



General Information



FUNDAMENTAL PROCEDURES

There are six primary symbols used to complement illustrations. These symbols indicate the areas to apply such materials during service.

Symbol	Meaning	Type
	Apply oil	New engine oil or gear oil as appropriate
	Apply brake fluid	Only brake fluid
	Apply automatic transmission fluid (ATF)	Only ATF
	Apply grease	Appropriate grease
	Apply sealant	Appropriate sealant
	Apply petroleum jelly	Appropriate petroleum jelly

NOTICE

Whenever special oil or grease is required, it will be shown in the illustration.

NOTICES, CAUTIONS, AND WARNINGS

As you read through the various procedures, you will encounter Notices, Cautions and Warnings. Each one is there for a specific purpose. Notices give you added information that will assist you in completing a particular procedure. Cautions

present you from making an error that could damaged the vehicle. Warnings remind you to be especially careful in specific areas where carelessness can cause personal injury.

The following items contain general procedures you should always follow when working on a vehicle :

PROTECTION OF THE VEHICLE

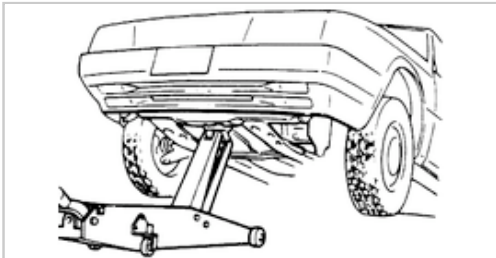
- Always cover fenders, seats, and floor areas before starting work.
Operate the engine only in a well-ventilated area to avoid carbon monoxide poisoning.



A WORD ABOUT SAFETY

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

1. Block the wheels.
2. Use only the specified jacking positions.
3. Support the vehicle with safety stands.



The engine compartment must be clear of tools and people before starting the engine.

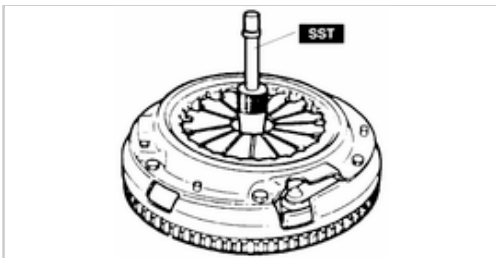
PREPARATION OF TOOLS AND MEASURING EQUIPMENT

1. All necessary tools and measuring equipment should be available before starting any work.



SPECLAL SERVICE TOOLS (SST'S)

1. Use special service tools when they are required. SST's can be found under "preparation" prior to any procedure requiring them.



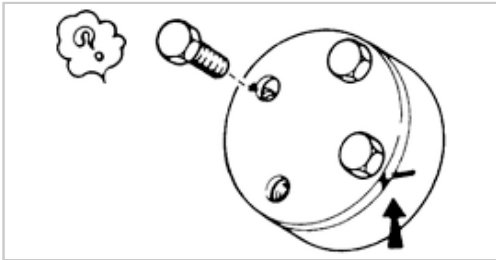
REMOVAL OF PARTS

1. Begin work only after first learning which parts and subassemblies must be removed and disassembled for replacement for repair.



DISASSEMBLY

1. 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 identified so that assembly can be performed easily and efficiently.



2. Inspection of parts

When removed, each part should be carefully inspected for malfunction, deformation, damage, or other problems.



3. Arrangement of parts

All disassembled parts should be carefully arranged for assembly. Separate or identify the parts to be replaced from those that will be reused.



4. Cleaning parts for reuse

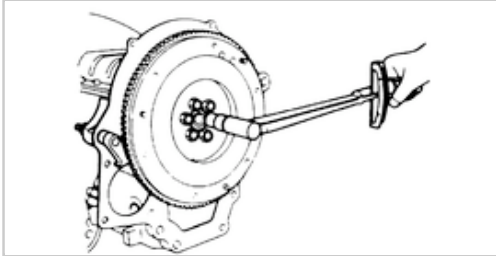
All parts to be reused should be carefully and thoroughly cleaned according to the appropriate method.



