

HOW TO USE THIS MANUAL

IN00U-90

GENERAL INFORMATION

1. INDEX

An INDEX is provided on the first page of each section to guide you to the item to be repaired. To assist you in finding your way through the manual, the Section Title and major heading are given at the top of every page.

2. GENERAL DESCRIPTION

At the beginning of each section, a General Description is given that pertains to all repair operations contained in that section.

Read these precautions before starting any repair task.

3. TROUBLESHOOTING

TROUBLESHOOTING tables are included for each system to help you diagnose the problem and find the cause. The fundamentals of how to proceed with troubleshooting are described on page [IN-22](#).

Be sure to read this before performing troubleshooting.

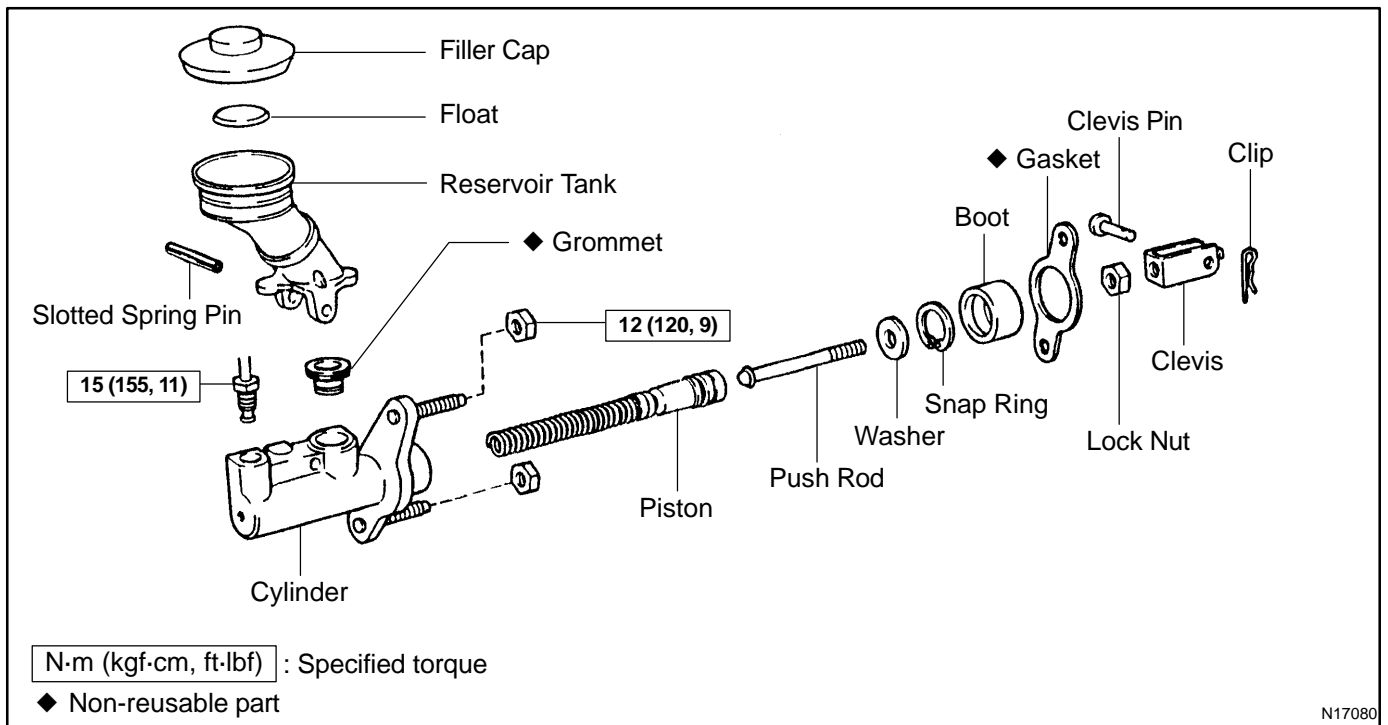
4. PREPARATION

Preparation lists the SST (Special Service Tools), recommended tools, equipment, lubricant and SSM (Special Service Materials) which should be prepared before beginning the operation and explains the purpose of each one.

5. REPAIR PROCEDURES

Most repair operations begin with an overview illustration. It identifies the components and shows how the parts fit together.

Example:



The procedures are presented in a step-by-step format:

- The illustration shows what to do and where to do it.
- The task heading tells what to do.
- 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

21. CHECK PISTON STROKE OF OVERDRIVE BRAKE

(a) Place SST and a dial indicator onto the overdrive brake piston as shown in the illustration.

SST 09350-30020 (09350-06120)

Set part No.

Component part No.

Detailed text : how to do task

(b) Measure the stroke applying and releasing the compressed air (392 — 785 kPa, 4 — 8 kgf/cm² or 57 — 114 psi) as shown in the illustration.

Piston stroke: 1.40 — 1.70 mm (0.0551 — 0.0669 in.)

Specification

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

6. REFERENCES

References have been kept to a minimum. However, when they are required you are given the page to refer to.

7. SPECIFICATIONS

Specifications are presented in bold type throughout the text where needed. You never have to leave the procedure to look up your specifications. They are also found in Service Specifications section for quick reference.

8. CAUTIONS, NOTICES, HINTS:

- CAUTIONS are presented in bold type, and indicate there is a possibility of injury to you or other people.
- NOTICES are also presented in bold type, and indicate the possibility of damage to the components being repaired.
- HINTS are separated from the text but do not appear in bold. They provide additional information to help you perform the repair efficiently.

9. SI UNIT

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.

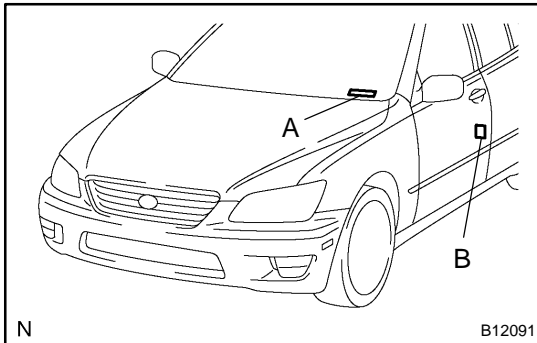
Example:

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

IDENTIFICATION INFORMATION

VEHICLE IDENTIFICATION AND ENGINE SERIAL NUMBER

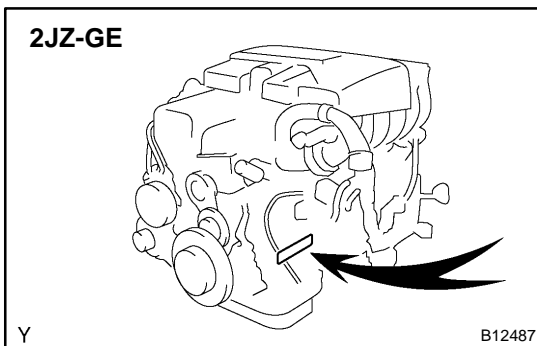
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1. VEHICLE IDENTIFICATION NUMBER

The vehicle identification number is stamped on the vehicle identification number plate and the certification label, as shown in the illustration.

- A: Vehicle Identification Number Plate
- B: Certification Label



2. ENGINE SERIAL NUMBER

The engine serial number is stamped on the engine block, as shown in the illustration.

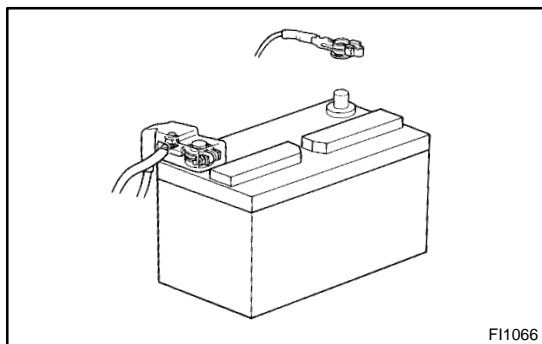
REPAIR INSTRUCTIONS

GENERAL INFORMATION

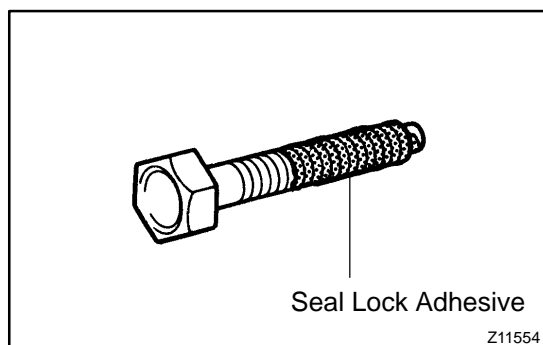
INODC-15

BASIC REPAIR HINT

- (a) Prevent damage and maintain vehicle cleanliness by protective covering on the fender, seat and floor.
- (b) During disassembly, line up parts in the order they were removed to facilitate reassembly.

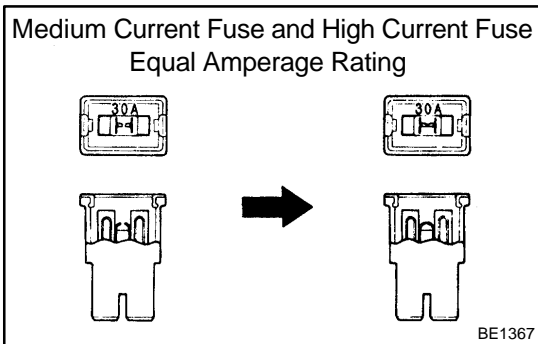


- (c) Installation and removal of battery terminal:
 - (1) Before performing electrical work, disconnect the negative (-) terminal cable from the battery.
 - (2) If it is necessary to disconnect the battery for inspection or repair, first disconnect the negative (-) terminal cable.
 - (3) To prevent damage to the battery terminal when disconnecting the terminal cable, loosen the cable nut and raise the cable straight up. Do not twist or pry the cable off.
 - (4) Clean the battery terminals and cable ends with a clean shop rag. Do not scrape them with a file or other abrasive objects.
 - (5) Install the cable ends to the battery terminals after loosening the nut, and tighten the nut after installation. Do not use a hammer to tap the cable ends onto the terminals.
 - (6) Be sure the cover for the positive (+) terminal is properly in place.
- (d) Check hose and wiring connectors to make sure that they are connected securely and correctly.
- (e) Non-reusable parts:
 - (1) Always replace cotter pins, gaskets, O-rings, oil seals, etc. with new ones.
 - (2) Non-reusable parts are indicated in component illustrations by the "◆" symbols.



- (f) Precoated parts
Precoated parts are bolts, nuts, etc. that are coated with a seal lock adhesive at the factory.
 - (1) If a precoated part is retightened, loosened or move caused to in any way, it must be recoated with the specified adhesive.
 - (2) When reusing precoated parts, clean off the old adhesive and dry with compressed air. Then apply new seal lock adhesive to the bolt, nut or threads.

