FOREWORD

This supplement has been prepared to provide information covering general service repairs for COROLLA which underwent changes in August, 2004.

Applicable models: ZZE120, 121, 122, 123 series

For the service specifications and repair procedures of the above model other than those listed in the supplement, refer to the following manuals.

Manual Name	Pub. No.
• COROLLA Repair Manual	RM821E
• COROLLA Repair Manual Supplement (Oct., 2001)	RM926E
• COROLLA Repair Manual Supplement (Aug., 2002)	DR105E
• COROLLA Repair Manual Supplement (Aug., 2003)	DR141E
• 1ZZ-FE, 3ZZ-FE Engine Repair Manual	RM823E
• 2ZZ-GE Engine Repair Manual	RM929E
• 3ZZ-FE, 4ZZ-FE Engine Repair Manual	RM928E
• C51, C52 Manual Transaxle Repair Manual	RM826E
• C64 Manual Transaxle Repair Manual	RM930E
• C150 Manual Transaxle Repair Manual	RM827E
• A245E, A246E Automatic Transaxle Repair Manual	RM847E
• COROLLA Electrical Wiring Diagram	DR112W

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.

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

TOYOTA MOTOR CORPORATION

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CAUTION

This manual does not include all the necessary items about repair and service. This manual is made for the purpose of the use for the persons who have special techniques and certifications. In the cases that non-specialized or uncertified technicians perform repair or service only using this manual or without proper equipment or tool, that may cause severe injury to you or other people around and also cause damage to your customer's vehicle.

In order to prevent dangerous operation and damages to your customer's vehicle, be sure to follow the instruction shown below.

- Must read this manual 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 recommended tools and service method, be sure to confirm safety of the technicians and any possibility of causing personal injury or damage to the customer's vehicle before starting the operation.
- If part replacement is necessary, must replace the part with the same part number or equivalent part. Do not replace it with inferior quality.
- 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 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 exhaustive, because it is important to warn of all the possible hazardous consequences that might result from failure to follow these instructions.

TOYOTA COROLLA
SUPPLEMENT DR157E

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HOW TO USE THIS MANUAL

010B2-25

GENERAL INFORMATION

1. GENERAL DESCRIPTION

(a) This manual is made in accordance with SAE J2008.

(b) Generally, repair operations can be separated in the following 3 main processes:
1. Diagnosis
2. Removing and Installing, Replacing, Disassembling, Installing and Checking, Adjusting
3. Final Inspection

(c) This manual explains the 1st process of "Diagnosis" (placed in the "Diagnostics" section), the 2nd process of "Removing and Installing, Replacing, Disassembling, Installing and Checking, Adjusting", but the 3rd process of "Final Inspection" is omitted.

(d) The following essential operations are not written in this manual. However, these operations must be done in the practical situation.
(1) Operation with a jack or lift
(2) Cleaning of a removed part when necessary
(3) Visual check

2. INDEX

(a) An alphabetical INDEX is provided as a section on the end of the book to guide you to 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 repairing condition. Be sure to use SST and SSM when they are required and follow the working procedure properly. A list of SST and SSM is in the Preparation section of this manual.

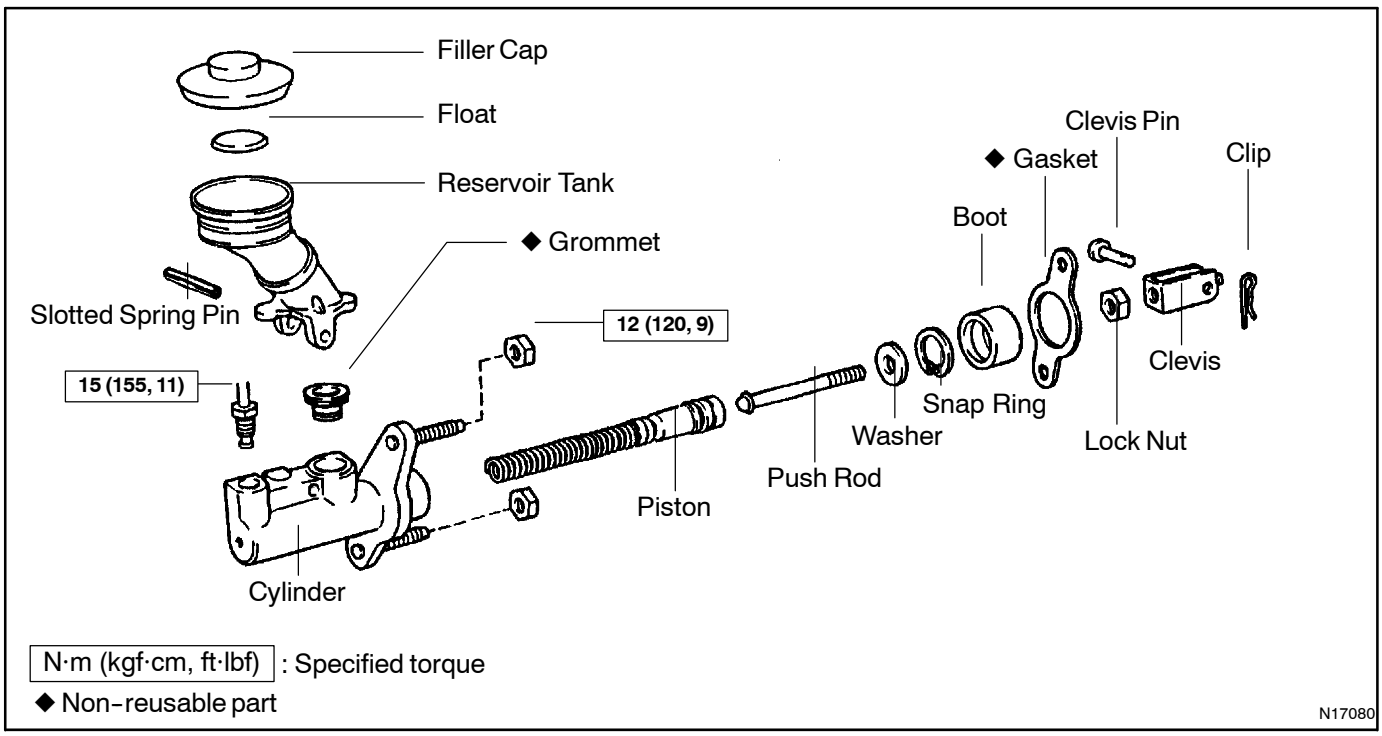
4. REPAIR PROCEDURES

(a) Component drawing is placed under the title when necessary.

(b) Illustrations are placed as "disassembled parts drawing" so that it enables you to understand the fitting condition of the components.

(c) Non-reusable parts, grease applied parts, precoated parts and tightening torque are specified in the components drawing.

Example:



(d) Tightening torque, oil applying position, and non-reusable parts are described as important points in the procedure.

NOTICE:

There are cases where such information can only be indicated by an illustration. In that case, all the information such as torque, oil, etc. are described in the illustration.

(e) Installing procedure of operation items is performed in the reverse order of the removal, and only the important points are described.

(f) Only items with points are described in the procedure, and the operational portion and content are placed using an illustration. In the explanations, details of the operational method, standard value and notice are placed.

(g) There may be a case where the illustrations of the similar models are used. In that case the details may be different from the actual vehicle.

(h) The procedures are presented in a step-by-step format:

(1) The illustration shows what to do and where to do it.

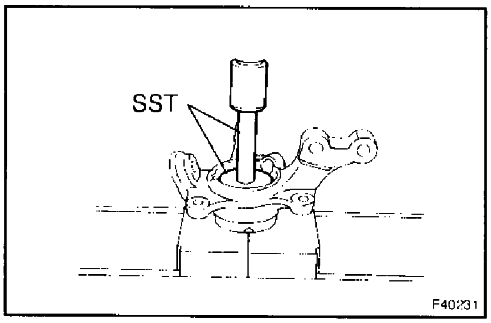
(2) The task heading tells what to do.

(3) The detailed text tells how to perform the task and gives other information such as specifications and warnings.

Example:

Illustration:

what to do and where



Task heading: what to do

14. INSTALL FRONT AXLE HUB LH BEARING

(a) Using SST and a press, install a new bearing to the steering knuckle. ← *Detailed text: how to perform task*

SST 09950-60020 (09951-00720), 09950-70010 (09951-07100)

Set part No.

Component part No.

D26745

HINT:

This format provides an experienced technician with a FAST TRACK to the necessary information. The task heading can be read at a glance when necessary, and the text below provides detailed information. Important specifications and warnings always stand out in bold type.

5. SERVICE SPECIFICATIONS

(a) Specifications are presented in bold type throughout the manual. You never have to leave the procedure to look up your specifications. The specifications are also found in the Service Specifications section for a quick reference.

6. TERMS DEFINITION

CAUTION	Indicate the possibility of injury to you or other people.
NOTICE	Indicate the possibility of damage to the components being repaired.
HINT	Provide additional information to help you to perform the repair efficiently.

7. SI UNIT

(a) The UNITS given in this manual are primarily expressed according to the SI UNIT (International System of Unit), and alternately expressed in the metric system and in the English System.

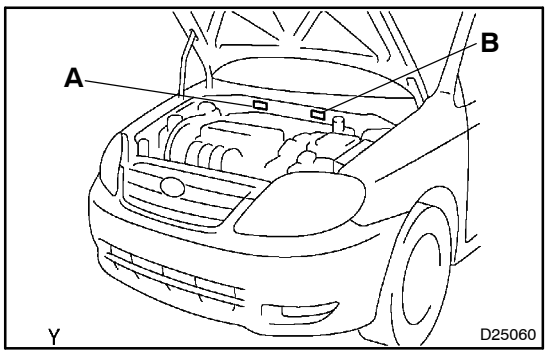
Example:

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

IDENTIFICATION INFORMATION

VEHICLE IDENTIFICATION AND SERIAL NUMBERS

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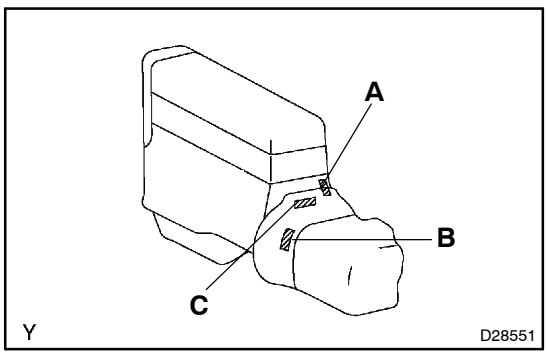


1. VEHICLE IDENTIFICATION NUMBER

(a) The vehicle identification number is stamped in the engine compartment, as shown in the illustration. This number has also been stamped on the manufacturer's plate.

A: Vehicle Identification Number

B: Manufacturer's Plate



2. ENGINE SERIAL NUMBER AND TRANSAXLE SERIAL NUMBER

(a) The engine serial number is stamped on the cylinder block of the engine, and the transaxle serial number is stamped on the transaxle, as shown in the illustration.

A: 1ZZ-FE, 2ZZ-GE, 3ZZ-FE, 4ZZ-FE

B: C50, C52, C64, A245E, A246E

C: C150

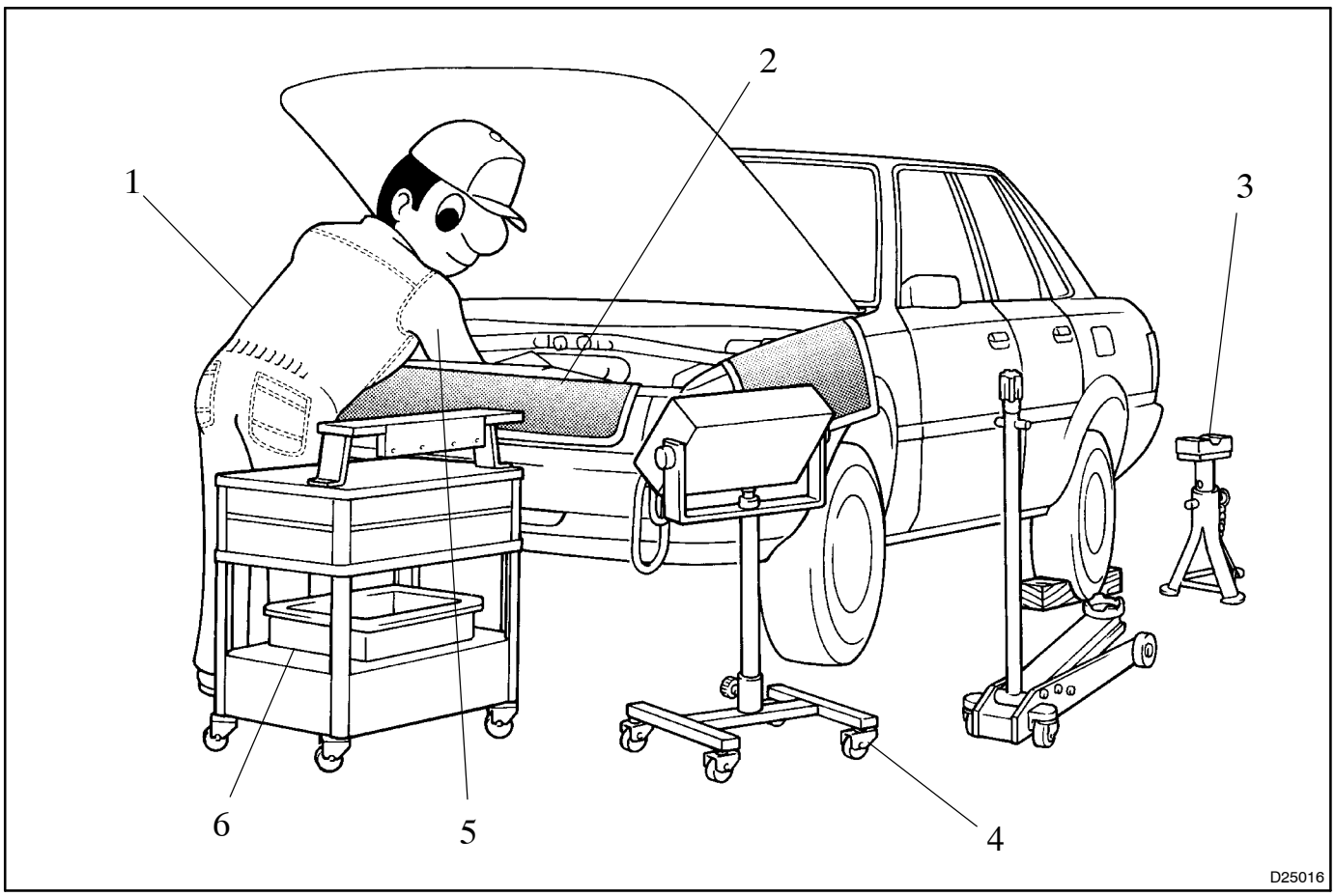
REPAIR INSTRUCTION

PRECAUTION

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1. BASIC REPAIR HINT

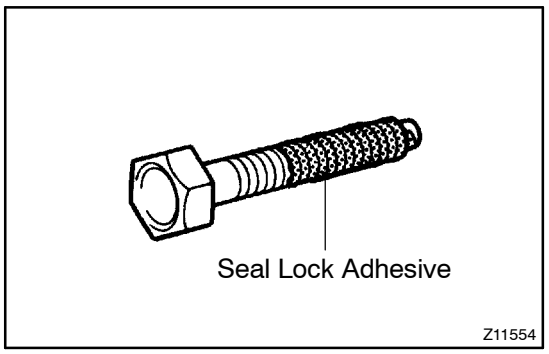
(a) HINTS ON OPERATIONS



1	Looks	• Always wear a clean uniform. • Hat and safety shoes must be worn.
2	Vehicle protection	• Set a grill cover, fender cover, seat cover and floor mat before starting the operation.
3	Safe operation	• In case of working with 2 or more persons, be sure to check safety of one another. • When working with the engine running, pay attention to the ventilation of the workshop. • In case of operating on a high-temperature parts, rotating, moving and vibrating parts, pay attention to not burn or injure yourself. • When jacking up the vehicle, be sure to support the specified location with a safety stand. • When lifting up the vehicle, apply a safety equipment.
4	Preparation of tools and measuring gauge	• Before starting operation, prepare a tool stand, SST, gauge, oil, shop rag and parts for replacement.
5	Removal and installation, disassembly and assembly operations	• Diagnose with a thorough understanding of the trouble phenomenon and perform effective operations. • Before removing the parts, check the assembly for general condition, deformation and damage. • When the structure is complicated, take a note or put matchmakers so as not to make mistakes that affect the function of the parts. • Clean and wash the removed parts if necessary, and assemble them after a thorough check.
6	Removed parts	• Place the removed parts in the correct order to avoid mixing up or making them dirty. • As for non-reusable parts such as gasket, O-ring, and self lock nut, change them to new ones following the instruction of this manual. • Sort out the parts for replacement in a box and show them to the customer.

(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 (see page 01-16).



(c) PRECOATED PARTS

(1) Precoated parts are bolts, nuts, etc. that are coated with a 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 precoated parts, clean off the old adhesive and dry the part with compressed air. Then apply new seal lock adhesive appropriate to the bolt, nut, etc.

NOTICE:

Perform the torque with the lower limit value of the torque tolerance.

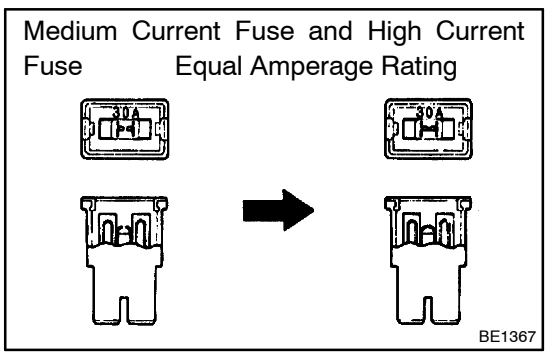
(4) Depending on the seal lock agent to apply, there may be a case where it is necessary to leave it for a specified time until it hardens.

(d) GASKETS

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

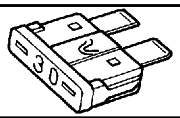
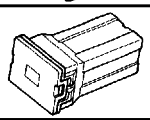
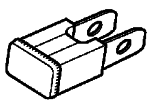
(e) BOLTS, NUTS AND SCREWS

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



(f) FUSES

(1) When replacing fuses, be sure that the new fuse has the correct amperage rating. DO NOT exceed the rating or use one with a lower rating.

Illustration	Symbol	Part Name	Abbreviation
 BE5594	 IN0365	FUSE	FUSE
 BE5595	 IN0366	MEDIUM CURRENT FUSE	M-FUSE
 D27353	 IN0367	HIGH CURRENT FUSE	H-FUSE

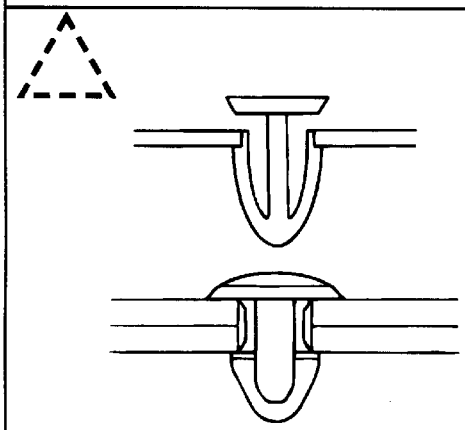
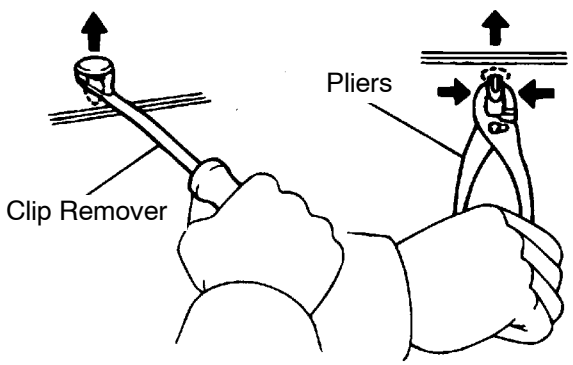
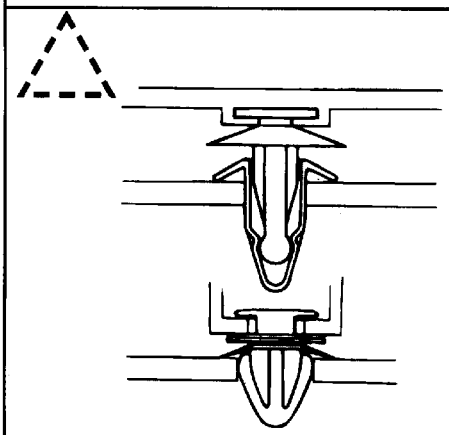
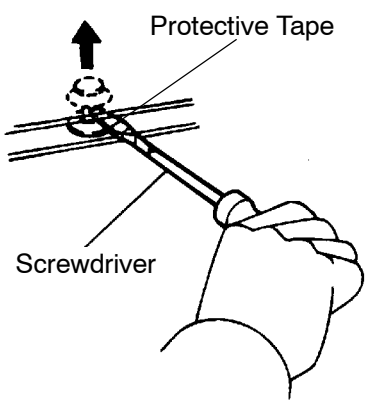
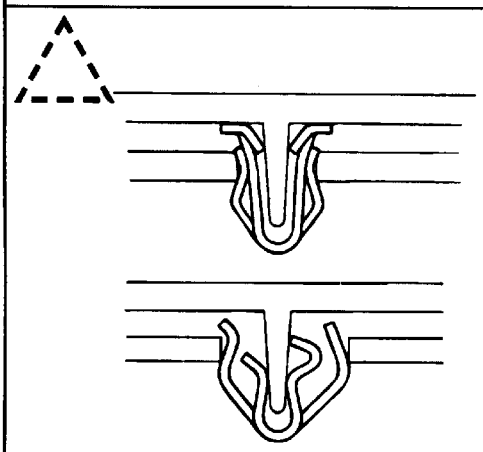
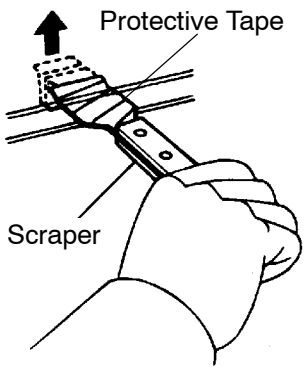
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(g) CLIPS

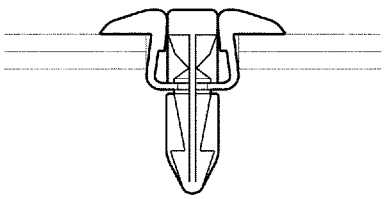
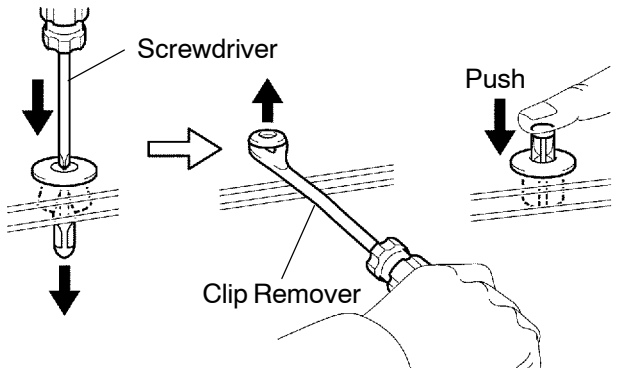
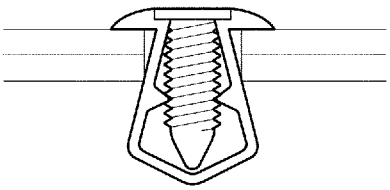
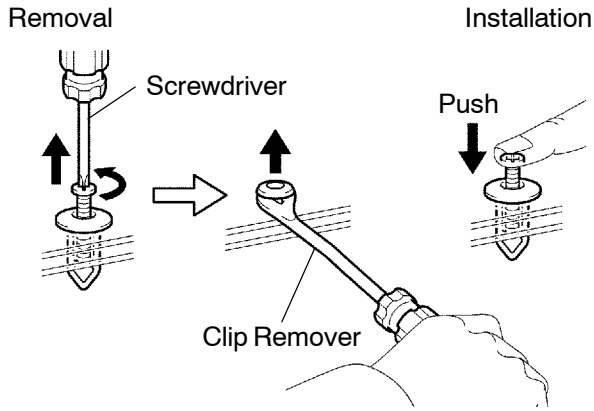
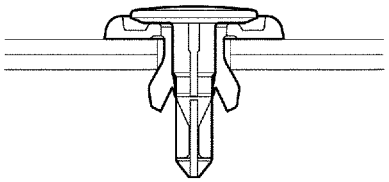
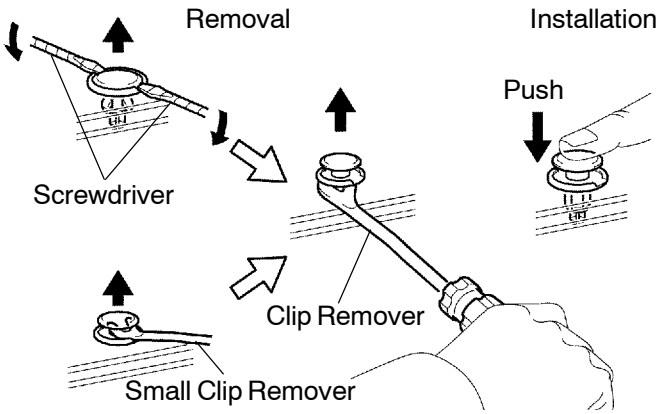
(1) The removal and installation methods of typical clips used in body parts are shown in the table below.

HINT:

If the clip is damaged during the operation, always replace it with a new clip.

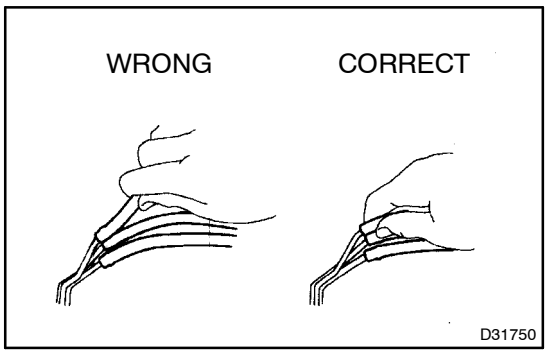
Shape (Example)	Removal/Installation
	
	
	

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Shape (Example)	Removal/Installation
	 Remove rivet by pushing the center pin through and prying out the rivet shell.
	 Remove rivet by unscrewing the center pin and prying out the rivet shell.
	 Remove rivet by prying out the pin and then prying out the rivet shell.

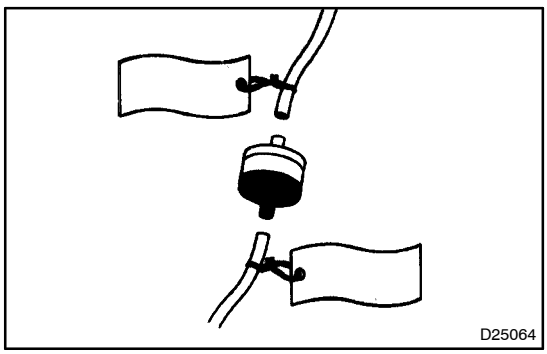
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(h) REMOVAL AND INSTALLATION OF VACUUM HOSES

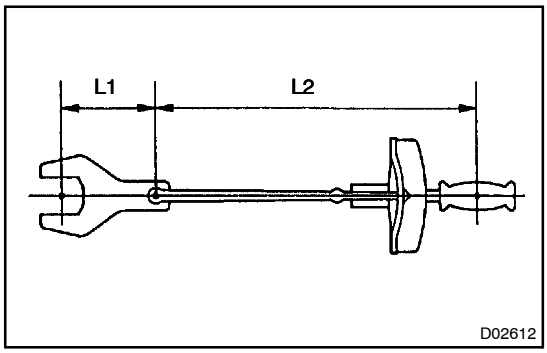
(1) To disconnect vacuum hose, pull and twist from the end of the hose. Do not pull from the middle of the hose as this may cause damage.

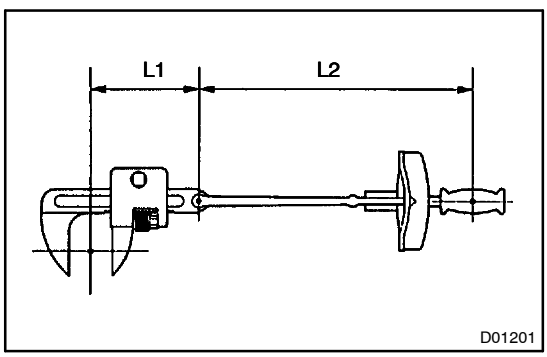


(2) If SST or an extension tool is combined with the torque wrench to extend its length, do not tighten the torque wrench to the specified torque values in this manual. the actual torque will be excessive.

(3) After completing the job, 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. Use a step-down adapter for adjustment. Once the hose has been stretched, it may leak air.





(i) TORQUE WHEN USING TORQUE WRENCH WITH EXTENSION TOOL

(1) If SST or an extension tool is combined its length, do not tighten the torque wrench the specified torque values in this manual. The actual torque will be excessive.

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

(3) Formula: T'=T x L2/(L1 + L2)

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)
L2	Length of torque wrench (cm)

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

HINT:

The COROLLA is equipped with a Supplemental Restraint System (SRS) and seat belt pretensioner. 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) Malfunction symptoms of the SRS are difficult to confirm so the Diagnostic Trouble Codes (DTCs) become the most important source of information when troubleshooting. When troubleshooting the SRS, always inspect the DTCs before disconnecting the battery (see page 05-59 of Pub. No. RM926E).

(2) To avoid serious injury, servicing the SRS must be started 90 seconds after:

- The ignition switch is tuned to the "LOCK" position.
- The negative (-) terminal cable is disconnected from the battery.

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

Disconnecting the negative (-) terminal cable will erase clock memory and audio system presets. Mark down data as necessary before disconnecting the cable.

CAUTION:

Never use a back-up power source (battery or other) in an attempt to avoid erasing system memory. The back-up power source may inadvertently power the SRS system, leading to a possible SRS deployment during service.

(3) In minor collisions where the SRS does not deploy, the horn button assembly (see page 60-16), instrument panel passenger airbag assembly(See pages 60-26 of Pub. No. RM821E) and seat belt pretensioner should be inspected before further use of the vehicle (See pages 61-4 of Pub. No. RM821E).

(4) Never use the SRS parts from another vehicle. When replacing parts, use new parts.

(5) Before repairs, remove the airbag sensor if impacts are likely to be applied to the sensor during repairs.

(6) Never disassemble and repair the airbag sensor assembly, horn button assembly, instrument panel passenger airbag assembly or seat belt pretensioner.

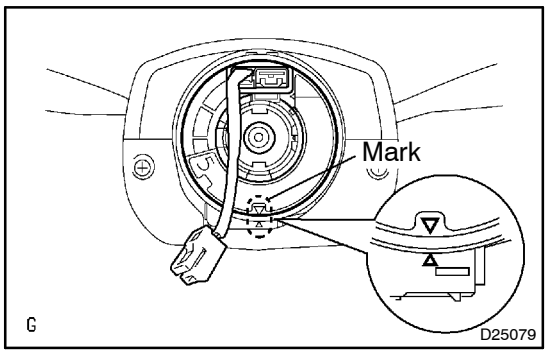
(7) Replace if the center airbag sensor assembly, side airbag sensor assembly, horn button assembly or the instrument panel passenger airbag assembly if: 1) damage has occurred from being dropped, or 2) if there are cracks, dents or other defects in the case, bracket or connector.

(8) Do not directly expose the airbag sensor assembly, the horn button assembly, the instrument panel passenger airbag assembly or the seat belt pretensioner to hot air or flames.

(9) Use a volt/ohmmeter with high impedance (10 kΩ/V minimum) 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 (See page 05-59 of Pub. No. RM926E).



(b) SPIRAL CABLE (in Combination Switch)

(1) The steering wheel must be fitted correctly to the steering column with the spiral cable at the neutral position, otherwise cable disconnection and other troubles may occur. see page 60-23 concerning the correct installation of steering wheel.

(c) HORN BUTTON ASSEMBLY (with Airbag)

(1) When removing the horn button assembly or handling a new horn button, it should be placed with the pad top surface facing up. See illustration below.
Placing it with the pad surface facing downward may lead to a serious accident if the airbag accidently inflates. Also, do not place horn buttons on top of one another.

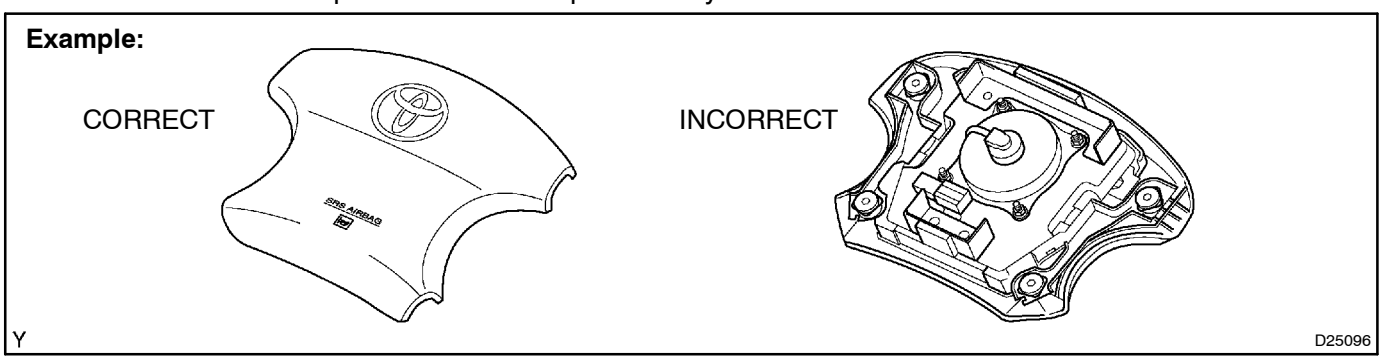
(2) Never measure the resistance of the airbag squib. This may cause the airbag to inflate, which could cause serious injury.

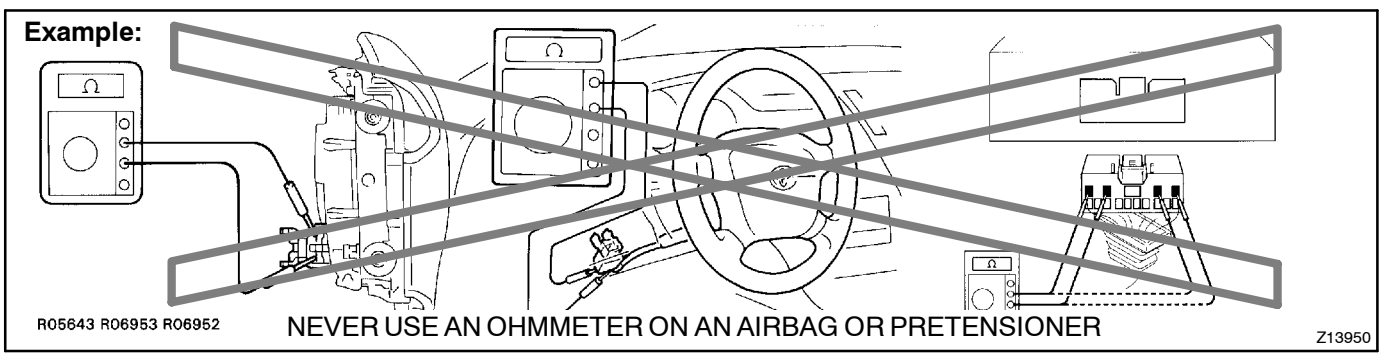
(3) Grease or detergents of any kind should not be applied to the steering wheel pad.

(4) Store the horn button assembly where the ambient temperature remains below 93°C (200°F), has low humidity and is away from electrical noise.

(5) When using electric welding anywhere on the vehicle, disconnect the airbag ECU connectors (4 yellow pins). These connectors contain shorting springs. This feature reduces the possibility of the airbag or seat belt pretensioner deploying due to currents entering the squib wiring.

(6) When disposing of the vehicle or the horn button assembly by itself the airbag should be inflated using an SST before disposal (see page 60-15 of Pub. No. RM821E).
Perform the operation in a safe place away from electrical noise.





(d) INSTRUMENT PANEL PASSENGER AIRBAG ASSEMBLY

(1) Always place a removed or new instrument panel passenger airbag assembly with the airbag deployment direction facing upward.
Placing the airbag assembly with the airbag deployment direction facing downward could cause a serious accident if the airbag inflates.

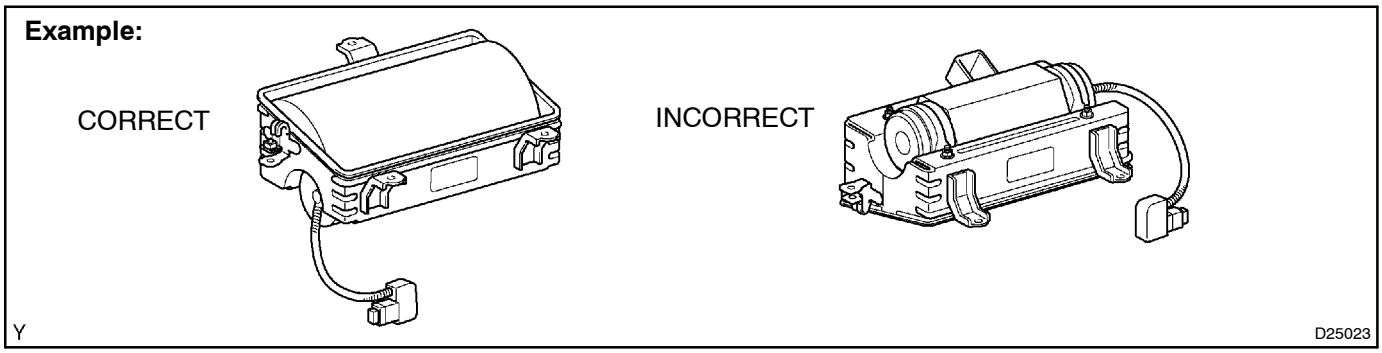
(2) Never measure the resistance of the airbag squib. This may cause the airbag to deploy, which could cause serious injury.

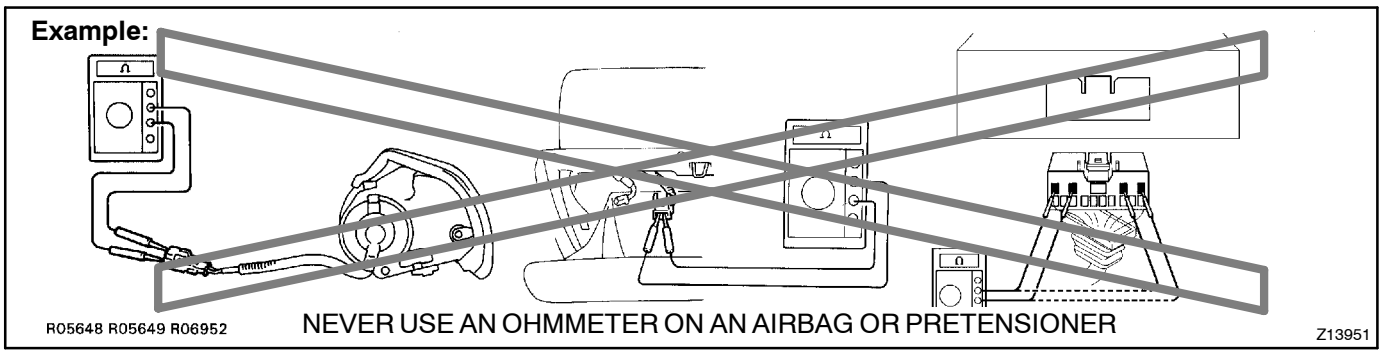
(3) Grease or detergents of any kinds should not be applied to the instrument panel passenger airbag assembly.

(4) Store the airbag assembly where the ambient temperature remains below 93°C (200°F), has low humidity and away from electrical noise.

(5) When using electric welding anywhere on the vehicle, disconnect the airbag ECU connectors (4 yellow pins). These connectors contain shorting springs. This feature reduces the possibility of the airbag deploying due to currents entering the squib wiring.

(6) When disposing of a vehicle or the airbag assembly alone, the airbag should be inflated using an SST before disposal (Refer to Pub. No. RM821E on page 60-26).
Perform the operation in a safe place away from electrical noise.





(e) SEAT BELT PRETENSIONER

(1) Never measure the resistance of the seat belt pretensioner (This may cause the seat belt pretensioner to activate, which is very dangerous.).

(2) Never disassemble the seat belt pretensioner.

(3) Never install the seat belt pretensioner in another vehicle.

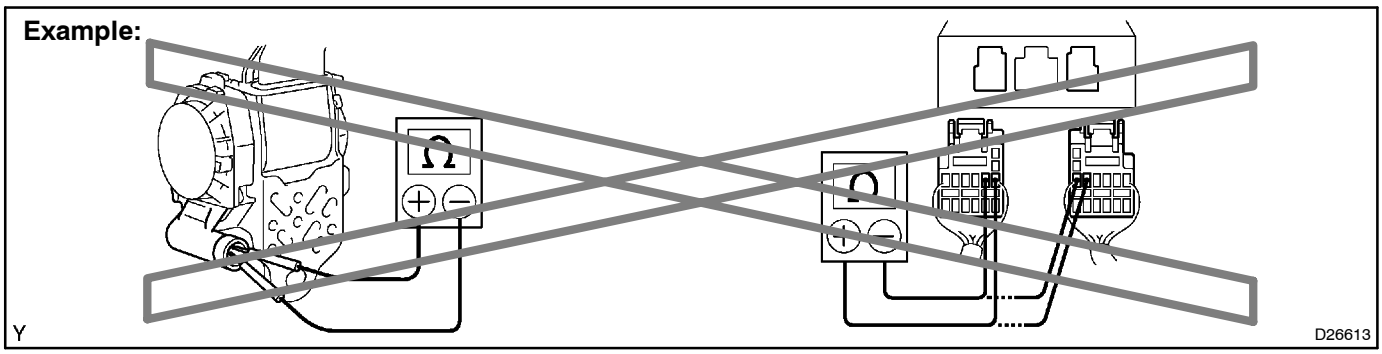
(4) Store the seat belt pretensioner where the ambient temperature remains below 80°C (176°F) without high humidity and away from electrical noise.

(5) When using electric welding, first disconnect the connector (2 yellow pins) before starting work.

(6) When disposing of a vehicle or the seat belt pretensioner alone, the seat belt pretensioner should be activated before disposal (Refer to Pub. No. RM821E on page 61-4). Perform the operation in a safe place away from electrical noise.

(7) The seat belt pretensioner is hot after activation, so let it cool down sufficiently before disposal. Never apply water to cool down the seat belt pretensioner.

(8) Oil or water should not be put on the front seat outer belt and the front seat outer belt should be cleaned with the appropriate detergents.



(f) AIRBAG SENSOR ASSEMBLY

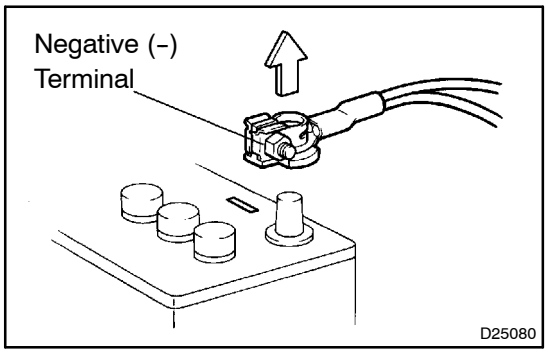
(1) Never reuse an airbag sensor assembly involved in a collision where the SRS has deployed.

(2) The connectors to the airbag sensor assembly should be connected or disconnected with the sensor mounted on the floor. If the connectors are connected or disconnected while the airbag sensor assembly is not mounted to the floor, it could cause the supplemental restraint system to deploy potentially resulting in injury.

(3) Work must be started after 90 seconds from the time that the ignition switch is turned to the LOCK position and the negative (-) terminal cable is disconnected from the battery, even if only loosening the set bolts of the airbag sensor assembly.

(g) WIRE HARNESS AND CONNECTOR

(1) The SRS wire harness is integrated with the instrument panel wire harness assembly. All the connectors in the system are a standard yellow color. If the SRS wire harness becomes disconnected or the connector becomes broken for whatever reason, repair or replace it.



3. ELECTRONIC CONTROL

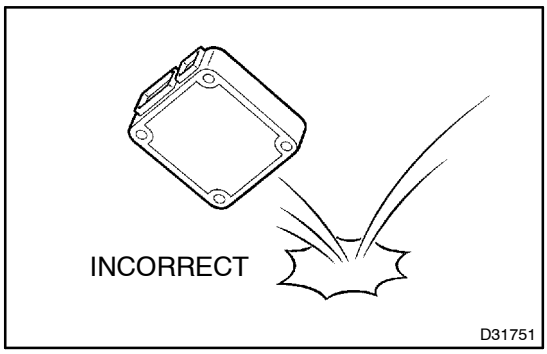
(a) REMOVAL AND INSTALLATION OF BATTERY TERMINAL

(1) Before performing electronic work, disconnect the battery negative (-) terminal cable beforehand to prevent component and wire damage caused by accidental short circuits.

(2) When disconnecting and installing the terminal cable, turn the ignition switch and lighting switch OFF and loosen the terminal nut completely. Perform these operations without twisting or prying the terminal. Remove the battery cable from battery post.

(3) Clock settings, radio settings, DTCs and other data are erased when the battery cable is removed. Before removing the battery cable, record any necessary data.

(4) When disconnecting the negative (-) terminal cable of the battery, initialize the following systems after the completion of the operation.



(b) HANDLING OF ELECTRONIC PARTS

(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) To disconnect electronic connectors, pull the connector itself, not the wires.

(3) Be careful not to drop electronic components, such as sensors or relays. If they are dropped on a hard floor, they should be replaced.

(4) When cleaning the engine 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 checking the continuity at the wire connector, insert the tester probe carefully to prevent terminals from bending.

4. REMOVAL AND INSTALLATION OF FUEL CONTROL PARTS

(a) PLACE FOR REMOVING AND INSTALLING OF FUEL SYSTEM PARTS

(1) Work in a place with good air ventilation and without anything flammable such as welder, grinder, drill, electric motor or stove in the surroundings.

(2) Never work in a place such as a pit or nearby a pit, as there is a possibility that vaporized fuel is filled in those places.

(b) REMOVING AND INSTALLING OF FUEL SYSTEM PARTS

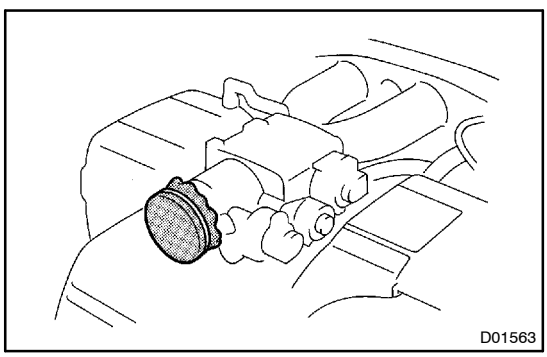
(1) Prepare a fire extinguisher before starting the operation.

(2) For prevention of the static electricity, install a ground on the fuel changer, vehicle and fuel tank, and do not spray much water so as to prevent slipping.

(3) Never use any electric equipment like an electric motor or a working light, as they may cause sparks or high temperature.

(4) Never use an iron hammer, as it may cause sparks.

(5) Dispose of the shop rag separately from any fuel deposit.

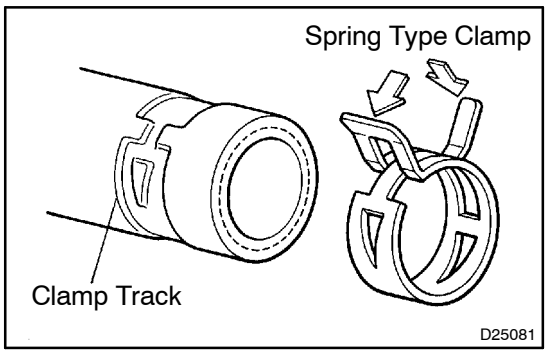


5. REMOVAL AND INSTALLATION OF ENGINE INTAKE PARTS

(a) If any metal tip is mixed in the inlet pass, that may give a bad effect to the engine and turbocharger.

(b) When removing and installing the inlet system parts, close the opening of the removed inlet system parts and the engine with a clean shop rag or gummed tape.

(c) When installing the inlet system parts, check that there is no mixing of a metal tip.



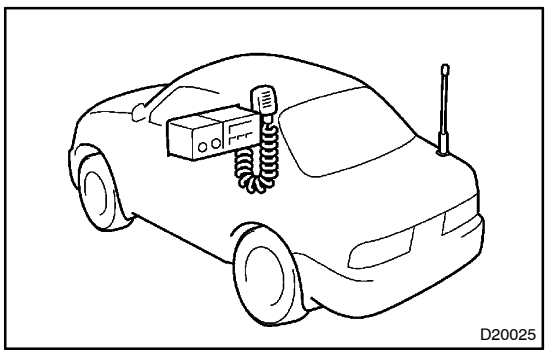
6. HANDLING OF HOSE CLAMPS

(a) Before removing the hose, check the clamp position so you can restore it in the same way.

(b) Replace deformed or dented clamps with a new one.

(c) When reusing a hose, attach the clamp on the clamp track portion of the hose.

(d) For a spring type clamp, you may want to spread the tabs slightly after installation by pushing in the direction of the arrow marks as shown in the illustration.



7. FOR VEHICLES EQUIPPED WITH MOBILE COMMUNICATION SYSTEMS

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

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

(c) Keep the antenna and feeder separate from other wirings as much as possible. This will prevent signals 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 any high-powered mobile communication system.

8. FOR VEHICLES EQUIPPED WITH CATALYTIC CONVERTER

CAUTION:

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

(a) Use only unleaded gasoline.

(b) Avoid prolonged idling.
Avoid idling the engine for more than 20 minutes.

(c) Avoid a spark jump test.
(1) Perform a spark jump test only when absolutely necessary. Perform this test as rapidly as possible.
(2) While testing, never race the engine.

(d) Avoid a prolonged engine compression measurement.
Engine compression measurements must be performed as rapidly as possible.

(e) 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.

010B5-20

VEHICLE LIFT AND SUPPORT LOCATIONS

1. NOTICE ABOUT VEHICLE CONDITION WHEN JACKING UP

(a) As a rule, the vehicle must be unloaded when jacking up. Never jack up or lift up the vehicle loaded with things of heavy weight.

(b) When removing any parts of heavy weight like the engine and transmission, the center of gravity of the vehicle moves. Place a balance weight so as to keep it from rolling, or hold the jacking support location using the mission jack.

2. NOTICE FOR USING 4 POST LIFT

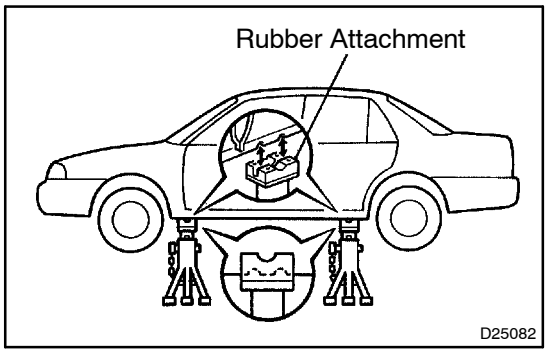
(a) Follow the instruction manual for a safety operation.

(b) Do not damage tires or wheels with a free wheel beam.

(c) Using a wheel stopper, fix the vehicle.

3. NOTICE FOR USING JACK AND SAFETY STAND

(a) Work in the flat place using a wheel stopper at all times.



(b) Use a safety stand with a rubber attachment, as shown in the illustration.

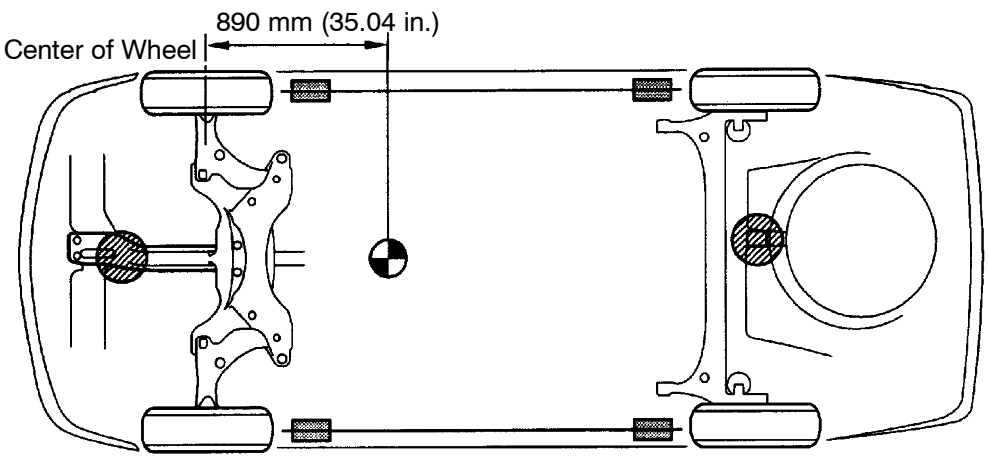
(c) Support the specified location with a jack and safety stand accurately.

(d) When jacking up the front wheels, release the parking brake and place wheel stoppers only behind the rear wheels. When jacking up the rear wheels, place wheel stoppers only in front of the front wheels.

(e) Do not work or leave the vehicle supported only by a jack. Be sure to support the vehicle with a safety stand.

(f) When jacking up only the front wheels or only the rear wheels, place wheel stoppers to both sides of the wheels that contact ground.

(g) When jacking down the vehicle with its front wheels jacked up, release the parking brake and place wheel stoppers only in front of the rear wheels. When jacking down the vehicle with its rear wheels jacked up, place wheel stoppers only behind the front wheels.



4. NOTICE FOR USING SWING ARM TYPE LIFT

(a) Follow the instruction manual of the lift for a safe operation.

(b) Use a cradle with a rubber attachment, as shown in the illustration.

(c) Set in the vehicle so as to make its center of gravity as close as possible to the center of the lift. ("L" becomes short.)

(d) Place the vehicle horizontally by adjusting the height of the cradle, and match the groove of the cradle and the safety stand support location accurately.

(e) Be sure to lock the swing arm during the operation.

(f) Lift the vehicle up until the tires float, and shake the vehicle to make sure that the vehicle is stable.

5. NOTICE FOR USING PLATE TYPE LIFT

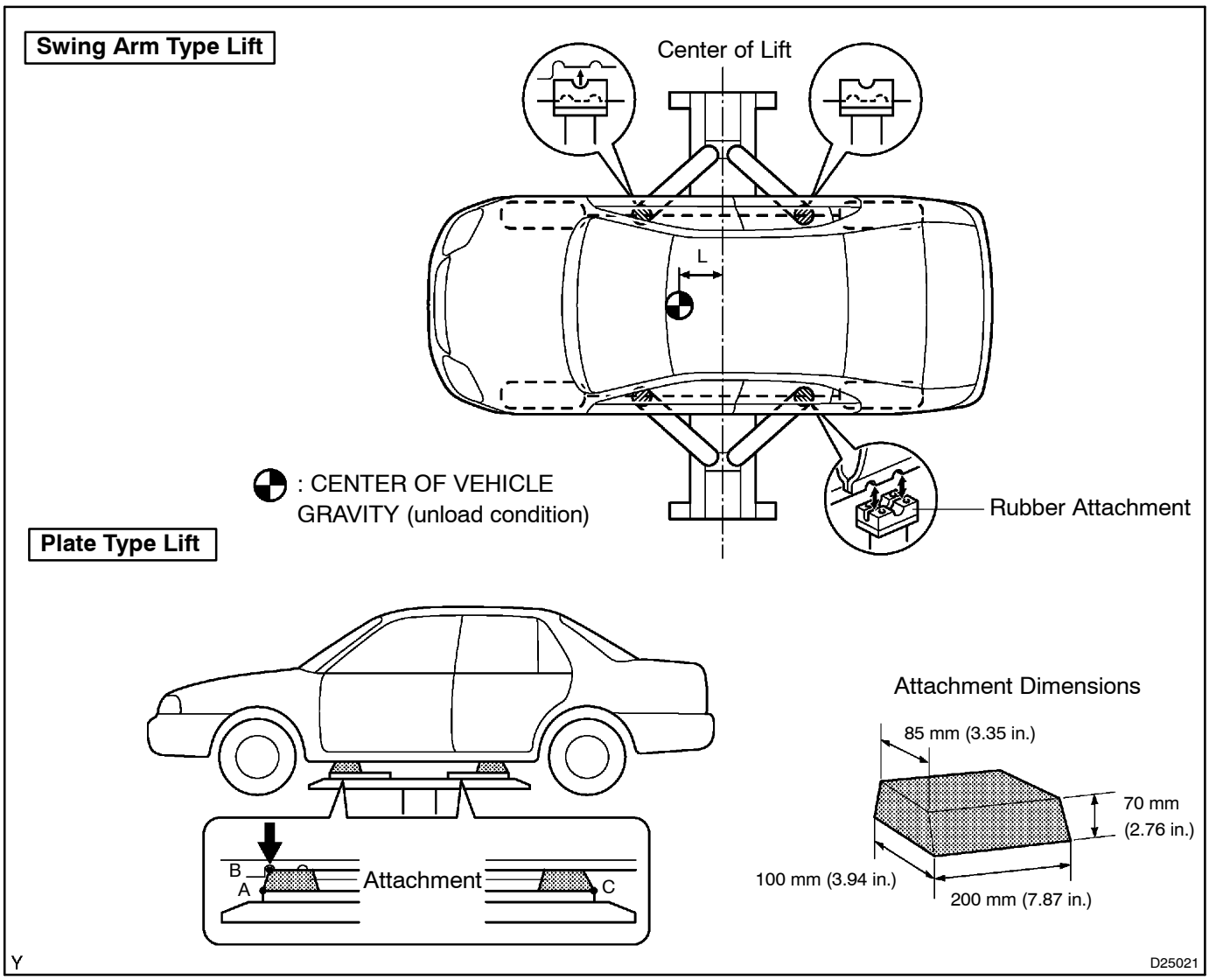
(a) Follow the instruction manual of the lift for a safe operation.

