secure the vehicle with chains for safety.

(b) NOTICES FOR VSC RELATED PROCEDURES

(1) For VSC related parts, adjustments are required after removal and installation. Therefore, perform removal and installation only when necessary.

(2) When performing VSC related procedures, be sure to strictly follow the preparation and completion procedures.

(3) When performing removal and installation or replacement of VSC related parts, first disconnect the cable from the negative (-) battery terminal.

16. WHEN INSPECTING VEHICLES

NOTICE:

When the vehicle is run in inspection mode for an operation such as a speedometer test, a DTC may be set. Therefore, if the warning light comes on, after canceling inspection mode, check for DTCs using the Techstream and clear the DTCs.

(a) VEHICLE CONDITIONS

(1) Before activating inspection mode, turn the air conditioning off, start the hybrid system with park (P) selected, and check that the engine stops within several seconds after starting (engine warm up check).

(2) Activate the appropriate inspection mode and inspect the vehicle .

HINT:

Different types of inspection mode are available. One is Maintenance Mode, and the other is Certification Mode. The following table indicates the mode appropriate for each test item.

The shift state for each test is as follows:

Test Item	Mode	Shift State
1. Vehicle straight travelling test (side slip inspection)	Maintenance mode or normal mode	D
2. Braking force test	Maintenance mode	N
3. Speedometer test	Maintenance mode	D
4. Exhaust gas test (idling)	Maintenance mode	P
5. Headlight test	Maintenance mode or normal mode	P

(3) Cancel inspection mode immediately after completion of inspection.

NOTICE:

Driving the vehicle without canceling inspection mode may damage the transaxle.

(b) WHEN USING A BRAKE TESTER

CAUTION:

Be sure to perform the test in maintenance mode.

NOTICE:

- A high-speed type brake tester cannot be used.
- Vehicle speed should be less than 0.5 km/h (0.3 mph).
- Follow all usage and safety procedures in the operator's manual for the brake tester.

(1) Place the wheels to be tested (front or rear) onto the rollers.

(2) Move the selector lever to N.

(3) Start the engine to allow normal brake booster operation.

(4) Operate the brakes to perform the test.

(c) WHEN USING A SPEEDOMETER TESTER

CAUTION:

Be sure to perform the test in maintenance mode.

NOTICE:

Do not perform rapid starting or quick acceleration on a speedometer tester. If rapid starting or quick acceleration is performed on a speedometer tester, damage may occur to the transaxle.

(1) Depress the accelerator pedal slowly and gradually accelerate the vehicle. Make a measurement.

(2) After the measurement, use the brakes to gradually decelerate the vehicle.

(d) WHEN USING A CHASSIS DYNAMOMETER

(1) Always set an appropriate load before starting the test.

NOTICE:

Sudden acceleration or deceleration of the vehicle on a chassis dynamometer under minimal load may damage the transaxle.

(e) WHEN USING AN ON-VEHICLE BALANCER

(1) Raise the vehicle until all 4 wheels are off the ground.

(2) Support the vehicle with safety stands at an appropriate height. Make sure that the vehicle does not lean in any direction, and that the tires are completely clear of the floor.

(3) Place the vibration pick-up unit into position for the wheel to be measured*1.

(4) Release the parking brake.

(5) Check that no dragging force exists when turning each wheel by hand.

(6) Put the wheel balancer in position.

(7) Wheel balance measurement should be done by using both the engine and the wheel balancer drive roller to spin the wheels.

HINT:

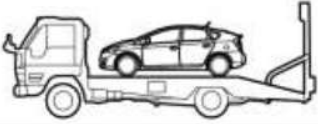
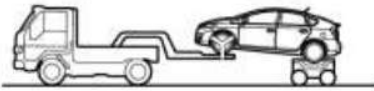
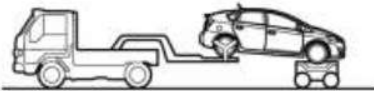
*1: Different on-vehicle wheel balancers have different requirements for mounting the vibration pick-up unit(s). Refer to the operator's manual for the wheel balancer to confirm requirements for use.

NOTICE:

- Be sure to perform the test in maintenance mode.
- Start the engine and then increase the vehicle speed gradually with drive (D) selected.
- Do not accelerate or decelerate suddenly.
- Deceleration should be done by braking gradually.
- Make sure that no one is standing in-line with the spinning wheels.
- Measurement should be done quickly.
- Confirm that the vehicle is securely immobilized.
- Follow all usage and safety procedures in the operator's manual for the wheel balancer.

17. WHEN TOWING VEHICLES

- (a) Use one of the following methods to tow the vehicle.
- (b) If the vehicle has trouble with the chassis or drive train, use method 1 (flatbed truck).

Conditions Towing Method	Parking Brake	Shift State
1. Flatbed Truck 	Applied	Any
2. Wheel Lift Type Truck From Front (using dollies)  From Rear 	Applied	Any
3. Wheel Lift Type Truck From Front (not using dollies) 	Released	P

NOTICE:

Do not use any towing method other than those shown above.

(c) If a tow truck is not available, in an emergency vehicle may be temporarily towed using a cable or chain secured to the emergency towing eyelet(s). This should only be attempted on hard surfaced roads for short distances below 30 km/h (19 mph).

A driver must be in the vehicle to steer and operate the brakes. The vehicle's wheels, drive train, axles, steering and brakes must be in good condition.

(1) Emergency towing procedure

1. Turn the power switch on (IG).
2. Depress the brake pedal and move the selector lever to N.
3. Release the parking brake.
4. Release the brake pedal slowly.

NOTICE:

- Use extreme caution when towing the vehicle.

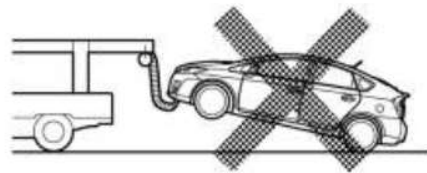
Avoid sudden starts or erratic driving maneuvers which place excessive stress on the emergency towing eyelet and the cables or chains.

- If the hybrid system is off, the power assist for the brakes and steering will not function, making steering and braking more difficult.



(d) The following towing methods shown below are dangerous and can damage the vehicle, so do not use them.

- (1) Do not tow the vehicle with only front wheels on the ground.
- (2) Do not use a sling-type towing method either from the front or rear.



NOTICE:

If these towing methods are used either from the front or rear, the following may occur.

- The drive train may overheat and be damaged.
- If a sling-type tow truck is used, damage may occur to the vehicle body.

18. FOR VEHICLES EQUIPPED WITH CATALYTIC CONVERTER

CAUTION:

If a large amount of unburned gasoline or gasoline vapors flow into the converter, it may cause converter overheating and create a fire hazard. To prevent this, observe the following precautions:

- (a) Use only unleaded gasoline.
- (b) Avoid performing unnecessary spark tests.
- (1) Perform a spark test only when absolutely necessary. Perform this test as rapidly as possible with the injector connector disconnected.

(c) While testing, never race the engine unless instructed.

(d) Do not run the engine when the fuel tank is nearly empty. This may cause the engine to misfire and create an extra load on the converter.