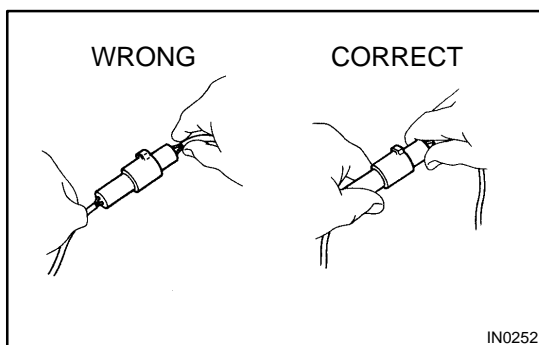
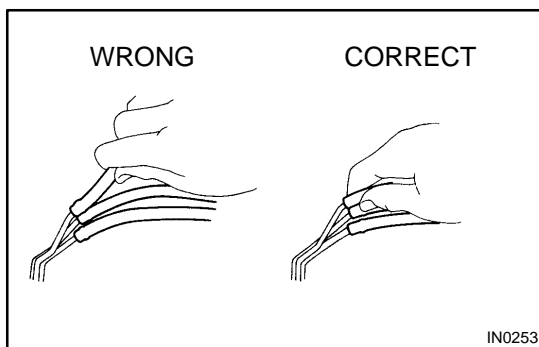
- (3) Precoated parts are indicated in component illustrations by the "★" symbols.
- (g) When necessary, use a sealer on gaskets to prevent leaks.
- (h) Carefully observe all specifications for bolt tightening torques. Always use a torque wrench.
- (i) Use of special service tools (SST) and special service materials (SSM) may be required, depending on the nature of the repair. Be sure to use SST and SSM where specified and follow the proper work procedure. A list of SST and SSM can be found in the Preparation section in this manual.



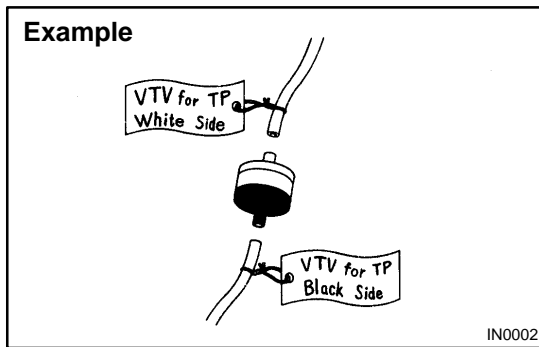
- (j) When replacing fuses, be sure the new fuse has the correct amperage rating. DO NOT exceed the rating or use one with a lower rating.

Illustration	Symbol	Part Name	Abbreviation
<p>BE5594</p>	<p>IN0365</p>	FUSE	FUSE
<p>BE5595</p>	<p>IN0366</p>	MEDIUM CURRENT FUSE	M-FUSE
<p>BE5596</p>	<p>IN0367</p>	HIGH CURRENT FUSE	H-FUSE
<p>BE5597</p>	<p>IN0367</p>	FUSIBLE LINK	FL
<p>BE5598</p>	<p>IN0368</p>	CIRCUIT BREAKER	CB

- (k) 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 [IN-8](#)).
- Release the parking brake on a level surface and shift to in Neutral or N range.
 - When jacking up the front wheels of the vehicle, at first place chocks behind the rear wheels.
 - When jacking up the rear wheels of the vehicle, place chocks in front of the front wheels.
 - When jacking up only the front or rear wheels, set rigid racks and place chocks on front and behind the wheels in contact with the ground.
 - After the vehicle is jacked up, be sure to support it on rigid racks. It is extremely dangerous to do any work on a vehicle raised on a jack alone, even for a small job that can be finished quickly.
- (l) Observe the following precautions to avoid damage to the following parts:
- (1) Do not open the cover or case of the ECU unless absolutely necessary. (Static electricity transmitted through human touch may destroy the IC.)

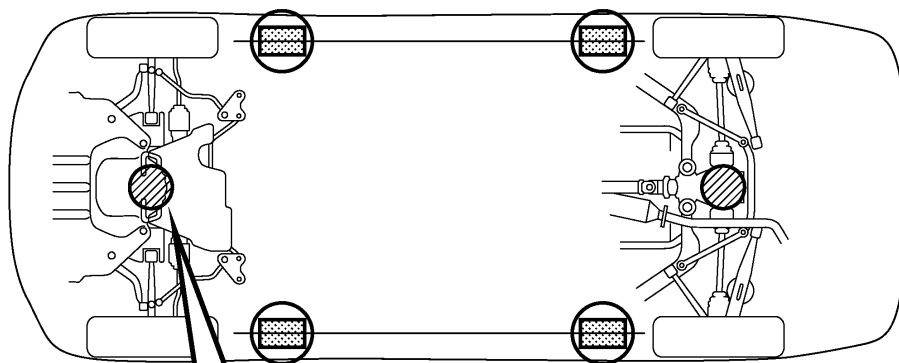


- (2) To disconnect vacuum hoses, pull off the end of the hose, not the middle.
- (3) To pull apart electrical connectors, pull on the connector itself, not the wires.
- (4) Be careful not to drop electrical components, such as sensors or relays. If they are dropped on a hard floor, they should be replaced and not reused.
- (5) When steam cleaning an engine, protect the electronic components, air filter and emission-related components from water.
- (6) Never use an impact wrench to remove or install temperature switches or temperature sensors.
- (7) When checking continuity at the wire connector, insert the tester probe carefully to prevent terminals from bending.
- (8) 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.



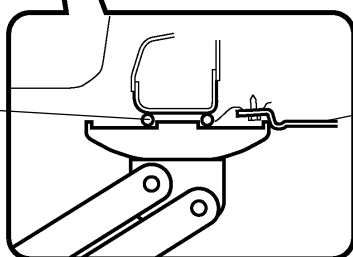
- (m) Installation and removal of vacuum hose:
- (1) When disconnecting vacuum hoses, use tags to identify where they should be reconnected to.
 - (2) After completing a job, double check that the vacuum hoses are properly connected. A label under the hood shows the proper layout.
- (n) Unless otherwise stated, all resistance should be measured at an ambient temperature of 20°C (68°F). Measurement should be made after the engine has cooled down. If measured at high temperatures immediately after the vehicle has been running, resistance may be outside specifications.

VEHICLE LIFT AND SUPPORT LOCATIONS

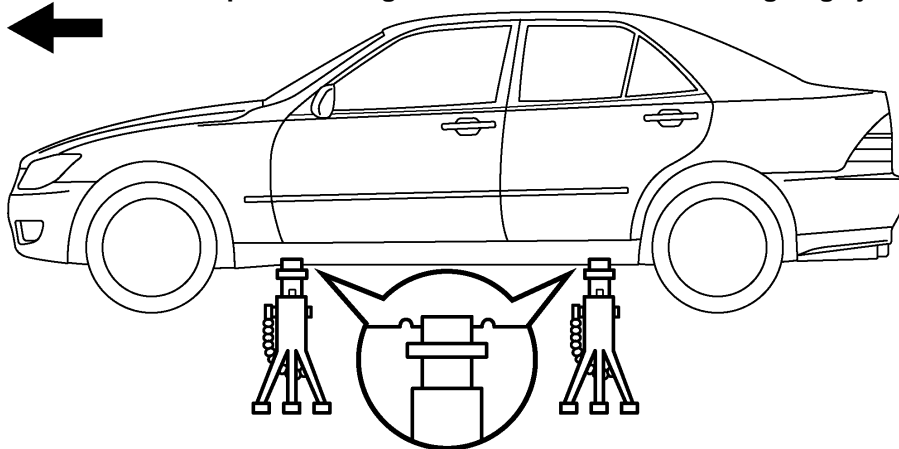


Front Suspension Member

Engine Under Cover No. 2



NOTICE:
Never place the engine under cover No. 2 on the garage jack.



JACK POSITION _____

Front ----- Front suspension member

Rear ----- Differential carrier



CAUTION : When jacking-up the front and rear, make sure the vehicle is not carrying any extra weight.

PANTOGRAPH JACK POSITION _____

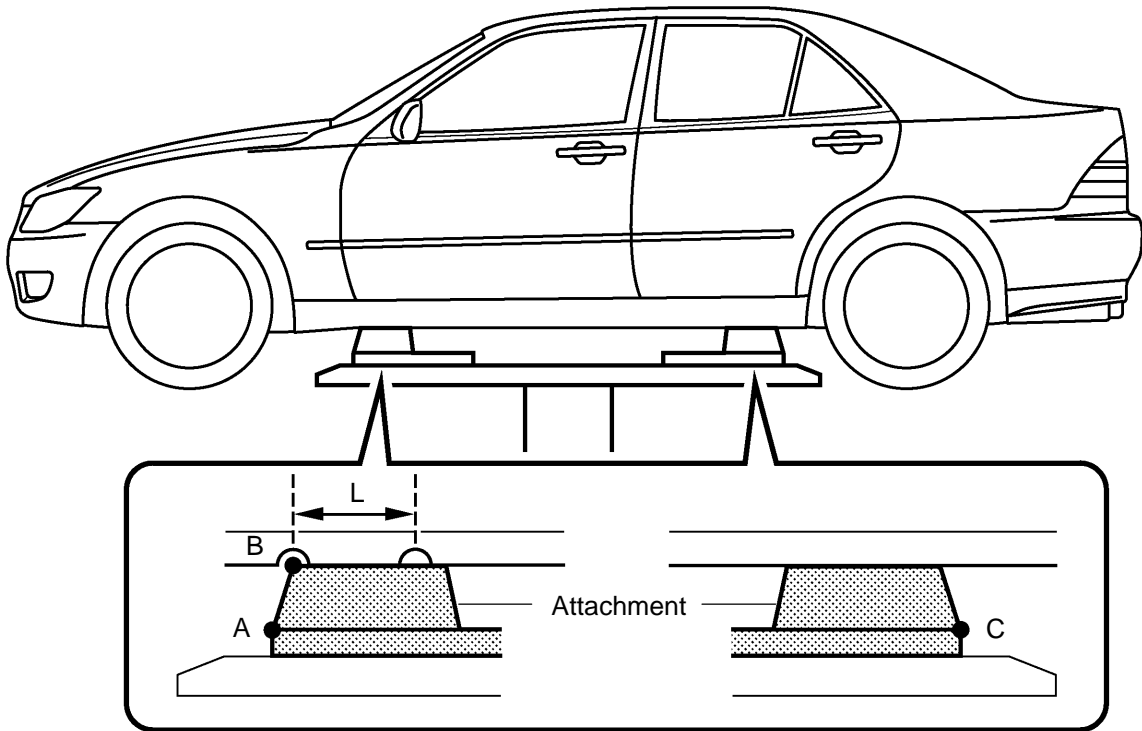


SUPPORT POSITION

Safety stand and swing arm type lift -----



Plate type lift

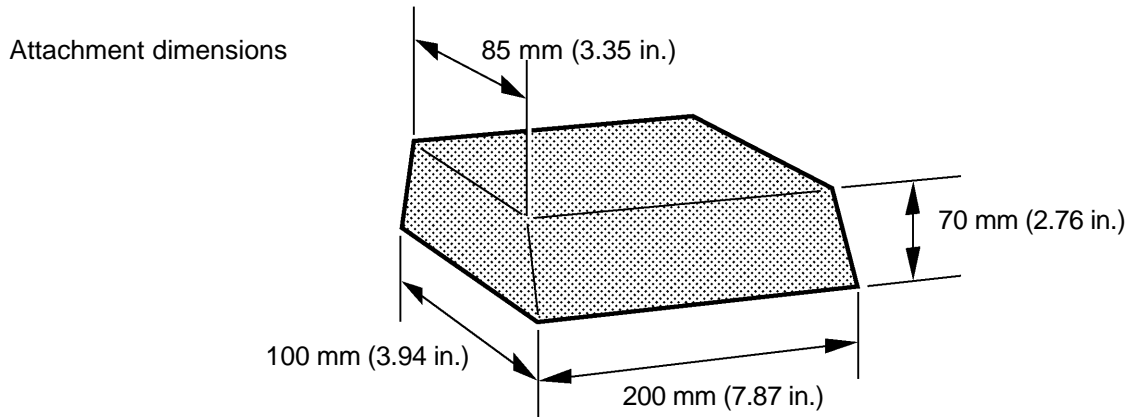


HINT :

- | | |
|-----------------------------|---|
| Right and left set position | Place the vehicle over the center of the lift. |
| Front and rear set position | <ul style="list-style-type: none"> ● When using attachments, place the one for front side vertically and the one for rear side horizontally to the vehicle. ● Align the cushion gum ends of the plate with the attachment lower ends (A, C). ● Align the attachment upper end (B) with the rocker flange front side notch. |

NOTICE :

Check the interference of the attachment with the front floor cover when placing the attachment on the plate.