(b) Use a plate lift attachment.

(c) Be sure to set the vehicle to the specified position.

Right and left set position	• Place the vehicle over the center of the lift.
Front and rear set position	• Align the cushion gum ends of the plate with the attachment lower ends (A and C). • Align the attachment upper end (B) with the rocker flange front side notch.

(d) Lift the vehicle up until the tires float a bit, and shake the vehicle to make sure that the vehicle is stable.



HOW TO TROUBLESHOOT ECU CONTROLLED SYSTEMS

010B6-22

GENERAL INFORMATION

A large number of ECU controlled systems are used in COROLLA. In general, the ECU controlled system is considered to be a very intricate system requiring high level of technical knowledge and expert skill to troubleshoot. The fact is, however, that if you proceed to inspect the circuits one by one, troubleshooting of these systems is not complex. If you have adequate understanding of the system and basic knowledge of electricity, accurate diagnosis and necessary repair can be performed to locate and fix the problem. This manual is designed through emphasis of the above standpoint to help service technicians perform an accurate and effective troubleshooting, and is compiled for the following major ECU controlled systems.
The troubleshooting procedure and how to make use of it are described on the following pages.

System	Page
1. Supplemental Restraint System	05-2
2. Audio System	05-26

FOR USING HAND-HELD TESTER

- Before using the tester, the tester's operator manual should be read thoroughly.
- If the tester cannot communicate with the ECU controlled systems when you have connected the cable of the tester to the DLC3, turned the ignition switch ON and operated the tester, there is a problem on the vehicle side or tester side.
  (1) If the communication is normal when the tester is connected to another vehicle, inspect the diagnosis data link line (Bus⊕line) or ECU power circuit of the vehicle.
  (2) If the communication is still impossible when the tester is connected to another vehicle, the problem is probably in the tester itself, so perform the Self Test procedures outlined in the Tester Operator's Manual.

010B7-22

HOW TO PROCEED WITH TROUBLESHOOTING

HINT:

Carry out troubleshooting in accordance with the procedures below. Only a basic procedure is shown. Details in the Diagnostics Section show the most effective methods for each circuit. Confirm the troubleshooting procedures for the relevant circuit before beginning troubleshooting.

1	VEHICLE BROUGHT TO WORKSHOP

2	CUSTOMER PROBLEM ANALYSIS

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

3	SYMPTOM CONFIRMATION AND DTC (AND FREEZE FRAME DATA) CHECK

(a) Check the battery positive voltage.
Standard: 11 to 14 V (Engine stopped)

(b) Visually check the wire harness, connectors and fuses for open and short, etc.

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

(d) Confirm the problem symptoms and conditions, and check for DTCs according to the related chart.

OK	Go to step 5

NG

4	DTC CHART

(a) Check the results obtained in step 3, then confirm the inspection procedures for the system or part using the DTC chart.

	Go to step 6

5	PROBLEM SYMPTOMS CHART

(a) Check the results obtained in step 3. Confirm the inspection procedures for the system or part using the problem symptoms table.

6	CIRCUIT INSPECTION OR PARTS INSPECTION

(a) Confirm the circuit in the system or the part that should be checked using the problem symptoms table or the results obtained in step 4.

7	REPAIR

(a) Repair the affected system or part according to the instructions in step 6.

8	CONFIRMATION TEST

(a) After completing repairs, confirm that the problem has been solved. If the problem does not recur, perform a confirmation test under the same conditions and in the same environment as when it occurred for the first time.

END

CUSTOMER PROBLEM ANALYSIS

HINT:

- In troubleshooting, the problem symptoms must be confirmed accurately. Preconceptions should be discarded in order to give an accurate judgement. 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 it occurred.
- As much information as possible should be gathered for the reference, even past problems that seem unrelated may help in some cases. In the Diagnostic section, a customer problem analysis table is provided for each system.
- 5 items are important points in the problem analysis:

Important Points with Customer Problem Analysis

- What ----- Vehicle model, system name
- When ----- Date, time, occurrence frequency
- Where ----- Road conditions
- Under what conditions? ----- Running conditions, driving conditions, weather conditions
- How did it happen? ----- Problem symptoms

(Sample) Supplemental restraint system check sheet.

CUSTOMER PROBLEM ANALYSIS CHECK

Supplemental Restraint System Check Sheet

Inspector's Name _____

Customer's Name		**VIN**	
		Production Date	/ /
		Licence Plate No.	
Date Vehicle Brought In	/ /	**Odometer Reading**	km miles

Date Problem First Occurred	/ /
Weather	☐ Fine ☐ Cloudy ☐ Rainy ☐ Snowy ☐ Other
Temperature	Approx.

Vehicle Operation	☐ Starting ☐ Idling ☐ Driving [☐ Constant speed ☐ Acceleration ☐ Deceleration ☐ Other]

SYMPTOM CONFIRMATION AND DIAGNOSTIC TROUBLE CODE

HINT:

The diagnostic system in the COROLLA has various functions.

- The first function is the Diagnostic Trouble Code (DTC) check. In a DTC check, a previous malfunction's DTC can be checked by a technician during troubleshooting. (A DTC is a code stored in the ECU memory whenever a malfunction in the signal circuits to the ECU occurs.)
- 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 and troubleshooting is more effective.
  Diagnostic functions are incorporated in the following systems in the COROLLA:

System	Diagnostic Trouble Code Check	Input Signal Check (Sensor Check)	Diagnostic Test Mode (Active Test)
Supplemental Restraint System	○	-	-
Audio System	○	-	-

- In the DTC check, it is very important to determine whether the problem indicated by the DTC is: 1) still occurring, or 2) occurred in the past but has since 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 conditions, as shown in the table below.
  Never skip the DTC check. Failure to check DTCs may, depending on the case, result in unnecessary troubleshooting for systems operating normally or lead to repairs not pertinent to the problem. Follow the procedures listed above in the correct order.
- A flow chart showing how to proceed with troubleshooting using the DTC check is shown below. Directions from the flow chart will indicate how to proceed either to DTC troubleshooting or to the troubleshooting of the problem symptoms table.

1 DTC CHECK

2 MAKE A NOTE OF DTCS DISPLAYED AND THEN CLEAR THE MEMORY

3 SYMPTOM CONFIRMATION

○	Symptoms exist
○	No symptoms exist

a → Go to step 5

b

4 SIMULATION TEST USING THE SYMPTOM SIMULATION METHODS

5	DTC CHECK

□	DTC displayed
□	No DTC displayed

a → TROUBLESHOOTING OF PROBLEM INDICATED BY DTC

b

6	SYMPTOM CONFIRMATION

□	No symptoms exist
□	Symptoms exist

If a DTC was displayed in the initial DTC check, it indicates that the trouble may have occurred in a wire harness or connector in that circuit in the past. Therefore, check the wire harness and connectors (see page 01-29).

a → SYSTEM NORMAL

b

TROUBLESHOOTING OF EACH PROBLEM SYMPTOM

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

SYMPTOM SIMULATION

HINT:

The most difficult case in troubleshooting is when no problem symptoms occur. In such cases, a thorough customer 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 lead to mistakes or delays.

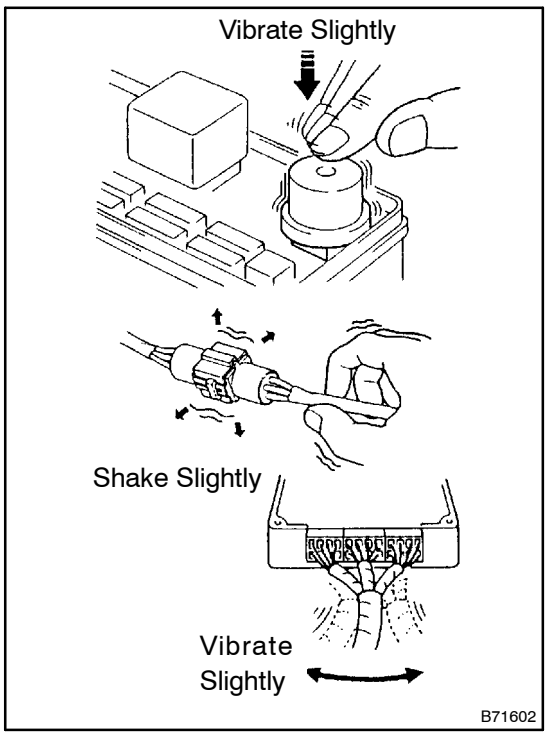
For example:

With a problem that only occurs when the engine is cold or occurs as 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 symptom simulation tests below are effective substitutes for the conditions and can be applied on 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 the problem symptoms table for each system to narrow down the possible causes.



1. VIBRATION METHOD: When vibration seems to be the major cause.

(a) PART AND SENSOR

(1) Apply slight vibration with a finger to the part of the sensor considered to be the cause of the problem and check whether or not the malfunction occurs.

HINT:

Applying strong vibration to relays may result in open relays.

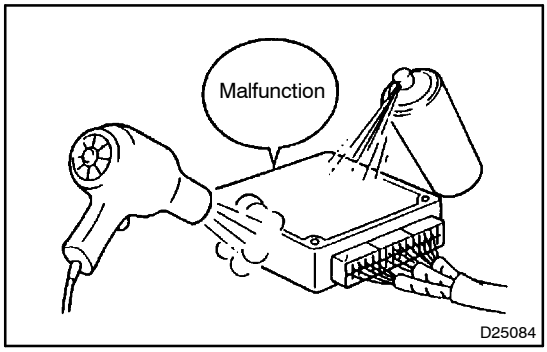
(b) CONNECTORS

(1) Slightly shake the connector vertically and horizontally.

(c) WIRE HARNESS

(1) Slightly shake the wire harness vertically and horizontally.

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

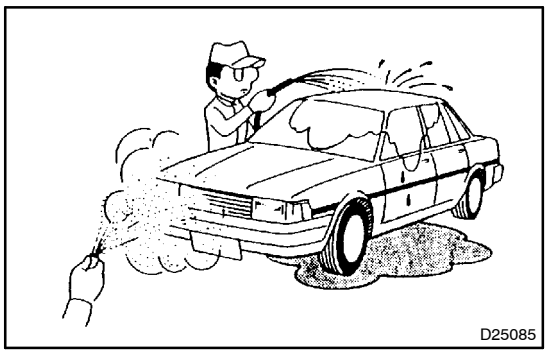


2. HEAT METHOD: If the problem seems to occur when the area in question is heated.

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



3. WATER SPRINKLING METHOD: When the malfunction seems to occur on a rainy day or in high-humidity.

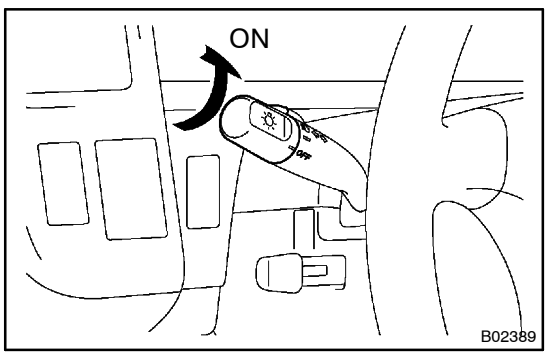
(a) Sprinkle water onto the vehicle and check the malfunction occurs.

NOTICE:

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

HINT:

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



4. HIGH ELECTRICAL LOAD METHOD: When a malfunction seems to occur when electrical load is excessive.

(a) Turn on all the electrical loads including the heater blower, headlights, rear window defogger, etc., and check if the malfunction occurs.

DIAGNOSTIC TROUBLE CODE CHART

Use Diagnostic Trouble Codes (DTCs) (from the DTC checks) in the table below to determine the trouble area and proper inspection procedure. The Supplemental Restraint System (SRS) diagnostic trouble code chart is shown below as an example.

- DTC No.
  Indicates the diagnostic trouble code.
- Page or Instructions
  Indicates the page where the inspection procedures for each circuit is to be found, or gives instructions for checking and repairs.

- Trouble Area
  Indicates the suspect areas of the problem.

- Detection Item
  Indicates the system or details of the problem.

DIAGNOSTIC TROUBLE CODE CHART

If a malfunction code is displayed during the DTC check, check the circuit for that code listed in the table below (Proceed to the page given for that circuit).

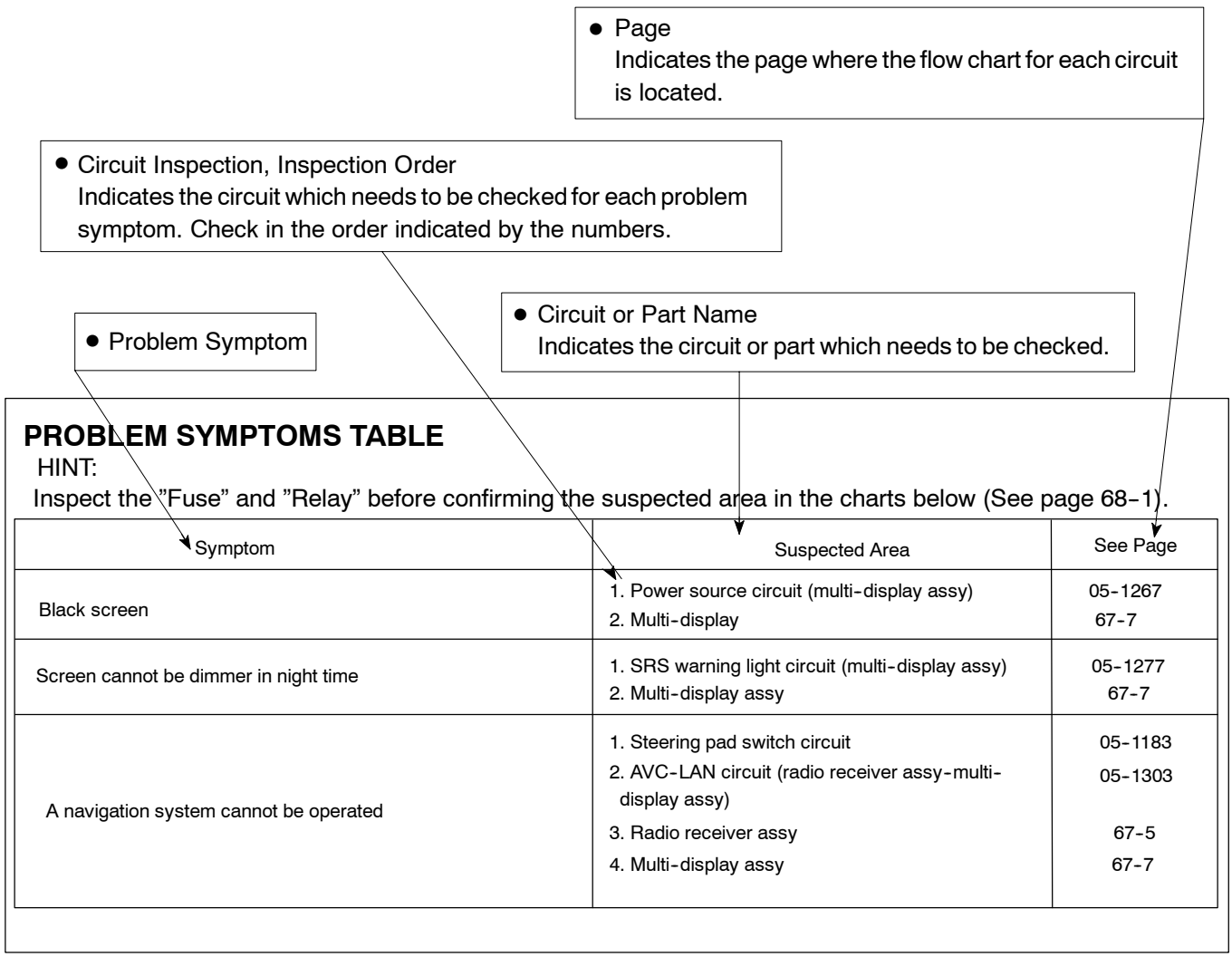
DTC No. (See page)	Detection Item	Trouble Area	SRS Warning Light
B0100/13 (05-119)	● Short in D squib circuit	● Steering wheel pad (squib) ● Spiral cable ● Airbag sensor assembly ● Wire harness	ON
B0101/14 (05-124)	● Open in D squib circuit	● Steering wheel pad (squib) ● Spiral cable ● Airbag sensor assembly ● Wire harness	ON
B0102/11 (05-128)	● Short in D squib circuit (to ground)	● Steering wheel pad (squib) ● Spiral cable ● Airbag sensor assembly ● Wire harness	ON
B0103/12 (05-132)	● Short in D squib circuit (to B+)	● Steering wheel pad (squib) ● Spiral cable ● Airbag sensor assembly ● Wire harness	ON
B0105/53 (05-136)	● Short in P squib circuit	● Front passenger airbag assembly (squib) ● Airbag sensor assembly ● Wire harness	ON
B0106/54	● Open in P squib circuit	● Front passenger airbag assembly (squib) ● Airbag sensor assembly ● Wire harness	
	circuit (to Ground)	● Front passenger airbag assembly (squib) ● Airbag sensor assembly ● Wire harness	

PROBLEM SYMPTOMS TABLE

The suspected circuits or parts for each problem symptom are shown in the table below. Use this table to troubleshoot when, during a DTC check, a "Normal" code is displayed but the problem is still occurring. Numbers in the table show the inspection order in which the circuits or parts should be checked.

HINT:

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



PROBLEM SYMPTOMS TABLE

HINT:

Inspect the "Fuse" and "Relay" before confirming the suspected area in the charts below (See page 68-1).

Symptom	Suspected Area	See Page
Black screen	1. Power source circuit (multi-display assy) 2. Multi-display	05-1267 67-7
Screen cannot be dimmer in night time	1. SRS warning light circuit (multi-display assy) 2. Multi-display assy	05-1277 67-7
A navigation system cannot be operated	1. Steering pad switch circuit 2. AVC-LAN circuit (radio receiver assy-multi-display assy) 3. Radio receiver assy 4. Multi-display assy	05-1183 05-1303 67-5 67-7

CIRCUIT INSPECTION

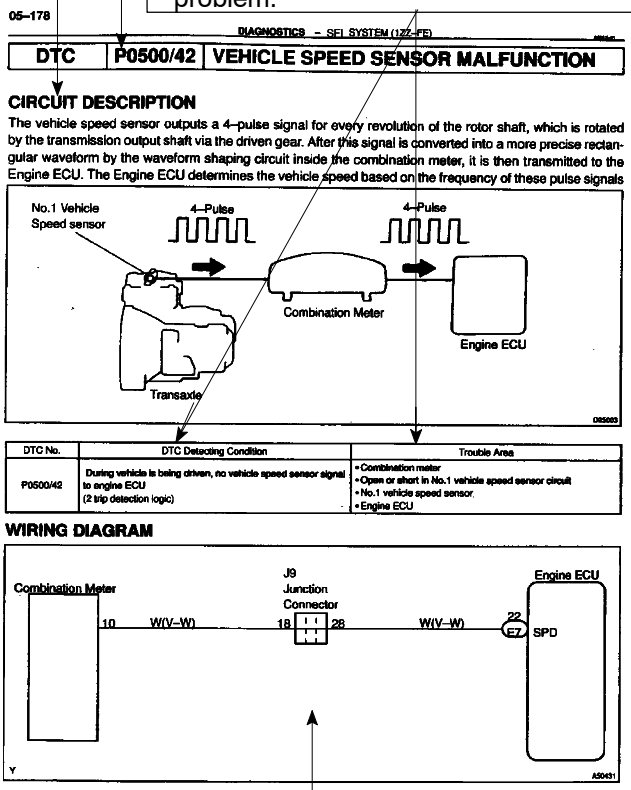
How to read and use each page is shown below.

● Circuit Description
The major role and, operation of the circuit and its component parts are explained.

● Diagnostic Trouble Code No. and Detection Item

● Indicates the diagnostic trouble codes, diagnostic trouble code settings and suspect areas for a problem.

● Inspection Procedures
Use the inspection procedures to determine if the circuit is normal or abnormal. If it is abnormal, use it to determine whether the problem is located in the sensors, actuators, wire harness or ECU.


05–178

DIAGNOSTICS – SFI SYSTEM (1ZZ–FE)

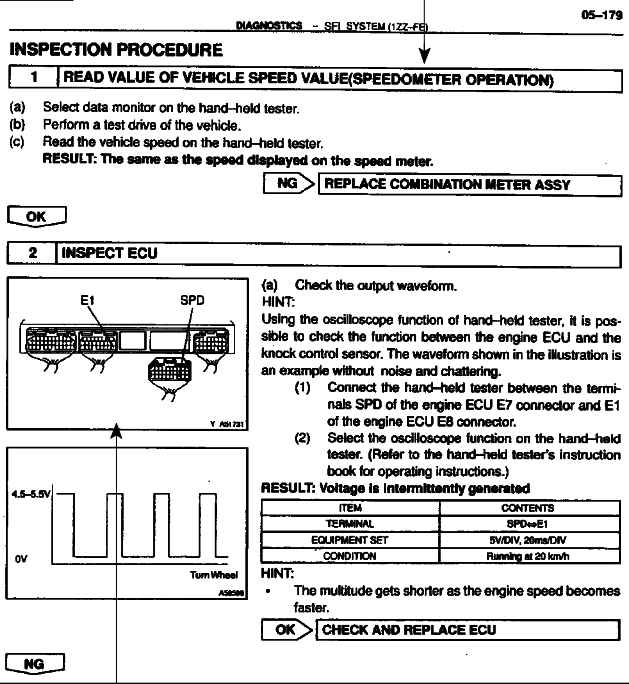
DTC	P0500/42	VEHICLE SPEED SENSOR MALFUNCTION

CIRCUIT DESCRIPTION

The vehicle speed sensor outputs a 4–pulse signal for every revolution of the rotor shaft, which is rotated by the transmission output shaft via the driven gear. After this signal is converted into a more precise rectangular waveform by the waveform shaping circuit inside the combination meter, it is then transmitted to the Engine ECU. The Engine ECU determines the vehicle speed based on the frequency of these pulse signals

DTC No.	DTC Detecting Condition	Trouble Area
P0500/42	During vehicle is being driven, no vehicle speed sensor signal to engine ECU (2 trip detection logic)	• Combination meter • Open or short in No.1 vehicle speed sensor circuit • No.1 vehicle speed sensor • Engine ECU

WIRING DIAGRAM


DIAGNOSTICS – SFI SYSTEM (1ZZ–FE) 05–179

INSPECTION PROCEDURE

1 READ VALUE OF VEHICLE SPEED VALUE(SPEEDOMETER OPERATION)

(a) Select data monitor on the hand–held tester.
(b) Perform a test drive of the vehicle.
(c) Read the vehicle speed on the hand–held tester.
RESULT: The same as the speed displayed on the speed meter.

NG → REPLACE COMBINATION METER ASSY

OK

2 INSPECT ECU

(a) Check the output waveform.
HINT:
Using the oscilloscope function of hand–held tester, it is possible to check the function between the engine ECU and the knock control sensor. The waveform shown in the illustration is an example without noise and chattering.
(1) Connect the hand–held tester between the terminals SPD of the engine ECU E7 connector and E1 of the engine ECU E8 connector.
(2) Select the oscilloscope function on the hand–held tester. (Refer to the hand–held tester's instruction book for operating instructions.)
RESULT: Voltage is intermittently generated

ITEM	CONTENTS
TERMINAL	SPD⇔E1
EQUIPMENT SET	5V/DIV, 20ms/DIV
CONDITION	Running at 20 km/h

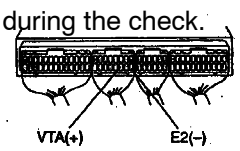
HINT:
- The multitude gets shorter as the engine speed becomes faster.

OK → CHECK AND REPLACE ECU

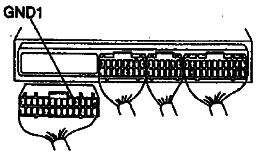
NG

● Wiring Diagram
This shows a wiring diagram of the circuit.
Use this diagram together with ELECTRICAL WIRING DIAGRAM to thoroughly understand the circuit.
Wire colors are indicated by an alphabetical code.
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.

● Indicates the condition of the connector of the ECU during the check.



Connector being checked is connected.
Connections of tester are indicated by (+), (–) after terminals name.



Connector being checked is disconnected.
For inspection of connector with body ground, there is nothing about the body ground written down.

D25842

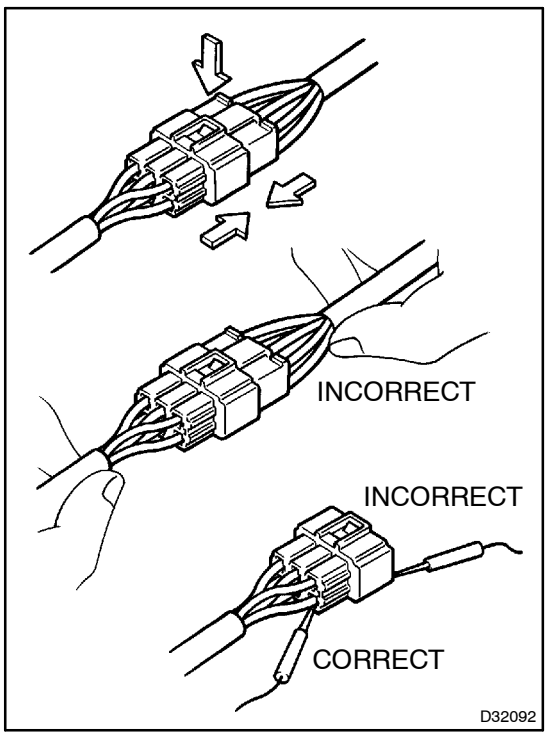
010B8-15

ELECTRONIC CIRCUIT INSPECTION PROCEDURE

1. BASIC INSPECTION

(a) RESISTANCE MEASURING CONDITION OF ELECTRONIC PARTS

(1) Unless stated, all resistance is measured at an ambient temperature of 20°C (68°F). Resistances measured may be outside the specifications 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

(1) When disconnecting a connector, first squeeze the mating halves tightly together to release the lock, then press the lock claw and separate the connector.

(2) When disconnecting a connector, do not pull on the harness. Grasp the connector directly and separate it.

(3) Before connecting the connector, check that there are no deformed, damaged, loose or missing terminals.

(4) When connecting a connector, press firmly until you hear the lock close with a "click" sound.

(5) If checking the connector with a TOYOTA electrical tester, check it from the backside (harness side) of the connector using a mini test lead.

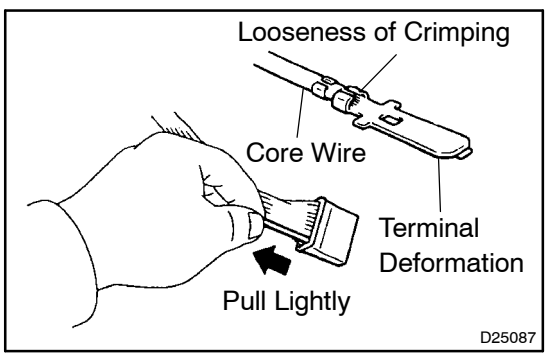
NOTICE:

- **As a waterproof connector cannot be checked from the backside, check by connecting a sub-harness.**
- **Do not damage the terminals by moving the inserted tester needle.**

(c) CHECKING CONNECTORS

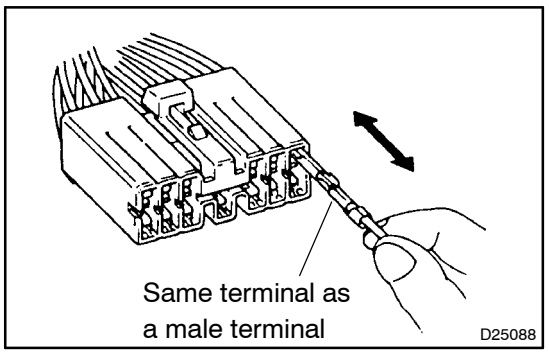
(1) Checking when the connector is connected:
Squeeze the connector together to confirm that it is fully inserted and locked.

(2) Checking when the 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.
Check visually for corrosion, metallic or foreign objects and water; and bent, rusted, overheated, contaminated, and deformed terminals.

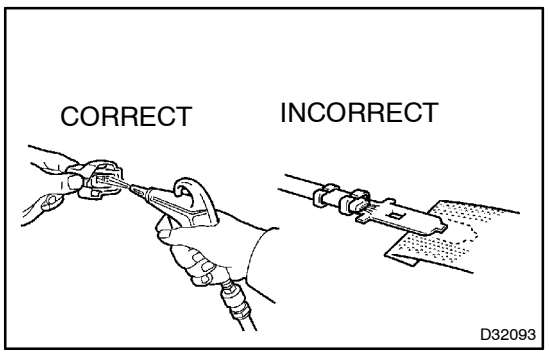


NOTICE:

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



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

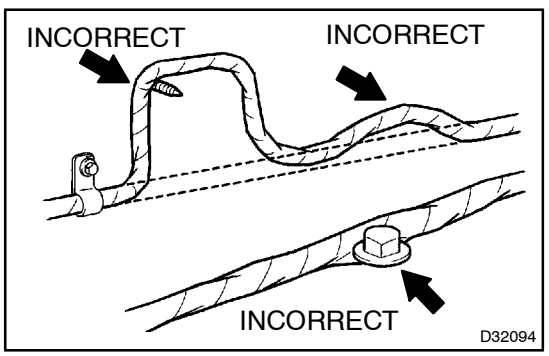


(d) REPAIR METHOD OF CONNECTOR TERMINAL

(1) If there is any dirt on the terminal, clean the contact point using an air gun or shop rag. Never polish the contact point using sandpaper as the platings 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 will not lock into the housing, the housing may have to be replaced.



(e) HANDLING OF WIRE HARNESS

(1) If removing a wire harness, check the wiring and clamping before proceeding so that it can be restored in the same way.

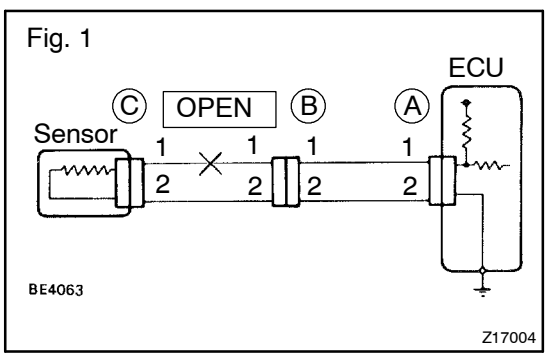
(2) Never twist, pull or slacken the wire harness more than necessary.

(3) Never make the wire harness come into contact with a high temperature part, rotating, moving, vibrating or sharp-edged parts. Avoid panel edges, screw tips and similar 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, replace it or securely repair it with vinyl tape.

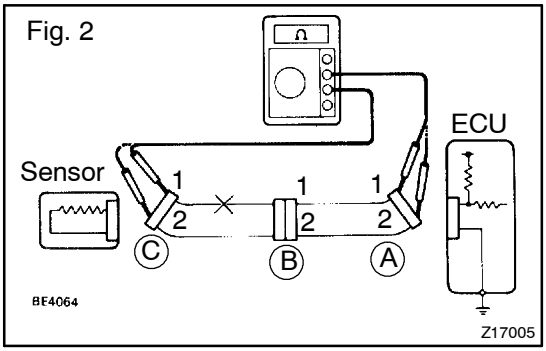
Fig. 1



2. CHECK OPEN CIRCUIT

(a) For an open circuit in the wire harness in Fig. 1, perform a resistance check (step b) or a voltage check (step c).

Fig. 2



(b) Check the resistance.

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

Resistance: Below 1 Ω

HINT:

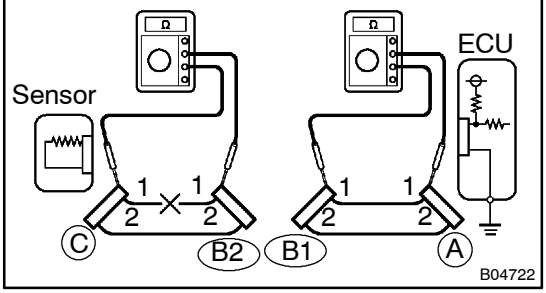
Measure the resistance while lightly shaking the wire harness vertically and horizontally.

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 kΩ

If your results match the examples above, an open circuit exists between terminal 1 of connector A and terminal 1 of connector C.

Fig. 3



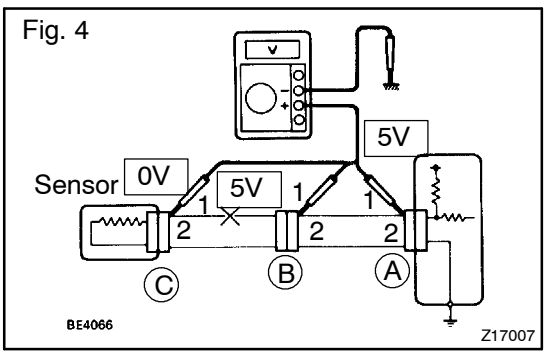
(2) Disconnect connector B and measure the resistance between the connectors.

Fig. 3:

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

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

Fig. 4



(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.

Fig. 4:

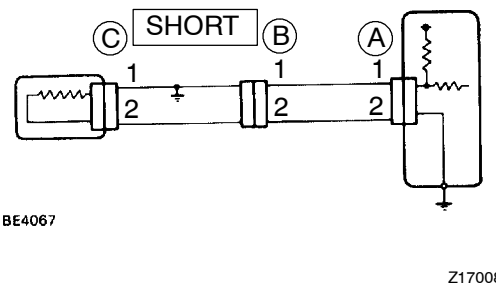
With each connector still connected, measure the voltage between the body ground these terminals (in this order): 1) terminal 1 of connector A at the ECU 5V output terminal, 2) terminal 1 of connector B, and 3) terminal 1 of connector C.

(2) Example results:

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	0 V

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

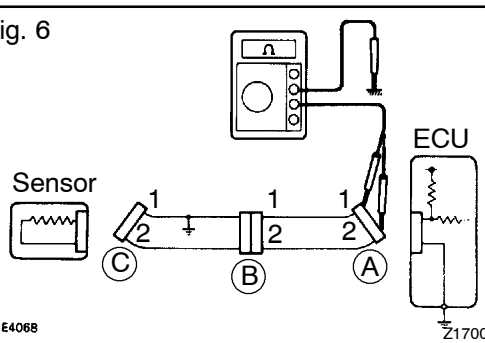
Fig. 5



3. CHECK SHORT CIRCUIT

(a) If the wire harness is ground shorted (Fig. 5), locate the section by conducting a resistance check with the body ground (below).

Fig. 6



(b) Check the resistance with the body ground.

(1) Disconnect connectors A and C and measure the resistance between terminals 1 and 2 of connector A and the body ground.

Resistance: 10 kΩ or higher

HINT:

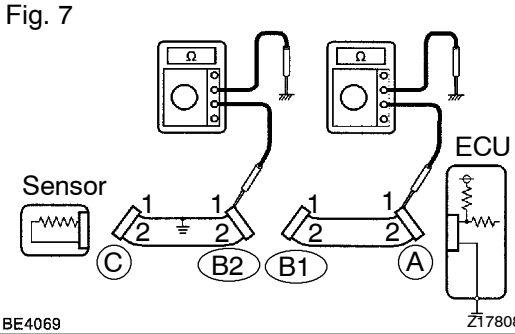
Measure the resistance while lightly shaking the wire harness vertically and horizontally.

Fig. 6:

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

If your results match the examples above, a short circuit exists between terminal 1 of connector A and terminal 1 of connector C.

Fig. 7



(2) Disconnect connector B and measure the resistance between terminal 1 of connector A and the body ground, and terminal 1 of connector B2 and the body ground.

Fig. 7:

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

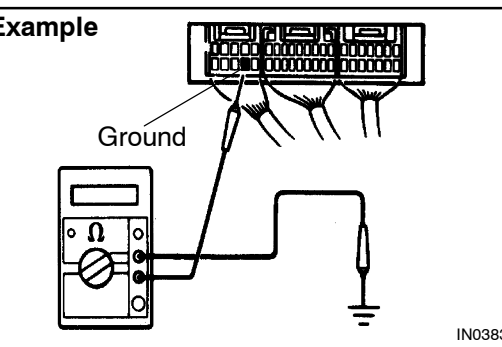
If your results match the examples above, a short circuit exists between terminal 1 of connector B2 and terminal 1 of connector C.

4. CHECK AND REPLACE ECU

NOTICE:

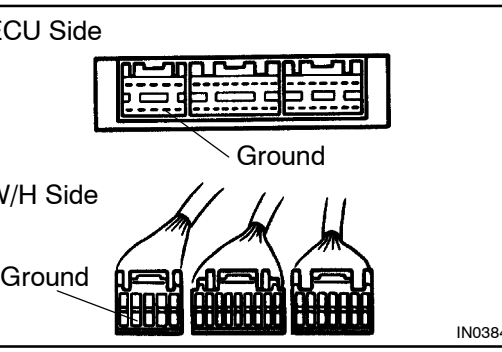
- **The connector should not be disconnected from the ECU. Perform the inspection from the backside of the connector on the wire harness side.**
- **When no measuring condition is specified, perform the inspection with the engine stopped and the ignition switch ON.**
- **Check that the connectors are 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. Replace the ECU with a normal functioning one and check if the symptoms occur. If the trouble symptoms stop, replace the ECU.



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

Resistance: Below 1 Ω



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

TERMS

ABBREVIATIONS USED IN MANUAL

010B9-22

Abbreviations	Meaning
ABS	Anti-Lock Brake System
A/C	Air Conditioner
AC	Alternating Current
ACC	Accessory
ACIS	Acoustic Control Induction System
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
ATF	Automatic Transmission Fluid
AUTO	Automatic
AUX	Auxiliary
AVG	Average
AVS	Adaptive Variable Suspension
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
CB	Circuit Breaker
CCo	Catalytic Converter For Oxidation
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

Abbreviations	Meaning
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
ECAM	Engine Control And Measurement System
ECD	Electronic Controlled Diesel
ECDY	Eddy Current Dynamometer
ECT	Electronic Control Transmission
ECU	Electronic Control Unit
ED	Electro-Deposited Coating
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
EMPS	Electric Motor Power Steering
ENG	Engine
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
HAC	High Altitude Compensator
H/B	Hatchback
H-FUSE	High Current Fuse

Abbreviations	Meaning
HI	High
HID	High Intensity Discharge (Head Lamp)
HSG	Housing
HT	Hard Top
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
L/H/W	Length, Height, Width
LLC	Long-Life Coolant
LNG	Liquified Natural Gas
LO	Low
LPG	Liquified Petroleum Gas
LSD	Limited Slip Differential
LSP & PV	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
MG1	Motor Generator No.1
MG2	Motor Generator No.2
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
O/D	Overdrive
OEM	Original Equipment Manufacturing

Abbreviations	Meaning
OHC	Overhead Camshaft
OHV	Overhead Valve
OPT	Option
ORVR	On-board Refilling Vapor Recovery
O/S	Oversize
P & BV	Proportioning And Bypass Valve
PCS	Power Control System
PCV	Positive Crankcase Ventilation
PKB	Parking Brake
PPS	Progressive Power Steering
PTC	Positive Temperature Coefficient
PS	Power Steering
PTO	Power Take-Off
P/W	Power Window
R & P	Rack And Pinion
RAM	Random Access Memory
R/B	Relay Block
RBS	Recirculating Ball Type Steering
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
RWD	Rear-Wheel Drive
SDN	Sedan
SEN	Sensor
SICS	Starting Injection Control System
SOC	State Of Charge
SOHC	Single Overhead Camshaft
SPEC	Specification
SPI	Single Point Injection
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
TCV	Timing Control Valve
TDC	Top Dead Center
TEMP.	Temperature
TEMS	TOYOTA Electronic Modulated Suspension
TFT	Toyota Free-Tronic

Abbreviations	Meaning
TIS	Total Information System For Vehicle Development
T/M	Transmission
TMC	TOYOTA Motor Corporation
TMMK	TOYOTA Motor Manufacturing Kentucky, Inc.
TRC	Traction Control System
TURBO	Turbocharge
TWC	Three-Way Catalyst
U/D	Underdrive
U/S	Undersize
VCV	Vacuum Control Valve
VENT	Ventilator
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
WU-TWC	Warm Up Three-way Catalytic Converter
WU-OC	Warm Up Oxidation Catalytic Converter
1st	First
2nd	Second
2WD	Two Wheel Drive Vehicle (4 x 2)
3rd	Third
4th	Fourth
4WD	Four Wheel Drive Vehicle (4 x 4)
4WS	Four Wheel Steering System
5th	Fifth

010BA-23

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 ABBREVIATIONS	SAE TERMS	TOYOTA TERMS ( )--ABBREVIATIONS
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)
DI	Distributor Ignition	-
DLC1 DLC2 DLC3	Data Link Connector 1 Data Link Connector 2 Data Link Connector 3	1: Check Connector 2: Total Diagnosis Communication Link (TDCL) 3: OBD II Diagnostic Connector
DTC	Diagnostic Trouble Code	Diagnostic Code
DTM	Diagnostic Test Mode	-
ECL	Engine Coolant Level	-
ECM	Engine Control Module	Engine ECU (Electronic Control Unit)
ECT	Engine Coolant Temperature	Coolant Temperature, Water Temperature (THW)
EEPROM	Electrically Erasable Programmable Read Only Memory	Electrically Erasable Programmable Read Only Memory (EEPROM), Erasable Programmable Read Only Memory (EPROM)
EFE	Early Fuel Evaporation	Cold Mixture Heater (CMH), Heat Control Valve (HCV)
EGR	Exhaust Gas Recirculation	Exhaust Gas Recirculation (EGR)
EI	Electronic Ignition	TOYOTA Distributorless Ignition (TDI)
EM	Engine Modification	Engine Modification (EM)
EPROM	Erasable Programmable Read Only Memory	Programmable Read Only Memory (PROM)
EVAP	Evaporative Emission	Evaporative Emission Control (EVAP)
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_2S)
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 Air Flow	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 Lamp
MST	Manifold Surface Temperature	-
MVZ	Manifold Vacuum ZOne	-
NVRAM	Non-Volatile Random Access Memory	-
O2S	Oxygen Sensor	Oxygen Sensor, O_2 Sensor (O_2S)
OBD	On-Board Diagnostic	On-Board Diagnostic System (OBD)
OC	Oxidation Catalytic Converter	Oxidation Catalyst Convert (OC), CC_O
OL	Open Loop	Open Loop
PAIR	Pulsed Secondary Air Injection	Air Suction (AS)
PCM	Powertrain Control Module	-
PNP	Park/Neutral Position	-
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	Superchager 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
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	-

PREPARATION

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PREPARATION 02–1
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REFER TO FOLLOWING REPAIR MANUALS:

Manual Name	Pub. No.
COROLLA Repair Manual	RM821E
COROLLA Repair Manual Supplement (Oct., 2001)	RM926E
COROLLA Repair Manual Supplement (Aug, 2002)	DR105E
COROLLA Repair Manual Supplement (Aug, 2003)	DR141E

NOTE: The above pages contain only the points which differ from the above listed manuals.

FRONT SUSPENSION

02422-02

PREPARATION

Equipment

Torque wrench	
Dial indicator with magnetic base	
Tire pressure gauge	
Alignment tester	
Toe-in gauge	
Angle gauge	
Camber-caster-kingpin gauge	

TIRE & WHEEL

PREPARATION

02421-01

Equipment

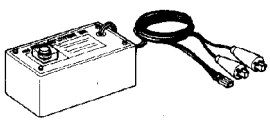
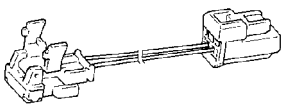
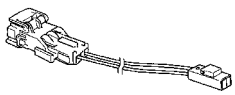
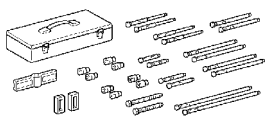
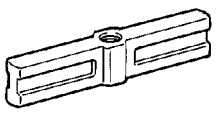
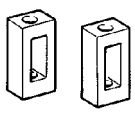
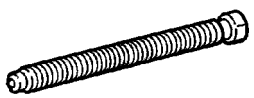
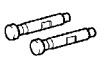
Tire pressure gauge	
Dial indicator with magnetic base	
Wheel balancer	

SUPPLEMENTAL RESTRAINT SYSTEM

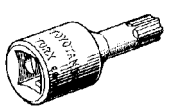
0241O-01

PREPARATION

SST

	09082-00700	SRS Airbag Deployment Tool	HORN BUTTON ASSY
	09082-00760	Airbag Deployment Wire Sub-harness No.4	HORN BUTTON ASSY
	09082-00802	Airbag Deployment Wire Sub-Harness No. 8	HORN BUTTON ASSY
	(09082-10801)	Wire A	HORN BUTTON ASSY
	(09082-40800)	Wire D	HORN BUTTON ASSY
	09950-50013	Puller C Set	SPIRAL CABLE SUB-ASSY
	(09951-05010)	Hanger 150	SPIRAL CABLE SUB-ASSY
	(09952-05010)	Slide Arm	SPIRAL CABLE SUB-ASSY
	(09953-05020)	Center Bolt 150	SPIRAL CABLE SUB-ASSY
	(09954-05021)	Claw No.2	SPIRAL CABLE SUB-ASSY

Recommended Tools

	09042-00010	Torx Socket T30	HORN BUTTON ASSY SPIRAL CABLE SUB-ASSY

Equipment

Torque wrench	
Bolt Length: 35.0 mm (1.378 in.) Pitch: 1.0 mm (0.039 in.) Diameter: 6.0 mm (0.236 in.)	Airbag disposal
Tire Width: 185 mm (7.28 in.) Inner diameter: 360 mm (14.17 in.)	Airbag disposal
Tire with disc wheel Width: 185 mm (7.28 in.) Inner diameter: 360 mm (14.17 in.)	Airbag disposal
Plastic bag	Airbag disposal

LIGHTING

PREPARATION

02427-01

Equipment

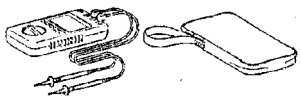
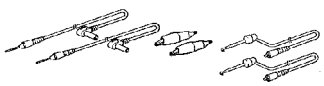
White paper	
Clip remover	
Protective tape	

WIPER & WASHER

PREPARATION

0241P-01

Recommended Tools

	09082-00040	TOYOTA Electrical Tester	WIPER AND WASHER SYSTEM
	(09083-00150)	Test Lead Set	WIPER AND WASHER SYSTEM

EXTERIOR/INTERIOR TRIM

0242G-01

PREPARATION

Equipment

Adhesive tape	To avoid surface damage.
Clip remover	
Protective tape	To avoid surface damage.
Torque wrench	

SERVICE SPECIFICATIONS

STANDARD BOLT 03–1
HOW TO DETERMINE BOLT STRENGTH 03–1
SPECIFIED TORQUE FOR STANDARD BOLTS 03–2
HOW TO DETERMINE NUT STRENGTH 03–3
FRONT SUSPENSION (SOUTH AFRICA) . . . 03–4
SERVICE DATA 03–4
TORQUE SPECIFICATION 03–5
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SERVICE DATA 03–6
SUPPLEMENTAL RESTRAINT SYSTEM . . . 03–7
TORQUE SPECIFICATION 03–7
EXTERIOR/INTERIOR TRIM 03–8
TORQUE SPECIFICATION 03–8

REFER TO FOLLOWING REPAIR MANUALS:

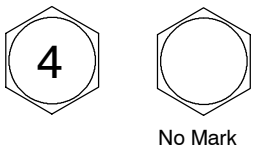
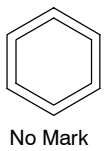
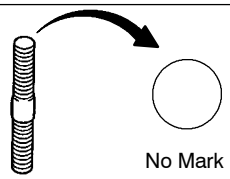
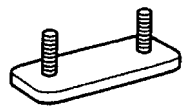
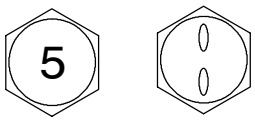
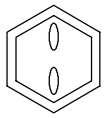
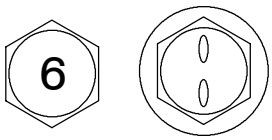
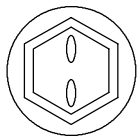
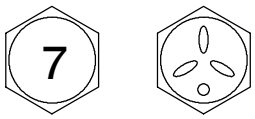
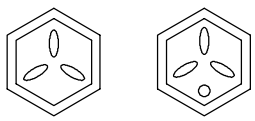
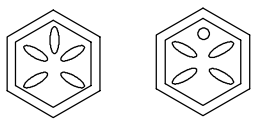
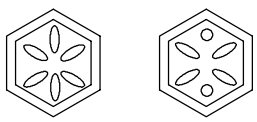
Manual Name	Pub. No.
COROLLA Repair Manual	RM821E
COROLLA Repair Manual Supplement (Oct., 2001)	RM926E
COROLLA Repair Manual Supplement (Aug, 2002)	DR105E
COROLLA Repair Manual Supplement (Aug, 2003)	DR141E

NOTE: The above pages contain only the points which differ from the above listed manuals.

STANDARD BOLT

HOW TO DETERMINE BOLT STRENGTH

0328F-01

Bolt Type				Class
Hexagon Head Bolt		Stud Bolt	Weld Bolt	
Normal Recess Bolt	Deep Recess Bolt			
 4 — No Mark	 No Mark	 No Mark		4T
 5				5T
 6 — w/ Washer	 w/ Washer			6T
 7				7T
 8				8T
 9				9T
 10				10T
 11				11T

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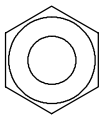
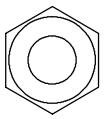
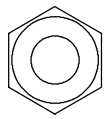
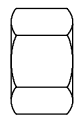
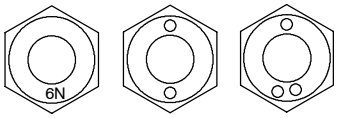
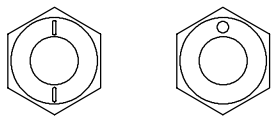
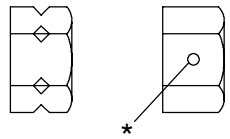
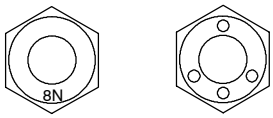
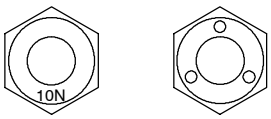
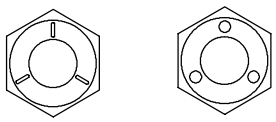
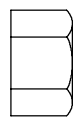
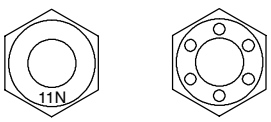
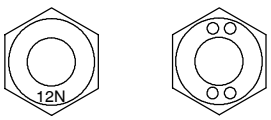
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SPECIFIED TORQUE FOR STANDARD BOLTS

Class	Diameter mm	Pitch mm	Specified torque					
			Hexagon head bolt			Hexagon flange bolt		
			N·m	kgf·cm	ft·lbf	N·m	kgf·cm	ft·lbf
4T	6	1	5	55	48 in.·lbf	6	60	52 in.·lbf
	8	1.25	12.5	130	9	14	145	10
	10	1.25	26	260	19	29	290	21
	12	1.25	47	480	35	53	540	39
	14	1.5	74	760	55	84	850	61
	16	1.5	115	1,150	83	-	-	-
5T	6	1	6.5	65	56 in.·lbf	7.5	75	65 in.·lbf
	8	1.25	15.5	160	12	17.5	175	13
	10	1.25	32	330	24	36	360	26
	12	1.25	59	600	43	65	670	48
	14	1.5	91	930	67	100	1,050	76
	16	1.5	140	1,400	101	-	-	-
6T	6	1	8	80	69 in.·lbf	9	90	78 in.·lbf
	8	1.25	19	195	14	21	210	15
	10	1.25	39	400	29	44	440	32
	12	1.25	71	730	53	80	810	59
	14	1.5	110	1,100	80	125	1,250	90
	16	1.5	170	1,750	127	-	-	-
7T	6	1	10.5	110	8	12	120	9
	8	1.25	25	260	19	28	290	21
	10	1.25	52	530	38	58	590	43
	12	1.25	95	970	70	105	1,050	76
	14	1.5	145	1,500	108	165	1,700	123
	16	1.5	230	2,300	166	-	-	-
8T	8	1.25	29	300	22	33	330	24
	10	1.25	61	620	45	68	690	50
	12	1.25	110	1,100	80	120	1,250	90
9T	8	1.25	34	340	25	37	380	27
	10	1.25	70	710	51	78	790	57
	12	1.25	125	1,300	94	140	1,450	105
10T	8	1.25	38	390	28	42	430	31
	10	1.25	78	800	58	88	890	64
	12	1.25	140	1,450	105	155	1,600	116
11T	8	1.25	42	430	31	47	480	35
	10	1.25	87	890	64	97	990	72
	12	1.25	155	1,600	116	175	1,800	130

0328H-01

HOW TO DETERMINE NUT STRENGTH

Nut Type			Class
Present Standard Hexagon Nut	Old Standard Hexagon Nut		
	Cold Forging Nut	Cutting Processed Nut	
 No Mark			4N
 No Mark (w/ Washer)	 No Mark (w/ Washer)	 No Mark	5N (4T)
 6N			6N
		 *	7N (5T)
 8N			8N
 10N		 No Mark	10N (7T)
 11N			11N
 12N			12N

*: Nut with 1 or more marks on one side surface of the nut.

B06432

HINT:

Use the nut with the same number of the nut strength classification or the greater than the bolt strength classification number when tightening parts with a bolt and nut.

Example: Bolt = 4T

Nut = 4N or more

FRONT SUSPENSION (SOUTH AFRICA)

032AW-02

SERVICE DATA

Front wheel alignment	Vehicle height		
	185/70R14	A - B:	88 mm (3.39 in.)
		D - C:	38 mm (1.50 in.)
	195/60R15	A - B:	88 mm (3.39 in.)
		D - C:	40 mm (1.57 in.)
	195/55R16	A - B:	88 mm (3.39 in.)
		D - C:	40 mm (1.57 in.)
	Toe-in (total)		0° ± 12' (0° ± 0.2°), 0 ± 2 mm (0 ± 0.08 in.)
		Rack end length difference	1.5 mm (0.059 in.) or less
	Wheel angle		
		Inside wheel	38°45' (36°45' – 40°45') 38.75° (36.75° – 40.75°)
		Outside wheel: Reference	32°50' 32.83°
	Camber		
	185/70R14		-0°31' ± 45' (-0.52° ± 0.75°)
		Right-left error	45' (0.75°) or less
	195/60R15		-0°31' ± 45' (-0.52° ± 0.75°)
		Right-left error	45' (0.75°) or less
	195/55R16		-0°31' ± 45' (-0.52° ± 0.75°)
		Right-left error	45' (0.75°) or less
	Caster		
	185/70R14		2°42' ± 45' (2.70° ± 0.75°)
		Right-left error	45' (0.75°) or less
	195/60R15		2°43' ± 45' (2.72° ± 0.75°)
		Right-left error	45' (0.75°) or less
	195/55R16		2°43' ± 45' (2.72° ± 0.75°)
		Right-left error	45' (0.75°) or less
	Steering axis inclination		
	185/70R14		11°19' ± 45' (11.32° ± 0.75°)
		Right-left error	45' (0.75°) or less
	195/60R15		11°21' ± 45' (11.35° ± 0.75°)
		Right-left error	45' (0.75°) or less
	195/55R16		11°21' ± 45' (11.35° ± 0.75°)
		Right-left error	45' (0.75°) or less

A: Ground clearance of front wheel center
B: Ground clearance of lower suspension arm front bolt center
C: Ground clearance of axle beam set bolt center
D: Ground clearance of rear wheel center

032AX-01

TORQUE SPECIFICATION

Part Tightened	N·m	kgf·cm	ft·lbf
Tie rod end lock nut	74	755	55
Steering knuckle x Shock absorber	153	1,560	113

TIRE & WHEEL (SOUTH AFRICA)

SERVICE DATA

032AY-01

Cold tire inflation pressure	175/70/R 14 84H	Front:	220 kPa (2.2 kgf/cm^2, 32 psi)
		Rear:	220 kPa (2.2 kgf/cm^2, 32 psi)
	195/60/R 15 88V	Front:	220 kPa (2.2 kgf/cm^2, 32 psi)
		Rear:	220 kPa (2.2 kgf/cm^2, 32 psi)
	195/55/R 16 87V	Front:	220 kPa (2.2 kgf/cm^2, 32 psi)
		Rear:	220 kPa (2.2 kgf/cm^2, 32 psi)

Tire runout	3.0 mm (0.118 in.) or less
Imbalance after adjustment	8.0 g (0.018 lb) or less

SUPPLEMENTAL RESTRAINT SYSTEM

TORQUE SPECIFICATION

0301O-05

Part Tightened	N·m	kgf·cm	ft·lbf
Horn button assy x Steering wheel assy	8.8	90	78 in.·lbf
Airbag sensor assy center x Body	17.5	179	13
Airbag sensor front LH x Body	17.5	179	13
Airbag front RH sensor x Body	9.0	92	80 in.·lbf

EXTERIOR/INTERIOR TRIM

TORQUE SPECIFICATION

032BC-01

Part Tightened	N·m	kgf·cm	ft·lbf
FRONT BUMPER			
Front bumper reinforcement x Body	13	133	10
FRONT BUMPER (HATCHBACK)			
Front bumper reinforcement x Body	13	133	10

DIAGNOSTICS

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PRECAUTION ... 05-1
HOW TO PROCEED WITH TROUBLESHOOTING ... 05-2/3
DIAGNOSTIC TROUBLE CODE CHART ... 05-4/5
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B0101/14 ... 05-10/13
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B0103/12 ... 05-18/21
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CD SOUND SKIPS ... 05-61/62
NOISE OCCURS ... 05-63
DO NOT DISPLAY FUEL EFFICIENCY ... 05-64/65
THE AMBIENT TEMPERATURE DOES NOT DISPLAY ... 05-66/67

REFER TO FOLLOWING REPAIR MANUALS:

Manual Name	Pub. No.
COROLLA Repair Manual	RM821E
COROLLA Repair Manual Supplement (Oct., 2001)	RM926E
COROLLA Repair Manual Supplement (Aug, 2002)	DR105E
COROLLA Repair Manual Supplement (Aug, 2003)	DR141E

NOTE: The above pages contain only the points which differ from the above listed manuals.

