

**HYUNDAI**

**1994  
Shop  
Manual**

**ELANTRA**

# HYUNDAI

## 1994

### Elantra

## Shop Manual

## Volume 1 & 2

## FOREWORD

This shop manual is intended for use by service technicians of authorized Hyundai dealers to help them provide efficient and correct service and maintenance on Hyundai vehicles.

To ensure customer satisfaction with Hyundai products, proper service and maintenance by Hyundai technicians is essential. Consequently, it is important that service personnel fully understand the contents of this manual, which should be kept in a handy place for quick and easy reference.

All the contents of this manual, including photographs, drawings, and specifications, are the latest available at the time of printing. As modifications affecting service occur, dealers will be provided technical service bulletins or supplementary volumes. This manual should be kept carefully up-to-date upon receipt of the new information.

Hyundai Motor Company reserves the right to make changes in design or to make additions to or improvements in its products without imposing any obligations upon itself to install them on its products previously manufactured.

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MAY. 1993, Printed in Korea

**NOTE : This PDF Manual contains the contents of both printed Volumes 1 & 2**

## CONTENTS

TITLE	SECTION
GENERAL INFORMATION	00
LUBRICATION AND MAINTENANCE	10
ENGINE MECHANICAL	20
COOLING SYSTEM	25
ENGINE ELECTRICAL SYSTEM	27
INTAKE & EXHAUST SYSTEM	28
EMISSION CONTROL SYSTEM	29
FUEL SYSTEM	31
CLUTCH	41
MANUAL TRANSAXLE	43
AUTOMATIC TRANSAXLE	45
DRIVE SHAFT AND FRONT AXLE	49
FRONT SUSPENSION	54
REAR SUSPENSION	55
STEERING SYSTEM (Manual and Power)	56
SRS AIR-BAG	56A
BRAKE SYSTEM	58
ANTI-LOCK BRAKE SYSTEM	58A
BODY (Interior and exterior)	60
BODY ELECTRICAL SYSTEM	90
AIR CONDITIONING SYSTEM	97
APPENDIX (Electrical Wiring System)	WS

**The acronyms, terminology, abbreviations used in this manual have been changed to standardize naming vehicle systems and components.**

The followings are list of current terms and new (recommended) ones based on SAE J1930

RECOMMENDED TERMS	EXISTING	RECOMMENDED ACRONYM/ABBREVIATION
ABS Control Module		ABSCM
Accelerator Pedal	Accelerator	AP
Air Cleaner	Air Cleaner, ACI, Air Cleaner Housing, Thermac Air Cleaner	ACL
Air Cleaner Filter	Air Cleaner Element, Air Filter	ACL Filter
Air Conditioning	A/CON, AC, ACC, Air Conditioner	A/C
Barometric Pressure	BARO, Atmospheric Pressure	BARO
Barometric Pressure Sensor	BPS, Atmospheric Pressure Sensor	BARO Sensor
Battery Positive Voltage	B+, VSS, VCC, Battery Voltage	B+
Bypass Air		BPA
Camshaft Position Sensor	No.1 TDC Sensor	CMP Sensor
Canister Purge		CANP
Carburetor	Carb	CARB
Charge Air Cooler	Inter Cooler, After Cooler	CAC
Closed Loop	CL, CLS, EEC,	CL
Closed Throttle Position	Closed Throttle	CTP
Clutch Pedal Position Switch	CES, Clutch Start Switch,	CPP Switch
Crankshaft Position Sensor	Crank Angle Sensor	CKP Sensor
Cruise Control	Automatic Speed Control	c c
Cruise Control Module	Electronic Control Unit	CCM
Data Link Connector	Self-Test connector, Diagnosis Connector	DLC
Diagnostic Test Mode	Modes	DIM
Diagnostic Trouble Code	Self Test Codes, Fault Codes	DTC
Distributor Ignition	DIS, EDIS, EI, ESAC, HEI, TFI,	DI
Electronic Ignition	DLI, Distributorless Ignition	EI
Engine Coolant Level	ECL, Engine Coolant Level	ECL
Engine Control Module	ECU, Electronic Control Unit	ECM
Engine Coolant Temperature	Water Temperature	ECT
Engine Speed	Crankshaft Speed, Revolutions per Minute	RPM
Evaporative Emission	EECS	EVAP
Evaporative Emission System	EECS, Evaporative Emission Control System	EVAP System
Exhaust Gas Recirculation	EGRVC, EGR Diagnostic Valve	EGR
Fan Control	EDF, Engine Coolant Fan, HEDF	FC
Flexible Fuel	Alcohol Concentration, Flexible Fuel	FF
Fourth Gear	4th Gear	4GR
Fuel Pump	Fuel Pump	FP
Generator	Alternator, ALT	GEN
Ground	Ground, GRD	GND
Heated Oxygen Sensor	HEGO, HOS, Oxygen Sensor	HO2S
Idle Speed Control	ISC	ISC
Ignition Control	Electronic Spark Timing, EST	IC
Ignition Control Module	DIS Module, TFI Module	ICM

