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SUZUKI

VITARA

SERVICE MANUAL

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IMPORTANT

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WARNING/CAUTION/NOTE

Please read this manual and follow its instructions carefully. To emphasize special information, the words **WARNING**, **CAUTION**, and **NOTE** have, special meanings. Pay special attention to the messages highlighted by these signal words.

WARNING:

Indicates a potential hazard that could result in death or injury.

CAUTION:

Indicates a potential hazard that could result in vehicle damage.

NOTE:

Indicates special information to make maintenance easier or instructions clearer.

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FOREWORD

This manual contains procedures for diagnosis, maintenance adjustments, minor service operations, replacement of components (Service) and for disassembly and assembly of major components (Unit Repair-Overhaul).

Applicable model:

VITARA 3 DOOR MODEL vehicles of and after following body No.

For European Market For Other Markets
 JSAETA01C00160001 — TA01C—110001—
 JSAETA01V00140001 — TA01V—110001—

The contents are classified into sections each of which is given a section number as indicated in the "Table of Contents" on this page. And on the first page of each individual section is an index of that section.

This manual should be kept in a handy place for ready reference of the service work. Strict observance of the so specified items will enable one to obtain the full performance of the vehicle.

When replacing parts or servicing by disassembling, it is recommended to use SUZUKI genuine parts, tools, and service materials (lubricants, sealants, etc.) as specified in each description.

All information, illustrations, and specifications contained in this literature are based on the latest product information available at the time of publication approval. As this service manual is intended mainly for the left hand steering vehicle, it is possible that some illustrations do not correspond to the right hand steering vehicle. The right is reserved to make changes at any time without notice.

NOTE:

- "CARBURETOR MODEL" as used in this manual means the vehicle equipped with a carburetor and "FUEL INJECTION MODEL" the vehicle equipped with an electronic fuel injection system.
- For related service manuals, refer to next page.

SUZUKI MOTOR CORPORATION

TECHNICAL DEPARTMENT
 AUTOMOBILE SERVICE DIVISION

TABLE OF CONTENTS	SECTION
GENERAL INFORMATION	
General Information	0A
Maintenance and Lubrication	0B
HEATING AND AIR CONDITIONING	
Heating and Ventilation	1A
BUMPERS AND SHEET METAL	2
STEERING, SUSPENSION, WHEELS AND TIRES	3
Front End Alignment	3A
Steering Gear Box and Linkage	3B2
Power Steering System (Optional)	3B3
Steering Wheel, Column and Shaft	3C2
Front Suspension	3D
Rear Suspension	3E
Wheel and Tires	3F
FRONT DRIVE AXLE/AXLE BEARING, OIL SEAL	4
PROPELLER SHAFTS	4B
BRAKES	5
ENGINE	
General Information and Diagnosis	6
Engine Mechanical	6A
Engine Cooling	6B
Engine Fuel	6C
Carburetor	6D
Electronic Fuel Injection System	6E
Ignition System (Carburetor Model)	6F
Ignition System (Fuel Injection Model)	6F1
Cranking System (Reduction Type)	6G
Cranking System (No-Reduction Type)	6G1
Charging System	6H
Emission Controls	6J
Exhaust System	6K
TRANS.	
Manual Transmission	7A
Automatic Transmission (3 A/T)	7B
Clutch	7C
Transfer	7D
Differential (Front & Rear)	7E
BODY ELECTRICAL SYSTEM	8
BODY SERVICE	9

RELATED SERVICE MANUAL

SERVICE MANUAL RELATED TO THIS MANUAL 99500-60A10		APPLICABILITY
VITARA Supplementary Service Manual for 5-door Model	99501-60A50	Vehicles equipped with 5-doors

For vehicles from the very beginning of the production up to body Nos. as listed in "FOREWORD", refer to VITARA Service Manual 99500-60A01.

SERVICE MANUAL RELATED TO VITARA S/M 99500-60A01		APPLICABILITY
VITARA Supplementary Service Manual for Fuel Injection model	99501-60A01	Vehicles equipped with electronic fuel injection system
VITARA Supplementary Service Manual for Body Service	99501-60A10	All vehicles This supplement has been prepared for anti-corrosion treatment of body service.
VITARA Supplementary Service Manual for Automatic Transmission	99501-60A21	Vehicles equipped with automatic transmission

SECTION 0A

GENERAL INFORMATION

CONTENTS

HOW TO USE THIS MANUAL	0A-1	Transmission Identification Number . .	0A- 8
ABBREVIATIONS USED IN THIS		METRIC INFORMATION	0A- 9
MANUAL	0A-3	Metric Fasteners	0A- 9
GENERAL PRECAUTIONS	0A-5	Fastener Strength Identification	0A- 9
IDENTIFICATION INFORMATION	0A-8	Standard Tightening Torque	0A-10
Body Number	0A-8	VEHICLE LIFTING POINTS	0A-11
Engine Identification Number	0A-8		

HOW TO USE THIS MANUAL

There is a table of contents for the whole manual on the first page of this manual, whereby you can easily find the section that offers the information you need.

TABLE OF CONTENTS	SECTION
GENERAL INFORMATION	
General Information	0A
Maintenance and Lubrication	0B
HEATING AND AIR CONDITIONING	
Heating and Ventilation	1A
BUMPERS AND SHEET METAL	2
STEERING, SUSPENSION, WHEELS AND TIRES	

Fig. 0A-1

Also, there is a table of contents on the first page of each section, where the main items in that section are listed.

MANUAL TRANSMISSION 7A-1	
SECTION 7A	
MANUAL TRANSMISSION	
CONTENTS	
GENERAL DESCRIPTION7A- 1	UNIT REPAIR OVERHAUL7A-12
DIAGNOSIS7A- 4	Dismounting of Trans Unit7A-12
ON VEHICLE SERVICE7A- 5	Remounting7A-13
Maintenance Service7A- 5	Gear Shift Control7A-14
Transfer Oil Seals7A- 6	Transmission Units7A-17
Shift Control Levers7A- 8	RECOMMENDED TORQUE
Switches7A- 8	SPECIFICATIONS7A-35
Speedometer Driven Gear7A-10	REQUIRED SERVICE MATERIALS7A-35
Engine Rear Mounting7A-11	SPECIAL TOOLS7A-36

Fig. 0A-2

Each section of this manual has its own pagination. It is indicated at the top of each page along with the Section name.

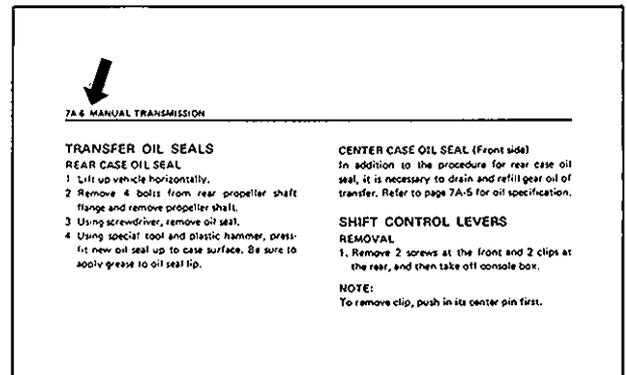


Fig. 0A-3

The torque specification is given as shown figure below or it is described at the end page of each section.

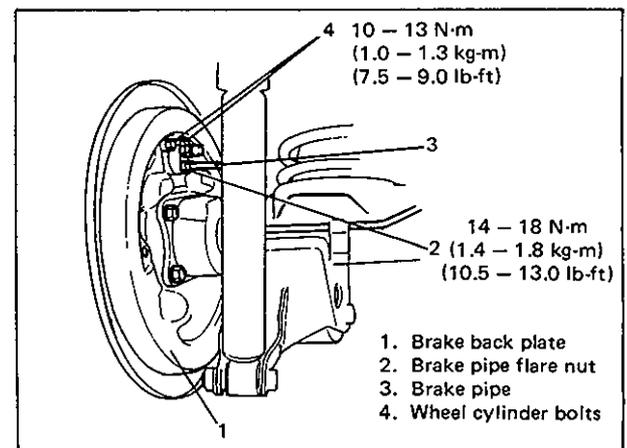


Fig. 0A-4

The SI, metric and foot-pound systems are used as units in this manual.

BRAKES 6-87

RECOMMENDED TORQUE SPECIFICATIONS

Fastening parts	Tightening torque		
	N-m	kgm	lb-ft
1. Brake caliper carrier bolt	70 - 100	7.0 - 10.0	51.0 - 72.0
2. Brake caliper pin bolt	22 - 32	2.2 - 3.2	16.0 - 23.0
3. Front brake flexible hose bolt	20 - 25	2.0 - 2.5	14.5 - 18.0
4. Rear brake nut (Brake back plate nut)	18 - 28	1.8 - 2.8	13.5 - 20.0
5. Master cylinder nut	10 - 16	1.0 - 1.6	7.5 - 11.5
6. Booster nut	10 - 16	1.0 - 1.6	7.5 - 11.5
7. Brake pipe S-way joint bolt	8 - 12	0.8 - 1.2	6.0 - 8.5
8. LSP valve bolt	18 - 28	1.8 - 2.8	13.5 - 20.0
9. Brake pipe flare nut	14 - 18	1.4 - 1.8	10.5 - 13.0
10. Brake pedal shaft nut	18 - 28	1.8 - 2.8	13.5 - 20.0
11. Rear brake drum nut	50 - 60	5.0 - 6.0	36.5 - 57.5

Fig. 0A-5

In each figure in the text, part names, special tool names and numbers and their usage are provided.

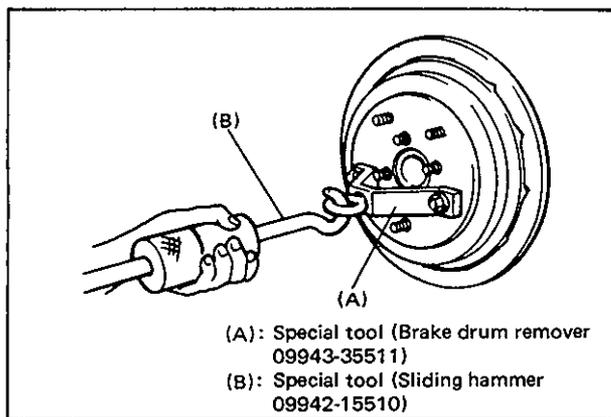


Fig. 0A-6

A number of abbreviations are used in the text. For their full explanations, refer to "ABBREVIATIONS USED IN THIS MANUAL" on the page 0A-3 of this section.

DIAGNOSIS and CORRECTION are included in each section as necessary.

IGNITION SYSTEM 4F-3

DIAGNOSIS

Condition	Possible cause	Correction
Engine cranks, but will not run	<ul style="list-style-type: none"> • No spark • Defective spark plug • Leaky high tension cords • Cracked rotor or cap • Defective generator assembly • Maladjusted signal rotor air gap • Defective ignition coil • Loose connection or disconnection of high tension cords or lead wires • Blown fuse • Defective noise suppressor • Maladjusted ignition timing. 	<ul style="list-style-type: none"> Adjust the gap, or replace Replace defective cords Replace Replace Adjust Replace Connect securely Replace and repair Replace Adjust

Fig. 0A-7

At the end of each section, there are descriptions of SPECIAL TOOLS, REQUIRED SERVICE MATERIALS and RECOMMENDED TORQUE SPECIFICATIONS that should be used for the servicing work described in that section.