REASSEMBLY

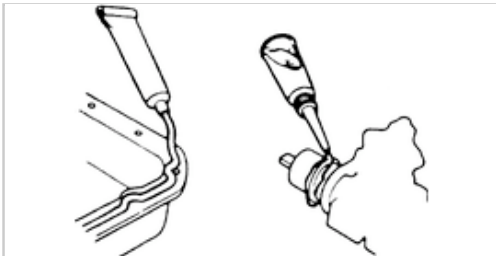
Standard values, such as torques and certain adjustments, must be strictly observed in the assembly of all parts. When removed, the following parts should be replaced with new ones:

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



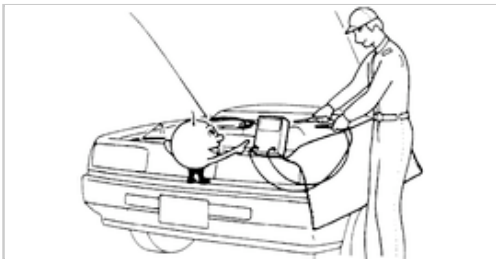
Depending on location:

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



ADJUSTMENT

1. Use appropriate gauges and/or testers when making adjustments.



RUBBER PARTS AND TUBING

1. Prevent gasoline or oil from getting on rubber parts or tubing.



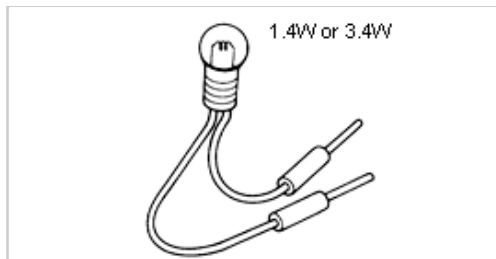
ELECTRICAL TROUBLESHOOTING TOOLS

1. Test Light

The test light, as shown in the figure, uses a 12V bulb. The two lead wires should be connected to probes. The test light is used for simple voltage checks and in checking for short circuits.

CAUTION

When checking the engine control module (ECM), never use a bulb exceeding 3.4W.

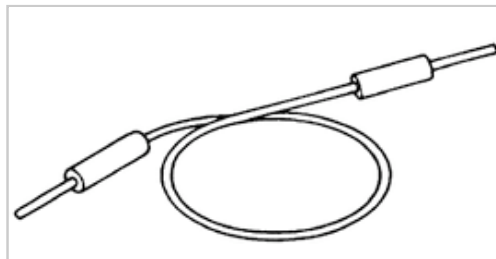


2. Jumper Wire

The jumper wire is used for testing by shorting across switch terminals and ground connections.

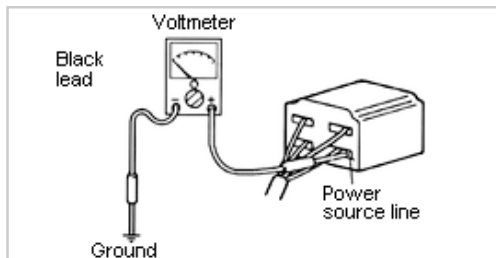
CAUTION

Do not connect a jumper wire from the power source line to a body ground. Such a connection may cause damage to harnesses or electronic components.



3. Voltmeter

The DC voltmeter is used to measure circuit voltage. A voltmeter with a range of 15V or more is used by connecting the positive (+) probe to the point where voltage is to be measured and the negative (-) probe to a body ground.