RECOMMENDED TERMS	EXISTING	RECOMMENDED ACRONYM/ABBREVIATION
Intake Air Temperature	MAT, ACT, IAT, VAT, TBT	IAT
Knock Sensor	KS, Detonation Sensor, DS	KS
Malfunction Indicator Lamp	Check Engine, Service Engine Soon	MIL
Manifold Absolute Pressure	MAP	MA-P
Manifold Vacuum Zone Switch	Vacuum Switch	MVZ Switch
Mass Air Flow	MAF, MFC, AFS, Air Flow Meter, AFC, Hot Wire Anemometer	MAF
Mixture Control	MCS, M/C, FBC	MC
Multiport Fuel Injection	MPI, D-Jetronic, DFI, EFI, ECFI, LH-Jetronic, PFI, Motronic	MFI
On-Board Diagnostic	OBD, Self-Test	OBD
Open Loop	OL	OL
Oxygen Sensor	EGO, O2, EOS, EGS, OS, Lambda sensor, EGOS,	O2S
Park/Neutral Position		PNP
Power Steering Pressure	PSP	PSP
Power-train Control Module	ECA, ECU4, EEC Processor, MCU, SBEC, SMEC	PCM
Random Access Memory	RAM, KAM	RAM
Read Only Memory	ROM	ROM
Relay Module	Integrated Relay Module	RM
Scan Tool	Diagnostic Tester, MUT, Multi use Tester	ST
Service Reminder Indicator		SRI
SRS Control Module	Air Bag Control Module, ESPS	SRSCM
Stop Lamp Switch	Brake Switch, Stop Switch	SL Switch
Supercharger	SC	SC
Supercharger Bypass	SBS	SCB
Thermal Vacuum Valve	Thermal Vacuum Switch, Thermo Valve	TVV
Third Gear	3th Gear	3GR
Three Way Catalytic Converter	TWC	TWC
Throttle Body	Fuel Charging Station	TB
Throttle Position	TP, Throttle Potentiometer	TP
Throttle Position Sensor	TPS	TP Sensor
Torque Converter Clutch	TCC, CCO, LUS	TCC
Transaxle Control Module	TCU, EATX	TCM
Transaxle Range	PRNDL, SLP, Transmission Position	TR
Transaxle Range Switch	Inhibitor Switch	TR Switch
Turbocharger	TC, Turbo	TC
Vehicle Speed Sensor	PG, Distance Sensor	VSS
Voltage Regulator	VR	VR
Volume Air Flow	AFC, AFS, Air Flow Meter	VAF
Wide Open Throttle	Full, WOT	WOT

# **GENERAL INFORMATION**

## GENERAL INFORMATION

### HOW TO USE THIS MANUAL

This manual is divided into 22 sections. This first page of each section is marked with a black tab at the edge of the page. You can quickly find the first page of each section without looking through a full table of contents.

Each section includes the essential removal, installation, adjustment and maintenance procedures for servicing all body styles. This information is current as of time of publication.

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

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

### DEFINITION OF TERMS

#### Standard Value

Indicates the value use as the standard for judging the quality of a part or assembly on inspection or the value to which the part or assembly is corrected and adjusted. It is given by a tolerance.

#### Limit

Shows the standard for judging the quality of a part or assembly on inspection and means the maximum or minimum value within which the part or assembly must be kept functionally or in strength. It is a value established outside the range of standard value.

### NOTE, WARNING AND CAUTION

#### NOTE

A point of information.

#### WARNING

Information about an activity that could cause damage to the vehicle.

#### CAUTION

Information about an activity that could cause injury or damage to the driver, occupants or repair personnel.

