1990 TOYOTA SUPRA REPAIR MANUAL

FOREWORD

This manual contains maintenance and repair procedures for the 1990 TOYOTA SUPRA.

Applicable model: MA70 series

The manual is divided into 24 sections and 4 appendixes with a thumb index for each section at the edge of the pages.

Please note that the publications below have also been prepared as relevant service manuals to the components and systems in this vehicle.

Manual Name	Pub. No.
• 1990 Toyota Supra Electrical Wiring Diagram Manual	EWD072U
• Toyota Supra Collision Damaged Body Repair Manual	BRM005E
• Toyota Supra Collision Damaged Body Repair Manual Supplement	BRM009E
• 1990 Model New Car Features	NCF059U

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.

TOYOTA MOTOR CORPORATION

INTRODUCTION

HOW TO USE THIS MANUAL

To assist you in finding your way through the manual, the Section Title and major heading are given at the top of every page.

An **INDEX** is provided on the first page of each section to guide you to the item to be repaired.

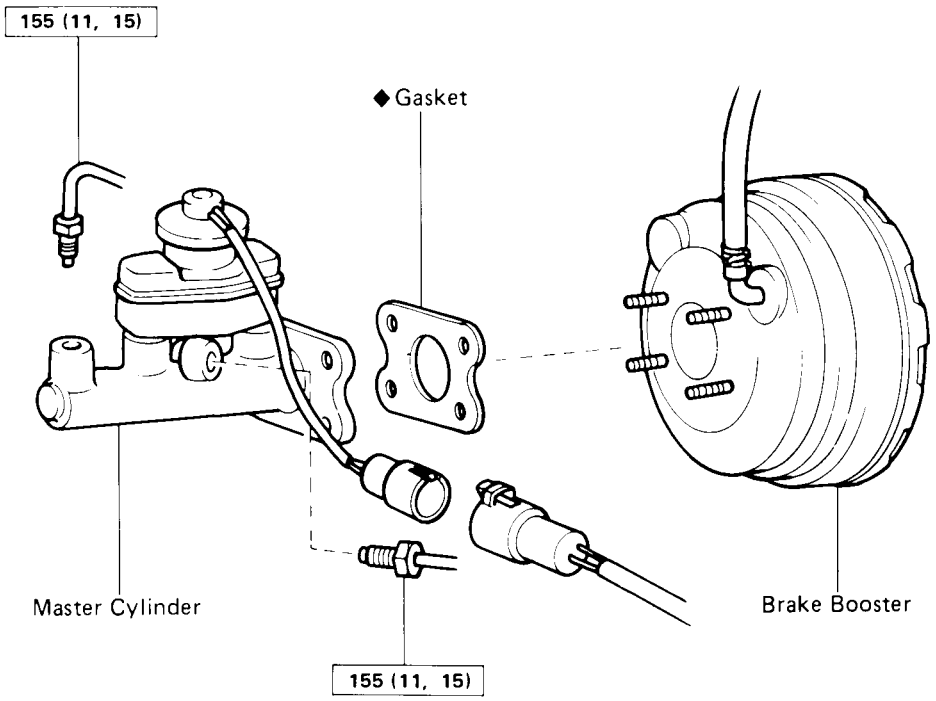
At the beginning of each section, **PRECAUTIONS** are given that pertain to *all* repair operations contained in that section. *Read these precautions before starting any repair task.*

TROUBLESHOOTING tables are included for each system to help you diagnose the problem and find the cause. The repair for each possible cause is referenced in the remedy column to quickly lead you to the solution.

REPAIR PROCEDURES

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

Example:



kg-cm (ft-lb, N·m) : Specified torque
◆ Non-reusable part

BR1219

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.

Illustration:
what to do and where

Example:

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 figure.

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 (4 – 8 kg/cm^2, 57 – 114 psi or 392 – 785 kPa) as shown in the figure.

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.