ABBREVIATIONS USED IN THIS MANUAL

A

ATDC : After Top Dead Center
 API : American Petroleum Institute
 ATF : Automatic Transmission Fluid
 ALR : Automatic Locking Retractor
 AC : Alternating Current
 A/T : Automatic Transmission
 A/C : Air-Conditioner
 AFM : Air Flow Meter
 AFS : Air Flow Sensor
 ABDC : After Bottom Dead Center
 A/F : Air Fuel mixture ratio
 ALDL : Assembly Line Diagnostic Link
 ADR : Australian Design Rule
 A-ELR : Automatic-Emergency Locking Retractor

B

BTDC : Before Top Dead Center
 BBDC : Before Bottom Dead Center
 BVSFV : Bimetal Vacuum Switching Valve

C

CAS : Crank Angle Sensor
 CPU : Central Processing Unit
 CO : Carbon Monoxide
 CB : Circuit Breaker
 CMVSS : Canadian Motor Vehicle Safety Standard
 CRS : Child Restraint System

D

DRL : Daytime Running Light
 DERM : Diagnostic Energy Reserve Module
 DC : Direct Current
 DOJ : Double Offset Joint
 DOT : Department of Transportation
 DSPV : Deceleration Sensing Proportioning Valve

E

ECM : Electronic Control Module
 EGR : Exhaust Gas Recirculation
 ESA : Electronic Spark Advance
 ECU : Electronic Control Unit
 EPA : Environmental Protection Agency
 ELR : Emergency Locking Retractor

F

FMVSS : Federal Motor Vehicle Safety Standard
 4WD : 4 Wheel Drive Vehicles

H

HAC : High Altitude Compensator
 HIC : Hot Idle Compensator
 HC : Hydrocarbons

I

ISC : Idle Speed Control
 IG : Ignition
 ISO : International Standards Organization

L

LSD : Limited Slip Differential
 LSPV : Load Sensing Proportioning Valve
 LCD : Liquid Crystal Display
 LH : Left Hand Steering Vehicle

M

M/T : Manual Transmission
 Min : Minimum
 Max : Maximum

N

NHTSA : National Highway Traffic Safety Organization
 NOx : Nitrogen Oxides

O

OHC : Over Head Camshaft

P

PCV : Positive Crankcase Ventilation
 P/S : Power Steering
 PTC : Positive Temperature Coefficient
 PWM : Pulse Width Modulation

0A-4 GENERAL INFORMATION

R

REGTS : Recirculated Exhaust Gas Temperature Sensor

RWAL : Rear Wheel Anti Lock Brake

RH : Right Hand Steering Vehicle

S

SAE : Society of Automotive Engineers

SIR : Supplemental Inflatable Restraint

SOHC : Single Over Head Camshaft

T

TB : Throttle Body

TPS : Throttle Position Sensor

TS : Throttle Switch

TVSV : Thermal Vacuum Switching Valve

2WD : 2 Wheel Drive Vehicles

V

VSV : Vacuum Switching Valve

VIN : Vehicle Identification Number

VTV : Vacuum Transmitting Valve

VSS : Vehicle Speed Sensor

W

WTG : Water Temperature Gauge

WTS : Water Temperature Sensor

WOT : Wide Open Throttle

GENERAL PRECAUTIONS

The WARNING and CAUTION below describe some general precautions that you should observe when servicing a vehicle. These general precautions apply to many of the service procedures described in this manual, and they will not necessarily be repeated with each procedure to which they apply.

WARNING:

- Whenever raising a vehicle for service, be sure to follow the instructions under "VEHICLE LIFTING POINTS" on page 0A-11 of this manual.

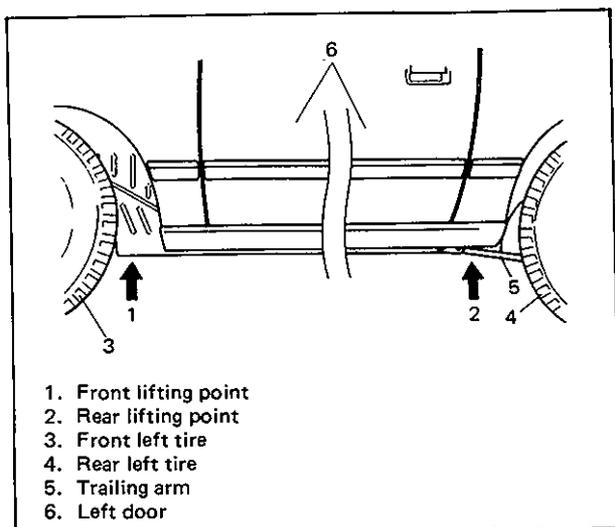


Fig. 0A-8

- When it is necessary to do service work with the engine running, make sure that the parking brake is set fully and the transmission is in Neutral (for manual transmission vehicles) or Park (for automatic transmission vehicles). Keep hands, hair, clothing, tools, etc. away from the fan and belts when the engine is running.
- Do not perform service work in areas where combustible materials can come in contact with a hot exhaust system. When working with toxic or flammable materials (such as gasoline and refrigerant), make sure that the area you work in is well-ventilated.
- To avoid getting burned, keep away from hot metal parts such as the radiator, exhaust manifold, tailpipe, muffler, etc.

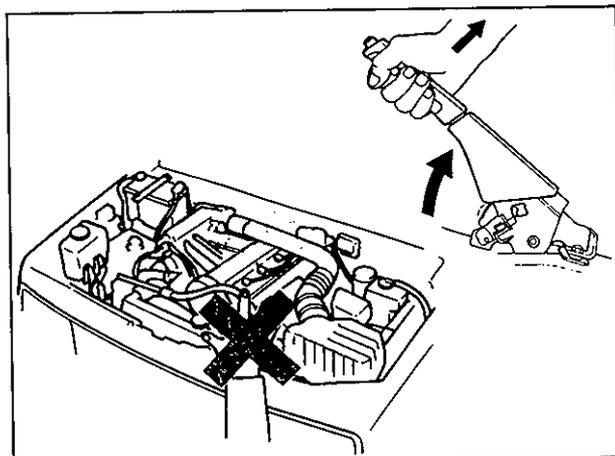


Fig. 0A-9

- When it is necessary to run the engine indoors, make sure that the exhaust gas is forced outdoors.

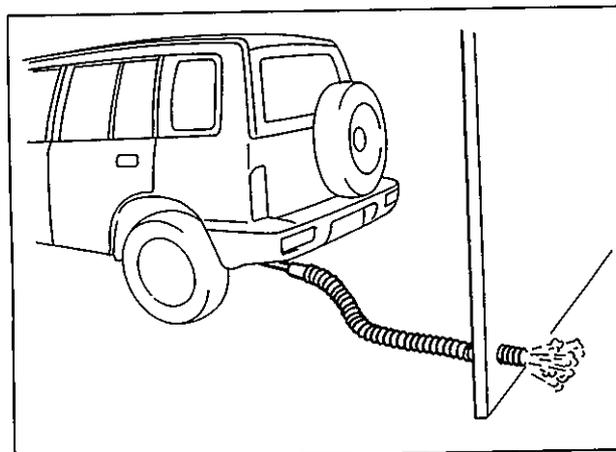


Fig. 0A-10

- It is important to note that, during any vehicle maintenance procedures, replacement fasteners must have the same measurements as those removed. Mismatched or incorrect fasteners can result in vehicle damage or malfunction, or possible personal injury. Therefore, fasteners removed from the vehicle should be saved for re-use whenever possible. Where the fasteners are not satisfactory for re-use, care should be taken to select a replacement that matches the original. Additional information concerning this subject will be found in METRIC INFORMATION of this section.

CAUTION:

- Before starting any service work, cover fenders, seats, and any other parts that are likely to get scratched or stained during servicing. Also, be aware that what you wear (e.g., buttons) may cause damage to the vehicle's finish.

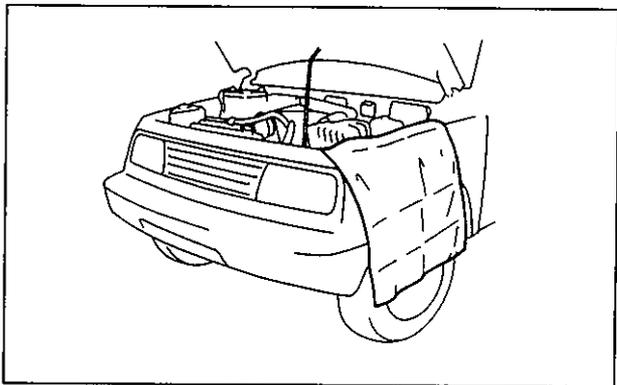


Fig. 0A-11

- When performing service to electrical parts that does not require use of battery power, disconnect the negative cable of the battery.

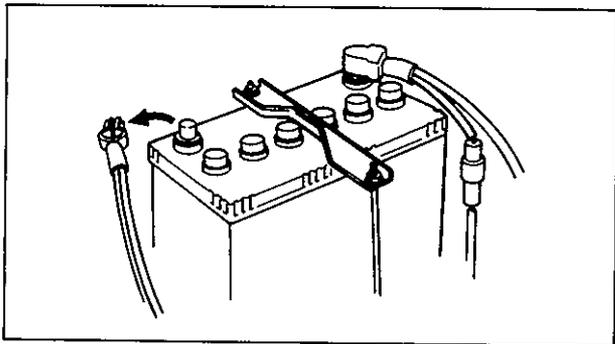


Fig. 0A-12

- When removing the battery, be sure to disconnect the negative cable first and then the positive cable. When reconnecting the battery, connect the positive cable first and then the negative cable, and replace the terminal covers.

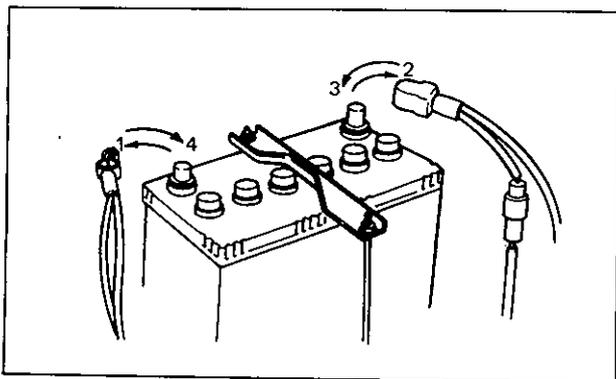


Fig. 0A-13

- When removing parts that are to be reused, be sure to keep them arranged in an orderly manner so that they may be reinstalled in the proper order and position.

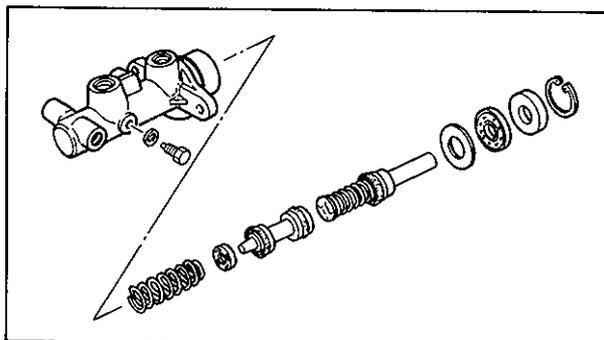


Fig. 0A-14

- Whenever you use oil seals, gaskets, packing, O-rings, locking washers, split pins, self-locking nuts, and certain other parts as specified, be sure to use new ones. Also, before installing new gaskets, packing, etc., be sure to remove any residual material from the mating surfaces.

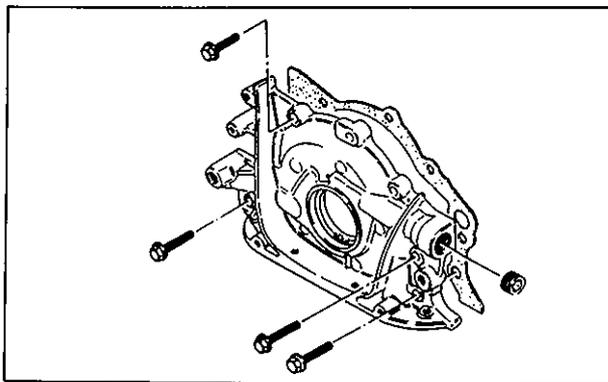


Fig. 0A-15

- Make sure that all parts used in reassembly are perfectly clean.
- When use of a certain type of lubricant, bond, or sealant is specified, be sure to use the specified type.