SUPPLEMENTAL RESTRAINT SYSTEM

05LWN-01

PRECAUTION

1. HANDLING PRECAUTIONS FOR AIRBAG SENSOR

HINT:

In this section, the airbag sensor assy center, airbag sensor front LH, airbag sensor front RH, side airbag sensor assy LH, side airbag sensor assy RH, airbag sensor rear LH, airbag sensor rear RH and seat position airbag sensor are collectively referred to as the airbag sensor.

(a) Before starting the following operations, wait at least 90 seconds after disconnecting the negative (-) terminal of the battery:
  (1) Replacement of the airbag sensor.
  (2) Adjustment of the front/rear doors of the vehicle equipped with the side airbag and curtain shield airbag (fitting adjustment).

(b) When connecting or disconnecting the airbag sensor connector, ensure that all of the sensors are installed in the vehicle.

(c) Do not use an airbag sensor which has been dropped during the operation or transportation.

(d) Do not disassemble the airbag sensor.

2. INSPECTION PROCEDURE FOR VEHICLE INVOLVED IN ACCIDENT

(a) When the airbag has not deployed, confirm the DTC by checking the SRS warning light. If there is any malfunction in the SRS airbag system, perform troubleshooting.

(b) When any of the airbags have deployed, replace the airbag sensor and check the installation condition.

05LJ1-02

HOW TO PROCEED WITH TROUBLESHOOTING

The intelligent tester II can be used at steps 4, 6, 8 and 9.

1	VEHICLE BROUGHT TO WORKSHOP

2	CUSTOMER PROBLEM ANALYSIS (SEE PUB. NO. RM926E, PAGE 05-58)

3	WARNING LIGHT CHECK (SEE PUB. NO. RM926E, PAGE 05-59)

4	DTC CHECK (Present and Past DTC) (SEE PUB. NO. RM926E, PAGE 05-59)

- DTC IS OUTPUT (INCLUDING NORMAL SYSTEM CODE): GO TO STEP 5
- DTC IS NOT OUTPUT: PROBLEM SYMPTOMS TABLE (SEE PUB. NO. RM926E, PAGE 05-70)

5	DTC CHART (SEE PAGE 05-4)

6	CIRCUIT INSPECTION (SEE PAGE 05-6 TO 05-18) (SEE PUB. NO. RM926E, PAGE 05-71 TO 05-185)

7	REPAIR

8	CLEAR DTC (Present and Past DTCs) (SEE PUB. NO. RM926E, PAGE 05-59)

9	DTC CHECK (Present and Past DTC) (SEE PUB. NO. RM926E, PAGE 05-59)

- DTC IS NOT OUTPUT: GO TO STEP 11
- DTC IS OUTPUT: GO TO STEP 5

10	SYMPTOM SIMULATION

WARNING LIGHT REMAINS OFF: GO TO STEP 11

WARNING LIGHT IS ON: GO TO STEP 5

11	CONFIRMATION TEST

END

05LJ2-02

DIAGNOSTIC TROUBLE CODE CHART

DTC No. (See page)	Detection Item	Trouble Area	SRS Warning Light
B0100/13 (05-6)	• SHORT IN D SQUIB CIRCUIT	• Horn button assy (squib) • Spiral cable sub-assy • Airbag sensor assy center • Instrument panel wire	ON
B0101/14 (05-10)	• OPEN IN D SQUIB CIRCUIT	• Horn button assy (squib) • Spiral cable sub-assy • Airbag sensor assy center • Instrument panel wire	ON
B0102/11 (05-14)	• SHORT IN D SQUIB CIRCUIT (TO GROUND)	• Horn button assy (squib) • Spiral cable sub-assy • Airbag sensor assy center • Instrument panel wire	ON
B0103/12 (05-18)	• SHORT IN D SQUIB CIRCUIT (TO B+)	• Horn button assy (squib) • Spiral cable sub-assy • Airbag sensor assy center • Instrument panel wire	ON
B0105/53 (★)	• SHORT IN P SQUIB CIRCUIT	• Instr pnl pass l/door airbag assy (squib) • Airbag sensor assy center • Instrument panel wire	ON
B0106/54 (★)	• OPEN IN P SQUIB CIRCUIT	• Instr pnl pass l/door airbag assy (squib) • Airbag sensor assy center • Instrument panel wire	ON
B0107/51 (★)	• SHORT IN P SQUIB CIRCUIT (TO GROUND)	• Instr pnl pass l/door airbag assy (squib) • Airbag sensor assy center • Instrument panel wire	ON
B0108/52 (★)	• SHORT IN P SQUIB CIRCUIT (TO B+)	• Instr pnl pass l/door airbag assy (squib) • Airbag sensor assy center • Instrument panel wire	ON
B0110/43 (★)	• SHORT IN SIDE SQUIB (RH) CIRCUIT	• Front seat airbag assy RH (squib) • Airbag sensor assy center • Wire harness	Blink
B0111/44 (★)	• OPEN IN SIDE SQUIB (RH) CIRCUIT	• Front seat airbag assy RH (squib) • Airbag sensor assy center • Wire harness	Blink
B0112/41 (★)	• SHORT IN SIDE SQUIB (RH) CIRCUIT (TO GROUND)	• Front seat airbag assy RH (squib) • Airbag sensor assy center • Wire harness	Blink
B0113/42 (★)	• SHORT IN SIDE SQUIB (RH) CIRCUIT (TO B+)	• Front seat airbag assy RH (squib) • Airbag sensor assy center • Wire harness	Blink
B0115/47 (★)	• SHORT IN SIDE SQUIB (LH) CIRCUIT	• Front seat airbag assy LH (squib) • Airbag sensor assy center • Wire harness	Blink
B0116/48 (★)	• OPEN IN SIDE SQUIB (LH) CIRCUIT	• Front seat airbag assy LH (squib) • Airbag sensor assy center • Wire harness	Blink
B0117/45 (★)	• SHORT IN SIDE SQUIB (LH) CIRCUIT (TO GROUND)	• Front seat airbag assy LH (squib) • Airbag sensor assy center • Wire harness	Blink
B0118/46 (★)	• SHORT IN SIDE SQUIB (LH) CIRCUIT (TO B+)	• Front seat airbag assy LH (squib) • Airbag sensor assy center • Wire harness	Blink
B1100/31 (★)	• AIRBAG SENSOR ASSY CENTER MALFUNCTION	• Airbag sensor assy center	ON
B1135/24 (★)	• HALF CONNECTION DETECTION MALFUNCTION	• Airbag sensor assy center	ON

B1140/32 (★)	• SIDE AIRBAG SENSOR ASSY (RH) MALFUNCTION	• Side Airbag sensor assy RH • Wire harness	Blink
B1141/33 (★)	• SIDE AIRBAG SENSOR ASSY (LH) MALFUNCTION	• Side Airbag sensor assy LH • Wire harness	Blink
B1156/B1157/15 (★)	• FRONT AIRBAG SENSOR (RH) MALFUNCTION	• Airbag front RH sensor • Airbag sensor assy center • Wire harness	ON
B1158/B1157/16 (★)	• FRONT AIRBAG SENSOR (LH) MALFUNCTION	• Airbag sensor front LH • Airbag sensor assy center • Wire harness	ON
Normal (★)	• SYSTEM NORMAL	-	OFF
	• VOLTAGE SOURCE DROP	• Battery • Airbag sensor assy center	ON

★: Refer to COROLLA Repair Manual Supplement (Pub. No. RM926E).

HINT:

- When the SRS warning light remains lit up and the DTC is the normal code, this means a voltage source drops.
  This malfunction is not stored in memory by the airbag sensor assy center and if the power source voltage returns to normal, the SRS warning light will automatically go out.
- When 2 or more codes are indicated, the codes will be displayed in numeral order starting from the lowest numbered code.
- If a code not listed on the chart is displayed, the airbag sensor assy center is faulty.
- In the case of any malfunction concerning any open circuit, ground short, or B+ short due to any squib, another malfunction code may not be detected. In this case, correct the malfunction currently being output, and then perform malfunction diagnosis again. Another malfunction code may then be detected.

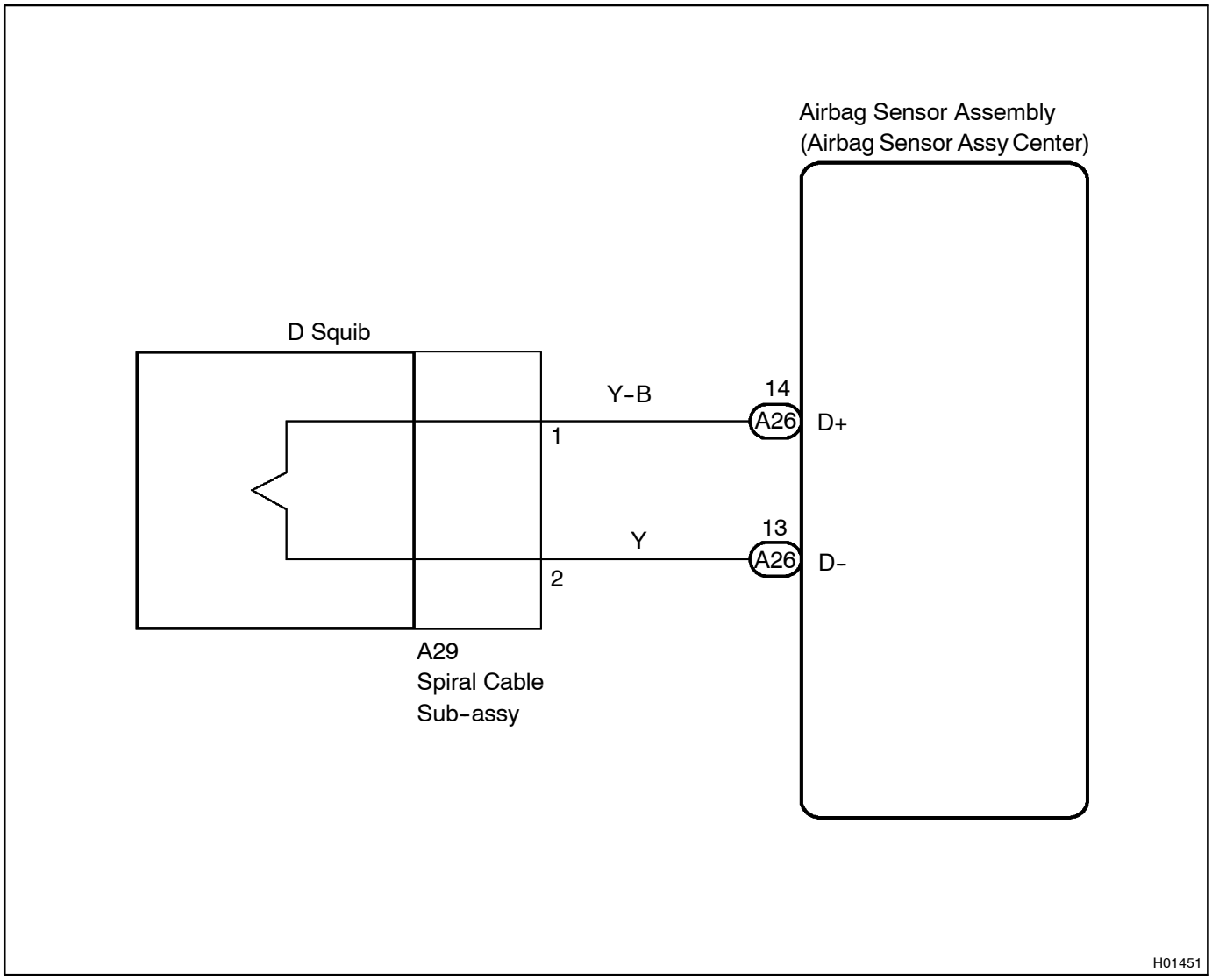
DTC B0100/13 SHORT IN D SQUIB CIRCUIT

CIRCUIT DESCRIPTION

The D squib circuit consists of the airbag sensor assembly (airbag sensor assy center), the spiral cable sub-assy and the horn button assy.
The circuit instructs the SRS to deploy when deployment conditions are met.
DTC B0100/13 is recorded when a short circuit is detected in the D squib circuit.

DTC No.	DTC Detecting Condition	Trouble Area
B0100/13	• Short circuit between D+ wire harness and D- wire harness of D squib • D squib malfunction • Spiral cable sub-assy malfunction • Airbag sensor assy center malfunction	• Horn button assy (D squib) • Spiral cable sub-assy • Airbag sensor assembly (Airbag sensor assy center) • Wire harness (Instrument panel wire)

WIRING DIAGRAM



INSPECTION PROCEDURE

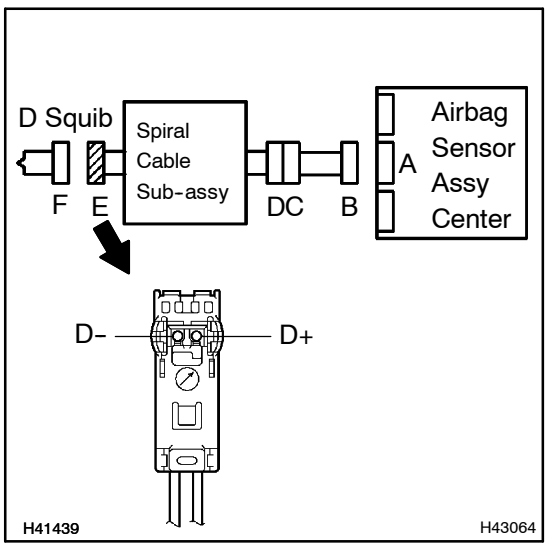
1	CHECK CONNECTOR

(a) Turn the ignition switch to the LOCK position.
(b) Disconnect the negative (-) terminal cable from the battery, and wait for at least 90 seconds.
(c) Disconnect the connector from the horn button assy.
(d) Check that the spiral cable sub-assy connector (on the horn button assy side) is not damaged.
OK:
The lock button is not disengaged, or the claw of the lock is not deformed or damaged.

NG → **REPLACE SPIRAL CABLE SUB-ASSY**

OK

2	CHECK D SQUIB CIRCUIT(AIRBAG SENSOR ASSY CENTER - HORN BUTTON ASSY)



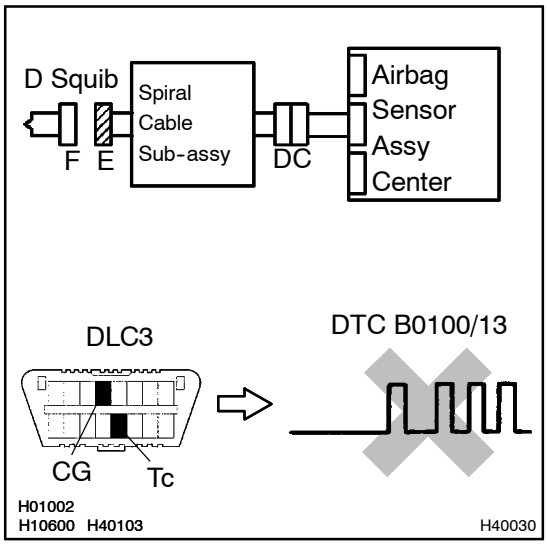
(a) Disconnect the connectors from the airbag sensor assy center.
(b) Release the activation prevention mechanism built into connector "B" (See Pub. No. RM926E, page 05-59).
(c) Measure the resistance according to the value(s) in the table below.
Standard:

Tester connection	Condition	Specified condition
D+ - D-	Always	1 MΩ or Higher

NG → **Go to step 5**

OK

3 CHECK AIRBAG SENSOR ASSY CENTER



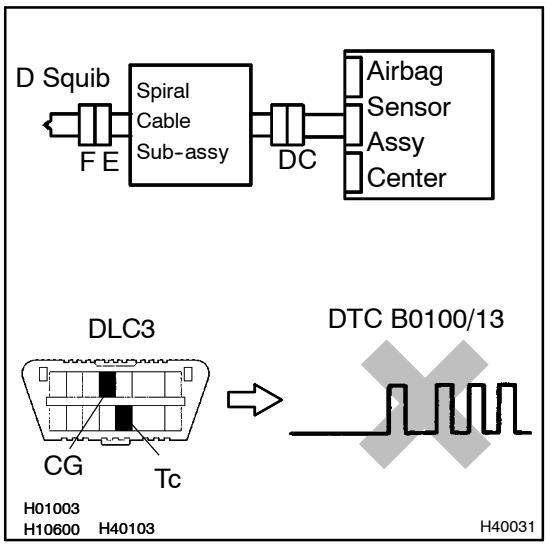
(a) Connect the connectors to the airbag sensor assy center.
(b) Connect the negative (-) terminal cable to the battery, and wait for at least 2 seconds.
(c) Turn the ignition switch to the ON position, and wait for at least 60 seconds.
(d) Clear the DTCs stored in memory (See Pub. No. RM926E, page 05-59).
(e) Turn the ignition switch to the LOCK position.
(f) Turn the ignition switch to the ON position, and wait for at least 60 seconds.
(g) Check the DTCs (See Pub. No. RM926E, page 05-59).
OK:
DTC B0100/13 is not output.

HINT:
Codes other than code B0100/13 may be output at this time, but they are not related to this check.

NG → **REPLACE AIRBAG SENSOR ASSY CENTER**

OK

4 CHECK HORN BUTTON ASSY(D SQUIB)



(a) Turn the ignition switch to the LOCK position.
(b) Disconnect the negative (-) terminal cable from the battery, and wait for at least 90 seconds.
(c) Connect the connector to the horn button assy.
(d) Connect the negative (-) terminal cable to the battery, and wait for at least 2 seconds.
(e) Turn the ignition switch to the ON position, and wait for at least 60 seconds.
(f) Clear the DTCs stored in memory (See Pub. No. RM926E, page 05-59).
(g) Turn the ignition switch to the LOCK position.
(h) Turn the ignition switch to the ON position, and wait for at least 60 seconds.
(i) Check the DTCs (See Pub. No. RM926E, page 05-59).
OK:
DTC B0100/13 is not output.

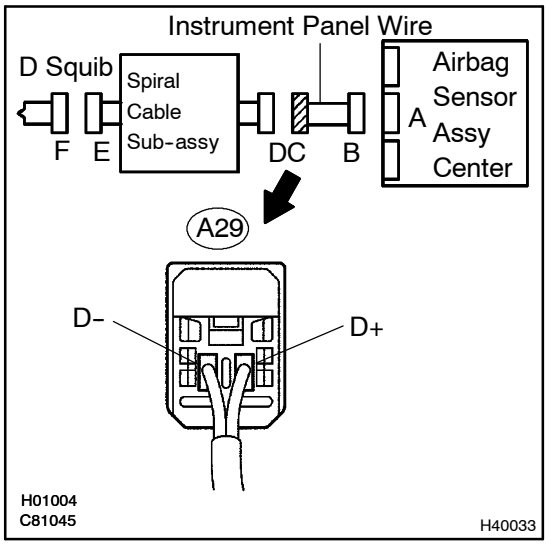
HINT:
Codes other than code B0100/13 may be output at this time, but they are not related to this check.

NG → **REPLACE HORN BUTTON ASSY**

OK

USE SIMULATION METHOD TO CHECK

5 CHECK WIRE, INSTRUMENT PANEL



(a) Disconnect the connector of the instrument panel wire.

HINT:

The activation prevention mechanism of connector "B" has already been released.

(b) Measure the resistance according to the value(s) in the table below.

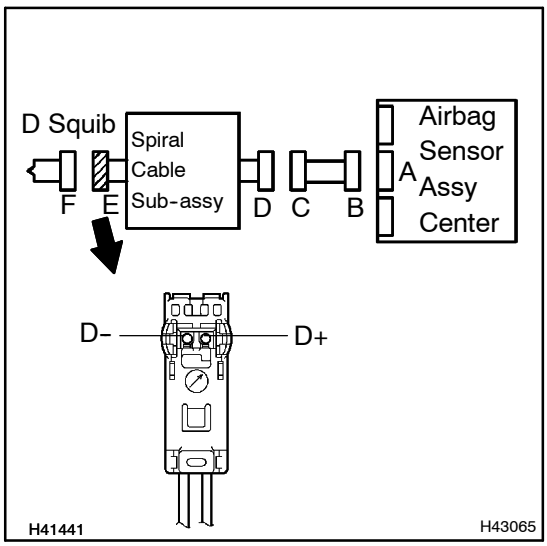
Standard:

Tester connection	Condition	Specified condition
A29-1 (D+) - A29-2 (D-)	Always	1 MΩ or Higher

NG → **REPAIR OR REPLACE WIRE, INSTRUMENT PANEL**

OK

6 CHECK SPIRAL CABLE SUB-ASSY



(a) Release the activation prevention mechanism built into connector "D" (See Pub. No. RM926E, page 05-59).

(b) Measure the resistance according to the value(s) in the table below.

Standard:

Tester connection	Condition	Specified condition
D+ - D-	Always	1 MΩ or Higher

NG → **REPLACE SPIRAL CABLE SUB-ASSY**

OK

USE SIMULATION METHOD TO CHECK

DTC B0101/14 OPEN IN D SQUIB CIRCUIT

CIRCUIT DESCRIPTION

The D squib circuit consists of the airbag sensor assembly (airbag sensor assy center), the spiral cable sub-assy and the horn button assy.
The circuit instructs the SRS to deploy when deployment conditions are met.
DTC B0101/14 is recorded when an open circuit is detected in the D squib circuit.

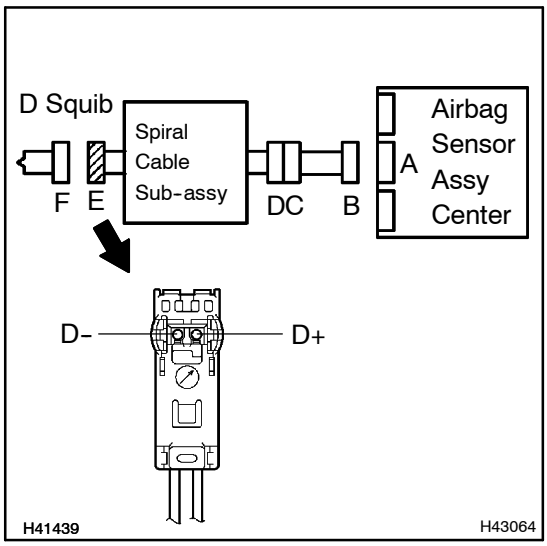
DTC No.	DTC Detecting Condition	Trouble Area
B0101/14	• Open circuit in D+ wire harness or D- wire harness of D squib • D squib malfunction • Spiral cable sub-assy malfunction • Airbag sensor assy center malfunction	• Horn button assy (D squib) • Spiral cable sub-assy • Airbag sensor assembly (Airbag sensor assy center) • Wire harness (Instrument panel wire)

WIRING DIAGRAM

See page 05-6.

INSPECTION PROCEDURE

1	CHECK D SQUIB CIRCUIT(AIRBAG SENSOR ASSY CENTER - HORN BUTTON ASSY)



(a) Turn the ignition switch to the LOCK position.
(b) Disconnect the negative (-) terminal cable from the battery, and wait for at least 90 seconds.
(c) Disconnect the connectors from the airbag sensor assy center and the horn button assy.
(d) Measure the resistance according to the value(s) in the table below.

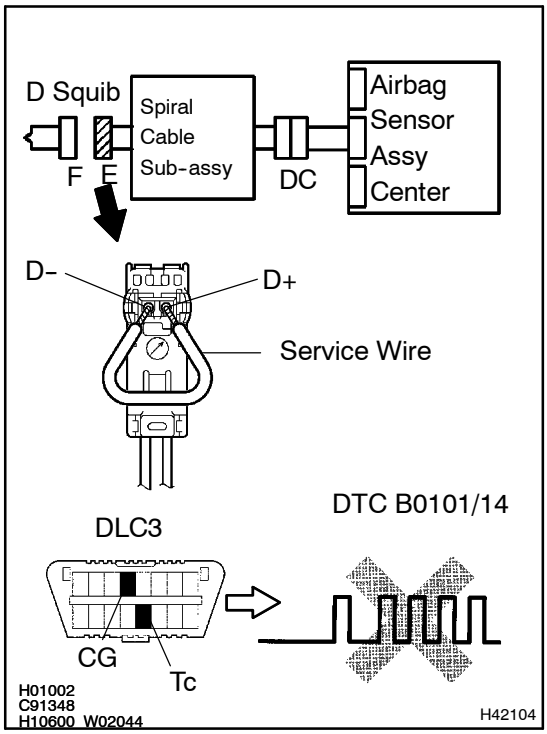
Standard:

Tester connection	Condition	Specified condition
D+ - D-	Always	Below 1 Ω

NG → Go to step 4

OK

2	CHECK AIRBAG SENSOR ASSY CENTER



(a) Connect the connectors to the airbag sensor assy center.
(b) Using a service wire, connect D+ and D- of connector "E".

NOTICE:

- **Twist the end of the service wire in order to insert it into the connector.**
- **Do not forcibly insert the twisted service wire into the terminal of the connector when connecting.**

(c) Connect the negative (-) terminal cable to the battery, and wait for at least 2 seconds.
(d) Turn the ignition switch to the ON position, and wait for at least 60 seconds.
(e) Clear the DTCs stored in memory (See Pub. No. RM926E, page 05-59).
(f) Turn the ignition switch to the LOCK position.
(g) Turn the ignition switch to the ON position, and wait for at least 60 seconds.
(h) Check the DTCs (See Pub. No. RM926E, page 05-59).

OK:

DTC B0101/14 is not output.

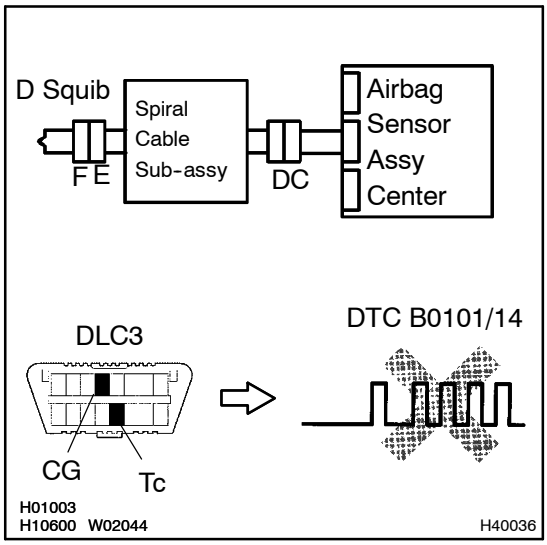
HINT:

Codes other than code B0101/14 may be output at this time, but they are not related to this check.

NG → **REPLACE AIRBAG SENSOR ASSY CENTER**

OK

3	CHECK HORN BUTTON ASSY(D SQUIB)



(a) Turn the ignition switch to the LOCK position.
(b) Disconnect the negative (-) terminal cable from the battery, and wait for at least 90 seconds.
(c) Disconnect the service wire from connector "E".
(d) Connect the connector to the horn button assy.
(e) Connect the negative (-) terminal cable to the battery, and wait for at least 2 seconds.
(f) Turn the ignition switch to the ON position, and wait for at least 60 seconds.
(g) Clear the DTCs stored in memory (See Pub. No. RM926E, page 05-59).
(h) Turn the ignition switch to the LOCK position.
(i) Turn the ignition switch to the ON position, and wait for at least 60 seconds.
(j) Check the DTCs (See Pub. No. RM926E, page 05-59).
OK:
DTC B0101/14 is not output.

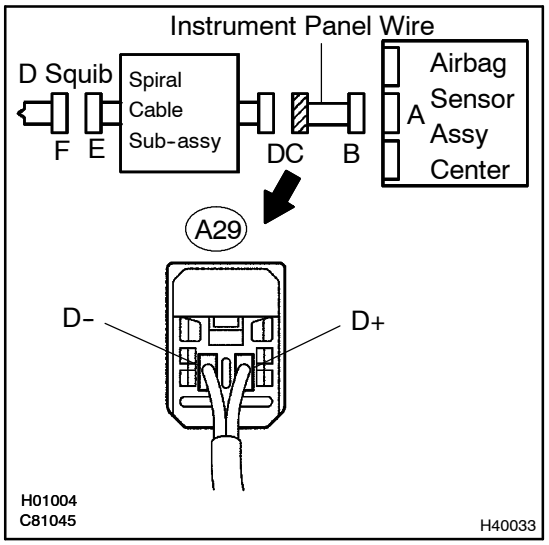
HINT:
Codes other than code B0101/14 may be output at this time, but they are not related to this check.

NG → **REPLACE HORN BUTTON ASSY**

OK

USE SIMULATION METHOD TO CHECK

4 CHECK WIRE, INSTRUMENT PANEL



(a) Disconnect the connector of the instrument panel wire.
(b) Measure the resistance according to the value(s) in the table below.

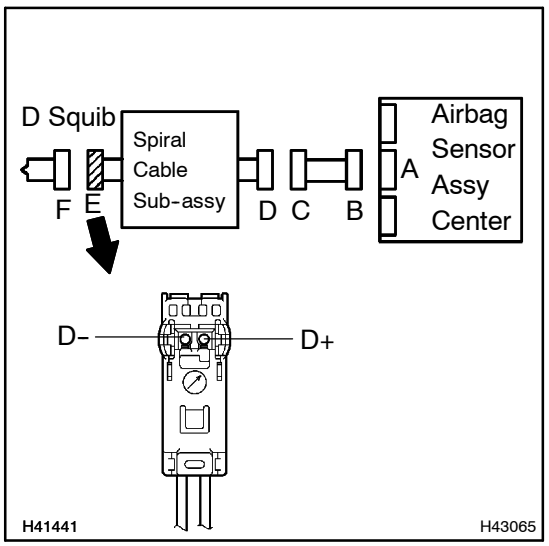
Standard:

Tester connection	Condition	Specified condition
A29-1 (D+) - A29-2 (D-)	Always	Below 1 Ω

NG → **REPAIR OR REPLACE WIRE, INSTRUMENT PANEL**

OK

5 CHECK SPIRAL CABLE SUB-ASSY



(a) Measure the resistance according to the value(s) in the table below.

Standard:

Tester connection	Condition	Specified condition
D+ - D-	Always	Below 1 Ω

NG → **REPLACE SPIRAL CABLE SUB-ASSY**

OK

USE SIMULATION METHOD TO CHECK

DTC B0102/11 SHORT IN D SQUIB CIRCUIT (TO GROUND)

CIRCUIT DESCRIPTION

The D squib circuit consists of the airbag sensor assembly (airbag sensor assy center), the spiral cable sub-assy and the horn button assy.
The circuit instructs the SRS to deploy when deployment conditions are met.
DTC B0102/11 is recorded when a short to ground is detected in the D squib circuit.

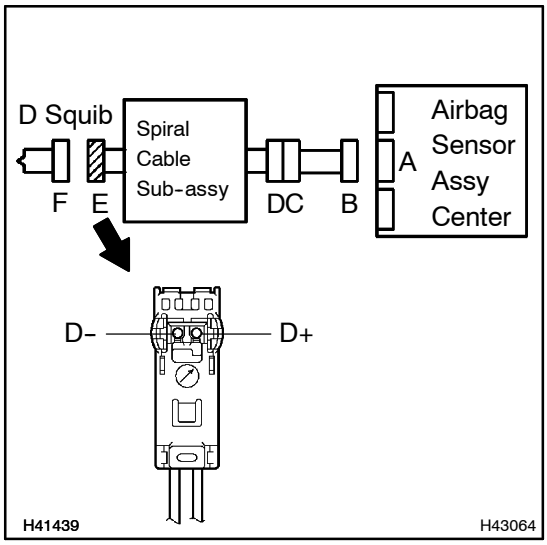
DTC No.	DTC Detecting Condition	Trouble Area
B0102/11	• Short circuit in D squib wire harness (to ground) • D squib malfunction • Spiral cable sub-assy malfunction • Airbag sensor assy center malfunction	• Horn button assy (D squib) • Spiral cable sub-assy • Airbag sensor assembly (Airbag sensor assy center) • Wire harness (Instrument panel wire)

WIRING DIAGRAM

See page 05-6.

INSPECTION PROCEDURE

1	CHECK D SQUIB CIRCUIT(AIRBAG SENSOR ASSY CENTER - HORN BUTTON ASSY)



(a) Turn the ignition switch to the LOCK position.
(b) Disconnect the negative (-) terminal cable from the battery, and wait for at least 90 seconds.
(c) Disconnect the connectors from the airbag sensor assy center and the horn button assy.
(d) Measure the resistance according to the value(s) in the table below.

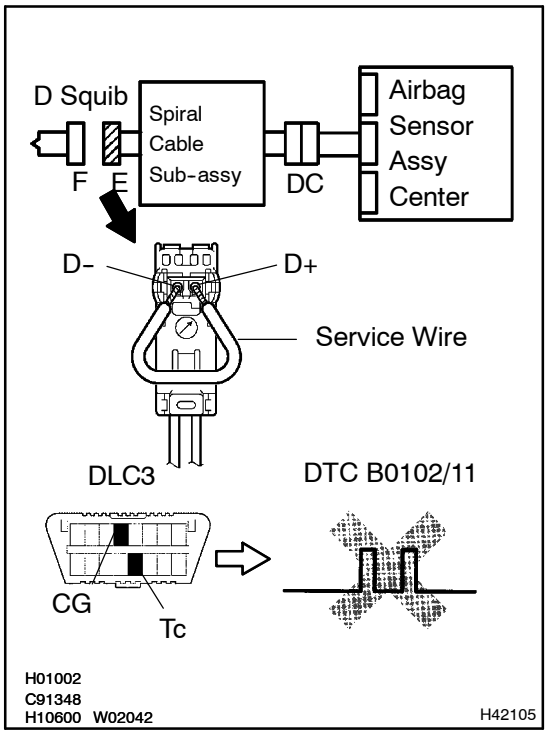
Standard:

Tester connection	Condition	Specified condition
D+ - Body ground	Always	1 MΩ or Higher
D- - Body ground	Always	1 MΩ or Higher

NG → **Go to step 4**

OK

2	CHECK AIRBAG SENSOR ASSY CENTER



(a) Connect the connectors to the airbag sensor assy center.
(b) Using a service wire, connect D+ and D- of connector "E".

NOTICE:

- **Twist the end of the service wire in order to insert it into the connector.**
- **Do not forcibly insert the twisted service wire into the terminal of the connector when connecting.**

(c) Connect the negative (-) terminal cable to the battery, and wait for at least 2 seconds.
(d) Turn the ignition switch to the ON position, and wait for at least 60 seconds.
(e) Clear the DTCs stored in memory (See Pub. No. RM926E, page 05-59).
(f) Turn the ignition switch to the LOCK position.
(g) Turn the ignition switch to the ON position, and wait for at least 60 seconds.
(h) Check the DTCs (See Pub. No. RM926E, page 05-59).

OK:

DTC B0102/11 is not output.

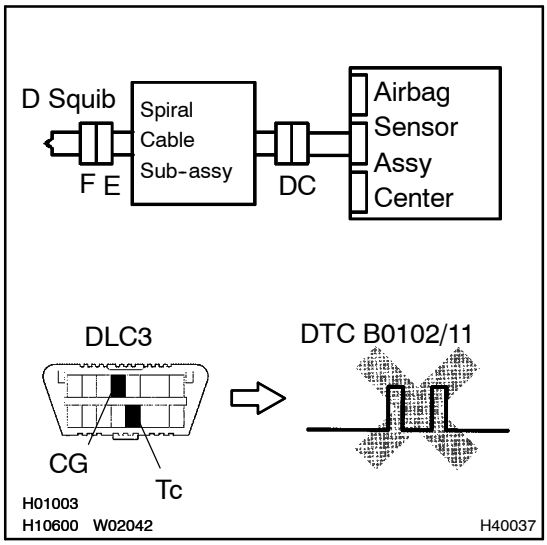
HINT:

Codes other than code B0102/11 may be output at this time, but they are not related to this check.

NG → **REPLACE AIRBAG SENSOR ASSY CENTER**

OK

3 CHECK HORN BUTTON ASSY(D SQUIB)



(a) Turn the ignition switch to the LOCK position.
(b) Disconnect the negative (-) terminal cable from the battery, and wait for at least 90 seconds.
(c) Disconnect the service wire from connector "E".
(d) Connect the connector to the horn button assy.
(e) Connect the negative (-) terminal cable to the battery, and wait for at least 2 seconds.
(f) Turn the ignition switch to the ON position, and wait for at least 60 seconds.
(g) Clear the DTCs stored in memory (See Pub. No. RM926E, page 05-59).
(h) Turn the ignition switch to the LOCK position.
(i) Turn the ignition switch to the ON position, and wait for at least 60 seconds.
(j) Check the DTCs (See Pub. No. RM926E, page 05-59).
OK:
DTC B0102/11 is not output.

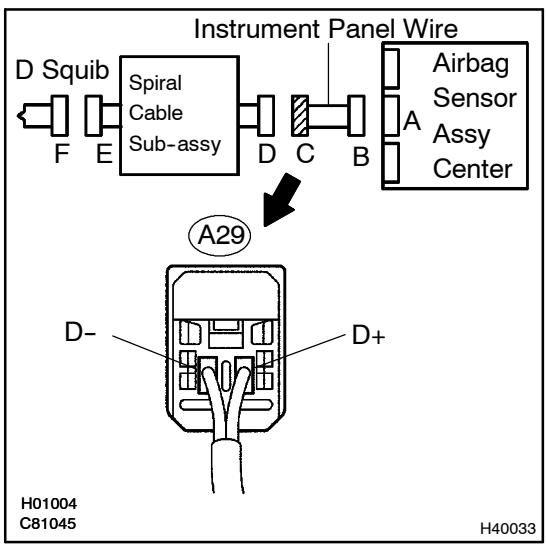
HINT:
Codes other than code B0102/11 may be output at this time, but they are not related to this check.

NG → **REPLACE HORN BUTTON ASSY**

OK

USE SIMULATION METHOD TO CHECK

4 CHECK WIRE, INSTRUMENT PANEL



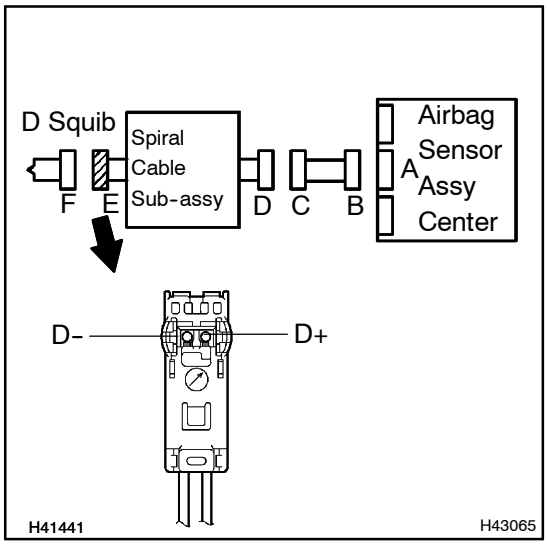
(a) Disconnect the connector of the instrument panel wire.
(b) Measure the resistance according to the value(s) in the table below.
Standard:

Tester connection	Condition	Specified condition
A29-1 (D+) - Body ground	Always	1 MΩ or Higher
A29-2 (D-) - Body ground	Always	1 MΩ or Higher

NG → **REPAIR OR REPLACE WIRE, INSTRUMENT PANEL**

OK

5	CHECK SPIRAL CABLE SUB-ASSY



(a) Measure the resistance according to the value(s) in the table below.

Standard:

Tester connection	Condition	Specified condition
D+ - Body ground	Always	1 MΩ or Higher
D- - Body ground	Always	1 MΩ or Higher

NG → **REPLACE SPIRAL CABLE SUB-ASSY**

OK

USE SIMULATION METHOD TO CHECK

DTC B0103/12 SHORT IN D SQUIB CIRCUIT (TO B+)

CIRCUIT DESCRIPTION

The D squib circuit consists of the airbag sensor assembly (airbag sensor assy center), the spiral cable sub-assy and the horn button assy.
The circuit instructs the SRS to deploy when deployment conditions are met.
DTC B0103/12 is recorded when a short to B+ is detected in the D squib circuit.

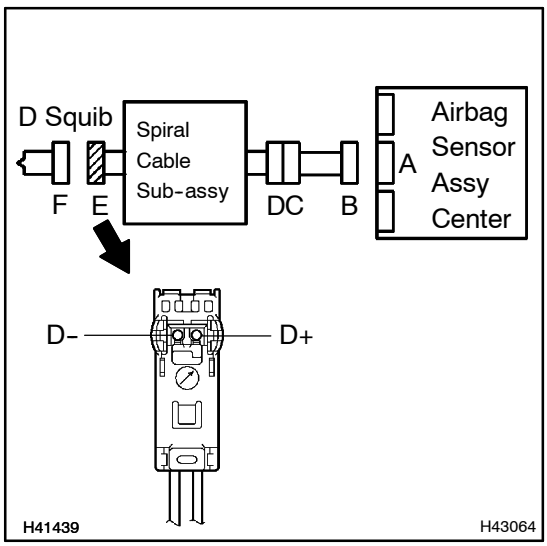
DTC No.	DTC Detecting Condition	Trouble Area
B0103/12	• Short circuit in D squib wire harness (to B+) • D squib malfunction • Spiral cable sub-assy malfunction • Airbag sensor assy center malfunction	• Horn button assy (D squib) • Spiral cable sub-assy • Airbag sensor assembly (Airbag sensor assy center) • Wire harness (Instrument panel wire)

WIRING DIAGRAM

See page 05-6.

INSPECTION PROCEDURE

1	CHECK D SQUIB CIRCUIT(AIRBAG SENSOR ASSY CENTER - HORN BUTTON ASSY)



(a) Turn the ignition switch to the LOCK position.
(b) Disconnect the negative (-) terminal cable from the battery, and wait for at least 90 seconds.
(c) Disconnect the connectors from the airbag sensor assy center and the horn button assy.
(d) Connect the negative (-) terminal cable to the battery, and wait for at least 2 seconds.
(e) Turn the ignition switch to the ON position.
(f) Measure the voltage according to the value(s) in the table below.

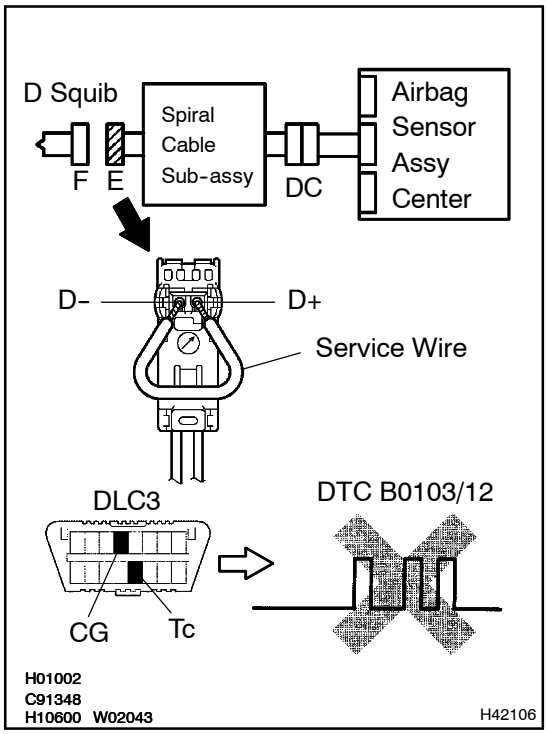
Standard:

Tester connection	Condition	Specified condition
D+ - Body ground	Ignition switch ON	Below 1 V
D- - Body ground	Ignition switch ON	Below 1 V

NG → **Go to step 4**

OK

2	CHECK AIRBAG SENSOR ASSY CENTER



(a) Turn the ignition switch to the LOCK position.
(b) Disconnect the negative (-) terminal cable from the battery, and wait for at least 90 seconds.
(c) Connect the connectors to the airbag sensor assy center.
(d) Using a service wire, connect D+ and D- of connector "E".

NOTICE:

- **Twist the end of the service wire in order to insert it into the connector.**
- **Do not forcibly insert the twisted service wire into the terminal of the connector when connecting.**

(e) Connect the negative (-) terminal cable to the battery, and wait for at least 2 seconds.
(f) Turn the ignition switch to the ON position, and wait for at least 60 seconds.
(g) Clear the DTCs stored in memory (See Pub. No. RM926E, page 05-59).
(h) Turn the ignition switch to the LOCK position.
(i) Turn the ignition switch to the ON position, and wait for at least 60 seconds.
(j) Check the DTCs (See Pub. No. RM926E, page 05-59).

OK:

DTC B0103/12 is not output.

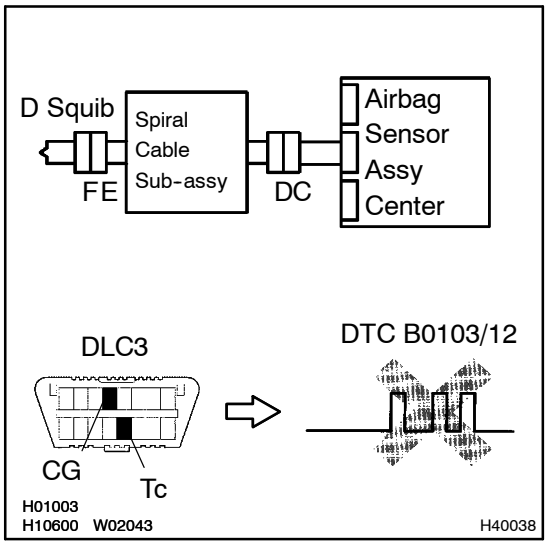
HINT:

Codes other than code B0103/12 may be output at this time, but they are not related to this check.

NG → **REPLACE AIRBAG SENSOR ASSY CENTER**

OK

3 CHECK HORN BUTTON ASSY(D SQUIB)



(a) Turn the ignition switch to the LOCK position.
(b) Disconnect the negative (-) terminal cable from the battery, and wait for at least 90 seconds.
(c) Disconnect the service wire from connector "E".
(d) Connect the connector to the horn button assy.
(e) Connect the negative (-) terminal cable to the battery, and wait for at least 2 seconds.
(f) Turn the ignition switch to the ON position, and wait for at least 60 seconds.
(g) Clear the DTCs stored in memory (See Pub. No. RM926E, page 05-59).
(h) Turn the ignition switch to the LOCK position.
(i) Turn the ignition switch to the ON position, and wait for at least 60 seconds.
(j) Check the DTCs (See Pub. No. RM926E, page 05-59).

OK:

DTC B0103/12 is not output.

HINT:

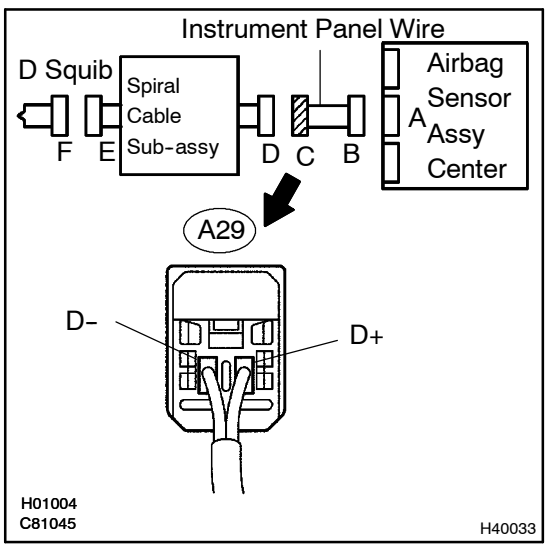
Codes other than code B0103/12 may be output at this time, but they are not related to this check.

NG → **REPLACE HORN BUTTON ASSY**

OK

USE SIMULATION METHOD TO CHECK

4 CHECK WIRE, INSTRUMENT PANEL



(a) Turn the ignition switch to the LOCK position.
(b) Disconnect the negative (-) terminal cable from the battery, and wait for at least 90 seconds.
(c) Disconnect the connector of the instrument panel wire.
(d) Connect the negative (-) terminal cable to the battery, and wait for at least 2 seconds.
(e) Turn the ignition switch to the ON position.
(f) Measure the voltage according to the value(s) in the table below.

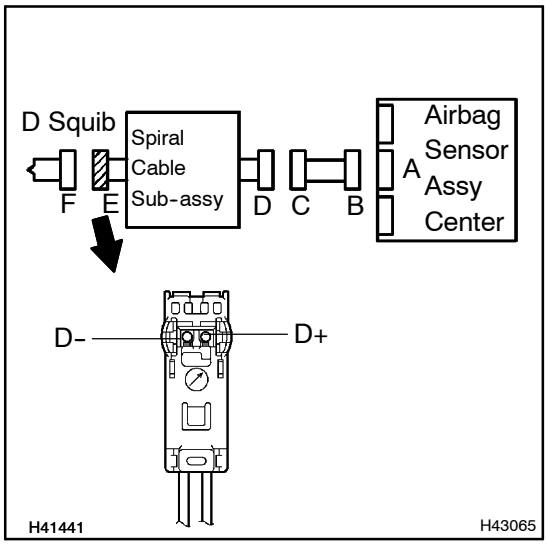
Standard:

Tester connection	Condition	Specified condition
A29-1 (D+) - Body ground	Ignition switch ON	Below 1 V
A29-2 (D-) - Body ground	Ignition switch ON	Below 1 V

NG → **REPAIR OR REPLACE WIRE, INSTRUMENT PANEL**

OK

5	CHECK SPIRAL CABLE SUB-ASSY



(a) Measure the voltage according to the value(s) in the table below when the ignition switch remains in the ON position.

Standard:

Tester connection	Condition	Specified condition
D+ - Body ground	Ignition switch ON	Below 1 V
D- - Body ground	Ignition switch ON	Below 1 V

NG → **REPLACE SPIRAL CABLE SUB-ASSY**

OK

USE SIMULATION METHOD TO CHECK

AUDIO SYSTEM

DESCRIPTION

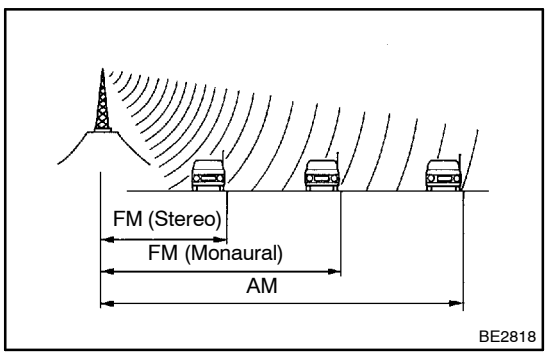
05L53-03

1. RADIO WAVE BAND

The radio wave bands used in radio broadcasting are as follows:

Frequency	30 kHz	300 kHz	3 MHz	30 MHz	300 MHz
Designation	LF	MF	HF	VHF	
Radio wave		AM ← →		FM ← →	
Modulation	Amplitude modulation			Frequency modulation	

LF: Low Frequency
MF: Medium Frequency
HF: High Frequency
VHF: Very High Frequency

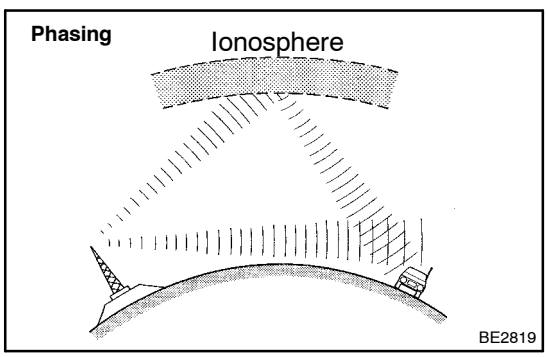


2. SERVICE AREA

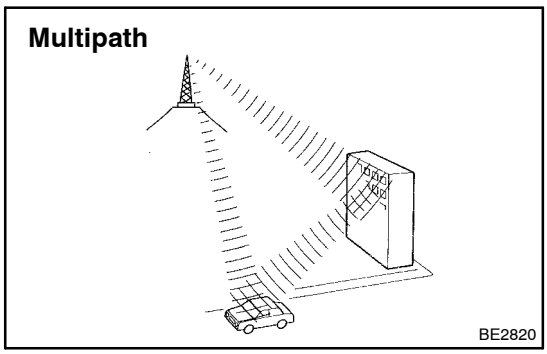
(a) There is a great difference in the size of the service areas for AM and FM broadcasting. Sometimes an FM stereo broadcast cannot be received even though AM can be received very clearly.
FM stereo has the smaller service area, and it also picks up static and other types of interference (”noise”) easily.

3. RECEPTION PROBLEMS

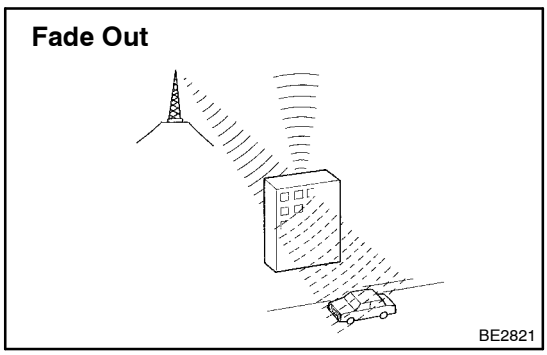
HINT:
Besides the problem of static, there are other problems called ”phasing”, ”multipath” and ”fade out”. These problems are caused not by electrical noise but by the nature of the radio waves themselves.



(a) Phasing
Besides electrical interference, AM broadcasts are also susceptible to other types of interference, especially at night. This is because AM radio waves bounce off the ionosphere at night. These radio waves then interfere with the signals that reach the vehicle’s antenna directly from the same transmitter. This type of interference is called ”phasing”.



(b) Multipath
Interference caused by reflection of radio waves against obstructions is called ”multipath”. Multipath occurs when radio signals emitted from the broadcast transmitter antenna are reflected against tall buildings or mountains and interfere with other signals which are to be received directly.



(c) Fade Out
FM radio wave tends to be reflected against obstructions such as tall buildings or mountains because FM frequency is higher than that of AM. For this reason, FM signals often seem to gradually disappear or fade away as the vehicle goes behind those obstructions. This phenomenon is called ”fade out”.

4. NOISE PROBLEMS

(a) It is very important for technicians to understand a customer’s noise claim clearly. Use the following table to diagnose the phenomena.

Radio wave	Condition in which noise occurs	Probable cause
AM	Noise occurs at a specific place.	Strong possibility of foreign noise.
	Noise occurs when listening to faint broadcasting.	The same program may be broadcasted from some local stations. If the program is the same, one of those may be tuned in.
FM	Noise occurs only at night.	Strong possibility of an interfering beat from a distant broadcast.
	Noise occurs at a specific place during driving.	Strong possibility of multipath noise and phasing noise caused by changes of FM frequency.

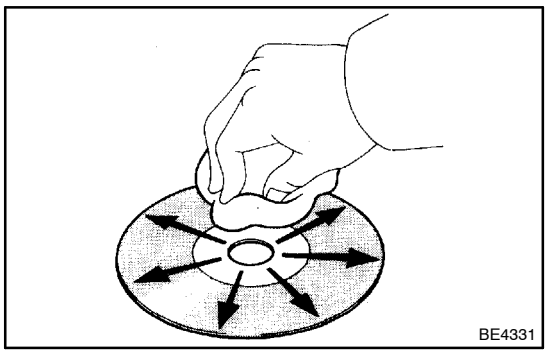
HINT:
If the condition when the noise occurs does not meet any of the above, find out the cause based on ”Reception Problems”. Refer to the description about ”multipath” and ”phasing” mentioned previously.

5. COMPACT DISC PLAYER

(a) Compact Disc Players (hereafter ”CD player”) use a laser beam pick–up to read the digital signals recorded on compact discs (hereafter ”CD” or ”disc”) and reproduce analog signals of the music, etc. 4.7 in. (12 cm) and 3.2 in. (8 cm) discs are available for the CD player.

HINT:
Never disassemble or apply oil to any part of the player unit. Do not insert any object other than a disc into the CD player.

NOTICE:
CD players use an invisible laser beam which could cause hazardous radiation exposure. Be sure to operate the player correctly as instructed.



6. MAINTENANCE

CD Player / Disc Cleaning:

If the disc gets dirty, clean the disc by wiping the surface from the center to outside in a radial direction with a soft cloth.

NOTICE:

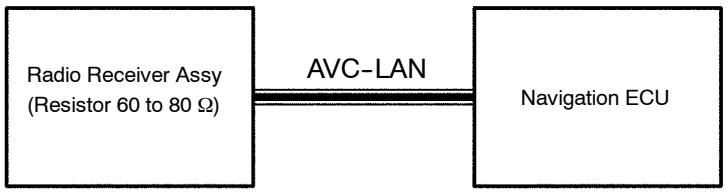
Do not use a conventional record cleaner or anti-static preservative.

7. AVC-LAN DESCRIPTION

(a) What is AVC-LAN?

AVC-LAN, an abbreviation for "Audio Visual Communication-Local Area Network", is a united standard developed by the manufacturers in affiliation with Toyota Motor Corporation. This standard pertains to audio and visual signals as well as switch and communication signals.

Example:



(b) Purpose

Recently, car audio systems have rapidly developed and the functions vastly changed. The conventional car audio system is being integrated with multi-media interfaces similar to those in navigation systems. At the same time, customers are demanding higher quality from their audio systems. This is merely an overview of the standardization background. The specific purposes are as follows.

(1) To solve sound problems, etc. caused by using components of different manufacturers through signal standardization.

(2) To allow each manufacturer to concentrate on developing products they do best. From this, reasonably priced products can be produced.

HINT:

- If a +B or GND short is detected in the AVC-LAN circuit, communication is interrupted and the audio system will stop functioning.
- If an audio system is equipped with a navigation system, the multi-display unit acts as the master unit. If the navigation system is not equipped, the audio head unit acts as the master unit instead. If the radio and navigation assy is equipped, it is the master unit.
- The radio receiver assy provides resistance to make communication possible.
- The car audio system with an AVC-LAN circuit has a diagnostic function.
- Each component has a specified number (3-digit) called a physical address. Each function has a number (2-digit) called a logical address.