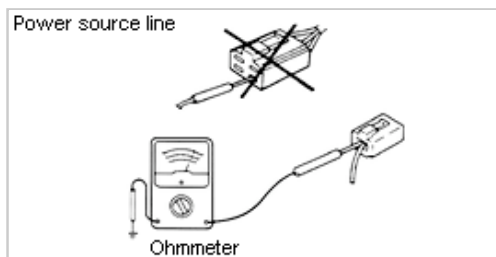


4. Ohmmeter

The ohmmeter is used to measure the resistance between two points in a circuit to check for continuity, and in diagnosis of short circuits.

CAUTION

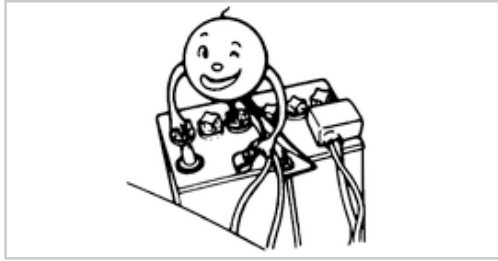
Do not attempt to connect the ohmmeter to any circuit to which voltage is applied ; this may bum or otherwise damage the ohmmeter.



ELECTRICAL PARTS

1. Battery Cable

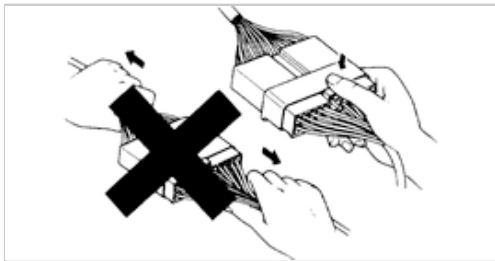
Before disconnecting connectors replacing electrical parts, disconnect the negative battery cable.



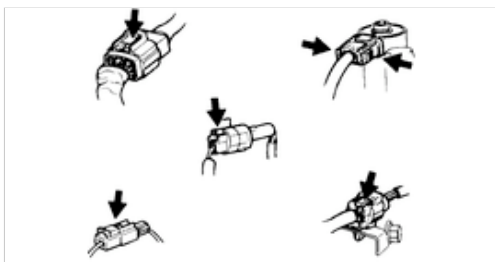
CONNECTORS

1. Removal of connector

(1) Never pull on the wiring harness when disconnecting connectors.

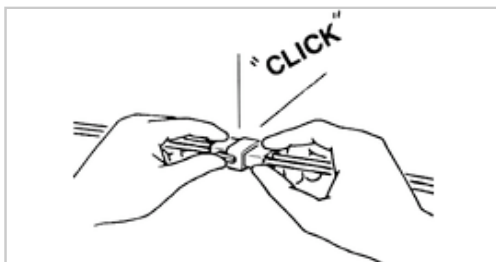


(2) Connectors can be removed by pressing or pulling the lock lever..



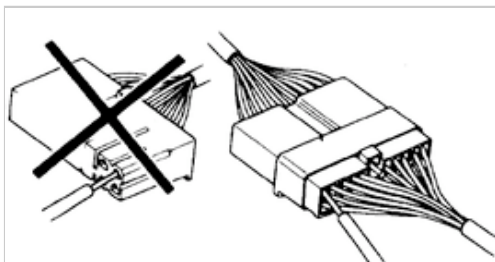
2. Locking a connector

Listen for a click when locking connectors. This sound indicates that they are securely locked.



3. Inspection

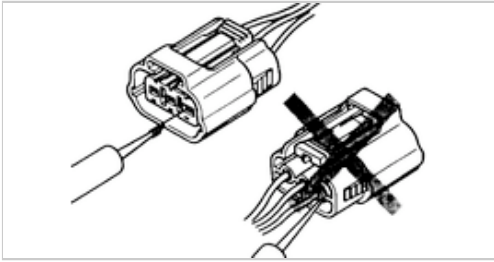
(1) When a tester is being used to check for continuity or to measure voltage, insert the tester probe from the wire harness side.



(2) Check the terminals of waterproof connectors from the connector side, because they cannot be accessed from the wire harness side.