VEHICLE LIFT AND SUPPORT LOCATIONS

1. NOTICE ABOUT VEHICLE CONDITION WHEN RAISING VEHICLE

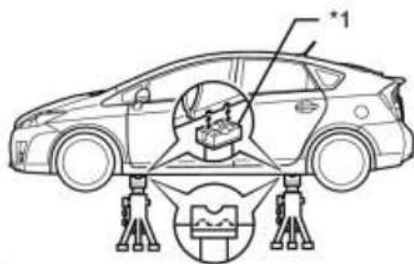
- (a) The vehicle must be unloaded before jacking up or raising the vehicle. Never jack up or raise a heavily loaded vehicle.
- (b) When removing any heavy components like the engine or transaxle, the vehicle center of gravity will shift. To stabilize the vehicle, place a balance weight in a location that will prevent the vehicle from rolling or shifting, or place a transmission jack under the appropriate jack position at the opposite end of the vehicle.

2. NOTICE FOR USING 4 POST LIFT

- (a) Follow the safety procedures outlined in the lift's instruction manual.
- (b) Do not damage the tires or wheels while driving onto the lift.
- (c) Use wheel chocks to secure the vehicle.

3. NOTICE FOR USING JACK AND SAFETY STANDS

- (a) Work on a level surface. Use wheel chocks at all times.



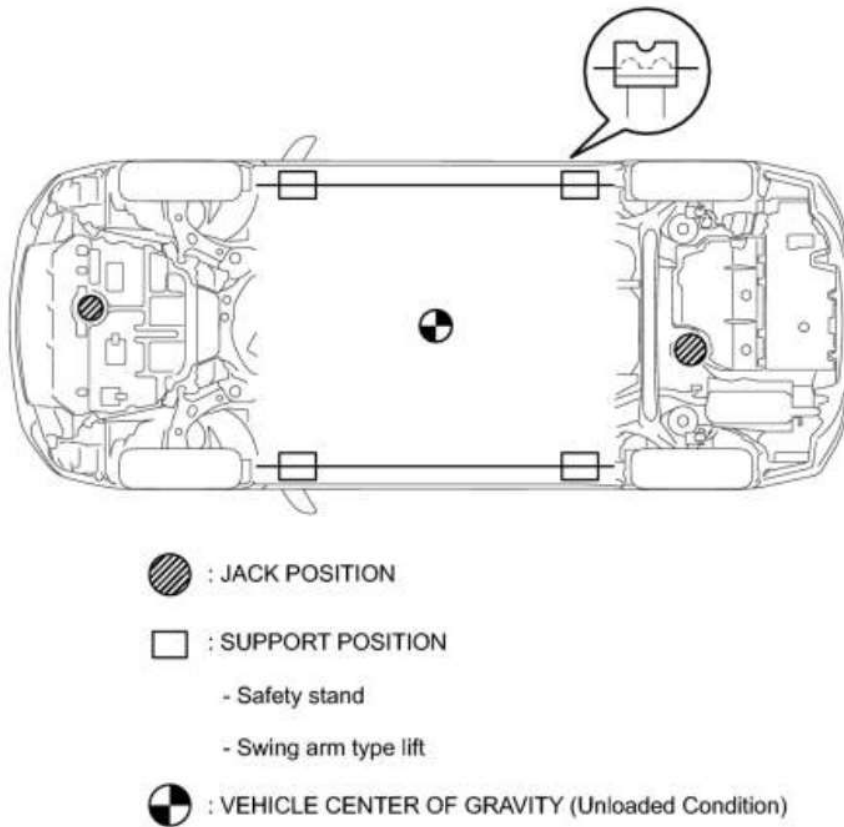
- (b) Use safety stands with rubber attachments as shown in the illustration.

Text in Illustration

*1	Rubber Attachment
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- (c) Set the jack and safety stands exactly under the specified locations on the vehicle.
- (d) Do not work on or leave the vehicle supported only by a jack. Be sure to support the vehicle with safety stands.
- (e) When jacking up the vehicle, first release the parking brake and move the selector lever to N.
- (f) When jacking up the entire vehicle:
 - (1) When jacking up the front wheels first, make sure wheel chocks are behind the rear wheels.
 - (2) When jacking up the rear wheels first, make sure wheel chocks are in front of the front wheels.
- (g) When jacking up only the front or rear wheels of the vehicle:
 - (1) Before jacking up the front wheels, place wheel chocks on both sides of the rear wheels.

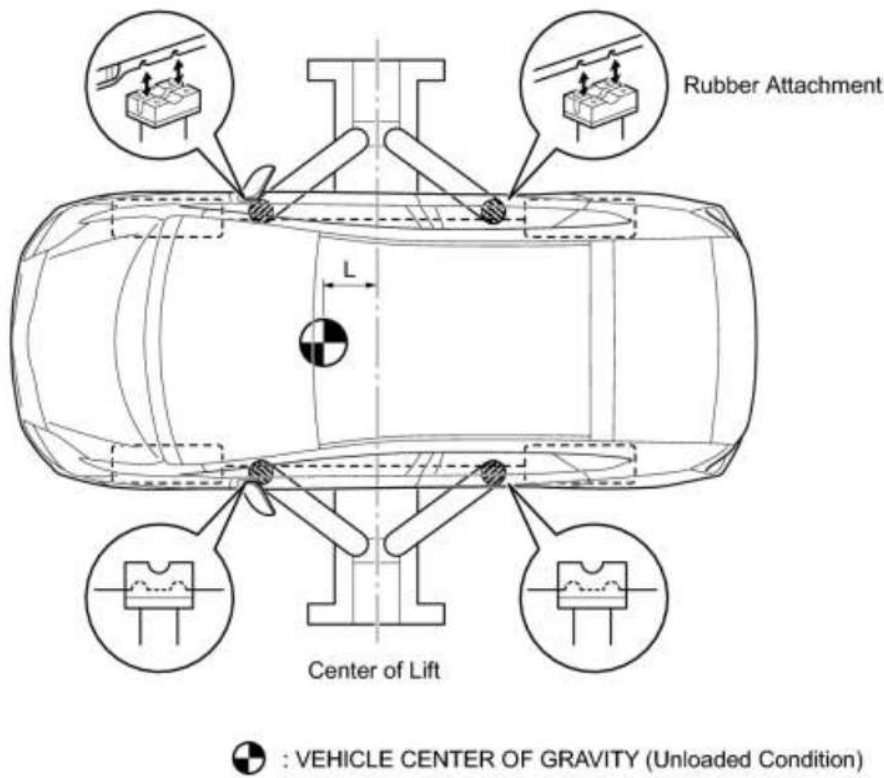
- (2) Before jacking up the rear wheels, place wheel chocks on both sides of the front wheels.
- (h) When lowering a vehicle that only has its front or rear wheels jacked up.



c

- (1) Before lowering the front wheels, make sure wheel chocks are in front of the rear wheels.
- (2) Before lowering the rear wheels, make sure wheel chocks are behind the front wheels.
- #### 4. NOTICE FOR USING A SWING ARM TYPE LIFT
- (a) Follow the safety procedures outlined in the lift's instruction manual.
- (b) Use swing arms equipped with rubber attachments as shown in the illustration.
- (c) Position the vehicle so that its center of gravity is centered on the lift (length of "L" in the illustration should be as short as possible).
- (d) Ensure that the rubber cushions or swing arms do not contact the body cladding or lower mouldings.
- (e) Be sure to lock the swing arms before raising the vehicle (if equipped with arm locks).

