

# REPAIR MANUAL

- MAINTENANCE
- PREPARATION
- SPECIFICATIONS
- DIAGNOSTICS

# FOREWORD

This manual (Volume 1) contains maintenance, preparation, specifications and diagnostics procedures for the 2000 CELICA.

Applicable models: ZTZ230, 231 series

For repair procedures for the engine, chassis and body, and electrical service procedures, refer to VOLUME 2 (Pub. No. RM744U2).

The manual is divided into 6 sections 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 for the components and systems in this vehicles.

Manual Name	Pub. No.
• U240E Automatic Transaxle Repair Manual (Aug., 1999)	RM740U
• U340E, U341E Automatic Transaxle Repair Manual (Aug., 1999)	RM735U
• 2000 CELICA Electrical Wiring Diagram	EW0399U
• 2000 CELICA New Car Features	NCF169U

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**

©1999 TOYOTA MOTOR CORPORATION  
All rights reserved. This book may not be reproduced or copied, in whole or in part, without the written permission of Toyota Motor Corporation.  
First Printing: Jul. 14, 1999 01-990714-00

## **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 good understanding all the contents written in the PRECAUTION of "IN" 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.**

NOTE: The screen toned sections below are in VOLUME 2  
(Pub. No. RM744U2).

<b>INTRODUCTION</b>	<b>IN</b>
<b>MAINTENANCE</b>	<b>MA</b>
<b>PREPARATION</b>	<b>PP</b>
<b>SERVICE SPECIFICATIONS</b>	<b>SS</b>
<b>DIAGNOSTICS</b>	<b>DI</b>
ENGINE MECHANICAL	INTRO
EMISSION CONTROL	INTRO
SFI	INTRO
COOLING	INTRO
LUBRICATION	INTRO
IGNITION	INTRO
STARTING	INTRO
CHARGING	INTRO
CLUTCH	INTRO
C55 MANUAL TRANSAXLE	INTRO
C60 MANUAL TRANSAXLE	INTRO
U240E AUTOMATIC TRANSAXLE	INTRO
U341E AUTOMATIC TRANSAXLE	INTRO
SUSPENSION AND AXLE	INTRO
BRAKE	INTRO
STEERING	INTRO
SUPPLEMENTAL RESTRAINT SYSTEM	INTRO
BODY ELECTRICAL	INTRO
BODY	INTRO
AIR CONDITIONING	INTRO
<b>ALPHABETICAL INDEX</b>	<b>ID</b>

---

# INTRODUCTION

HOW TO USE THIS MANUAL .....	IN-1
GENERAL INFORMATION .....	IN-1
IDENTIFICATION INFORMATION .....	IN-3
VEHICLE IDENTIFICATION AND ENGINE SERIAL NUMBER .....	IN-3
REPAIR INSTRUCTIONS .....	IN-4
GENERAL INFORMATION .....	IN-4
VEHICLE LIFT AND SUPPORT LOCATIONS ..	IN-8
FOR ALL OF VEHICLES .....	IN-10
PRECAUTION .....	IN-10
HOW TO TROUBLESHOOT ECU	
CONTROLLED SYSTEMS .....	IN-19
GENERAL INFORMATION .....	IN-19
HOW TO PROCEED WITH TROUBLESHOOTING .....	IN-20
HOW TO USE THE DIAGNOSTIC CHART AND INSPECTION PROCEDURE .....	IN-30
TERMS .....	IN-35
ABBREVIATIONS USED IN THIS MANUAL .....	IN-35
GLOSSARY OF SAE AND TOYOTA TERMS ...	IN-40

# HOW TO USE THIS MANUAL

## GENERAL INFORMATION

FIGURE 36

### 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. PRECAUTION

At the beginning of each section, a PRECAUTION 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-20.

Be sure to read this before performing troubleshooting.