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FOR ALL OF VEHICLES PRECAUTION

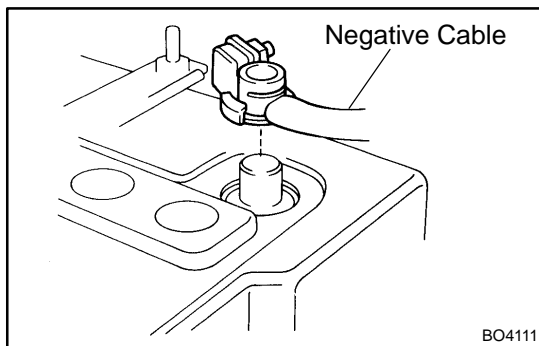
IN0KE-01

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

- (a) The LEXUS IS300 is equipped with an Supplemental Restraint System (SRS), such as the driver airbag, front passenger airbag assembly, side airbag assembly, curtain shield airbag assembly and seat belt pretensioners.

Failure to carry out service operations in the correct sequence could cause the supplemental restraint system to unexpectedly deploy during servicing, possibly leading to a serious accident.

Further, if a mistake is made in servicing the supplemental restraint system, it is possible the SRS may fail to operate when required. Before servicing (including removal or installation of parts, inspection or replacement), be sure to read the following items carefully, then follow the correct procedure described in this manual.



(b) GENERAL NOTICE

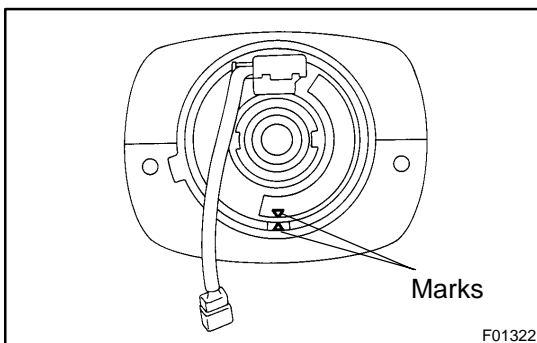
- (1) Malfunction symptoms of the SRS are difficult to confirm, so the diagnostic trouble codes become the most important source of information when troubleshooting. When troubleshooting the supplemental restraint system, always check the diagnostic trouble codes before disconnecting the battery (see page [DI-607](#)).

- (2) Work must be started after 90 seconds from the time the ignition switch is turned to the LOCK position and the negative (-) terminal cable is disconnected from the battery.

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

When the negative (-) terminal cable is disconnected from the battery, memory of the clock and audio systems will be cancelled. So before starting work, make a record of the contents memorized by the each memory system. Then when work is finished, reset the clock and audio systems as before. To avoid erasing the memory of each memory system, never use a back-up power supply from another battery.

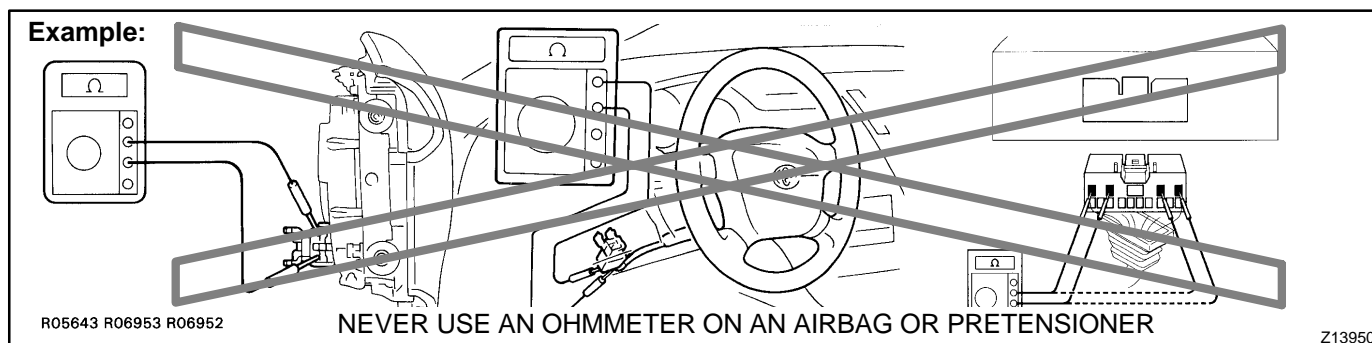
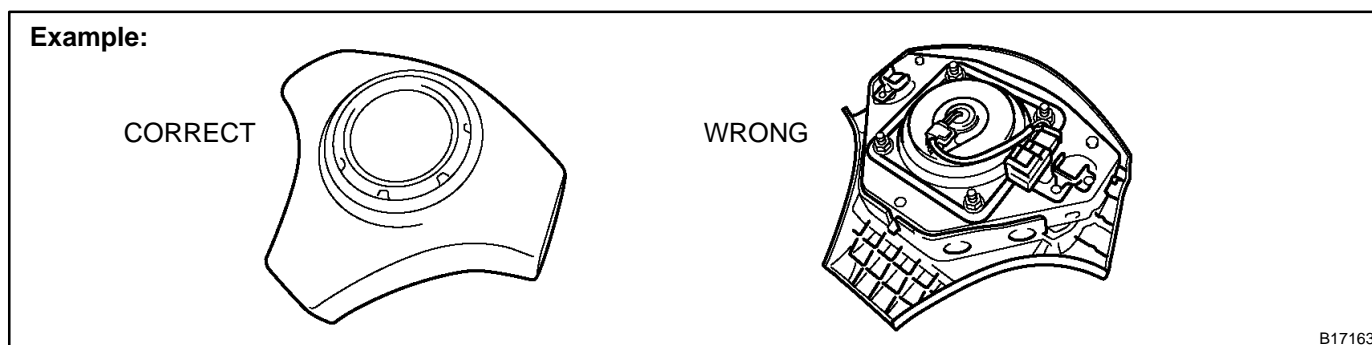
- (3) Even in cases of a minor collision where the SRS does not deploy, the steering wheel pad (see page [RS-17](#)), front passenger airbag assembly (see page [RS-31](#)), side airbag assembly (see page [RS-44](#)), curtain shield airbag assembly (see page [RS-58](#)), front airbag sensor (see page [RS-74](#)), side and curtain shield airbag sensor assembly (see page [RS-79](#)) and seat belt pretensioner (see page [BO-220](#)) should be inspected.
- (4) Never use SRS parts from another vehicle. When replacing parts, replace them with new parts.
- (5) Before repairs, remove the airbag sensor if shocks are likely to be applied to the sensor during repairs.
- (6) Never disassemble and repair the steering wheel pad, front passenger airbag assembly, side airbag assembly, curtain shield airbag assembly, front airbag sensor, side and curtain shield airbag sensor assembly or seat belt pretensioner.
- (7) Replace if the airbag sensor, steering wheel pad, front passenger airbag assembly, side airbag assembly, curtain shield airbag assembly, front airbag sensor assembly or seat belt pretensioner if it has been dropped, or if there are cracks, dents or other defects in its case, bracket or connector.
- (8) Do not directly expose the steering wheel pad, front passenger airbag assembly, side airbag assembly, curtain shield airbag assembly, front airbag sensor, side and curtain shield airbag sensor assembly or seat belt pretensioner to hot air or flames.
- (9) Use a voltmeter/ohmmeter with high impedance (10 k Ω /V minimum) for troubleshooting of the electrical circuit.
- (10) Information labels are attached to the periphery of the SRS components. Follow the instructions on the labels.
- (11) After work on the SRS is completed, check the SRS warning light (see page [DI-607](#)).



- (c) **SPIRAL CABLE (in Combination Switch)**
 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 result. Refer to [SR-25](#) of this manual concerning correct steering wheel installation.

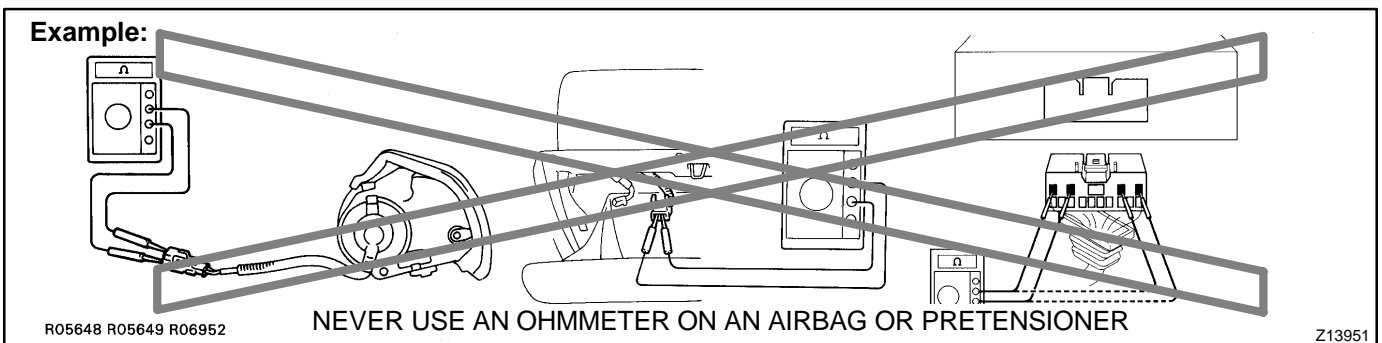
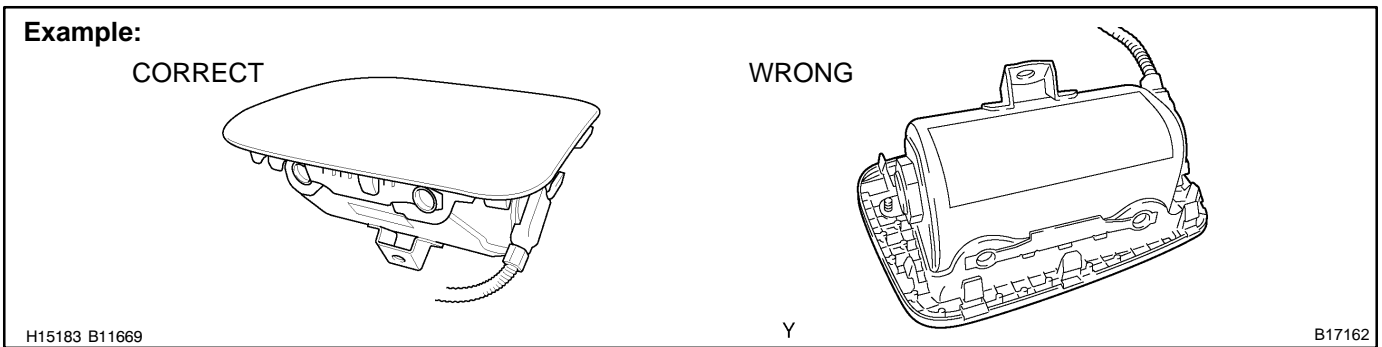
(d) STEERING WHEEL PAD (with Airbag)

- (1) When removing the steering wheel pad or handling a new steering wheel pad, it should be placed with the pad top surface facing up see illustration below. Storing the pad with its metallic surface facing upward may lead to a serious accident if the airbag inflates. In addition, do not store a steering wheel pad on top of one another.
- (2) Never measure the resistance of the airbag squib. This may cause the airbag to deploy, which is could cause serious injury.
- (3) Grease or detergents of any kind should not be applied to the steering wheel pad.
- (4) Store the steering wheel pad where the ambient temperature remains below 93°C (200°F), has low humidity and is away from electrical noise.
- (5) Before using an electric welder, first disconnect the airbag connector (the connector is yellow and has 4 pins) under the steering column near the combination switch connector.
- (6) As a safety measure, always deploy airbags using an SST before disposal (see page [RS-17](#)). Deploy airbags in a safe place away from electrical noise.