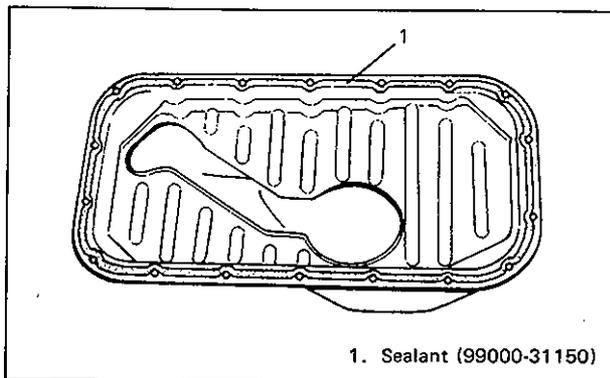


Fig. 0A-16

1. Sealant (99000-31150)

- Be sure to use special tools when instructed.

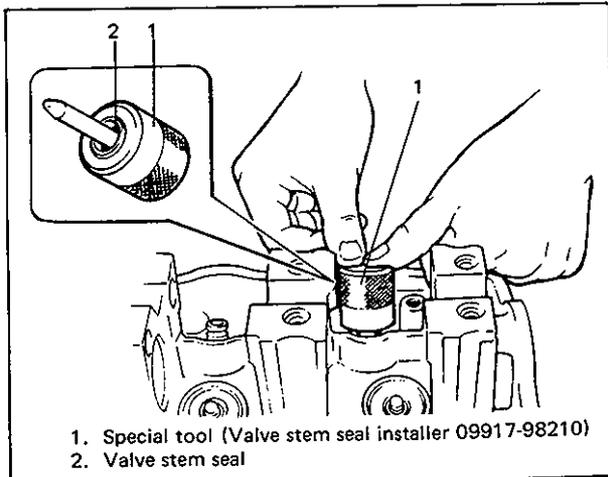


Fig. 0A-17

- When disconnecting vacuum hoses, attach a tag describing the correct installation position so that the hoses can be reinstalled correctly.

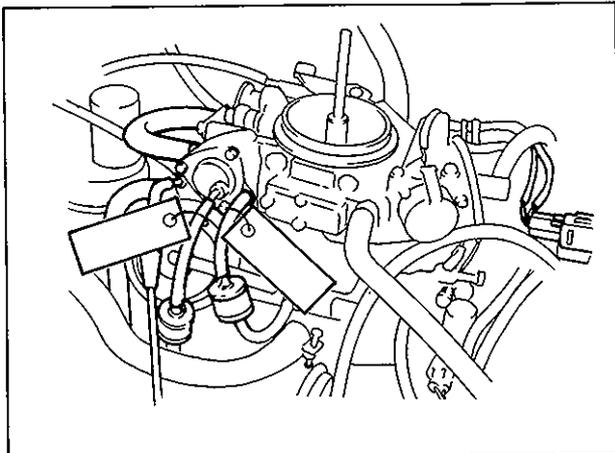


Fig. 0A-18

- After servicing fuel, oil, water, vacuum, exhaust, or brake systems, check all lines related to the system for leaks.

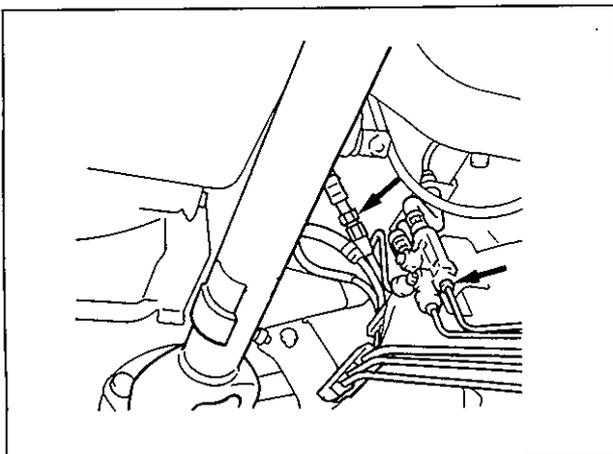


Fig. 0A-19

- Be careful not to touch the electrical terminals of parts which use microcomputers (e.g. electronic control unit). The static electricity from your body can damage these parts.

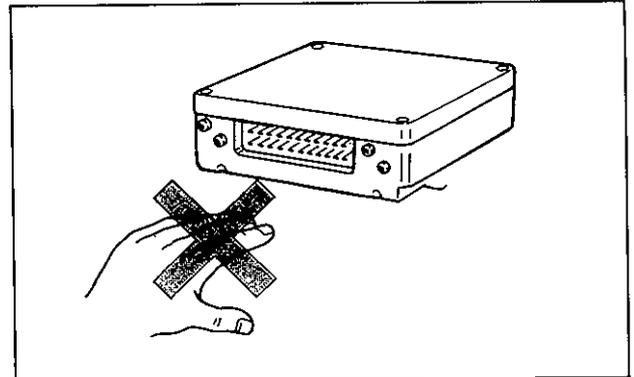


Fig. 0A-20

- When taking measurements at electrical connectors using a tester probe, be sure to insert the probe from the wire harness side (backside) of the connector.

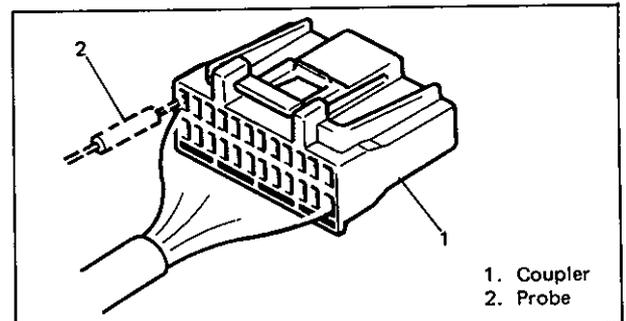


Fig. 0A-21

- For vehicles equipped with a catalytic converter, be careful not to let a large amount of unburned gasoline enter the converter or it can be damaged. Conduct a spark jump test only when necessary, make it as short as possible, and do not open the throttle. Conduct engine compression checks within the shortest possible time. Avoid situations which can result in engine misfire (e.g. starting the engine when the fuel tank is nearly empty).
- For vehicles equipped with fuel injection systems, never disconnect the fuel line between the fuel pump and injector without first releasing the fuel pressure, or fuel can be sprayed out under pressure.

IDENTIFICATION INFORMATION

BODY NUMBER

The vehicle body number is punched on the chassis inside the tire housing on the right front side.

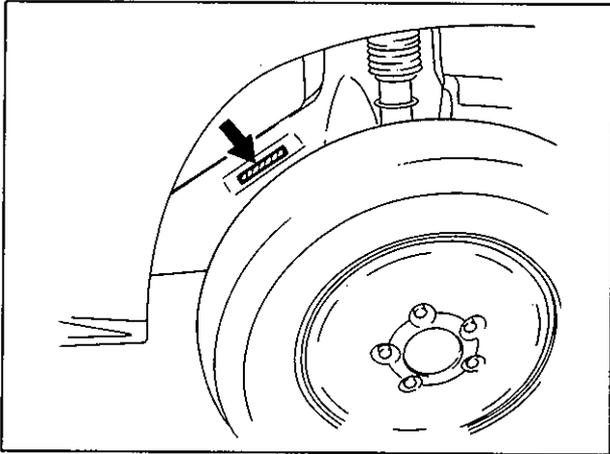


Fig. 0A-22 Vehicle Body Number Location

TRANSMISSION IDENTIFICATION NUMBER

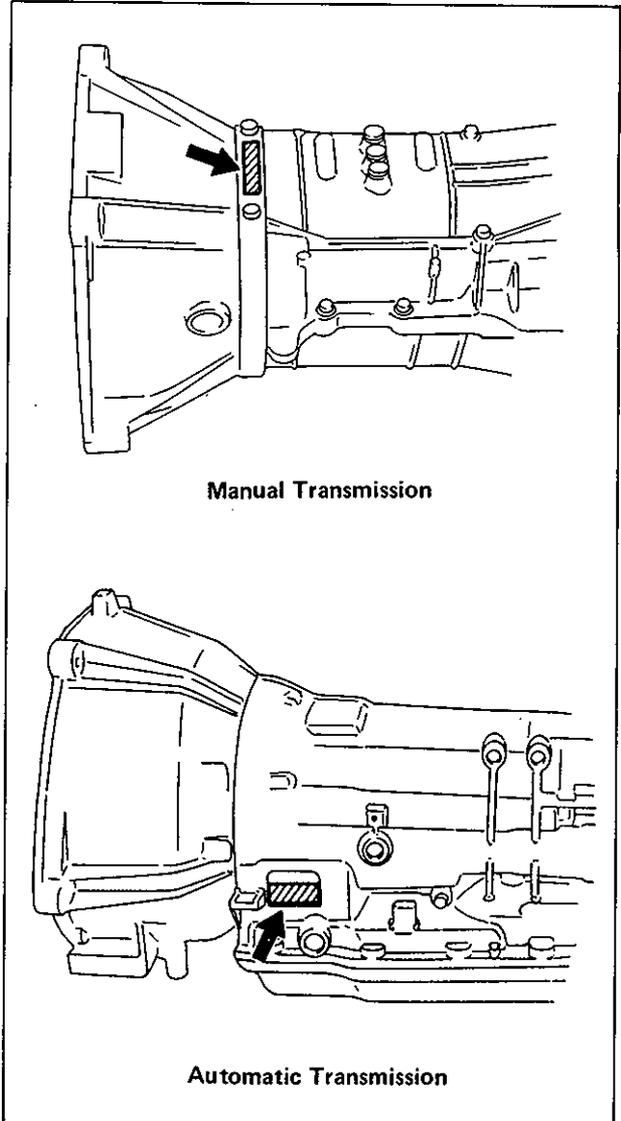
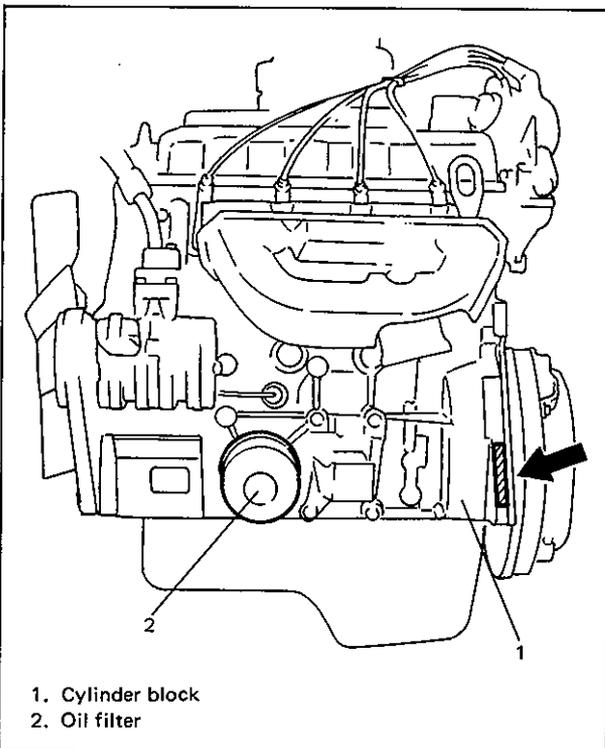


Fig. 0A-24 Transmission Number Location

ENGINE IDENTIFICATION NUMBER



1. Cylinder block
2. Oil filter

Fig. 0A-23 Engine Number Location

METRIC INFORMATION

METRIC FASTENERS

Most of the fasteners used for this vehicle are metric. When replacing any fasteners, it is most important that replacement fasteners be the correct diameter, thread pitch and strength.