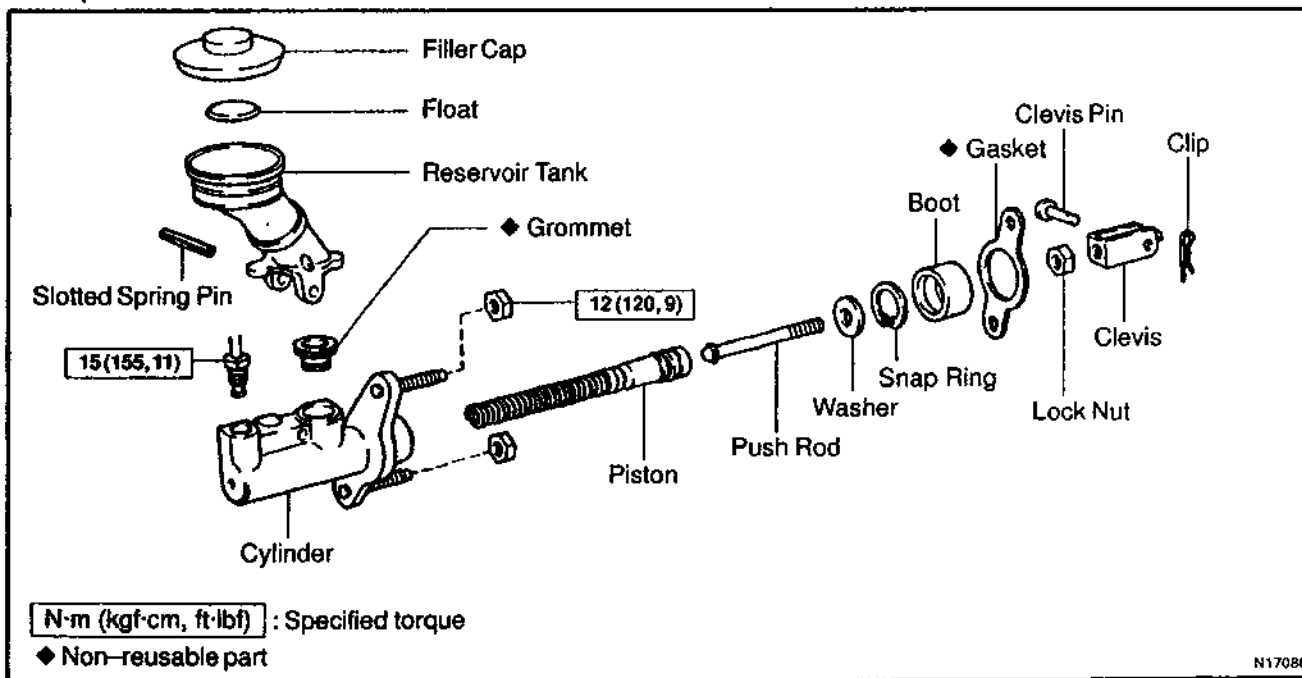
### 4. PREPARATION

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:

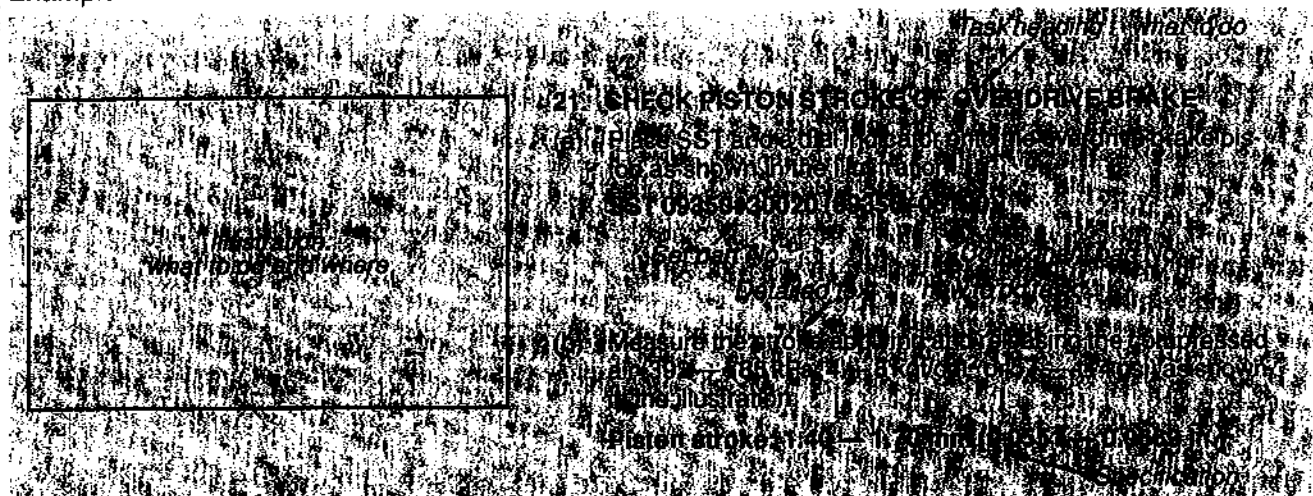


The procedures are presented in a step-by-step format:

- 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.