(e) FRONT PASSENGER AIRBAG ASSEMBLY

- (1) Always store a removed or new front passenger airbag assembly with the airbag deployment direction facing up.
Storing the airbag assembly with the airbag deployment direction facing down could cause a serious accident if the airbag inflate.
- (2) Never measure the resistance of the airbag squib. This may cause the airbag to deploy, which is could cause serious injury.
- (3) Grease or detergents of any kind should not be applied to the steering wheel pad.
- (4) Store the steering wheel pad where the ambient temperature remains below 93°C (200°F), has low humidity and is away from electrical noise.
- (5) Before using an electric welder, first disconnect the airbag connector (the connector is yellow and has 4 pins) under the steering column near the combination switch connector.
- (6) As a safety measure, always deploy airbags using an SST before disposal (see page RS-31).
Deploy airbags in a safe place away from electrical noise.

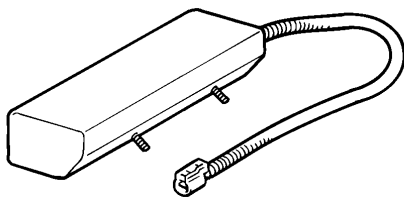


(f) SIDE AIRBAG ASSEMBLY

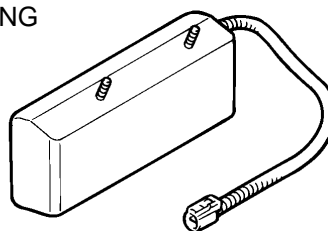
- (1) Always store a removed or new side airbag assembly with the airbag deployment direction facing up. Storing the airbag assembly with the airbag deployment direction facing down could cause a serious accident if the airbag inflates.
- (2) Never measure the resistance of the airbag squib. This may cause the airbag to deploy, which could cause serious injury.
- (3) Grease or detergents of any kind should not be applied to the steering wheel pad.
- (4) Store the steering wheel pad where the ambient temperature remains below 93°C (200°F), has low humidity and is away from electrical noise.
- (5) Before using an electric welder, first disconnect the airbag connector (the connector is yellow and has 2 pins) under the steering column near the combination switch connector.
- (6) As a safety measure, always deploy airbags using an SST before disposal (see page [RS-44](#)). Deploy airbags in safe place away from electrical noise.

Example:

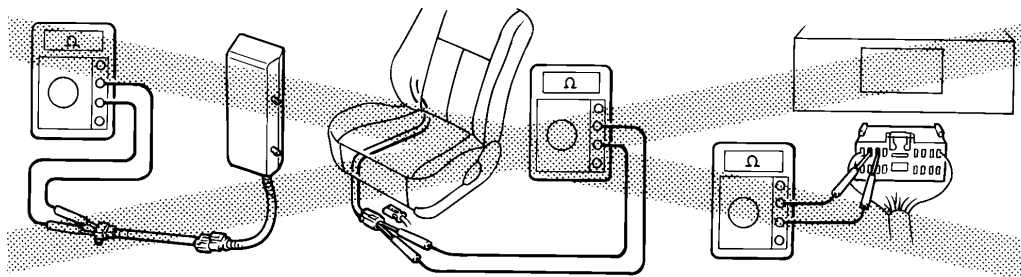
CORRECT



WRONG



B17197

Example:

NEVER USE AN OHMMETER ON AN AIRBAG OR PRETENSIONER

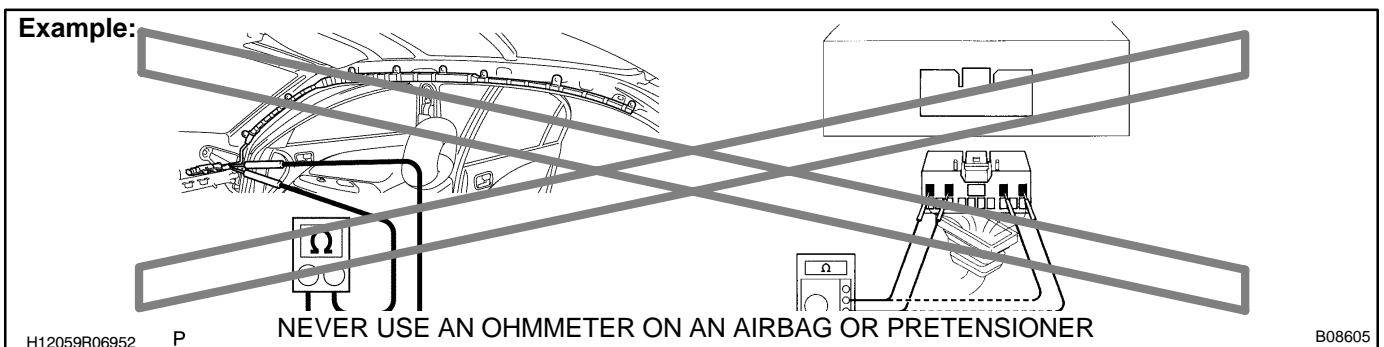
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(g) CURTAIN SHIELD AIRBAG ASSEMBLY

- (1) Always store a removed or new side airbag assembly with the airbag deployment direction facing up. Storing the airbag assembly with the airbag deployment direction facing down could cause a serious accident if the airbag inflates.

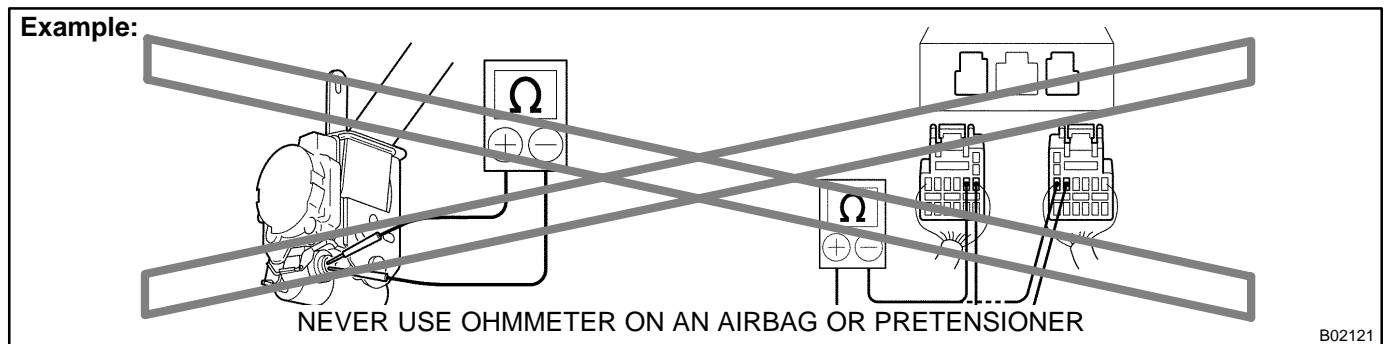
NOTICE:**Plastic bag is not re-useable.****CAUTION:****Never disassemble the curtain shield airbag assembly.**

- (2) Never measure the resistance of the airbag squib. This may cause the airbag to deploy, which could cause serious injury.
- (3) Grease or detergents of any kind should not be applied to the curtain shield airbag assembly.
- (4) Store the steering wheel pad where the ambient temperature remains below 93°C (200°F), has low humidity and is away from electrical noise.
- (5) Before using an electric welder, first disconnect the airbag connector (the connector is yellow and has 2 pins) under the steering column near the combination switch connector.
- (6) As a safety measure, always deploy airbags using an SST before disposal (see page [RS-59](#)). Deploy airbags in a safe place away from electrical noise.



(h) SEAT BELT PRETENSIONER

- (1) Never measure the resistance of the seat belt pretensioner. This may cause the seat belt pretensioner to activate, which could cause serious injury.
- (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), has low humidity and is away from electrical noise.
- (5) Before using an electric welder, first disconnect the connector (the connector is yellow and has 2 pins).
- (6) As a safety measure, always activate the seat belt pretensioner before disposal (see page [BO-220](#)). Activate the pretensioner in safe place away from electrical noise.
- (7) The seat belt pretensioner becomes hot after activation. Allow it to cool before disposing. Never use water to cool seat belt pretensioner.



(i) AIRBAG SENSOR ASSEMBLY

- (1) If an airbag sensor assembly has been involved in a collision where its SRS has deployed, do not re-use it.
- (2) The connectors to the airbag sensor assembly should be connected or disconnected with the sensor mounted on the floor. Failure to do so could cause undesired deployment of the SRS.
- (3) To avoid serious injury, servicing the SRS must be started 90 seconds after:
 - The ignition switch is turned to the LOCK position.
 - The negative (-) terminal cable is disconnected from the battery.

Even if only loosening the set bolts of the airbag sensor assembly, you must follow the above guidelines.

(j) WIRE HARNESS AND CONNECTOR

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, etc., repair or replace it as shown on page [RS-82](#).

2. FOR VEHICLES EQUIPPED WITH A CATALYTIC CONVERTER

CAUTION:

If large amount of unburned gasoline flows into the converter, it may overheat and create a fire hazard. To prevent this, observe the following precautions and explain them to your customer.

- (a) Use only unleaded gasoline.
- (b) Avoid prolonged idling.
Avoid running the engine at idle speed for more than 20 minutes.
- (c) Avoid spark jump test.
 - (1) Perform spark jump test only when absolutely necessary. Perform this test as rapidly as possible.
 - (2) While testing, never race the engine.
- (d) Avoid prolonged engine compression measurement.
Engine compression tests must be done as rapidly as possible.
- (e) Do not run engine when fuel tank is nearly empty.
This may cause the engine to misfire and create an extra load on the converter.
- (f) Avoid coasting with ignition turned off.
- (g) Do not dispose of used catalyst along with parts contaminated with gasoline or oil.

3. IF VEHICLE IS EQUIPPED WITH MOBILE COMMUNICATION SYSTEM

For vehicles with mobile communication systems such as two-way radios and cellular telephones, observe the following precautions.

- (1) Install the antenna as far as possible away from the ECU and sensors of the vehicle's electronic system.
- (2) Install the antenna feeder at least 20 cm (7.87 in.) away from the ECU and sensors of the vehicle's electronic systems. For details about ECU and sensors locations, refer to the section on the applicable component.
- (3) Avoid winding the antenna feeder together with other wiring as much as possible, and also avoid running the antenna feeder parallel with other wire harnesses.
- (4) Check that the antenna and feeder are correctly adjusted.
- (5) Do not install powerful mobile communications system.