(f) Use the lift to raise the vehicle until the tires are off the ground, then stop the lift and shake the front and rear of the vehicle to make sure that it is stable.



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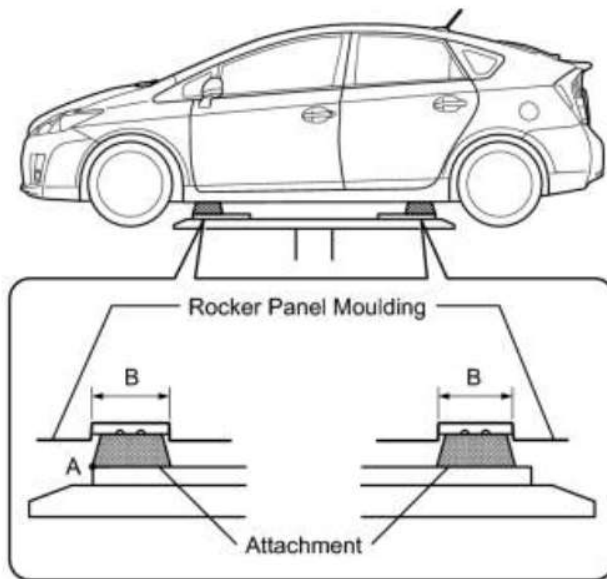
5. NOTICE FOR USING PLATE TYPE LIFT

- (a) Follow the safety procedures outlined in the lift's instruction manual.
- (b) Use plate lift attachments (rubber lifting blocks) on top of the plates.
- (c) Be sure to set the vehicle to the specified position described in the following chart and shown in the following illustration.

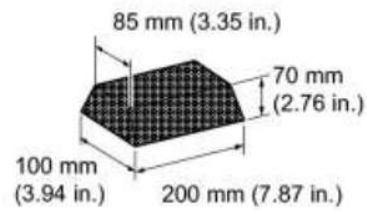
Right and left set position	Center the vehicle on the lift.
Front and rear set position	- Align the plate cushion ends with the lower ends of the attachments (A). - Be sure to set the attachment to position (B) as shown in the illustration.

- (d) Ensure that the plate lift or rubber lifting blocks do not contact the body cladding or lower moldings.

(e) Use the lift to raise the vehicle until the tires are off the ground, then stop the lift and shake the front and rear of the vehicle to make sure that it is stable.



Attachment Dimensions



c

CUSTOMIZE PARAMETERS

NOTICE:

- When the customer requests a change in a function, first make sure that the function can be customized.
- Be sure to make a note of the current settings before customizing.
- When troubleshooting a function, first make sure that the function is set to the default setting.

HINT:

The following items can be customized.

1. POWER DOOR LOCK CONTROL SYSTEM

Door Lock

Display	Default	Content	Setting
Unlock Key Twice	ON	Function that unlocks only the driver door when the driver door key cylinder is turned to unlock once, and unlock all doors when it is turned to unlock twice. For the OFF setting, turning it once unlocks all doors.	ON or OFF
Auto Lock	OFF ON*	Function that locks all doors when the vehicle speed reaches a certain level.	ON or OFF
Auto Lock/Shift	ON OFF*	Function that locks all doors when the shift lever is moved from P to any position other than P while the engine is running and all doors are closed.	ON or OFF
Auto Unlock/Shift	ON	Function that unlocks all doors when the shift lever is moved to P from any position other than P while the power switch is on (IG).	ON or OFF
All Unlock/Open-Close	OFF	Function that unlocks the other doors when the driver door is opened within 10 seconds after the power switch is turned off.	ON or OFF

- *: for Korea

Illuminated Entry

Display	Default	Content	Setting
Lighting Time	15 s	Function that changes the lighting time after closing all doors. (It will quickly fade out in case of turning the power switch from off to on (ACC) or (IG).)	7.5 s, 15 s or 30 s

2. WIRELESS DOOR LOCK CONTROL SYSTEM

Wireless Door Lock Control System

Display (item)	Default	Function	Setting
Wireless Control	ON	Function that turns wireless door lock function on or off	ON or OFF
Hazard Answer	ON	When the doors are locked by wireless operation, the hazard	ON or OFF

Display (item)	Default	Function	Setting
Back		warning lights flash once. When the doors are unlocked by wireless operation, the hazard warning lights flash twice.	
Open Door Warning	ON	The buzzer sounds when lock is pressed when any of the doors are ajar.	ON or OFF
Unlock 2 Operation	ON	Function that unlocks driver door when unlock switch on transmitter is pressed once, and unlocks all doors when pressed twice. If setting is OFF, pressing unlock switch once makes all doors unlock.	ON or OFF
Panic Function	ON	Function to operate theft deterrent system by continuously pressing panic switch on transmitter for 0.8 seconds	ON or OFF
Auto Lock Time	60 s*1 or 30 s*2	Function that regulates the interval between unlocking and automatic relocking of doors	30 s, 60 s or 120 s
Wireless Auto Lock	ON	This function turns the wireless auto lock function on or off.	ON or OFF
Wireless Buzzer Resp	ON	Wireless door lock buzzer response	ON or OFF
Wireless Buzzer Vol	Level7	Wireless door lock buzzer volume	Level7, Level6, Level5, Level4, Level3, Level2, Level1 or Level0

• *1: except for Korea

• *2: for Korea

Illuminated Entry

Display	Default	Content	Setting
Lighting Time	15 s	Changes the lighting time after closing all doors. (It will quickly fade out in case of turning the power switch from off to on (ACC or IG).)	7.5 s, 15 s or 30 s

3. SMART KEY SYSTEM (for Entry Function)

Smart Key / Access

Tester Display	Default	Content	Setting
Park Wait Time	2.5 s	Function that sets waiting time to permit opening door after door is locked with entry lock function	0.5 s, 1.5 s, 2.5 s or 5 s
Ignition Available Area	All	Function that switches the entry hybrid vehicle control system start detection area	Front or All*1
Back Door Opening Operation*2	Long	Function that opens the back door when the driver has the key and presses back door opener switch assembly (opener switch)	Long, Twice or OFF

• *1: Weak radio waves will still be emitted from oscillators other than the front oscillator even when the "Front" customize setting is selected.

- *2: w/ Entry System Back Door Open Function

Warning

Tester Display	Default	Content	Setting
Key Low Battery Warning	ON	Function that warns driver that the key battery is weak	ON or OFF

4. ENTRY UNLOCK MODE SWITCHING* (SMART KEY SYSTEM (for Entry Function))

*: except for Korea and Mexico

(a) To change the vehicle entry unlock mode, make sure that the vehicle power is off and simultaneously push and hold the lock switch and another switch on the key for 5 seconds.

Driver door unlock default setting:

When the switches are pressed and held for 5 seconds, the entry door unlock mode changes to the mode that is not currently selected.