IN

Example:



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:

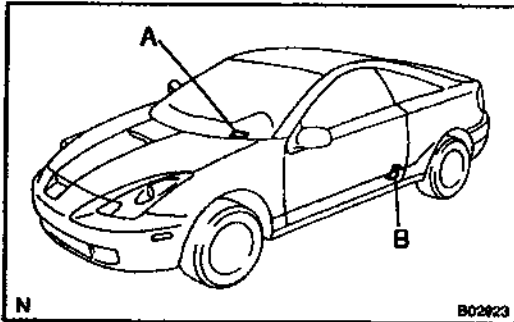
**Torque: 30 N·m (310 kgf·cm, 22 ft·lbf)**

# IDENTIFICATION INFORMATION

## VEHICLE IDENTIFICATION AND ENGINE SERIAL NUMBER

INCH-01

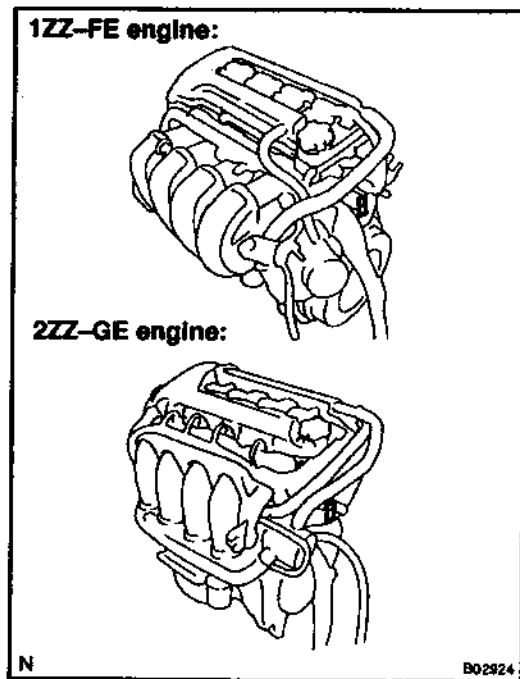
IN



### 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.



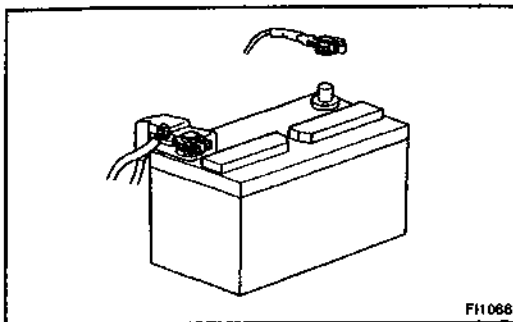
## REPAIR INSTRUCTIONS

### GENERAL INFORMATION

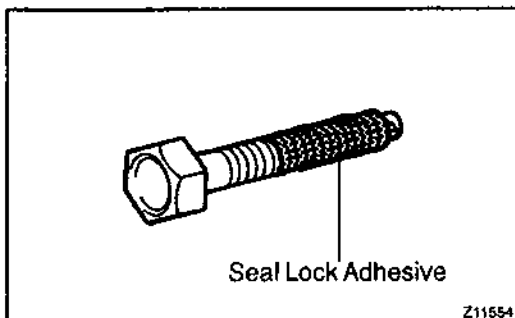
F800-08

#### BASIC REPAIR HINT

- (a) Use fender, seat and floor covers to keep the vehicle clean and prevent damage.
- (b) During disassembly, keep parts in the appropriate order 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) When disconnecting the terminal cable, to prevent damage to battery terminal, loosen the cable nut and raise the cable straight up without twisting or prying it.
  - (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 the component illustrations by the "◆" symbol.



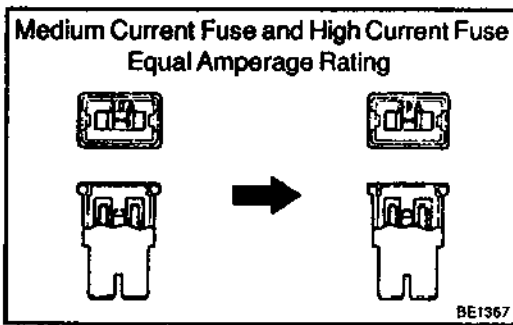
IN



- (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 caused to move 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 the specified seal lock adhesive to the bolt, nut or threads.

- (3) Precoated parts are indicated in the component illustrations by the "★" symbol.
- (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 Preparation section in this manual.