NOTE:

However that the metric system is not used for the fasteners of the Automatic transmission. Their sizes are explained in inches.

FASTENER STRENGTH IDENTIFICATION

Most commonly used metric fastener strength property classes are 4T, 7T and radial line with the class identification embossed on the head of each bolt. Some metric nuts will be marked with punch mark strength identification on the nut face. Fig. 0A-25 shows the different strength markings.

When replacing metric fasteners, be careful to use bolts and nuts of the same strength or greater than the original fasteners (the same number marking or higher). It is likewise important to select replacement fasteners of the correct size. Correct replacement bolts and nuts are available through the parts division.

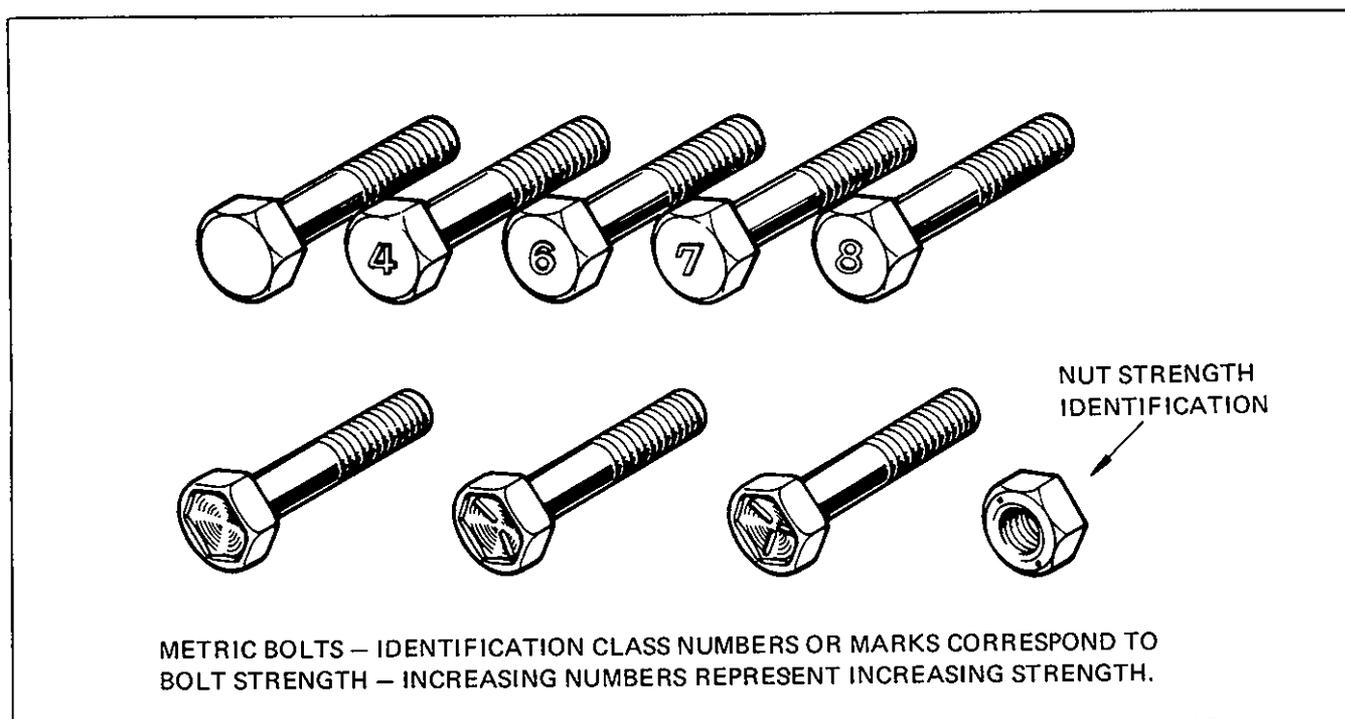


Fig. 0A-25 Bolt Strength Markings

STANDARD TIGHTENING TORQUE

Each fastener should be tightened to the torque specified in each section of this manual. If no description or specification is provided, refer to the following tightening torque chart for the applicable torque for each fastener. When a fastener of greater strength than the original one is used, however, use the torque specified for the original fastener.

NOTE:

- For the flanged bolt and nut, add 10% to the tightening torque given in the chart below.
- The following chart is applicable only where the fastened parts are made of steel or light alloy.

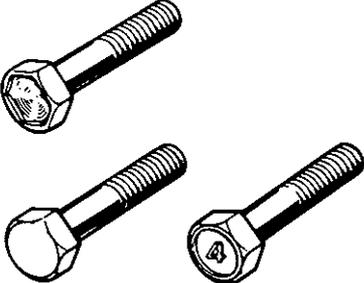
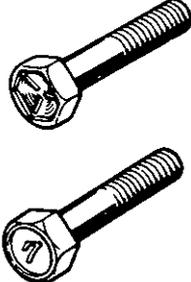
STRENGTH THREAD DIAMETER (mm)	 Conventional bolt "4T" bolt			 "7T" bolt		
	N-m	kg-m	lb-ft	N-m	kg-m	lb-ft
4	1 – 2	0.1 – 0.2	0.7 – 1.5	1.5 – 3.0	0.15 – 0.30	1.0 – 2.2
5	2 – 4	0.2 – 0.4	1.5 – 3.0	3 – 6	0.3 – 0.6	2.0 – 4.5
6	4 – 7	0.4 – 0.7	3.0 – 5.0	8 – 12	0.8 – 1.2	6.0 – 8.5
8	10 – 16	1.0 – 1.6	7.0 – 11.5	18 – 28	1.8 – 2.8	13.0 – 20.0
10	22 – 35	2.2 – 3.5	16.0 – 25.0	40 – 60	4.0 – 6.0	29.0 – 43.5
12	35 – 55	3.5 – 5.5	25.0 – 40.0	70 – 100	7.0 – 10.0	50.5 – 72.5
14	50 – 80	5.0 – 8.0	36.0 – 58.0	110 – 160	11.0 – 16.0	79.5 – 116.0
16	80 – 130	8.0 – 13.0	57.5 – 94.5	170 – 250	17.0 – 25.0	122.5 – 181.0
18	130 – 190	13.0 – 19.0	94.0 – 137.5	200 – 280	20.0 – 28.0	144.5 – 203.0

Fig. 0A-26 Tightening Torque Chart

VEHICLE LIFTING POINTS

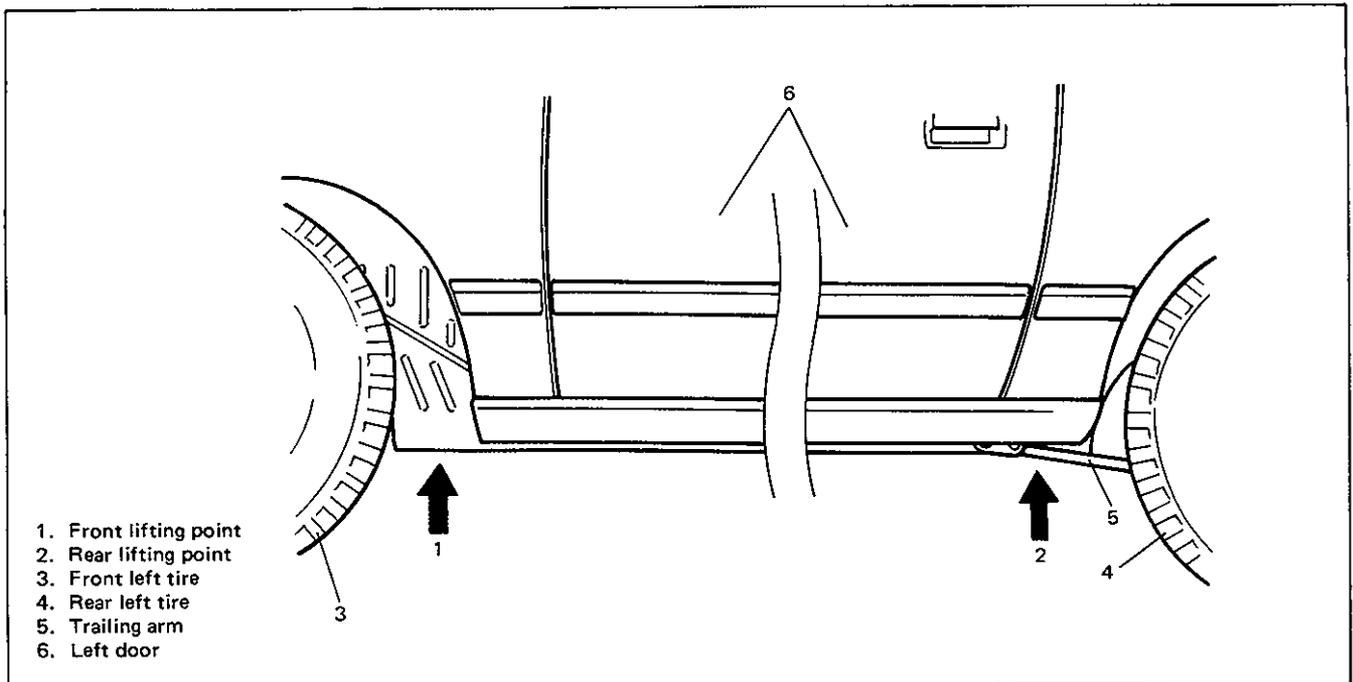


Fig. 0A-27 Vehicle Lifting Points

The arrow marks shown in Fig. 0A-27 indicate vehicle lifting points.

Fig. 0A-28 and 0A-29 indicate the methods of lifting the vehicle using a hoist, and Fig. 0A-30 and 0A-31 show additional locations, for lifting with a floor jack.

To perform service with either front or rear vehicle end jacked up, be sure to place safety stands under chassis frame so that body is securely supported. And then check to ensure that chassis frame does not slide on safety stands and the vehicle is held stable for safety's sake.

WARNING:

- When using frame contact hoist, apply hoist as shown below (right and left at the same position). Lift up the vehicle till 4 tires are a little off the ground and make sure that the vehicle will not fall off by trying to move vehicle body in both ways. Work can be started only after this confirmation.
- Before applying hoist to underbody, always take vehicle balance throughout service into consideration. Vehicle balance on hoist may change depending of what part to be removed.
- Make absolutely sure to lock hoist after vehicle is hoisted up.

WARNING:

Place chocks against both right and left wheels on the ground from both front and rear.