8. COMMUNICATION SYSTEM OUTLINE

(a) Components of the audio system communicate with each other via the AVC-LAN.

(b) The radio receiver assy has enough resistance (60 to 80 Ω) for communication.
This is essential for communication.

(c) If a short circuit or open circuit occurs in the AVC-LAN circuit, communication is interrupted and the audio system will stop functioning.

9. DIAGNOSTIC FUNCTION OUTLINE

(a) The audio system has a diagnostic function (the result is indicated on the master unit).

(b) A 3-digit hexadecimal component code (physical address) is allocated to each component on the AVC-LAN. Using this code, the component in the diagnostic function can be displayed.

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HOW TO PROCEED WITH TROUBLESHOOTING

1	VEHICLE BROUGHT TO WORKSHOP

2	CUSTOMER PROBLEM ANALYSIS (SEE PAGE 05-28)

3	BASIC INSPECTION

(a) Basic inspection.
  (1) Check the battery voltage.
  Standard: 11 to 14 V
(b) Check the power supply to the radio receiver assy.
  (1) Turn the engine switch on (ACC).
  (2) Check whether or not the display appears on the radio receiver assy.

DISPLAY DOES NOT APPEAR	DISPLAY DOES NOT APPEAR (PROCEED TO PROBLEM SYMPTOMS TABLE) (SEE PAGE 05-41)
DISPLAY APPEARS	DISPLAY APPEARS (GO TO STEP 4)

4	DTC CHECK (SEE PAGE 05-29)

DTC IS OUTPUT	DTC IS OUTPUT (GO TO STEP 5)
DTC IS NOT OUTPUT	DTC IS NOT OUTPUT (GO TO STEP 6)

5	DTC CHART (SEE PAGE 05-35)

	GO TO STEP 7

6	PROBLEM SYMPTOMS TABLE (SEE PAGE 05-41)

7	CIRCUIT INSPECTION AND PART INSPECTION (SEE PAGE 05-42 - 05-63)

8	IDENTIFICATION OF PROBLEM

9	CONFIRMATION TEST

END

05D0T-09

CUSTOMER PROBLEM ANALYSIS CHECK

AUDIO SYSTEM Check Sheet

Inspector's name: _____

Customer's Name		**VIN**	
		Production Date	
		Licence Plate No.	
Date Vehicle Brought in	/ /	**Odometer Reading**	**km mile**

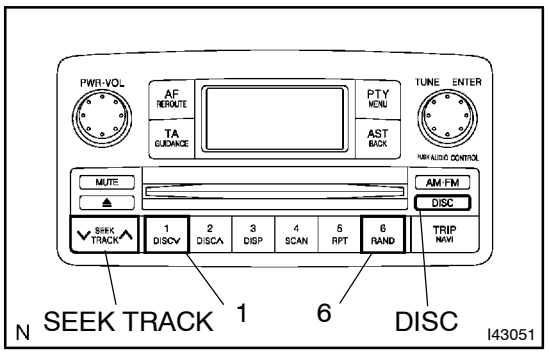
Date of First Occurrence	/ /
Frequency of Problem Occurrence	☐ Constant ☐ Intermittent (Times a day)

Problem Symptom	☐ **Switch**
	☐ **Radio**
	☐ **CD**
	☐ **Noise**

	Parts name	**DTC (1st time)**	**DTC (2nd time)**
DTC Check	Radio receiver assy		
	Others		

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PRE-CHECK

1. DIAGNOSTIC CHECK

(a) Starting Diagnostic Mode (All elements come on during the SW check mode.)

(1) Turn off the ignition switch on (ACC) and turn the audio system. While pressing the preset switches "1" and "6" at the same time, press the "DISC" 3 times.

HINT:

- When the system enters the Diagnostic Mode, a beep sound is emitted 3 times and all the elements come on during the SW check mode.
- It takes about 40 seconds to complete the check.
- Turn all the elements in the LCD on.
- When pressing the switch, confirm a beep sound is emitted.

(b) Service Check Screen

(1) Press the "SEEK TRACK UP" switch to enter the "Service Check Screen".

(2) In the service check mode, the system check and the diagnostic memory check are performed, and the check results are displayed in ascending order of the component codes (physical address).

Terms	Meaning
Component code (Physical address)	Three-digit code (in hexadecimal) given to each device comprising AVC-LAN. Corresponding to its function, individual symbol is provided.
Logical address	Two-digit code (in hexadecimal) given to each function and device unit in each device comprising AVC-LAN.

Code No. (physical address) List

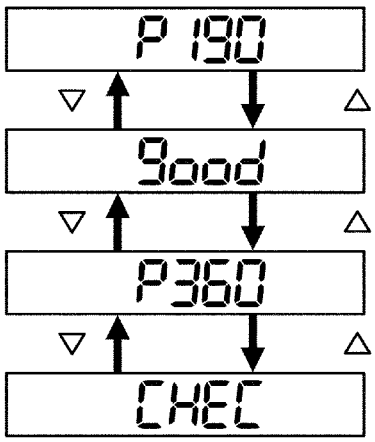
Code No. (physical address)	Equipment name
190	Radio receiver assy (Audio head unit)

(c) Finishing Diagnostic Mode

(1) Press the "DISC" switch for 2 seconds or more, or turn the ignition switch off.

(d) Service Check Mode Result Display (for checking the current and the past system conditions).

(1) Press the "SEEK TRACK" switch to see the check result of each component.



P---indicates physical address
190---physical address

good---"The component is normal".

P---indicates physical address
360---physical address

CHEC---"Check needed".

△ : SEEK TRACK UP
▽ : SEEK TRACK DOWN

The illustration shows the case that the system has 2 components with codes 190 and 360, and one component (code 360) requires a check.
The check result is displayed in ascending order of component code. The component device code is displayed first, and then the check result follows.

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(2) Check Result Display.

Display	Original Language	Meaning	Action to be taken
good	Good (normal)	No DTCs are detected in both "System Check Mode" and "Diagnostic Memory Mode".	-
NCON	No connection	The system recognized the component when it was registered, but the component gives no response to the "Diagnostic Mode ON Request".	Check the power source circuit and the communication circuit of the component indicated by the component code (physical address).
ECHN	Exchange	One or more DTCs for "Exchange" are detected in either "System Check Mode" or "Diagnostic Memory Mode".	Go to the detailed information mode to check the trouble area referring to the DTC list.
CHEC	Check	When no DTCs are detected for "Exchange", one or more DTCs for "Check" are detected in either "System Check Mode" or "Diagnostic Memory Mode".	Go to the detailed information mode to check the trouble area referring to the DTC list.

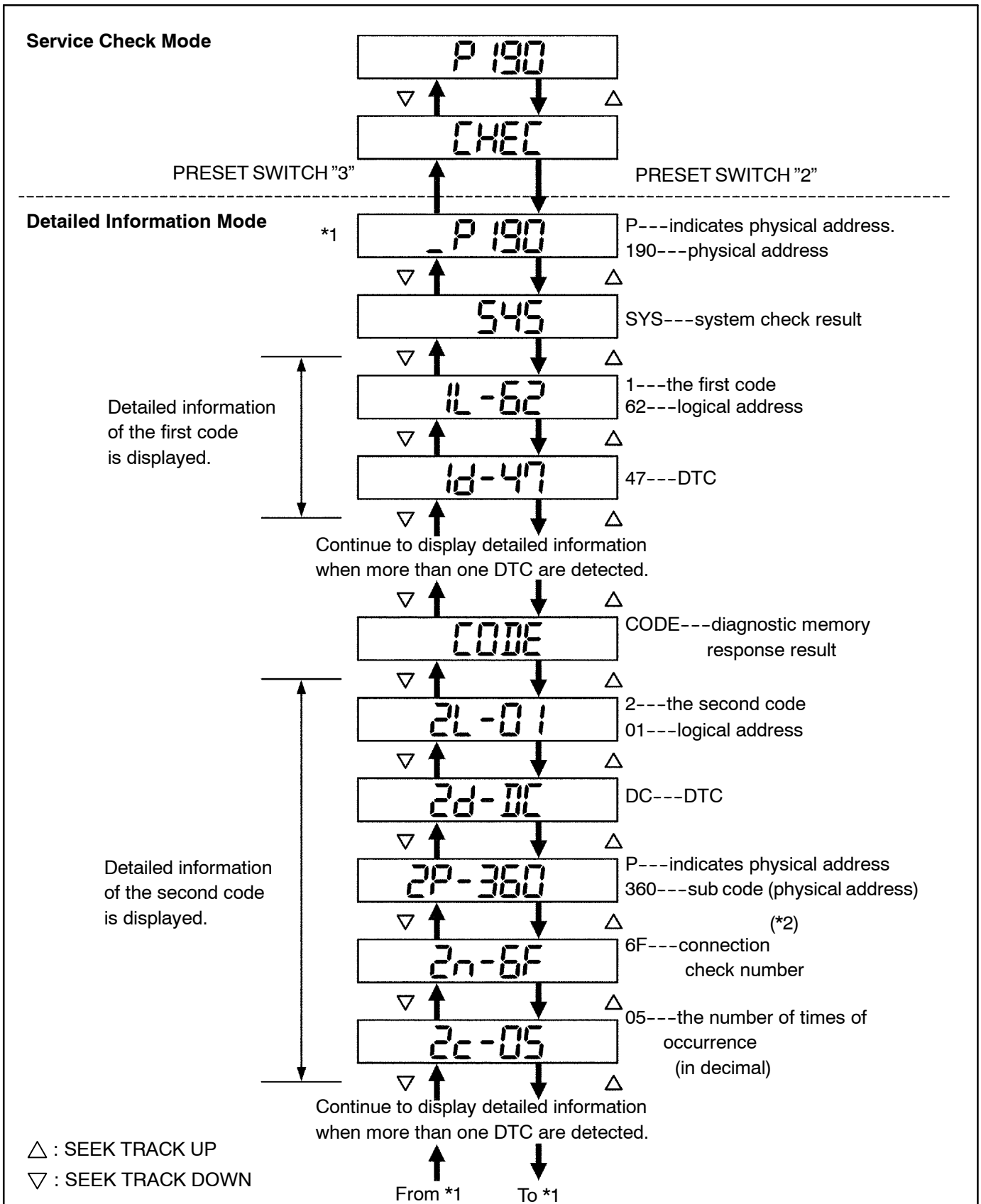
Display	Original Language	Meaning	Action to be taken
OLD	Old version	Old DTC application is identified and DTC is detected in either "System Check Mode" or "Diagnostic Memory Mode".	-
NRES	No response	The device gives no response to any one of "System Check Mode ON Request", "System Check Result Request" and "Diagnostic Memory Request".	Check the power source circuit and the communication circuit of the component indicated by the component code (physical address).

(3) To perform the Service Check again, press the preset switch "1".

(e) Detailed Information Mode (when displaying the DTC for a trouble component)

(1) With "CHEC" or "ECHN" being displayed, press the preset switch "2" to go to the detailed information mode.

(2) Press the "SEEK TRACK" switch to display the "System Check Result (SYS)" and "Diagnostic Memory Response (CODE)".



The illustration shows the case that the component with code 190 has DTC "47" and "dC" as a result of the system check and the diagnostic memory response.
The detailed information mode shows the system check result first, then the diagnostic memory response result follows. (*2): As for the DTCs that do not have any sub code, sub code is not displayed.

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(3) Displayed Items in Detailed Information Mode

Division Code for DTC display	Meaning	The order of detailed information displayed when the "TUNE UP" switch is pressed (The order is reversed when the "TUNE DOWN" switch is pressed.)
SYS	System check result is displayed.	Logical address → DTC
CODE	Diagnostic memory check result is displayed.	Logical address → DTC → Sub code → Connection confirmation number → The number of times of occurrence

(4) Check the trouble area referring to the DTC list.

(5) To return to the service check mode, press the preset switch "3".

(f) Clearing Individual DTC Memory (when clearing the memory of the DTC detected in the past individually)

(1) Press the preset switch "5" for 2 seconds or more while the "ECHN" is displayed in the service check mode or during the detailed information mode.

HINT:

- A beep sound is emitted once when the DTC memory is completely cleared.
- When the DTC memory is cleared, only the component code (physical address) is displayed for the target component.
- To check DTCs, press the preset switch "1" and perform the service check again.

(g) Clearance of all the DTC memory (when clearing all the memory of the DTCs detected in the past)

(1) Start the diagnostic mode after repairing the trouble area.

(2) Press the preset switch "5" for 2 seconds or more. ("CLR" is displayed at this time.)

HINT:

- A beep sound is emitted once when the DTC memory is completely cleared.
- When the DTC memory for all the component is cleared, only the component codes (physical address) are displayed.

(3) Press the preset switch "1" to perform the service check again, and check that no DTCs are displayed for all the component codes (physical address).

2. IDENTIFICATION OF NOISE SOURCE

(a) Identify the conditions under which the noise occurs, and check the noise filter on the relevant part.

Condition in which noise occurs	Noise Source
Noise increases when the accelerator pedal is depressed, but stops when the engine is stopped.	Generator
Noise occurs during A/C or heater operation.	Blower motor
Noise occurs when the vehicle accelerates rapidly on an unpaved road or after the ignition switch is turned on (IG).	Fuel pump
Noise occurs when the horn switch is pressed and released or when pressed and held.	Horn
Quiet noise occurs while the engine is running, but stops when the engine is stopped.	Ignition
Noise occurs synchronously with the blink of the turn signal.	Flasher
Noise occurs during window washer operation.	Washer
Noise occurs while the engine is running, and continues even after the engine is stopped.	Water temperature sensor
Noise occurs during wiper operation.	Wiper
Noise occurs when the brake pedal is depressed.	Stop light switch
Others	Static electricity stored on the vehicle

HINT:

- First ensure that the noise is not coming from the outside. Failure to do so makes noise source detection difficult and may lead to a misdiagnosis.
- Noise should be removed in descending order of loudness.
- Tuning the radio so that no station is received makes the noise more noticeable, making the recognition of the phenomenon easier.

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DIAGNOSTIC TROUBLE CODE CHART

Terms	Meaning
Physical address	Three-digit code (shown in hexadecimal) which is given to each component comprising the AVC-LAN. Corresponding to the function, individual symbols are specified.
Logical address	Two-digit code (shown in hexadecimal) which is given to each function comprising the inner system of the AVC-LAN.

HINT:

Titles for each unit are stated in the following order: physical address (parts name).

1. 190 (RADIO RECEIVER ASSY)

HINT:

- *1: Even if no failure is detected, trouble codes may be stored depending on the battery condition or voltage for starting the engine.
- *2: The code is stored 180 seconds after the power supply connector is disconnected after engine start.
- *3: The code may be stored when the ignition switch is turned on (READY) again 1 minute after engine start.
- *4: The code may be stored when the ignition switch is turned on (READY) again after engine start.
- *5: The code is stored 210 seconds after the master component power supply connector is disconnected with the ignition switch on (ACC or IG).

(a) Logical address: 01 (Communication control)

DTC	Diagnosis item	Diagnosis content	Countermeasure and inspected parts
21	ROM Error	Abnormal condition of ROM is detected.	Replace radio receiver assy.
22	RAM Error	Abnormal condition of RAM is detected.	Replace radio receiver assy.
D5 *1	Registered Component Disconnected	Component shown by sub code is or was disconnected from system with ignition switch on (ACC or IG). Communication with component shown by sub code is not ensured when engine is started.	• Check harness for power supply system of component shown by sub code. • Check harness for communication system of component shown by sub code.
D6 *1	Absence of Master	Component in which this code is recorded was disconnected from system or master component with ignition switch on (ACC or IG).	• Check harness for power supply system of radio receiver assy. • Check harness for communication system of radio receiver assy.
D7 *5	Connection Check Error	Component in which this code is recorded was disconnected from system or master component with ignition switch on (ACC or IG).	• Check harness for power supply system of radio receiver assy. • Check harness for communication system of radio receiver assy.
D8 *2	No Response to Connection Check	Component shown by sub code is or was disconnected from system after engine start.	• Check harness for power supply system of component shown by sub code. • Check harness for communication system of component shown by sub code.
D9 *1	Last Mode Error	Audio or visual component operated before engine stop is or was disconnected with ignition switch on (ACC or IG).	• Check harness for power supply system of component shown by sub code. • Check harness for communication system of component shown by sub code.
DA	No Response to ON/OFF Instruction	No response is identified when changing mode (audio and visual mode change). Sound and picture do not change by button operation.	• Check harness for power supply system of component shown by sub code. • Check harness for communication system of component shown by sub code. • If error occurs again, replace component shown by sub code.

DTC	Diagnosis item	Diagnosis content	Countermeasure and inspected parts
DB *1	Mode Status Error	Dual alarm is detected.	• Check harness for power supply system of component shown by sub code. • Check harness for communication system of component shown by sub code.
DC *3	Transmission Error	Transmission to component shown by sub code has failed. (Detecting this DTC does not necessarily mean actual failure.)	If same sub code is recorded in other component, check harness for power supply and communication system of all components shown by code. (If not, delete DTC and recheck.)
DD *4	Master Reset (Momentary Interruption)	After the engine was started, master component was disconnected from system.	• Check harness for power supply system of radio receiver assy. • Check harness for communication system of radio receiver assy. • If this error occurs frequently, replace radio receiver assy.
DE *4	Slave Reset (Momentary Interruption)	After the engine was started, component shown by sub code was disconnected from system.	• Check harness for power supply system of component shown by sub code. • Check harness for communication system of component shown by sub code.
DF *4	Master Error	Due to defective condition of component with a display, master function is switched to audio equipment. Error occurs in communication between sub-master (audio) and master component.	• Check harness for power supply system of radio receiver assy. • Check harness for communication system of radio receiver assy. • Check harness for communication system between radio receiver assy and sub-master component.
E0 *1	Registration Completion Instruction Error	”Registration Completion Instruction” command from master cannot be received.	Since this DTC is provided for engineering purposes, it may be detected when no actual failure exists.
E1 *1	Voice Processing Device ON Error	The AMP device records that the AMP output does not function even while the source device operates.	• Check harness for power supply system of radio receiver assy. • Check harness for communication system of radio receiver assy.
E2	ON/OFF Instruction Parameter Error	Error occurs in ON/OFF controlling command from master component.	Replace radio receiver assy.
E3 *1	Registration Request Transmission	Registration Request command is output from component shown by sub code. Receiving Connection Check Instruction, Registration Request command is output from sub-master component.	Since this DTC is provided for engineering purposes, it may be detected when no actual failure exists.
E4 *1	Multiple Frame Abort	Multiple frame transmission is aborted.	Since this DTC is provided for engineering purposes, it may be detected when no actual failure exists.

(b) Logical address: 60 (Radio unit)

DTC	Diagnosis item	Diagnosis content	Countermeasure and inspected parts
43	AM Tuner Error	Abnormal condition of AM tuner is detected.	Replace radio receiver assy.
44	FM Tuner Error	Abnormal condition of FM tuner is detected.	Replace radio receiver assy.

(c) Logical address: 62 (CD player)

DTC	Diagnosis item	Diagnosis content	Countermeasure and inspected parts
42	No Disc Readout	Disc cannot be read.	• Inspect CD. • Replace radio receiver assy.
44	CD player Error	Error is detected in CD player.	Replace radio receiver assy.

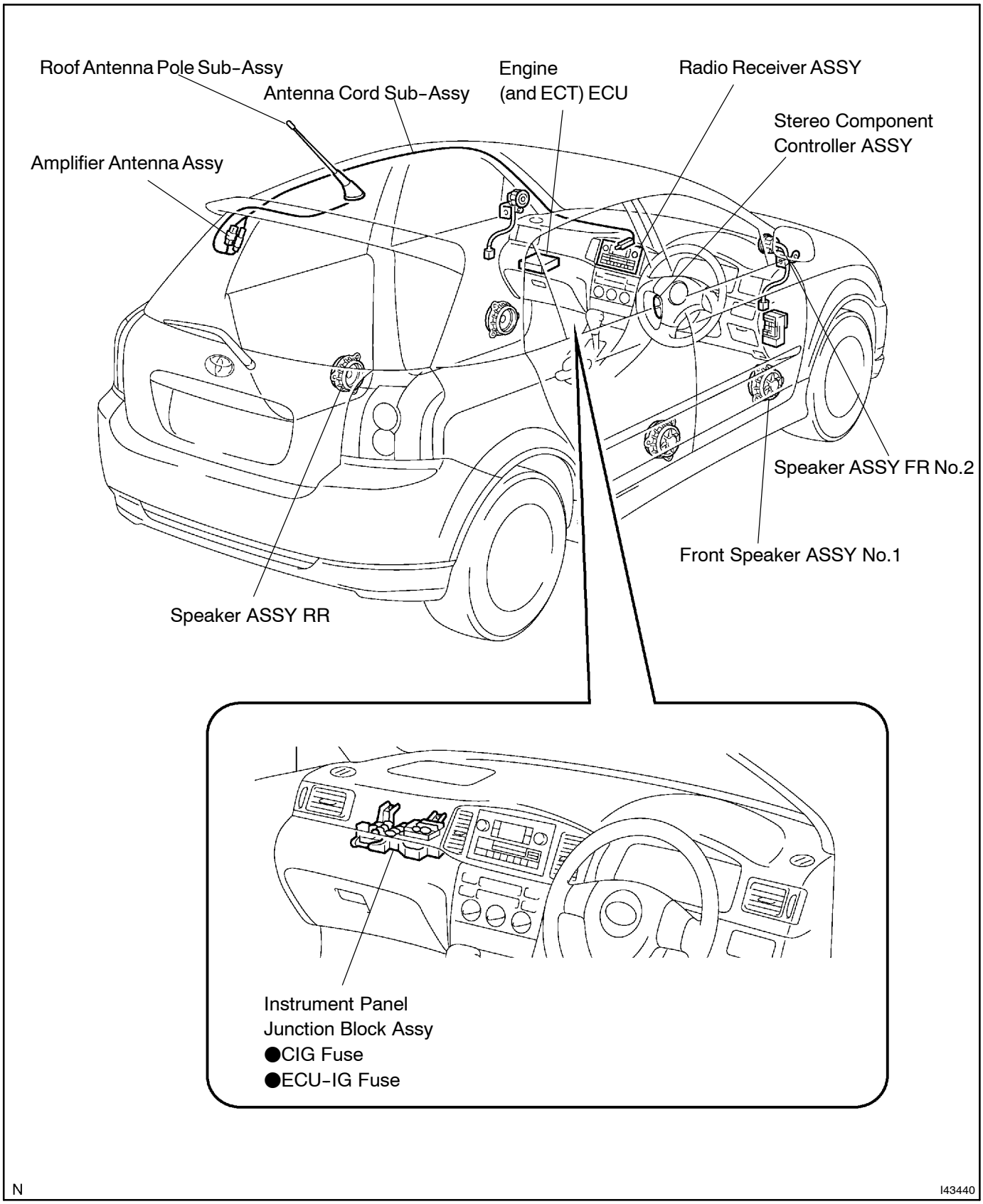
DTC	Diagnosis item	Diagnosis content	Countermeasure and inspected parts
45	EJECT Error	Magazine cannot be ejected.	Replace radio receiver assy.
46	Scratched/Reversed Disc	Scratches or dirt is found on CD surface or CD is set upside down.	Inspect CD.

(d) Logical address: 63 (In-dush CD changer)

DTC	Diagnosis item	Diagnosis content	Countermeasure and inspected parts
42	No Disc Readout	Disc cannot be read.	• Inspect CD. • Replace radio receiver assy.
44	CD player Error	Error is detected in CD player.	Replace radio receiver assy.
45	EJECT Error	Magazine cannot be ejected.	Replace radio receiver assy.
46	Scratched/Reversed Disc	Scratches or dirt is found on CD surface or CD is set upside down.	Inspect CD.
51	CD changer elevator error	Mechanical error occurred during elevator operation	Replace radio receiver assy.
52	Scratched/Reversed Disc	Failure in disc clamping or clamp error	Replace radio receiver assy.

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LOCATION



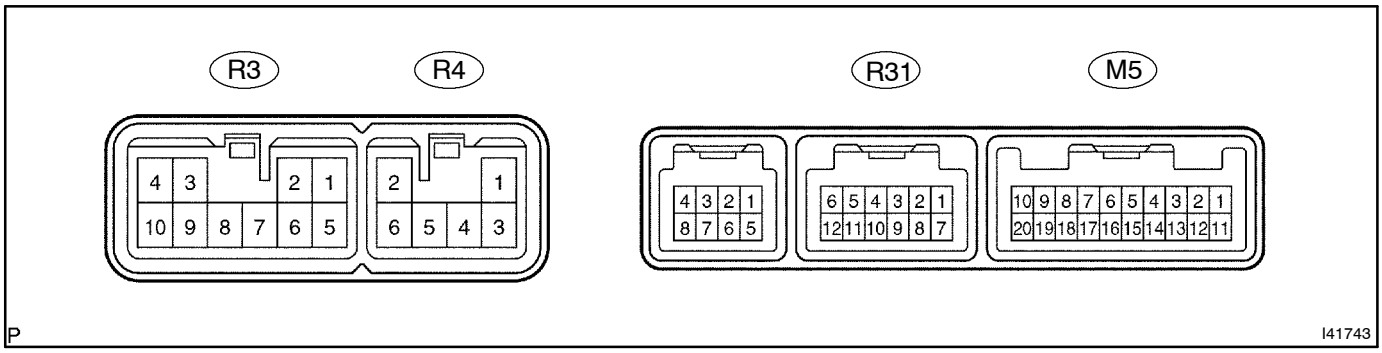
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TERMINALS OF ECU

1. RADIO RECEIVER ASSY



Symbols (Terminal No.)	Wiring Color	Terminal Description	Condition	Specified
GND (R31-7)*1 - Body ground	BR - Body ground	Ground	Always	Below 1 V
TX+ (R31-9)*1 - GND (R3-7)	R - BR	AVC-LAN communication signal	Turn engine switch on (ACC)	2 to 3 V
TX- (R31-10)*1 - GND (R3-7)	G - BR	AVC-LAN communication signal	Turn engine switch on (ACC)	2 to 3 V
RR+ (R4-1) - GND (R3-7)	R - BR	Sound signal (Rear Right)	Audio system is playing	-
RL+ (R4-2) - GND (R3-7)	B - BR	Sound signal (Rear Left)	Audio system is playing	-
RR- (R4-3) - GND (R3-7)	W - BR	Sound signal (Rear Right)	Audio system is playing	-
RL- (R4-6) - GND (R3-7)	Y - BR	Sound signal (Rear Left)	Audio system is playing	-
FR+ (R3-1) - GND (R3-7)	LG - BR	Sound signal (Front Right)	Audio system is playing	-
FL+ (R3-2) - GND (R3-7)	P - BR	Sound signal (Front Left)	Audio system is playing	-
ACC (R3-3) - GND (R3-7)	GR - BR	Accessory	Turn engine switch off → on (ACC or IG)	Below 1 V → 10 to 14 V
+B (R3-4) - GND (R3-7)	L-Y - BR	Battery	Always	10 to 14 V
FR- (R3-5) - GND (R3-7)	L - BR	Sound signal (Front Right)	Audio system is playing	-
FL- (R3-6) - GND (R3-7)	V - BR	Sound signal (Front Left)	Audio system is playing	-
GND (R3-7) - Body ground	BR - Body ground	Ground	Always	Below 1 V
ANT+ (R3-8) - GND (R3-7)	B - BR	Power source of antenna	Radio switch ON and AM or FM	10 to 14 V
ILL+ (R3-10) - GND (R3-7)	G - BR	Illumination signal	Light control switch TAIL or HEAD	10 to 14 V
GND (M5-1)*1, 4 - Body ground	W-B - Body ground	Ground	Always	Below 1 V
TH+ (M5-4) - SG (M5-5)	BR-Y - W-G	Amvient temp. sensor signal	Turn engine switch on (ACC)	4.5 to 5.5 V
GND (M5-11)*1, 3 - Body ground	W-B - Body ground	Ground	Always	Below 1 V
GND (M5-12)*1, 2 - Body ground	W-B - Body ground	Ground	Always	Below 1 V
SPD (M5-15)*1 - Body ground	V-W - Body ground	Vehicle speed sensor signal	-	Pulse generates in accordance with vehicle speed
TAUB (M5-17)*1 - Body ground	B-W - Body ground	Injector voltage	Turn engine switch on	10 to 14 V
TAU (M5-18)*1 - Body ground	Y - Body ground	Injector drive signal	Engine is running	-
IG (M5-17)*1 - Body ground	B-Y - Body ground	Ignition (ON)	Turn ignition switch OFF → ON	Below 1 V → 10 to 14 V

*1: w/ Navigation System (Turn by Turn Type)
*2: 4ZZ-FE
*3: 2ZZ-FE
*4: 1ZZ-FE

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PROBLEM SYMPTOMS TABLE

RADIO RECEIVER ASSY

Symptom	Suspected Area	See page
Pressing power switch does not start system.	1. Power source circuit (radio receiver assy) 2. Replace radio receiver assy	05-42 67-2*
Turning on light switch does not light up night time illumination of radio receiver or display.	1. Illumination circuit 2. Replace radio receiver assy	05-44 67-2*
All switches do not respond.	1. Stereo component controller assy circuit 2. Replace radio receiver assy	- 67-2*
No sound can be heard.	1. Power source circuit (radio receiver assy) 2. Speaker circuit 3. Replace radio receiver assy	05-42 05-46 67-2*
Sound quality is bad in all modes. (volume is too low)	1. Power source circuit (radio receiver assy) 2. Speaker circuit 3. Sound quality is bad in all modes (volume is too low)	05-42 05-46 05-54
Radio broadcast cannot be received (Bad reception)	1. Replace radio receiver assy 2. Antenna 3. Antenna code sub-assy	67-2* 05-55 05-55
Noise occurs.	-	05-63
Radio broadcast cannot be received. (bad reception)	-	05-55
CD cannot be inserted or is ejected right after insertion.	1. Power source circuit (radio receiver assy) 2. CD cannot be inserted or is ejected right after insertion	05-42 05-57
CD cannot be ejected.	1. Power source circuit (radio receiver assy) 2. CD cannot be ejected	05-42 05-59
Sound quality is bad only when playing CD. (volume is too low)	-	05-54
CD sound skips.	-	05-61
Fuel efficiency is not displayed.	-	05-64
Ambient temperature is not displayed.	-	05-66

STEREO COMPONENT CONTROLLER ASSY

Symptom	Suspected Area	See page
A audio system cannot be operated with steering pad switch.	1. Stereo component controller assy circuit 2. Replace radio receiver assy	05-50 67-2*

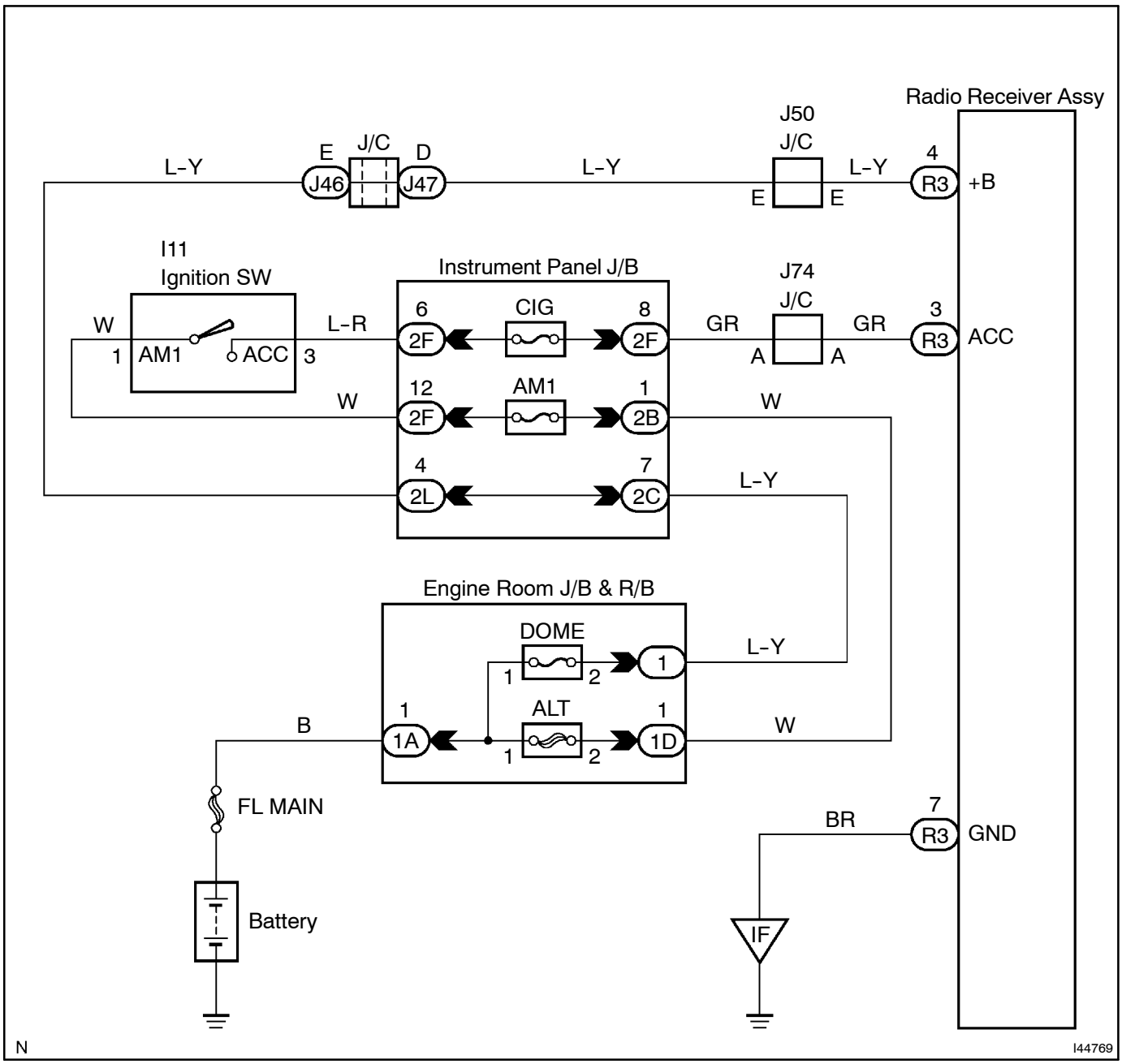
*: Refer to RM821E.

POWER SOURCE CIRCUIT (RADIO RECEIVER ASSY)

CIRCUIT DESCRIPTION

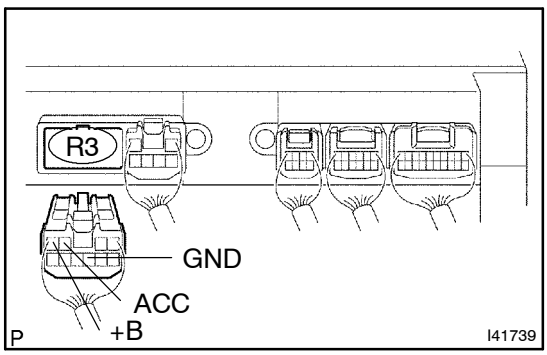
This circuit provides power to the radio receiver assy.

WIRING DIAGRAM



INSPECTION PROCEDURE

1	INSPECT RADIO RECEIVER ASSY(+B, ACC, GND)



(a) Disconnect the connector from the radio receiver assy.
(b) Measure the resistance according to the value in the table below.

Standard:

Tester connection	Condition	Specified condition
GND - Body ground	Always	Below 1 Ω

(c) Measure the voltage according to the values in the table below.

Standard:

Tester connection	Condition	Specified condition
+B - GND	Always	10 to 14 V
ACC - GND	Ignition SW ACC	10 to 14 V

NG → **REPAIR OR REPLACE HARNESS OR CONNECTOR**

OK

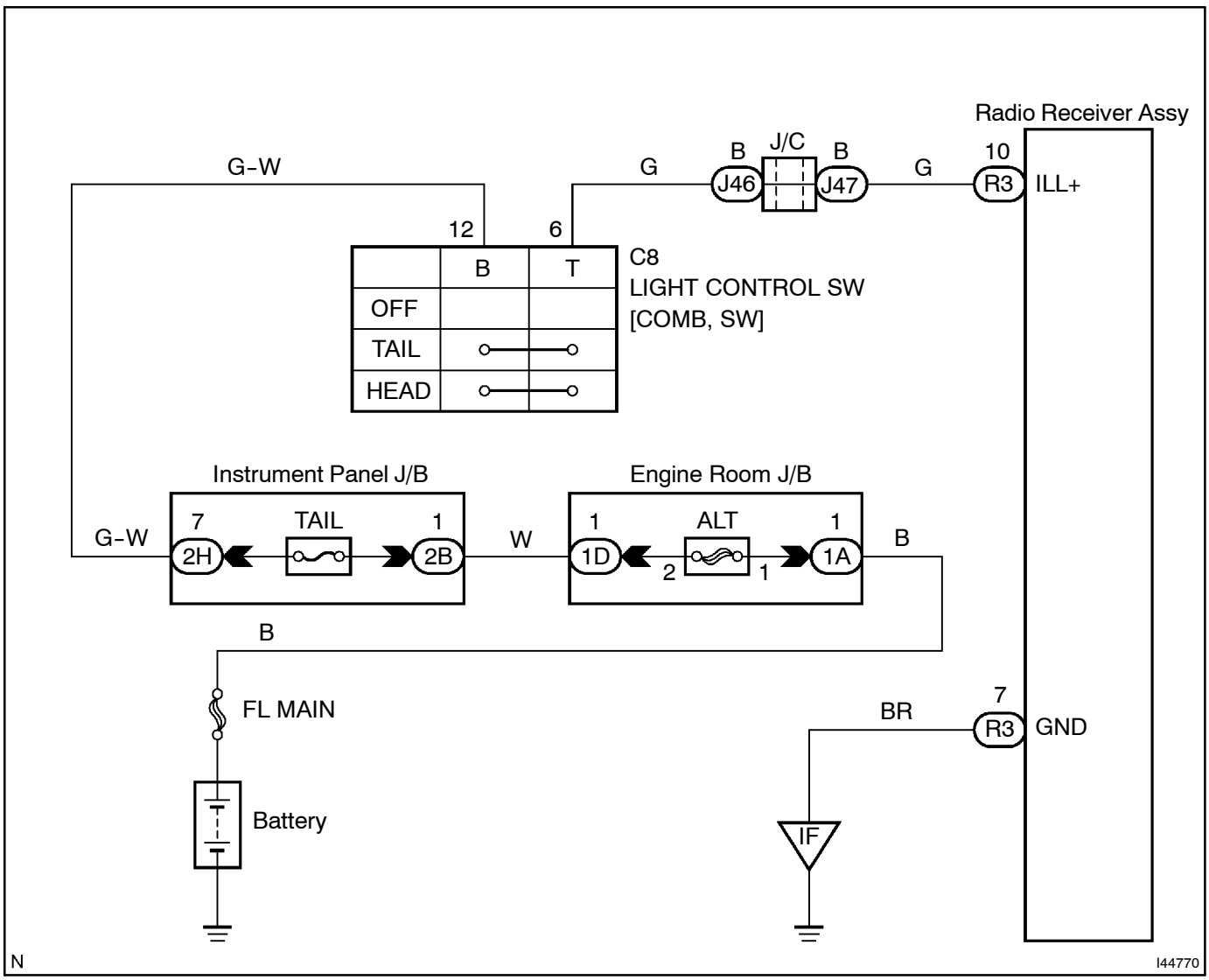
PROCEED TO NEXT CIRCUIT INSPECTION SHOWN IN PROBLEM SYMPTOMS TABLE (SEE PAGE 05-41)

ILLUMINATION CIRCUIT

CIRCUIT DESCRIPTION

This is the illumination circuit for the radio receiver assy and other displays and indicators.
When the light control switch is in the TAIL or HEAD position, the TAILLIGHT relay is activated and supplies power to illuminate the radio receiver assy.

WIRING DIAGRAM



INSPECTION PROCEDURE

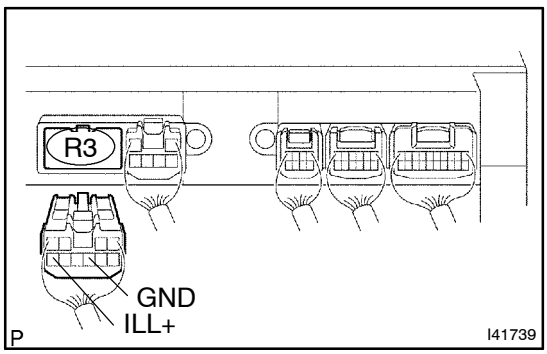
1	CHECK LIGHTING SYSTEM

(a) Turn the light control switch to the TAIL or HEAD position.
Check if other displays or illumination such as the A/C control panel come on.
OK: Other displays or illumination come on.

NG → **GO TO LIGHTING SYSTEM**

OK

2	INSPECT RADIO RECEIVER ASSY(ILL+, GND)



(a) Disconnect the connector from the radio receiver assy.
(b) Measure the voltage according to the value in the table below.
Standard:

Tester connection	Condition	Specified condition
ILL+ - GND	Light control SW TAIL or HEAD	10 to 14 V

NG → **REPAIR OR REPLACE HARNESS OR CONNECTOR(RADIO RECEIVER ASSY - CENTER J/B)**

OK

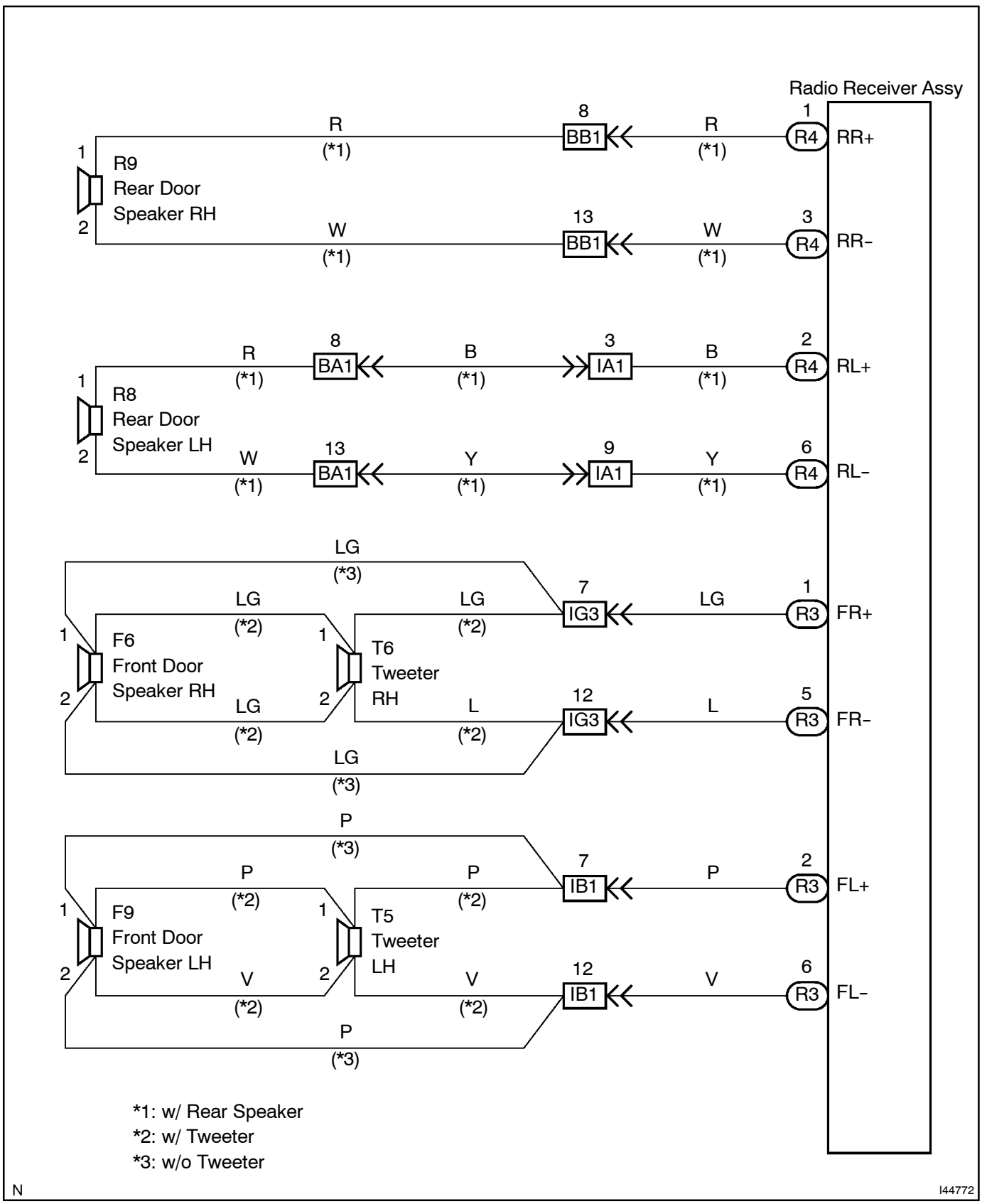
PROCEED TO NEXT CIRCUIT INSPECTION SHOWN IN PROBLEM SYMPTOMS TABLE
(SEE PAGE 05-41)

SPEAKER CIRCUIT

CIRCUIT DESCRIPTION

A sound signal is sent from the radio receiver assy to the speakers via this circuit.

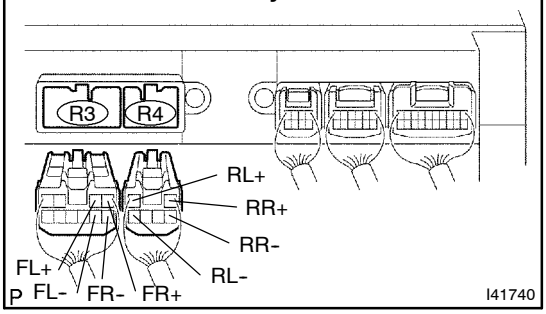
WIRING DIAGRAM



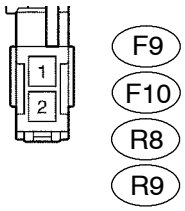
INSPECTION PROCEDURE

1	CHECK HARNESS AND CONNECTOR(RADIO RECEIVER ASSY - SPEAKER ASSY)

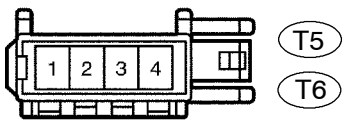
Radio Receiver Assy:



Connector Front View:
(Front No.1 Speaker Assy)
(Rear Speaker Assy)



Connector Front View:
(Front No.2 Speaker Assy)



(a) Disconnect the connectors from the radio receiver assy and speakers.

(b) Measure the resistance according to the value(s) in the table below.

Standard:

Tester connection	Specified condition
FL+ - T5-4	Below 1 Ω
FL- - T5-2	Below 1 Ω
FR+ - T6-4	Below 1 Ω
FR- - T6-2	Below 1 Ω
T5-1 - F9-2	Below 1 Ω
T5-3 - F9-1	Below 1 Ω
T6-1 - F10-2	Below 1 Ω
T6-3 - F10-1	Below 1 Ω
RL+ - R8-1	Below 1 Ω
RL- - R8-2	Below 1 Ω
RR+ - R9-1	Below 1 Ω
RR- - R9-2	Below 1 Ω
FL+ - Body ground	10 kΩ or higher
FL- - Body ground	10 kΩ or higher
FR+ - Body ground	10 kΩ or higher
FR- - Body ground	10 kΩ or higher
RL+ - Body ground	10 kΩ or higher
RL- - Body ground	10 kΩ or higher
RR+ - Body ground	10 kΩ or higher
RR- - Body ground	10 kΩ or higher

NG → **REPAIR OR REPLACE HARNESS OR CONNECTOR**

OK

2	INSPECT FRONT NO. 1 SPEAKER ASSY

(a) Resistance check.
(1) Measure the resistance between the terminals of the speaker.

NOTICE:
The speaker should not be removed for checking.

Standard: Approximately 4 Ω

NG → **REPLACE FRONT NO. 1 SPEAKER ASSY (SEE PUB. NO. RM821E, PAGE 67-3)**

OK

3	INSPECT FRONT NO. 2 SPEAKER ASSY

(a) Check that malfunction disappears when another speaker in good condition is installed.
OK: Malfunction disappears.

HINT:
- Connect all the connectors to the speakers.
- When there is a possibility that either right or left front speaker is defective, inspect by interchanging the right one and the left one.

OK → **REPLACE FRONT NO. 2 SPEAKER ASSY (SEE PUB. NO. RM821E, PAGE 67-4)**

NG

4	INSPECT REAR SPEAKER ASSY

(a) Resistance check.
(1) Measure the resistance between the terminals of the speaker.

NOTICE:
The speaker should not be removed for checking.

Standard: Approximately 4 Ω

NG → **REPLACE REAR SPEAKER ASSY (SEE PUB. NO. RM821E, PAGE 67-5)**

OK

PROCEED TO NEXT CIRCUIT INSPECTION SHOWN IN PROBLEM SYMPTOMS TABLE (SEE PAGE 05-41)

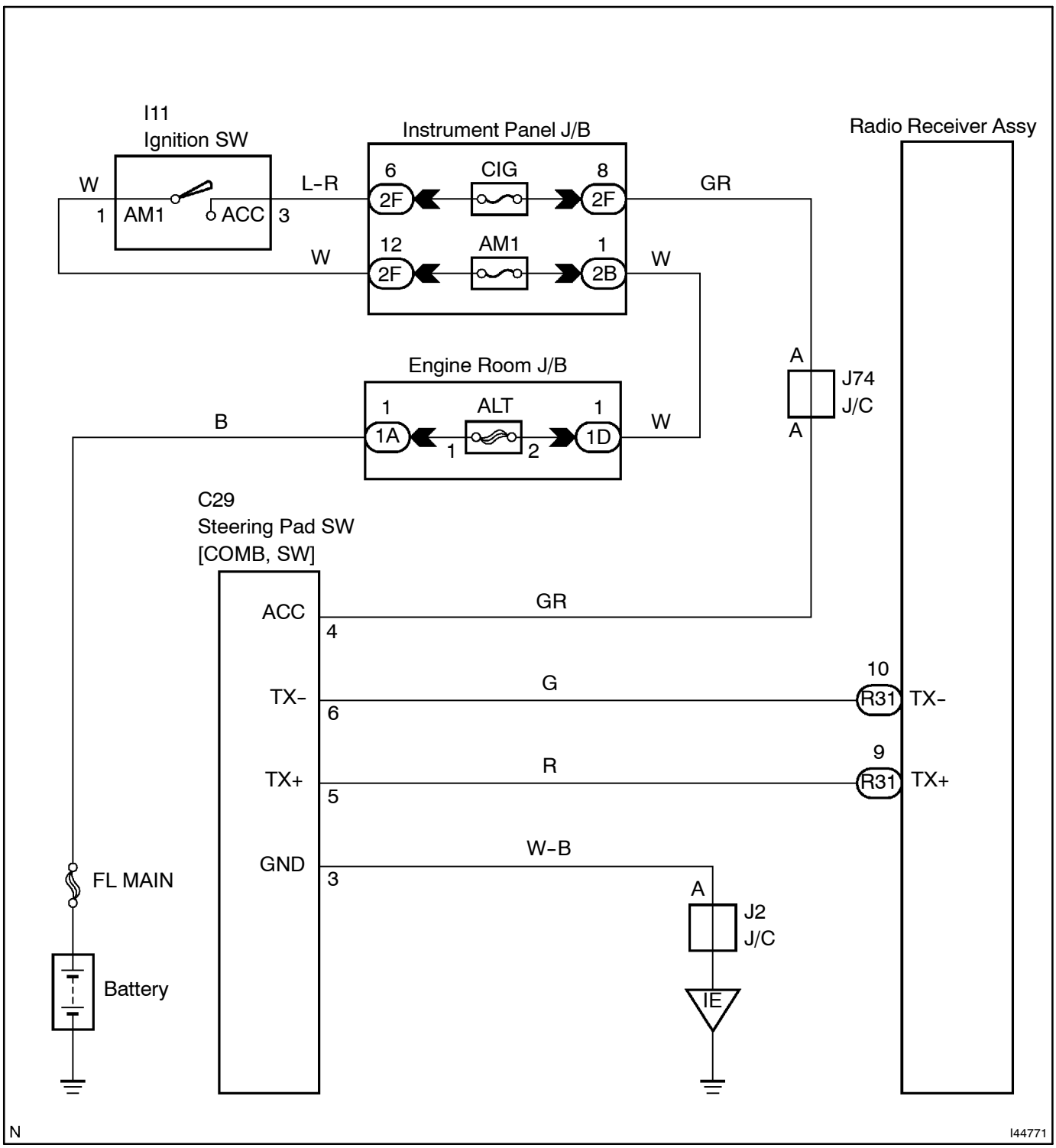
STEREO COMPONENT CONTROLLER ASSY CIRCUIT

CIRCUIT DESCRIPTION

This circuit sends an operation signal from the stereo component controller assy to the radio receiver assy. If there is an open in the circuit, the audio system cannot be operated by the stereo component controller assy.

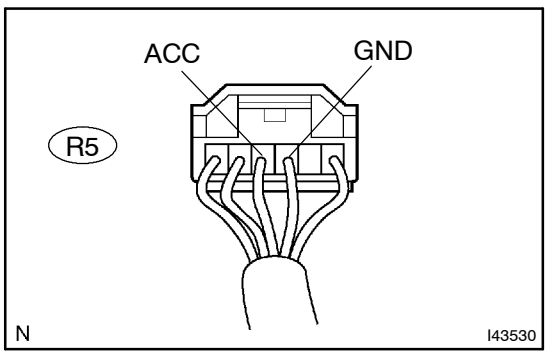
If there is a short in the circuit, the same condition as that when the switch is continuously depressed occurs. Therefore, the radio receiver assy cannot be operated by the stereo component controller assy, and also the radio receiver assy itself does not function.

WIRING DIAGRAM



INSPECTION PROCEDURE

1 CHECK TERMINAL VOLTAGE(POWER SOURCE CIRCUIT)



(a) Disconnect the connector from the spiral cable sub-assy.
(b) Measure the resistance according to the value in the table below.

Standard:

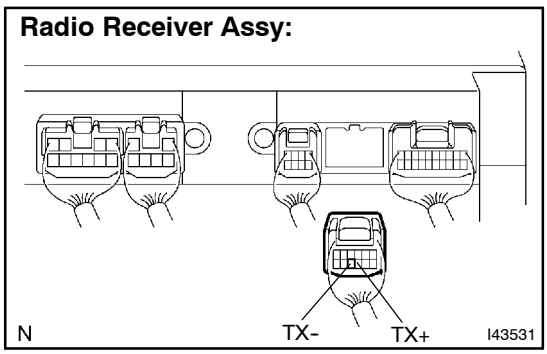
Tester connection	Condition	Specified condition
ACC - GND	Ignition switch ACC	10 to 14 V

NG → **REPAIR OR REPLACE HARNESS OR CONNECTOR**

OK

2 CHECK HARNESS AND CONNECTOR(SPIRAL CABLE - RADIO RECEIVER ASSY)

Radio Receiver Assy:

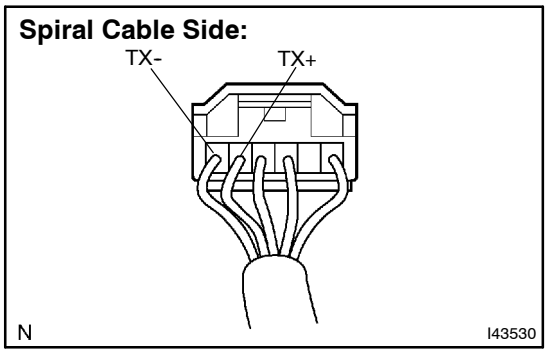


(a) Disconnect the connectors from the radio receiver assy and spiral cable sub-assy.
(b) Measure the resistance according to the value in the table below.

Standard:

Tester connection	Specified condition
TX+ - TX+	Below 1 Ω
TX- - TX-	Below 1 Ω

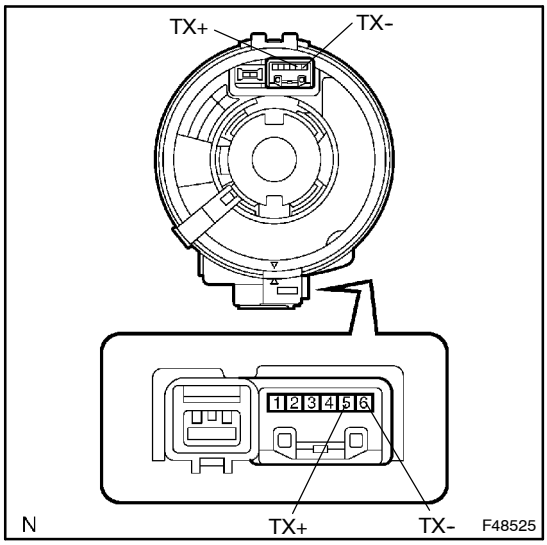
Spiral Cable Side:



NG → **REPAIR OR REPLACE HARNESS OR CONNECTOR**

OK

3	CHECK SPIRAL CABLE SUB-ASSY



(a) Disconnect the connectors from the spiral cable sub-assy.

(b) Measure the resistance according to the value in the table below.

Standard:

Tester connection	Specified condition
TX+ - TX+	Below 1 Ω
TX- - TX-	Below 1 Ω

NG → **REPLACE SPIRAL CABLE SUB-ASSY**

OK

REPLACE STEREO COMPONENT CONTROLLER ASSY

SOUND QUALITY IS BAD IN ALL MODES (VOLUME IS TOO LOW)

INSPECTION PROCEDURE

1	ADJUST SOUND QUALITY

(a) Adjust the sound quality.
(1) Operate the radio receiver assy to adjust the sound quality.
OK: Malfunction disappears.

OK → BAD SOUND QUALITY

NG

2	COMPARE IT WITH ANOTHER VEHICLE OF SAME MODEL

(a) Compare it with another vehicle of the same model.
(1) Compare it with the vehicle of the same model which does not have a trouble to see if there is any difference in the sound quality.
OK: No difference is found.