4. FOR USING OBD II SCAN TOOL OR HAND-HELD TESTER

CAUTION:

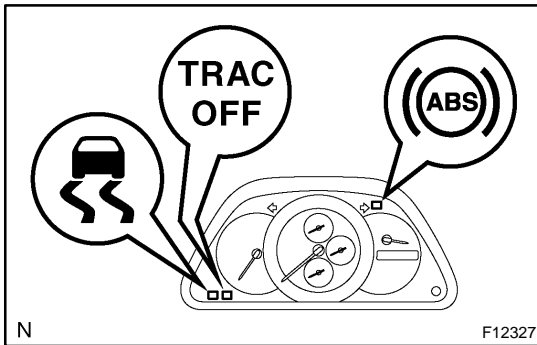
Observe the following items for safety reasons:

- **Before using the OBD II scan tool or hand-held tester, the OBD II scan tool's instruction book or hand-held tester's operator manual should be read thoroughly.**
- **Be sure to route all cables securely when driving with the OBD II scan tool or hand-held tester connected to the vehicle. (i.e. Keep cables away from feet, pedals, steering wheel and shift lever.)**
- **Two persons are required when test driving with the OBD II scan tool or hand-held tester, one person to drive the vehicle and the other person to operate the OBD II scan tool or hand-held tester.**

5. FOR VEHICLES EQUIPPED WITH TRACTION CONTROL (TRAC) SYSTEM

NOTICE:

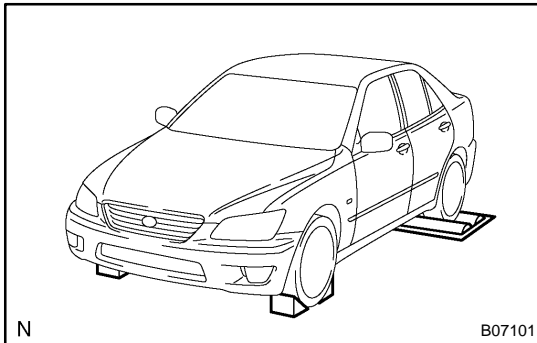
When using a 2-wheel drum tester such as a speedometer tester or chassis dynamometer, etc., or jacking up the rear wheels and driving the wheels, always push in the TRAC cut switch and turn the TRAC system OFF.



- (a) Press the TRAC cut switch.
- (b) Check that the TRAC system is turned OFF by the TRAC cut switch.

HINT:

The SLIP indicator light should be always ON immediately after the engine is restarted.



- (c) Begin measurements.
- (d) Press the TRAC cut switch to turn the TRAC to the operative mode and check that the TRAC OFF indicator light goes off.

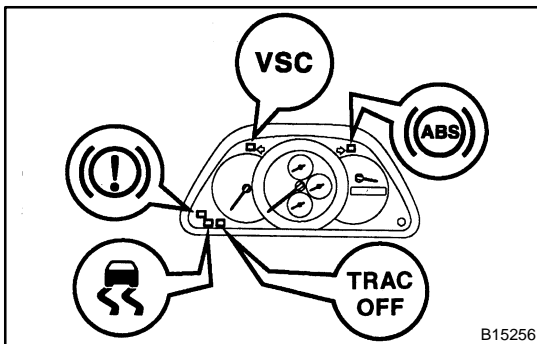
HINT:

The SLIP indicator light blinks when the TRAC system is operational.

6. FOR VEHICLES EQUIPPED WITH VEHICLE SKID CONTROL (VSC) SYSTEM

NOTICE:

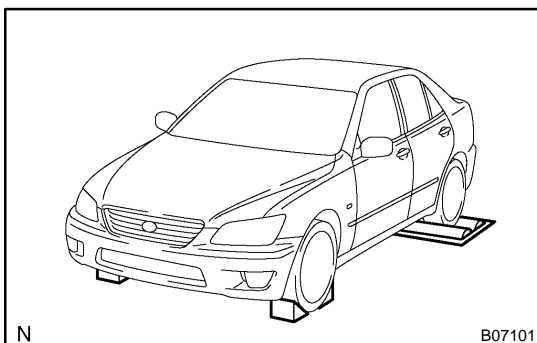
When using 2-wheel drum tester such as a speedometer tester or chassis dynamometer, etc., or jacking up the front wheels and driving the wheels, always push in the VSC OFF switch to turn the VSC system OFF.



- (a) Press the VSC OFF switch.
- (b) Check that the VSC OFF indicator light comes ON.

HINT:

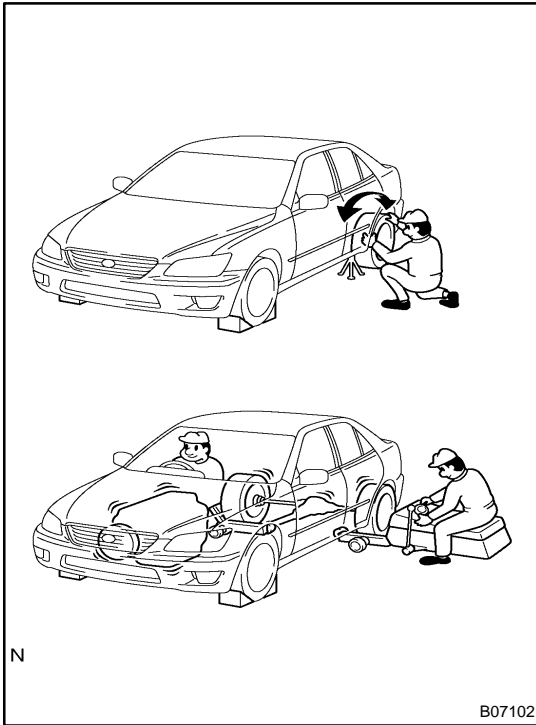
The VSC OFF indicator light should be always OFF when the engine is restarted.



- (c) Begin measurements.
- (d) Press the VSC OFF switch again to change the VSC system to operational condition and check that the VSC OFF indicator light goes off.

HINT:

The SLIP indicator light blinks and the VSC buzzer sounds when the VSC system is operational.



7. FOR VEHICLES EQUIPPED WITH LIMITED SLIP DIFFERENTIAL

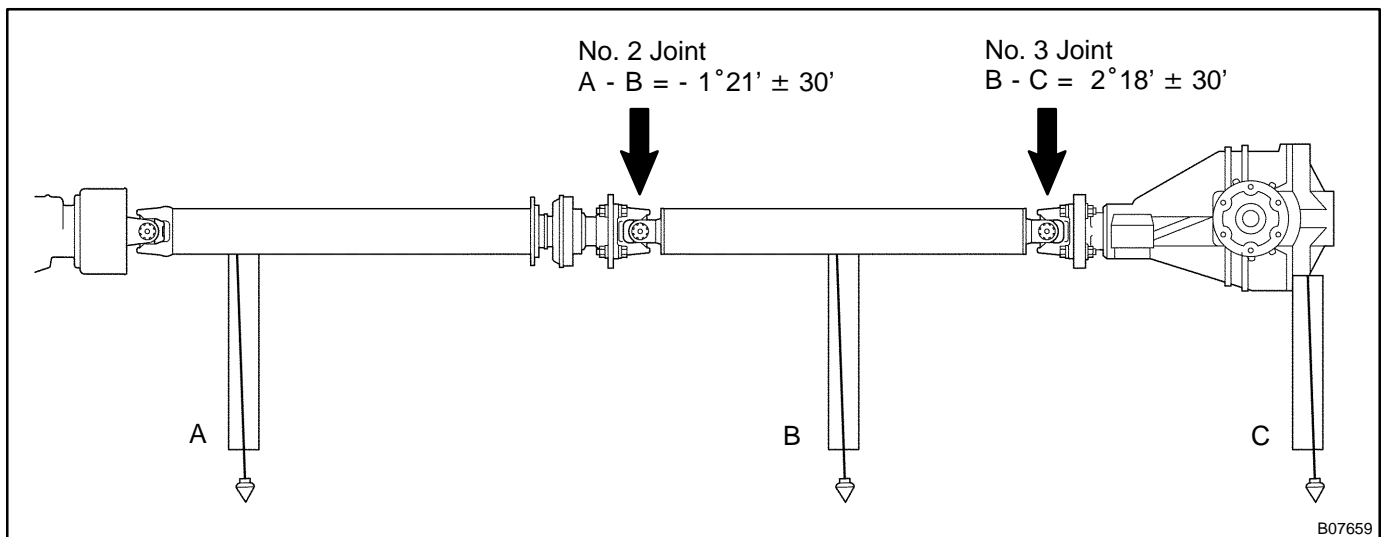
- (a) Never apply driving force when RH or LH rear wheel only is touching the ground.
- (b) During service/rectification work never spin (race) the RH or LH rear wheel only such as with ON-The-Car type wheel balancer, both rear wheels must be off the ground.

HINT:

- In case of the above, due to the construction of the LSD the driving force is transmitted to the opposite wheel and therefore it is possible for the vehicle to start suddenly if only one rear wheel is off the ground. Furthermore it could result in component damage to the LSD due to the loads acting on it.
- Always raise both rear wheels off the ground and support the vehicle on suitable safety stand.

8. INSPECTION AND ADJUSTMENT OF JOINT ANGLE DURING REMOVAL AND INSTALLATION OF PROPELLER SHAFT

When performing operations which involve the removal and installation of the propeller shaft, always check the joint angle. Make adjustments if necessary (see page [PR-11](#)).



HOW TO TROUBLESHOOT ECU CONTROLLED SYSTEMS

GENERAL INFORMATION

IN04S-45

A large number of ECU controlled systems are used in the LEXUS IS300. In general, ECU controlled systems are considered to be a very intricate, requiring a high level of technical knowledge to troubleshoot. However, following the problem checking procedures of the ECU controlled system's circuits carefully is not complex. If you have an adequate understanding of the system and a basic knowledge of electricity, accurate diagnosis and necessary repair can be performed.