When using frame contact hoist:

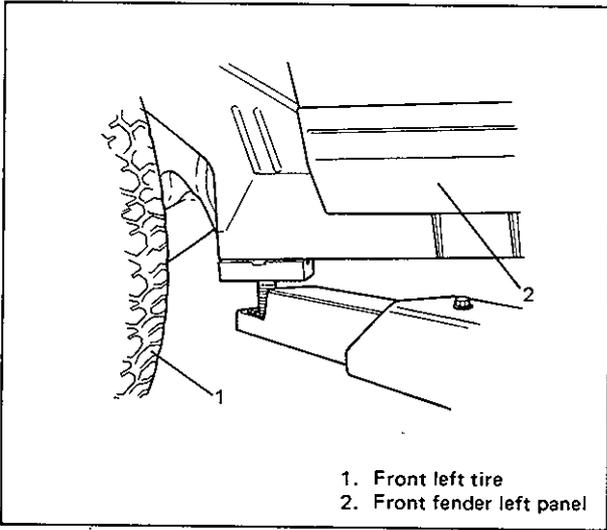


Fig. 0A-28 Front Support Location

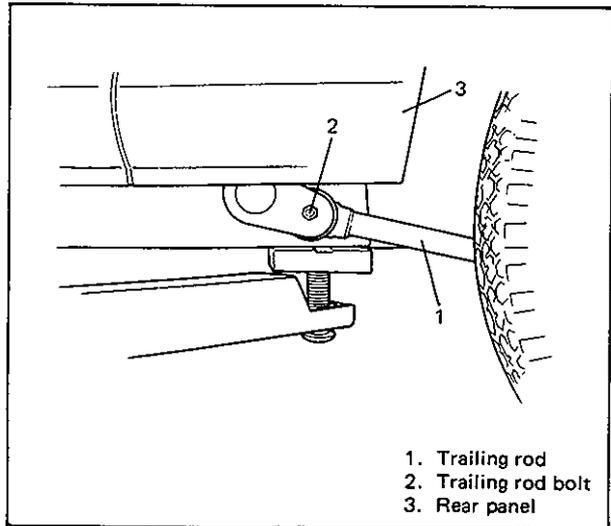


Fig. 0A-29 Rear Support Location

When using floor jack:

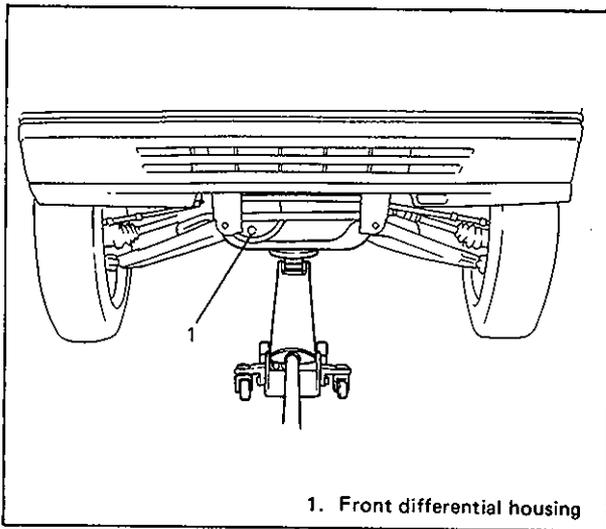


Fig. 0A-30 Front Support Location

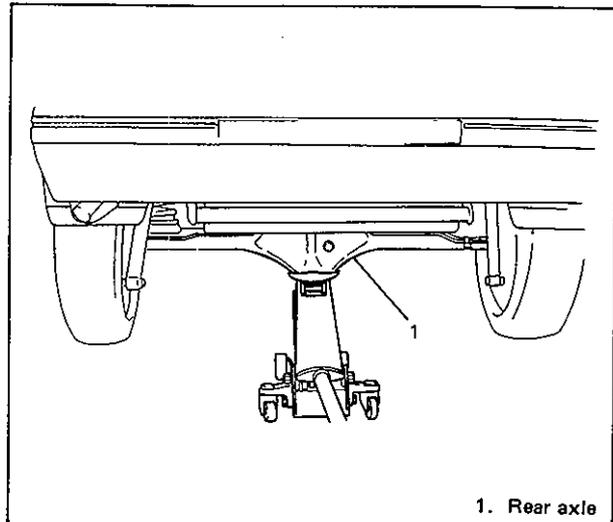


Fig. 0A-31 Rear Support Location

SECTION 0B**MAINTENANCE AND LUBRICATION****CONTENTS**

MAINTENANCE SCHEDULE (For Fuel Injection Model)	0B- 2
MAINTENANCE SCHECULE (For Carburetor Model)	0B- 5
MAINTENANCE SERVICE	0B- 8
Engine	0B- 8
Ignition System	0B-13
Fuel System	0B-15
Emission Control System	0B-16
Electrical System	0B-17
Chassis and Body	0B-18
Final Inspection	0B-23
RECOMMENDED FLUIDS AND LUBRICANTS	0B-25

MAINTENANCE SCHEDULE (For Fuel Injection Model)

MAINTENANCE SCHEDULE UNDER NORMAL DRIVING CONDITIONS

Interval: This interval should be judged by odometer reading or months, whichever comes first.	This table includes services as scheduled up to 80,000 km (48,000 miles) mileage. Beyond 80,000 km (48,000 miles), carry out the same services at the same intervals respectively.								
	km (x 1,000)	10	20	30	40	50	60	70	80
	miles (x 1,000)	6	12	18	24	30	36	42	48
	months	6	12	18	24	30	36	42	48
ENGINE									
1-1. Water pump (fan) drive belt (tension, damage)	—	—	—	I	—	—	—	—	R
1-2. Camshaft timing belt	—	—	—	—	—	—	—	—	I
1-3. Valve lash (clearance)	—	I	—	I	—	I	—	—	I
1-4. Engine oil and oil filter	R	R	R	R	R	R	R	R	R
1-5. Cooling system hoses and connections	—	—	—	I	—	—	—	—	I
1-6. Engine coolant	—	—	—	R	—	—	—	—	R
1-7. Exhaust pipes and mountings (except catalyst)	—	—	—	I	—	—	—	—	I&(R)
IGNITION SYSTEM									
2-1. Ignition wiring (high tension cords)	—	—	—	—	—	—	—	—	R
2-2. Distributor cap and rotor (crack, wear)	—	—	—	I	—	—	—	—	I
2-3. Spark plugs	—	—	—	—	R	—	—	—	—
FUEL SYSTEM									
3-1. Air cleaner filter element	I	I	I	R	I	I	I	I	R
3-2. Fuel tank cap, fuel lines and connections	—	—	—	I	—	—	—	—	I&(R)
3-3. Fuel filter	—	—	—	**R	—	—	—	—	R
EMISSION CONTROL SYSTEM									
4-1. Oxygen sensor	Replace every 80,000 km or 60 months								
4-2. PCV valve	Inspect every 80,000 km or 60 months								
4-3. Fuel vapor storage (Evaporative emission control) system	Inspect every 80,000 km or 60 months								
ELECTRICAL SYSTEM									
5-1. Wiring harness connections and headlights	—	—	—	I	—	—	—	—	I

NOTES:

"R": Replace or change

"I": Inspect and correct or replace if necessary

- Item 1-7 (R) is applicable to exhaust mounting rubber only.
- Item 3-2 (R) is applicable to fuel tank cap only.
- Item 3-3 **R is recommended maintenance item.
- For Sweden, item 2-1, 4-1, 4-2 and 4-3 should be performed by odometer reading only.

Interval: This interval should be judged by odometer reading or months, whichever comes first.	This table includes services as scheduled up to 80,000 km (48,000 miles) mileage. Beyond 80,000 km (48,000 miles), carry out the same services at the same intervals respectively.								
	km (x 1,000)	10	20	30	40	50	60	70	80
	miles (x 1,000)	6	12	18	24	30	36	42	48
	months	6	12	18	24	30	36	42	48
CHASSIS AND BODY									
6- 1. Clutch (For manual transmission)	-	I	-	I	-	I	-	I	
6- 2. Brake discs and pads (front) Brake drums and shoes (rear)	-	I	-	I	-	I	-	I	
6- 3. Brake hoses and pipes	-	I	-	I	-	I	-	I	
6- 4. Brake fluid	-	I	-	R	-	I	-	R	
6- 5. Brake pedal	-	I	-	I	-	I	-	I	
6- 6. Brake lever and cable	-	I	-	I	-	I	-	I	
6- 7. Tires	I	I	I	I	I	I	I	I	
6- 8. Wheel discs and free wheeling hubs (if equipped)	I	I	I	I	I	I	I	I	
6- 9. Wheel bearings	-	I	-	*I	-	I	-	*I	
6-10. Suspension system	*I	I	-	I	-	I	-	I	
6-11. Propeller shafts	-	I	-	I	-	I	-	I	
6-12. Manual transmission oil	R	I	I	R	I	I	I	R	
6-13. Automatic transmission	Fluid level	I	I	I	I	I	I	I	
	Fluid change	Replace every 160,000km(100,000miles)							
	Fluid hose	-	-	-	-	-	R	-	-
6-14. Transfer and differential oil	R	I	I	R	I	I	I	R	
6-15. Steering system	I	I	I	I	I	I	I	I	
6-16. Power steering (if equipped)	I	I	I	I	I	I	I	I	
6-17. Door hinges	L	L	L	L	L	L	L	L	

NOTES:

- "R" : Replace or change
- "I" : Inspect and correct or replace if necessary
- "L" : Lubricate
- "T" : Tighten to the specified torque

- Item 6-9 *I is applicable to not only rattled wear but also their grease.
- Item 6-10 *I should be performed at 10,000 km only.

MAINTENANCE RECOMMENDED UNDER SEVERE DRIVING CONDITIONS

If the vehicle is usually used under the conditions corresponding to any severe condition code given below, it is recommended that applicable maintenance operation be performed at the particular interval as given in the chart below.

Severe condition code

A — Towing a trailer

B — Repeated short trips

C — Driving on rough and/or muddy roads

D — Driving on dusty roads

E — Driving in extremely cold weather and/or salted roads

F — Repeated short trips in extremely cold weather

Severe Condition Code	Maintenance	Maintenance Operation	Maintenance Interval
-- C D --	Water pump (fan) drive belt	I	Every 12,000 miles (20,000 km) or 12 months
		R	Every 24,000 miles (40,000 km) or 24 months
A -- D E F	Engine oil and oil filter	R	Every 3,000 miles (5,000 km) or 3 months
A B C -- E --	Exhaust pipes and mountings	I	Every 6,000 miles (10,000 km) or 6 months
---- D --	Air cleaner filter element *1	I	Every 1,500 miles (2,500 km)
		R	Every 12,000 miles (20,000 km) or 12 months
A B C D --	Brake discs and pads (Front) Brake drums and shoes (Rear)	I	Every 6,000 miles (10,000 km) or 6 months
A B C ---	Propeller shafts	I	Every 6,000 miles (10,000 km) or 6 months
A -- C ---	Manual transmission, transfer and differential oil	R	Every 12,000 miles (20,000 km) or 12 months
-- B C -- F	Automatic transmission fluid	R	Every 12,000 miles (20,000 km) or 12 months
-- C ---	Drive axle shaft boots	I	Every 6,000 miles (10,000 km) or 6 months
-- C ---	Bolts and nuts on chassis	T	Every 6,000 miles (10,000 km) or 6 months

NOTE:

"I" — Inspect and correct or replace if necessary "T" — Tighten to the specified torque

"R" — Replace or change

- *1 Inspect or replace more frequently if the vehicle is used under dusty conditions.