NOTICE

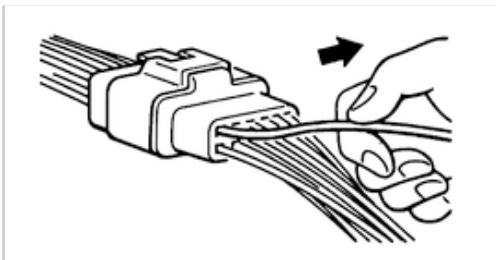
- Use a fine wire to prevent damage to the terminal.
- Do not damage the terminal when inserting the tester lead.



Terminals

1. Inspection

Pull lightly on individual wires to ensure that they are secured in the terminal.



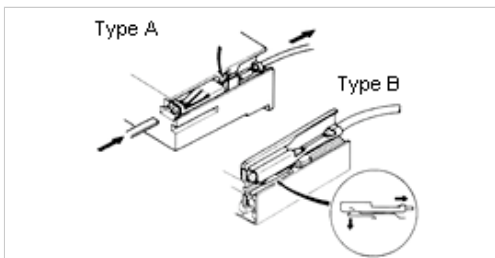
2. Replacement of terminals

Use the appropriate tools to remove the terminal as shown.

When installing the terminal, be sure to insert it until it locks securely.

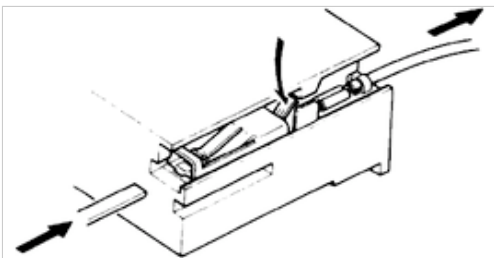
(1) Female

Insert a thin piece of metal from the terminal side of the connector, and with the terminal locking tab pressed down, pull the terminal out from the connector.



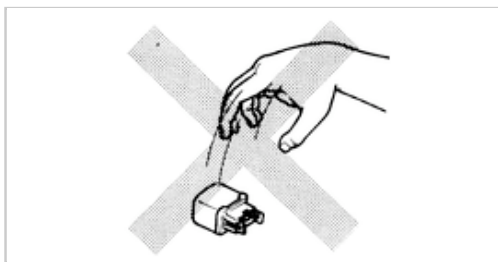
(2) Male

Insert a thin piece of metal from the terminal side of the connector, and with the terminal locking tab pressed down, pull the terminal out from the connector.



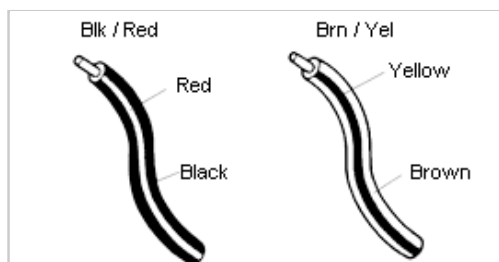
3. Sensors, switches, and relays

Always handle sensors, switches, and relays carefully. Do not drop them or accidentally strike them against other parts.



4. Wiring color codes.

Two-color wires are indicated by two color code symbols. The first code symbol indicates the base color of the wire, and the second the color of the stripe on the base color.



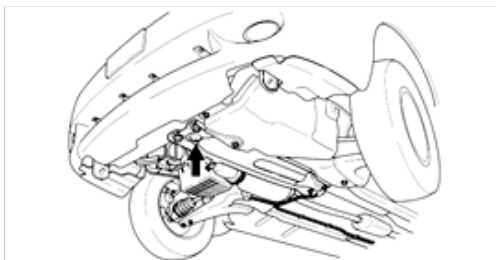
Code	Color	Code	Color
BLK	Black	ORN	Orange
BRN	Brown	PNK	Pink
GRN	Green	RED	Red
GRY	Gray	VIO	Violet
BLU	Blue	WHT	White
LT BLU	Light Blue	YEL	Yellow
LT GRN	Light Green	LT GRY	Light gray