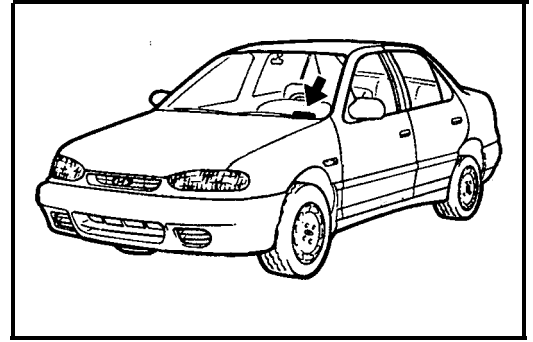
#### ABBREVIATIONS

**MFI:** Indicates Multiport Fuel Injection system.

**DOHC:** Indicates Double Overhead Camshaft Engine system

## VEHICLE IDENTIFICATION NUMBER LOCATION

The vehicle identification number (VIN) is stamped on the upper left side of the crash pad.



## VEHICLE IDENTIFICATION NUMBER

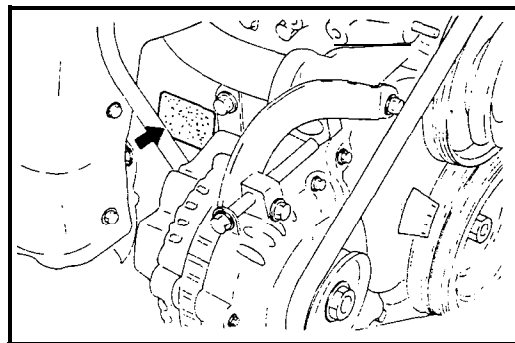
K	M	H	J	F	3	2	J	7	R	U	1	2	3	4	5	6
<hr/>																
1	2	3	4	5	6	7	8	9	10							

1. World manufacturer's identifier code  
KMH - Hyundai Motor Co., Korea
2. Drive line type  
J - ELANTRA
3. Body Type  
F - 4 Door sedan
4. Body style & version
  - 1 - Standard
  - 2 - Deluxe
  - 3 - Super deluxe
5. Restraint type
  - 1 - Active system
  - 2 - Passive system
6. Engine type
  - R - 1596 cc
  - M - 1836 cc
7. Check digit  
Mathematically determined to validate frame numbers
8. Model year
 

P - 1993	R - 1994	S - 1995	T - 1996
----------	----------	----------	----------
9. Plant code  
U - Ulsan plant
10. Serial number 000001 through 999999

## ENGINE IDENTIFICATION PLATE

The engine identification plate is stamped at the right front side on the top edge of the cylinder block.



## ENGINE IDENTIFICATION NUMBER

Engine identification number consists of 10 digits.

G	4	D	R	R	1	2	3	4	5	6
T	T	T	T	T						
1	2	3	4	5						

1. Engine fuel  
G - Gasoline
2. Engine range  
4 - In line 4 cycle 4 cylinder
3. Engine development order  
A - Z
4. Engine capacity  
R - 1596 cc      M - 1836 cc
5. Product year  
P - 1993      R - 1994      S - 1995      T - 1996
6. Serial number  
000001 through 999999



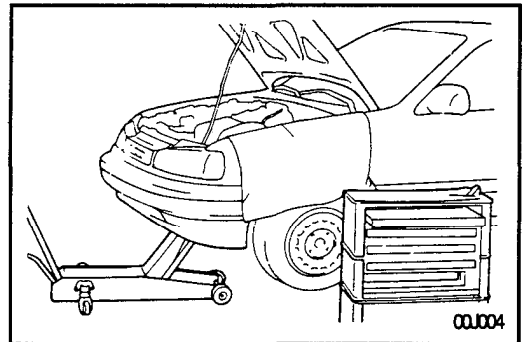
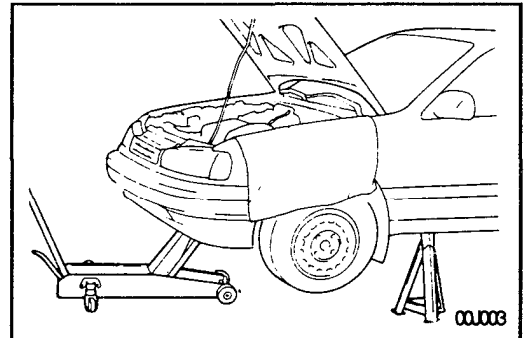
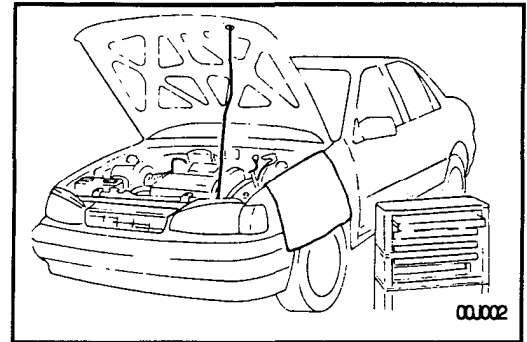
## PROTECTION OF THE VEHICLE

Always be sure to cover fenders, seats, and floor areas before starting work.