REFERENCES

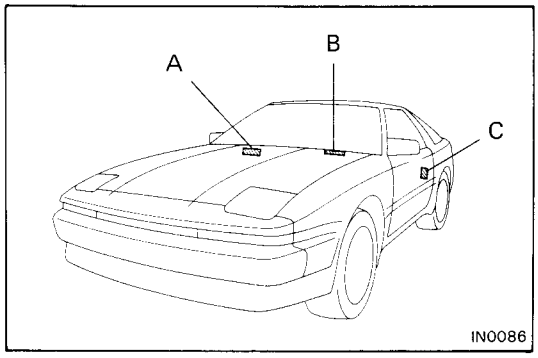
References have been kept to a minimum. However, when they are required you are given the page to refer to.

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 Appendex A, for quick reference.

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 efficiently perform the repair.

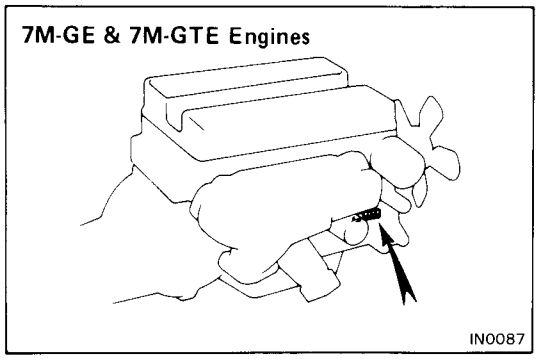


IDENTIFICATION INFORMATION

VEHICLE IDENTIFICATION NUMBER

The vehicle identification number is stamped on the cowl panel. This number has also been stamped on the vehicle identification number plate and certification regulation label.

A. Vehicle Identification Number
B. Vehicle Identification Number Plate
C. Certification Regulation Label



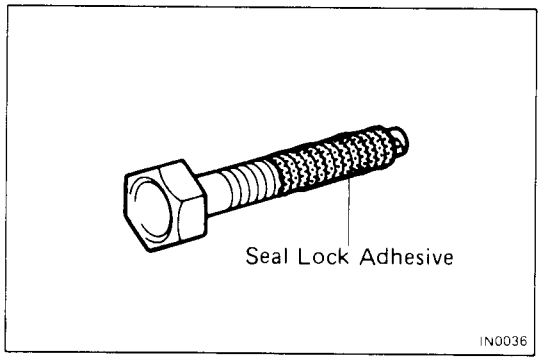
ENGINE SERIAL NUMBER

The engine serial number is stamped on the engine block as showh.

GENERAL REPAIR INSTRUCTIONS

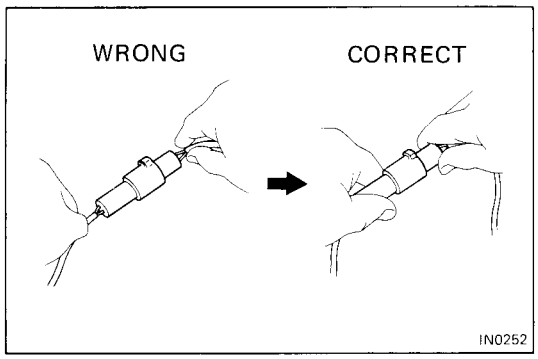
1. Use fender seat and floor covers to keep the vehicle clean and prevent damage.
2. During disassembly, keep parts in the appropriate order to facilitate reassembly.
3. Observe the following:
   (a) **CAUTION: Work must be started after approx. 20 seconds or longer from the time the ignition switch is turned to the "LOCK" position and the negative (−) terminal cable is disconnected from the battery (See page AB-2).**
   (b) Before performing electrical work, disconnect the negative from the battery terminal.
   (c) If it is necessary to disconnect the battery for inspection or repair, always disconnect the cable from the negative (−) terminal which is grounded to the vehicle body.
   (d) To prevent damage to the battery terminal post, loosen the terminal nut and raise the cable straight up without twisting or prying it.
   (e) Clean the battery terminal posts and cable terminals with a shop rag. Do not scrape them with a file or other adrasive object.
   (f) Install the cable terminal to the battery post with the nut loose, and tighten the nut after installation. Do not use a hammer to tap the terminal onto the post.
   (g) Be sure the cover for the positive (+) terminal is properly in place.