MAINTENANCE SCHEDULE (For Carburetor Model)

MAINTENANCE SCHEDULE UNDER NORMAL DRIVING CONDITIONS

<p>Interval: This interval should be judged by odometer reading or months, whichever comes first.</p>	<p>This table includes services as scheduled up to 80,000 km (48,000 miles) mileage. Beyond 80,000 km (48,000 miles), carry out the same services at the same intervals respectively.</p>								
	km (x 1,000)	10	20	30	40	50	60	70	80
	miles (x 1,000)	6	12	18	24	30	36	42	48
	months	6	12	18	24	30	36	42	48
ENGINE									
1-1. Water pump (fan) drive belt (tension, damage)		-	-	-	I	-	-	-	R
1-2. Engine bolts (All cylinder head and manifold fixings)		-	-	-	T	-	-	-	T
1-3. Valve lash (clearance)		-	I	-	I	-	I	-	I
1-4. Engine oil filter		R	R	R	R	R	R	R	R
1-4-1. Engine oil	API Grade SD, SE, SF or SG	Replace every 10,000 km (6,000 miles)							
	API Grade SC	Replace every 5,000 km (3,000 miles)							
1-5. Cooling system hoses and connections		-	I	-	I	-	I	-	I
1-6. Engine coolant		-	-	-	R	-	-	-	R
1-7. Exhaust pipes and mountings (leakage, damage, tightness)		-	I	-	I	-	I	-	I
IGNITION SYSTEM									
2-1. Ignition wiring (high tension cords)		-	I	-	I	-	I	-	I
2-2. Distributor cap and rotor (crack, wear)		-	I	-	I	-	I	-	I
2-3. Spark plugs	When unleaded fuel is used	-	R	-	R	-	R	-	R
	When leaded fuel is used, refer to "Severe Driving Condition" schedule								
2-4. Ignition timing		I	I	I	I	I	I	I	I
2-5. Distributor advance		-	I	-	I	-	I	-	I
FUEL SYSTEM									
3-1. Air cleaner filter element		I	I	I	R	I	I	I	R
3-2. Fuel tank cap, fuel lines and connections		-	-	-	I	-	-	-	I
3-3. Fuel filter		-	-	-	R	-	-	-	R
3-4. Carburetor choke system		I&L	I&L	I&L	I&L	I&L	I&L	I&L	I&L
3-5. Idle speed and idle mixture		-	I	-	I	-	I	-	I

0B-6 MAINTENANCE AND LUBRICATION

Interval: This interval should be judged by odometer reading or months, whichever comes first.	This table includes services as scheduled up to 80,000 km (48,000 miles) mileage. Beyond 80,000 km (48,000 miles), carry out the same services at the same intervals respectively.								
	km (x 1,000)	10	20	30	40	50	60	70	80
	miles (x 1,000)	6	12	18	24	30	36	42	48
	months	6	12	18	24	30	36	42	48
EMISSION CONTROL SYSTEM									
4-1. Crankcase ventilation hoses and connections	-	I	-	I	-	I	-	I	
4-2. PCV valve	-	-	-	I	-	-	-	-	I
4-3. Fuel vapor storage system, hoses and connections	-	I	-	I	-	I	-	I	
4-4. Canister (if equipped)	-	I	-	I	-	I	-	I	
4-5. Fuel cut system (Australia only)	-	-	-	I	-	-	-	-	I
ELECTRICAL									
5-1. Wiring harness connections and headlights	-	I	-	I	-	I	-	I	
CHASSIS AND BODY									
6- 1. Clutch (For manual transmission)	-	I	-	I	-	I	-	I	
6- 2. Brake discs and pads (front) Brake drums and shoes (rear)	-	I	-	I	-	I	-	I	
6- 3. Brake hoses and pipes	-	I	-	I	-	I	-	I	
6- 4. Brake fluid	-	I	-	R	-	I	-	R	
6- 5. Brake pedal	-	I	-	I	-	I	-	I	
6- 6. Brake lever and cable	-	I	-	I	-	I	-	I	
6- 7. Tires	I	I	I	I	I	I	I	I	
6- 8. Wheel discs and free wheeling hubs (if equipped)	I	I	I	I	I	I	I	I	
6- 9. Wheel bearings	-	I	-	*I	-	I	-	*I	
6-10. Suspension system	*I	I	-	I	-	I	-	I	
6-11. Propeller shafts	-	I	-	I	-	I	-	I	
6-12. Manual transmission oil	R	I	I	R	I	I	I	R	
6-13. Automatic transmission	Fluid level	I	I	I	I	I	I	I	
	Fluid change	Replace every 160,000km (100,000miles)							
	Fluid hose	-	-	-	-	-	R	-	-
6-14. Transfer and differential oil	R	I	I	R	I	I	I	R	
6-15. Steering system	I	I	I	I	I	I	I	I	
6-16. Power steering (if equipped)	I	I	I	I	I	I	I	I	
6-17. Door hinges	L	L	L	L	L	L	L	L	

NOTES:

"R" : Replace or change

"I" : Inspect and correct or replace if necessary

"L" : Lubricate

"T" : Tighten to the specified torque

• Item 6-9 *I is applicable to not only rattled wear but also their grease.

• Item 6-10 *I should be performed at 10,000 km only.

MAINTENANCE RECOMMENDED UNDER SEVERE DRIVING CONDITIONS

If the vehicle is usually used under the conditions corresponding to any severe condition code given below, it is recommended that applicable maintenance operation be performed at the particular interval as given in the chart below.

Severe condition code

- A – Towing a trailer
- B – Repeated short trips
- C – Driving on rough and/or muddy roads
- D – Driving on dusty roads
- E – Driving in extremely cold weather and/or salted roads
- F – Repeated short trips in extremely cold weather
- G – Leaded fuel use

Severe Condition Code	Maintenance	Maintenance Operation	Maintenance Interval
A B C D – F G	Spark plugs	R	Every 6,000 miles (10,000 km) or 6 months
A – – D E F	Engine oil and oil filter	R	Every 3,000 miles (5,000 km) or 3 months
– – C D – –	Water pump (Fan) drive belt	I	Every 12,000 miles (20,000 km) or 12 months
		R	Every 24,000 miles (40,000 km) or 24 months
A B C – E –	Exhaust pipes and mountings	I	Every 6,000 miles (10,000 km) or 6 months
– – – D – –	Air cleaner filter element *1	I	Every 1,500 miles (2,500 km) or more frequently if necessary
		R	Every 12,000 miles (20,000 km) or 12 months or more frequently if necessary
A B C D – –	Brake discs and pads (Front) Brake drums and shoes (Rear)	I	Every 6,000 miles (10,000 km) or 6 months
A B C – – –	Propeller shafts	I	Every 6,000 miles (10,000 km) or 6 months
A – C – – –	Manual transmission, transfer and differential oil	R	Every 12,000 miles (20,000 km) or 12 months after first replacement at 6,000 miles
– B C – – F	Automatic transmission fluid	R	Every 12,000 miles (20,000 km) or 12 months
– – C – – –	Drive axle shaft boots	I	Every 6,000 miles (10,000 km) or 6 months
– – C – – –	Bolts and nuts on chassis	T	Every 6,000 miles (10,000 km) or 6 months

NOTE:

“I” – Inspect and correct or replace if necessary “T” – Tighten to the specified torque
 “R” – Replace or change

- *1 Inspect or replace more frequently if the vehicle is used under dusty conditions.

MAINTENANCE SERVICE

ENGINE

ITEM 1-1

Water Pump Belt Inspection and Replacement

WARNING:

All inspection and replacement are to be performed with **ENGINE NOT RUNNING**.

[Inspection]

- 1) Disconnect negative battery lead at battery.
- 2) Inspect belt for cracks, cuts, deformation, wear and cleanliness. If any defect exists, replace. Check belt for tension. The belt is in proper tension if it deflects 6 to 8 mm (0.24 – 0.32 in.) under thumb pressure (about 10 kg or 22 lb.).

Belt tension specification	6 – 8 mm (0.24 – 0.32 in.) as deflection
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NOTE:

When replacing belt with a new one, adjust belt tension to 5 – 7 mm (0.20 – 0.27 in.).

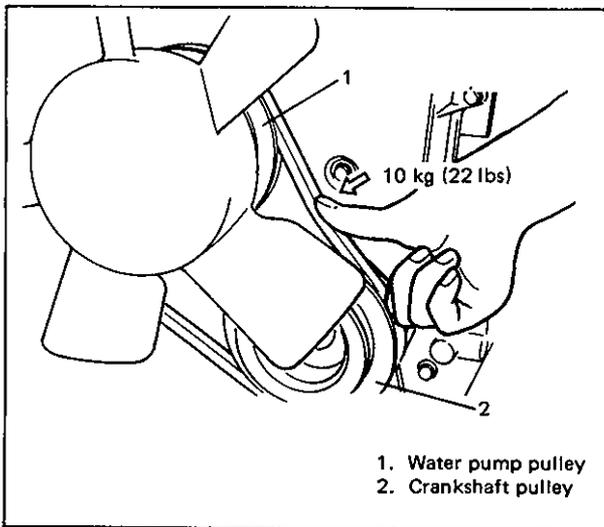


Fig. 0B-1

- 3) If the belt is too tight or too loose, adjust it to specification by adjusting alternator position.

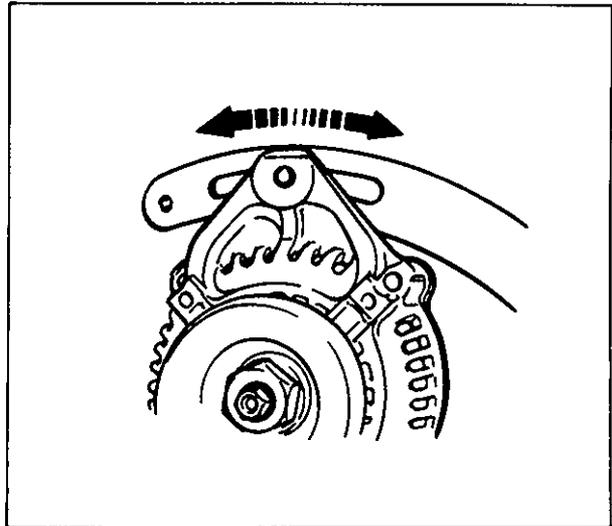


Fig. 0B-2

- 4) Tighten alternator adjusting bolt and pivot bolts.
- 5) Connect negative battery lead to battery.

[Replacement]

- 1) Disconnect negative battery lead at battery.
- 2) Loosen alternator adjusting bolt and pivot bolts.
- 3) Replace water pump belt.
- 4) Adjust belt tension to specification and tighten alternator adjusting bolt and pivot bolts.
- 5) Connect negative battery lead to battery.

A/C Compressor and/or Power Steering Pump Drive Belt (If equipped)

Inspect belt for wear, deterioration and tension.

A/C compressor or P/S pump drive belt tension	6.0–9.0 mm (0.24–0.35 in) deflection under 10 kg or 22 lb pressure
---	--

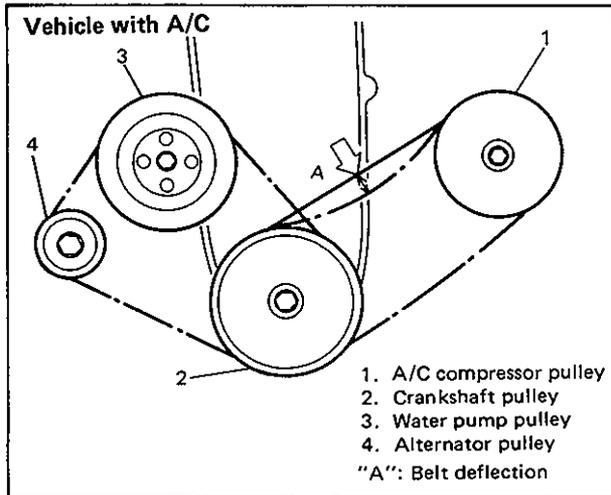


Fig. 0B-3

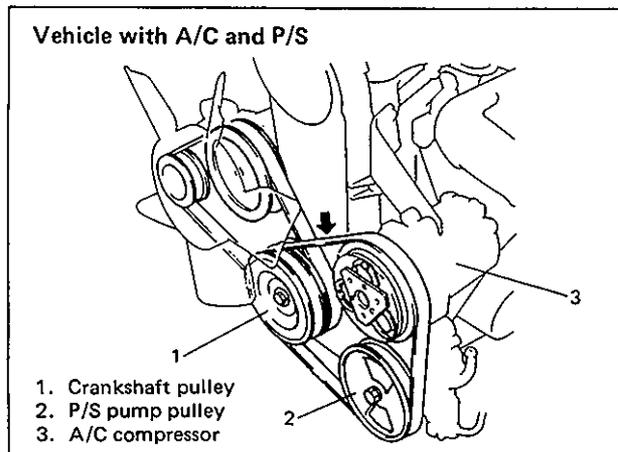


Fig. 0B-4

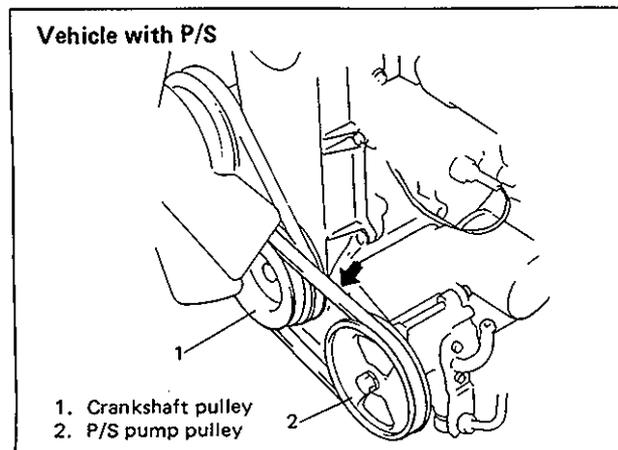


Fig. 0B-5

ITEM 1-2

Camshaft Timing Belt Inspection (Fuel Injection model only)

- 1) Remove timing belt outside cover, referring to p. 6A-18.
- 2) Inspect belt for wear or crack. If any wear or crack is found on belt, replace it.