### CAUTION:

The support rod must be inserted into the hole near the edge of the hood whenever you inspect the engine compartment to prevent the hood from falling and possibly injuring you.

Assure that the support rod has been released prior to closing the hood. Always double check to be sure the hood is firmly latched before driving away.



## A WORD ABOUT SAFETY

The following precautions must be followed when jacking up the vehicle.

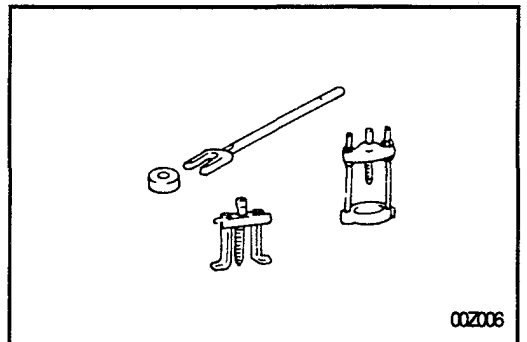
1. Block wheels.
2. Use only specified jacking positions.
3. Support vehicle with safety stands (jack stands)  
Refer to the page 00- 10
4. Start the engine only after making certain the engine compartment is clear of tools and people.

## PREPARATION OF TOOLS AND MEASURING EQUIPMENT

Be sure that all necessary tools and measuring equipment are available before starting work activity.

## SPECIAL TOOLS

Use special tools when they are required.



## REMOVAL OF PARTS

First find the cause of trouble and then make sure whether removing or disassembling is required before starting the job.



## DISASSEMBLY

If the disassembly procedure is complex, requiring many parts to be disassembled, all parts should be disassembled in a way that will not affect their performance or external appearance and be identified so that reassembly can be performed efficiently.

### 1. Inspection of parts

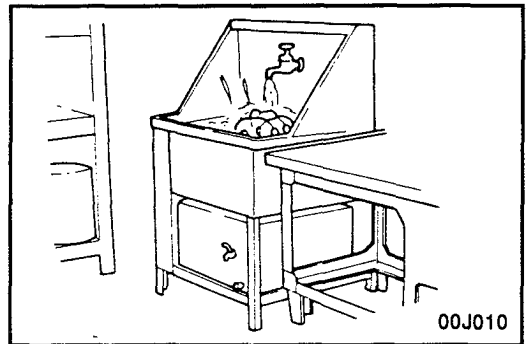
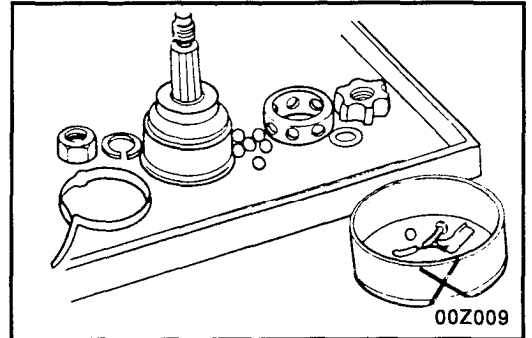
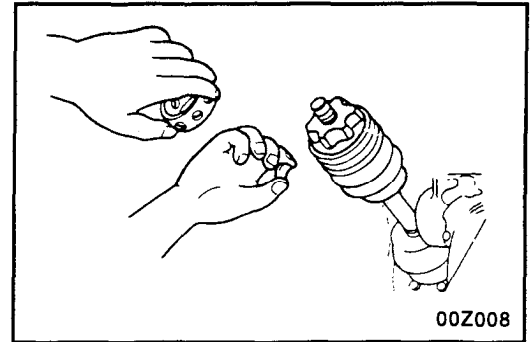
Each part when removed should be carefully inspected for wear, deformation, damage, and other problems.

### 2. Arrangement of parts

All disassembled parts should be carefully arranged for reassembly.  
Be sure to separate or otherwise identify the parts to be replaced from those that will be reused.

### 3. Cleaning parts for reuse

All parts to be reused should be carefully and thoroughly cleaned by the appropriate method.