OK → CHECK SPEAKER CIRCUIT (SEE PAGE 05-46)

NG

REPLACE RADIO RECEIVER ASSY (SEE PUB. NO. RM821E, PAGE 67-2)

RADIO BROADCAST CANNOT BE RECEIVED(BAD RECEPTION)

INSPECTION PROCEDURE

1	CHECK IF RADIO AUTO-SEARCH FUNCTIONS PROPERLY

(a) Check if the radio auto-search functions properly.
(1) Perform the auto-search of the radio and check that it functions normally.
OK: The radio auto-search functions properly.

OK → Go to step 3

NG

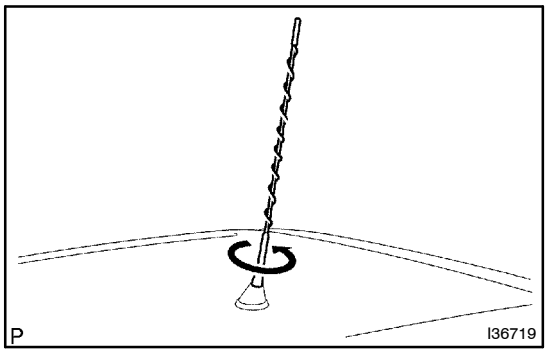
2	CHECK OPTIONAL COMPONENT

(a) Check optional component (telephone antenna, etc.).
(1) Check whether or not any optional component such as the sun shade film and the telephone antenna is installed.
OK: Optional component is installed.

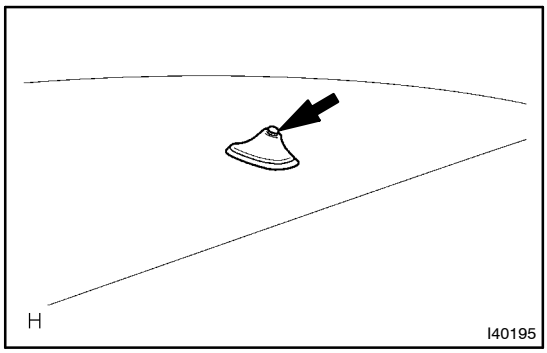
OK → EFFECT FROM OPTIONAL COMPONENT

NG

3 CHECK ANTENNA FOR NOISE PRODUCTION



(a) Noise Check with Antenna
(1) Remove the roof antenna pole sub-assy by turning it in the direction of the arrow as shown in the illustration.
(2) With the ignition switch on (ACC), turn on the radio and choose the AM mode.



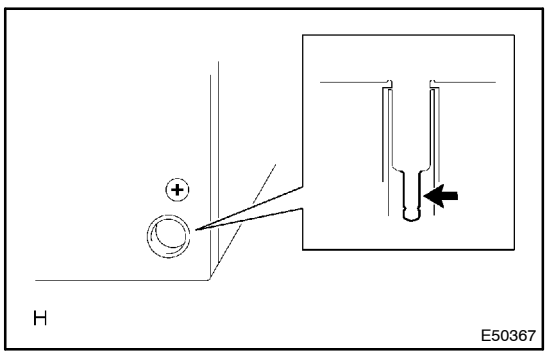
(3) Place the tip of a screwdriver on the antenna of the antenna assembly, and check that the noise is heard from the speaker.

OK: Noise occurs.

OK → **REPLACE ROOF ANTENNA POLE SUB-ASSY (SEE PUB. NO. RM926E, PAGE 67-6)**

NG

4 INSPECT RADIO RECEIVER ASSY(ANTENNA)



(a) Preparation for Check
(1) Remove the antenna plug of the radio receiver assembly.
(b) Noise Check
(1) With the radio receiver assy connector connected, turn the ignition switch on (ACC).
(2) Turn on the radio and choose the AM mode.
(3) Place a screwdriver or a piece of metal such as thin wire on an antenna jack of the radio receiver assy and check that the noise is heard from the speaker.

OK: Noise occurs.

NG → **REPLACE RADIO RECEIVER ASSY (SEE PUB. NO. RM821E, PAGE 67-2)**

OK

CHECK AND REPLACE ANTENNA CORD SUB-ASSY

CD CANNOT BE INSERTED OR IS EJECTED RIGHT AFTER INSERTION

INSPECTION PROCEDURE

1	CHECK IF NORMAL CD IS INSERTED

(a) Check if a normal CD is inserted.
(1) Make sure that the CD is a normal audio CD, and that there is no deformation, flaw, stain, burr or other defects on the CD.
OK: Normal audio CD.

Reference:
- Translucent or oddly-shaped CD cannot be played.
- Computer CD-ROMs (even those with music) and CD-R discs cannot be played.
- Playing an 8 cm (3.2 in.) CD does not require an adapter.

NG → **CD IS FAULTY**

OK

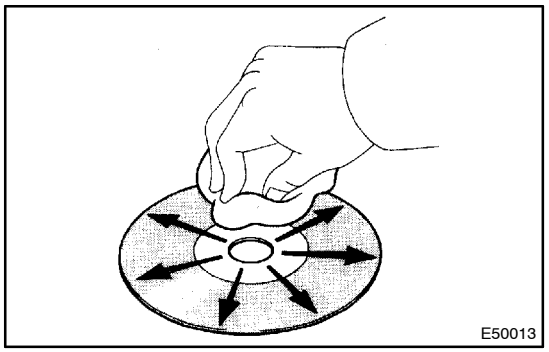
2	CHECK IF CD IS INSERTED PROPERLY

(a) Check if a CD is inserted properly.
(1) Check whether or not the CD is inserted upside down.
OK: Not upside down.

NG → **SET DISC CORRECTLY**

OK

3	DISC CLEANING



(a) Disc cleaning
(1) If the disc gets dirty, clean the disc by wiping the surface from the center to outside in a radial direction with a soft cloth.

NOTICE:
Do not use a conventional record cleaner or anti-static preservative.

OK: Malfunction disappears.

OK → **DISC IS DIRTY**

NG

4	REPLACE CD WITH ANOTHER AND RECHECK

(a) Replace the CD with another and recheck.
(1) Replace the CD with another normal one to see if the same trouble occurs again.
OK: Malfunction disappears.

NG → **REPLACE RADIO RECEIVER ASSY (SEE PUB. NO. RM821E, PAGE 67-2)**

OK

CD IS FAULTY

CD CANNOT BE EJECTED

INSPECTION PROCEDURE

1	PRESS ”EJECT” AND CHECK OPERATION

(a) Press ”EJECT”and check the operation.
  (1) Press the CD EJECT switch of the radio receiver assembly for 2 seconds or more to see if the CD is ejected.
  OK: CD is ejected.

HINT:
If the CD is not ejected, bring the vehicle in for repair.
Do not attempt to remove it by force.

NG → **REPLACE RADIO RECEIVER ASSY (SEE PUB. NO. RM821E, PAGE 67-2)**

OK

2	REPLACE CD WITH ANOTHER ONE AND RECHECK

(a) Replace the CD with another one and recheck.
  (1) Replace the CD with another normal one to see if the same trouble occurs again.
  OK: Malfunction disappears.

NG → **REPLACE RADIO RECEIVER ASSY (SEE PUB. NO. RM821E, PAGE 67-2)**

OK

CD IS FAULTY

SOUND QUALITY IS BAD ONLY WHEN CD IS PLAYED (VOLUME IS TOO LOW)

INSPECTION PROCEDURE

1	REPLACE CD WITH ANOTHER ONE AND RECHECK

(a) Replace the CD with another one and recheck.
(1) Check the installation condition of the radio receiver assembly.
OK: Malfunction disappears.

NG → **REPLACE RADIO RECEIVER ASSY (SEE PUB. NO. RM821E, PAGE 67-2)**

OK

CD IS FAULTY

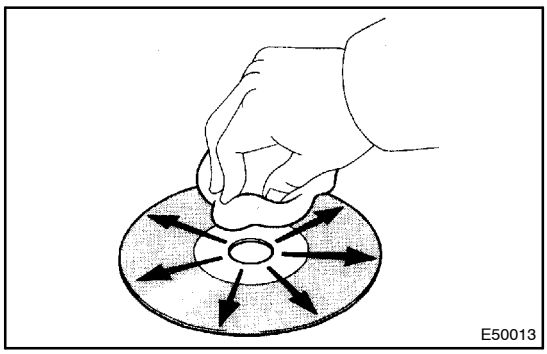
CD SOUND SKIPS

HINT:

- The sound may skip when driving on an unpaved road.

INSPECTION PROCEDURE

1	DISC CLEANING



(a) Disc cleaning

(1) If the disc gets dirty, clean the disc by wiping the surface from the center to outside in a radial direction with a soft cloth.

NOTICE:

Do not use a conventional record cleaner or anti-static preservative.

OK: Malfunction disappears.

OK	DISC IS DIRTY

NG

2	REPLACE CD WITH ANOTHER ONE AND RECHECK

(a) Replace the CD with another one and recheck.

(1) Replace the CD with another normal one to see if the same trouble occurs again.

OK: Malfunction disappears.

OK	CD IS FAULTY

NG

3	CHECK RADIO RECEIVER ASSEMBLY INSTALLATION

(a) Check the radio receiver assembly installation condition.

(1) Check that the radio receiver assembly is installed properly.

OK: Installed properly.

NG	INSTALL THE RADIO RECEIVER ASSEMBLY PROPERLY

OK

4	DID TEMPERATURE IN CABIN CHANGE RAPIDLY?

(a) Did the temperature in the cabin change rapidly?

(1) Check whether or not the rapid temperature change occurred in the cabin.

Yes : A rapid temperature change occurred.

HINT:

A rapid temperature change creates condensation inside the CD player, which may prevent the CD from being played.

NO → **REPLACE RADIO RECEIVER ASSY (SEE PUB. NO. RM821E, PAGE 67-2)**

YES

CONDENSATION DUE TO TEMPERATURE CHANGE (LET IT SIT FOR A WHILE BEFORE USING)

NOISE OCCURS

INSPECTION PROCEDURE

1	CHECK SPEAKER INSTALLATION

(a) Check the speaker installation condition.
(1) Check and securely installed each speaker.
OK: Malfunction disappears.

HINT:
The radio is equipped with a noise prevention system that blocks excessively loud noise. If such noise occurs, check that all wiring is proper and that the antenna installation part ground and noise-prevention equipment are installed.

Conditions under which noise occurs	Noise type
Noise increases when the accelerator pedal is depressed, but stops when the engine is stopped.	Generator noise
Noise occurs during A/C or heater operation.	Blower motor noise
Noise occurs when the vehicle accelerates rapidly on an unpaved road or after the engine switch is turned on (IG).	Fuel pump noise
Noise occurs when the horn switch is pressed and released or when pressed and held.	Horn noise
Quiet noise occurs while the engine is running, but stops when the engine is stopped.	Ignition noise
Noise occurs synchronously with the blink of the turn signal.	Flasher noise
Noise occurs during window washer operation.	Washer noise
Noise occurs while the engine is running, and continues even after the engine is stopped.	Water temperature sensor noise
Noise occurs during wiper operation.	Wiper noise
Noise occurs when the brake pedal is depressed.	Stop light switch noise
Others	Static electricity stored on the vehicle

HINT:
- Identify the conditions under which the noise occurs, and check the noise filter on the relevant part.
- First ensure that the noise is not coming from the outside. Failure to do so makes noise source detection difficult and may lead to a misdiagnosis.
- Noise should be removed in descending order of loudness.

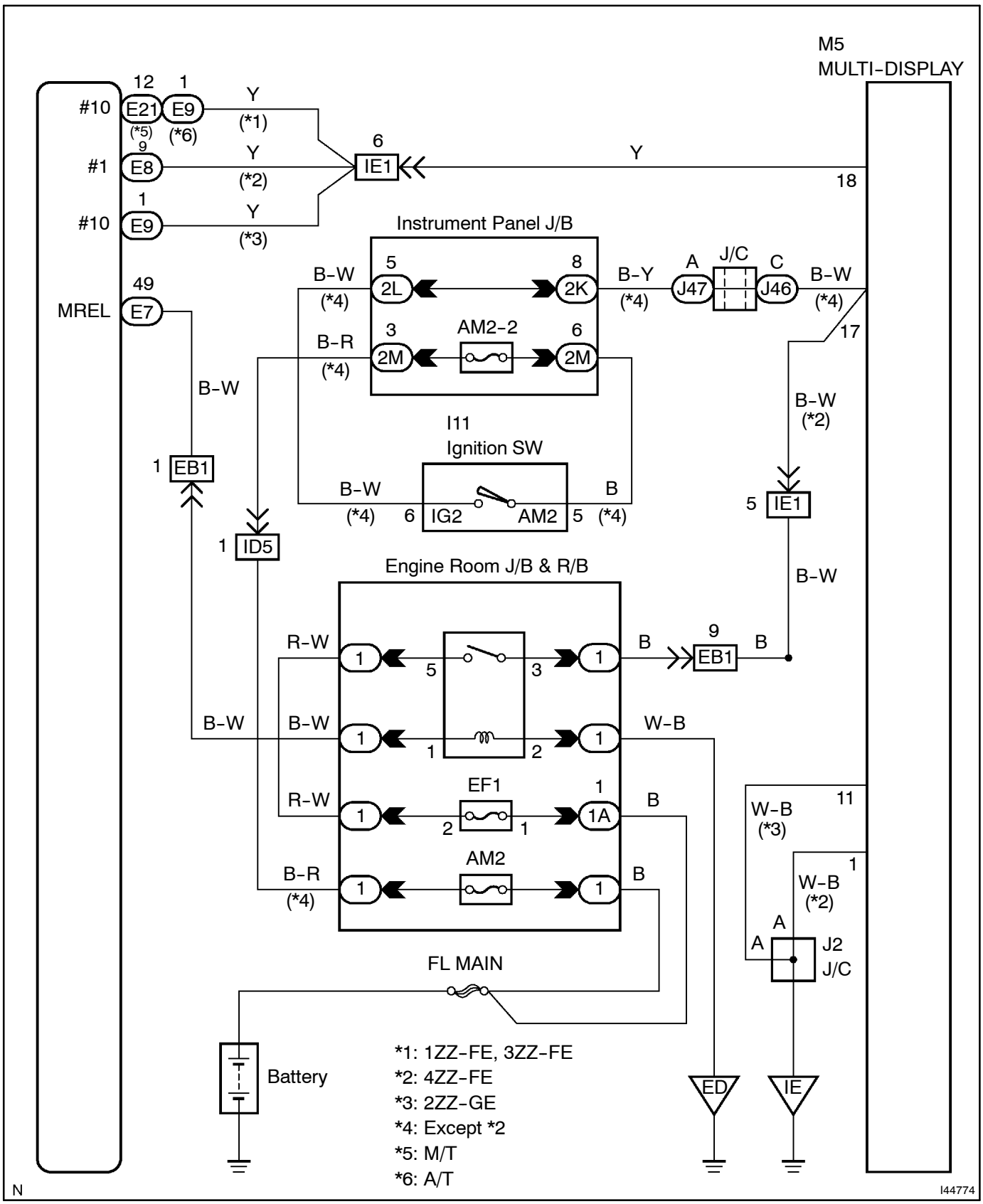
NG → INSTALL IT PROPERLY

OK

IDENTIFICATION OF NOISE SOURCE

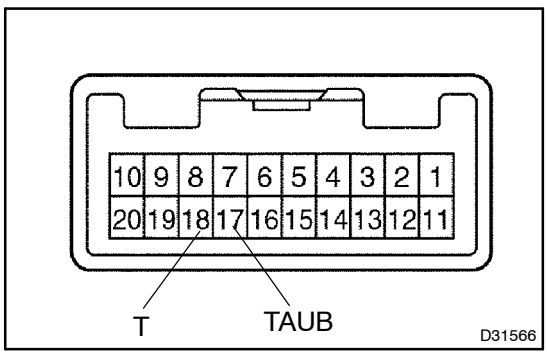
DO NOT DISPLAY FUEL EFFICIENCY

WIRING DIAGRAM



INSPECTION PROCEDURE

1	CHECK HARNESS AND CONNECTOR(RADIO RECEIVER - ECM)



(a) Measure voltage between terminals at each condition, as shown in the chart.

Standard:

Tester connection	Condition	Specified condition
TAUB - GND	Ignition switch ON	10 - 14 V
T - GND	Engine running	10 - 14 V

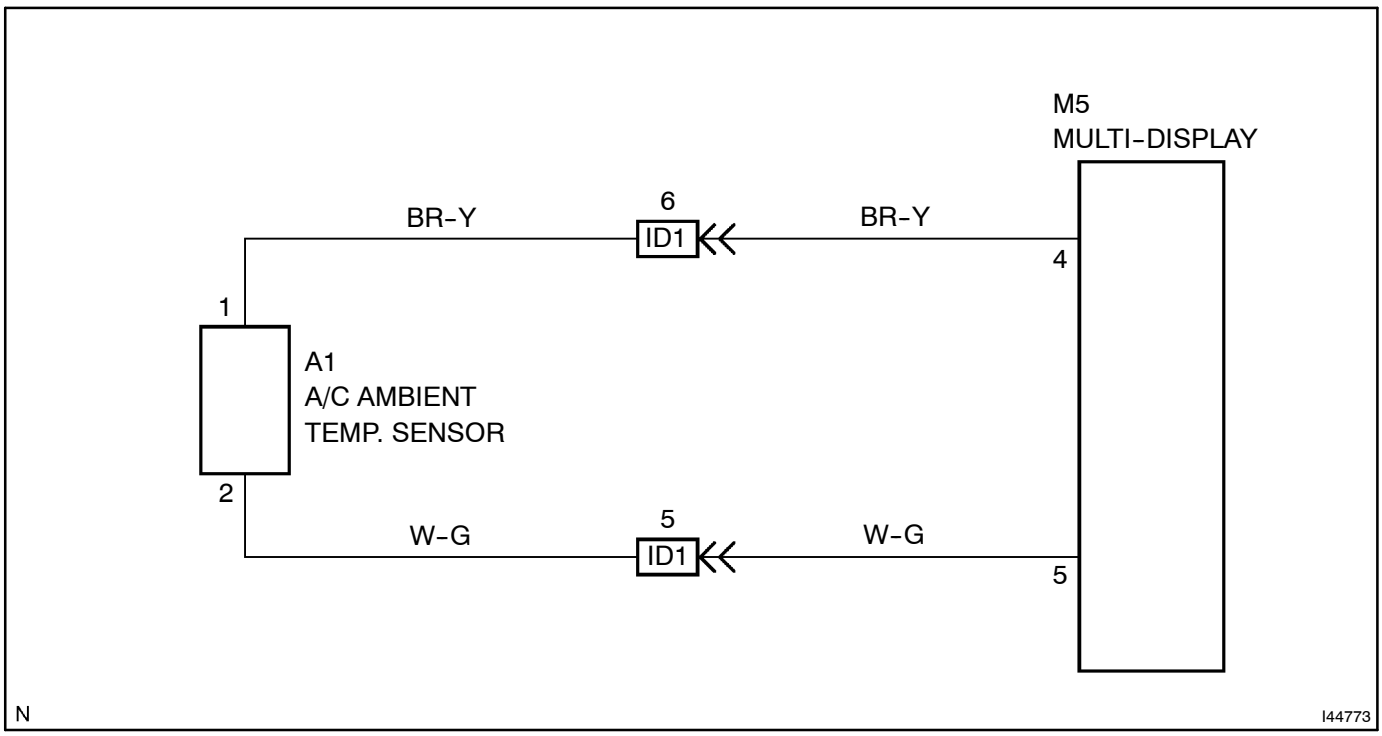
NG → **REPLACE ECM**

OK

CHECK AND REPLACE RADIO RECEIVER ASSY

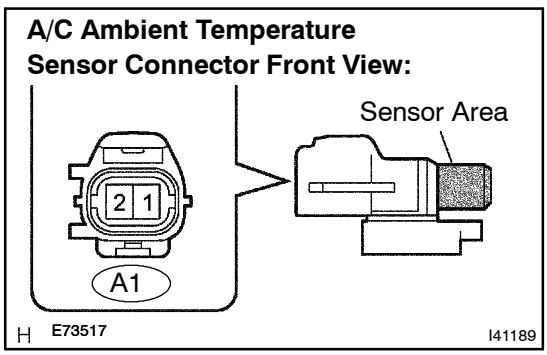
THE AMBIENT TEMPERATURE DOES NOT DISPLAY

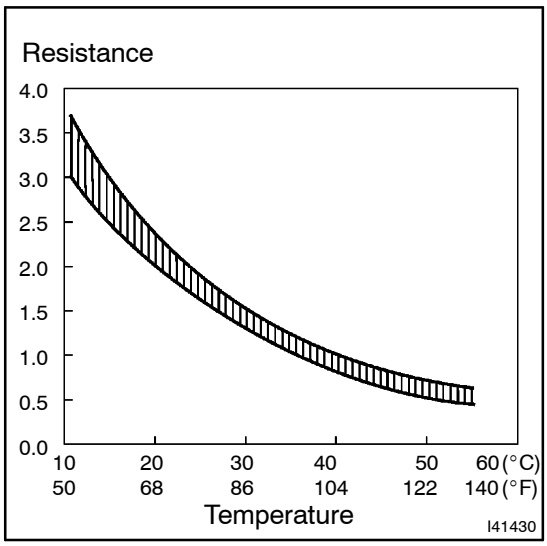
WIRING DIAGRAM



INSPECTION PROCEDURE

1	INSPECT A/C AMBIENT TEMPERATURE SENSOR





(a) Remove the A/C ambient temperature sensor.
(b) Disconnect the connector from the A/C ambient temperature sensor.
(c) Measure the resistance according to the value(s) in the table below.

Standard:

Tester connection	Condition	Specified condition
A1-1 - A1-2	10°C (50°F)	3.00 to 3.73 kΩ
A1-1 - A1-2	15°C (59°F)	2.45 to 2.88 kΩ
A1-1 - A1-2	20°C (68°F)	1.95 to 2.30 kΩ
A1-1 - A1-2	25°C (77°F)	1.60 to 1.80 kΩ
A1-1 - A1-2	30°C (86°F)	1.28 to 1.47 kΩ
A1-1 - A1-2	35°C (95°F)	1.00 to 1.22 kΩ
A1-1 - A1-2	40°C (104°F)	0.80 to 1.00 kΩ
A1-1 - A1-2	45°C (113°F)	0.65 to 0.85 kΩ
A1-1 - A1-2	50°C (122°F)	0.50 to 0.70 kΩ
A1-1 - A1-2	55°C (131°F)	0.44 to 0.60 kΩ
A1-1 - A1-2	60°C (140°F)	0.36 to 0.50 kΩ

NOTICE:

- **Even slightly touching the sensor may change the resistance value. Be sure to hold the connector of the sensor.**
- **When measuring, the sensor temperature must be the same as the ambient temperature.**

HINT:
As the temperature increases, the resistance decreases (see the graph on the left).

NG → **REPLACE A/C AMBIENT TEMPERATURE SENSOR**

OK

2	CHECK HARNESS AND CONNECTOR(THERMISTOR ASSY-RADIO RECEIVER ASSY)

NG → **REPAIR OR REPLACE HARNESS OR CONNECTOR**

OK

CHECK AND REPLACE RECEIVER ASSY, RADIO

FRONT SUSPENSION

FRONT WHEEL ALIGNMENT
(SOUTH AFRICA) 26–1
ADJUSTMENT 26–1/6

REFER TO COROLLA REPAIR MANUAL (Pub. No. RM821E)

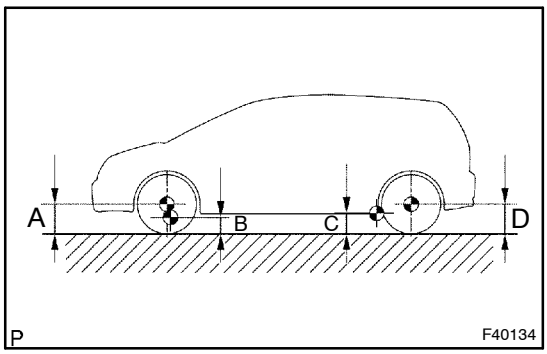
NOTE: The above pages contain only the points which differ from the above listed manual.

FRONT WHEEL ALIGNMENT (SOUTH AFRICA)

260JN-02

ADJUSTMENT

1. INSPECT TIRE (SEE PAGE 28-1)



2. MEASURE VEHICLE HEIGHT

Vehicle height:

Tire size	Front A - B	Rear D - C
185/70R 14	86 mm (3.39 in.)	38 mm (1.50 in.)
195/60R 15	88 mm (3.46 in.)	40 mm (1.57 in.)
195/55R 16	88 mm (3.46 in.)	40 mm (1.57 in.)

Measuring points:

A: Ground clearance of front wheel center

B: Ground clearance of lower suspension arm front bolt center

C: Ground clearance of axle beam set bolt center

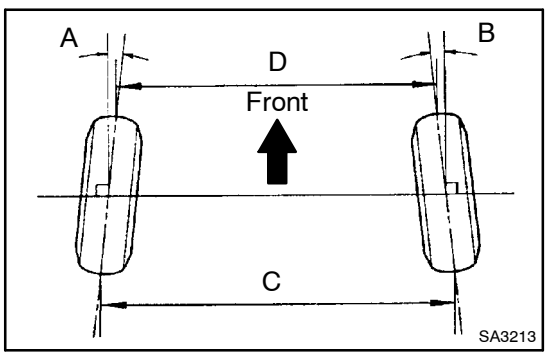
D: Ground clearance of rear wheel center

NOTICE:

Before inspecting the wheel alignment, adjust the vehicle height to the specified value.

HINT:

Bounce the vehicle at the corners up and down to stabilize the suspension and inspect the vehicle height.



3. INSPECT TOE-IN

Toe-in:

Toe-in (total)	A + B: 0° ± 12' (0° ± 0.2°) C - D: 0 ± 2 mm (0 ± 0.08 in.)

HINT:

- Measure "C-D" only when "A+B" can not be measured.
- If toe-in is not within the specified range, adjust it at the rack ends.

4. ADJUST TOE-IN

(a) Measure the thread lengths of the right and left rack ends.

Standard: Difference in thread length is 1.5 mm or less

(b) Remove the rack boot set clips.

(c) Loosen the tie rod end lock nuts.

(d) Adjust the rack ends if the difference in thread length between the right and left rack ends is not within the specified range.

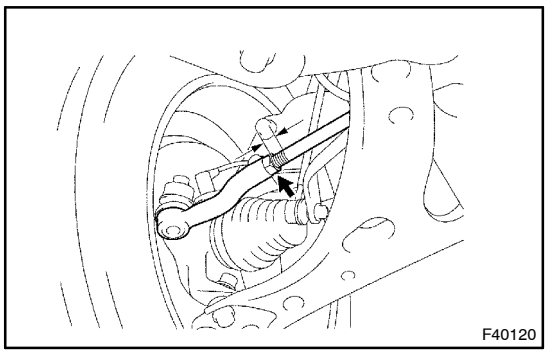
(1) Extend the shorter rack end if the measured toe-in deviates toward the outer-side.

(2) Shorten the longer rack end if the measured toe-in deviates toward the inner-side.

(e) Turn the right and left rack ends by an equal amount to adjust toe-in.

HINT:

Try to adjust toe-in to the center of the specified range.



(f) Make sure that the lengths of the right and left rack ends are the same.

Standard: Difference in thread length is 0 ± 1 mm

(g) Torque the tie rod end lock nuts.

Torque: 74 N·m (755 kgf·cm, 55 ft·lbf)

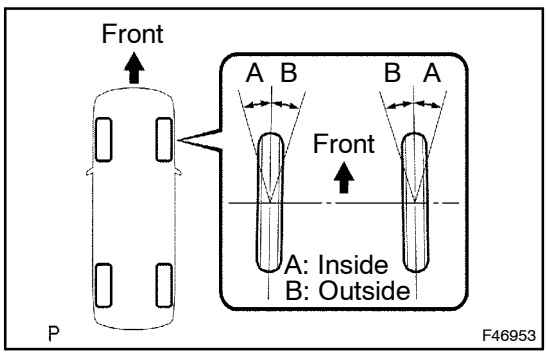
NOTICE:

Temporarily tighten the lock nut while holding the hexagonal part of the steering rack end so that the lock nut and the steering rack end do not turn together. Hold the width across flat of the tie rod end and tighten the lock nut.

(h) Place the boots on the seats and install the clips.

HINT:

Make sure that the boots are not twisted.



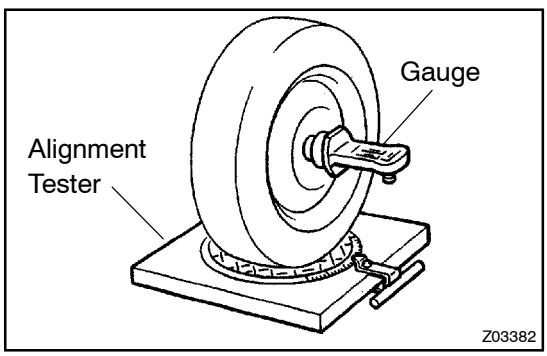
5. INSPECT WHEEL ANGLE

(a) Turn the steering wheel fully left and right and measure the turning angle.

Wheel turning angle:

Inside wheel	38°45' ± 2° (38.75° ± 2°)
Outside wheel: Reference	32°50' (32.83°)

If the right and left inside wheel angles differ from the specified range, check the right and left rack end lengths.



6. INSPECT CAMBER, CASTER AND STEERING AXIS INCLINATION

(a) Put the front wheel on the center of the alignment tester.

(b) Remove the center ornament or wheel cap.

(c) Install the camber-caster-steering axis inclination gauge at the center of the axle hub or drive shaft.

(d) Inspect the camber, caster and steering axis inclination.

Camber, caster and steering axis inclination:

185/70R 14:

Camber	-0°31' ± 45' (-0.52° ± 0.75°)
Right-left error	45' (0.75°) or less
Caster	2°42' ± 45' (2.70° ± 0.75°)
Right-left error	45' (0.75°) or less
Steering axis inclination	11°19' ± 45' (11.32° ± 0.75°)
Right-left error	45' (0.75°) or less

195/60R 15:

Camber	-0°31' ± 45' (-0.52° ± 0.75°)
Right-left error	45' (0.75°) or less
Caster	2°43' ± 45' (2.72° ± 0.75°)
Right-left error	45' (0.75°) or less
Steering axis inclination	11°21' ± 45' (11.35° ± 0.75°)
Right-left error	45' (0.75°) or less

195/55R 16:

Camber Right-left error	-0°31' ± 45' (-0.52° ± 0.75°) 45' (0.75°) or less
Caster Right-left error	2°43' ± 45' (2.72° ± 0.75°) 45' (0.75°) or less
Steering axis inclination Right-left error	11°21' ± 45' (11.35° ± 0.75°) 45' (0.75°) or less

NOTICE:

- **Inspect while the vehicle is empty (without the spare tire or tools onboard).**
- **The maximum tolerance of right and left difference for the camber and caster is 45' or less.**

(e) Remove the camber-caster-steering axis inclination gauge and attachment.

(f) Install the center ornament or wheel cap.

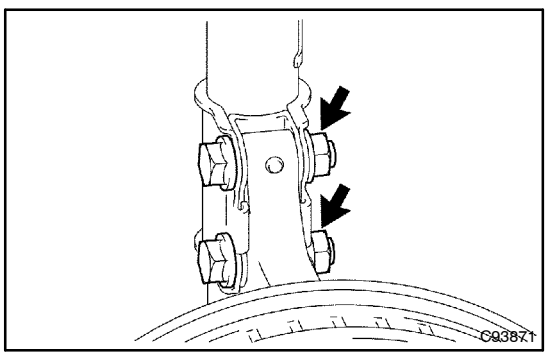
If the caster and steering axis inclination are not within the specified range, after the camber has been correctly adjusted, recheck the suspension parts for damage and/or wear.

7. ADJUST CAMBER

NOTICE:

After the camber has been adjusted, inspect toe-in.

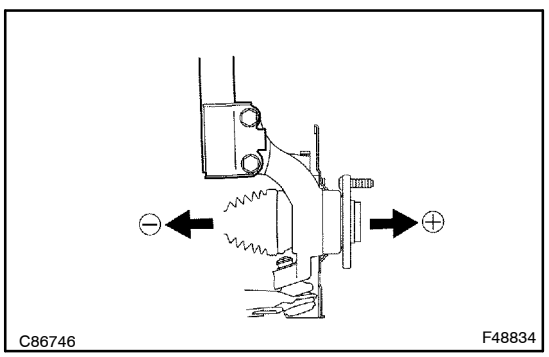
(a) Remove the front wheel.



(b) Remove the 2 nuts on the lower side of the shock absorber assy front LH.

(c) Clean the installation surfaces of the shock absorber assy front LH and the steering knuckle.

(d) Temporarily install the 2 nuts.



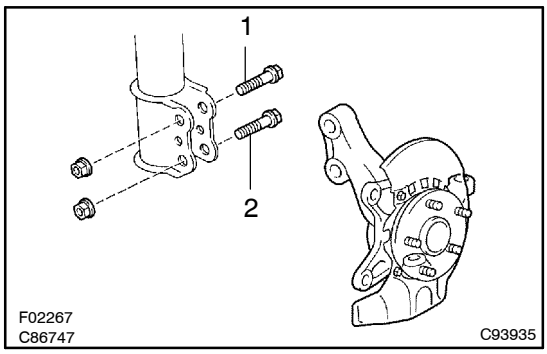
(e) Fully push or pull the front axle hub in the direction of the required adjustment.

(f) Tighten the nuts.

Torque: 153 N·m (1,560 kgf·cm, 113 ft·lbf)

(g) Install the front wheel.

Torque: 103 N·m (1,050 kgf·cm, 76 ft·lbf)



(h) Check the camber.

If the measured value is not within the specified range, calculate the required adjustment amount using the formula below.

(Camber adjustment amount) = Center of the specified range - Measured value

(i) Check installed bolts combination. Select appropriate bolts from the table below to adjust the camber within the specified range.

Move the axle toward (+) in step (e)	Refer to table (1) (Move the axle toward positive side)
Move the axle toward (-) in step (e)	Refer to table (2) (Move the axle toward negative side)

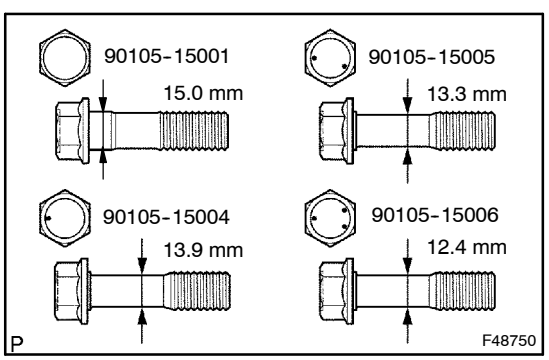
Table (1) (Move the axle toward positive side)

Installed Bolt / Adjusting Value		1	2	3	4	5	6	7
		90105-15001	90105-15001	90105-15001	90105-15001	90105-15004	90105-15005	90105-15006
		90105-15001	90105-15004	90105-15005	90105-15006	90105-15006	90105-15006	90105-15006
-1°30' to -1°15'								G
-1°15' to -1°00'							G	A
-1°00' to -0°45'						G	A	B
-0°45' to -0°30'					G	A	B	C
-0°30' to -0°15'				G	A	B	C	D
-0°15' to 0°			G	A	B	C	D	E
0° to 0°15'		A	B	C	D	E	F	
0°15' to 0°30		B	C	D	E	F		
0°30' to 0°45'		C	D	E	F			
0°45' to 1°00'		D	E	F				
1°00' to 1°15'		E	F					
1°15' to 1°30'		F						

Selected Bolt Combination

	A	B	C	D	E	F	G
1	90105-15001	90105-15001	90105-15001	90105-15004	90105-15005	90105-15006	90105-15001
2	90105-15004	90105-15005	90105-15006	90105-15006	90105-15006	90105-15006	90105-15001

P F48751



The body and suspension may be damaged if the camber is not correctly adjusted according to the above table.

NOTICE:

Replace the nut with a new one when replacing the bolt.

(j) Repeat the steps mentioned above. At step (b), replace 1 or 2 selected bolts.

HINT:

Replace one bolt at a time when replacing 2 bolts.

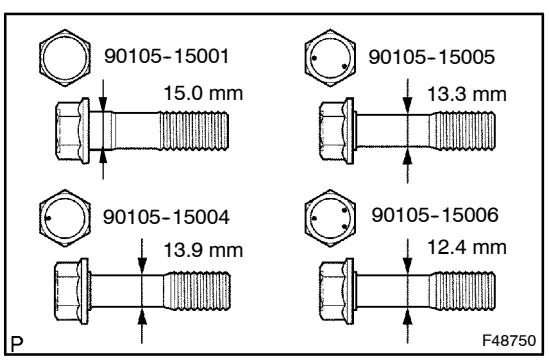
Table (2) (Move the axle toward negative side)

Installed Bolt / Adjusting Value		1						
		90105-15001	90105-15001	90105-15001	90105-15001	90105-15004	90105-15005	90105-15006
	2	90105-15001	90105-15004	90105-15005	90105-15006	90105-15006	90105-15006	90105-15006
-1°30' to -1°15'								G
-1°15' to -1°00'							G	A
-1°00' to -0°45'						G	A	B
-0°45' to -0°30'					G	A	B	C
-0°30' to -0°15'				G	A	B	C	D
-0°15' to 0°			G	A	B	C	D	E
0° to 0°15'		A	B	C	D	E	F	
0°15' to 0°30		B	C	D	E	F		
0°30' to 0°45'		C	D	E	F			
0°45' to 1°00'		D	E	F				
1°00' to 1°15'		E	F					
1°15' to 1°30'		F						

Selected Bolt Combination

	A	B	C	D	E	F	G
1	90105-15001	90105-15001	90105-15001	90105-15004	90105-15005	90105-15006	90105-15001
2	90105-15004	90105-15005	90105-15006	90105-15006	90105-15006	90105-15006	90105-15001

P F48751



The body and suspension may be damaged if the camber is not correctly adjusted according to the above table.

NOTICE:

Replace the nut with a new one when replacing the bolt.

(k) Repeat the steps mentioned above. At step (b), replace 1 or 2 selected bolts.

HINT:

Replace one bolt at a time when replacing 2 bolts.

TIRE & WHEEL

WHEEL AND TIRE SYSTEM
(SOUTH AFRICA) 28-1
INSPECTION 28-1
HOW TO PROCEED WITH
TROUBLESHOOTING 28-2

REFER TO FOLLOWING REPAIR MANUALS:

Manual Name	Pub. No.
COROLLA Repair Manual	RM821E
COROLLA Repair Manual Supplement	RM926E

NOTE: The above pages contain only the points which differ from the above listed manuals.

WHEEL AND TIRE SYSTEM (SOUTH AFRICA)

2801Z-02

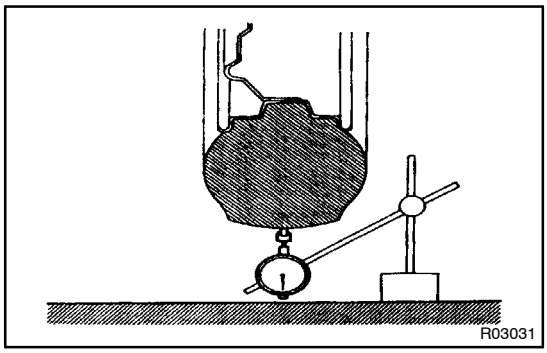
INSPECTION

1. INSPECT TIRE

(a) Check the tires for wear and proper inflation pressure.

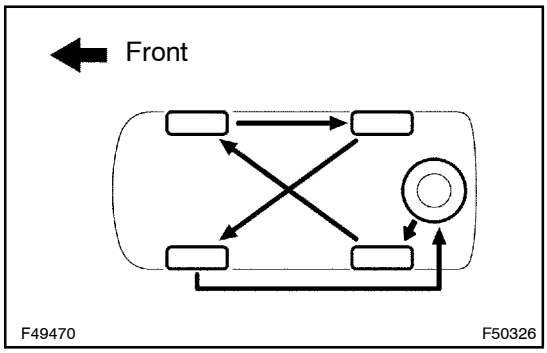
Cold tire inflation pressure:

Tire size	Front kPa (kgf·cm^2, psi)	Rear kPa (kgf·cm^2, psi)
175/70R14 84H 195/60R15 88V 195/55R16 87V	220 (2.2, 32)	220 (2.2, 32)



(b) Using a dial indicator, check the runout of tires.

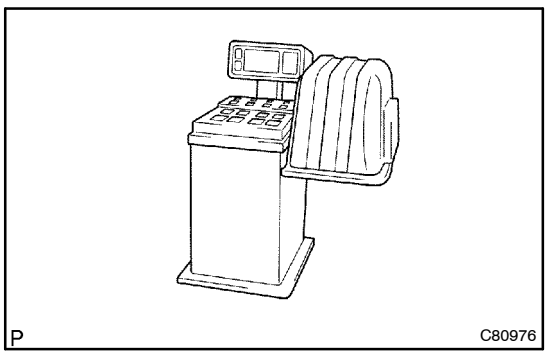
Tire runout: 3.0 mm (0.0118 in.) or less



2. ROTATE TIRES

HINT:

See the illustration for where to rotate each tire.



3. INSPECT WHEEL BALANCE

(a) Check and adjust the off-the-car balance.

(b) If required, check and adjust the on-the-car balance.

Imbalance after adjustment: 8.0 g (0.018 lb) or less

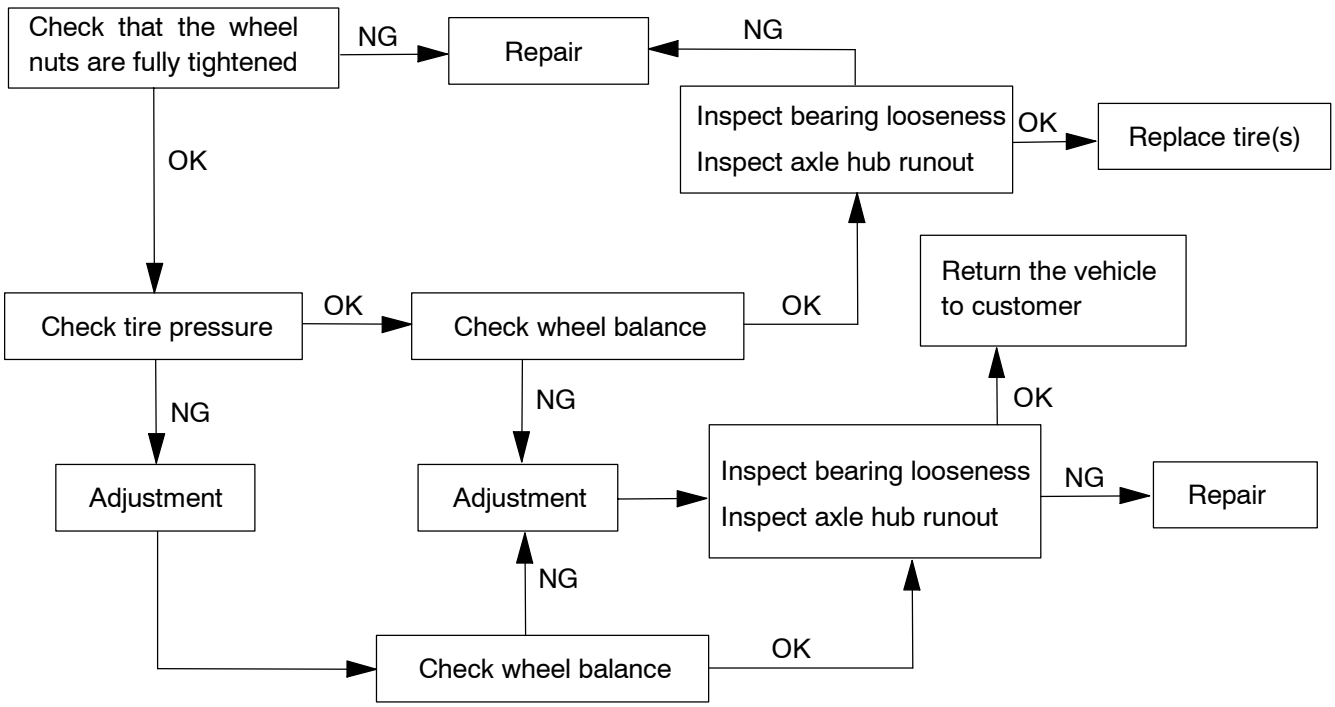
4. INSPECT BEARING LOOSENESS (SEE PUB. NO. RM821E PAGE 30-3)

5. INSPECT AXLE HUB RUNOUT (SEE PUB. NO. RM821E PAGE 30-3)

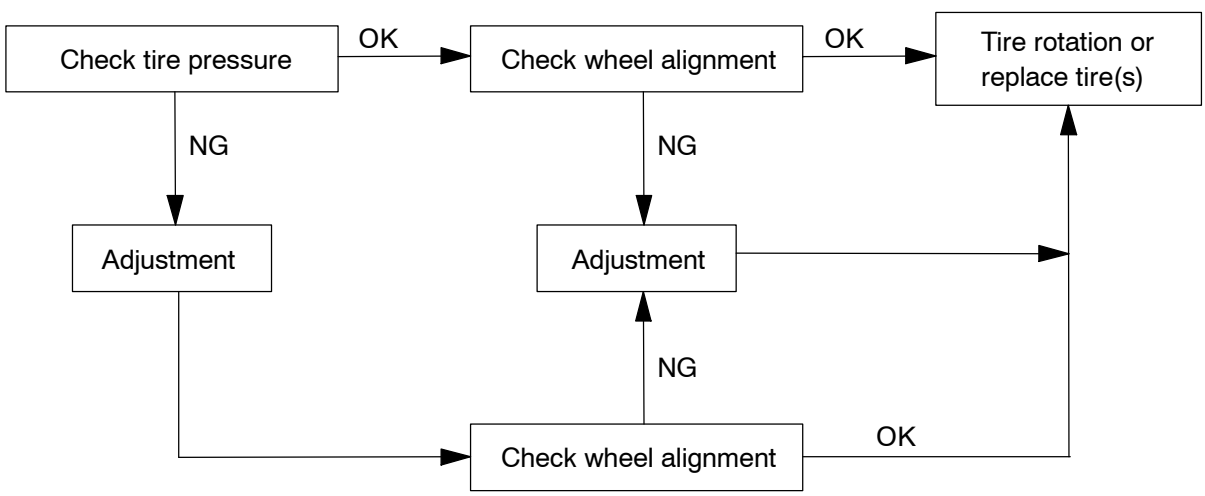
2805G-01

HOW TO PROCEED WITH TROUBLESHOOTING

1. DIAGNOSIS OF TIRE VIBRATION



2. PREMATURE OF IRREGULAR TIRE WEAR



AUTOMATIC TRANSMISSION / TRANS

PARK/NEUTRAL POSITION SWITCH ASSY (ATM FOR SOUTH AFRICA) 40-1
REPLACEMENT 40-1/3
ADJUSTMENT 40-4

REFER TO FOLLOWING REPAIR MANUALS:

Manual Name	Pub. No.
COROLLA Repair Manual	RM821E
COROLLA Repair Manual Supplement	RM926E

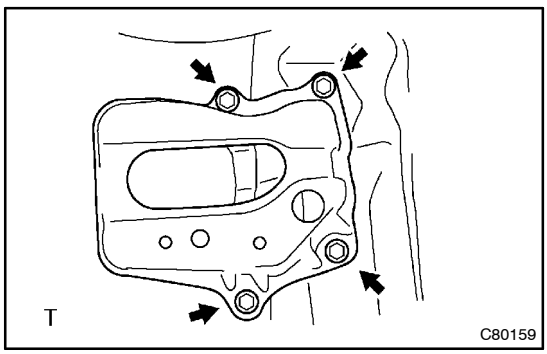
NOTE: The above pages contain only the points which differ from the above listed manuals.

PARK/NEUTRAL POSITION SWITCH ASSY (ATM FOR SOUTH AFRICA)

401BX-01

REPLACEMENT

1. REMOVE BATTERY

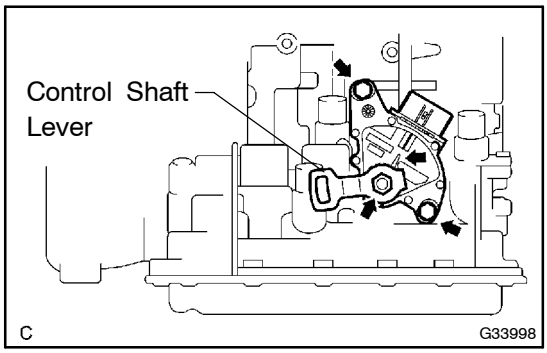


2. REMOVE BATTERY CARRIER

(a) Remove the 4 bolts and battery carrier.

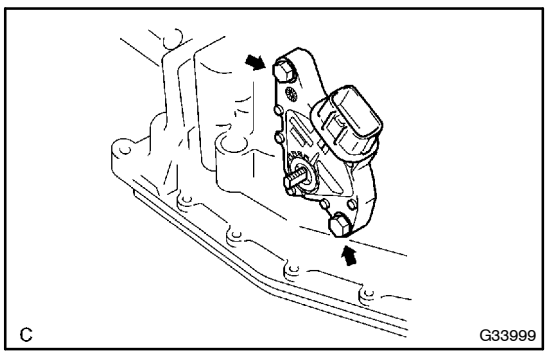
3. SEPARATE TRANSMISSION CONTROL CABLE ASSY

(a) Remove the nut from the control shaft lever.
(b) Separate the control cable from the control shaft lever.
(c) Remove the clip and separate the control cable from the control cable bracket.



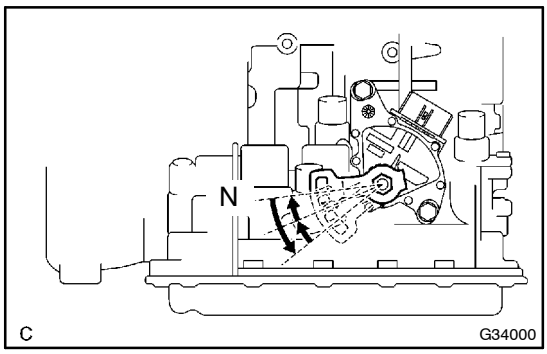
4. REMOVE PARK/NEUTRAL POSITION SWITCH ASSY

(a) Remove the nut, washer and control shaft lever.
(b) Pry out the lock plate and remove the manual valve shaft nut and lock plate.
(c) Remove the 2 bolts and pull out the neutral start switch.



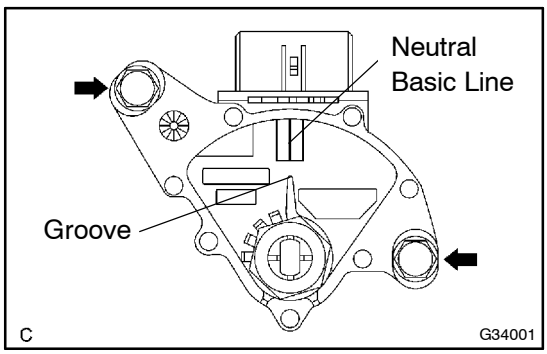
5. INSTALL PARK/NEUTRAL POSITION SWITCH ASSY

(a) Temporarily install the neutral start switch to the manual valve shaft with the 2 bolts.
(b) Place a new lock plate and tighten the nut.
Torque: 5.5 N·m (56 kgf·cm, 49 in.·lbf)
(c) Temporarily install the control shaft lever.



(d) Turn the lever counterclockwise until it stops, then turn it clockwise 2 notches (N position).

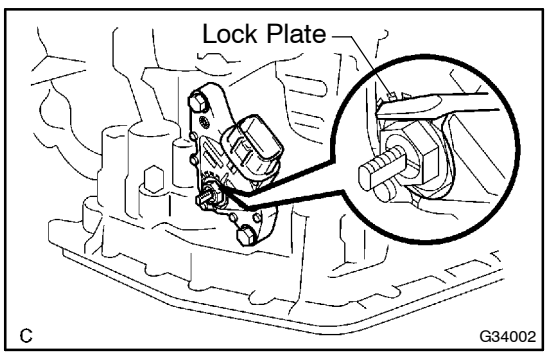
(e) Remove the control shaft lever.



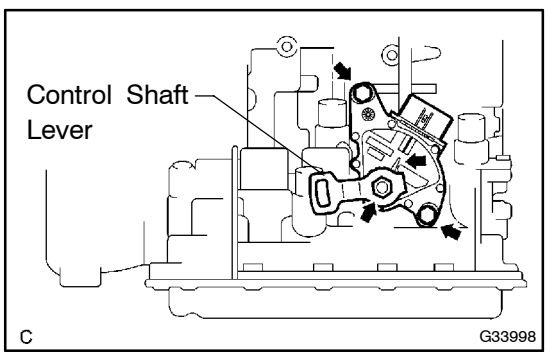
(f) Align the groove with neutral basic line.

(g) Hold the switch in position and tighten the 2 bolts.

Torque: 5.4 N·m (55 kgf·cm, 48 in.·lbf)



(h) Using a screwdriver, stake the nut with the lock plate.



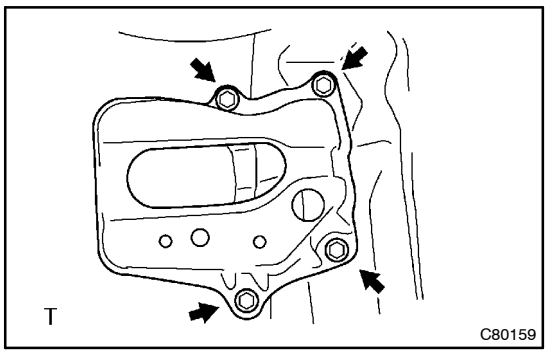
(i) Install the control shaft lever, washer and nut.

Torque: 12.5 N·m (127 kgf·cm, 9 ft·lbf)

6. INSTALL TRANSMISSION CONTROL CABLE ASSY

(a) Temporarily install the control cable to the control shaft lever with nuts.

(b) Install the control cable and clip to the bracket.



7. INSTALL BATTERY CARRIER

(a) Install the battery carrier with the 4 bolts.
Torque: 13 N·m (132 kgf·cm, 10 ft·lbf)

8. INSTALL BATTERY

9. ADJUST SHIFT LEVER POSITION (SEE PUB. NO. RM821E, PAGE 40-81)

10. INSPECT SHIFT LEVER POSITION (SEE PUB. NO. RM821E, PAGE 40-81)

11. INSPECT PARK/NEUTRAL POSITION SWITCH ASSY (SEE PAGE 40-4)

SUPPLEMENTAL RESTRAINT SYSTEM

SUPPLEMENTAL RESTRAINT SYSTEM . . . 60–1
PRECAUTION 60–1/9
ON–VEHICLE INSPECTION 60–10/12
HORN BUTTON ASSY 60–13
COMPONENTS 60–13
REPLACEMENT 60–14/15
DISPOSAL 60–16/22
SPIRAL CABLE SUB–ASSY 60–23
REPLACEMENT 60–23/24
AIRBAG SENSOR ASSY CENTER 60–25
COMPONENTS 60–25
REPLACEMENT 60–26
AIRBAG FRONT RH SENSOR 60–27
COMPONENTS 60–27
REPLACEMENT 60–28

REFER TO FOLLOWING REPAIR MANUALS:

Manual Name	Pub. No.
COROLLA Repair Manual	RM821E
COROLLA Repair Manual Supplement	RM926E

NOTE: The above pages contain only the points which differ from the above listed manuals.