This manual emphasizes the above standpoint to help service technicians perform accurate and effective troubleshooting. Detailed information on major ECU controlled systems in this vehicle are outlined below:

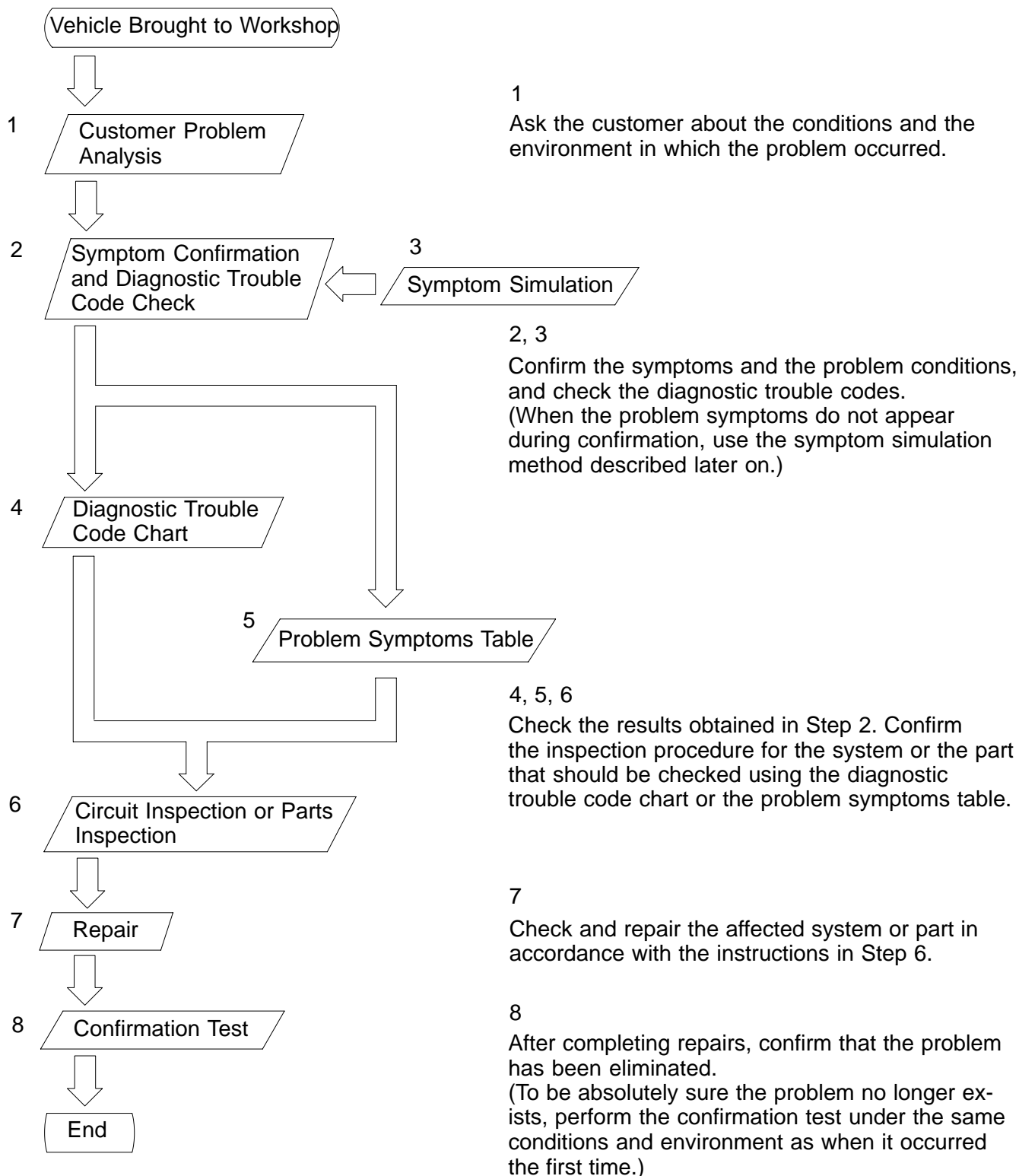
System	Page
1. Engine	DI-1
2. Automatic Transmission	DI-335
3. ABS with EBD & BA & TRAC System	DI-435
4. ABS with EBD & BA & TRAC & VSC System	DI-505
5. Supplemental Restraint System	DI-605
6. Theft Deterrent System	DI-776
7. Cruise Control System	DI-818
8. Engine Immobiliser System	DI-849
9. Combination Meter System	DI-870
10. Body Control System	DI-893
11. Multiplex Communication System	DI-949
12. LEXUS Navigation System	DI-979
13. Air Conditioning System	DI-1009

FOR USING OBDII SCAN TOOL OR HAND-HELD TESTER

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

HOW TO PROCEED WITH TROUBLESHOOTING

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



1. CUSTOMER PROBLEM ANALYSIS

- The 5 items in the table below are important points in the problem analysis:
- In troubleshooting, the problem symptoms must be confirmed accurately. Preconceptions should be discarded in order to give an accurate judgement. To ascertain what the problem symptoms are, it is extremely important to ask the customer about the problem and the conditions at the time it occurred.

Important Points in the 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 No.	
Date Vehicle Brought In	/ /	Odometer Reading	km miles
Date Problem First Occurred	/ /		
Weather	<input type="checkbox"/> Fine <input type="checkbox"/> Cloudy <input type="checkbox"/> Rainy <input type="checkbox"/> Snowy <input type="checkbox"/> Other		
Temperature	Approx. _____		
Vehicle Operation	<input type="checkbox"/> Starting <input type="checkbox"/> Idling <input type="checkbox"/> Driving [<input type="checkbox"/> Constant speed <input type="checkbox"/> Acceleration <input type="checkbox"/> Deceleration <input type="checkbox"/> Other]		

2. SYMPTOM CONFIRMATION AND DIAGNOSTIC TROUBLE CODE CHECK

The diagnostic system in the LEXUS IS300 fulfills 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 check functions, the problem areas can be narrowed down and troubleshooting is more effective. Diagnostic functions are incorporated in the following systems in the LEXUS IS300.

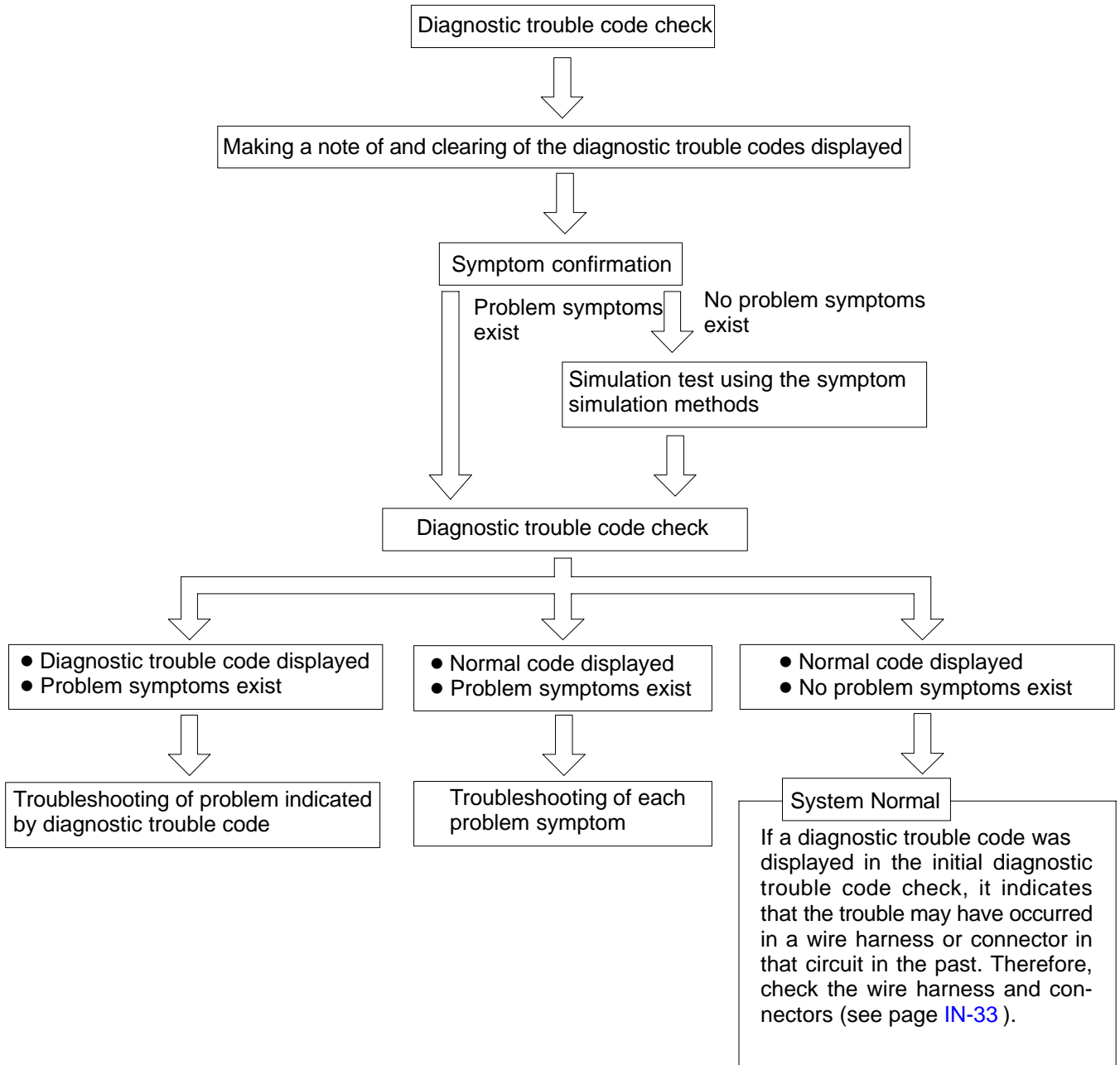
System	Diagnostic Trouble Code Check	Input Signal Check (Sensor Check)	Diagnostic Test Mode (Active Test)
Engine	☑ (with Check Mode)	☑	☑
Automatic Transmission	☑ (with Check Mode)	☑	
ABS with EBD & BA & TRAC System	☑	☑	☑
ABS with EBD & BA & TRAC & VSC System	☑	☑	☑
Supplemental Restraint System	☑		
Theft Deterent System			☑
Cruise Control System	☑	☑	
Engine Immobiliser System	☑		
Combination Meter System			☑
Body Control System			☑
Multiplex Communication System	☑		☑
LEXUS Navigation System			☑
Air Conditioning System	☑		☑

In diagnostic trouble code check, it is very important to determine whether the problem indicated by the diagnostic trouble code is still occurring or occurred in the past but returned to normal at present. In addition, it must be checked in the problem symptom check whether the malfunction indicated by the diagnostic trouble code is directly related to the problem symptom or not. For this reason, the diagnostic trouble codes should be checked before and after the symptom confirmation to determine the current conditions, as shown in the table below. If this is not done, it may, depending on the case, result in unnecessary troubleshooting for normally operating systems, thus making it more difficult to locate the problem, or in repairs not pertinent to the problem. Therefore, always follow the procedure in correct order and perform the diagnostic trouble code check.

DIAGNOSTIC TROUBLE CODE CHECK PROCEDURE

Diagnostic Trouble Code Check (Make a note of and then clear)	Confirmation of Symptoms	Diagnostic Trouble Code Check	Problem Condition
Diagnostic Trouble Code Display	Problem symptoms exist	Same diagnostic trouble code is displayed	Problem is still occurring in the diagnostic circuit
		Normal code is displayed	The problem is still occurring in a place other than in the diagnostic circuit (The diagnostic trouble code displayed first is either for a past problem or it is a secondary problem)
	No problem symptoms exist		The problem occurred in the diagnostic circuit in the past
Normal Code Display	Problem symptoms exist	Normal code is displayed	The problem is still occurring in a place other than in the diagnostic circuit
	No problem symptoms exist	Normal code is displayed	The problem occurred in a place other than in the diagnostic circuit in the past

Taking into account the points on the previous page, a flow chart showing how to proceed with troubleshooting using the diagnostic trouble code check is shown below. This flow chart shows how to utilize the diagnostic trouble code check effectively, then by carefully checking the results, indicates how to proceed either to diagnostic trouble code troubleshooting or to troubleshooting of problem symptoms table.



3. SYMPTOM SIMULATION

The most difficult case in troubleshooting is when no problem symptoms occurring. In such cases, a thorough customer problem analysis must be carried out. Then simulate 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 something important in the repair operation being overlooked and lead to mistakes or delays in repairs.