## REASSEMBLY

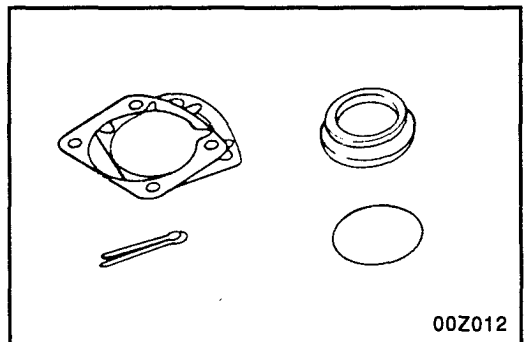
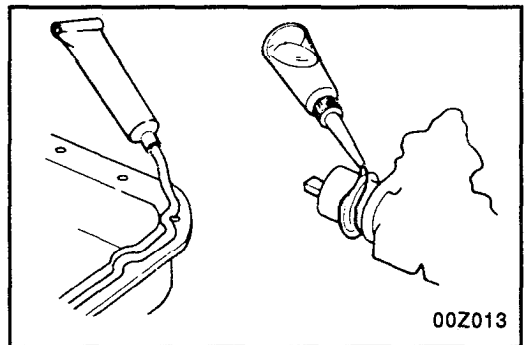
Standard values, such as torques and certain adjustments, must be strictly observed in the reassembly of all parts.

If removed, these parts should be replaced with new ones.

1. Oil seals
2. Gaskets
3. O-rings
4. Lock washers
5. Cotter pins (split pins)
6. Nylon nuts

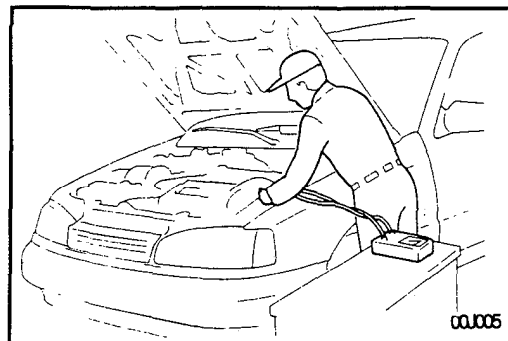
Depending on where they are;

1. Sealant should be applied to gaskets.
2. Oil should be applied to moving components of parts.
3. Specified oil or grease should be applied at the prescribed locations (oil seals, etc.) before assembly.



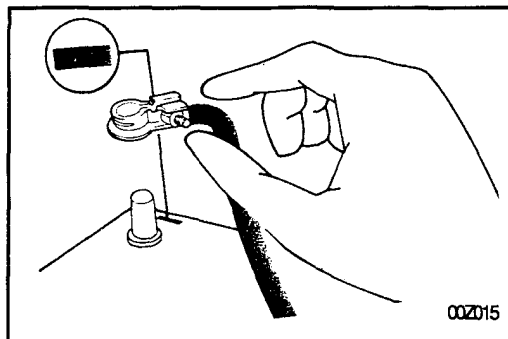
## ADJUSTMENTS

Use gauges and testers to correct adjustments to standard values.



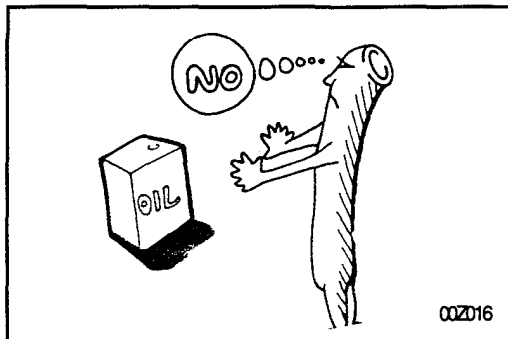
## ELECTRICAL SYSTEM

1. Be sure to disconnect the battery cable from the negative (-) terminal of the battery.
2. Never pull on the wiring when disconnecting connectors.
3. Locking connectors will click when the connector is secure.
4. Handle sensors and relays carefully. Be careful not to drop them or hit them against other parts.



## RUBBER PARTS AND TUBING

Always prevent gasoline or oil from touching rubber parts or tubing.



## PRECAUTIONS FOR 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 unleaded gasoline only.
2. Avoid prolonged idling.  
Avoid running the engine at fast idle speed for more than 10 minutes and at idle speed for more than 20 minutes.
3. Avoid spark jump test.  
Spark jump only when absolutely necessary. Perform this test as rapidly as possible and, 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 along with parts contaminated with gasoline or oil.