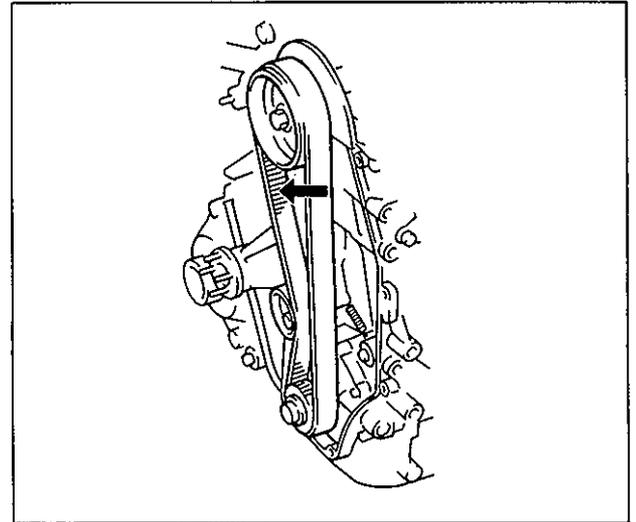


Fig. 0B-6

- 3) Install timing belt outside cover and other parts, referring to p. 6A-19.

ITEM 1-2

Engine Bolts Tightening (Carburetor model only)

1) To check cylinder head bolts, head cover must be removed. The tightening torque for the cylinder head bolts is as follows.

Tightening torque for cylinder head bolts	N·m	kg·m	lb·ft
	70 – 75	7.0 – 7.5	51.0 – 54.0

2) When securing cylinder head or when retightening these bolts, torque each bolt in such a way as to equalize the pressure throughout gasketed surface. The tightening sequence is referring to p. 6A-42.

3) Cylinder-head cover bolt should be tightened to the following torque:

Tightening torque for cylinder head cover bolts	N·m	kg·m	lb·ft
	4 – 5	0.4 – 0.5	3.0 – 3.5

ITEM 1-3

Valve Lash Inspection

1) Remove cylinder head cover.
 2) Inspect intake and exhaust valve lash and adjust as necessary.

Valve lash (gap A) specification		When cold (Coolant temperature is 15 – 25°C or 59 – 77°F)	When hot (Coolant temperature is 60 – 68°C or 140 – 154°F)
	Intake	0.13 – 0.17 mm (0.0051 – 0.0067 in.)	0.23 – 0.27 mm (0.0091 – 0.0106 in.)
	Exhaust	0.15 – 0.19 mm (0.0059 – 0.0075 in.)	0.25 – 0.29 mm (0.0098 – 0.0114 in.)

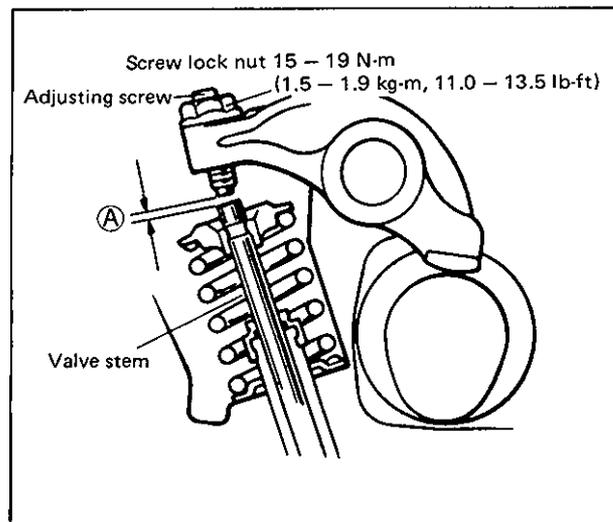


Fig. OB-7

3) Refer to page 6A-7 of SECTION 6A for valve lash inspection and adjustment procedures.
 4) Install cylinder head cover and tighten bolts to specification.

ITEM 1-4

Engine Oil and Filter Change

Before draining engine oil, check engine for oil leakage. If any evidence of leakage is found, make sure to correct defective part before proceeding to the following work.

1) Drain engine oil by removing drain plug.

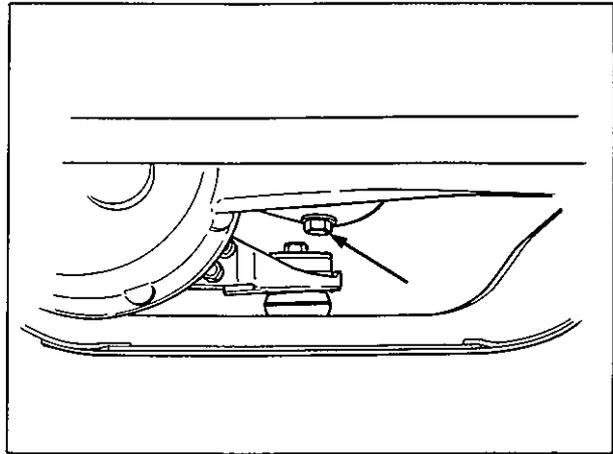


Fig. OB-8

2) After draining oil, wipe drain plug clean. Reinstall drain plug, and tighten it securely as specified below.

Tightening torque for oil drain plug	N·m	kg·m	lb·ft
	30 – 40	3.0 – 4.0	22.0 – 28.5

3) Loosen oil filter by using oil filter wrench (special tool).

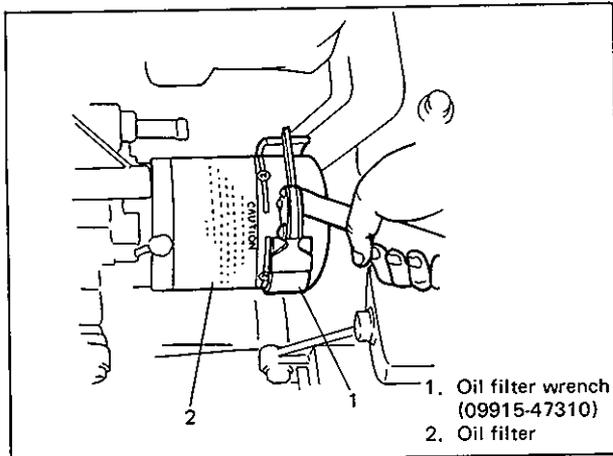


Fig. 0B-9

NOTE:

Before fitting new oil filter, be sure to oil its "O" ring. Use engine oil for this purpose.

4) Screw new filter on oil filter stand by hand until the filter "O" ring contacts the mounting surface.

CAUTION:
To tighten oil filter properly, it is important to accurately identify the position at which the filter "O" ring first contacts the mounting surface.

5) Tighten the filter 3/4 turn from the point of contact with the mounting surface using an oil filter wrench.

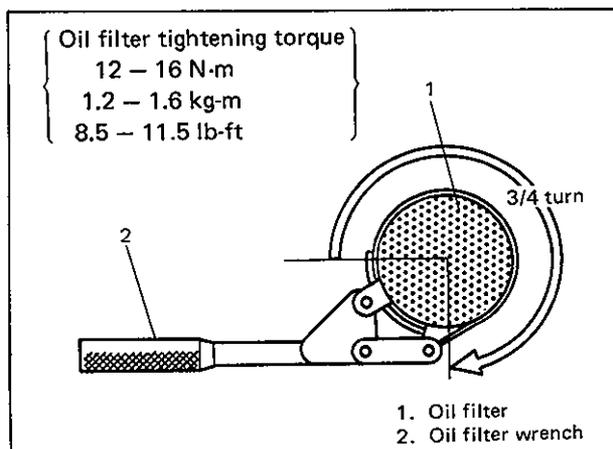


Fig. 0B-10

6) Replenish oil until oil level is brought to FULL level mark on dipstick. (about 4.2 liters or 8.9/7.4 US/Imp pt.). The filler inlet is atop the cylinder head cover.

7) Start engine and run it for three minutes. Stop it and wait another three minutes before checking oil level. Add oil, as necessary, to bring oil level to FULL level mark on dip stick.

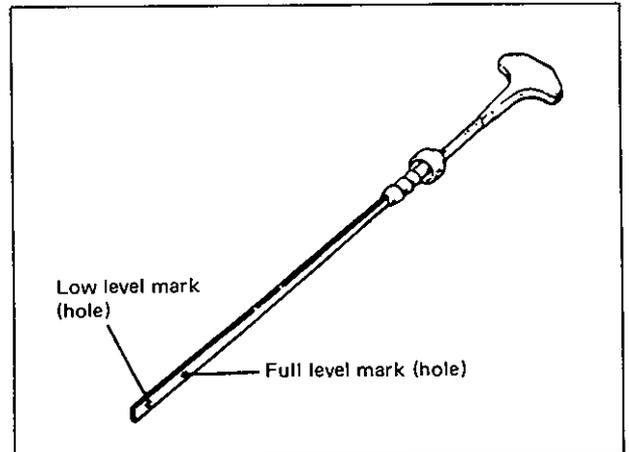


Fig. 0B-11

NOTE:

Steps 1) – 6) outlined above must be performed with ENGINE NOT RUNNING. For step 7), be sure to have adequate ventilation while engine is running.

It is recommended to use engine oil of SE, SF or SG class.

NOTE:

For temperature below 32° F (0° C), it is highly recommended to use SAE 5W – 30 oil.

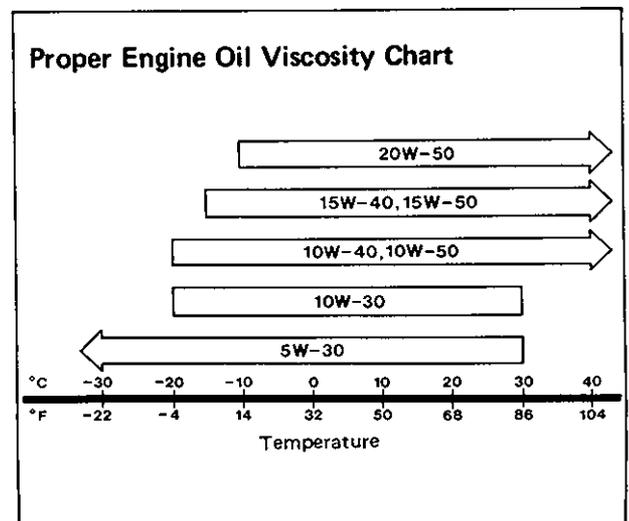


Fig. 0B-12 Engine Oil Viscosity Chart

Engine oil capacity

Oil pan capacity	about 4.0 liters (8.4/7.0 US/Imp pt.)
Oil filter capacity	about 0.2 liters (0.4/0.3 US/Imp pt.)
Others	about 0.3 liters (0.6/0.5 US/Imp pt.)
Total	about 4.5 liters (9.5/7.9 US/Imp pt.)

NOTE:

Engine oil capacity is specified as above. However, note that the amount of oil required when actually changing oil may somewhat differ from the data in the above table depending on various conditions (temperature, viscosity, etc.).