JACK AND SAFETY STAND POSITIONS

1. Front end

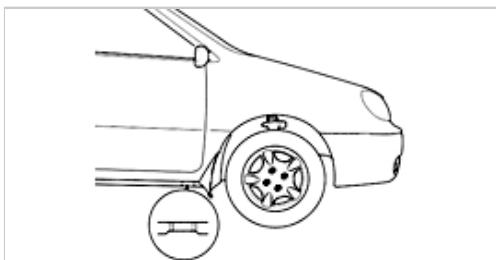
(1) Jack position :

At the front subframe



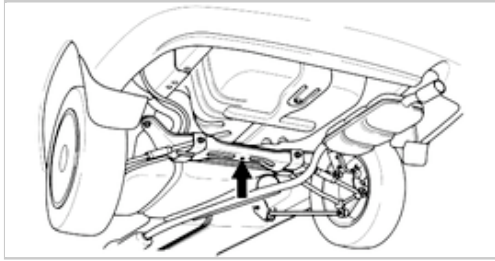
2. Safety stand positions :

(1) On both sides of the side sills

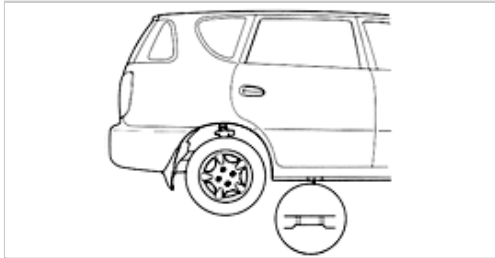


3. Rear end

- (1) Jack position :
At the center of the rear crossmember

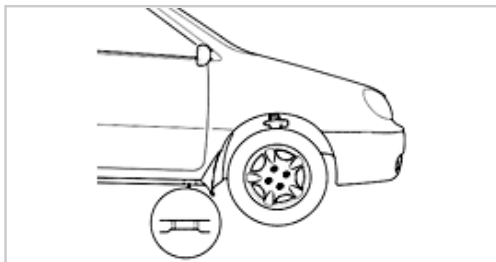


4. Safety stand positions :
(1) On both sides of the side sills

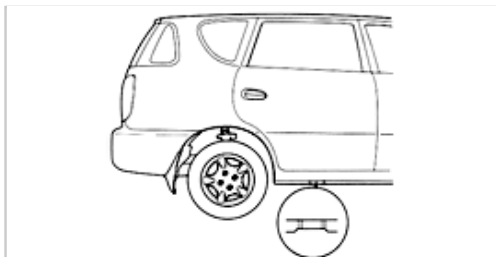


VEHICLE LIFT (2-SUPPORT TYPE) POSITIONS

1. Front end / Rear end
Side sills (both sides)

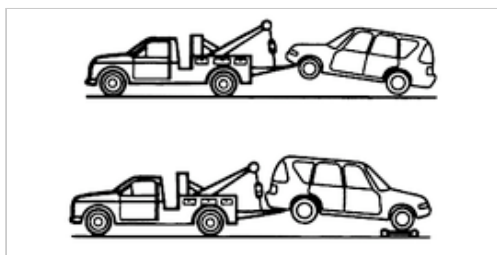


2. Rear end
Side sills (both sides)



TOWING

- Proper towing equipment is necessary to prevent damage to the vehicle.
- Always observe laws and regulations applicable to vehicles in tow. As a general rule, towed vehicles should be pulled with the driving wheels off the ground. If excessive damage or other conditions prevent towing the vehicle with the driving wheels off the ground, use wheel dollies.

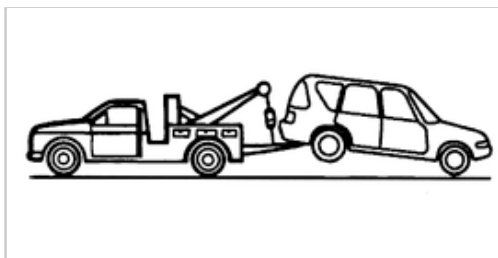


With either automatic or manual transmission :

1. Set the ignition switch in the ACC position.
2. Place the selector lever or shift lever in N (Neutral).
3. Release the parking brake.