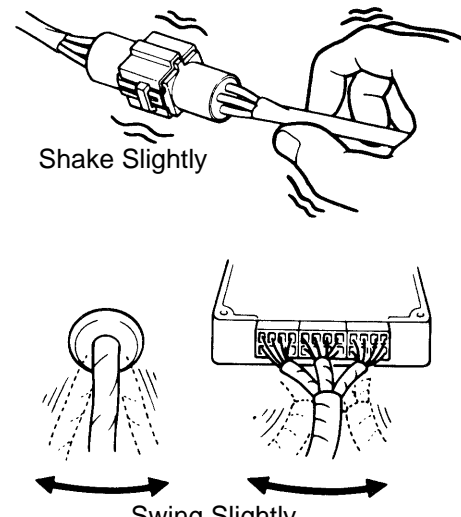
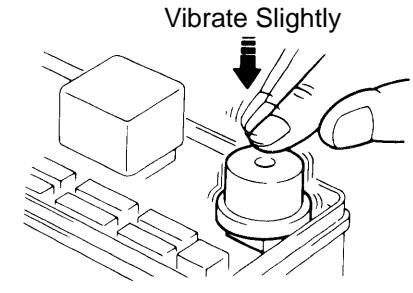
For example:

With a problem that only occurs when the engine is cold, or occurs as result of vibration caused by road during driving, the problem can never be determined as long as the symptoms are being checked on stationary vehicle or a vehicle with a warmed-up engine.

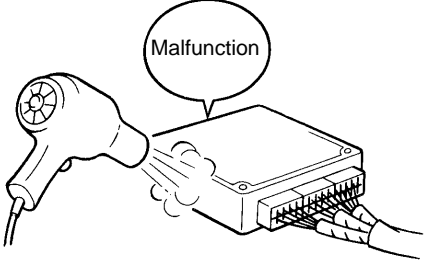

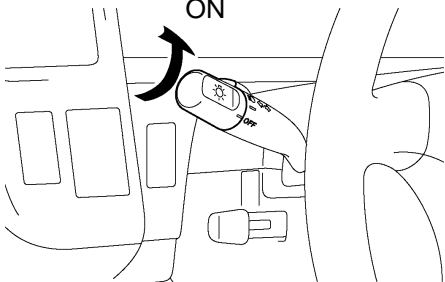
Vibration, heat or water penetration (moisture) is difficult to reproduce. The symptom simulation tests below are effected substitutes for the conditions and can be applied on a stationary vehicle.

Important Points in the Symptom Simulation Test:

In the symptom simulation test, the problem symptoms as well as 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, and also confirming the problem symptoms at the same time. Refer to the problem symptoms table for each system to narrow down the possible causes of the symptom.

1	VIBRATION METHOD: When vibration seems to be the major cause.	
<p>CONNECTORS Slightly shake the connector vertically and horizontally.</p> <p>WIRE HARNESS Slightly shake the wire harness vertically and horizontally. The connector joint, fulcrum of the vibration, and body through portion are the major areas that should be checked thoroughly.</p>	 <p>F12331 F12332</p>	
<p>PARTS AND SENSOR 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.</p> <p>HINT: Applying strong vibration to relays may result in open relays.</p>	 <p>F12330</p>	

V07268

<p>2</p>	<p>HEAT METHOD: When the problem seems to occur when the suspect area is heated.</p>
<p>Heat the component that is the likely cause of the malfunction with a hair dryer or similar device. Check whether or not if the malfunction occurs.</p> <p>NOTICE:</p> <p>(1) Do not heat to more than 60°C (140°F). (Exceeding this temperature may damage components.)</p> <p>(2) Do not apply heat directly to parts in the ECU.</p>	 <p>F12334</p>
<p>3</p>	<p>WATER SPRINKLING METHOD: When the malfunction seems to occur on a rainy day or in a high-humidity condition.</p>
<p>Sprinkle water onto the vehicle and check whether or not if the malfunction occurs.</p> <p>NOTICE:</p> <p>(1) Never sprinkle water directly into the engine compartment. Indirectly change the temperature and humidity by applying water spray onto the front of the radiator.</p> <p>(2) Never apply water directly onto electronic components.</p> <p>HINT:</p> <p>If a vehicle is subject to water leakage, the leaked water may damage the ECU. When testing a vehicle with a water leakage problem, special caution must be taken.</p>	 <p>F16649</p>
<p>4</p>	<p>OTHER: When a malfunction seems to occur when electrical load is excessive.</p>
<p>Turn on all electrical loads including the heater blower, head lights, rear window defogger, etc. and check to see if the malfunction occurs.</p>	 <p>B02389</p>

B02390

4. 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 engine 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 procedure for each circuit is to be found, or gives instructions for checking and repairs.

● **Trouble Area**
Indicates the suspect area of the problem.

● **Detection Item**
Indicates the system of the problem or contents of the problem.

DTC CHART (SAE Controlled)

HINT:
Parameters listed in the chart may not be exactly the same as your reading due to the type of instrument or other factors.

If a malfunction code is displayed during the DTC check mode, check the circuit for that code listed in the table below. For details of each code, refer to the "See page" under the "DTC No." in the DTC chart.

DTC No. (See page)	Detection Item	Trouble Area	MIL*	Memory
P0100 (DI-24)	Mass Air Flow Circuit Malfunction	<ul style="list-style-type: none"> ● Open or short in mass air flow meter circuit ● Mass air flow meter ● ECM 	○	○
P0101 (DI-28)	Mass Air Flow Circuit Range/ Performance Problem	<ul style="list-style-type: none"> ● Mass air flow meter 	○	○
P0110 (DI-29)	Intake Air Temp. Circuit Malfunction	<ul style="list-style-type: none"> ● Open or short in intake air temp. sensor circuit ● Intake air temp. sensor ● ECM 	○	○
P0115 (DI-33)	Engine Coolant Temp. Circuit Malfunction	<ul style="list-style-type: none"> ● Open or short in engine coolant temp. sensor circuit ● Engine coolant temp. sensor ● ECM 	○	○
P0116 (DI-37)	Engine Coolant Temp. Circuit Range/ Performance Problem	<ul style="list-style-type: none"> ● Engine coolant temp. sensor ● Cooling system 	○	○
	Throttle Position Sensor/Switch Malfunction	<ul style="list-style-type: none"> ● Open or short in throttle position sensor circuit ● Throttle position sensor ● ECM 		
	Throttle Position Sensor/ Switch Range/ Performance Problem	<ul style="list-style-type: none"> ● Throttle position sensor 		

5. 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 in the diagnostic trouble code check 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, a 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.

● Page
Indicates the page where the flow chart for each circuit is located.

● Circuit Inspection, Inspection Order
Indicates the circuit which needs to be checked for a problem symptom.

● Problem Symptom

● Circuit or Part Name
Indicates the circuit or part which needs to be checked.

PROBLEM SYMPTOMS TABLE

Symptom	Suspect Area	See page
Engine does not crank (Does not start)	1. Starter and starter relay	ST-2 ST-17
No initial combustion (Does not start)	1. ECM power source circuit 2. Fuel pump control circuit 3. Engine control module (ECM)	DI-147 DI-151 IN-29
No complete combustion (Does not start)	1. Fuel pump control circuit	DI-151
Engine cranks normally (Difficult to start)	1. Starter signal circuit 2. Fuel pump control circuit 3. Compression	DI-144 DI-151 EM-3
Cold engine (Difficult to start)	1. Starter signal circuit 2. Fuel pump control circuit	DI-144 DI-151
Hot engine	1. Starter signal circuit 2. Fuel pump control circuit	DI-144 DI-151
Engine idle speed (Poor idling)	1. A/C signal circuit (Compressor circuit) 2. ECM power source circuit	AC-88
Engine idle speed (Poor idling)	1. A/C signal circuit 2. Fuel pump control circuit	
Engine idle speed (Poor idling)	1. Compression 2. Fuel pump control circuit	

6. CIRCUIT INSPECTION

How to read and use each page is shown below.

● Diagnostic Trouble Code No. and Detection Item

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

DTC	P0325	Knock Sensor 1 Circuit Malfunction
------------	--------------	---

CIRCUIT DESCRIPTION

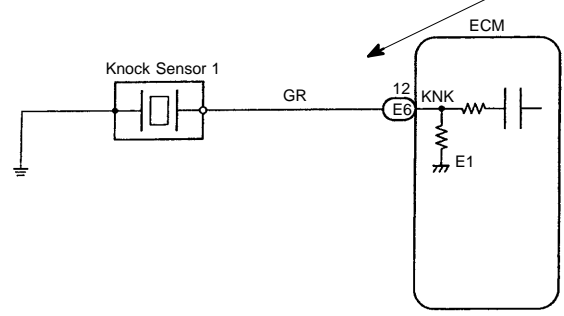
Knock sensor is fitted to the cylinder block to detect engine knocking. This sensor contains a piezoelectric element which generates a voltage when it becomes deformed, which occurs when the cylinder block vibrates due to knocking. If engine knocking occurs, ignition timing is retarded to suppress it.

DTC No.	DTC Detecting Condition	Trouble Area
P0325	No knock sensor 1 signal to ECM with engine speed 1,200 rpm or more.	<ul style="list-style-type: none"> ● Open or short in knock sensor1 circuit ● Knock sensor 1 (looseness) ● ECM

If the ECM detects the above diagnosis conditions, it operates the fail safe function in which the corrective retard angle value is set to the maximum value.

● Indicates the diagnostic trouble code (DTC), (DTC) set parameter and suspect area of the problem.

WIRING DIAGRAM



● Wiring Diagram
This is a wiring diagram of the circuit. Use this diagram together with an 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.

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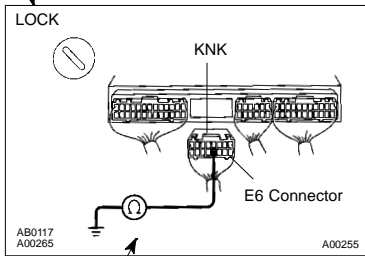
- Indicates the position of the ignition switch during the check.



- Inspection Procedure
Use the inspection procedure 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.

INSPECTION PROCEDURE

1 Check continuity between terminal KNK of ECM connector and body ground.



PREPARATION:

- (a) Remove the glove compartment (See page SF-68).
- (b) Disconnect the E6 connector of ECM.

CHECK:

Measure resistance between terminal KNK of ECM connector and body ground.

OK:

Resistance: 1 MΩ or higher

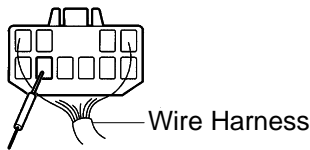
OK → Go to step 3.

NG

2 Check knock sensor (See page SF-61).

OK → Replace knock sensor.

- Indicates the place to check the voltage or resistance.
- Indicates the connector position to checked (from the front or back side).

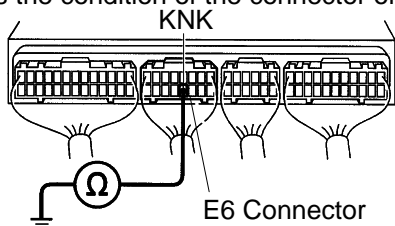


Check from the connector back side (with harness).

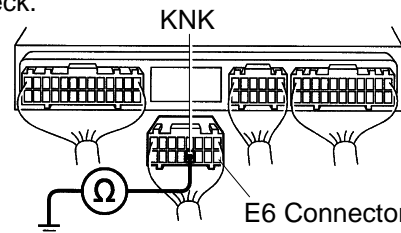


Check from the connector front side (without harness). In this case, care must be taken not to bend the terminals.

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



Connector being checked is connected.



Connector being checked is disconnected.

HOW TO USE THIS MANUAL

IN00U-90

GENERAL INFORMATION

1. INDEX

An INDEX is provided on the first page of each section to guide you to the item to be repaired. To assist you in finding your way through the manual, the Section Title and major heading are given at the top of every page.