NOTICE:

After pressing and holding the switches for 5 seconds, wait 5 seconds before performing the same procedure again.

- Driver door unlock mode:

When the driver door touch sensor is touched, only the driver door unlocks. When another touch sensor is touched, all doors unlock.*

*: w/ Entry System Back Door Open Function

- All door unlock mode:

When any touch sensor is touched, all doors unlock.

(b) The certification ECU (smart key ECU assembly) receives this signal from the door control receiver assembly and changes the smart key system to entry unlock mode.

(c) The certification ECU (smart key ECU assembly) sounds the buzzers of the wireless door lock buzzer assembly.

Mode	Wireless Door Lock Buzzer Assembly
Driver Door (Default)	Sounds 3 times
All Doors (Customized)	Sounds 2 times

HINT:

The procedure only changes entry unlock mode of the smart key system. It does not switch the unlocking of the wireless door lock control.

5. ELECTRICAL KEY CANCEL (SMART KEY SYSTEM (for Entry Function))

The electrical key cancel operation disables the following functions:

- Entry Unlock/Lock
- Entry Hybrid Vehicle Control System Start
- Entry System Back Door Open Function*

*: w/ Entry System Back Door Open Function

- Electrical Key Lock-in Prevention
- Warning

(a) The operation procedure is as follows:

Precondition:

Power switch off, driver door closed and unlocked.

- (1) Push the unlock switch of the key once.
- (2) Open the driver door within 5 seconds.
- (3) Push the unlock switch of the key twice within 5 seconds.
- (4) Close and open the driver door twice within 30 seconds.
(Driver door: Close → Open → Close → Open)
- (5) Push the unlock switch of the key twice within 5 seconds.
- (6) Close and open the driver door within 30 seconds.
(Driver door: Close → Open)
- (7) Close the driver door within 5 seconds.

When electrical key cancel is activated, the wireless door lock buzzer sounds twice.

To return to the original condition, perform the procedure again. When the original condition is returned, the wireless door lock buzzer sounds once.

6. SMART KEY SYSTEM (for Start Function)

Smart Key / Access

Tester Display	Default	Content	Setting
Ignition Available Area (Entry	All	Function to choose the available area for electrical key	Front or

Tester Display	Default	Content	Setting
ignition available area)		to start the hybrid control system.	All*

- *: Weak radio waves will still be emitted from oscillators other than the front oscillator even when the "Front" customize setting is selected.

7. CUSTOMIZING FUNCTION WITHOUT TECHSTREAM (SMART KEY SYSTEM (for Start Function))

Performing the following procedure disables the smart key system.

HINT:

To start the hybrid control system while the smart key system is disabled, follow the procedure for when the key battery is low .

(a) The procedure to disable the smart key system is as follows:

HINT:

Repeating the following steps switches the smart key system status between activated and disabled.

Preconditions:

Power switch off, driver door closed and unlocked.

- (1) Press the unlock switch of the key once.
- (2) Open the driver door within 5 seconds after pressing the unlock switch of the key in the previous step.
- (3) Repeat closing and opening of the driver door twice within 30 seconds after opening the driver door in the previous step.
- (4) Press the unlock switch of the key twice within 30 seconds after the last closing of the driver door in the previous step.
- (5) Close and then open the driver door within 30 seconds after pressing the unlock switch of the key twice in the previous step.
- (6) Close the driver door within 5 seconds after opening the driver door in the previous step.
- (7) Check that the wireless buzzer sounds once*1 or twice*2.

- *1: When the smart key system status is changed from activated to disabled.
- *2: When the smart key system status is changed from disabled to activated.

8. LIGHTING SYSTEM (LIGHTING INT)

Illuminated Entry

Tester Display	Default	Content	Setting
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Tester Display	Default	Content	Setting
Lighting Time	15 s	Changes the lighting time after closing all of the doors. (It will fade out immediately in case of turning the power switch from off to on (ACC or IG).)	7.5 s, 15 s or 30 s
I/L when ACC OFF	ON	Lights up power switch illumination, front interior lights, rear interior light and footwell lights when the power switch is turned from on (ACC or IG) to off.	ON or OFF
I/L ON W/Door Key Unlock	ON	Lights up power switch illumination, front interior lights, rear interior light and footwell lights when doors are unlocked using a mechanical key or door control transmitter.	ON or OFF
Light Control	ON	Dims (ON setting) or turns off (OFF setting) the footwell lights under the following conditions: Power switch on (IG), shift lever not in P, and all doors closed.	ON or OFF
Room Light when Aprchd	ON	Lights up the power switch illumination, front interior lights, rear interior light and footwell lights when a key enters any actuation area around the doors.	ON or OFF
Inside Foot Light	ON	Lights up the footwell lights when one of the following occurs: the power switch is turned on (IG), or any door is unlocked or opened.	ON or OFF

9. METER / GAUGE SYSTEM

Warning

Tester Display	Default	Content	Setting
Key Remind Sound	Slow	Function to change the cycle of the key reminder buzzer	Normal, Fast or Slow
Driver Side Seatbelt Warning Buzzer*1	ON	Function to turn on/off the seat belt warning buzzer	ON or OFF
Front Passenger Side Seatbelt Warning Buzzer*1	ON	Function to turn on/off the seat belt warning buzzer	ON or OFF
Rear Seatbelt Warning Buzzer*2	ON	Function to turn on/off the rear seat belt warning buzzer	ON or OFF
Reverse Buzzer	Continual	Function to change the type of the reverse warning buzzer	Single or Continual

• *1: This setting is only valid for the buzzer which sounds at 20 km/h (12 mph) or more.

• *2: w/ Rear Seat Belt Warning

10. SEAT BELT WARNING SYSTEM

Combination Meter

Tester Display	Default	Content	Setting
Driver Side Seatbelt Warning Buzzer	ON	Function to sound the seat belt warning buzzer	ON / OFF
Front Passenger Side Seatbelt Warning	ON	Function to sound the seat belt warning	ON /

Tester Display	Default	Content	Setting
Buzzer		buzzer	OFF

HINT:

This setting is only valid when the vehicle is driven at 20 km/h (12 mph) or more.