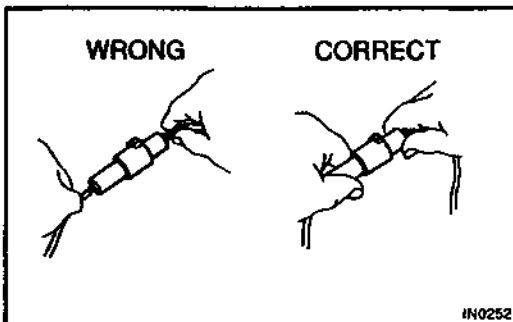
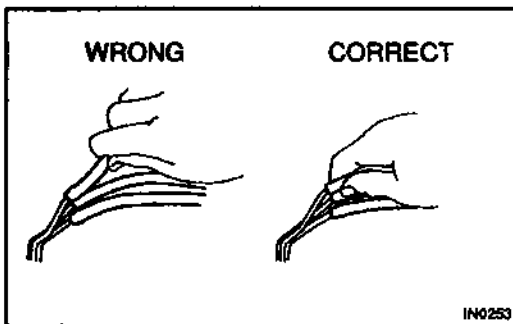
IN



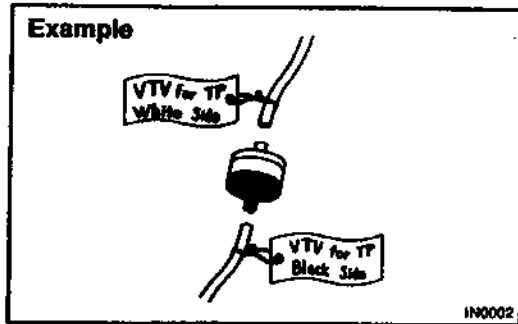
- (j) When replacing fuses, be sure the new fuse has the correct amperage rating. DO NOT exceed the rating or use one with a lower rating.

Illustration	Symbol	Part Name	Abbreviation
<p>BE5584</p>	<p>IN0365</p>	FUSE	FUSE
<p>BE5588</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).
- Cancel the parking brake on the level place and shift the transmission in Neutral (or N position).
  - When jacking up the front wheels of the vehicle at first place stoppers behind the rear wheels.
  - When jacking up the rear wheels of the vehicle at first place stoppers before the front wheels.
  - When either the front or rear wheels only should be jacked up, set rigid racks and place stoppers in front and behind the other wheels on 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. (If the IC terminals are touched, the IC may be destroyed by static electricity.)



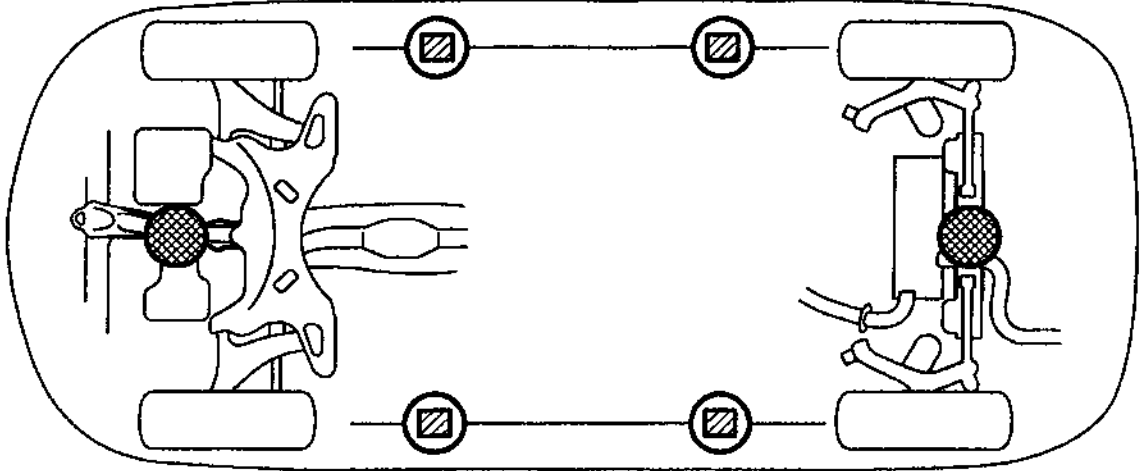
- (2) To disconnect vacuum hoses, pull off the end, not the middle of the hose.
- (3) To pull apart electrical connectors, pull on the connector itself, not the wires.
- (4) Be careful not to drop electrical components, such as sensors or relays. If they are dropped on a hard floor, they should be replaced 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.