SUPPLEMENTAL RESTRAINT SYSTEM

600UQ-02

PRECAUTION

CAUTION:

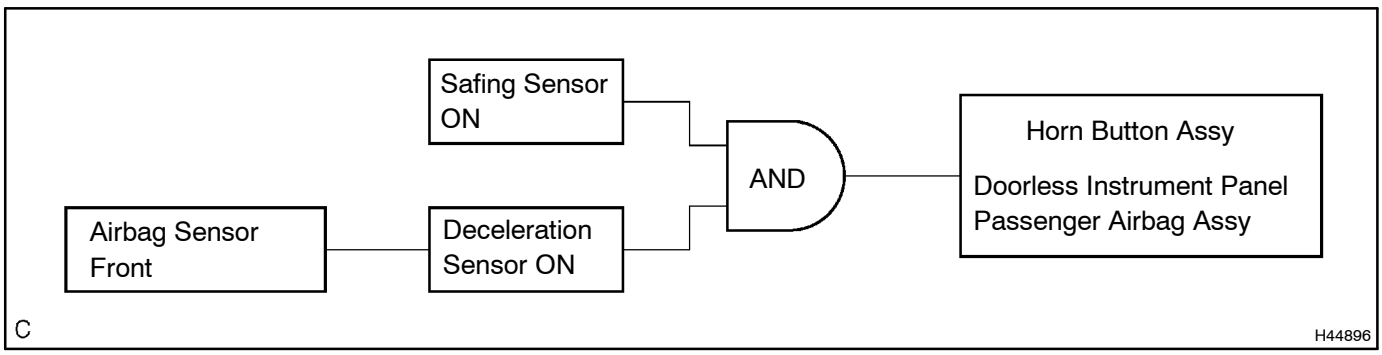
- **The vehicle is equipped with SRS, which consists of a driver airbag and front passenger airbag. Failure to carry out service operations in the correct sequence could cause the SRS to unexpectedly deploy during servicing, possibly leading to a serious accident. Further, if a mistake is made in servicing the SRS, it is possible that the SRS may fail to operate when required. Before performing servicing (including removal or installation of parts, inspection or replacement), be sure to read the following items carefully, then follow the correct procedures indicated in the repair manual.**
- **Wait at least 90 seconds after the ignition switch is turned to the "LOCK" position and the negative (-) terminal cable is disconnected from the battery before starting the operation.**
  (The SRS is equipped with a back-up power source, so that if work is started within 90 seconds after disconnecting the negative (-) terminal cable of the battery, the SRS may be deployed.)
- **Do not expose the horn button assy, doorless instrument panel passenger airbag assy, airbag sensor assy center or airbag sensor front directly to hot air or flames.**

NOTICE:

- **Malfunction symptoms of the SRS are difficult to confirm, so DTCs are the most important source of information when troubleshooting. When troubleshooting the SRS, always inspect DTCs before disconnecting the battery.**
- **Even in the case of a minor collision when the SRS does not deploy, the horn button assy, doorless instrument panel passenger airbag assy, airbag sensor assy center and airbag sensor front should be inspected (see page 60-10).**
- **Before repair work, remove the airbag sensor if any kind of shock is likely to occur to the airbag sensor during the operation.**
- **Never use SRS parts from another vehicle. When replacing the parts, replace them with new ones.**
- **Never disassemble or repair the horn button assy, doorless instrument panel passenger airbag assy, airbag sensor assy center or airbag sensor front in order to reuse it.**
- **If the horn button assy, doorless instrument panel passenger airbag assy, airbag sensor assy center or airbag sensor front has been dropped, or if there are any cracks, dents or other defects in the case, bracket or connector, replace it with a new one.**
- **Use a volt/ohmmeter with high impedance (10 kΩ/V minimum) for troubleshooting the electrical circuits.**
- **Information labels are attached to the periphery of the SRS components. Follow the instructions in the caution.**
- **After work on the SRS is completed, perform the SRS warning light check (see Pub. No. RM926E, page 05-59).**
- **When the negative (-) terminal cable is disconnected from the battery, the memory will be cleared. Because of this, be sure to make a record of the contents memorized in each system before starting work. When work is finished, adjust each system as it was before. Never use a back-up power supply from outside the vehicle to avoid erasing the memory in any system.**
- **If the vehicle is equipped with a mobile communication system, see page 01-5.**

1. DEPLOYMENT CONDITION

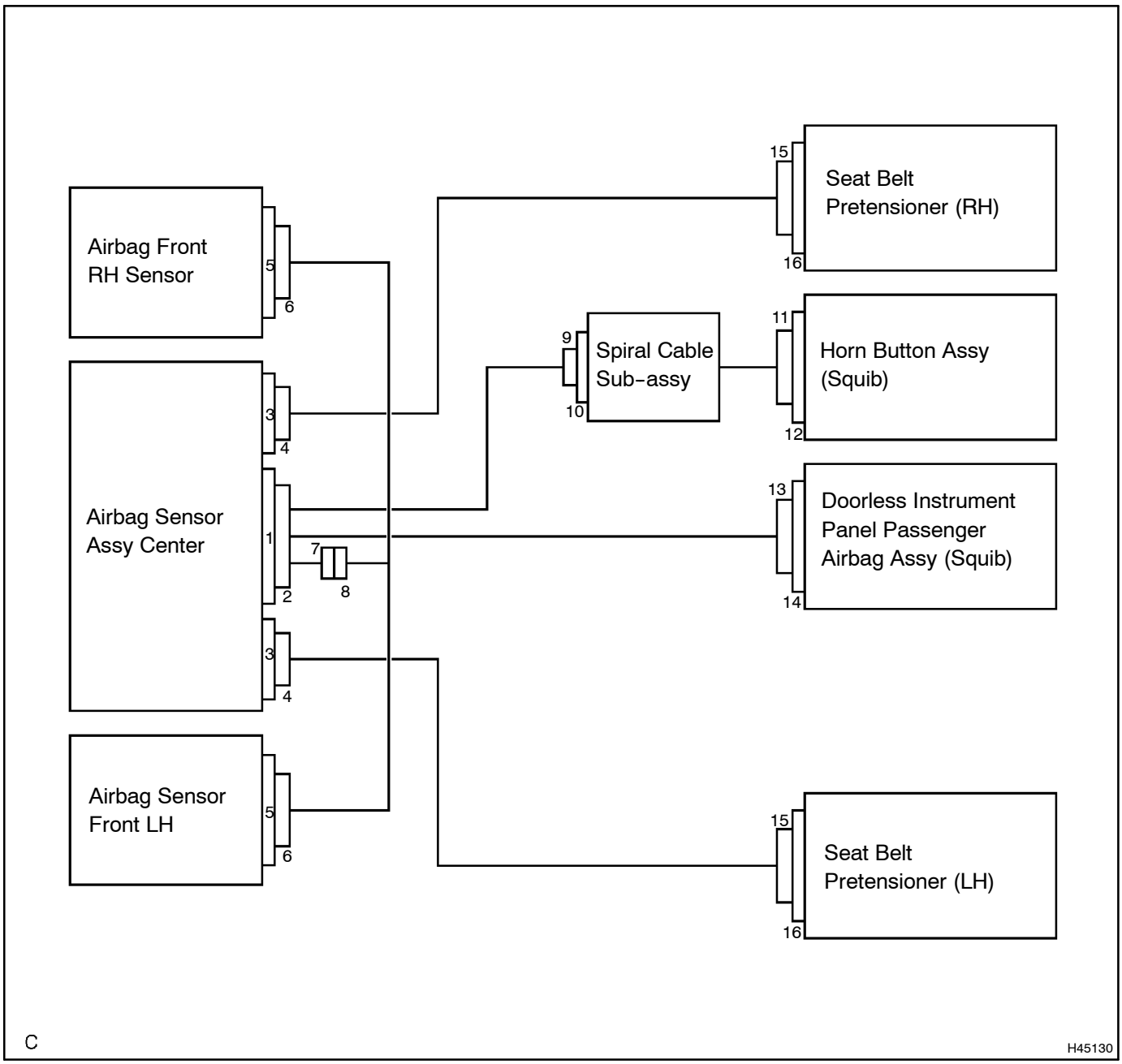
(a) When the vehicle collides and the shock is greater than the specified value, the SRS is activated automatically. The airbag sensor assy center includes the safing sensor and deceleration sensor. The safing sensor was designed to be turned on at a smaller deceleration rate than the deceleration sensor. The deceleration sensor determines whether or not ignition is necessary based on signals from the airbag sensor front. Current flows to the squibs to deploy the SRS when the conditions shown in the illustration below are met.



2. SRS CONNECTORS

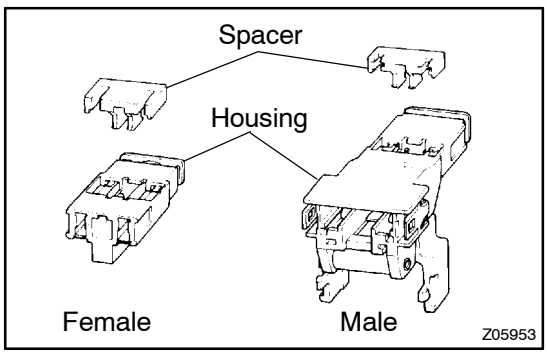
HINT:

SRS connectors are located as shown in the following illustration.



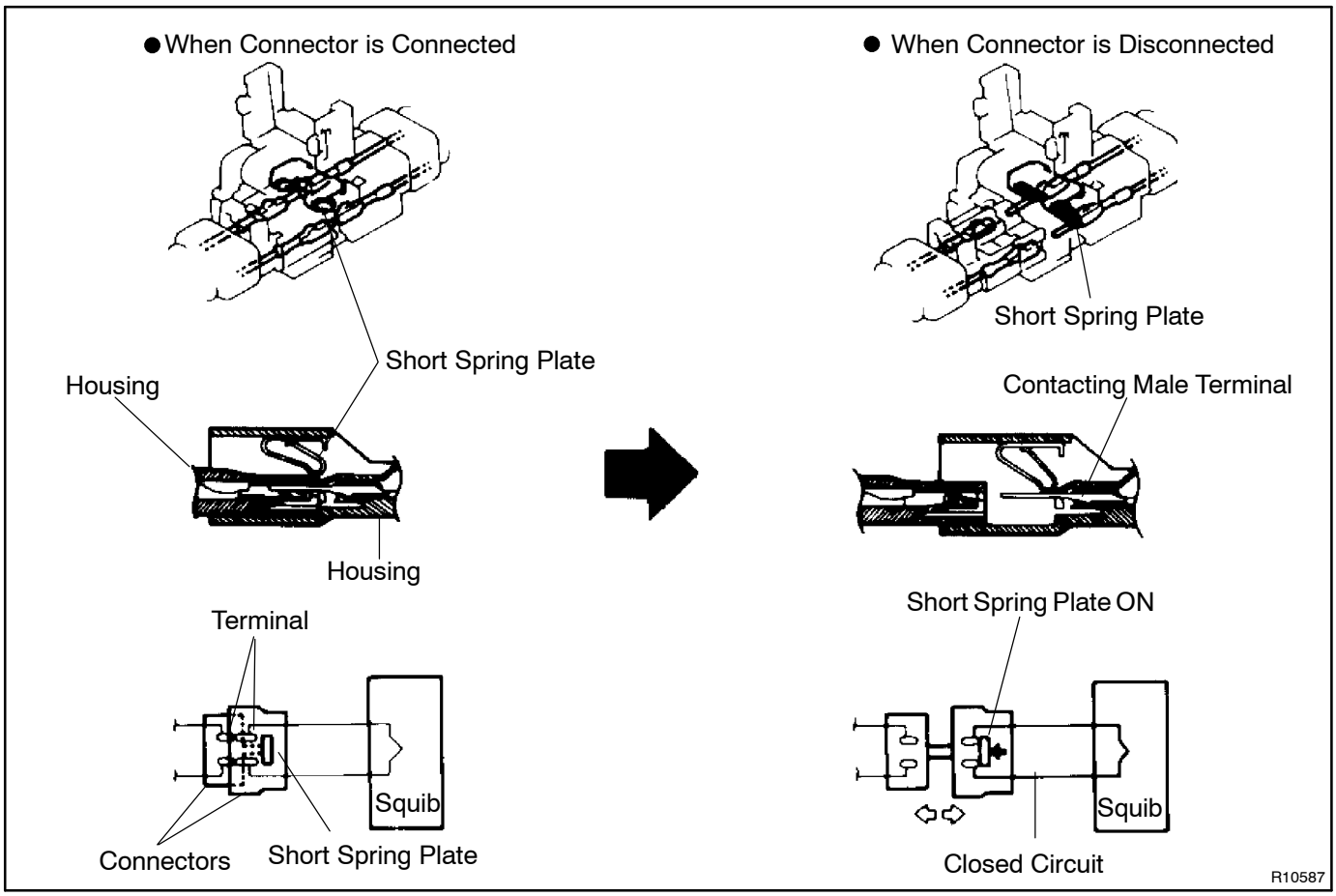
No.	Connector Type	Application
(1)	Terminal Twin-Lock Mechanism	Connectors 6, 7, 8, 9, 10, 13, 14
(2)	Activation Prevention Mechanism	Connectors 4, 9, 10, 12, 13, 14, 16
(3)	Electrical Connection Check Mechanism	Connectors 1, 2
(4)	Half Connection Prevention Mechanism	Connectors 6, 8, 9, 13
(5)	Connector Lock Mechanism	Connectors 11, 15

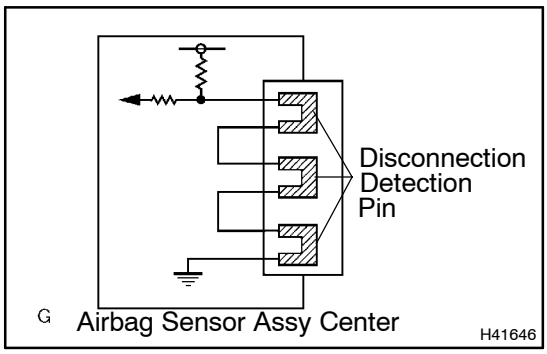
(a) All connectors in the SRS are colored yellow to distinguish them from other connectors. Some connectors have special functions, and are specially designed for the SRS. These connectors use durable gold-plated terminals, and are placed in the locations shown on the previous page to ensure high reliability.



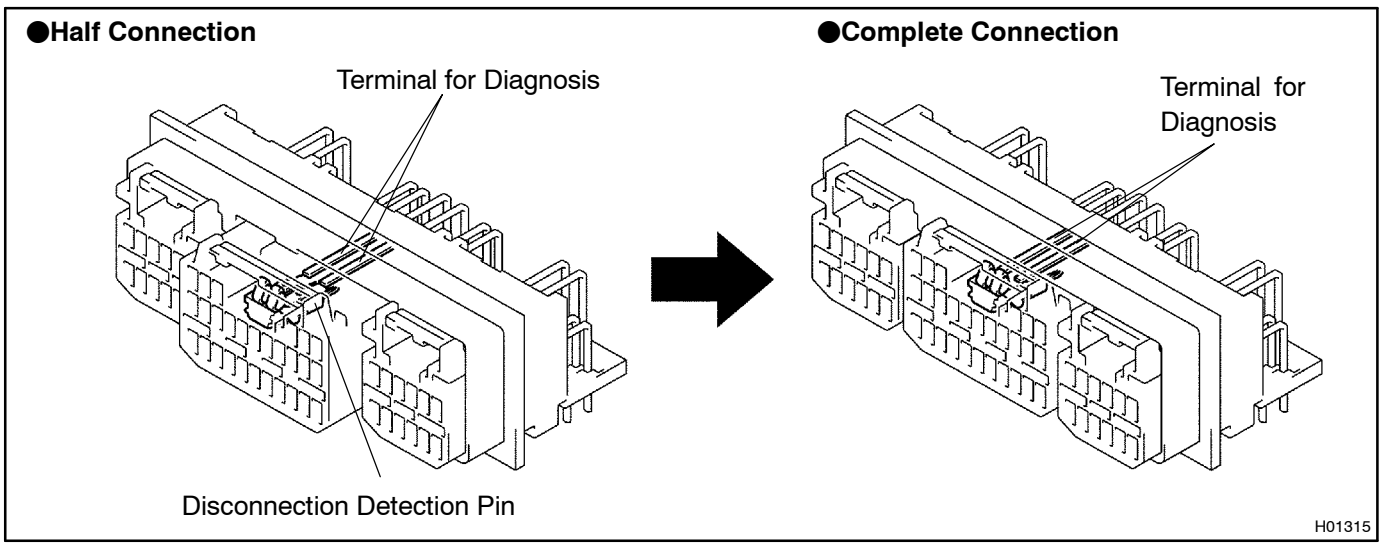
(1) Terminal twin-lock mechanism:
Each connector has a two-piece component consisting of a housing and a spacer. This design enables the terminal to be locked securely by two locking devices (the retainer and the lance) to prevent terminals from coming out.

(2) Activation prevention mechanism:
Each connector contains a short spring plate. When the connector is disconnected, the short spring plate automatically connects the positive (+) terminal and the negative (-) terminal of the squib.

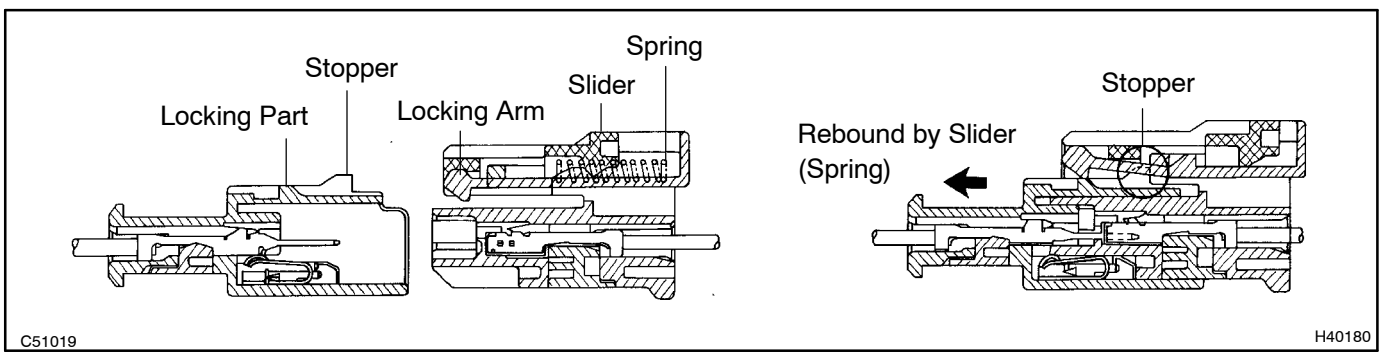




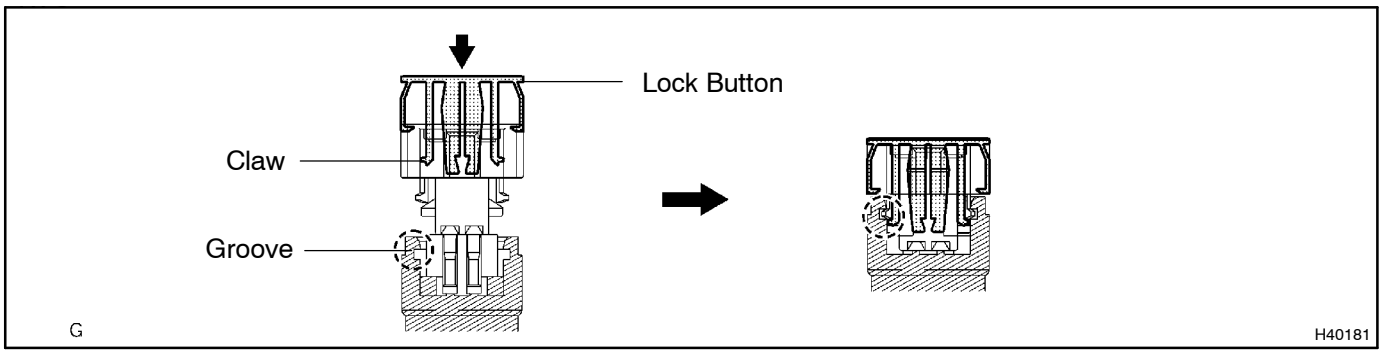
(3) Electrical connection check mechanism:
This mechanism electrically checks that the connectors are connected correctly and completely. The electrical connection check mechanism is designed so that the disconnection detection pin connects with the diagnosis terminals when the connector housing lock is locked.



(4) Half connection prevention mechanism:
If the connector is not completely connected, the connector is disconnected due to the spring operation to the extent that no continuity exists.



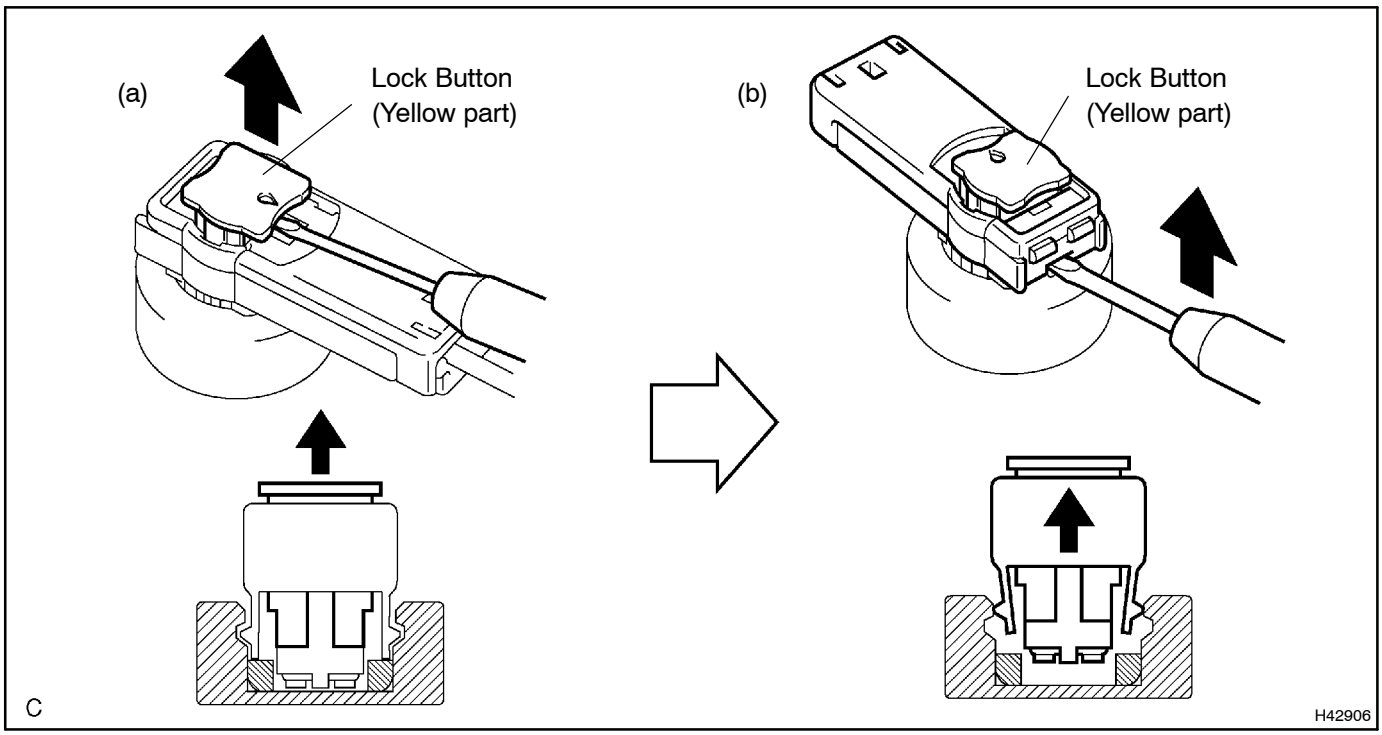
(5) Connector lock mechanism:
Locking the connector lock button connects the connector securely.



3. DISCONNECTION OF CONNECTOR FOR HORN BUTTON ASSY

(a) Release the lock button (yellow part) of the connector using a screwdriver.

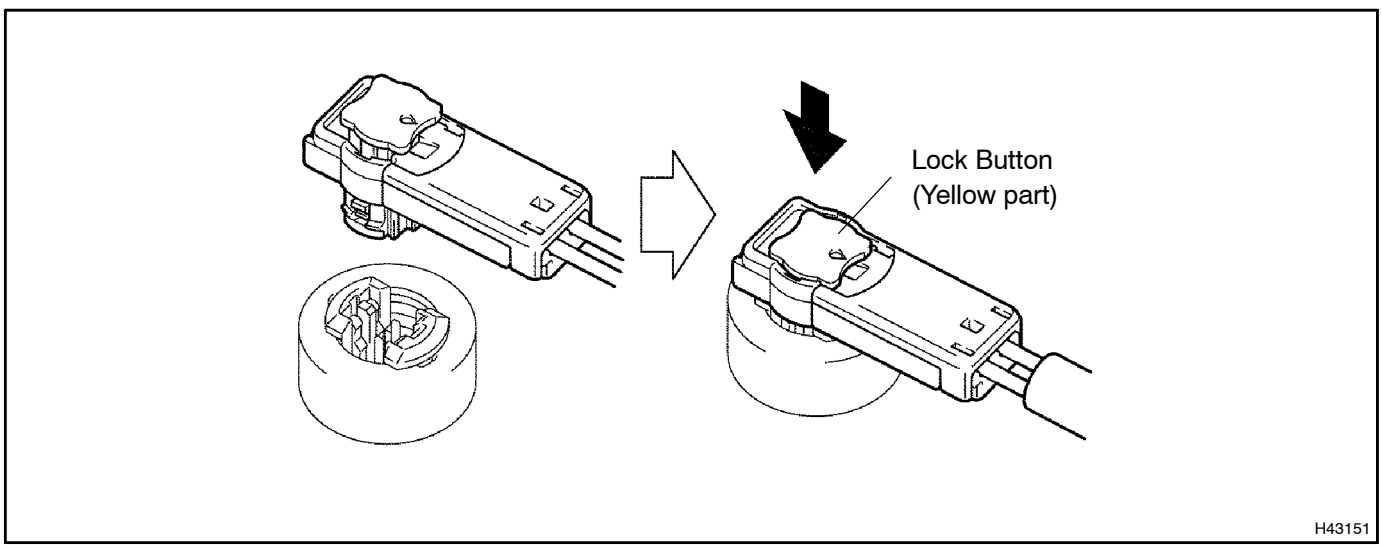
(b) Insert the screwdriver tip between the connector and the base, and then raise the connector.



4. CONNECTION OF CONNECTOR FOR HORN BUTTON ASSY

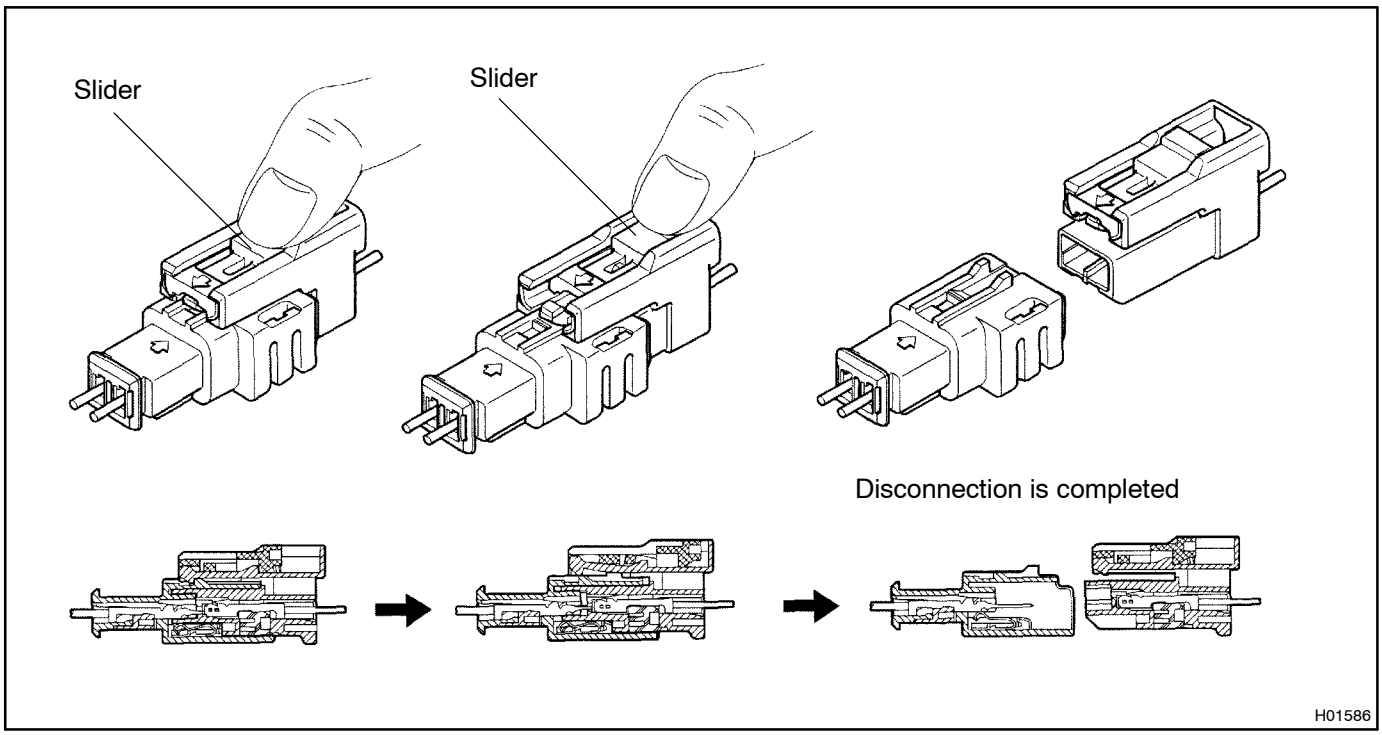
(a) Connect the connector.

(b) Push down securely on the lock button (yellow part) of the connector. (When locking, a click sound can be heard.)



5. DISCONNECTION OF CONNECTOR FOR DOORLESS INSTRUMENT PANEL PASSENGER AIR-BAG ASSY

(a) Place a finger on the slider, slide the slider to release the lock, and then disconnect the connector.

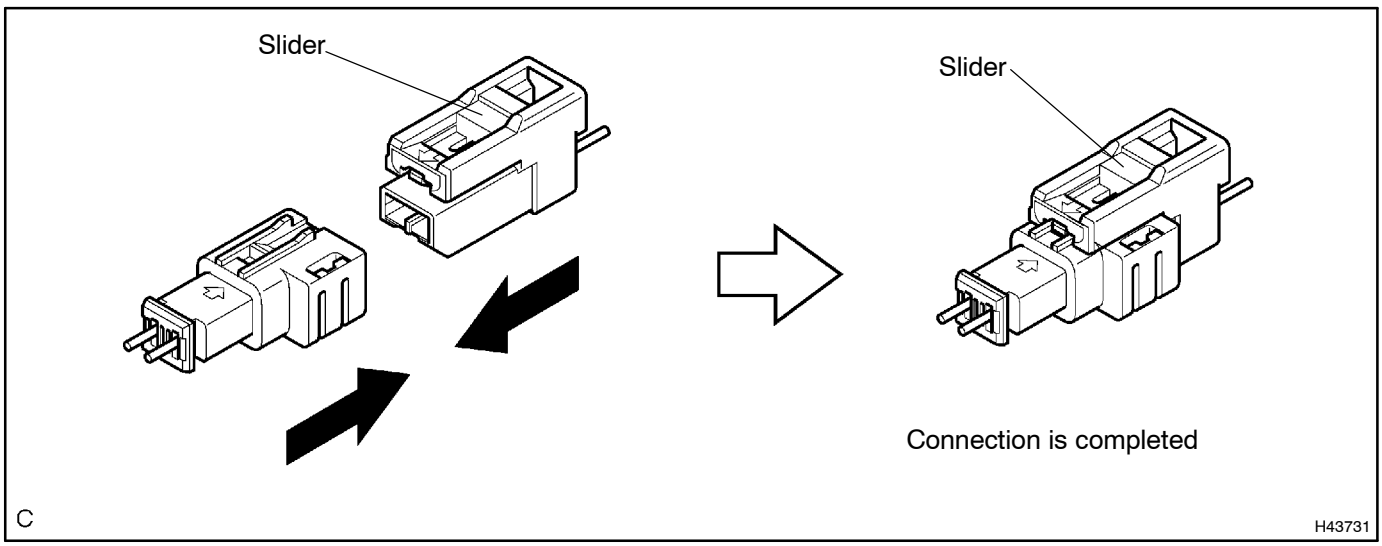


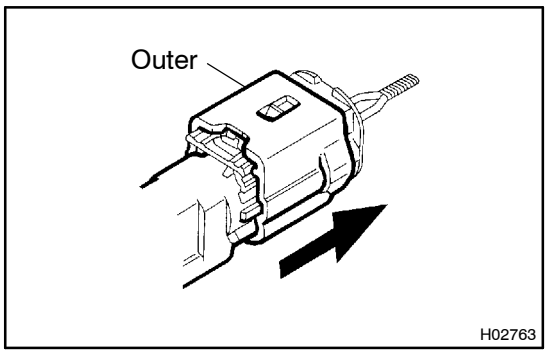
6. CONNECTION OF CONNECTOR FOR DOORLESS INSTRUMENT PANEL PASSENGER AIRBAG ASSY

(a) Connect the connector as shown in the illustration. (When locking, make sure that the slider returns to its original position and a click sound can be heard.)

HINT:

When connecting, the slider will slide. Be sure not to touch the slider while connecting, as it may result in an insecure fit.





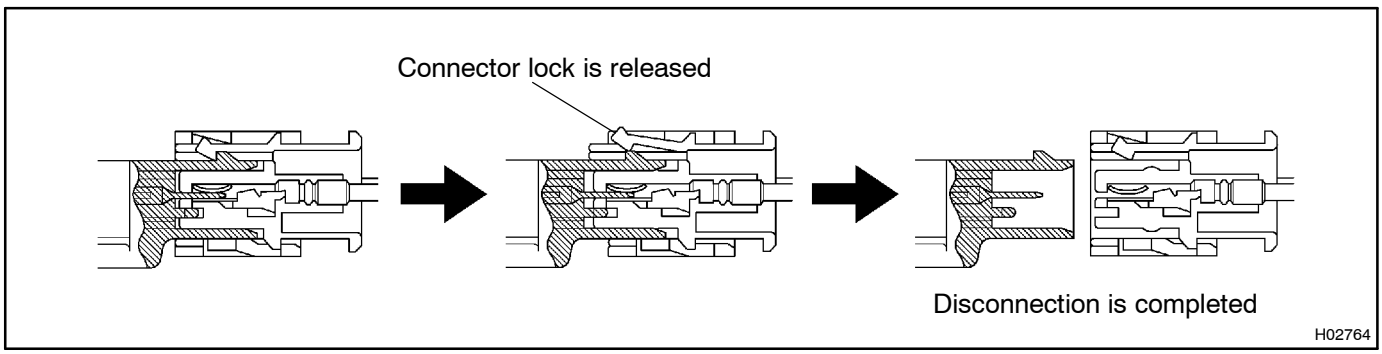
7. DISCONNECTION OF CONNECTOR FOR AIRBAG SENSOR FRONT

(a) While holding both outer flank sides, slide the outer in the direction shown by the arrow.

(b) When the connector lock is released, the connectors are disconnected .

HINT:

Be sure to hold both outer flank sides. Holding the top and bottom sides will make disconnection difficult.

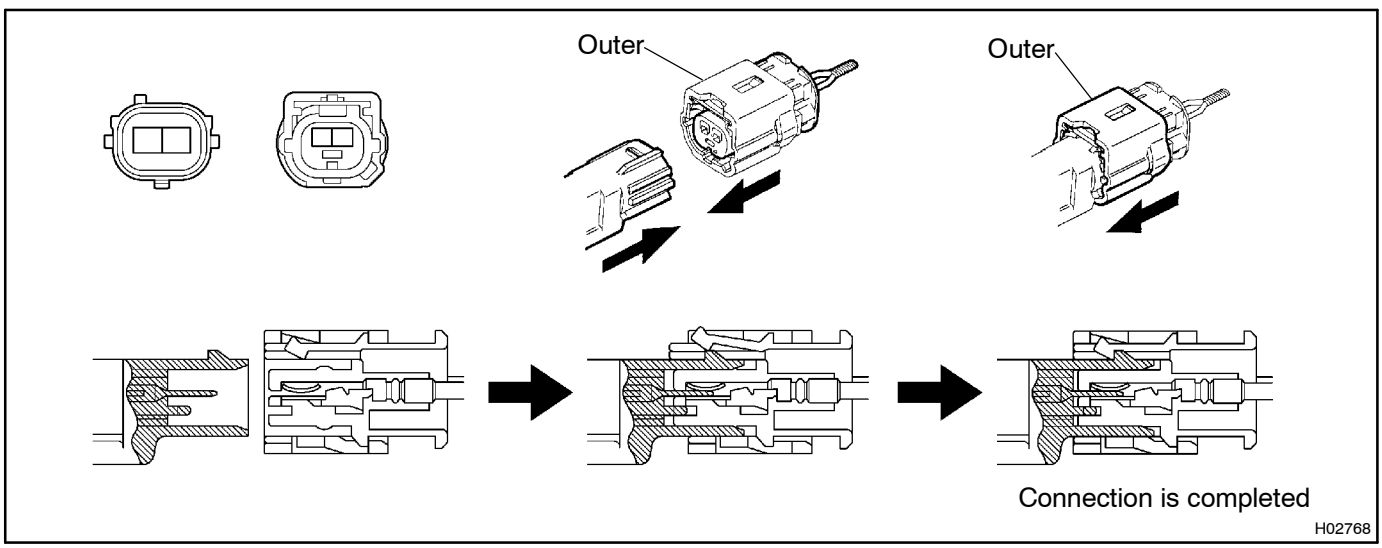


8. CONNECTION OF CONNECTOR FOR AIRBAG SENSOR FRONT

(a) Connect the connector as shown in the illustration. (When locking, make sure that the outer returns to its original position and a click sound can be heard.)

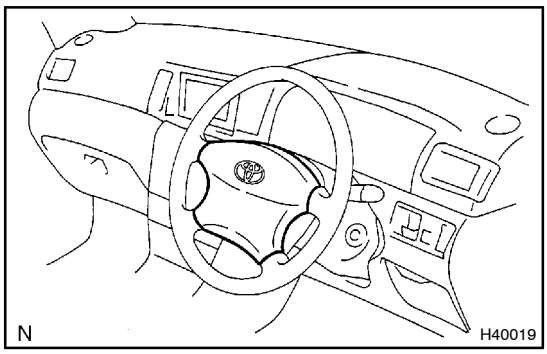
HINT:

When connecting, the outer will slide. Be sure not to hold the outer while connecting, as it may result in an insecure fit.



600WP-01

ON-VEHICLE INSPECTION



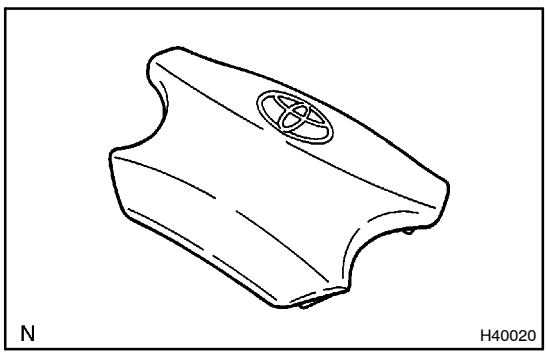
HINT:

There are two types of horn button assy: one is used with 3-spoke steering wheel assy and the other is used with 4-spoke steering wheel assy.

1. HORN BUTTON ASSY (VEHICLE NOT INVOLVED IN COLLISION)

(a) Perform a diagnostic system check (see Pub. No. RM926E, page 05-59).

(b) With the horn button assy installed on the vehicle, perform a visual check. If there are any defects as mentioned below, replace the horn button assy with a new one:
Cuts, minute cracks or marked discoloration on the horn button assy top surface or in the grooved portion.



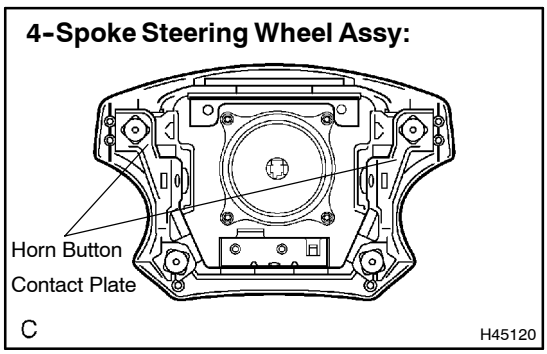
2. HORN BUTTON ASSY (VEHICLE INVOLVED IN COLLISION AND AIRBAG IS NOT DEPLOYED)

(a) Perform a diagnostic system check (see Pub. No. RM926E, page 05-59).

(b) With the horn button assy removed from the vehicle, perform a visual check. If there are any defects as mentioned below, replace the horn button assy or steering wheel assy with a new one:

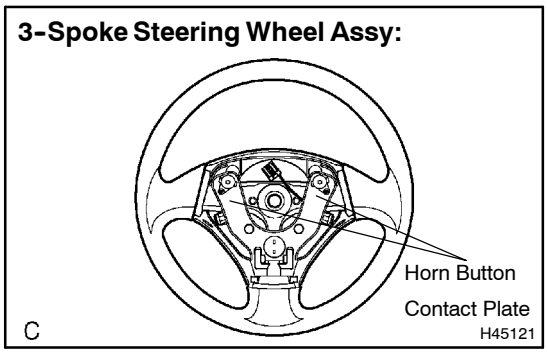
- Cuts, minute cracks or marked discoloration on the horn button assy top surface or in the grooved portion.
- Cracks or other damage to the connector.
- Deformation of the steering wheel assy.

4-Spoke Steering Wheel Assy:



- 4-Spoke Steering Wheel Assy:
  Deformation of the horn button contact plate of the horn button assy.

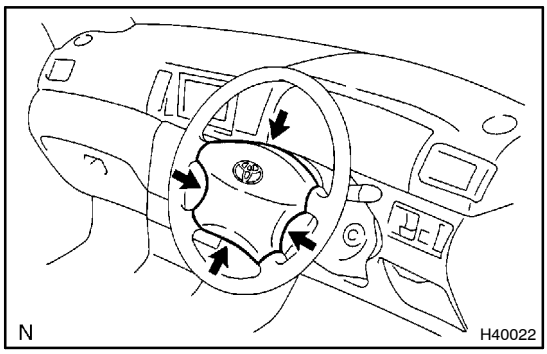
3-Spoke Steering Wheel Assy:



- 3-Spoke Steering Wheel Assy:
  Deformation of the horn button contact plate of the steering wheel assy.

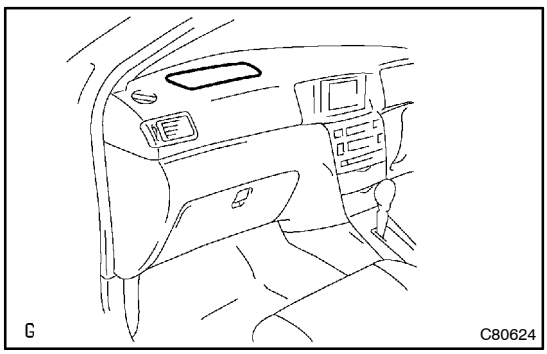
HINT:

If the horn button contact plate of the steering wheel assy is deformed, never repair it. Always replace the steering wheel assy with a new one.



- There should be no interference between the horn button assy and steering wheel assy, and the clearance should be uniform all the way around when the new horn button assy is installed on the steering wheel assy.

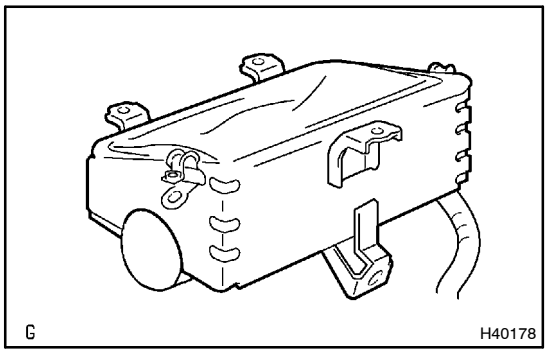
CAUTION:
For removal and installation procedures of the horn button assy, see page 60-14, and be sure to follow the correct procedure.



3. DOORLESS INSTRUMENT PANEL PASSENGER AIRBAG ASSY (VEHICLE NOT INVOLVED IN COLLISION)

(a) Perform a diagnostic system check (see Pub. No. RM926E, page 05-59).

(b) With the doorless instrument panel passenger airbag assy installed on the vehicle, perform a visual check. If there are any defects as mentioned below, replace the instrument panel with a new one:
Cuts, minute cracks or marked discoloration on the instrument panel around the doorless instrument panel passenger airbag assy.

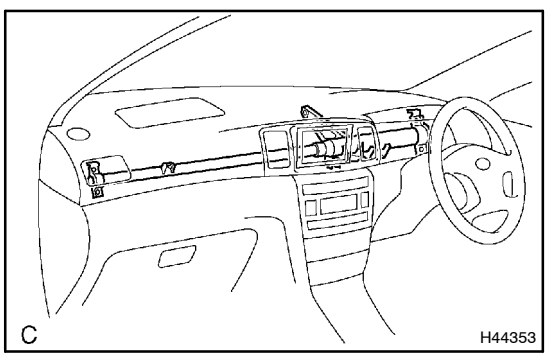


4. DOORLESS INSTRUMENT PANEL PASSENGER AIRBAG ASSY (VEHICLE INVOLVED IN COLLISION AND AIRBAG IS NOT DEPLOYED)

(a) Perform a diagnostic system check (see Pub. No. RM926E, page 05-59).

(b) With the doorless instrument panel passenger airbag assy removed from the vehicle, perform a visual check. If there are any defects as mentioned below, replace the doorless instrument panel passenger airbag assy, instrument panel or instrument panel reinforcement with a new one:

- Cuts, minute cracks or marked discoloration on the doorless instrument panel passenger airbag assy.
- Cracks or other damage to the wire harness or connector.
- Deformation or cracks on the instrument panel or instrument panel reinforcement.



CAUTION:
For removal and installation procedures of the doorless instrument panel passenger airbag assy, see Pub. No. RM821E, page 60-24, and be sure to follow the correct procedure.

5. AIRBAG SENSOR ASSY CENTER (VEHICLE NOT INVOLVED IN COLLISION)

(a) Perform a diagnostic system check (see Pub. No. RM926E, page 05-59).

6. AIRBAG SENSOR ASSY CENTER (VEHICLE INVOLVED IN COLLISION AND AIRBAG IS NOT DEPLOYED)

(a) Perform a diagnostic system check (see Pub. No. RM926E, page 05-59).

7. AIRBAG SENSOR ASSY CENTER (VEHICLE INVOLVED IN COLLISION AND AIRBAG IS DEPLOYED)

(a) Replace the airbag sensor assy center (see page 60-26).

CAUTION:

For removal and installation procedures of the airbag sensor assy center, see page 60-26, and be sure to follow the correct procedure.

HINT:

The airbag sensor assy center should be replaced after any of the airbags has deployed, as it has been subjected to the impact.

8. AIRBAG SENSOR FRONT (VEHICLE NOT INVOLVED IN COLLISION)

(a) Perform a diagnostic system check (see Pub. No. RM926E, page 05-59).

9. AIRBAG SENSOR FRONT (VEHICLE INVOLVED IN COLLISION AND AIRBAG IS NOT DEPLOYED)

(a) Perform a diagnostic system check (see Pub. No. RM926E, page 05-59).

(b) When the front bumper of the vehicle or its periphery is damaged, check if there is any damage to the airbag sensor front. If any of the airbag sensor front have defects as mentioned below, replace it with a new one:

- Cracks, dents or chips in the case.
- Cracks or other damage to the connector.
- Peeling off of the label or damage to the serial number.

CAUTION:

For removal and installation procedures of the airbag sensor front, see page 60-28, and be sure to follow the correct procedure.

10. AIRBAG SENSOR FRONT (VEHICLE INVOLVED IN COLLISION AND AIRBAG IS DEPLOYED)

(a) Replace the airbag sensor front (see page 60-28).

CAUTION:

For removal and installation procedures of the airbag sensor front, see page 60-28, and be sure to follow the correct procedure.

HINT:

The airbag sensor front on the impacted side should be replaced after the horn button assy or doorless instrument panel passenger airbag assy has deployed.

11. WIRE HARNESS AND CONNECTOR (VEHICLE NOT INVOLVED IN COLLISION)

(a) Perform a diagnostic system check (see Pub. No. RM926E, page 05-59).

12. WIRE HARNESS AND CONNECTOR (VEHICLE INVOLVED IN COLLISION)

(a) Perform a diagnostic system check (see Pub. No. RM926E, page 05-59).

(b) Check for breaks in all wires of the SRS wire harness and exposed conductors.

(c) Check to see if the SRS wire harness connectors are cracked or chipped.

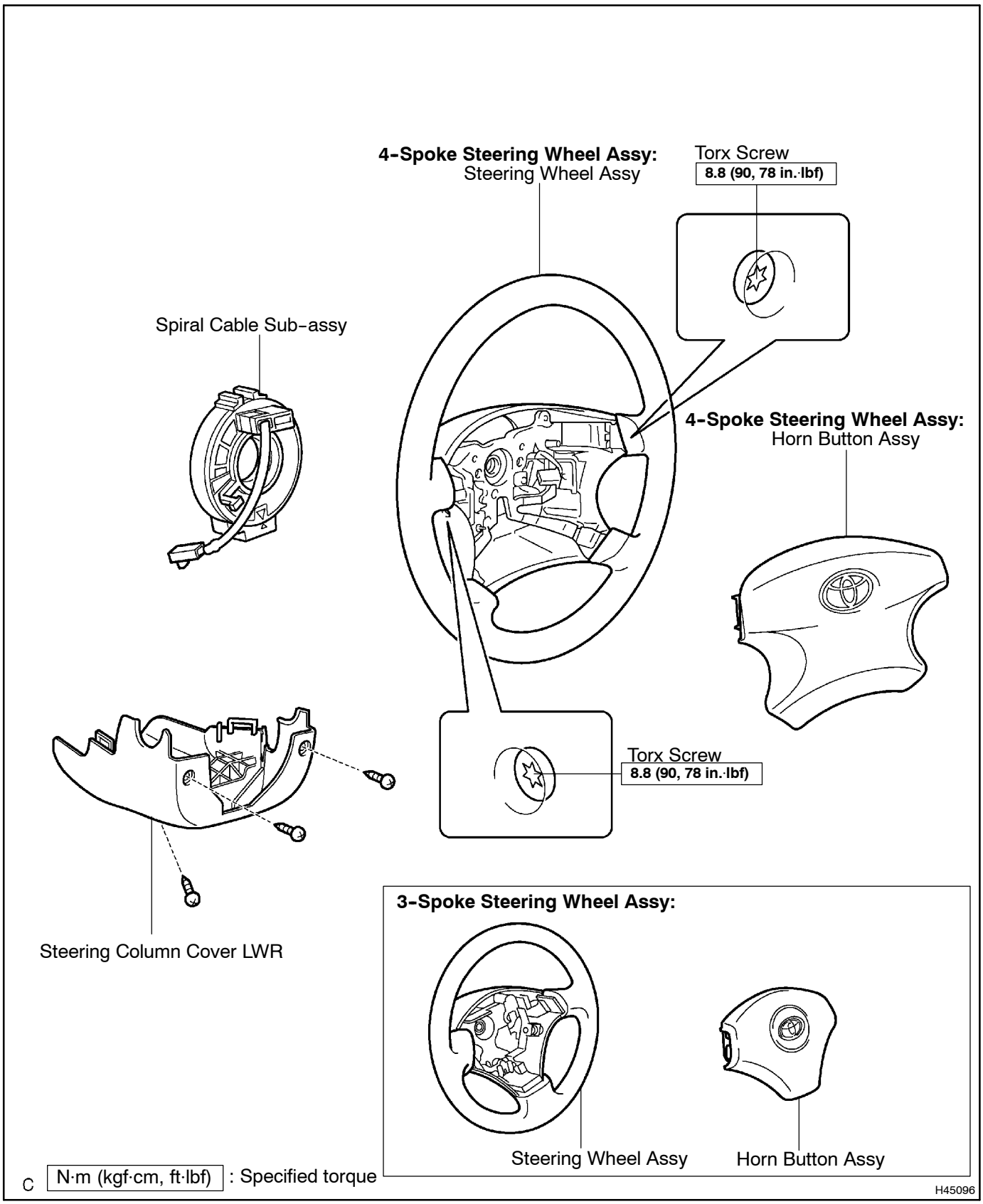
HINT:

The SRS wire harness is integrated with the engine room main wire and instrument panel wire.

HORN BUTTON ASSY

COMPONENTS

600L2-11



600WQ-01

REPLACEMENT

HINT:

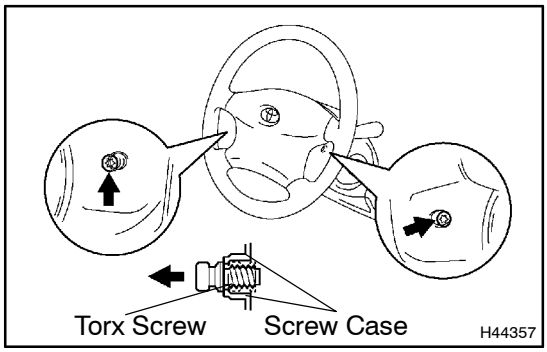
There are two types of horn button assy: one is used with 3-spoke steering wheel assy and the other is used with 4-spoke steering wheel assy.

1. PRECAUTION (SEE PAGE 60-1)

2. DISCONNECT BATTERY NEGATIVE TERMINAL

CAUTION:

After removing the terminal, wait for at least 90 seconds before starting the operation.



3. REMOVE HORN BUTTON ASSY

(a) Using a torx socket wrench (T30), loosen the 2 torx screws until the groove along the screw circumference catches on the screw case.

4-Spoke Steering Wheel Assy:



(b) 4-Spoke Steering Wheel Assy:
Remove the horn buntton assy.

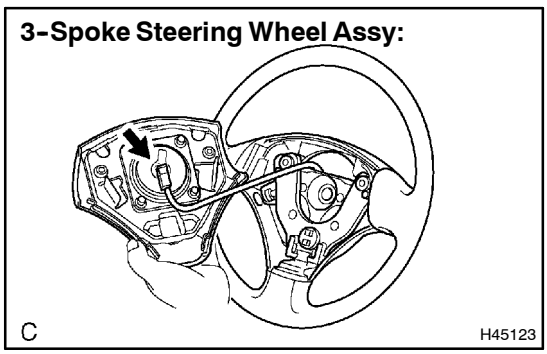
(1) Pull out the horn button assy from the steering wheel assy and support the horn button assy with one hand as shown in the illustration.

NOTICE:

When removing the horn button assy, do not pull the airbag wire harness.

(2) Disconnect the horn connector.

3-Spoke Steering Wheel Assy:



(c) 3-Spoke Steering Wheel Assy:
Remove the horn buntton assy.

(1) Pull out the horn button assy from the steering wheel assy and support the horn button assy with one hand as shown in the illustration.

NOTICE:

When removing the horn button assy, do not pull the airbag wire harness.

(d) Disconnect the connector from the horn button assy.

NOTICE:

When handling the airbag connector, take care not to damage the airbag wire harness.

4. INSTALL HORN BUTTON ASSY

4-Spoke Steering Wheel Assy:

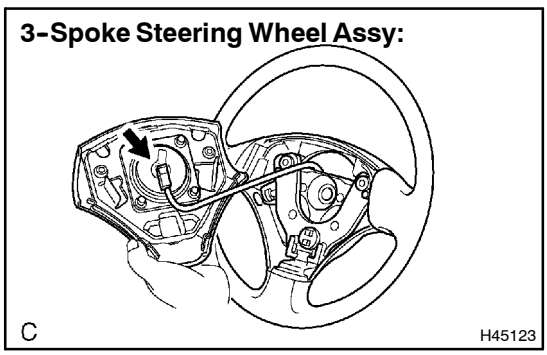


(a) 4-Spoke Steering Wheel Assy:
Install the horn button assy.
(1) Support the horn button assy with one hand as shown in the illustration.
(2) Connect the connector to the horn button assy.

NOTICE:
When handling the airbag connector, take care not to damage the airbag wire harness.

(3) Connect the horn connector.

3-Spoke Steering Wheel Assy:

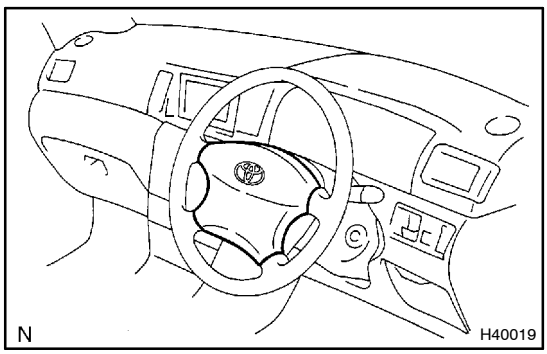


(b) 3-Spoke Steering Wheel Assy:
Install the horn button assy.
(1) Support the horn button assy with one hand as shown in the illustration.
(2) Connect the connector to the horn button assy.

NOTICE:
When handling the airbag connector, take care not to damage the airbag wire harness.

(c) Confirm that the circumference groove of the torx screw fits in the screw case, and place the horn button assy onto the steering wheel assy.
(d) Using a torx socket wrench (T30), tighten the 2 torx screws.
Torque: 8.8 N·m (90 kgf·cm, 78 in.·lbf)

5. CONNECT BATTERY NEGATIVE TERMINAL



6. INSPECT HORN BUTTON ASSY

(a) With the horn button assy installed on the vehicle, perform a visual check. If there are any defects as mentioned below, replace the horn button assy with a new one:
Cuts, minute cracks or marked discoloration on the horn button assy top surface or in the grooved portion.
(b) Make sure that the horn sounds.

HINT:
If the horn does not sound, inspect the horn system (see Pub. No. RM821E, page 69-2).

7. INSPECT SRS WARNING LIGHT (SEE PUB. NO. RM926E, PAGE 05-59)

600US-02

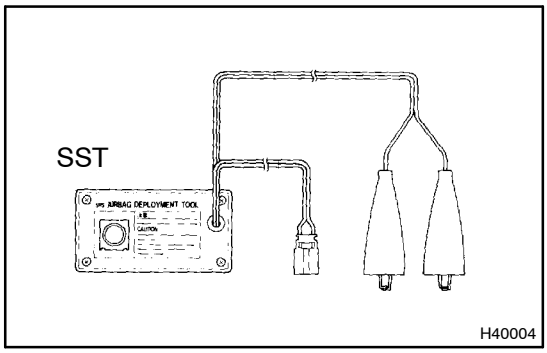
DISPOSAL

HINT:

- Use the same procedures for the 4-spoke steering wheel assy and 3-spoke steering wheel assy.
- The procedures listed below are for the 4-spoke steering wheel assy.
- When scrapping a vehicle equipped with the SRS or disposing of the horn button assy, be sure to deploy the airbag first in accordance with the procedure described below. If any abnormality occurs with the airbag deployment, contact the SERVICE DEPT. of the DISTRIBUTOR.

CAUTION:

- **Never dispose of a horn button assy that has an undeployed airbag.**
- **The airbag produces an exploding sound when it is deployed, so perform the operation outdoors and where it will not create a nuisance to nearby residents.**

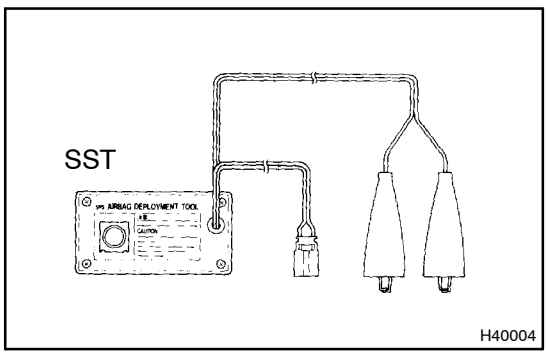


- **When deploying the airbag, always use the specified SST (SRS Airbag Deployment Tool). Perform the operation in a place away from electrical noise.**
- **When deploying the airbag, perform the operation at least 10 m (33 ft) away from the horn button assy.**
- **The horn button assy becomes extremely hot when the airbag is deployed, so do not touch it for at least 30 minutes after deployment.**
- **Use gloves and safety glasses when handling a horn button assy with a deployed airbag.**
- **Do not apply water, etc. to a horn button assy with a deployed airbag.**
- **Always wash your hands with water after completing the operation.**

1. DISPOSE OF HORN BUTTON ASSY (WHEN INSTALLED IN VEHICLE)

HINT:

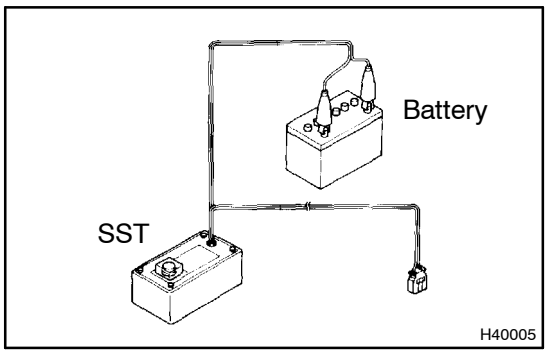
Prepare a battery as the power source to deploy the airbag.