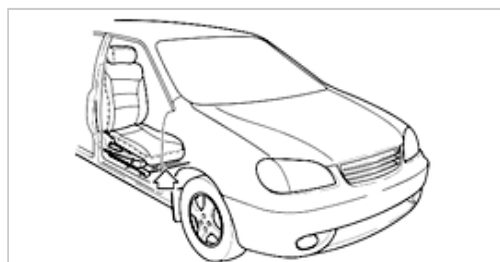
CAUTION

- Do not tow the vehicle backward with driving wheels on the ground. This may cause internal damage to the transmission.
- Do not use the hook loops under the front and rear of the vehicle for towing purposes. These hook loops are designed ONLY for transport tie-down. If tie-down hook loops are used for towing, the front/rear bumper will be damaged.

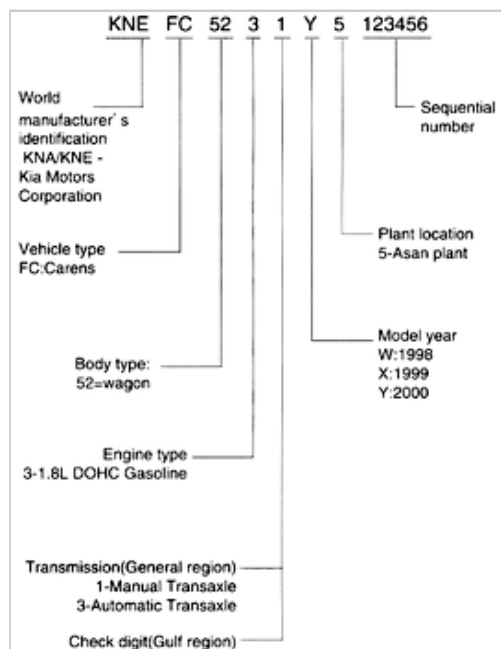


VIN locations

- Vin locations



Vehicle identification number arrangement



ENGLISH/METRIC CONVERSION TABLE

MULTIPLY	BY	TO GET
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inch (") foot (ft.) yard (yd.) mile	LENGTH 25.4 0.3048 0.9144 1.609	millimeters (mm) meters (m) meters kilometers (km)
inch ² (in ²) Foot ² (ft ²) yard ² (yd ²)	AREA 645.2 6.45 0.0929 0.8361	millimeters ² (mm ²) centimeters ² (cm ²) meters ² (m ²) meters ² (m ²)
inch ³ (in ³) quart (qt.) gallon (gal.) yard ³ (yd ³)	VOLUME 16387 16.387 0.0164 0.9464 3.7854 0.7646	mm ³ cm ³ liters (l) liters liters meters ³ (m ³)
pound (lb.) ton	MASS 0.4536 907.18	kilograms (kg) kilograms(kg)
kilogram (kg) ounce (oz.) pound (lb)	FORCE 9.807 0.2780 4.448	newtons (n) newtons newtons
foot/second ² (ft/sec ²) inch/second ² (in/sec ²)	ACCELERATION 0.3048 0.0254	meter/sec ² (m/s ²) meter/sec ² (m/s ²)
pound-inch (lb-in) pound-foot (lb-ft)	TORQUE 0.11298 1.355 8	newton-meters (N·m) newton-meters (N·m)
horsepower (hp)	POWER 0.746	kilowatts (kW)
pounds/inch ² (psi)	PRESSURE 6.895	kilopascals (kPa)
foot-pound kilowatt-hour	ENERGY 1.355 8 3,600,000	joules (J) joules (J)
miles/gallon (mpg)	FUEL PERFORMANCE 0.4251	kilometers/liter (km/l)
miles/hour (mph)	VELOCITY 1.6093	kilometers/hour
TEMPERATURE		
to convert fahrenheit temperature to Celsius temperature, use formula :	C	5/9 (F-32)
	F	9/5 C (+32)