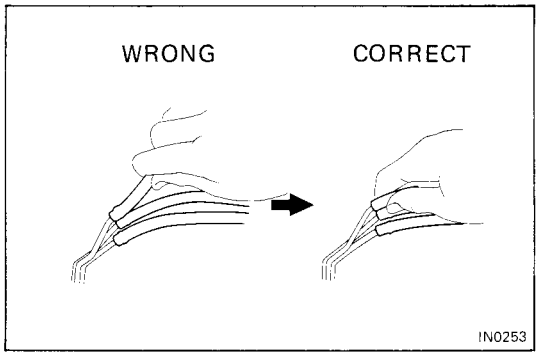
4. Check hose and wiring connectors to make sure that they are secure and correct.
5. Non-reusable parts
   (a) Always replace cotter pins, gaskets, O-rings and oil seals etc. with new ones.
   (b) Non-reusable parts are indicated in the component illustrations by the " ◆ " symbol.

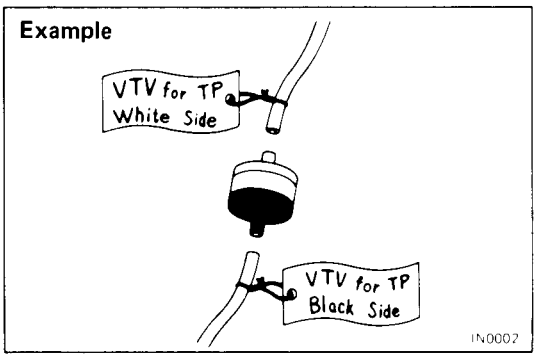


6. Precoated parts

   Precoated parts are bolts and nuts, etc. that are coated with a seal lock adhesive at the factory.
   (a) If a precoated part is retightened, loosened or caused to move in any way, it must be recoated with the specified adhesive.
   (b) Recoating of precoated parts
      (1) Clean off the old adhesive from the bolt, nut or threads.
      (2) Dry with compressed air.
      (3) Apply the specified seal lock adhesive to the bolt or nut threads.
   (c) Precoated parts are indicated in the component illustrations by the "★" symbol.
7. When necessary, use a sealer on gaskets to prevent leaks.
8. Carefully observe all specifications for bolt tightening torques. Always use a torque wrench.
9. 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 at the back of this manual.
10. 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.
11. 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-12)
   (a) If the vehicle is to be jacked up only at the front or rear end, be sure to block the wheels at the opposite end in order to ensure safety.
   (b) After the vehicle is jacked up, be sure to support it on stands. 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.