11. AIR CONDITIONING SYSTEM

Air Conditioner

Display (Item)	Default	Content	Setting
Set Temperature Shift	Normal	Function to control with the shifted temperature against the displayed temperature.	+2 C, +1 C, Normal, -1 C or -2 C
Compressor Mode	Automatic	Function to automatically turn the A/C on by pressing the AUTO button when blower is on and the A/C is off.	Manual or Automatic
Air Inlet Mode	Automatic	Function to shift from INLET mode to RECIRCULATION mode when the A/C is turned on.	Manual or Automatic
Foot/DEF Auto Mode	ON	Function to automatically turn the airflow from FOOT/DEF on when AUTO mode is on.	OFF or ON
Foot/DEF Automatic Blow Up Function	ON	Function to automatically increase the blower level when the defroster is on.	OFF or ON
Ambient Temperature Shift	Normal	Function to control the shifted ambient temperature in relation to the displayed ambient temperature.	+3 C, +2 C, +1 C, Normal, -1 C, -2 C or -3 C
ECO MODE Cancel	OFF	Function to cancel the ECO mode drive when item is on.	OFF or ON
Noise and Vibration Reduction	OFF	Function to change speed of the compressor when item is on.	OFF or ON
Start Pre A/C*1	Long1	Function to set the activation operation method for the remote air conditioning system using the key (electrical transmitter).	1 tim ON, 2 tim ON, Long1 or Long2
Stop Pre A/C*1	2 tim ON	Function to set the stop operation method for the remote air conditioning system using the key (electrical transmitter).	1 tim ON, 2 tim ON, Long1 or Long2

- *1: w/ Remote Air Conditioning System

12. LIGHTING SYSTEM (LIGHTING EXT)

Light Control

Display	Default	Content	Setting
Disp Ex ON Sen	Normal	Changes the ambient brightness level required to dim the lights such as the indicator lights of the combination meter, A/C indicator light and clock.	Light2, Light1, Normal, Dark1 or Dark2
Disp Ex OFF Sen	Normal	Changes the ambient brightness level required to cancel the dimming of the lights such as the indicator lights of the	Light2, Light1, Normal, Dark1 or

Display	Default	Content	Setting
		combination meter, A/C indicator light and clock.	Dark2
Light Auto OFF Delay	30 s	Keeps the headlights on for a certain period of time after turning the power switch off and closing all the doors with the low beam headlights on.	Off, 30 s, 60 s or 90 s
Sensitivity	Normal	Adjusts the sensitivity of the automatic light control system.	Light2, Light1, Normal, Dark1 or Dark2
Response Time*1	0.1 s	Changes the delay timing of lighting the taillights when going into a tunnel when the light control switch is in the AUTO position	0.1 s or 1.0 s

- *1: for Korea

INITIALIZATION

1. PROCEDURES NECESSARY WHEN BATTERY TERMINAL IS DISCONNECTED/RECONNECTED

Necessary Procedures	Effect / Inoperative Function When Necessary Procedures are not Performed	See Page
Correct the steering angle neutral point	Advance parking guidance system	INFO

NOTICE:

When the auxiliary battery is replaced or the cable is disconnected from its negative (-) battery terminal, the ISC learning value will be initialized and symptoms as a loud rattle from the hybrid vehicle transaxle assembly may occur until ISC learning is performed. Therefore, perform ISC learning when the auxiliary battery is replaced or the cable is disconnected from the negative (-) terminal of the auxiliary battery [INFO](#).

2. PROCEDURES NECESSARY WHEN ECU OR OTHER PARTS ARE REPLACED

Replacement Part	Necessary Procedure	Effect / Inoperative Function when Necessary Procedures are not Performed	See Page
Power management control ECU	Vehicle Identification Number (VIN) registration	MIL comes on	INFO
Millimeter wave radar sensor assembly	Adjust millimeter wave radar sensor assembly (Dynamic radar cruise control system)	- Dynamic radar cruise control system - Pre-collision system	INFO
Lane recognition camera sensor assembly	Adjust lane recognition camera sensor assembly (Lane keeping assist system)	- Lane keeping assist system - Pre-collision system	INFO
- Tire pressure warning ECU - Tire pressure warning valve and transmitter	Code registration (Tire pressure warning system)	- When DTC detection conditions of "transmitter ID not received" DTC are met, TPWS indicator blinks for 1 minute, and then illuminates. - Tire pressure warning function	INFO for initialization INFO for registration
Brake booster with master cylinder (Skid control ECU, brake actuator or pressure sensor)	- Initialization and calibration of the linear solenoid valve - Yaw rate and acceleration sensor zero point calibration	- ABS warning light illumination - Slip indicator light illumination - Brake warning light / yellow (minor malfunction) illumination	INFO for initialization INFO for calibration

Replacement Part	Necessary Procedure	Effect / Inoperative Function when Necessary Procedures are not Performed	See Page
		VSC disabled or malfunctioning	
- Brake pedal stroke sensor - Brake pedal	- Clearing stored linear solenoid valve calibration data - Initialization and calibration of the linear solenoid valve	- ABS warning light illumination - Slip indicator light illumination - Brake warning light / yellow (minor malfunction) illumination - VSC disabled or malfunctioning	
Yaw rate and acceleration sensor	- Clearing zero point calibration data - Yaw rate and acceleration sensor zero point calibration	- ABS warning light illumination - Slip indicator light illumination - Brake warning light / yellow (minor malfunction) illumination - VSC disabled or malfunctioning	
Power steering ECU*1	- Torque sensor zero point calibration - Assist map writing	- P/S warning light comes on - EPS control	INFO
Steering column assembly (containing the torque sensor)*1	Torque sensor zero point calibration	Steering effort is different between turning steering wheel to left and right	
Power steering ECU*2	Rotation angle sensor initialization and torque sensor zero point calibration	- P/S warning light comes on - EPS control	INFO
Steering column assembly*2	Rotation angle sensor initialization and torque sensor zero point calibration	Steering effort is different between turning steering wheel to left and right	
Spiral with sensor cable sub-assembly	- Correct steering angle neutral point - Steering angle setting	Advanced parking guidance system	INFO
Parking assist ECU	Parking assist ECU initialization	Advanced parking guidance system	
Suspension, tires, etc.	Height control sensor vehicle	Advanced parking guidance	

Replacement Part	Necessary Procedure	Effect / Inoperative Function when Necessary Procedures are not Performed	See Page
	height difference (Height set)	system	
Rear television camera	Rear television camera optical axis adjustment (Camera position setting)	Advanced parking guidance system	
Rear bumper cover	Rear bumper position setting	Advanced parking guidance system	
Rear height control sensor sub-assembly RH	- Height control sensor vehicle height difference (Height set) - Rear television camera optical axis adjustment - Perform headlight leveling ECU initialization	- Advanced parking guidance system - Automatic leveling function	INFO for Advanced parking guidance system INFO for lighting system
Inner rear view mirror assembly*3	Re-registration of codes in the garage door opener system - Register transmitter code - Rolling code systems	Garage door opener system	INFO
DCM (Telematics Transceiver)	DCM activation	Safety connect system	INFO
- Certification ECU (smart key ECU assembly) - ID code box (immobiliser code ECU)*4 - Transmission control ECU assembly - Key	Code registration (Engine immobiliser system)	- Wireless door lock control system - Smart key system - Engine start	INFO
- Occupant classification ECU - Front passenger seat	- Zero point calibration (Occupant classification system) - Sensitivity check (Occupant classification system)	- Occupant classification system - Passenger airbag ON/OFF indicator - Airbag system (Front passenger side) - Seat belt warning system	INFO

Replacement Part	Necessary Procedure	Effect / Inoperative Function when Necessary Procedures are not Performed	See Page
		(Front passenger side)	
- Power window regulator motor - Door window regulator	Initialize power window control system	- Automatic door glass open/ close function - Jam protection function - Operation function after power switch is turned off	INFO
- Sliding roof ECU (sliding roof drive gear sub-assembly) - Sliding roof glass - Sliding roof housing	Initialize sliding roof ECU (pulse sensor initial position setting)	- Automatic open function of sliding roof - Jam protection function - Operation function after power switch is turned off	INFO
Headlight leveling ECU	Perform headlight leveling ECU initialization	Automatic leveling function	INFO

- *1: for Brush Type Motor
- *2: for Brushless Type Motor
- *3: w/ Garage Door Opener System
- *4: w/ Automatic Light Control System

INSPECTION MODE PROCEDURE

1. INSPECTION MODE

NOTICE:

When the vehicle is run in inspection mode for an operation such as a speedometer test, a DTC may be set. Therefore, if the warning light comes on, after canceling inspection mode, check for DTCs using the Techstream and clear the DTCs.