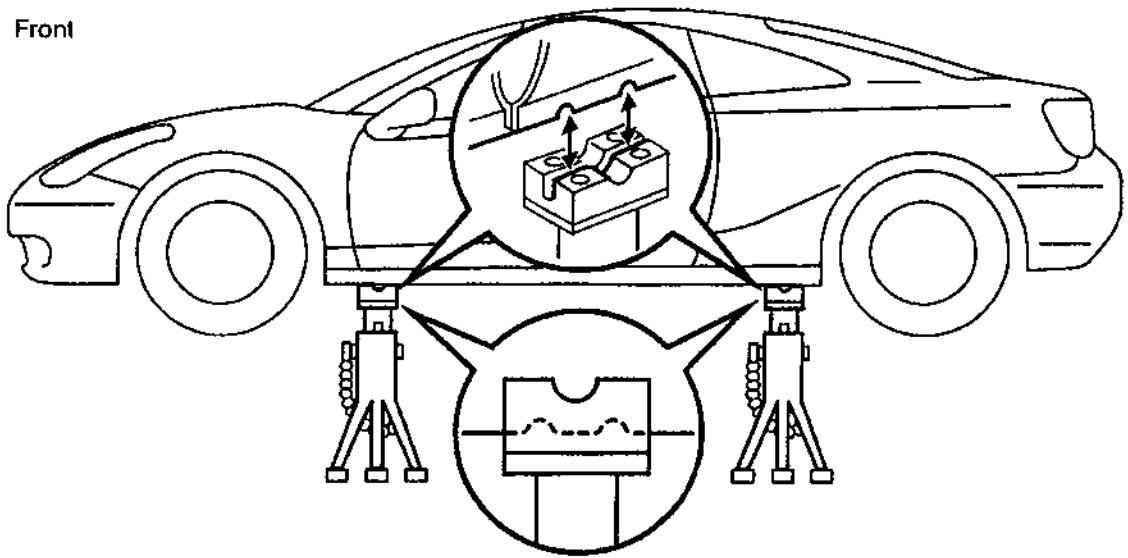
- (m) Installation and removal of vacuum hose:
- (1) When disconnecting vacuum hoses, use tags to identify how they should be reconnected to.
  - (2) After completing a job, double check that the vacuum hoses are properly connected. A label under the hood shows the proper layout.
- (n) Unless otherwise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

# VEHICLE LIFT AND SUPPORT LOCATIONS

IN



← Front



**JACK POSITION** \_\_\_\_\_ ●

Front ..... Front crossmember

Rear ..... Rear axle beam

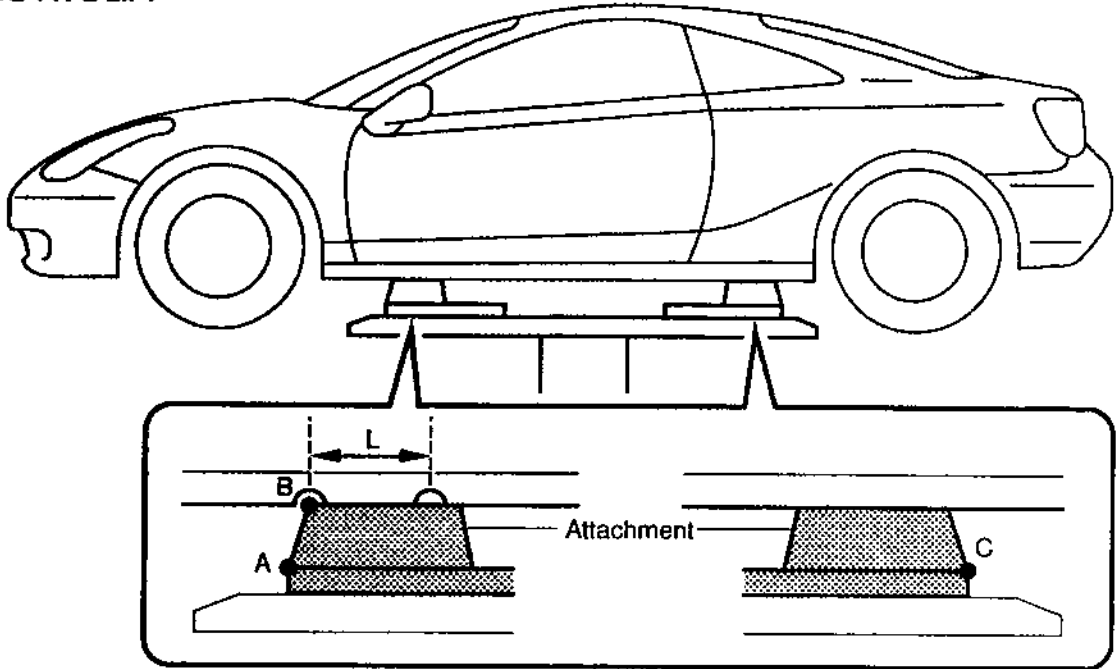
**CAUTION :** When jacking-up the rear and front, make sure the car is not carrying any extra weight.