## SRS SYSTEM COMPONENTS INFORMATION

### CUSTOMER CAUTIONS

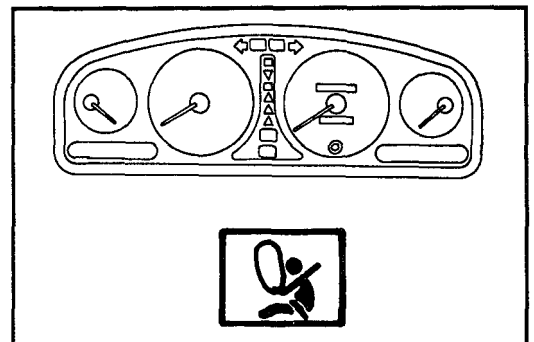
Failure to carry out service operations in the correct sequence could cause the airbag system to unexpectedly deploy during servicing, possibly leading to a serious accident.

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 the repair manual.

1. Work must be started after approx. 30 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 30 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 the audio memory system. Then when work is finished, reset the audio system as before and adjust the clock.
2. 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.
3. Never use airbag parts from another vehicle. When replacing parts, replace them with new parts.
4. Never attempt to disassemble and repair the airbag modules, SRSCM, Clock spring and Air-bag wiring harness in order to reuse it.
5. If the SRSCM or air-bag module have been dropped, or if there are cracks, dents or other defects in the case, bracket or connector, replace them with new ones.
6. After work on the airbag system is completed, perform the SRS SRI check.

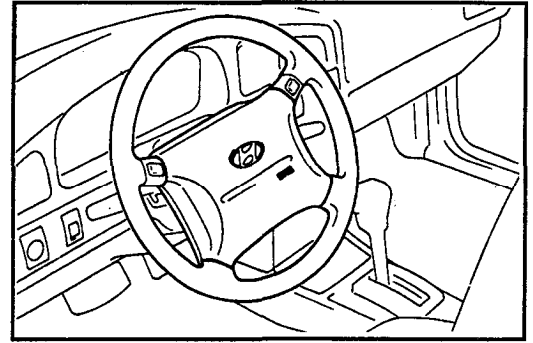
### SRS SERVICE REMINDER INDICATOR CHECK

When the ignition key is turned to "ON" position, the SRS service reminder indicator will illuminate for 6 seconds and then turn off. This means that the system is functioning properly.

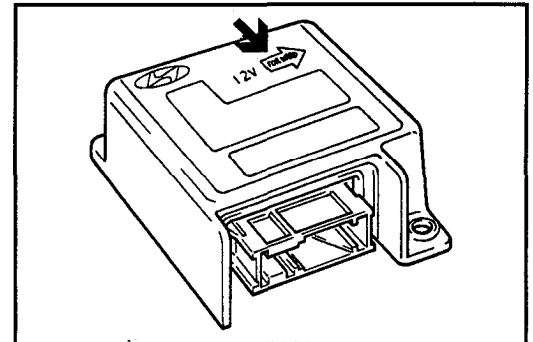


**AIR-BAG MODULE (with AIRBAG)**

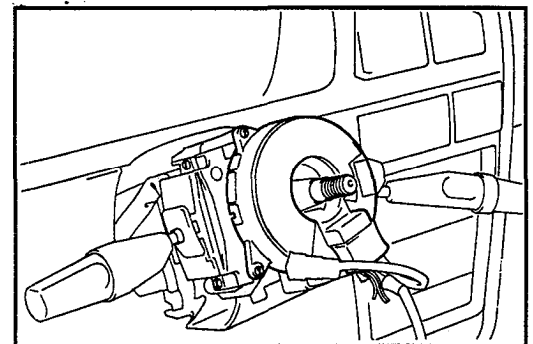
1. When removing the air-bag module or handling a new air-bag module, it should be placed with the pad top surface facing up. In this case, the twin-lock type connector lock lever should be in the lock state and care should be taken to place it so the connector will not be damaged. And do not store a 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. Store the air-bag module where the ambient temperature remains below 93°C (200°F), without high humidity and away from electrical noise.
4. When using electric welding, first disconnect the airbag connector (red color and 2 pins) under the steering column near the MULTI-FUNCTION SWITCH connector before starting work.