UNITS

ft-lb or in-lb (N·m)	Torque
rpm	Rotational speed
A	Amperes
V	Volts

Ω	Ohms (resistance)
psi (kPa)	Pressure
inHg (mmHg)	Pressure (usually negative/vacuum)
W	Watts (electrical power)
US qt (liters)	Volume
in (mm)	Length

ABBREVIATIONS

ABDC	After bottom dead center
ABS	Anti-lock braking system
A/C	Air conditioner
ACC	Accessories
A/T	Automatic transaxle
ATDC	After top dead center
ATF	Automatic transmission fluid
BBDC	Before bottom dead center
BTDC	Before top dead center
CMP	Camshaft position sensor
DIS	Distributorless ignition system
DLC	Data link connector
DOHC	Dual overhead camshaft
EBD	Electronic brake-force distribution
ECM	Engine control module
ECT	Engine coolant temperature
E/L	Electrical load
EX	Exhaust
GND	Ground
HLA	Hydraulic lash adjuster
HO ₂ S	Heated oxygen sensor
IAT	Intake air temperature
IGN	Ignition
IN	Intake
INT	Intermittent
IAC	Idle air control
LH	Left hand
M	Motor
MAF	Mass air flow
MIL	Malfunction indicator lamp
M/S	Manual steering
M/T	Manual transaxle
OBD	On-board diagnosis
OFF	Switch off

ON	Switch on
PCV	Positive crankcase ventilation
P/S	Power steering
PRC	Pressure regulator control
P/W	Power window
RH	Right hand
SFI	Sequential fuel injection system
SST	Special service tool
SW	Switch
TCS	Traction control unit
TDC	Top dead center
TNS	Tail number side
TPS	Throttle position sensor
TWC	Three way catalyst
WU-TWC	Warm-up three-way catalyst

Scheduled maintenance services

Follow schedule if the vehicle is mainly operated where none of the following conditions apply.

- Repeated short-distance driving.
- Driving in dusty conditions.
- Driving with extended use of brakes.
- Driving in areas where road salt or other corrosive materials are used.
- Driving on rough and/or muddy roads.
- Extended periods of idling and/or low-speed operation.
- Driving for prolonged periods in cold temperatures and/or extremely humid climates.

Maintenance Schedule (Except for Europe)

I : Inspect and if necessary correct, clean or replace
R : Replace or change A : Adjust

MAINTENANCE INTERVALS	Number of months or kilometer, whichever comes first									
	Months	–	6	12	18	24	30	36	42	48
MAINTENANCE ITEM	Km	1,000	10,000	20,000	30,000	40,000	50,000	60,000	70,000	80,000
Drive belts *1				A		A		A		A
Engine oil *3		General Region : 1,000 km Replacement Replace every 12 months or 10,000 km (Whichever comes first)								
Engine oil filter										
Engine timing belt *2		Replace every 90,000 km								
Air cleaner element				I		R		I		R
Spark plugs						R				R
Cooling system *3 (including coolant level adjustment)				I		I		I		I
Engine coolant		Replace at first 100,000 km (or 60 months) : after that, follow the Maintenance Interval recommended by coolant manufacturer								
Fuel filter						R				R
Fuel lines and hoses				I		I		I		I
Idle speed						A				A
Initial ignition timing				I		I		I		I
E.G.R system				I		I		I		I
Evaporative system				I		I		I		I
Battery condition				I		I		I		I
All electrical systems			I	I	I	I	I	I	I	I
Headlight alignment				A		A		A		A
Brake lines, hoses and connections				I		I		I		I
Brake pedal			I	I	I	I	I	I	I	I
Parking brake				A		A		A		A
Clutch pedal			I	I	I	I	I	I	I	I
Brake and clutch fluid *4			I	I	I	R	I	I	I	R
Drum brakes				I		I		I		I
Disc brakes				I		I		I		I

1* Adjust alternator and water pump drive belt, power steering and air conditioner drive belt, if equipped.