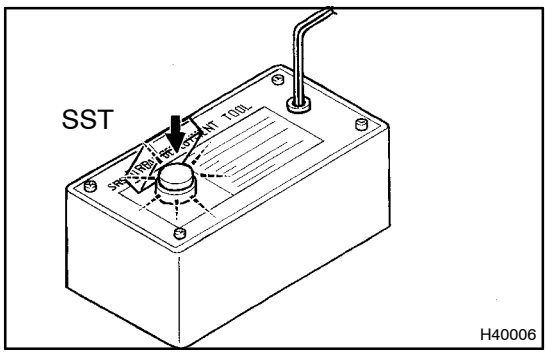
(a) Check the function of the SST.

CAUTION:

When deploying the airbag, always use the specified SST: SRS Airbag Deployment Tool.



(1) Connect the SST to the battery.
Connect the red clip of the SST to the battery positive (+) terminal and the black clip of the SST to the battery negative (-) terminal.



(2) Check the function of the SST.
Press the SST activation switch, and check that the LED of the SST activation switch comes on.

CAUTION:

- **Do not connect the SST connector (yellow colored one) to the airbag.**
- **If the LED comes on when the activation switch is not being pressed, SST malfunction is possible, so replace the SST with a new one.**

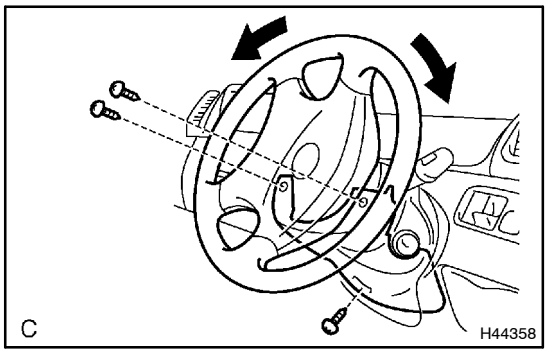
(3) Disconnect the SST from the battery.

(b) Precaution (see page 60-1).

(c) Disconnect the battery negative terminal.

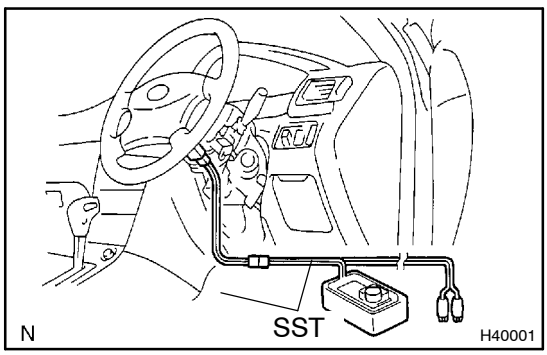
CAUTION:

After removing the terminal, wait for at least 90 seconds before starting the operation.



(d) Remove the steering column cover LWR.

(1) While turning the steering wheel assy to the right and left, remove the 3 screws and steering column cover LWR.



(e) Install the SST.

CAUTION:

Check that there is no looseness in the steering wheel assy and horn button assy.

(1) Disconnect the airbag connector (yellow colored one) from the spiral cable sub-assy.

NOTICE:

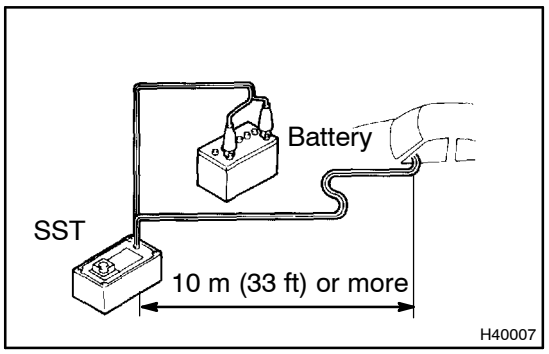
When handling the airbag connector, take care not to damage the airbag wire harness.

(2) Connect the SST connector to the airbag connector of the spiral cable sub-assy.

SST 09082-00700, 09082-00760

NOTICE:

To avoid damaging the SST connector and wire harness, do not lock the secondary lock of the twin lock.



(3) Move the SST at least 10 m (33 ft) away from the vehicle front side window.

(4) Maintaining enough clearance for the SST wire harness in the front side window, close all doors and windows of the vehicle.

NOTICE:

Take care not to damage the SST wire harness.

(5) Connect the red clip of the SST to the battery positive (+) terminal and the black clip of the SST to the negative (-) terminal.

(f) Deploy the airbag.

(1) Check that no one is inside the vehicle or within a 10 m (33 ft) radius of the vehicle.

(2) Press the SST activation switch and deploy the airbag.

CAUTION:

- **When deploying the airbag, make sure that no one is near the vehicle.**
- **The horn button assy becomes extremely hot when the airbag is deployed, so do not touch it for at least 30 minutes after deployment.**
- **Use gloves and safety glasses when handling a horn button assy with a deployed airbag.**
- **Do not apply water, etc. to a horn button assy with a deployed airbag.**
- **Always wash your hands with water after completing the operation.**

HINT:

The airbag is deployed as the LED of the SST activation switch comes on.

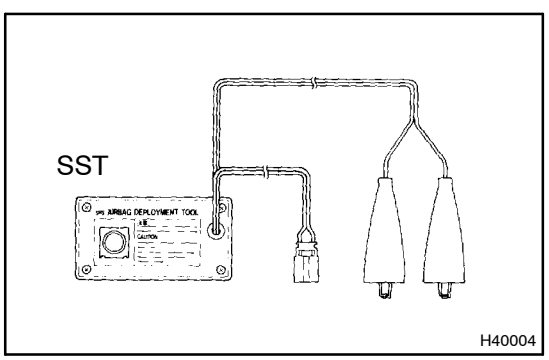
2. DISPOSE OF HORN BUTTON ASSY (WHEN NOT INSTALLED IN VEHICLE)

NOTICE:

- **When disposing of the horn button assy, never use the customer's vehicle to deploy the airbag.**
- **Be sure to follow the procedure detailed below when deploying the airbag.**

HINT:

Prepare a battery as the power source to deploy the airbag.

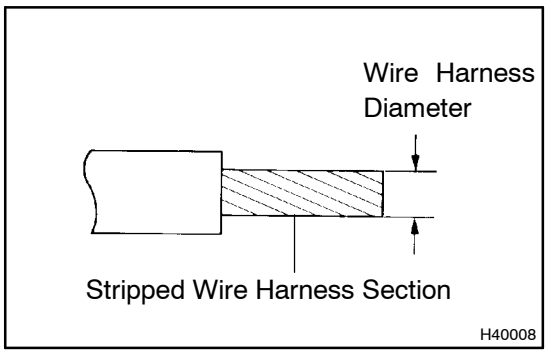


(a) Check the function of the SST (see step 1-(a)).

(b) Remove the horn button assy (see page 60-14).

CAUTION:

- **When removing the horn button assy, work must be started 90 seconds after the ignition switch is turned to the "LOCK" position and the negative (-) terminal cable is disconnected from the battery.**
- **When storing the horn button assy, keep the airbag deployment side facing upward.**



(c) Using a service-purpose wire harness for the vehicle, tie down the horn button assy to the disc wheel.

Wire harness: Stripped wire harness section 1.25 mm^2 or more (0.0019 $in.^2$ or more)

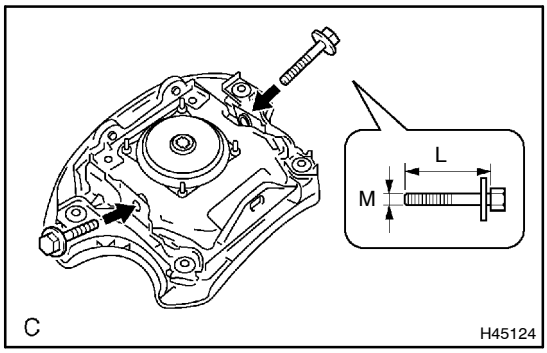
CAUTION:

If the wire harness is too thin or an alternative object is used to tie down the horn button assy, it may be snapped by the shock when the airbag is deployed. Always use a wire harness for vehicle use with an area of at least 1.25 mm^2 (0.0019 $in.^2$).

HINT:

To calculate the area of the stripped wire harness section:

Area = 3.14 x (Diameter)^2 divided by 4



(1) Install the 2 bolts with washers into the 2 bolt holes on the horn button assy.

Bolt:

L: 35.0 mm (1.378 in.)

M: 6.0 mm (0.236 in.)

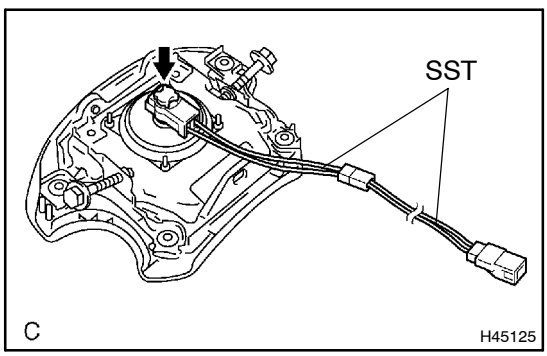
Pitch: 1.0 mm (0.039 in.)

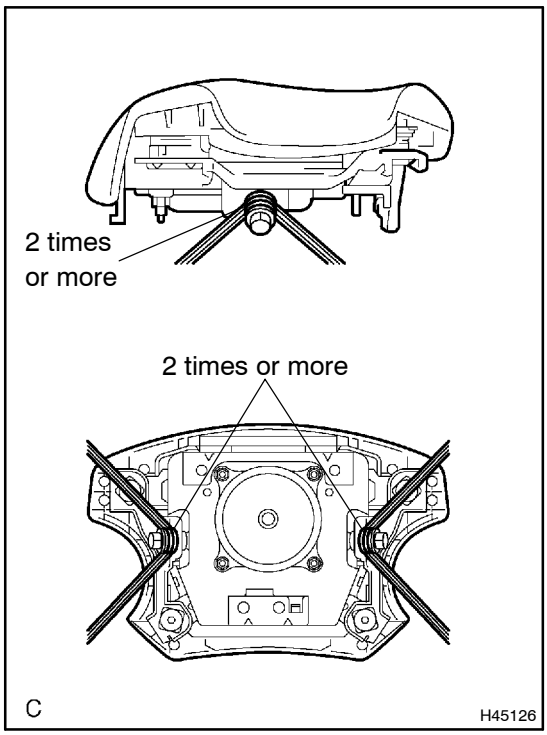
NOTICE:

- **Tighten the bolts by hand until they become difficult to turn.**
- **Do not tighten the bolts excessively.**

(2) After connecting the SST below to each other, connect them to the horn button assy.

SST 09082-00802 (09082-10801, 09082-40800)

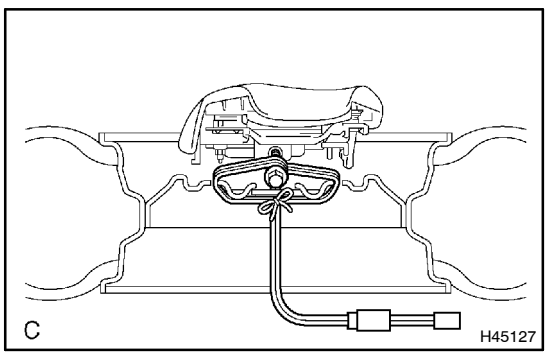




(3) Using 3 wire harnesses, wind wire harness at least 2 times each around the bolts installed on the left and right sides of the horn button assy.

CAUTION:

- **Tightly wind the wire harness around the bolts so that there is no slack.**
- **Make sure that the wire harness is tight. If there is slack in wire harness, the horn button assy may become loose due to the shock when the airbag is deployed.**



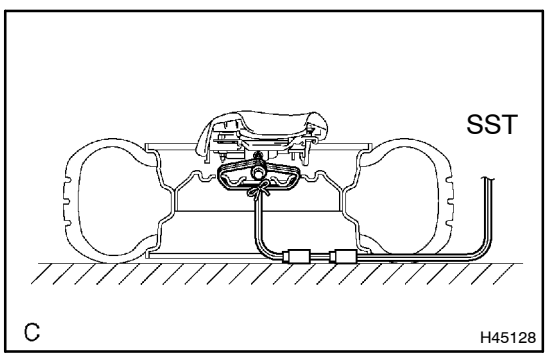
(4) Face the airbag deployment side of the horn button assy upward. Separately tie the left and right sides of the horn button assy to the disc wheel through the hub nut holes. Position the SST connector so that it hangs downward through the hub hole in the disc wheel.

CAUTION:

- **Make sure that the wire harness is tight. If there is slack in wire harness, the horn button assy may become loose due to the shock when the airbag is deployed.**
- **Always tie down the horn button assy with the airbag deployment side facing upward.**

NOTICE:

The disc wheel will be marked by the airbag deployment, so use an extra disc wheel.



(d) Install the SST.

CAUTION:

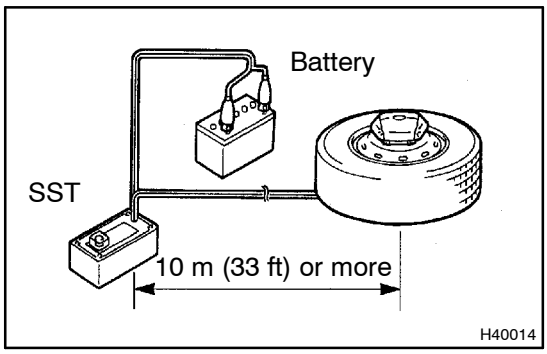
Place the disc wheel on level ground.

(1) Connect the SST connector.

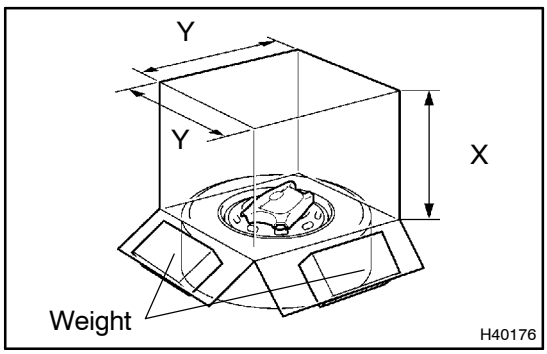
SST 09082-00700

NOTICE:

To avoid damaging the SST connector and wire harness, do not lock the secondary lock of the twin lock. Also, secure some slack for the SST wire harness inside the disc wheel.



(2) Move the SST at least 10 m (33 ft) away from the horn button assy tied down to the disc wheel.



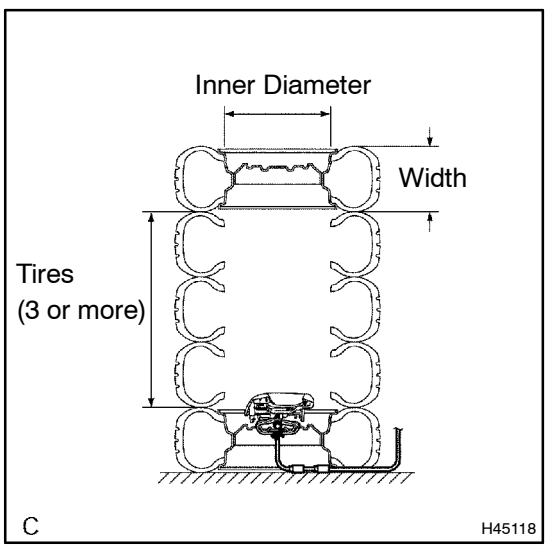
(e) Cover the horn button assy with a cardboard box or tires.

(1) Covering method using a cardboard box:
Cover the horn button assy with the cardboard box and place the weights on the cardboard box in 4 places with at least 190 N (19 kg, 43 lb).

Cardboard box size: Must exceed the following dimensions
X = 460 mm (18.11 in.)
Y = 650 mm (25.59 in.)

NOTICE:

- **When the dimension Y of the cardboard box exceeds the diameter of the disc wheel with tire which the horn button assy is tied to, X should be the following size.**
  X = 460 mm (18.11 in.) + width of tire
- **If a cardboard box which is smaller than the specified size is used, the cardboard box will be broken by the shock from the airbag deployment.**



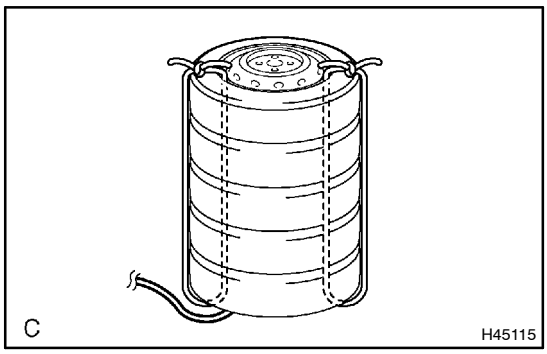
(2) Covering method using tires:
Place at least 3 tires without disc wheels on the tire with disc wheel which the horn button assy is tied to.
Place the tire with disc wheel on them.

Tire size: Must exceed the following dimensions
Width: 185 mm (7.28 in.)
Inner diameter: 360 mm (14.17 in.)

CAUTION:
Do not use tires with disc wheels except on the top and bottom.

NOTICE:

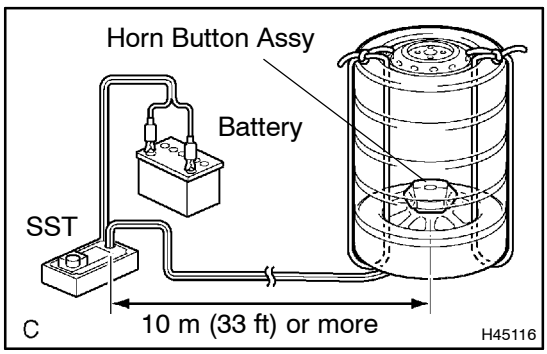
- **The tires may be marked by the airbag deployment, so use an extra tire.**
- **Do not place the SST connector under the tire because it could be damaged.**



(3) Tie the tires together with 2 wire harnesses.

CAUTION:

Make sure that the wire harness is tight. Looseness in the wire harness results in the tires coming free due to the shock when the airbag is deployed.



(f) Deploy the airbag.

(1) Connect the red clip of the SST to the battery positive (+) terminal and the black clip of the SST to the battery negative (-) terminal.

(2) Check that no one is within a 10 m (33 ft) radius of the disc wheel which the horn button assy is tied to.

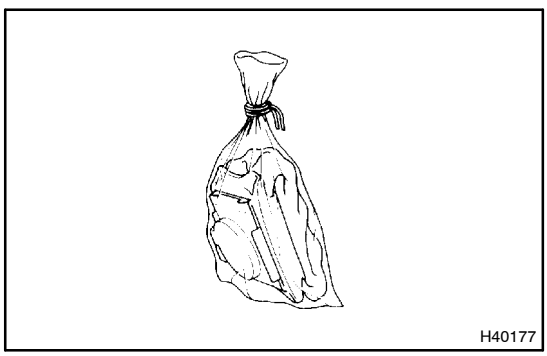
(3) Press the SST activation switch and deploy the airbag.

CAUTION:

When deploying the airbag, make sure that no one is near the tire.

HINT:

The airbag is deployed as the LED of the SST activation switch comes on.



(g) Dispose of the horn button assy.

CAUTION:

- **The horn button assy becomes extremely hot when the airbag is deployed, so do not touch it for at least 30 minutes after deployment.**
- **Use gloves and safety glasses when handling a horn button assy with a deployed airbag.**
- **Do not apply water, etc. to a horn button assy with a deployed airbag.**
- **Always wash your hands with water after completing the operation.**

(1) Remove the horn button assy from the disc wheel.

(2) Place the horn button assy in a plastic bag, tie it tightly and dispose of it as other general part disposal.

SPIRAL CABLE SUB-ASSY REPLACEMENT

600WR-01

HINT:

COMPONENTS: See page 60-13.

1. PRECAUTION (SEE PAGE 60-1)

2. DISCONNECT BATTERY NEGATIVE TERMINAL

CAUTION:

After removing the terminal, wait for at least 90 seconds before starting the operation.

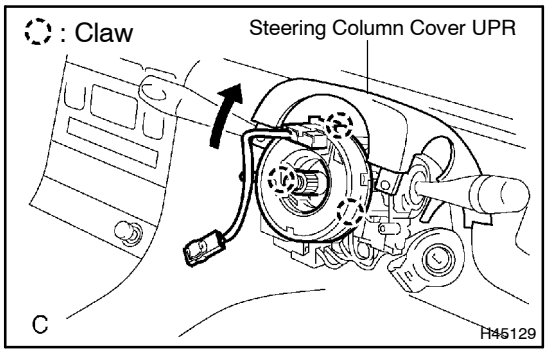
3. PLACE FRONT WHEELS FACING STRAIGHT AHEAD

4. REMOVE HORN BUTTON ASSY (SEE PAGE 60-14)

5. REMOVE STEERING WHEEL ASSY (SEE PUB. NO. RM821E, PAGE 50-5)

SST 09950-50013 (09951-05010, 09952-05010, 09953-05020, 09954-05021)

6. REMOVE STEERING COLUMN COVER LWR (SEE PUB. NO. RM821E, PAGE 50-5)



7. REMOVE SPIRAL CABLE SUB-ASSY

(a) Raise the steering column cover UPR.

(b) Disconnect the connectors from the spiral cable sub-assy.

NOTICE:

When handling the airbag connector, take care not to damage the airbag wire harness.

(c) Disengage the 3 claws and remove the spiral cable sub-assy.

8. INSPECT SPIRAL CABLE SUB-ASSY

(a) If any of the following conditions occur, replace the spiral cable sub-assy with a new one.

Condition:

Scratches or cracks on the connector

Cracks, dents or chips in the spiral cable sub-assy

9. INSTALL SPIRAL CABLE SUB-ASSY

(a) Check that the front wheels are facing straight ahead.

(b) Set the turn signal switch to the neutral position.

NOTICE:

Make sure that the turn signal switch is in the neutral position or the pin of the turn signal switch may be snapped.

(c) Install the spiral cable sub-assy.

NOTICE:

When replacing the spiral cable sub-assy with a new one, remove the lock pin before installing the steering wheel assy.

(d) Connect the connectors to the spiral cable sub-assy.

NOTICE:

When handling the airbag connector, take care not to damage the airbag wire harness.

10. INSTALL STEERING COLUMN COVER LWR (SEE PUB. NO. RM821E, PAGE 50-5)

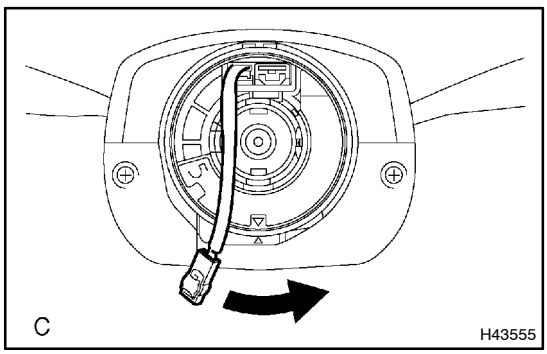
11. ADJUST SPIRAL CABLE SUB-ASSY

(a) Check that the ignition switch is off.

(b) Check that the battery negative (-) terminal is disconnected.

CAUTION:

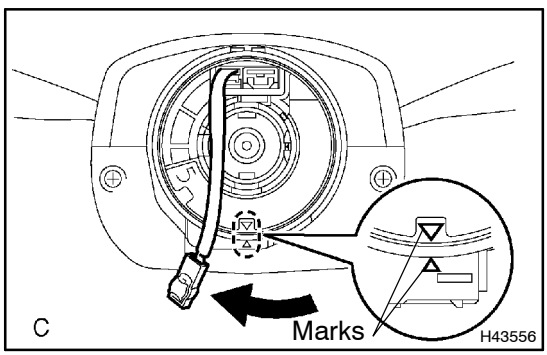
After removing the terminal, wait for at least 90 seconds before starting the operation.



(c) Rotate the spiral cable sub-assy counterclockwise slowly by hand until it feels firm.

NOTICE:

Do not turn the spiral cable sub-assy by the airbag wire harness.



(d) Rotate the spiral cable sub-assy clockwise approximately 2.5 turns to align the marks.

NOTICE:

Do not turn the spiral cable sub-assy by the airbag wire harness.

HINT:

The spiral cable sub-assy will rotate approximately 2.5 turns to both the left and right from the center.

12. INSTALL STEERING WHEEL ASSY (SEE PUB. NO. RM821E, PAGE 50-5)

13. INSPECT STEERING WHEEL CENTER POINT

14. INSTALL HORN BUTTON ASSY (SEE PAGE 60-14)

15. CONNECT BATTERY NEGATIVE TERMINAL

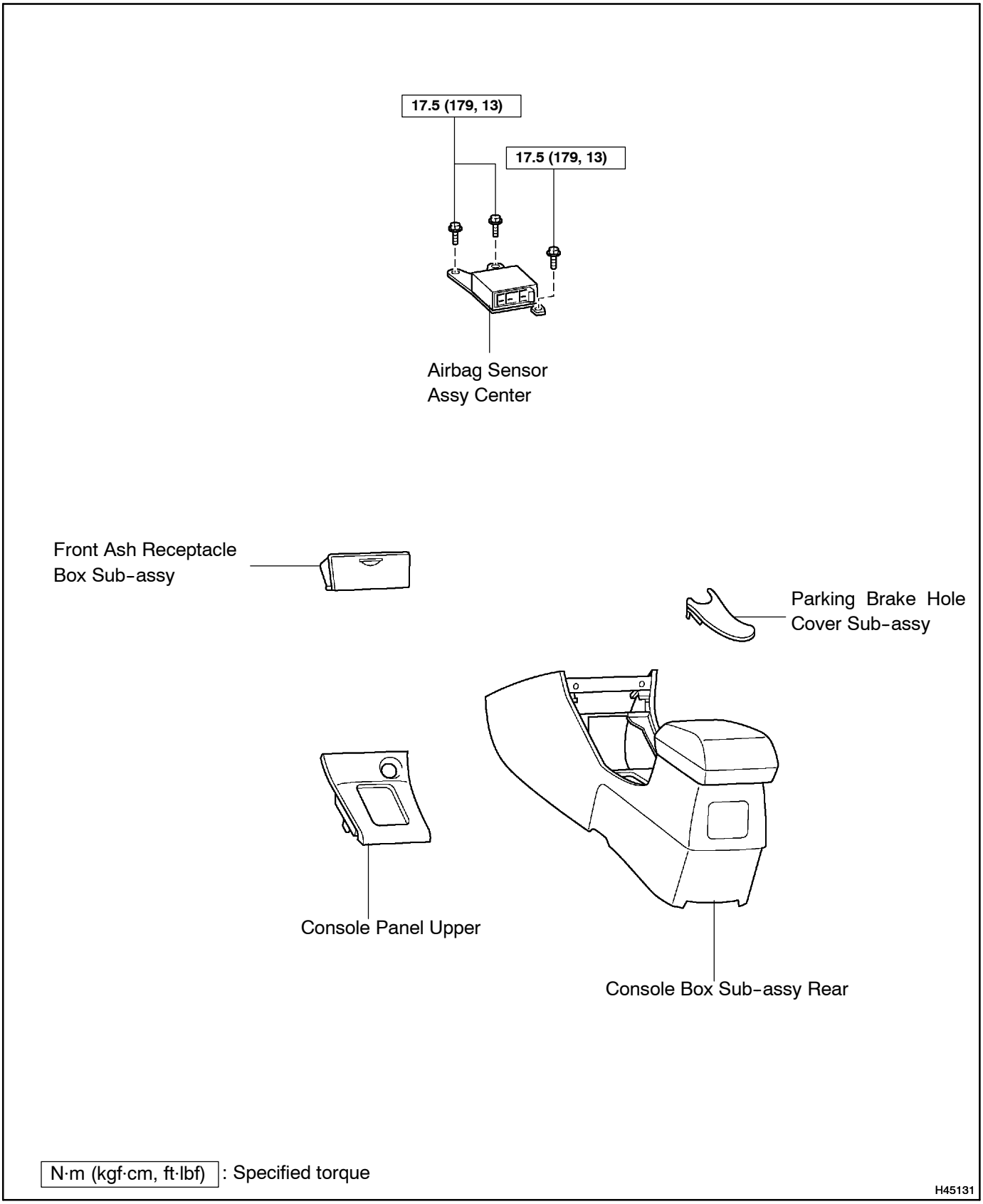
16. INSPECT HORN BUTTON ASSY (SEE PAGE 60-14)

17. INSPECT SRS WARNING LIGHT (SEE PUB. NO. RM926E, PAGE 05-59)

AIRBAG SENSOR ASSY CENTER

COMPONENTS

600WS-01



N·m (kgf·cm, ft·lbf) : Specified torque

H45131

600UT-02

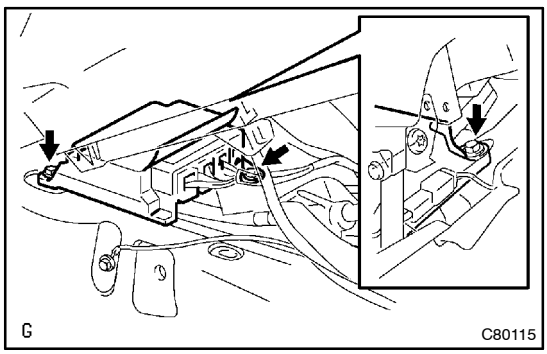
REPLACEMENT

1. **PRECAUTION (SEE PAGE 60-1)**
2. **DISCONNECT BATTERY NEGATIVE TERMINAL**

CAUTION:

After removing the terminal, wait for at least 90 seconds before starting the operation.

3. **REMOVE FRONT ASH RECEPTACLE BOX SUB-ASSY (SEE PUB. NO. RM821E, PAGE 71-11)**
4. **REMOVE CONSOLE PANEL UPPER (SEE PUB. NO. RM821E, PAGE 71-11)**
5. **REMOVE PARKING BRAKE HOLE COVER SUB-ASSY (SEE PUB. NO. RM821E, PAGE 71-11)**
6. **REMOVE CONSOLE BOX SUB-ASSY REAR (SEE PUB. NO. RM821E, PAGE 71-11)**



7. **REMOVE AIRBAG SENSOR ASSY CENTER**

(a) Disconnect the 3 connectors from the airbag sensor assy center.

(b) Remove the 3 bolts and the airbag sensor assy center.

8. **INSTALL AIRBAG SENSOR ASSY CENTER**

(a) Check that the ignition switch is off.

(b) Check that the battery negative (-) terminal is disconnected.

CAUTION:

After removing the terminal, wait for at least 90 seconds before starting the operation.

(c) Temporarily install the airbag sensor assy center with the 3 bolts.

NOTICE:

- **If the airbag sensor assy center has been dropped, or there are any cracks, dents or other defects in the case, bracket or connector, replace it with a new one.**
- **When installing the airbag sensor assy center, be careful that the SRS wiring does not interfere with other parts and that it is not pinched between other parts.**

(d) Tighten the 3 bolts to the specified torque.

Torque: 17.5 N·m (179 kgf·cm, 13 ft·lbf)

(e) Check that there is no looseness in the installation parts of the airbag sensor assy center.

(f) Connect the 3 connectors to the airbag sensor assy center.

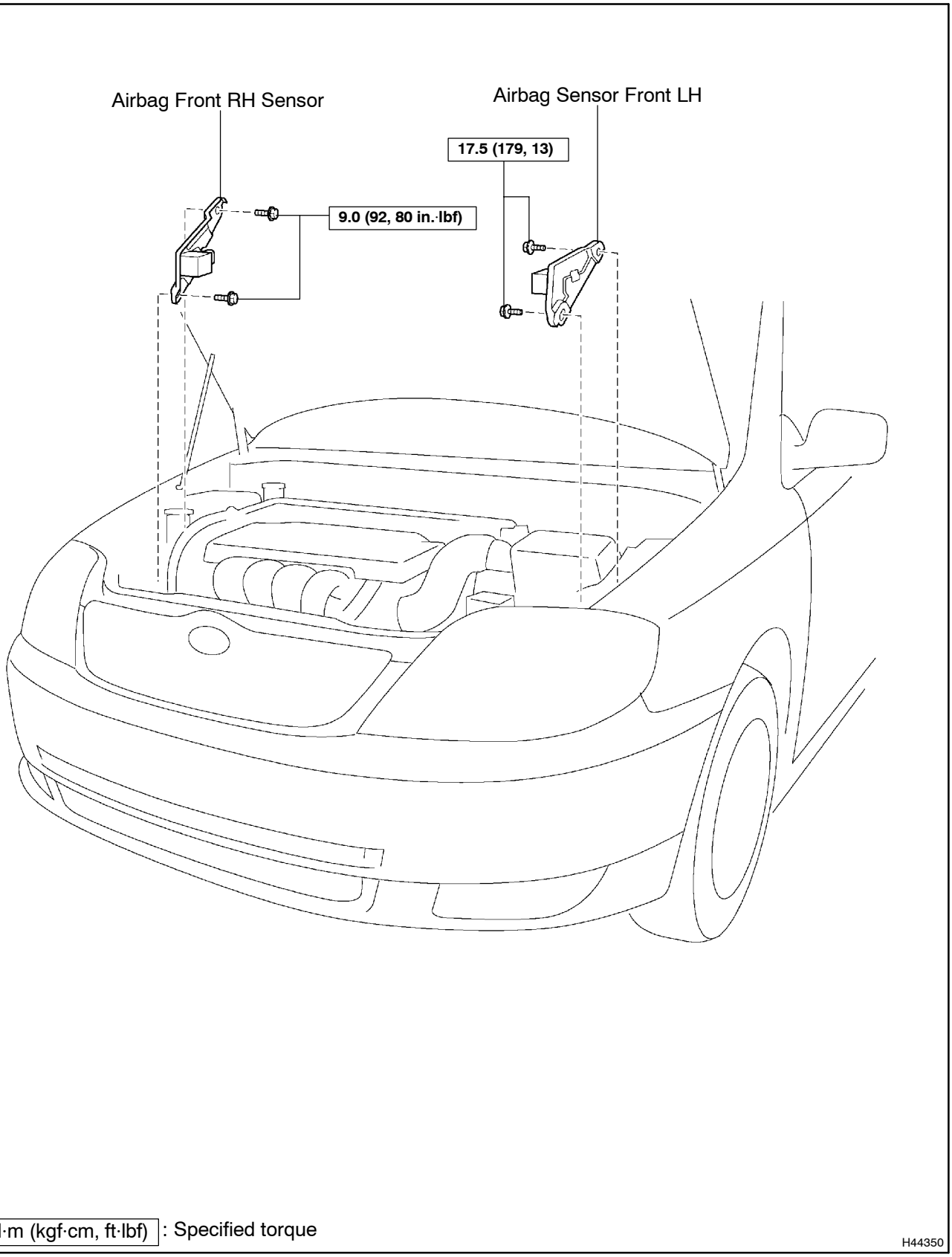
(g) Check that the water-proof sheet is properly set.

9. **INSTALL CONSOLE BOX SUB-ASSY REAR (SEE PUB. NO. RM821E, PAGE 71-11)**
10. **INSTALL PARKING BRAKE HOLE COVER SUB-ASSY (SEE PUB. NO. RM821E, PAGE 71-11)**
11. **INSTALL CONSOLE PANEL UPPER (SEE PUB. NO. RM821E, PAGE 71-11)**
12. **INSTALL FRONT ASH RECEPTACLE BOX SUB-ASSY (SEE PUB. NO. RM821E, PAGE 71-11)**
13. **CONNECT BATTERY NEGATIVE TERMINAL**
14. **INSPECT SRS WARNING LIGHT (SEE PUB. NO. RM926E, PAGE 05-59)**

AIRBAG FRONT RH SENSOR

COMPONENTS

600UU-02



C N·m (kgf·cm, ft·lbf) : Specified torque

H44350

60063-09

REPLACEMENT

HINT:

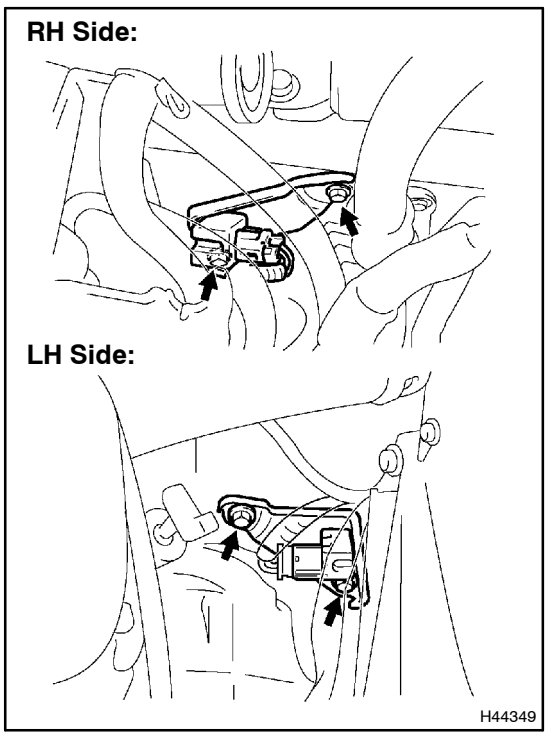
- Use the same procedures for the RH side and LH side.
- The procedures listed below are for the LH side.

1. PRECAUTION (SEE PAGE 60-1)

2. DISCONNECT BATTERY NEGATIVE TERMINAL

CAUTION:

After removing the terminal, wait for at least 90 seconds before starting the operation.



3. REMOVE AIRBAG FRONT RH SENSOR

(a) Disconnect the connector from the airbag front RH sensor.

(b) Remove the 2 bolts and the airbag front RH sensor.

4. INSTALL AIRBAG FRONT RH SENSOR

(a) Check that the ignition switch is off.

(b) Check that the battery negative (-) terminal is disconnected.

CAUTION:

After removing the terminal, wait for at least 90 seconds before starting the operation.

(c) Install the airbag front RH sensor with the 2 bolts.

Torque:
RH Side: 9.0 N·m (92 kgf·cm, 80 in.·lbf)
LH Side: 17.5 N·m (179 kgf·cm, 13 ft·lbf)

NOTICE:

- **If the airbag front RH sensor has been dropped, or there are any cracks, dents or other defects in the case, bracket or connector, replace it with a new one.**
- **When installing the airbag front RH sensor, be careful that the SRS wiring does not interfere with other parts and that it is not pinched between other parts.**

(d) Check that there is no looseness in the installation parts of the airbag front RH sensor.

(e) Connect the connector to the airbag front RH sensor.

5. CONNECT BATTERY NEGATIVE TERMINAL

6. INSPECT SRS WARNING LIGHT (SEE PUB. NO. RM926E, PAGE 05-59)

LIGHTING

LIGHTING SYSTEM (HATCHBACK) 65–1
PRECAUTION 65–1
HEADLAMP ASSY LH (HATCHBACK) 65–2
COMPONENTS 65–2
OVERHAUL 65–3/5
ADJUSTMENT 65–6/9
FRONT FOG LAMP ASSY LH 65–10
OVERHAUL 65–10
ADJUSTMENT 65–11/13
REAR COMBINATION
LAMP ASSY LH (HATCHBACK) 65–14
OVERHAUL 65–14/15

REFER TO FOLLOWING REPAIR MANUALS:

Manual Name	Pub. No.
COROLLA Repair Manual	RM821E
COROLLA Repair Manual Supplement (Oct., 2001)	RM926E
COROLLA Repair Manual Supplement (Aug, 2002)	DR105E
COROLLA Repair Manual Supplement (Aug, 2003)	DR141E

NOTE: The above pages contain only the points which differ from the above listed manuals.

LIGHTING SYSTEM (HATCHBACK)

6518B-01

PRECAUTION

1. PRECAUTION OF HEADLIGHT BULB REPLACEMENT

(a) If even a thin film of oil is left on the surface of the halogen lamp, its service life will be shortened because the lamp will burn at a higher temperature.

(b) Handle any halogen lamp with great care. Dropping, hitting or damaging the bulb, in any way, may result in it exploding and shattering because the internal pressure is high.

(c) Always prepare a new bulb for immediate replacement. While replacing the bulb, the lens may attract dust and moisture if removed from the vehicle for too long.

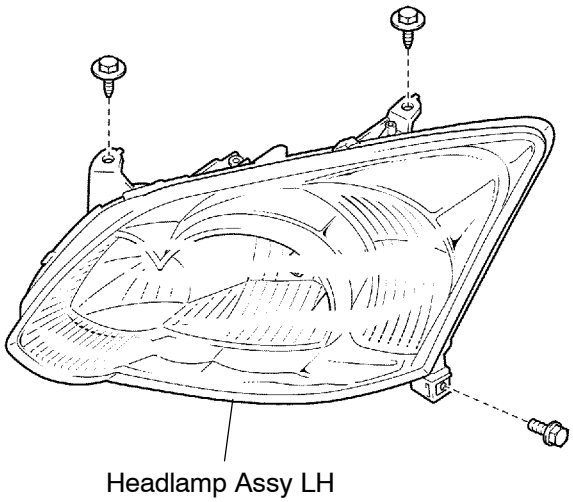
(d) Always use a bulb of the same wattage for replacement.

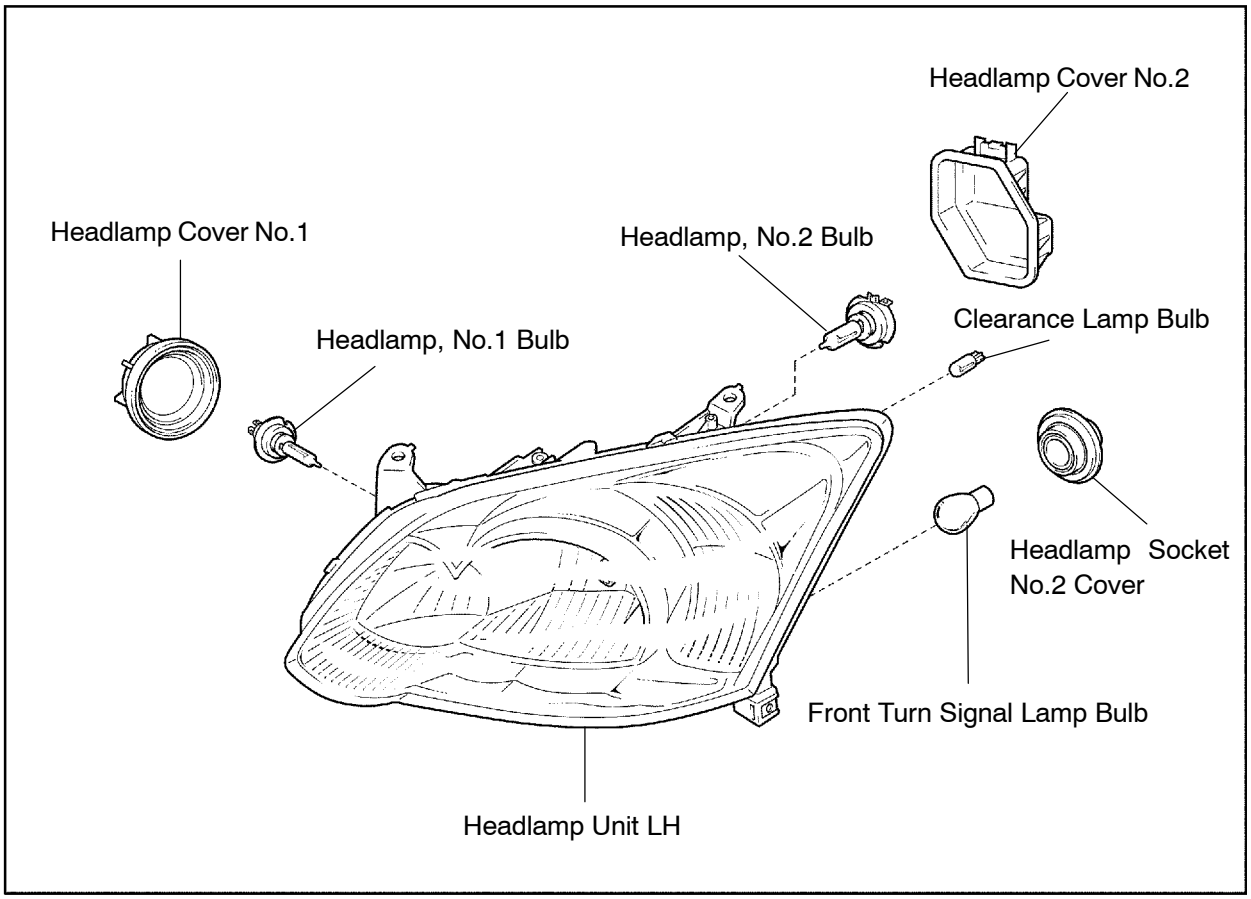
(e) Firmly reinstall the socket after bulb replacement. The lens may become cloudy or the light cavity may fill with water through the gaps around the socket.

HEADLAMP ASSY LH (HATCHBACK)

COMPONENTS

6518G-01





P

I42886

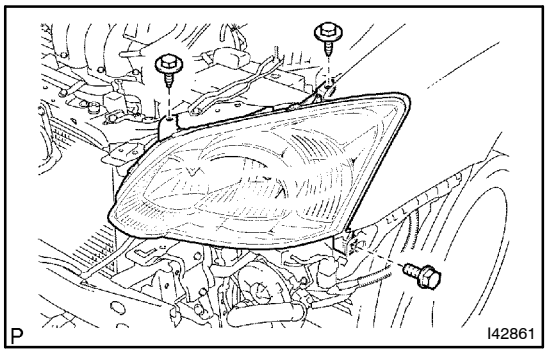
6518H-01

OVERHAUL

HINT:

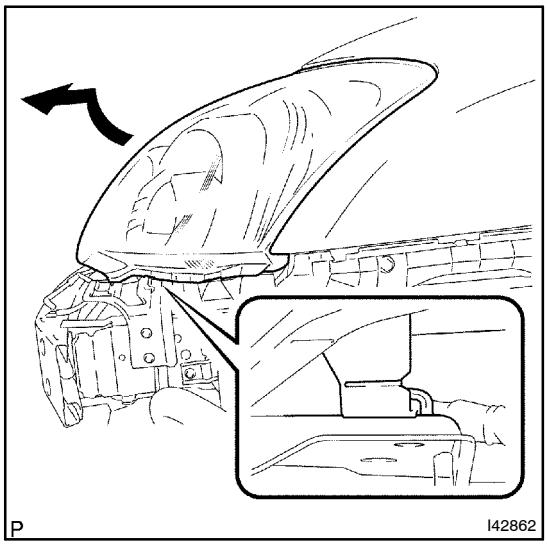
- COMPONENTS: SEE PAGE 65-2.
- Use the same procedures for the RH side and LH side.
- The procedures listed below are for the LH side.
- Installation is in the reverse order of removal.

1. **REMOVE RADIATOR GRILLE (SEE PAGE 76-5)**
2. **REMOVE FRONT SPOILER COVER LH (W/ FRONT SPOILER) (SEE PAGE 76-5)**
3. **REMOVE FRONT SPOILER COVER RH (W/ FRONT SPOILER) (SEE PAGE 76-5)**
4. **REMOVE ENGINE UNDER COVER LH (SEE PAGE 76-5)**
5. **REMOVE ENGINE UNDER COVER RH (SEE PAGE 76-5)**
6. **REMOVE FRONT FENDER LINER LH (SEE PAGE 76-5)**
7. **REMOVE FRONT FENDER LINER RH (SEE PAGE 76-5)**
8. **REMOVE FRONT BUMPER COVER SUB-ASSY (SEE PAGE 76-5)**



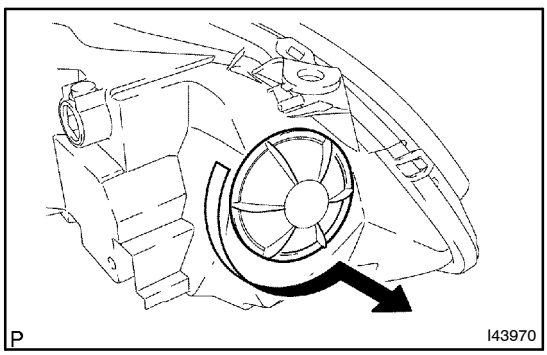
9. REMOVE HEADLAMP ASSY LH

(a) Remove the bolt and 2 screws.



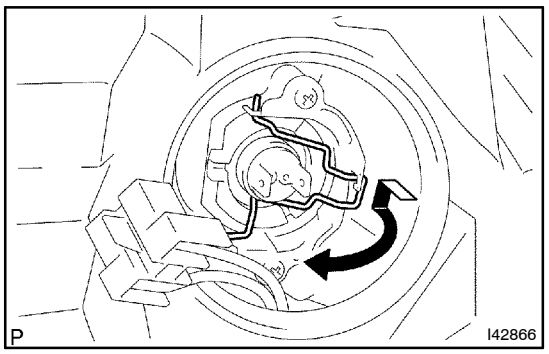
(b) Pull the headlamp assy LH in the direction indicated by the arrow, disengage the headlamp bracket, and then separate the headlamp assy LH.

(c) Disconnect the connector and remove the headlamp assy LH.

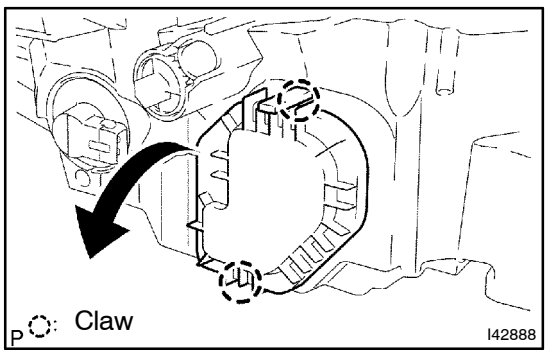


10. REMOVE HEADLAMP BULB NO.1

(a) Turn in the direction indicated by the arrow and remove the headlamp cover No.1.

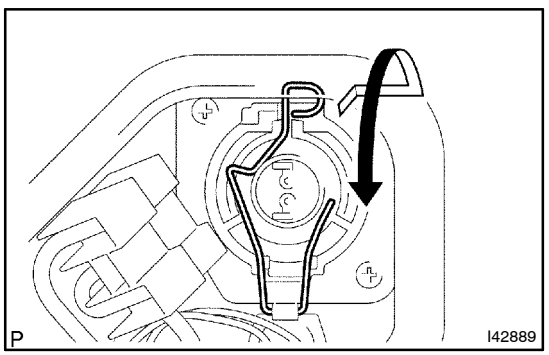


(b) Release the set spring lock as shown in the illustration and remove the headlamp bulb No.1.

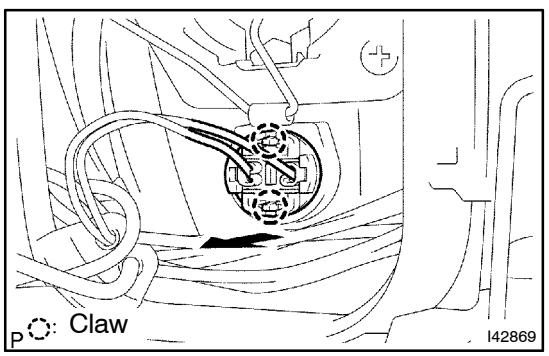


11. REMOVE HEADLAMP BULB NO.2

(a) Remove the headlamp cover No.2 as shown in the illustration.



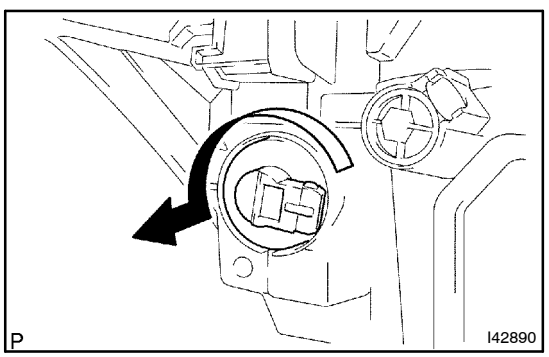
(b) Release the set spring lock as shown in the illustration and remove the headlamp bulb No.2.



12. REMOVE CLEARANCE LAMP BULB

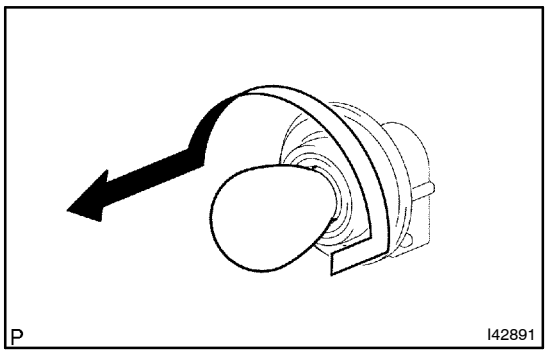
(a) While pushing the 2 claws, remove the clearance lamp bulb along with the clearance lamp socket.

(b) Remove the clearance lamp bulb from the clearance lamp socket.



13. REMOVE FRONT TURN SIGNAL LAMP BULB

(a) Turn in the direction indicated by the arrow and remove the headlamp socket No.2 cover and the front turn signal lamp bulb as a unit.



(b) Turn in the direction indicated by the arrow and remove the front turn signal lamp bulb.

14. **INSTALL FRONT BUMPER COVER SUB-ASSY (SEE PAGE 76-5)**
15. **VEHICLE PREPARATION FOR HEADLAMP AIM ADJUSTMENT (SEE PAGE 65-6)**
16. **PREPARATION FOR HEADLAMP AIMING (Using a screen) (SEE PAGE 65-6)**
17. **HEADLAMP AIMING INSPECTION (SEE PAGE 65-6)**
18. **HEADLAMP AIMING ADJUSTMENT (SEE PAGE 65-6)**

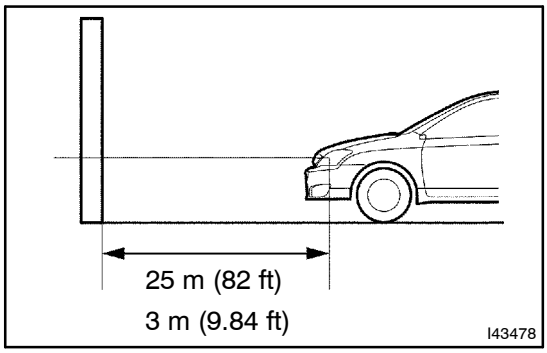
6518C-01

ADJUSTMENT

1. VEHICLE PREPARATION FOR HEADLAMP AIM ADJUSTMENT

(a) Prepare the vehicle:

- Ensure there is no damage or deformation to the body around the headlamps.
- Fill the fuel tank.
- Make sure that the oil is filled to the specified level.
- Make sure that the coolant is filled to the specified level.
- Inflate the tires to the appropriate pressure.
- Place the spare tire, tools, and jack in their original position.
- Unload the trunk.
- Sit a person of average weight (75 kg, 165 lb) in the driver's seat.



2. PREPARATION FOR HEADLAMP AIMING (Using a screen)

(a) Prepare the vehicle according to the following conditions:

- Place the vehicle in a location that is dark enough to clearly observe the cutoff line. The cutoff line is a distinct line, below which light from the headlamps can be observed and above which it cannot.
- Place the vehicle at a 90° angle to the wall.
- Create a 25 m (82 ft) distance between the vehicle (headlamp bulb center) and the wall.
- Place the vehicle on a level surface.
- Bounce the vehicle up and down to settle the suspension.

NOTICE:

A distance of 25 m (82 ft) between the vehicle (headlamp bulb center) and the wall is necessary for proper aim adjustment. If unavailable, secure a distance of exactly 3 m (9.84 ft) for check and adjustment. (The target zone will change with the distance so follow the instructions in the illustration.)

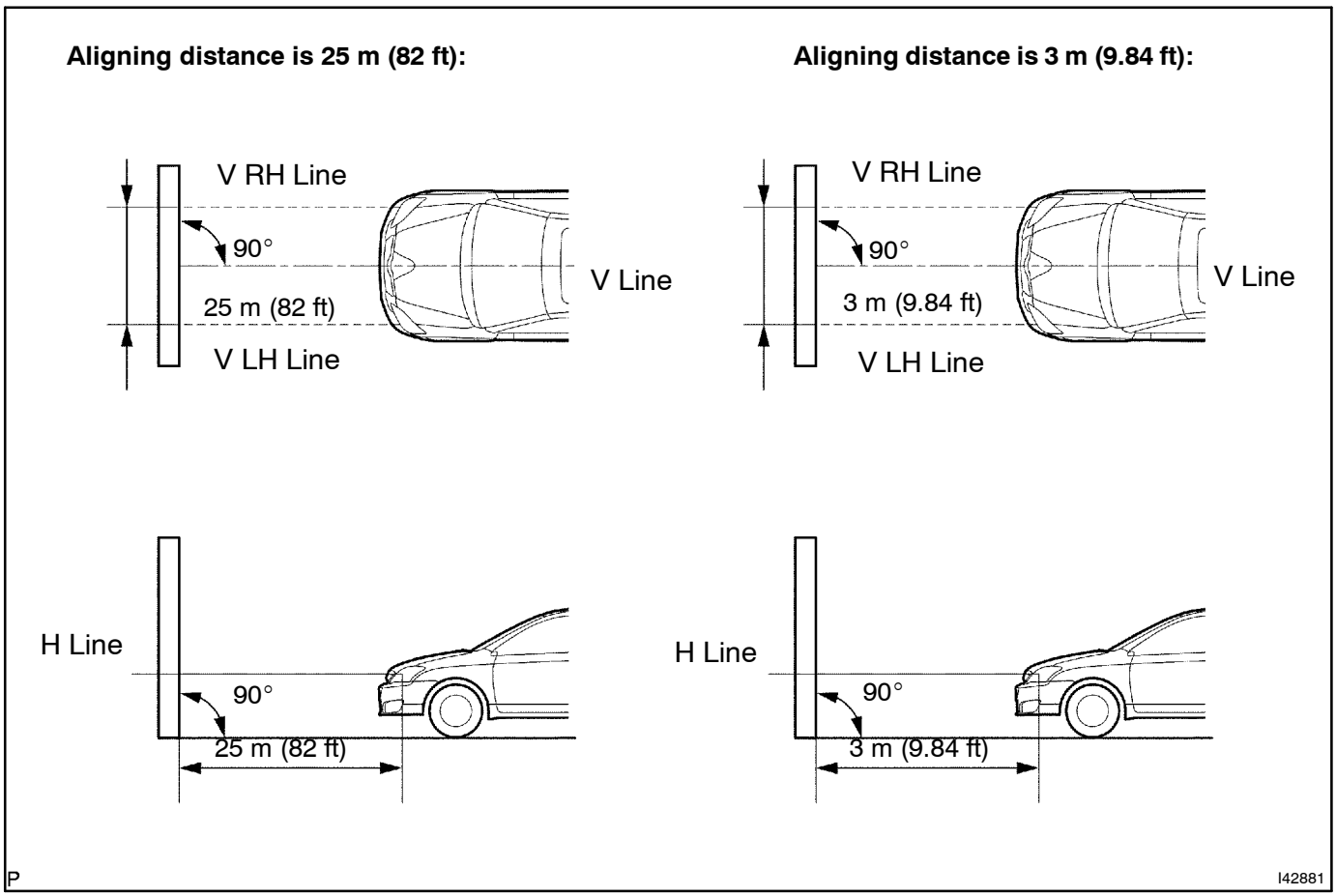
(b) Prepare a piece of thick white paper (approximately 2 m (6.6 ft) (height) x 4 m (13.1 ft) (width)) to use as a screen.