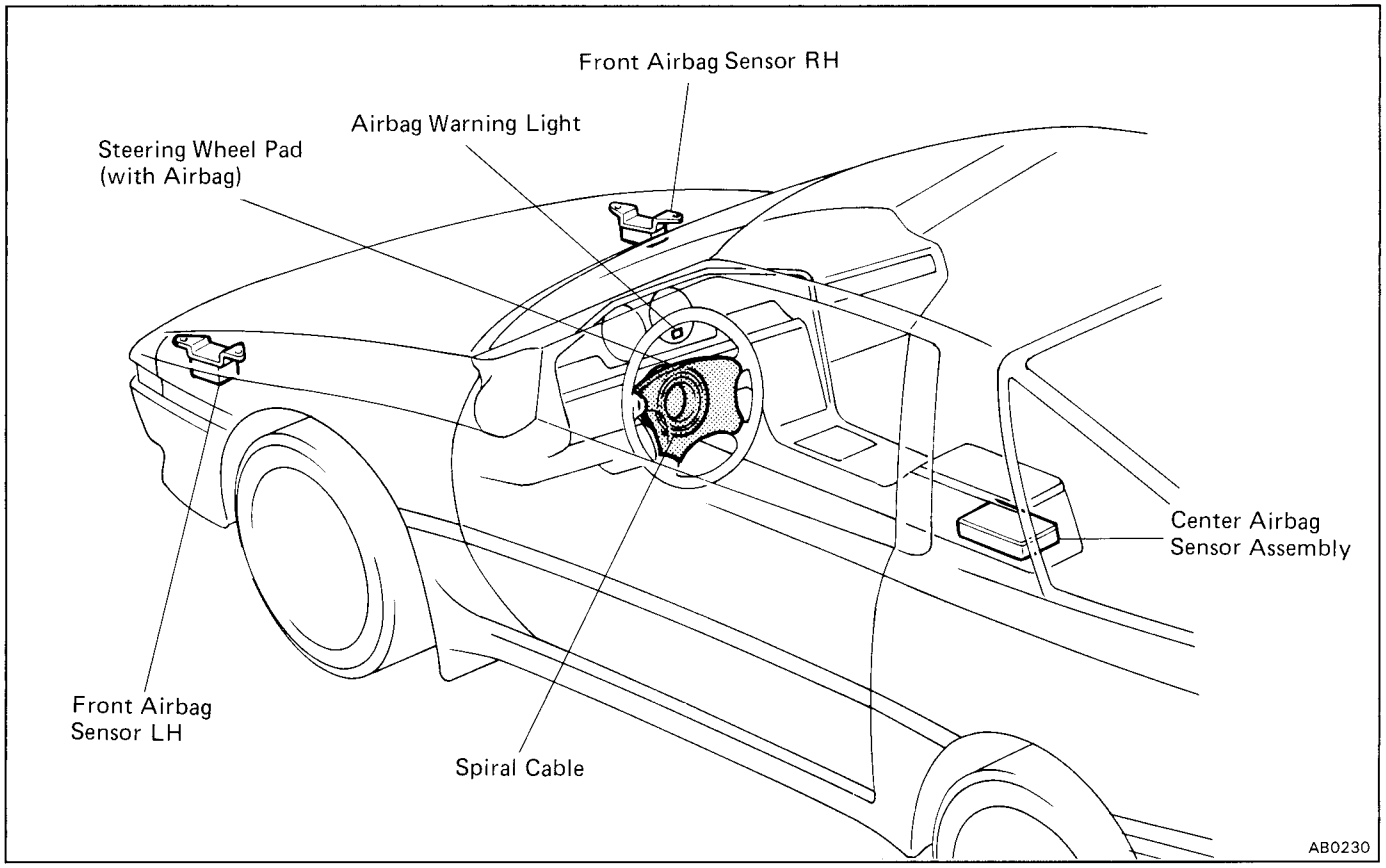
12. Observe the following precautions to avoid damage to the parts:
    (a) **Do not open the cover or case of the ECU unless absolutely necessary. (If the IC terminals are touched, the IC may be destroyed by static electricity.)**
    (b) To disconnect vacuum hoses, pull on the end, not the middle of the hose.
    (c) To pull apart electrical connectors, pull on the connector itself, not the wires.
    (d) 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.
    (e) When steam cleaning an engine, protect the distributor, coil, air filter and air intake from water.
    (f) Never use an impact wrench to remove or install temperature switches or temperature sensors.
    (g) When checking continuity at the wire connector, insert the tester probe carefully to prevent terminals from bending.
    (h) When using a vacuum gauge, never force the hose onto a connector that is too large. Use a step-down adapter instead. Once the hose has been stretched, it may leak.

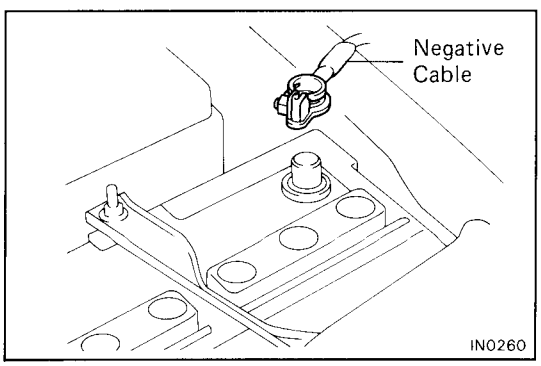
13. Tag hoses before disconnecting them:
    (a) When disconnecting vacuum hoses, use tags to identify how they should be reconnected.
    (b) After completing a job, double check that the vacuum hoses are properly connected. A label under the hood shows the proper layout.