**PANTOGRAPH JACK POSITION** \_\_\_\_\_ ○

**SUPPORT POSITION**

Safety stand and swing arm type lift ..... ▨

**PLATE TYPE LIFT**



IN

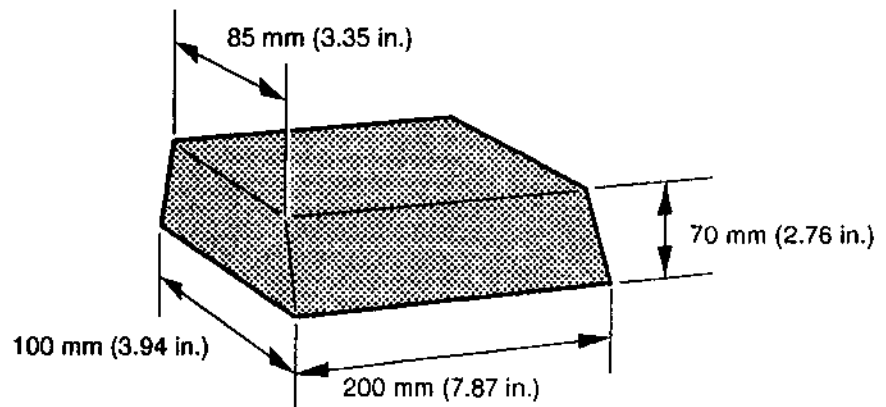
**HINT :**

- Left and right set position
- Front and rear set position

Place the vehicle over the center of the lift.

- Align the cushion gum ends of the plate with the attachment lower ends (A, C).
- Align the attachment upper end (B) with the front jack supporting point (L).

**Attachment dimensions**



## FOR ALL OF VEHICLES PRECAUTION

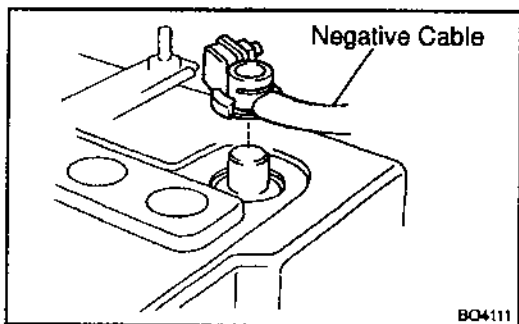
NFA-01

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

- (a) The CELICA is equipped with an SRS (Supplemental Restraint System), such as the driver airbag, front passenger airbag assembly, side airbag assembly and seat belt pretensioner.

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

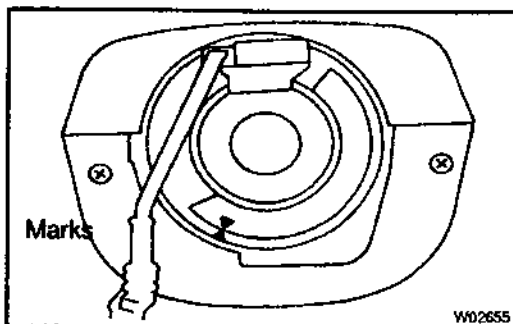
- (1) Malfunction symptoms of the supplemental restraint system are difficult to confirm, so the diagnostic trouble codes become the most important source of information when troubleshooting. When troubleshooting the supplemental restraint system, always inspect the diagnostic trouble codes before disconnecting the battery (See page DI-326).

- (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, front passenger airbag assembly, side airbag assembly and seat belt pretensioner should be inspected (See page RS-14, RS-28, and BO-111).
- (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 airbag sensor assembly, steering wheel pad, front passenger airbag assembly, side airbag assembly or seat belt pretensioner.
- (7) If the airbag sensor assembly, steering wheel pad, front passenger airbag assembly, side airbag assembly or seat belt pretensioner has been dropped, or if there are cracks, dents or other defects in the case, bracket or connector, replace them with new ones.
- (8) Do not directly expose the airbag sensor assembly, steering wheel pad, front passenger airbag assembly, side airbag assembly or seat belt pretensioner to hot air or flames.
- (9) Use a volt/ohmmeter with high impedance (10 k $\Omega$ /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 notices.
- (11) After work on the supplemental restraint system is completed, check the SRS warning light (See page DI-326).