HINT:

If the engine is warmed up and the battery is charged, the engine of the vehicle will stop after the vehicle stops. For example, if the engine is required to run continuously even after the vehicle stops, such as for an ignition timing check, switch to maintenance mode.

(a) The following table shows the types of inspection mode that are available, their purpose and the control that occurs in each mode.

Mode (Display)	Purpose	Control
MAINTENANCE MODE (2WD for measuring Exhaust Gas)	• Inspection of ignition timing etc. when performing engine maintenance, idle speed exhaust emissions testing (CO, HC), etc. • Tests using a speedometer tester, two-wheel chassis dynamometer, etc.	• Keeps the engine idling when park (P) is selected • Cancels traction control
CERTIFICATION MODE (2WD for cutting TRC)	Tests using a speedometer tester, two-wheel chassis dynamometer, etc.	Cancels traction control

(b) Vehicle conditions

(1) Before activating inspection mode, turn the air conditioning off, start the hybrid system with park (P) selected, and check that the engine stops within several seconds after starting (engine warm up check).

(2) Activate the appropriate inspection mode and inspect the vehicle. The shift state for each test is as follows:

Test Item	Mode	Shift State
1. Vehicle straight travelling test (side slip inspection)	Maintenance mode or normal mode	D
2. Braking force test	Maintenance mode	N
3. Speedometer test	Maintenance mode	D
4. Exhaust gas test (idling)	Maintenance mode	P
5. Headlight test	Maintenance mode or normal mode	P

(3) Cancel inspection mode immediately after completion of inspection.

NOTICE:

Driving the vehicle without canceling inspection mode may damage the transaxle.

(c) Special notes for speedometer test

CAUTION:

Be sure to perform the test in maintenance mode.

NOTICE:

Do not perform rapid starting or quick acceleration on a speedometer tester. If rapid starting or quick acceleration is performed on a speedometer tester, damage may occur to the transaxle.

(1) Depress the accelerator pedal slowly and gradually accelerate the vehicle. Make a measurement.

(2) After the measurement, use the brakes to gradually decelerate the vehicle.

(d) Special notes for using a chassis dynamometer

(1) Always set an appropriate load before starting the test.

NOTICE:

Sudden acceleration or deceleration of the vehicle on a chassis dynamometer under minimal load may damage the transaxle.

(e) Activating maintenance mode (Not using the Techstream)

Perform the following steps from (1) through (4) in 60 seconds.

(1) Turn the power switch on (IG).

(2) Fully depress the accelerator pedal twice with park (P) selected.

(3) Fully depress the accelerator pedal twice with neutral (N) selected.

(4) Fully depress the accelerator pedal twice with park (P) selected.

(5) Check that "MAINTENANCE MODE" is displayed on the multi-information display.



MAINTENANCE MODE

(6) Start the engine by turning the power switch on (READY) while depressing the brake pedal.

HINT:

The idle speed in maintenance mode is approximately 1000 rpm with park (P) selected. The engine speed increases to 1500 rpm when the accelerator pedal is depressed midway with park (P) selected. When the accelerator pedal is depressed more than midway, or when the accelerator pedal is fully depressed, the engine speed increases to approximately 2500 rpm.

(f) Activating maintenance mode (Using the Techstream)

(1) Connect the Techstream to the DLC3.

(2) Turn the power switch on (IG).

(3) Turn the Techstream on.

(4) Enter following menus: Powertrain / Hybrid Control / Utility / Inspection Mode - 2WD for measuring Exhaust Gas.



MAINTENANCE MODE

(5) Check that "MAINTENANCE MODE" is displayed on the multi-information display.

(6) Start the engine by turning the power switch on (READY) while depressing the brake pedal.

HINT:

The idle speed in maintenance mode is approximately 1000 rpm with park (P) selected. The engine speed increases to 1500 rpm when the accelerator pedal is depressed midway with park (P) selected. When the accelerator pedal is depressed more than midway, or when the accelerator pedal is fully depressed, the engine speed increases to approximately 2500 rpm.

(g) Activating certification mode (Not using the Techstream)

Perform the following steps from (1) through (4) in 60 seconds.

- (1) Turn the power switch on (IG).
- (2) Fully depress the accelerator pedal three times with park (P) selected.
- (3) Fully depress the accelerator pedal three times with neutral (N) selected.
- (4) Fully depress the accelerator pedal three times with park (P) selected.



CERTIFICATION MODE

- (5) Check that "CERTIFICATION MODE" is displayed on the multi-information display.

- (6) Start the engine by turning the power switch on (READY) while depressing the brake pedal.

(h) Activating certification mode (Using the Techstream)

- (1) Connect the Techstream to the DLC3.
- (2) Turn the power switch on (IG).
- (3) Turn the Techstream on.
- (4) Enter following menus: Powertrain / Hybrid Control / Utility / Inspection Mode - 2WD for cutting TRC.



CERTIFICATION MODE

- (5) Check that "CERTIFICATION MODE" is displayed on the multi-information display.

- (6) Start the engine by turning the power switch on (READY) while depressing the brake pedal.

(i) Deactivating inspection mode

- (1) Turn the power switch off. The HV system turns off simultaneously.

NOTICE:

- If a DTC is set during inspection mode, the master warning light will illuminate and a warning message will appear on the multi-information display.
- When the master warning light and the warning message illuminate during inspection mode, cancel inspection mode, and check for DTC(s).
- Driving the vehicle without canceling inspection mode may damage the transaxle.

ABBREVIATIONS USED IN MANUAL

Abbreviation	Meaning
ABS	Anti-lock Brake System
A/C	Air Conditioner
AC	Alternating Current
ACC	Accessory
ACIS	Acoustic Control Induction System
ACM	Active Control Engine Mount
ACSD	Automatic Cold Start Device
A.D.D	Automatic Disconnecting Differential
A/F	Air-Fuel Ratio
AHC	Active Height Control Suspension
ALR	Automatic Locking Retractor
ALT	Alternator
AMP	Amplifier
ANT	Antenna
APPROX.	Approximately
ASSY	Assembly
A/T, ATM	Automatic Transmission (Transaxle)
ATF	Automatic Transmission Fluid
AUTO	Automatic
AUX	Auxiliary
AVG	Average
AVS	Adaptive Variable Suspension
AWD	All Wheel Drive Vehicle
B+	Battery Voltage
BA	Brake Assist
BACS	Boost Altitude Compensation System
BAT	Battery
BDC	Bottom Dead Center
B/L	Bi-Level
B/S	Bore-Stroke Ratio
BTDC	Before Top Dead Center
BVSV	Bimetallic Vacuum Switching Valve
CAN	Controller Area Network
CB	Circuit Breaker
CCo	Catalytic Converter for Oxidation