2. GENERAL DESCRIPTION

At the beginning of each section, a General Description is given that pertains to all repair operations contained in that section.

Read these precautions before starting any repair task.

3. TROUBLESHOOTING

TROUBLESHOOTING tables are included for each system to help you diagnose the problem and find the cause. The fundamentals of how to proceed with troubleshooting are described on page [IN-22](#).

Be sure to read this before performing troubleshooting.

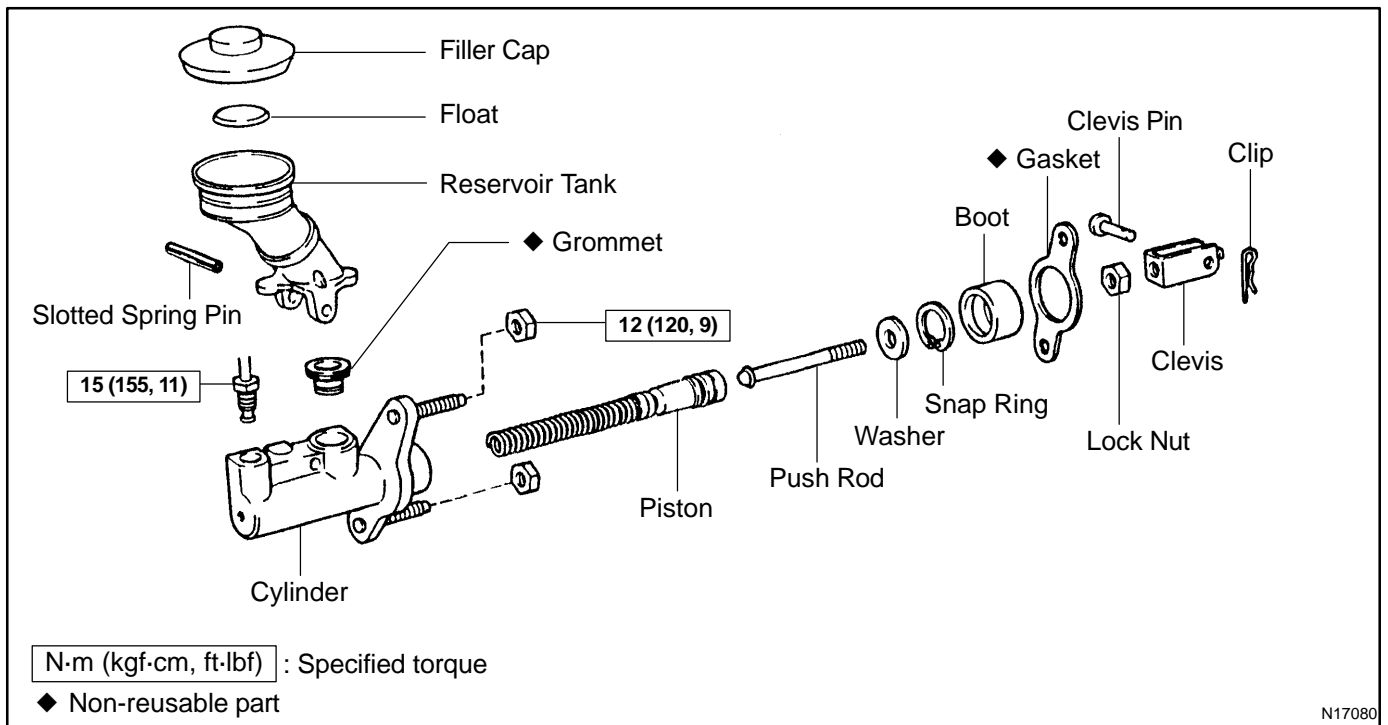
4. PREPARATION

Preparation lists the SST (Special Service Tools), recommended tools, equipment, lubricant and SSM (Special Service Materials) which should be prepared before beginning the operation and explains the purpose of each one.

5. REPAIR PROCEDURES

Most repair operations begin with an overview illustration. It identifies the components and shows how the parts fit together.

Example:



The procedures are presented in a step-by-step format:

- The illustration shows what to do and where to do it.
- The task heading tells what to do.
- 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

21. CHECK PISTON STROKE OF OVERDRIVE BRAKE

(a) Place SST and a dial indicator onto the overdrive brake piston as shown in the illustration.

SST 09350-30020 (09350-06120)

Set part No.

Component part No.

Detailed text : how to do task

(b) Measure the stroke applying and releasing the compressed air (392 — 785 kPa, 4 — 8 kgf/cm² or 57 — 114 psi) as shown in the illustration.

Piston stroke: 1.40 — 1.70 mm (0.0551 — 0.0669 in.)

Specification

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

6. REFERENCES

References have been kept to a minimum. However, when they are required you are given the page to refer to.

7. SPECIFICATIONS

Specifications are presented in bold type throughout the text where needed. You never have to leave the procedure to look up your specifications. They are also found in Service Specifications section for quick reference.

8. CAUTIONS, NOTICES, HINTS:

- CAUTIONS are presented in bold type, and indicate there is a possibility of injury to you or other people.
- NOTICES are also presented in bold type, and indicate the possibility of damage to the components being repaired.
- HINTS are separated from the text but do not appear in bold. They provide additional information to help you perform the repair efficiently.

9. SI UNIT

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)

TERMS

ABBREVIATIONS USED IN THIS MANUAL

IN04Q-24

Abbreviations	Meaning
ABS	Anti-Lock Brake System
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
A/T	Automatic Transmission (Transaxle)
ATDC	After Top Dead Center
ATF	Automatic Transmission Fluid
AUTO	Automatic
AUX	Auxiliary
AVG	Average
AVS	Adaptive Variable Suspension
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
Calif.	California
CB	Circuit Breaker
CCo	Catalytic Converter For Oxidation
CD	Compact Disc
CF	Cornering Force
CG	Center Of Gravity
CH	Channel
COMB.	Combination
CPE	Coupe
CPS	Combustion Pressure Sensor
CPU	Central Processing Unit
CRS	Child Restraint System
CTR	Center
C/V	Check Valve

INTRODUCTION - TERMS

CV	Control Valve
CW	Curb Weight
DC	Direct Current
DEF	Defogger
DFL	Deflector
DIFF.	Differential
DIFF. LOCK	Differential Lock
D/INJ	Direct Injection
DLI	Distributorless Ignition
DOHC	Double Overhead Camshaft
DP	Dash Pot
DS	Dead Soak
DSP	Digital Signal Processor
ECAM	Engine Control And Measurement System
ECD	Electronic Controlled Diesel
ECDY	Eddy Current Dynamometer
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-VM	EGR-Vacuum Modulator
ELR	Emergency Locking Retractor
ENG	Engine
ESA	Electronic Spark Advance
ETCS	Electronic Throttle Control System
EVAP	Evaporator
E-VR V	Electric Vacuum Regulating Valve
EXH	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
FR	Front-Engine Rear-Wheel-Drive
F/W	Flywheel
FW/D	Flywheel Damper
FWD	Front-Wheel-Drive
GAS	Gasoline
GND	Ground
HAC	High Altitude Compensator
H/B	Hatchback

2005 LEXUS IS300 (RM1140U)

H-FUSE	High Current Fuse
HI	High
HID	High Intensity Discharge (Head Lamp)
HSG	Housing
HT	Hard Top
HWS	Heated Windshield System
IAC	Idle Air Control
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
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
MAX.	Maximum
MIC	Microphone
MIL	Malfunction Indicator Lamp
MIN.	Minimum
MP	Multipurpose
MPX	Multiplex Communication System
M/T	Manual Transmission (Transaxle)
MT	Mount
MTG	Mounting
N	Neutral
NA	Natural Aspiration
No.	Number
O/D	Overdrive

INTRODUCTION - TERMS

OEM	Original Equipment Manufacturing
OHC	Overhead Camshaft
OHV	Overhead Valve
OPT	Option
O/S	Oversize
P & BV	Proportioning And Bypass Valve
PCS	Power Control System
PCV	Positive Crankcase Ventilation
PKB	Parking Brake
PPS	Progressive Power Steering
PS	Power Steering
PTO	Power Take-Off
R & P	Rack And Pinion
R/B	Relay Block
RBS	Recirculating Ball Type Steering
R/F	Reinforcement
RFS	Rigid Front Suspension
RRS	Rigid Rear Suspension
RH	Right-Hand
RHD	Right-Hand Drive
RLY	Relay
ROM	Read Only Memory
Rr	Rear
RR	Rear-Engine Rear-Wheel Drive
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

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TEMP.	Temperature
TEMS	TOYOTA Electronic Modulated Suspension
TIS	Total Information System For Vehicle Development
T/M	Transmission
TMC	TOYOTA Motor Corporation
TMMK	TOYOTA Motor Manufacturing Kentucky, Inc.
TRAC	Traction Control System
TURBO	Turbocharger
U/D	Underdrive
U/S	Undersize
VCV	Vacuum Control Valve
VENT	Ventilator
VIN	Vehicle Identification Number
VPS	Variable Power Steering
VSC	Vehicle Skid Control
VSV	Vacuum Switching Valve
VTV	Vacuum Transmitting Valve
w/	With
WGN	Wagon
W/H	Wire Harness
w/o	Without
1st	First
2nd	Second
2WD	Two Wheel Drive Vehicle (4x2)
4WD	Four Wheel Drive Vehicle (4x4)

GLOSSARY OF SAE AND LEXUS TERMS

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

SAE ABBREVIATIONS	SAE TERMS	LEXUS 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 Comunication 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 Distributor-less 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 ₂ S)
IAC	Idle Air Control	Idle Speed Control (ISC)
IAT	Intake Air Temperature	Intake or Inlet Air Temperature
ICM	Ignition Control Module	-
IFI	Indirect Fuel Injection	Indirect Injection (IDL)
IFS	Inertia Fuel-Shutoff	-
ISC	Idle Speed Control	-
KS	Knock Sensor	Knock Sensor
MAF	Mass Airflow	Air Flow Meter
MAP	Manifold Absolute Pressure	Manifold Pressure Intake Vacuum
MC	Mixture Control	Electric Bleed Air Control Valve (EBCV) Mixture Control Valve (MCV) Electric Air Control Valve (EACV)
MDP	Manifold Differential Pressure	-
MFI	Multiport Fuel Injection	Electronic Fuel Injection (EFI)
MIL	Malfunction Indicator Lamp	Check Engine Lamp
MST	Manifold Surface Temperature	-
MVZ	Manifold Vacuum Zone	-
NVRAM	Non-Volatile Random Access Memory	-
O2S	Oxygen Sensor	Oxygen Sensor, O ₂ Sensor (O ₂ S)
OBD	On-Board Diagnostic	On-Board Diagnostic System (OBD)
OC	Oxidation Catalytic Converter	Oxidation Catalyst Convert (OC), CCo
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	Supercharger Bypass	E-ABV
SFI	Sequential Multiport Fuel Injection	Electronic Fuel Injection (EFI), Sequential Injection
SPL	Smoke Puff Limiter	-
SRI	Service Reminder Indicator	-
SRT	System Readiness Test	-
ST	Scan Tool	-
TB	Throttle Body	Throttle Body
TBI	Throttle Body Fuel Injection	Single Point Injection Central Fuel Injection (Ci)
TC	Turbocharger	Turbocharger
TCC	Torque Converter Clutch	Torque Converter

INTRODUCTION - TERMS

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 + CCo
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	-