2* Replacement of the engine timing belt is required at every 90,000 km.

Failure to replace this belt may result in damage to the engine.

3* Check the level and add proper fluid / lubricant if necessary.

4* Replace every 2 years.

If there has been continuous of hard driving, mountain driving, or if the brakes are used extensively or the vehicle is operated in extremely humid climates, the brake fluid should be changed annually.

I : Inspect and if necessary correct, clean or replace
R : Replace or change A : Adjust

MAINTENANCE INTERVALS	Number of months or kilometer, whichever comes first									
	Months	–	6	12	18	24	30	36	42	48
MAINTENANCE ITEM	Km	1,000	10,000	20,000	30,000	40,000	50,000	60,000	70,000	80,000
Power steering fluid			I	I	I	I	I	I	I	I
Power steering system and hoses				I		I		I		I
Front suspension ball joints						I				I
Driveshaft dust boots						I				I
Bolt and nuts on chassis and body				T		T		T		T
Exhaust system heat shield		I				I				I
Air conditioner refrigerant (if equipped)		Inspect refrigerant amount annually								
Air conditioner compressor (if equipped)		Inspect operation annually								
Manual transaxle oil *3						R				R
Automatic transaxle fluid level				I		R		I		I

3* Check the level and add proper fluid / lubricant if necessary.

I : Inspect and if necessary correct, clean or replace
R : Replace or change A : Adjust T : Tighten

MAINTENANCE INTERVALS	Number of months or kilometers, whichever comes first								
	Months	12	24	36	48	60	72	84	96
MAINTENANCE ITEM	Km	15,000	30,000	45,000	60,000	75,000	90,000	105,000	120,000
Drive Belt *			I		I		I		I
Engine oil *		R	R	R	R	R	R	R	R
Engine oil filter *		R	R	R	R	R	R	R	R
Engine timing belt *		Replace every 90,000 km							
Air cleaner element *			R		R		R		R
Spark plugs		I	I	R	I	I	R	I	I
Cooling system (Including coolant level adjustment)			I		I		I		I
Engine coolant *1		I	R	I	R	I	R	I	R
Fuel filter *			R		R		R		R
Fuel lines and hoses			I		I		I		I
Idle speed			I		I		I		I
Initial ignition timing			I		I		I		I
Tire		I	I	I	I	I	I	I	I
Evaporative system			I		I		I		I
Battery condition			I		I		I		I
All electrical systems		I	I	I	I	I	I	I	I
Headlight alignment		A		A		A		A	
Brake lines, hoses and connections			I		I		I		I
Brake pedal			I		I		I		I
Parking brake			A		A		A		A
Clutch pedal			I		I		I		I
Brake and clutch fluid *1		I	I	I	I	I	I	I	I
Drum brakes		I	I	I	I	I	I	I	I
Disc brakes		I	I	I	I	I	I	I	I
Power steering fluid		I	I	I	I	I	I	I	I
Power steering system and hoses			I		I		I		I
Front suspension ball joints			I		I		I		I
Driveshaft dust boots		I	I	I	I	I	I	I	I
Bolt and nuts on chassis and body			I		I		I		I
Exhaust system heat shield			I		I		I		I
Airconditioner refrigerant (if equipped)		Inspect refrigerant amount annually							
Airconditioner compressor(if equipped)		Inspect operation annually							
Manual transaxle oil *		I	I	I	R	I	I	I	R
Automatic transaxle fluid *		I	I	I	R	I	I	I	R

1* Check the level and proper fluid lubricant / if necessary.

* If the vehicle is operated continuously under severe condition, it is suggested those (*) items should be changed more frequently.