8) Check oil filter and drain plug for oil leakage.

ITEM 1-5

Cooling System Hoses and Connections

Inspection

1) Visually inspect cooling system hoses for any evidence of leakage and cracks. Examine them for damage, and check connection clamps for tightness.

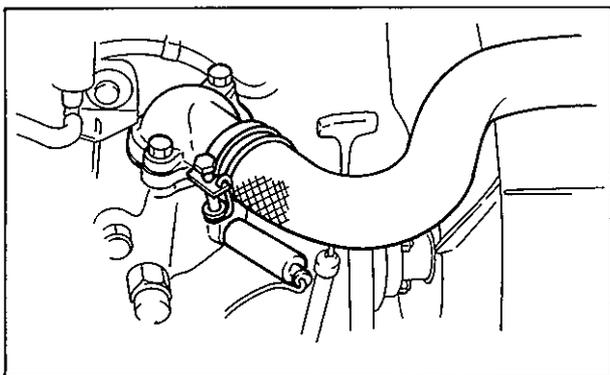


Fig. 0B-13

2) Replace all hoses which show evidence of leakage, cracks or other damage. Replace all clamps which cannot maintain proper tightness.

ITEM 1-6

Engine Coolant Change

WARNING:

To help avoid danger of being burned, do not remove radiator cap while engine and radiator are still hot. Scalding fluid and steam can be blown out under pressure if cap is taken off too soon.

- 1) Remove radiator cap when engine is cool.
- 2) Loosen radiator drain plug to drain coolant.
- 3) Remove reservoir tank, which is on the side of radiator, and drain.
- 4) Tighten plug securely. Also reinstall reservoir tank.

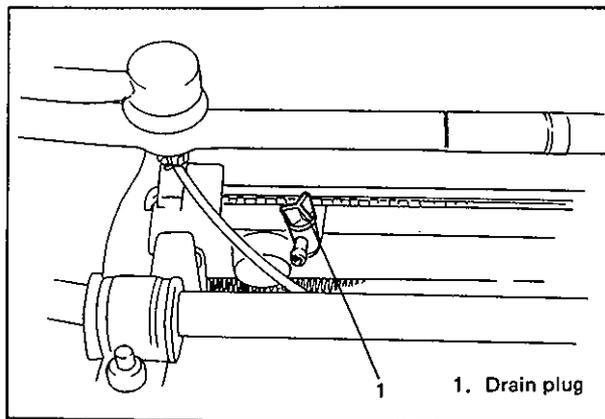
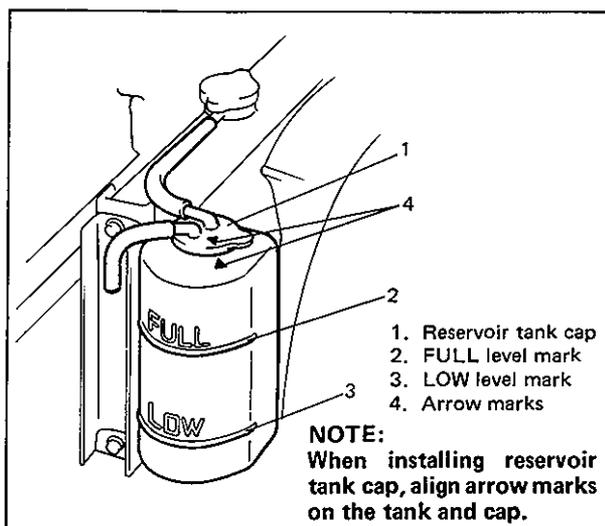


Fig. 0B-14



NOTE:

When installing reservoir tank cap, align arrow marks on the tank and cap.

Fig. 0B-15

- 5) Fill radiator with specified amount of coolant, and run engine for 2 or 3 minutes at idle. This drives out any air which may still be trapped within cooling system. STOP ENGINE. Add coolant as necessary until coolant level reaches the filler throat of radiator. Reinstall radiator cap.
- 6) Add coolant to reservoir tank so that its level aligns with Full mark. Then, reinstall cap aligning arrow marks on the tank and cap.

CAUTION:

When changing engine coolant, use mixture of 50% water and 50% ETHYLENE GLYCOL BASE COOLANT (ANTIFREEZE/ANTICORROSION COOLANT) for the market where ambient temperature falls lower than -16°C (3°F) in winter and mixture of 70% water and 30% ETHYLENE GLYCOL BASE COOLANT (ANTI-FREEZE/ANTICORROSION COOLANT) for the market where ambient temperature doesn't fall lower than -16°C (3°F). Even in a market where no freezing temperature is anticipated, mixture of 70% water and 30% ETHYLENE GLYCOL BASE COOLANT (ANTIFREEZE/ANTICORROSION COOLANT) should be used for the purpose of corrosion protection and lubrication.

ITEM 1-7

Exhaust Pipes and Mountings Inspection

WARNING:

To avoid danger of being burned, do not touch exhaust system when it is still hot. Any service on exhaust system should be performed when it is cool.

When carrying out periodic maintenance, or the vehicle is raised for other service, check exhaust system as follows:

- Check rubber mountings for damage, deterioration, and out of position.
- Check exhaust system for leakage, loose connections, dents, and damages.

If bolts or nuts are loose, tighten them to specification. Refer to SECTION 6K (page 6K-2) for torque specification of bolts and nuts.

- Check nearby body areas for damaged, missing, or mispositioned parts, open seams, holes, loose connections or other defects which could permit exhaust fumes to seep into the vehicle.
- Make sure that exhaust system components have enough clearance from the underbody to avoid overheating and possible damage to the floor carpet.
- Any defects should be fixed at once.

Mountings replacement

Replace muffler rubber mountings with new ones periodically. Refer to SECTION 6K for installation.

IGNITION SYSTEM

ITEM 2-1

Ignition Wiring Replacement

- 1) Disconnect high tension cords from spark plugs, ignition coil and distributor.
- 2) Connect new high tension cords and clamp them securely. DO NOT push cords for connection. Push boots.

Ignition Wiring Inspection

- 1) Inspect high-tension cords for cracks and check that their connections are secure.
- 2) Measure resistance of high-tension cords by using a ohmmeter.

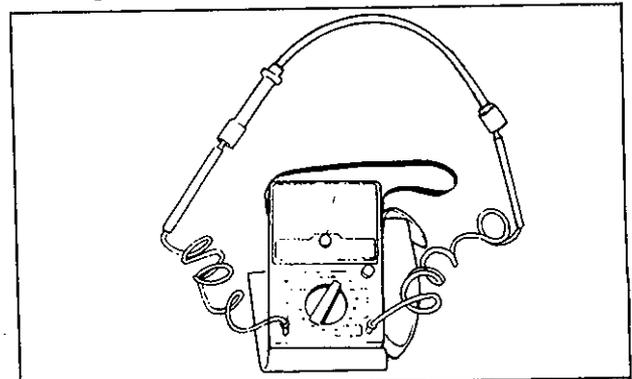


Fig. 0B-16

- 3) Replace high-tension cords that shown evidence of deterioration.

NOTE:

Check to make sure that each of the high-tension cord terminals and connections is secure and fully inserted into its mating component. Any burnt fitting must be replaced.

HIGH-TENSION CORD RESISTANCE	
Standard	16 k Ω /3.3 ft (1 m)
Service limit	20 k Ω /pc.

ITEM 2-2

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Distributor Cap and Rotor Inspection

- 1) Inspect distributor cap and rubber caps for cracks.
- 2) Inspect center electrode and terminals for wear.

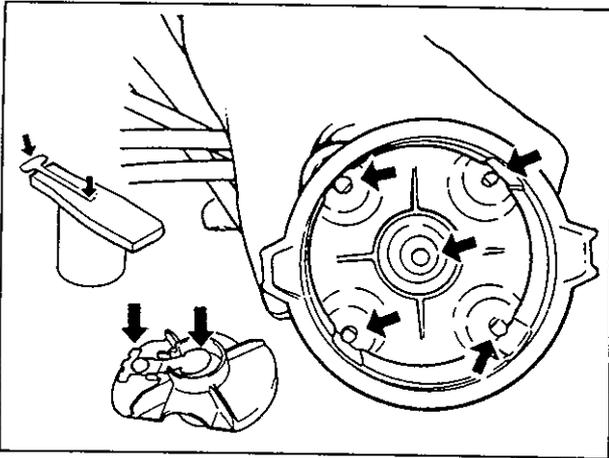


Fig. 0B-17

- 3) Inspect rotor for cracks, and its electrode for wear.
- 4) Repair or replace as necessary any component which is found to be in malcondition as described above.

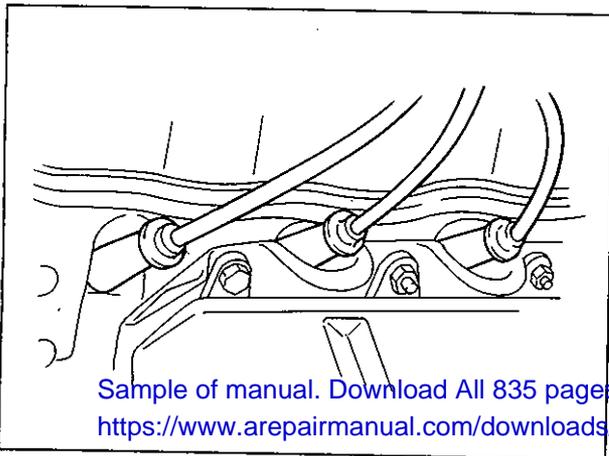
NOTE:

Dust and stains found within distributor can be cleaned by using a dry, soft cloth.

ITEM 2-3

Spark plugs Replacement

- 1) Disconnect high-tension cords from spark plugs. Make sure to pull only on spark plug caps.



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Fig. 0B-18

- 2) Using a spark plug wrench, loosen and remove plugs.

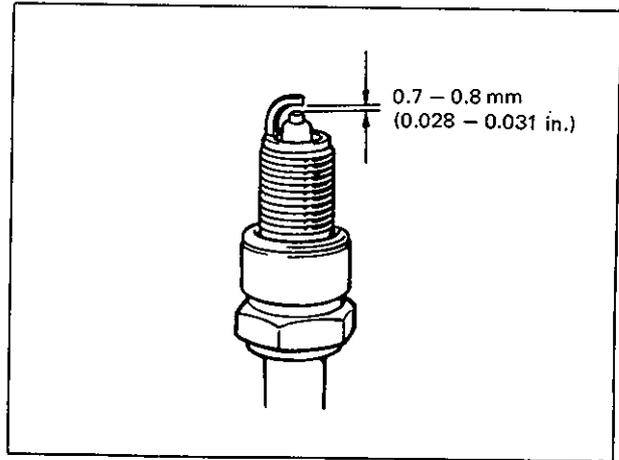


Fig. 0B-19

NOTE:

When replacing plugs, make sure to use new plugs of specified heat range and size.

PLUG SPECIFICATION

SPARK PLUG TYPE		
FUEL INJECTION MODEL	NGK	BPR5ES
	NIPPONDENSO	W16EXR-U
CARBURETOR MODEL	NGK	BP6ES (BPR6ES)
	NIPPONDENSO	W20EX-U (W20EXR-U)
	CHAMPION	N9YC

For carburetor model, there are two types of spark plugs, one without R included in its code and the other with R. Which one is used depends on countries. Look at the label attached to the vehicle. If originally equipped plug was with R included in its code, replacement plug should have R in its code, too.

- 3) Install new spark plugs. Tighten plugs to specification.
- 4) Connect high tension cords to spark plugs. DO NOT push cords for connection. Push boots.

Tightening torque for spark plug	N-m	kg-m	lb-ft
	20 - 30	2.0 - 3.0	14.5 - 21.5