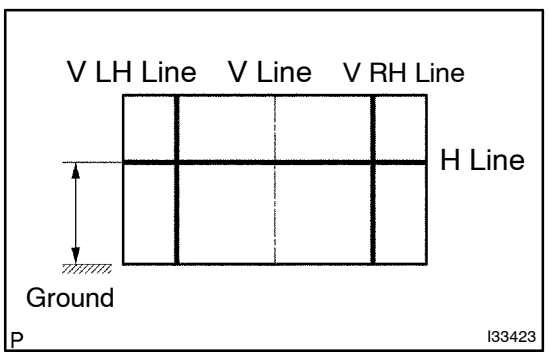
(c) Draw a vertical line down the center of screen (V line).

(d) Set the screen as shown in the illustration.

HINT:

- Stand the screen perpendicular to the ground.
- Align the V line on the screen with the center of the vehicle.





(e) Draw base lines (H line, V LH, V RH lines) on the screen as shown in the illustration.

HINT:

- The base lines differ for "low-beam inspection" and "high-beam inspection".
- Mark the headlamp bulb center marks on the screen. If the center mark cannot be observed on the headlamp, use the center of the headlamp bulb or the manufacturer's name marked on the headlamp as the center mark.

(1) H Line (Headlamp height):
Draw a horizontal line across the screen so that it passes through the center marks. The H line should be at the same height as the headlamp bulb center marks of the low-beam headlamps.

(2) V LH Line, V RH Line (Center mark position of left-hand (LH) and right-hand (RH) headlamps):
Draw two vertical lines so that they intersect the H line at each center mark (aligned with the center of the low-beam headlamp bulbs).

3. HEADLAMP AIMING INSPECTION

(a) Cover or disconnect the connector of the headlamp on the opposite side to prevent light from the headlamp not being inspected from affecting headlamp aiming inspection.

NOTICE:

Do not keep the headlamp covered for more than 3 minutes. The headlamp lens is made of synthetic resin, and may easily melt or be damaged due to heat.

HINT:

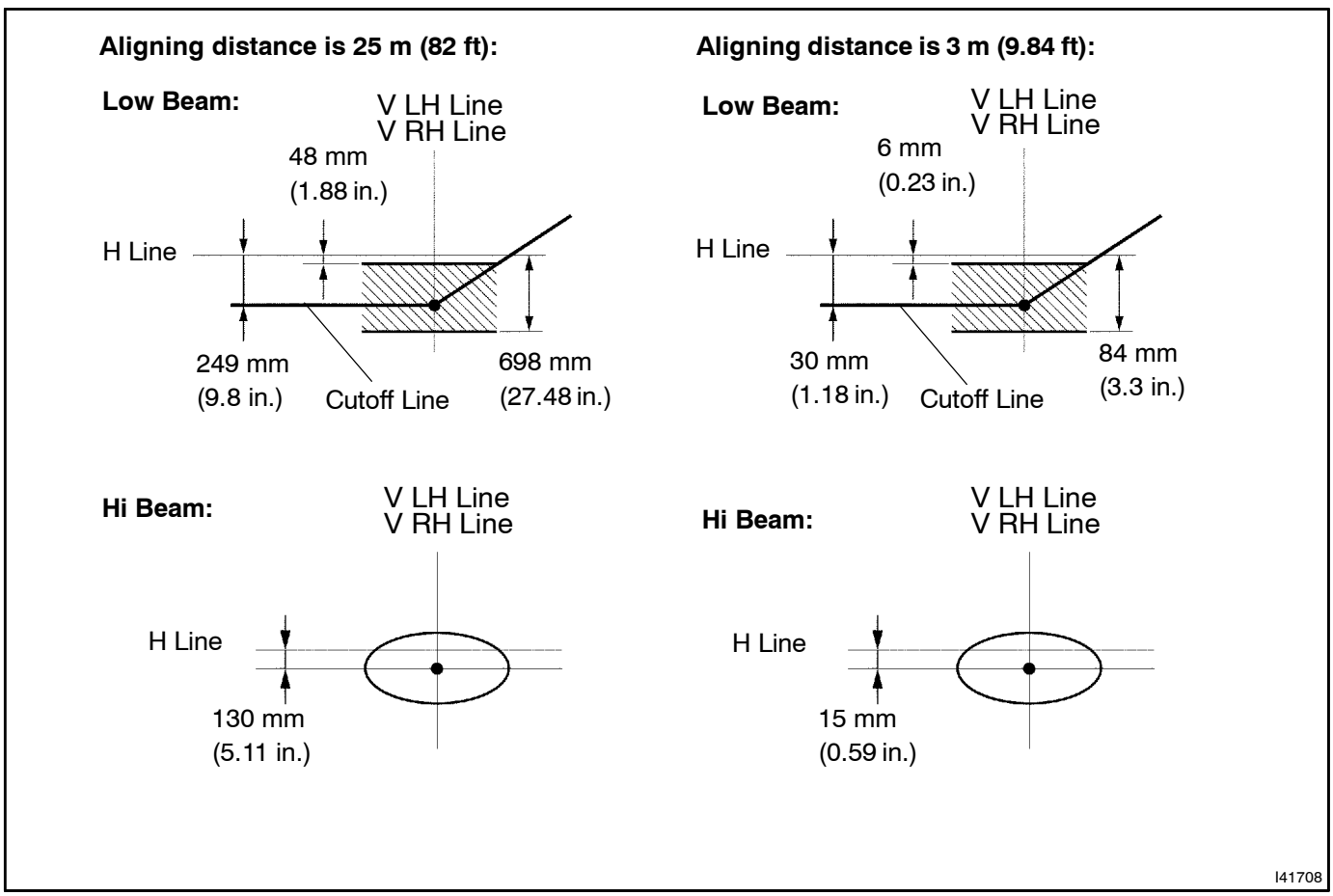
When checking the aim of the high-beam, cover the low-beam or disconnect the connector.

(b) Start the engine.

NOTICE:

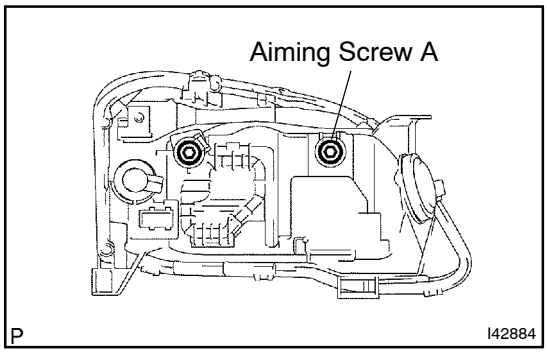
Engine rpm must be 1,500 or more.

(c) Turn on the headlamp and make sure that the cutoff line falls within the specified area, as shown in the illustration.



HINT:

- Alignment distance is 25 m (82 ft):
  The cutoff line is 48 mm (1.88 in.) to 698 mm (27.48 in.) below the H line with low-beam.
- Alignment distance is 3 m (9.84 ft):
  The cutoff line is 6 mm (0.23 in.) to 84 mm (3.3 in.) below the H line with low-beam.
- Alignment distance is 25 m (82 ft):
  The cutoff line is 249 mm (9.8 in.) below the H line with low-beam.
- Alignment distance is 3 m (9.84 ft):
  The cutoff line is 30 mm (1.18 in.) below the H line with low-beam.
- Since the low-beam light and the high-beam light are a unit, if the aim on one is correct, the other should also be correct. However, check both beams just to make sure.



4. HEADLAMP AIMING ADJUSTMENT

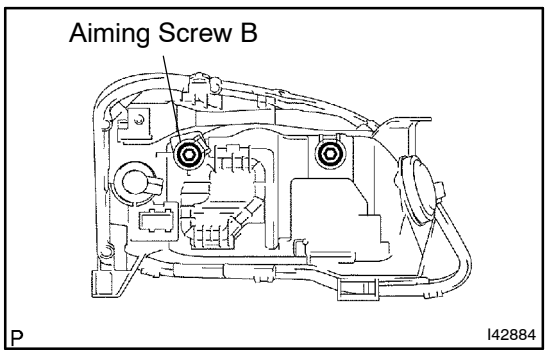
(a) Adjust the aim vertically:
Adjust the headlamp aim into the specified range by turning aiming screw A with a screwdriver.

NOTICE:

The final turn of the aiming screw should be made in the clockwise direction. If the screw is tightened excessively, loosen it and then retighten it, so that the final turn of the screw is in the clockwise direction.

HINT:

- Perform low-beam aim adjustment.
- The headlamp aim moves up when turning the aiming screw clockwise, and moves down when turning the aiming screw counterclockwise.



(b) Adjust the aim horizontally:
Adjust the headlamp aim into the specified range by turning aiming screw B with a screwdriver.

NOTICE:

The final turn of the aiming screw should be made in the clockwise direction. If the screw is tightened excessively, loosen it and then retighten it, so that the final turn of the screw is in the clockwise direction.

HINT:

Perform low-beam aim adjustment.

FRONT FOG LAMP ASSY LH

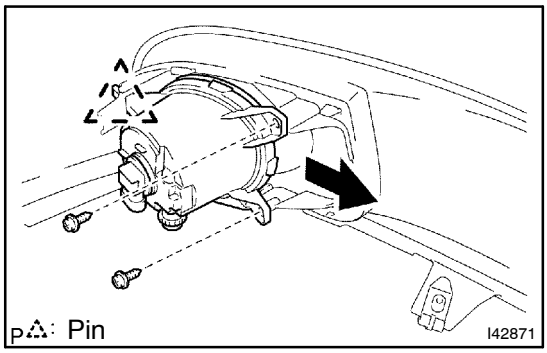
6518D-01

OVERHAUL

HINT:

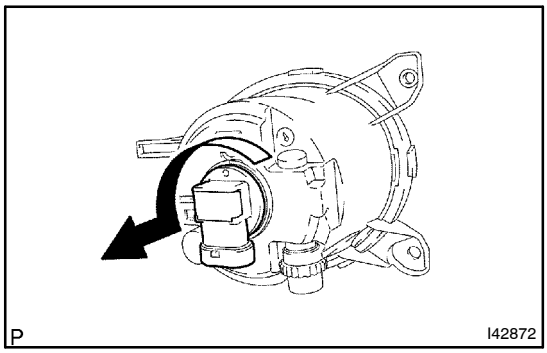
- Use the same procedures for the RH side and LH side.
- The procedures listed below are for the LH side.
- Installation is in the reverse order of removal.

1. **REMOVE ENGINE UNDER COVER LH (SEE PAGE 76-2)**
2. **REMOVE FRONT FENDER LINER LH (SEE PAGE 76-2)**
3. **REMOVE ENGINE UNDER COVER LH (HATCHBACK) (SEE PAGE 76-5)**
4. **REMOVE FRONT FENDER LINER LH (HATCHBACK) (SEE PAGE 76-5)**



5. **REMOVE FRONT FOG LAMP ASSY LH**

(a) Remove the 2 screws, disengage the pin and then remove the front fog lamp assy LH.



(b) Turn the fog lamp bulb in the direction as shown in the illustration and remove the fog lamp bulb.

6. **VEHICLE PREPARATION FOR FOG LAMP AIM ADJUSTMENT (SEE PAGE 65-11)**
7. **PREPARATION FOR FOG LAMP AIMING (SEE PAGE 65-11)**
8. **FOG LAMP AIMING INSPECTION (SEE PAGE 65-11)**
9. **FOG LAMP AIMING ADJUSTMENT (SEE PAGE 65-11)**

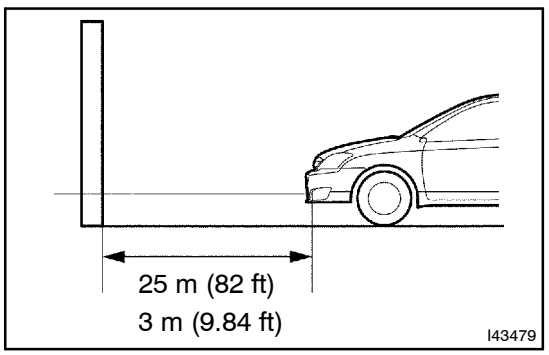
6518E-01

ADJUSTMENT

1. VEHICLE PREPARATION FOR FOG LAMP AIM ADJUSTMENT

(a) Prepare the vehicle:

- Ensure there is no damage or deformation to the body around the headlamps.
- Fill the fuel tank.
- Make sure that the oil is filled to the specified level.
- Make sure that the coolant is filled to the specified level.
- Inflate the tires to the appropriate pressure.
- Place the spare tire, tools, and jack in their original position.
- Unload the trunk.
- Sit a person of average weight (75 kg, 165 lb) in the driver's seat.



2. PREPARATION FOR FOG LAMP AIMING

(a) Prepare the vehicle according to the following conditions:

- Place the vehicle in a location that is dark enough to clearly observe the cutoff line. The cutoff line is a distinct line, below which light from the headlamps can be observed and above which it cannot.
- Place the vehicle at a 90° angle to the wall.
- Create a 25 m (82 ft) distance between the vehicle (fog lamp bulb center) and the wall.
- Place the vehicle on a level surface.
- Bounce the vehicle up and down to settle the suspension.

NOTICE:

A distance of 25 m (82 ft) between the vehicle (fog lamp bulb center) and the wall is necessary for proper aim adjustment. If unavailable, secure a distance of exactly 3 m (9.84 ft) for check and adjustment. (The target zone will change with the distance, so follow the instructions in the illustration.)

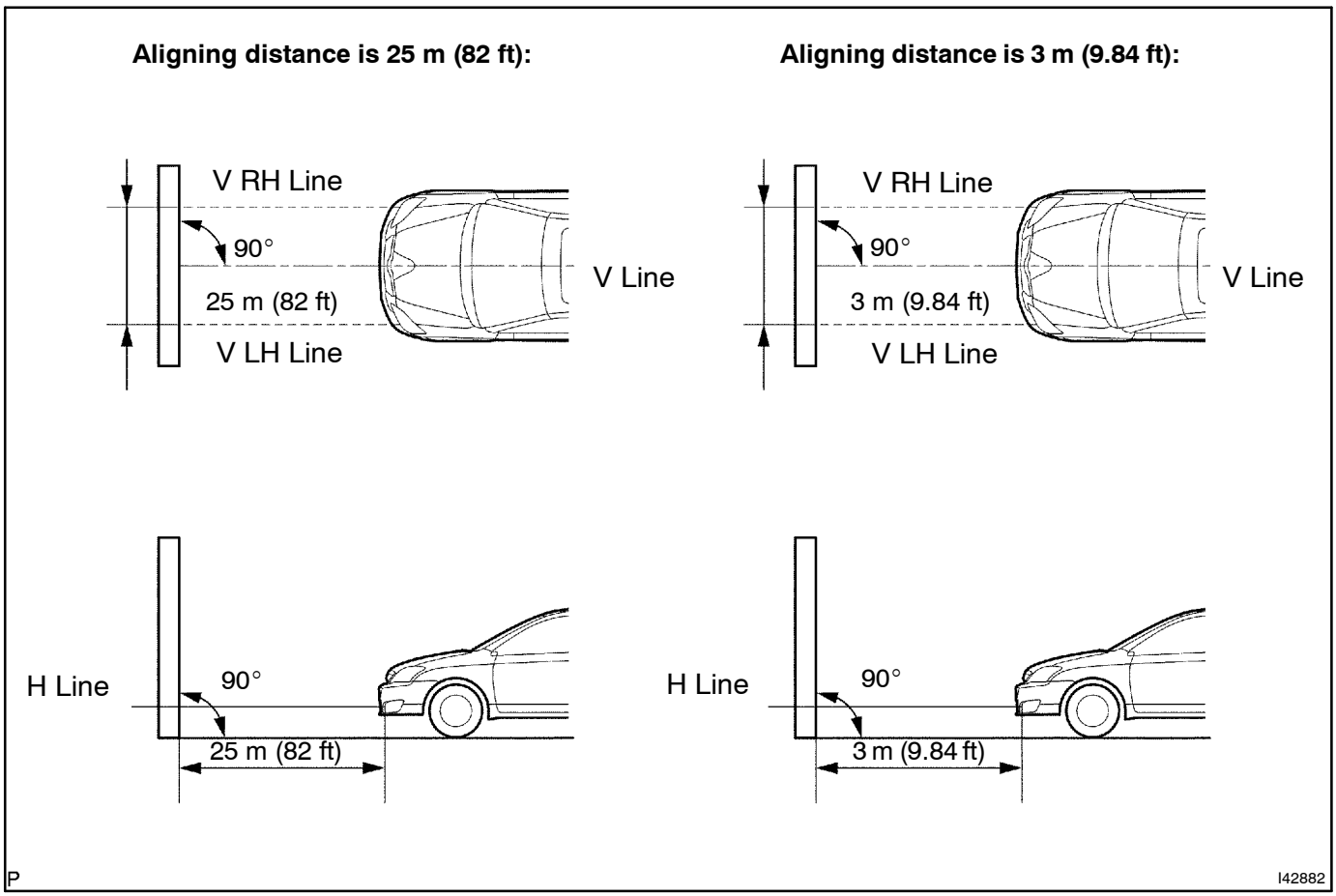
(b) Prepare a piece of thick white paper (approximately 2 m (6.6 ft) (height) x 4 m (13.1 ft) (width)) to use as a screen.

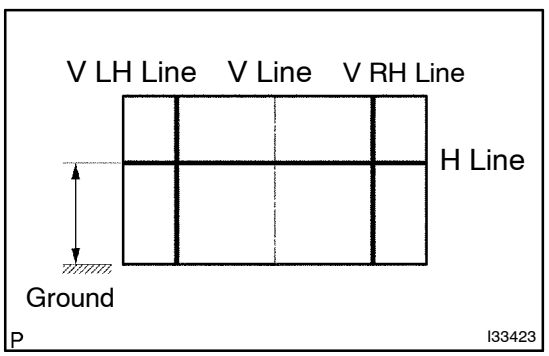
(c) Draw a vertical line down the center of screen (V line).

(d) Set the screen as shown in the illustration.

HINT:

- Stand the screen perpendicular to the ground.
- Align the V line on the screen with the center of the vehicle.





(e) Draw base lines (H line, V LH, V RH lines) on the screen as shown in the illustration.

HINT:

Mark the fog lamp bulb center marks on the screen. If the center mark cannot be observed on the fog lamp, use the center of the fog lamp bulb or the manufacturer's name marked on the fog lamp as the center mark.

(1) H Line (Fog lamp height):
Draw a horizontal line across the screen so that it passes through the center marks. The H line should be at the same height as the fog lamp bulb center marks of the low-beam fog lamps.

(2) V LH Line, V RH Line (Center mark position of left-hand (LH) and right-hand (RH) fog lamps):
Draw two vertical lines so that they intersect the H line at each center mark.

3. FOG LAMP AIMING INSPECTION

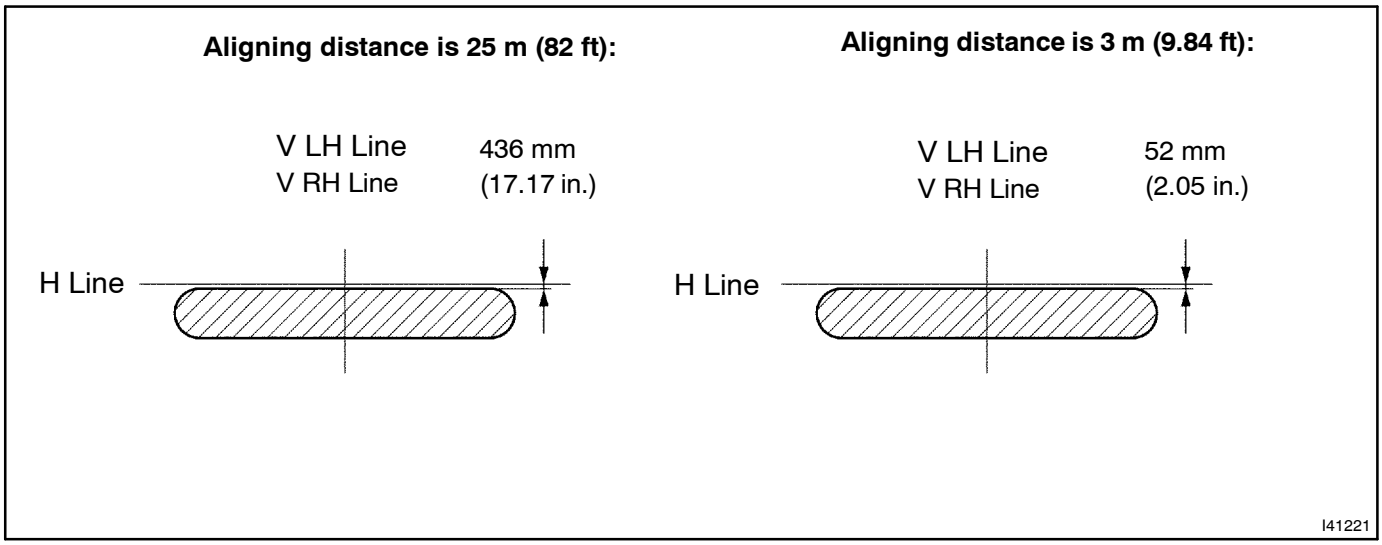
(a) Cover or disconnect the connector of the fog lamp on the opposite side to prevent light from the fog lamp not being inspected from affecting fog lamp aiming inspection.

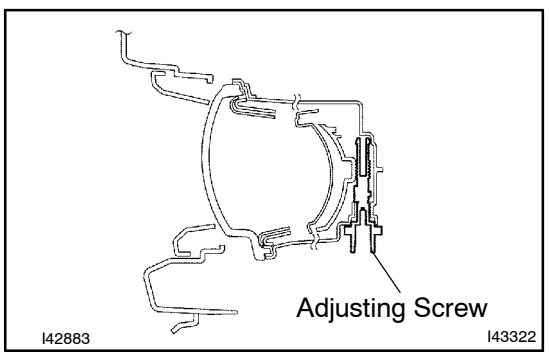
(b) Start the engine.

NOTICE:

Engine rpm must be 1,500 or more.

(c) Turn on the fog lamp and make sure that the cutoff line falls within the specified area, as shown in the illustration.





4. FOG LAMP AIMING ADJUSTMENT

(a) Adjust the headlamp aim into the specified range by turning aiming screw with a screwdriver.

NOTICE:

The final turn of the aiming screw should be made in the clockwise direction. If the screw is tightened excessively, loosen it and then retighten it, so that the final turn of the screw is in the clockwise direction.

REAR COMBINATION LAMP ASSY LH (HATCHBACK)

6518F-01

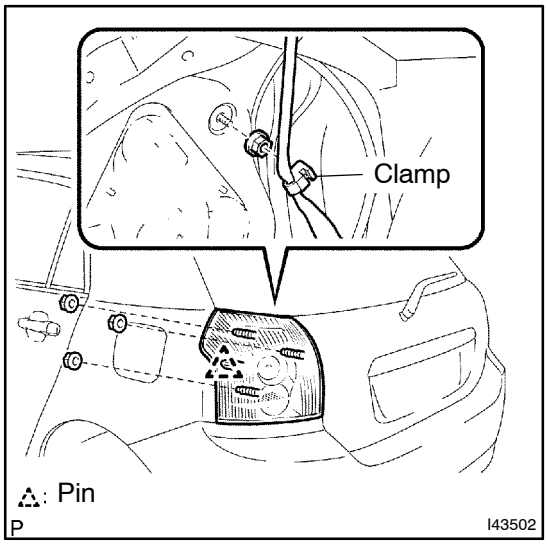
OVERHAUL

HINT:

- Use the same procedures for the RH side and LH side.
- The procedures listed below are for the LH side.
- Installation is in the reverse order of removal.

1. REMOVE DECK TRIM SIDE PANEL ASSY LH

(a) Remove deck trim side panel assy LH.

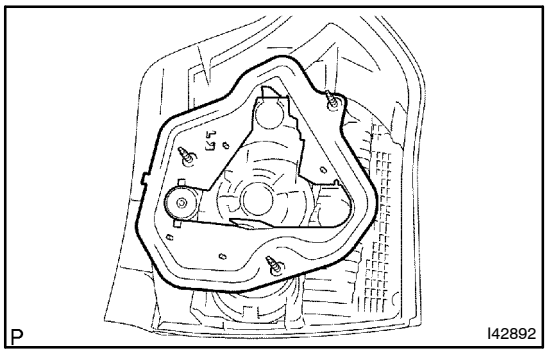


2. REMOVE REAR COMBINATION LAMP ASSY LH

(a) Disconnect the connector and remove the clamp.

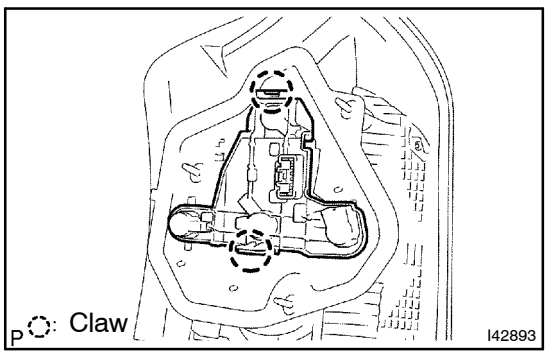
(b) Remove the 3 nuts.

(c) Pull the rear combination lamp assy LH and then remove the rear combination lamp assy LH.



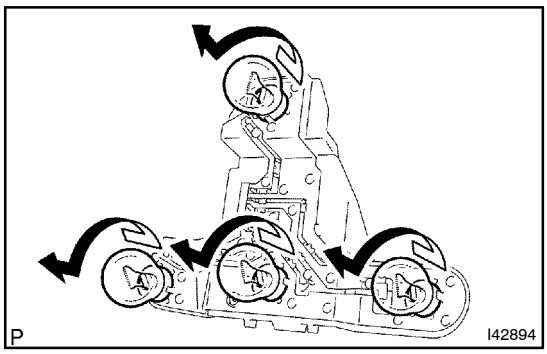
3. REMOVE REAR COMBINATION LAMP GASKET

(a) Remove the rear combination lamp gasket.



4. REMOVE REAR COMBINATION LAMP COVER LH

(a) Disengage the 2 claw and then remove the rear combination lamp cover LH.



5. REMOVE REAR COMBINATION LAMP BULB

(a) Turn in the direction indicated by the arrow and remove the rear combination lamp bulbs.

WIPER & WASHER

WIPER AND WASHER SYSTEM 66–1
PROBLEM SYMPTOMS TABLE 66–1
INSPECTION 66–2/4

REFER TO FOLLOWING REPAIR MANUALS:

Manual Name	Pub. No.
COROLLA Repair Manual	RM821E
COROLLA Repair Manual Supplement (Oct., 2001)	RM926E

NOTE: The above pages contain only the points which differ from the above listed manuals.

WIPER AND WASHER SYSTEM

660KJ-01

PROBLEM SYMPTOMS TABLE

HINT:

Use the table below, with suspected areas listed in numerical order, to determine the cause of the problem. Inspect and repair or replace parts as necessary according to the steps on the following pages.

WIPER AND WASHER SYSTEM

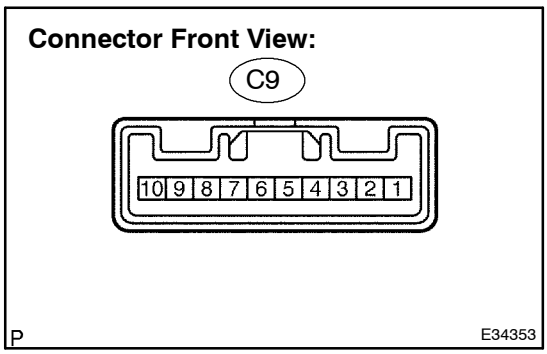
Symptom	Suspected Area	See page
Front wipers do not operate.	1. IG relay 2. WIPER fuse 3. Windshield wiper switch assy 4. Wire harness or connector	- - 66-2 -
Front wipers do not operate in LO or HI.	1. Windshield wiper switch assy 2. Windshield wiper motor assy 3. Wire harness or connector	66-2 ★ -
Front wipers do not operate in INT.	1. Windshield wiper switch assy 2. Windshield wiper motor assy 3. Wire harness or connector	66-2 ★ -
Front washer motor does not operate.	1. IG1 relay 2. WASH fuse 3. Windshield wiper switch assy 4. Windshield wiper motor assy 5. Wire harness or connector	- - 66-2 ★ -
Front wipers do not operate when washer switch is in ON position.	Windshield wiper switch assy	66-2
Rear wiper does not operate.	1. IG relay 2. WIPER fuse 3. Windshield wiper switch assy 4. Wire harness or connector	- - 66-2 -
Rear wiper does not operate in INT or ON.	1. Windshield wiper switch assy 2. Rear wiper motor assy 3. Wire harness or connector	66-2 ★ -
Rear washer motor does not operate.	1. IG1 relay 2. WASH fuse 3. Windshield wiper switch assy 4. Rear washer motor assy 5. Wire harness or connector	- - 66-2 ★ -
Rear wiper does not operate with washer switch in ON.	Windshield wiper switch assy	66-2
Washer fluid does not flow.	Washer Hose and Nozzle	-
• When the wiper switch is in HI position, the wiper blade is in contact with the body. • When the wiper switch is OFF, the wiper blade does not retract or the retract position is wrong.	1. Windshield wiper motor assy (Front wiper) 2. Rear wiper motor assy (Rear wiper) 3. Wiper blade installation position (*1)	★ ★ ★

HINT:

- *1: Inspect wiper arm and blade set position.
- ★: Refer to repair manual RM821E.

660KK-01

INSPECTION



1. WINDSHIELD WIPER SWITCH ASSY

(a) Continuity Check

(1) Measure the resistance according to the value(s) in the table below.

Standard:

Front Wiper Switch

Tester Connection	Switch Condition	Specified Condition
3 (+B) - 4 (+1)	MIST	Below 1 Ω
4 (+1) - 5 (+S)	OFF	Below 1 Ω
4 (+1) - 5 (+S)	INT	Below 1 Ω
3 (+B) - 4 (+1)	LO	Below 1 Ω
2 (+2) - 3 (+B)	HI	Below 1 Ω

Front Washer Switch

Tester Connection	Switch Condition	Specified Condition
6 (EW) - 7 (W)	OFF	10 kΩ or higher
6 (EW) - 7 (W)	ON	Below 1 Ω

Rear Wiper and Washer Switch

Tester Connection	Switch Condition	Specified Condition
6 (EW) - 8 (WR)	WASH (Rear wiper switch OFF position)	Below 1 Ω
6 (EW) - 8 (WR) 6 (EW) - 9 (+1R) 6 (EW) - 10 (C1R)	OFF	10 kΩ or higher
6 (EW) - 10 (C1R)	INT	Below 1 Ω
6 (EW) - 9 (+1R)	ON	Below 1 Ω
6 (EW) - 8 (WR) 6 (EW) - 9 (+1R)	WASH (Rear wiper switch ON position)	Below 1 Ω

(b) w/o Intermittent time adjust:

Intermittent Operation Check

(1) Connect the voltmeter positive terminal to terminal 4 (+1) of the connector and the voltmeter negative terminal to terminal 6 (EW).

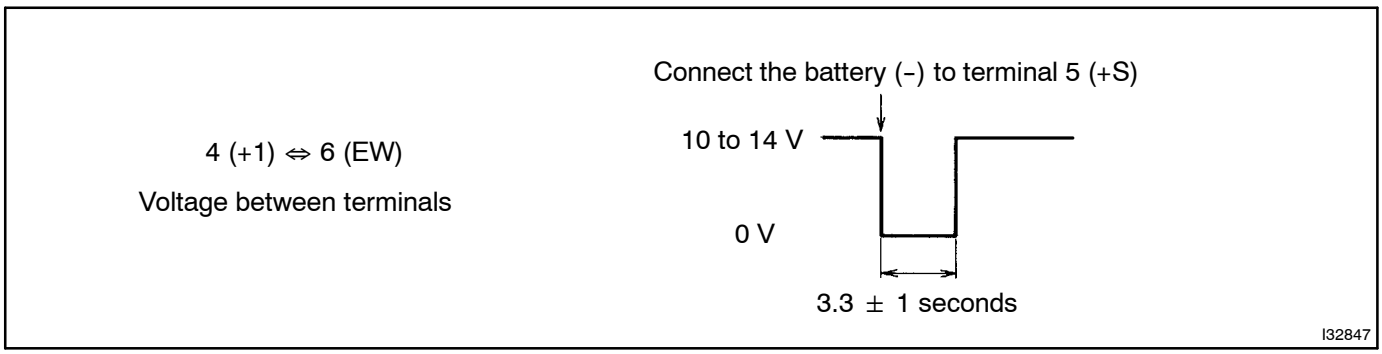
(2) Connect the battery positive (+) lead to terminal 3 (+B) and the battery negative (-) lead to terminals 6 (EW) and 5 (+S).

(3) Turn the wiper switch to the INT position.

(4) Connect the battery positive (+) lead to terminal 5 (+S) of the connector for 5 seconds.

(5) Connect the battery negative (-) lead to terminal 5 (+S) of the connector. Operate the intermittent wiper relay and check the voltage between terminals 4 (+1) and 6 (EW).

OK: The voltage changes as shown in the illustration.



(c) w/ Intermittent time adjust:
Intermittent Operation Check

(1) Connect the voltmeter positive terminal to terminal 4 (+1) of the connector and the voltmeter negative terminal to terminal 6 (EW).

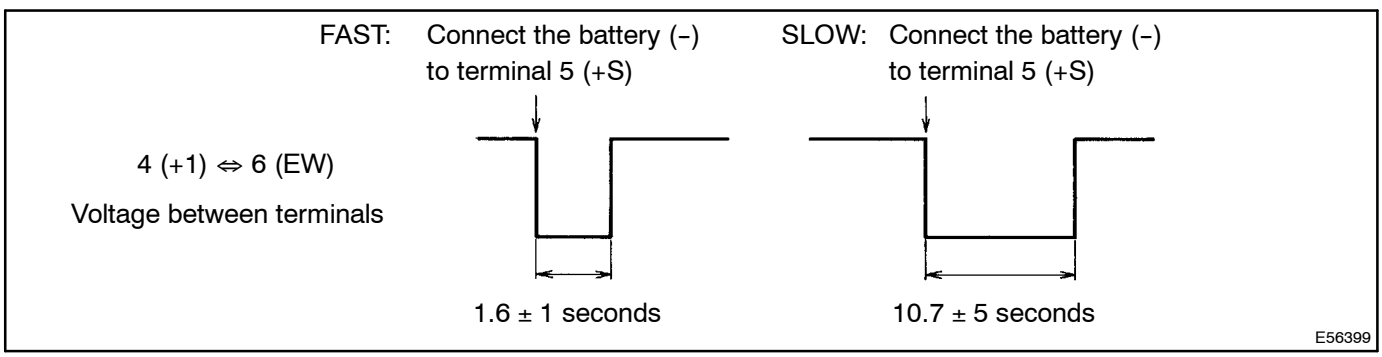
(2) Connect the battery positive (+) lead to terminal 3 (+B) and the battery negative (-) lead to terminals 6 (EW) and 5 (+S).

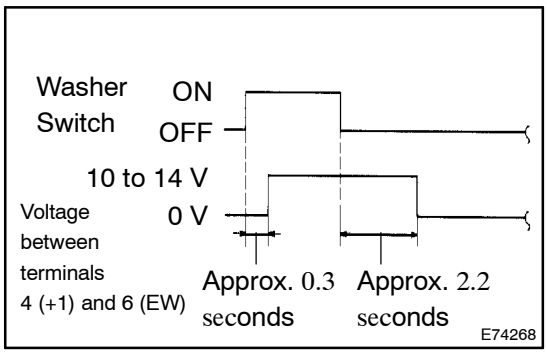
(3) Turn the wiper switch to the INT position.

(4) Connect the battery positive (+) lead to terminal 5 (+S) of the connector for 5 seconds.

(5) Connect the battery negative (-) lead to terminal 5 (+S) of the connector. Operate the intermittent wiper relay and check the voltage between terminals 4 (+1) and 6 (EW).

OK: The voltage changes as shown in the illustration.





(d) Front Washer Linked Operation Check

(1) Turn the wiper switch off.

(2) Connect the battery positive (+) lead to terminal 3 (+B) of the connector and the battery negative (–) lead to terminals 5 (+S) and 6 (EW).

(3) Connect the voltmeter positive terminal to terminal 4 (+1) of the connector and the voltmeter negative terminal to terminal 6 (EW).

(4) Turn the washer switch on and off, and check the voltage between terminals 4 (+1) and 6 (EW).

OK: The voltage changes as shown in the illustration.

EXTERIOR/INTERIOR TRIM

FRONT BUMPER 76–1
COMPONENTS 76–1
REPLACEMENT 76–2/3
FRONT BUMPER (HATCHBACK) 76–4
COMPONENTS 76–4
REPLACEMENT 76–5/6

REFER TO FOLLOWING REPAIR MANUALS:

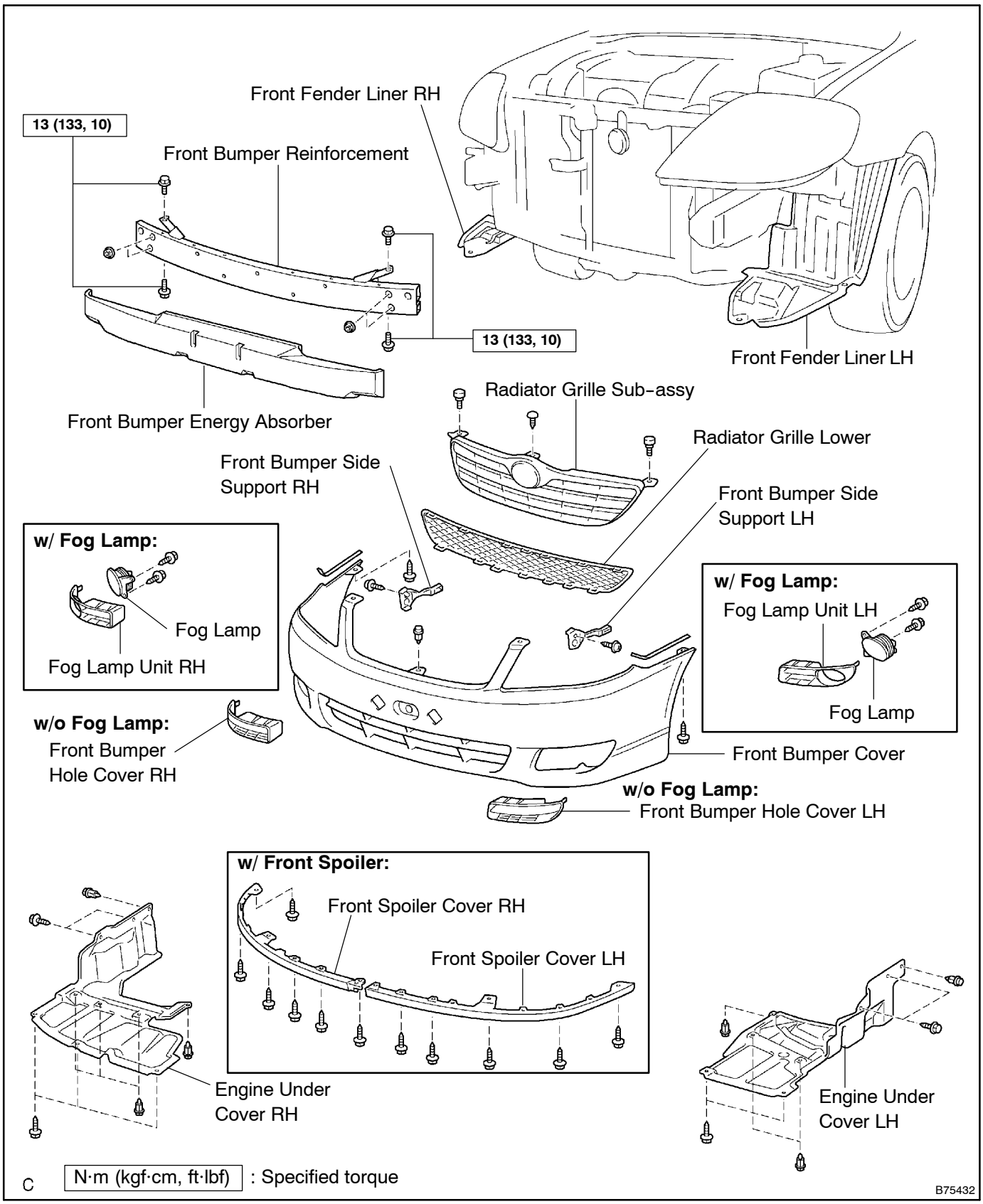
Manual Name	Pub. No.
COROLLA Repair Manual	RM821E
COROLLA Repair Manual Supplement	RM926E
COROLLA Repair Manual Supplement	DR105E

NOTE: The above pages contain only the points which differ from the above listed manuals.

FRONT BUMPER

COMPONENTS

761C6-01

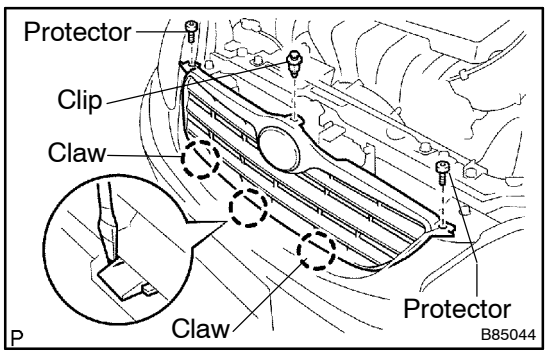


761C7-01

REPLACEMENT

HINT:

- Installation is in the reverse order of removal. However, only installation procedures requiring additional information are included.
- A bolt without a torque specification is shown in the standard bolt chart (see pub. No. RM821E page 03-1).



1. REMOVE RADIATOR GRILLE

(a) Remove the 2 protectors and clip.

(b) Using a screwdriver, disengage the 3 claws and remove the radiator grille.

HINT:

Tape the screwdriver tip before use.

2. REMOVE FRONT SPOILER COVER LH (W/ FRONT SPOILER)

(a) Remove the 6 screws and spoiler cover.

3. REMOVE FRONT SPOILER COVER RH (W/ FRONT SPOILER)

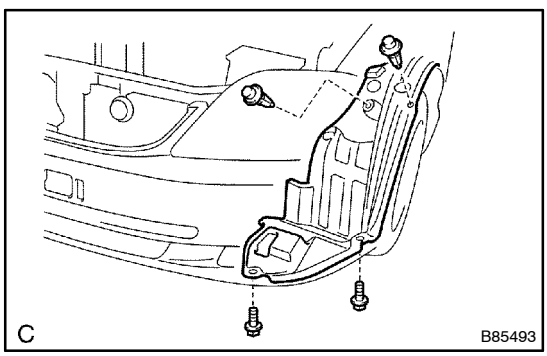
(a) Remove the 5 screws and spoiler cover.

4. REMOVE ENGINE UNDER COVER LH

(a) Remove the 2 screws, 4 clips and under cover.

5. REMOVE ENGINE UNDER COVER RH

(a) Remove the 2 screws, 5 clips and under cover.



6. REMOVE FRONT FENDER LINER LH

(a) Remove the 2 bolts.

(b) Using a clip remover, remove the 2 clips.

(c) Partially remove the fender liner.

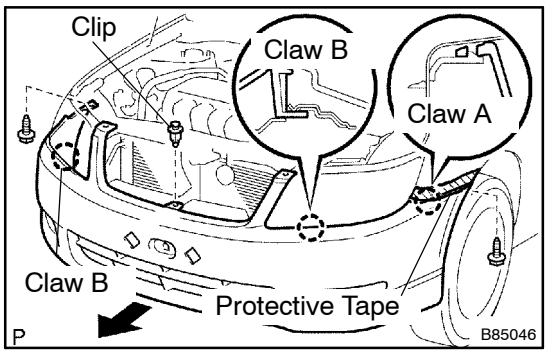
HINT:

It is not necessary to completely remove the fender liner. Partially remove it so that the bumper cover can be removed in step 8.

7. REMOVE FRONT FENDER LINER RH

HINT:

Use the same procedures described for the LH side.



8. REMOVE FRONT BUMPER COVER SUB-ASSY

(a) Apply protective tape under the front fender.

(b) Remove the 2 screws.

(c) Using a clip remover, remove the clip from the cover.

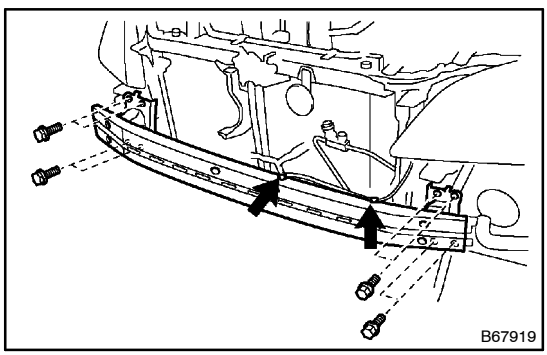
(d) Using a screwdriver, disengage 2 claws A, 2 claws B and remove the bumper cover.

HINT:

- Only one claw A is shown in the illustration but the other is on the opposite side of the vehicle.
- Tape the screwdriver tip before use.

(e) w/ Fog lamp:
Disconnect the 2 fog lamp connectors.

9. REMOVE FRONT BUMPER ENERGY ABSORBER



10. REMOVE FRONT BUMPER REINFORCEMENT

(a) Using a clip remover, remove the 2 wire harness clamps.

(b) Remove the 8 bolts and reinforcement.

11. REMOVE FRONT BUMPER SIDE SUPPORT LH

(a) Remove the screw and side support.

12. REMOVE FRONT BUMPER SIDE SUPPORT LH

(a) Remove the screw and side support.

13. REMOVE RADIATOR GRILLE LOWER

14. REMOVE FOG LAMP ASSY LH (W/ FOG LAMP) (SEE PAGE 65-10)

15. REMOVE FOG LAMP ASSY RH (W/ FOG LAMP) (SEE PAGE 65-10)

16. REMOVE FOG LAMP UNIT LH (W/ FOG LAMP) (SEE PUB. NO. RM821E PAGE 65-15)

17. REMOVE FOG LAMP UNIT RH (W/ FOG LAMP) (SEE PUB. NO. RM821E PAGE 65-15)

18. REMOVE FRONT BUMPER HOLE COVER LH (W/O FOG LAMP)

(a) Remove the 6 screws and bumper hole cover LH.

19. REMOVE FRONT BUMPER HOLE COVER RH (W/O FOG LAMP)

(a) Remove the 6 screws and bumper hole cover RH.

20. INSTALL FRONT BUMPER REINFORCEMENT

(a) Install the reinforcement with the 4 bolts and 4 nuts.
Torque: 13 N·m (133 kgf·cm, 10 ft·lbf)

21. INSTALL FRONT BUMPER COVER SUB-ASSY

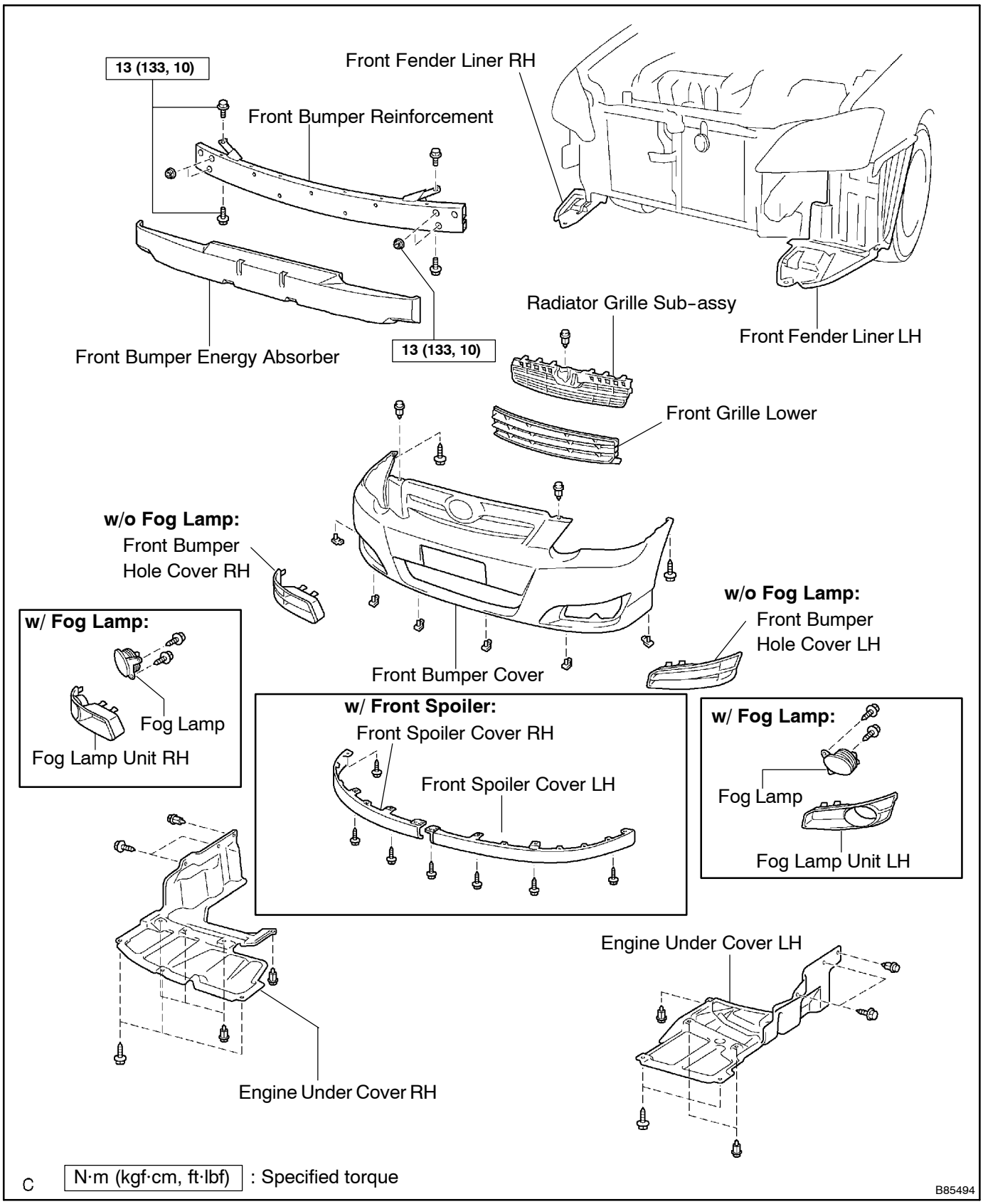
(a) Install the bumper cover with the 2 screws.

(b) Install the 2 clips.

FRONT BUMPER (HATCHBACK)

COMPONENTS

761C8-01



C N·m (kgf·cm, ft·lbf) : Specified torque

B85494

761C9-01

REPLACEMENT

HINT:

- Installation is in the reverse order of removal. However, only installation procedures requiring additional information are included.
- A bolt without a torque specification is shown in the standard bolt chart (see pub. No. RM821E page 03-1).

1. REMOVE FRONT SPOILER COVER LH (W/ FRONT SPOILER)

(a) Remove the 4 screws.

(b) Using a screwdriver, disengage the 4 claws, and remove the spoiler cover.

HINT:

Tape the screwdriver tip before use.

2. REMOVE FRONT SPOILER COVER RH (W/ FRONT SPOILER)

(a) Remove the 3 screws.

(b) Using a screwdriver, disengage the 4 claws, and remove the spoiler cover.

HINT:

Tape the screwdriver tip before use.

3. REMOVE ENGINE UNDER COVER LH

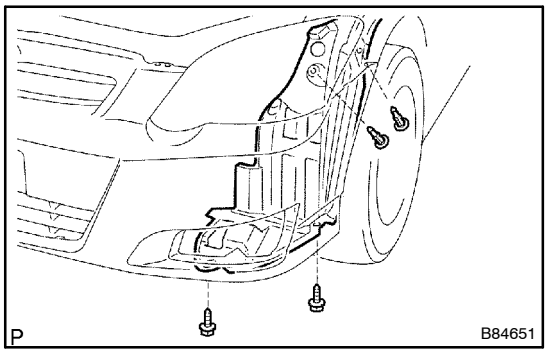
(a) Using a clip remover, remove the 4 clips.

(b) Remove the 2 screws and cover.

4. REMOVE ENGINE UNDER COVER RH

(a) Using a clip remover, remove the 5 clips.

(b) Remove the 2 screws and cover.



5. REMOVE FRONT FENDER LINER LH

(a) Remove the 2 bolts.

(b) Using a clip remover, remove the 2 clips.

(c) Partially remove the fender liner.

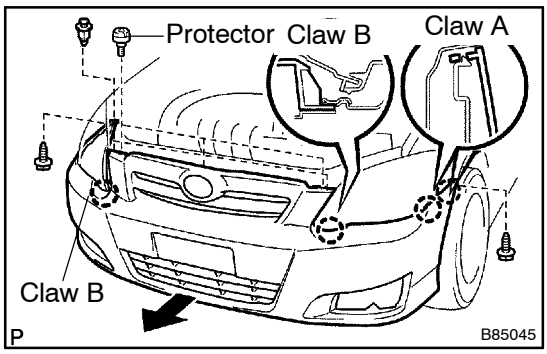
HINT:

It is not necessary to completely remove the fender liner. Partially remove it so that the bumper cover can be removed in step 8.

6. REMOVE FRONT FENDER LINER RH

HINT:

Use the same procedures described for the LH side.



7. REMOVE FRONT BUMPER COVER SUB-ASSY

(a) Remove the 2 screws and 2 protectors.

(b) Using a clip remover, remove the 2 clips.

(c) Disengage 2 claws A, 2 claws B and remove the bumper cover.

HINT:

- Only one claw A is shown in the illustration but the other is on the opposite side of the vehicle.
- Tape the screwdriver tip before use.

(d) w/ Fog lamp:
Disconnect the 2 fog lamp connectors.

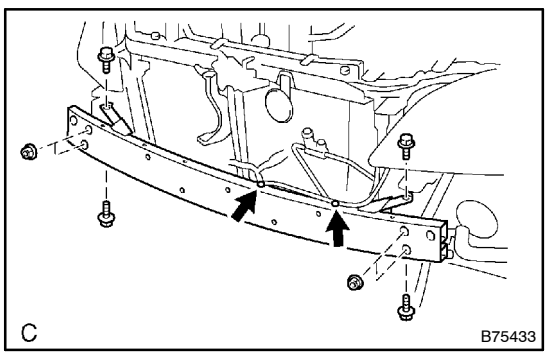
8. REMOVE RADIATOR GRILLE

(a) Using a screwdriver, disengage the 3 claws and clip, and remove the radiator grille.

HINT:

Tape the screwdriver tip before use.

9. REMOVE FRONT BUMPER ENERGY ABSORBER



10. REMOVE FRONT BUMPER REINFORCEMENT

(a) Using a clip remover, disconnect the 2 wire harness clamps.

(b) Remove the 4 bolts.

(c) Remove the 4 nuts and front bumper reinforcement.

11. REMOVE FRONT BUMPER SIDE SUPPORT LH

(a) Remove the 2 screws and side support.

12. REMOVE FRONT BUMPER SIDE SUPPORT LH

(a) Remove the 2 screws and side support.

13. REMOVE RADIATOR GRILLE LOWER

14. REMOVE FOG LAMP ASSY LH (W/ FOG LAMP) **(SEE PAGE 65-10)**

15. REMOVE FOG LAMP ASSY RH (W/ FOG LAMP) **(SEE PAGE 65-10)**

16. REMOVE FOG LAMP UNIT LH (W/ FOG LAMP) **(SEE PUB. NO. RM821E PAGE 65-15)**

17. REMOVE FOG LAMP UNIT RH (W/ FOG LAMP) **(SEE PUB. NO. RM821E PAGE 65-15)**

18. REMOVE FRONT BUMPER HOLE COVER LH (W/O FOG LAMP)

(a) Remove the 6 claws and bumper hole cover LH.

19. REMOVE FRONT BUMPER HOLE COVER RH (W/O FOG LAMP)

(a) Remove the 6 claws and bumper hole cover RH.

20. INSTALL FRONT BUMPER REINFORCEMENT

(a) Install the reinforcement with the 4 bolts and 4 nuts.

Torque: 13 N·m (133 kgf·cm, 10 ft·lbf)

21. INSTALL FRONT BUMPER COVER SUB-ASSY

(a) Install the bumper cover with the 2 screws and 2 protectors.

(b) Install the clip.

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