- (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-19 of this manual concerning correct steering wheel installation.



## (d) STEERING WHEEL PAD (with Airbag)

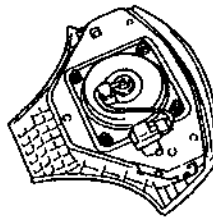
- (1) When removing the steering wheel pad or handling a new steering wheel pad, it should be placed with the pad top surface facing up.  
Storing the pad with its metallic surface facing upward may lead to a serious accident if the airbag deploys for some reason. In addition do not store a steering wheel pad on top of another one.
- (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 RS-16).  
Carry out the operation in a safe place away from electrical noise.

## Example:

Correct



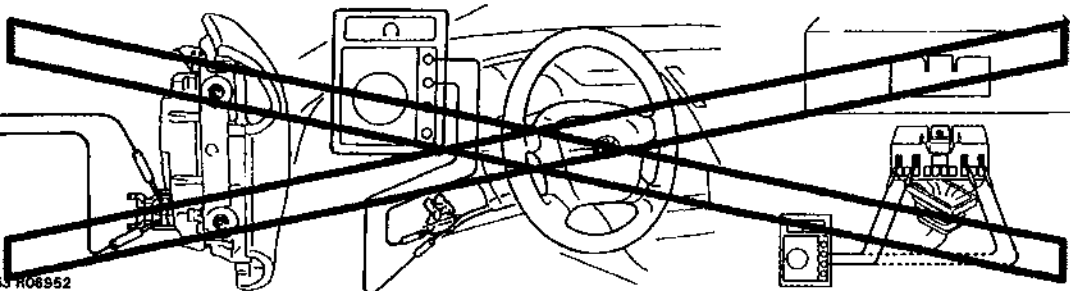
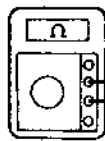
Wrong



N

B02920

## Example:

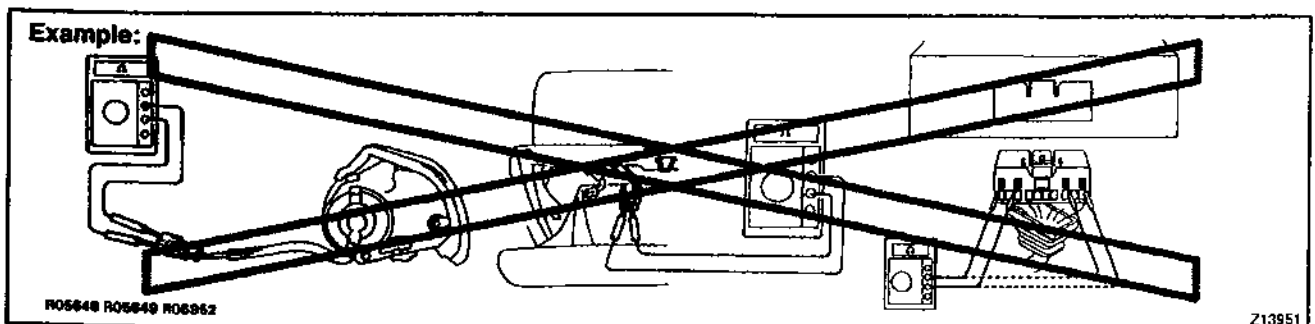
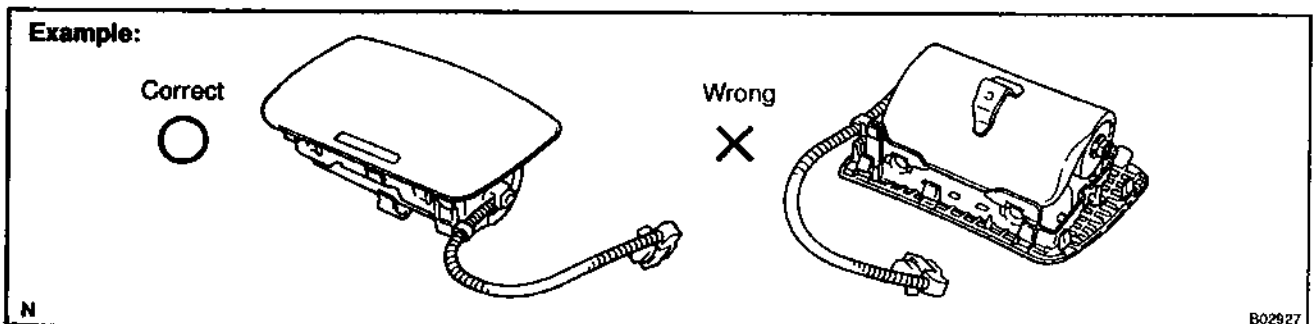