PRECAUTIONS FOR VEHICLES EQUIPPED WITH SRS AIRBAG

The 1990 Supra for USA specifications is equipped with a SRS (Supplemental Restraint System) airbag.
Failure to carry out service operations in the correct sequence could cause the airbag system to unexpectedly deploy during servicing, possibly leading to a serious accident.
Further, if a mistake is made in servicing the airbag system, it is possible the airbag 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 procedure described in this manual.

Locations of Airbag Components





1. Malfunction symptoms of the airbag system are difficult to confirm, so the diagnostic codes become the most important source of information when troubleshooting.

   When troubleshooting the airbag system, always inspect the diagnostic codes before disconnecting the battery (See page AB-24).

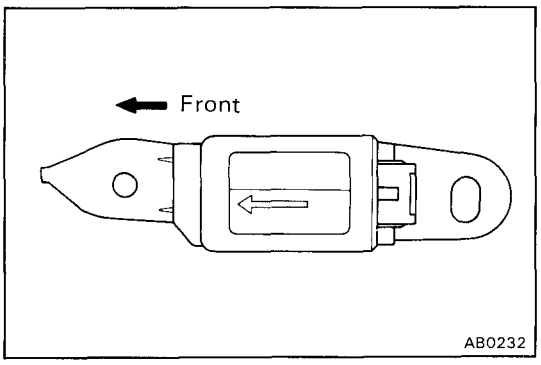
2. **Work must be started after approx. 20 seconds or longer from the time the ignition switch is turned to the LOCK position and the negative (—) terminal cable is disconnected from the battery.**

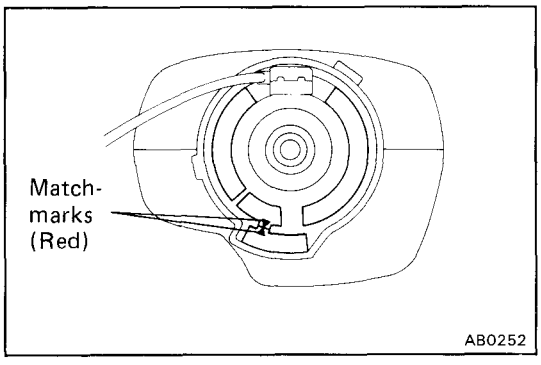
   (The airbag system is equipped with a back-up power source so that if work is started within 20 seconds of disconnecting the negative (—) terminal cable of the battery, the airbag may be deployed.)

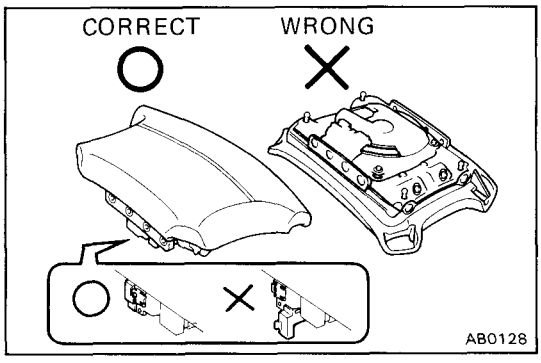
When the negative (−) terminal cable is disconnected from the battery, memory of the clock and audio systems will be cancelled. So before starting work, make a record of the contents memorized by each memory system. Then when work is finished, reset the clock and audio systems as before.

To avoid erasing the memory of each memory system, never use a back-up power supply from outside the vehicle.

3. Even in cases of a minor collision where the airbag does not deploy, the front airbag sensors and the steering wheel pad should be inspected (See page AB-11).
4. Never use airbag parts from another vehicle. When replacing parts, replace them with new parts.
5. Before repairs, remove the airbag sensors if shocks are likely to be applied to the sensors during repairs.
6. The center airbag sensor assembly contains mercury. After performing replacement, do not destroy the old part. When scrapping the vehicle or replacing the center airbag sensor assembly itself, remove the center airbag sensor assembly and dispose of it as toxic waste.
7. Never disassemble and repair the front airbag sensors, center airbag sensor assembly or steering wheel pad in order to reuse it.
8. If the front airbag sensors, center airbag sensor assembly or steering wheel pad have been dropped, or if there are cracks, dents or other defects in the case, bracket or connector, replace them with new ones.
9. Do not expose the front airbag sensors, center airbag sensor assembly or steering wheel pad directly to hot air or flames.
10. Use a volt/ohmmeter with high impedance (10 kΩ/V minimum) for troubleshooting of the electrical circuit.
11. Information labels are attached to the periphery of the airbag components. Follow the notices.
12. After work on the airbag system is completed, perform the airbag warning light check (See page AB-29).