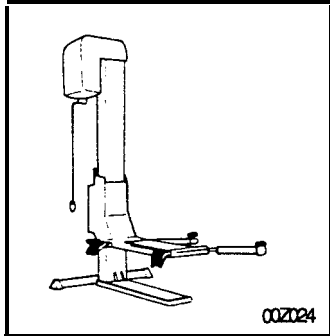
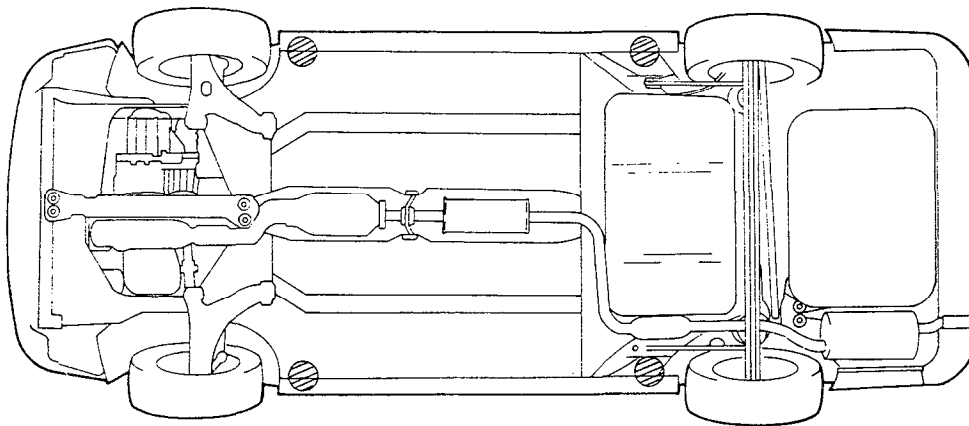
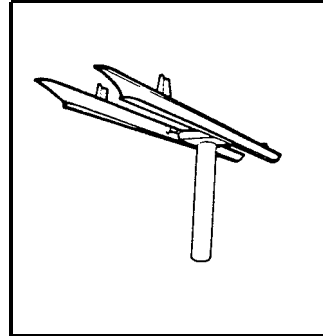
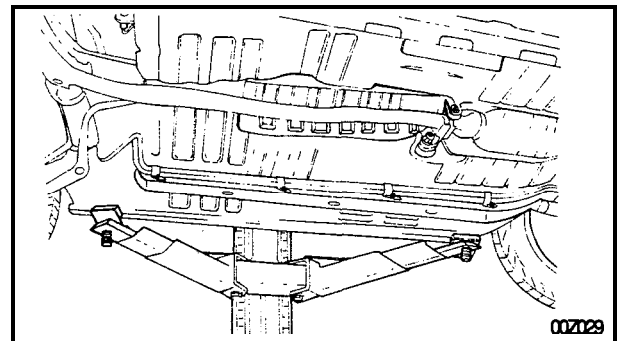
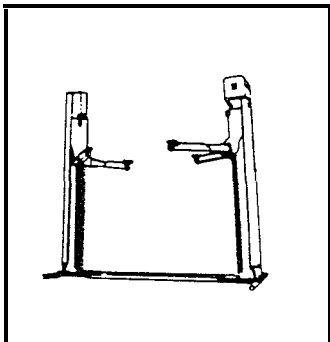
**SRSCM(SRS Control Module)**

Install the SRSCM with the arrow on the SRSCM facing toward the front of the vehicle.