R05643 R06955 R08352

Z13950

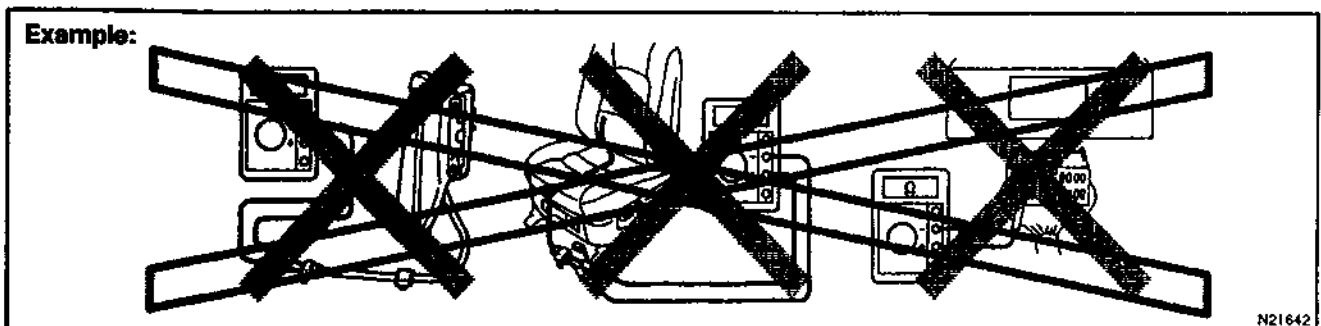
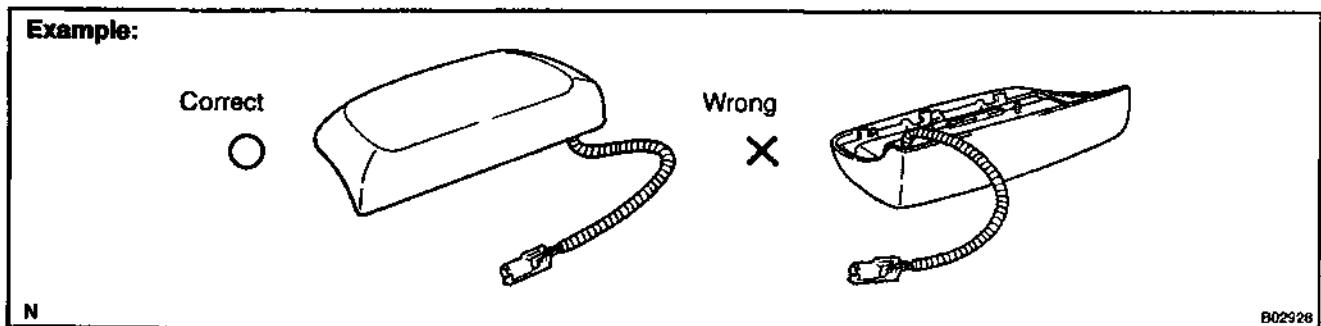
**(e) FRONT PASSENGER AIRBAG ASSEMBLY**

- (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 inflates.
- (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 front passenger airbag assembly and the airbag door should not be cleaned with detergents of any kind.
- (4) Store the airbag assembly 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) installed on the assembly before starting work.
- (6) When disposing of a vehicle or the airbag assembly alone, the airbag should be deployed using an SST before disposal (See page RS-30).  
Perform the operation 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 deploys.
- (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 side airbag assembly and the surface should not be cleaned with detergents of any kind.
- (4) Store the airbag assembly 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 seat before starting work.
- (6) When disposing of a vehicle or the side airbag assembly alone, the airbag should be deployed using an SST before disposal (See page RS-43). Perform the operation in a safe place away from electrical noise.



## (g) 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) and away from electrical noise without high humidity.
- (5) When using electric welding, first disconnect the connector (yellow color and 2 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 (See page BO-112). 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 the disposal. However never apply water to the seat belt pretensioner.