FRONT AIRBAG SENSOR

1. Never reuse the front airbag sensors involved in a collision when the airbag has deployed (Replace both the left and right airbag sensors).
2. Install the front airbag sensor with the arrow on the sensor facing toward the front of the vehicle.
3. The front airbag sensor set bolts have been anti-rust treated.

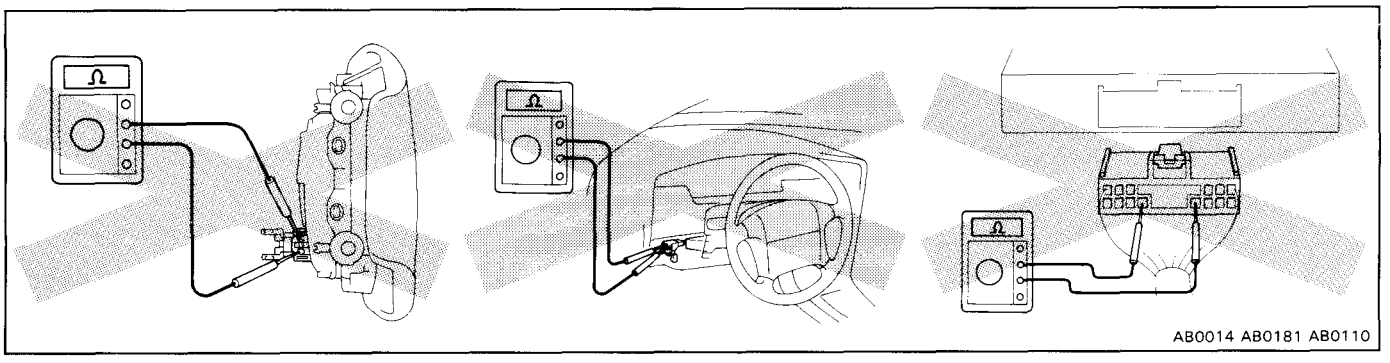
   When the sensor is removed, always replace the set bolts with new ones.
4. The front airbag sensor is equipped with an electrical connection check mechanism. Be sure to lock this mechanism securely when connecting the connector. If the connector is not securely locked, a malfunction code will be detected by the diagnosis system (See page AB-9).

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 page AB-16 of this manual concerning correct steering wheel installation.

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.** In this case, the twin-lock type connector lock lever should be in the locked state and care should be taken to place it so the connector will not be damaged. And do not store a steering wheel pad on top of another one (Storing the pad with its metallic surface up may lead to a serious accident if the airbag inflates for some reason).
2. **Never measure the resistance of the airbag squib (This may cause the airbag to deploy, which is very dangerous).**



3. Grease should not be applied to the steering wheel pad and the pad should not be cleaned with detergents of any kind.
4. Store the steering wheel pad where the ambient temperature remains below 93°C (200°F), without high humidity and away from electrical noise.
5. When using electric welding, first disconnect the airbag connector (yellow color and 2 pins) under the steering column near the combination switch connector before starting work.
6. **When disposing of a vehicle or the steering wheel pad alone, the airbag should be deployed using an SST before disposal (See page AB-82). Perform the operation in a place away from electrical noise.**

CENTER AIRBAG SENSOR ASSEMBLY

The connector to the center airbag sensor assembly should be connected or disconnected with the sensor mounted on the floor. If the connector is connected or disconnected while the center airbag sensor assembly is not mounted to the floor, it could cause undesired ignition of the airbag system.