**CLOCK SPRING (in MULTI-FUNCTION SWITCH)**

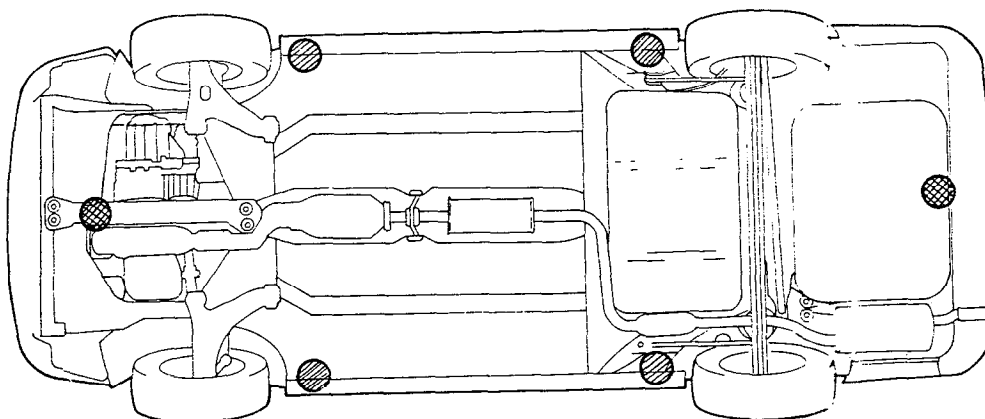
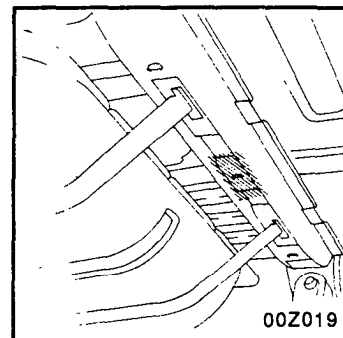
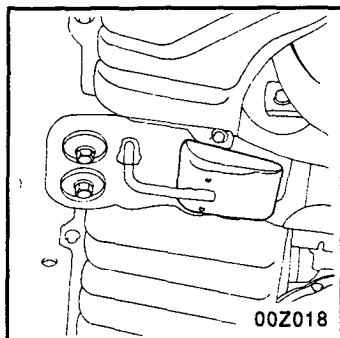
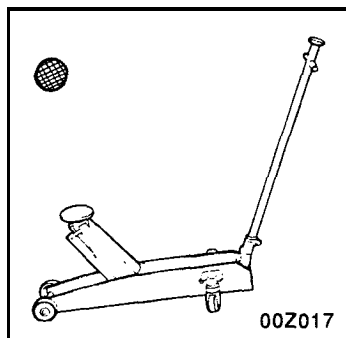
The steering wheel must be fitted correctly to the steering column with the clock spring at the neutral position, otherwise cable disconnection and other troubles may result. Refer to page 56A-13 of this manual concerning correct steering wheel installation.



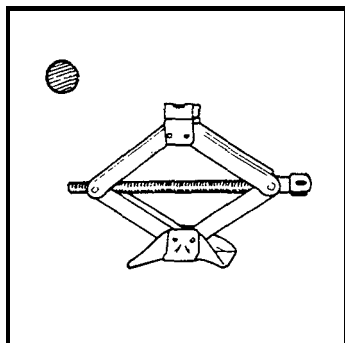
**JACK POINT****When using a single-post lift****When using a free wheel type auto lift****When using double-post lift**

**JACK POINT**

When using a floor jack




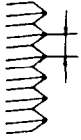

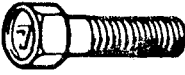
When using the jack  
provided with the  
vehicle (for reference)

**NOTE**

Do not support car at locations other than  
the specified support points.  
This will cause damage etc. to the body.



## STANDARD PARTS TIGHTENING TORQUE TABLE

Bolt nominal diameter (mm)	Pitch (mm)	Torque Nm (kg.cm, lb.ft)	
		Head Mark 4	Head Mark 7
			
M5	0.8	3-4 (30-40, 2.2-2.9)	5-6 (50-60, 3.6-4.3)
M6	1.0	5-6 (50-60, 3.6-4.3)	9-11 (90-110, 6.5-8.0)
M8	1.25	12-15 (120-150, 9-11)	20-25 (200-250, 14.5-18.0)
M10	1.25	25-30 (250-300, 18-22)	40-50 (400-500, 29-36)
M12	1.25	35-45 (350-450, 25-32)	60-80 (600-800, 43-58)
M14	1.5	75-85 (750-850, 55-60)	120-140 (1,200-1,400, 85-100)
M16	1.5	110-130 (1,100-1,300, 80-95)	180-210 (1,800-2,100, 130-150)
M18	1.5	160-180 (1,600-1,800, 115-130)	260-300 (2,600-3,000, 190-215)
M20	1.5	220-250 (2,200-2,500, 160-180)	360-420 (3,600-4,200, 260-300)
M22	1.5	290-330 (2,900-3,300, 210-240)	480-550 (4,800-5,500, 350-400)
M24	1.5	370-420 (3,700-4,200, 270-300)	610-700 (6,100-7,000, 440-505)

## NOTES

- The torques shown in the table are standard values applicable to tightening performed under the following conditions:
  - Nuts and bolts are made of steel bar, and galvanized.
  - Galvanized plain steel washers are inserted.
  - All nuts, bolts, and plain washers are dry.
- The torques shown in the table are not applicable:
  - Spring washers, toothed washers and the like are inserted.
  - If plastic parts are fastened.
  - If self-tapping screws or self-locking nuts are used.
  - If threads and surface are coated with oil.
- It should be standard practice to reduce the torques given in the table to the percentage indicated below:
  - If spring washers are used. 85%
  - If threads and bearing surfaces are stained with oil 85%