Abbreviation	Meaning
CCV	Canister Closed Valve
CD	Compact Disc
CF	Cornering Force
CG	Center of Gravity
CH	Channel
CKD	Complete Knock Down
COMB.	Combination
CPE	Coupe
CPS	Combustion Pressure Sensor
CPU	Central Processing Unit
CRS	Child Restraint System
CTR	Center
C/V	Check Valve
CV	Control Valve
CW	Curb Weight
DC	Direct Current
DEF	Defogger
DFL	Deflector
DIFF.	Differential
DIFF. LOCK	Differential Lock
D/INJ	Direct Injection
DLC	Data Link Connector
DLI	Distributorless Ignition
DOHC	Double Overhead Camshaft
DP	Dash Pot
DS	Dead Soak
DSP	Digital Signal Processor
DTC	Diagnostic Trouble Code
DVD	Digital Versatile Disc
EBD	Electric Brake Force Distribution
EC	Electrochromic
ECAM	Engine Control And Measurement System
ECD	Electronically Controlled Diesel
ECDY	Eddy Current Dynamometer
ECT	Electronic Controlled Automatic Transmission
ECU	Electronic Control Unit
ED	Electro-Deposited Coating

Abbreviation	Meaning
EDU	Electronic Driving Unit
EDIC	Electric Diesel Injection Control
EFI	Electronic Fuel Injection
E/G	Engine
EGR	Exhaust Gas Recirculation
EGR-VM	EGR-Vacuum Modulator
ELR	Emergency Locking Retractor
EPS	Electric Power Steering
ENG	Engine
ES	Easy & Smooth
ESA	Electronic Spark Advance
ETCS-i	Electronic Throttle Control System-intelligent
EVAP	Evaporative Emission Control
EVP	Evaporator
E-VRV	Electric Vacuum Regulating Valve
EX	Exhaust
FE	Fuel Economy
FF	Front-Engine-Front-Wheel-Drive
F/G	Fuel Gauge
FIPG	Formed In Place Gasket
FL	Fusible Link
F/P	Fuel Pump
FPU	Fuel Pressure Up
FR	Front
F/W	Flywheel
FW/D	Flywheel Damper
FWD	Front-Wheel-Drive
GAS	Gasoline
GND	Ground
GPS	Global Positioning System
GSA	Gear Shift Actuator
HAC	High Altitude Compensator
H/B	Hatchback
H-FUSE	High Current Fuse
HI	High
HID	High Intensity Discharge (Headlight)
HPU	Hydraulic Power Unit

Abbreviation	Meaning
HSG	Housing
HT	Hard Top
HV	Hybrid Vehicle
HWS	Heated Windshield System
IC	Integrated Circuit
IDI	Indirect Diesel Injection
IFS	Independent Front Suspension
IG	Ignition
IIA	Integrated Ignition Assembly
IN	Intake (Manifold, Valve)
INT	Intermittent
I/P	Instrument Panel
IRS	Independent Rear Suspension
ISC	Idle Speed Control
J/B	Junction Block
J/C	Junction Connector
KD	Kick-Down
LAN	Local Area Network
LB	Liftback
LCD	Liquid Crystal Display
LED	Light Emitting Diode
LH	Left-Hand
LHD	Left-Hand Drive
LIN	Local Interconnect Network
L/H/W	Length, Height, Width
LLC	Long-Life Coolant
LNG	Liquefied Natural Gas
LO	Low
LPG	Liquefied Petroleum Gas
LSD	Limited Slip Differential
LSP & BV	Load Sensing Proportioning and Bypass Valve
LSPV	Load Sensing Proportioning Valve
MAP	Manifold Absolute Pressure
MAX.	Maximum
MIC	Microphone
MIL	Malfunction Indicator Lamp
MIN.	Minimum

Abbreviation	Meaning
MG1	Motor Generator No. 1
MG2	Motor Generator No. 2
MMT	Multi-mode Manual Transmission
MP	Multipurpose
MPI	Multipoint Electronic Injection
MPX	Multiplex Communication System
M/T, MTM	Manual Transmission (Transaxle)
MT	Mount
MTG	Mounting
N	Neutral
NA	Natural Aspiration
NO.	Number
O2S	Oxygen Sensor
OC	Oxidation Catalyst
OCV	Oil Control Valve
O/D	Overdrive
OEM	Original Equipment Manufacturing
OHC	Overhead Camshaft
OHV	Overhead Valve
OPT	Option
ORVR	On-board Refilling Vapor Recovery
O/S	Oversize
P & BV	Proportioning and Bypass Valve
PBD	Power Back Door
PCS	Power Control System
PCV	Positive Crankcase Ventilation
PKB	Parking Brake
PPS	Progressive Power Steering
PROM	Programmable Read Only Memory
PS	Power Steering
PSD	Power Slide Door
PTC	Positive Temperature Coefficient
PTO	Power Take-Off
PZEV	Partial Zero Emission Vehicle
P/W	Power Window
R & P	Rack and Pinion
RAM	Random Access Memory

Abbreviation	Meaning
R/B	Relay Block
RBS	Recirculating Ball Type Steering
REAS	Relative Absorber System
R/F	Reinforcement
RFS	Rigid Front Suspension
RH	Right-Hand
RHD	Right-Hand Drive
RLY	Relay
ROM	Read Only Memory
RR	Rear
RRS	Rigid Rear Suspension
RSE	Rear Seat Entertainment
RWD	Rear-Wheel Drive
SC	Supercharger
SCV	Swirl Control Valve (for gasoline engine)
	Suction Control Valve (for diesel engine)
SDN	Sedan
SEN	Sensor
SICS	Starting Injection Control System
SOC	State Of Charge
SOHC	Single Overhead Camshaft
SPEC	Specification
SPI	Single Point Injection
SPV	Spill Control Valve
SRS	Supplemental Restraint System
SSM	Special Service Materials
SST	Special Service Tools
STD	Standard
STJ	Cold-Start Fuel Injection
SW	Switch
SYS	System
T/A	Transaxle
TACH	Tachometer
TBI	Throttle Body Electronic Fuel Injection
TC	Turbocharger
TCCS	TOYOTA Computer-Controlled System
TCM	Transmission Control Module

Abbreviation	Meaning
TCV	Timing Control Valve (for diesel engine)
	Tumble Control Valve (for gasoline engine)
TDC	Top Dead Center
TEMP.	Temperature
TFT	TOYOTA Free-Tronic
TIS	Total Information System for Vehicle Development
T/M	Transmission
TMC	TOYOTA Motor Corporation
TMMIN	PT. TOYOTA Motor Manufacturing Indonesia
TMMK	TOYOTA Motor Manufacturing Kentucky, Inc.
TMT	TOYOTA Motor Thailand Co. Ltd.
TRAC/TRC	Traction Control System
TURBO	Turbocharge
TVIP	TOYOTA Vehicle Intrusion Protection
TWC	Three-Way Catalyst
U/D	Underdrive
U/S	Undersize
VCV	Vacuum Control Valve
VDIM	Vehicle Dynamics Integrated Management
VENT	Ventilator
VIM	Vehicle Interface Module
VGRS	Variable Gear Ratio Steering
VIN	Vehicle Identification Number
VPS	Variable Power Steering
VSC	Vehicle Stability Control
VSV	Vacuum Switching Valve
VTV	Vacuum Transmitting Valve
VVT-i	Variable Valve Timing-intelligent
W/	With
WGN	Wagon
W/H	Wire Harness
W/O	Without
1ST	First
2ND	Second
2WD	Two Wheel Drive Vehicle (4 x 2)
3RD	Third
4TH	Fourth

Abbreviation	Meaning
4WD	Four Wheel Drive Vehicle (4 x 4)
4WS	Four Wheel Steering System
5TH	Fifth

GLOSSARY OF SAE AND TOYOTA TERMS

This glossary lists all SAE-J1930 terms and abbreviations used in this manual in compliance with SAE recommendations, as well as their TOYOTA equivalents.