WIRE HARNESS AND CONNECTOR

The airbag system's wire harness is integrated with the cowl wire harness assembly. The wires for the airbag wire harness are encased in a yellow corrugated tube. All the connectors for the system are also a standard yellow color. If the airbag system wire harness becomes disconnected or the connector becomes broken due to an accident, etc., repair or replace it as shown on page AB-21.

PRECAUTIONS FOR VEHICLES EQUIPPED WITH A CATALYTIC CONVERTER

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

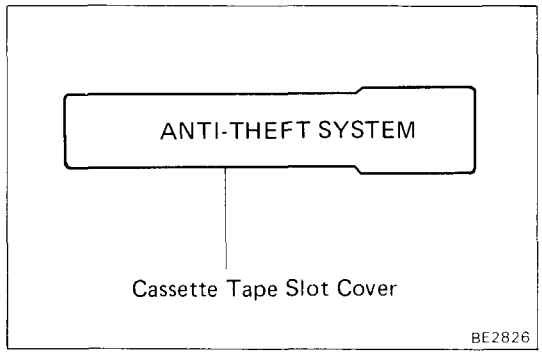
1. **Use only unleaded gasoline.**
2. **Avoid prolonged idling.**

   Avoid running the engine at idle speed for more than 20 minutes.
3. **Avoid spark jump test.**
   (a) Spark jump test only when absolutely necessary. Perform this test as rapidly as possible.
   (b) While testing, never race the engine.
4. **Avoid prolonged engine compression measurement.**

   Engine compression tests must be made as rapidly as possible.
5. **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.
6. **Avoid coasting with ignition turned off and prolonged braking.**
7. **Do not dispose of used catalyst(s) along with parts contaminated with gasoline or oil.**

PRECAUTIONS FOR VEHICLES WITH AN AUDIO SYSTEM WITH BUILT-IN ANTI-THEFT SYSTEM



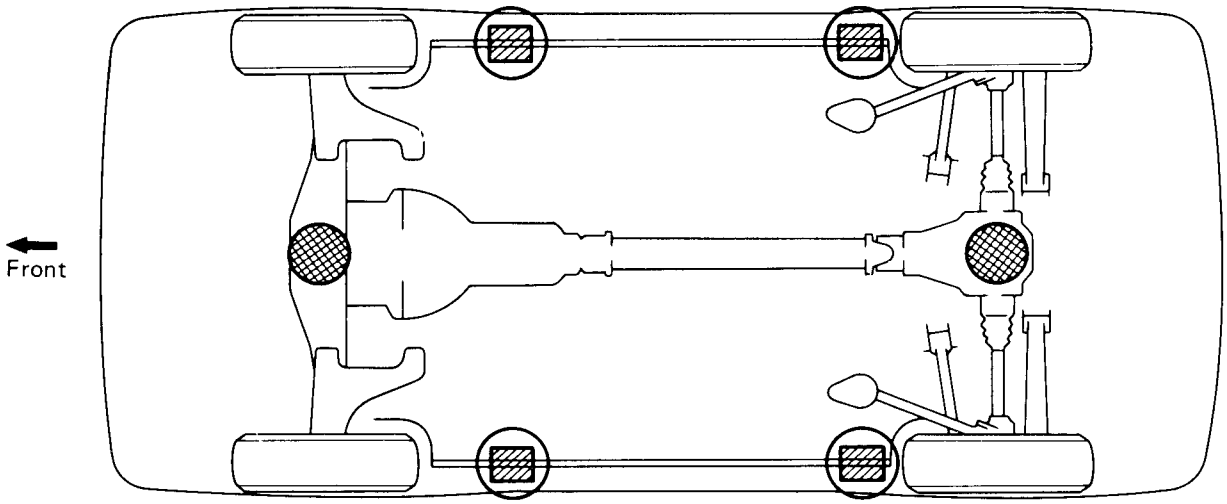
Audio Systems displaying the sign "ANTI-THEFT SYSTEM" shown on the left has a built-in anti-theft system which makes the audio system soundless if stolen.

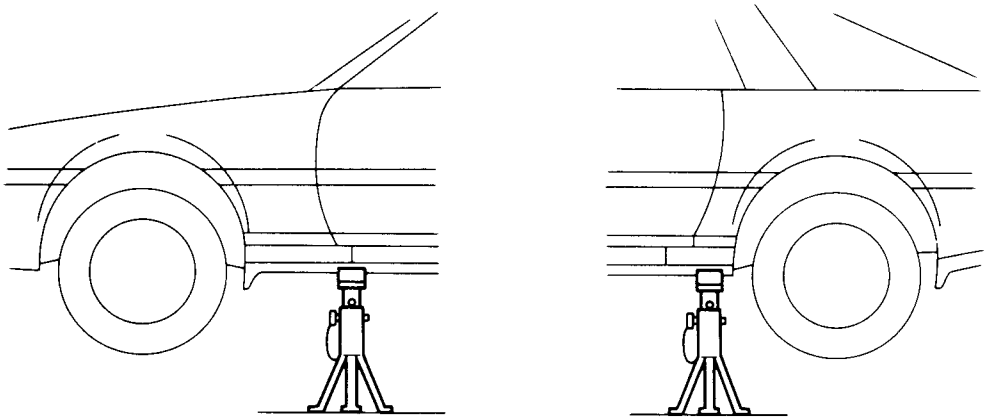
If the power source for the audio system is cut even once, the anti-theft system operates so that even if the power source is reconnected, the audio system will not produce any sound unless the ID number selected by the customer is input again.

Accordingly, when performing repairs on vehicles equipped with this system, before disconnecting the battery terminals or removing the audio system the customer should be asked for the ID number so that the technician can input the ID number afterwards, or else a request made to the customer to input the ID number.

For the method to input the ID number or cancel the anti-theft system, refer to the Owner's Manual.

VEHICLE LIFT AND SUPPORT LOCATIONS





JACK POSITION
Front ..... Center of front suspension crossmember
Rear ..... Jack up support of differential carrier

PANTOGRAPH JACK POSITION

SUPPORT POSITION
Safety stand .....

IN0088
IN0089

ABBREVIATIONS USED IN THIS MANUAL

A.B.S.	Anti-Lock Brake System
A/C	Air Conditioner
ALR	Automatic Locking Retractor
APPROX.	Approximation
A/T, ATM	Automatic Transmission
ATF	Automatic Transmission Fluid
B_0	Overdrive Brake
B_1	Second Coast Brake
B_2	Second Brake
B_3	First and Reverse Brake
BTDC	Before Top Dead Center
BVSV	Bimetal Vacuum Switching Valve
C_0	Overdrive Direct Clutch
C_1	Forward Clutch
C_2	Direct Clutch
CB	Circuit Breaker
CD	Compact Disc
CRS	Child Restraint System
DOHC	Double Over Head Camshaft
DP	Dash Pot
ECT	Electronic Controlled Transmission
ECU	Electronic Controlled Unit
EFI	Electronic Fuel Injection
EGR	Exhaust Gas Recirculation
ELR	Emergency Locking Retractor
ESA	Electronic Spark Advance
ETR	Electronic Tuning Radio
EVAP	Evaporative (Emission Control)
EX	Exhaust
Ex.	Except
F_0	Overdrive One-Way Clutch
F_1	No. 1 One-Way Clutch
F_2	No. 2 One-Way Clutch
FIPG	Formed in Place Gasket
FL	Fusible Link
Fr	Front
IG	Ignition
IN	Intake
ISC	Idle Speed Control
JB	Junction Block
LED	Light Emitting Diode
LH	Left-Hand
LSD	Limited Slip Differential
Max.	Maximum
MP	Multipurpose
M/T	Manual Transmission
O/D	Overdrive
O/S	Oversize
P & BV	Proportioning and By-Pass Valve
PCV	Positive Crankcase Ventilation
PPS	Progressive Power Steering
PS	Power Steering
RH	Right-Hand
SRS	Supplemental Restraint System
SSM	Special Service Materials
SST	Special Service Tools
STD	Standard
SW	Switch
TCCS	Toyota Computer Controlled System
TEMS	Toyota Electronic Modulated Suspension
T/M	Transmission
TWC	Three-Way Catalyst
U/S	Undersize
VSV	Vacuum Switching Valve
w/	With
w/o	Without