SAE Abbreviation	SAE Term	TOYOTA Term ()-Abbreviation
A/C	Air Conditioning	Air Conditioner
ACL	Air Cleaner	Air Cleaner, A/CL
AIR	Secondary Air Injection	Air Injection (AI)
AP	Accelerator Pedal	-
B+	Battery Positive Voltage	+B, Battery Voltage
BARO	Barometric Pressure	HAC
CAC	Charge Air Cooler	Intercooler
CARB	Carburetor	Carburetor
CFI	Continuous Fuel Injection	-
CKP	Crankshaft Position	Crank Angle
CL	Closed Loop	Closed Loop
CMP	Camshaft Position	Cam Angle
CPP	Clutch Pedal Position	-
CTOX	Continuous Trap Oxidizer	-
CTP	Closed Throttle Position	LL ON, Idle ON
DFI	Direct Fuel Injection	Direct Injection (DI/INJ)
DI	Distributor Ignition	-
DLC3	Data Link Connector 3	OBD II Diagnostic Connector
DTC	Diagnostic Trouble Code	Diagnostic Trouble Code
DTM	Diagnostic Test Mode	-
ECL	Engine Coolant Level	-
ECM	Engine Control Module	Engine Electronic Control Unit (ECU)
ECT	Engine Coolant Temperature	Coolant Temperature, Water Temperature (THW)
EEPROM	Electrically Erasable Programmable Read Only Memory	Electrically Erasable Programmable Read Only Memory (EEPROM)
EFE	Early Fuel Evaporation	Cold Mixture Heater (CMH), Heat Control Valve (HCV)
EGR	Exhaust Gas Recirculation	Exhaust Gas Recirculation (EGR)
EI	Electronic Ignition	Distributorless Ignition (DLI)
EM	Engine Modification	Engine Modification (EM)
EPROM	Erasable Programmable Read Only Memory	Programmable Read Only Memory (PROM)
EVAP	Evaporative Emission	Evaporative Emission Control (EVAP)

SAE Abbreviation	SAE Term	TOYOTA Term ()-Abbreviation
FC	Fan Control	-
FEEPROM	Flash Electrically Erasable Programmable Read Only Memory	-
FEPROM	Flash Erasable Programmable Read Only Memory	-
FF	Flexible Fuel	-
FP	Fuel Pump	Fuel Pump
GEN	Generator	Alternator
GND	Ground	Ground (GND)
HO2S	Heated Oxygen Sensor	Heated Oxygen Sensor (HO ₂ S)
IAC	Idle Air Control	Idle Speed Control (ISC)
IAT	Intake Air Temperature	Intake or Inlet Air Temperature
ICM	Ignition Control Module	-
IFI	Indirect Fuel Injection	Indirect Injection (IDL)
IFS	Inertia Fuel-Shutoff	-
ISC	Idle Speed Control	-
KS	Knock Sensor	Knock Sensor
MAF	Mass Airflow	Air Flow Meter
MAP	Manifold Absolute Pressure	Manifold Pressure Intake Vacuum
MC	Mixture Control	Electric Bleed Air Control Valve (EBCV)
		Mixture Control Valve (MCV)
		Electric Air Control Valve (EACV)
MDP	Manifold Differential Pressure	-
MFI	Multiport Fuel Injection	Electronic Fuel Injection (EFI)
MIL	Malfunction Indicator Lamp	Check Engine Light
MST	Manifold Surface Temperature	-
MVZ	Manifold Vacuum Zone	-
NVRAM	Non-Volatile Random Access Memory	-
O2S	Oxygen Sensor	Oxygen Sensor, O ₂ Sensor (O ₂ S)
OBD	On-Board Diagnostic	On-Board Diagnostic System (OBD)
OC	Oxidation Catalytic Converter	Oxidation Catalytic Convert (OC), CCo
OL	Open Loop	Open Loop
PAIR	Pulsed Secondary Air Injection	Air Suction (AS)
PCM	Powertrain Control Module	-
PNP	Park/Neutral Position	-

SAE Abbreviation	SAE Term	TOYOTA Term ()-Abbreviation
PROM	Programmable Read Only Memory	-
PSP	Power Steering Pressure	-
PTOX	Periodic Trap Oxidizer	Diesel Particulate Filter (DPF) Diesel Particulate Trap (DPT)
RAM	Random Access Memory	Random Access Memory (RAM)
RM	Relay Module	-
ROM	Read Only Memory	Read Only Memory (ROM)
RPM	Engine Speed	Engine Speed
SC	Supercharger	Supercharger
SCB	Supercharger Bypass	E-ABV
SFI	Sequential Multiport Fuel Injection	Electronic Fuel Injection (EFI), Sequential Injection
SPL	Smoke Puff Limiter	-
SRI	Service Reminder Indicator	-
SRT	System Readiness Test	-
ST	Scan Tool	-
TB	Throttle Body	Throttle Body
TBI	Throttle Body Fuel Injection	Single Point Injection Central Fuel Injection (Ci)
TC	Turbocharger	Turbocharger
TCC	Torque Converter Clutch	Torque Converter
TCM	Transmission Control Module	Transmission ECU, ECT ECU
TP	Throttle Position	Throttle Position
TR	Transmission Range	-
TVV	Thermal Vacuum Valve	Bimetallic Vacuum Switching Valve (BVSV) Thermostatic Vacuum Switching Valve (TVSV)
TWC	Three-Way Catalytic Converter	Three-Way Catalytic (TWC) Manifold Converter CC _{RO}
TWC+OC	Three-Way + Oxidation Catalytic Converter	CC _R + CC _O
VAF	Volume Airflow	Air Flow Meter
VR	Voltage Regulator	Voltage Regulator
VSS	Vehicle Speed Sensor	Vehicle Speed Sensor

SAE Abbreviation	SAE Term	TOYOTA Term ()-Abbreviation
WOT	Wide Open Throttle	Full Throttle
WU-OC	Warm Up Oxidation Catalytic Converter	-
WU-TWC	Warm Up Three-Way Catalytic Converter	-
3GR	Third Gear	-
4GR	Fourth Gear	-