

LUBRICATION AND MAINTENANCE

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GENERAL INFORMATION

N00PA-B

Maintenance and lubrication service recommendations have been compiled to provide maximum protection for the vehicle owner's investment against all reasonable types of driving conditions. Since these conditions vary with the individual vehicle owner's driving habits, the area in which the vehicle is operated and the type of driving to which the vehicle is subjected, it is necessary to prescribe lubrication and maintenance service on a time frequency as well as mileage interval basis.

Oils, lubricants and greases are classified and graded according to standards recommended by the Society of Automotive Engineers (SAE), the American Petroleum Institute (API) and the National Lubricating Grease Institute (NLGI).

MAINTENANCE SCHEDULES

Information for service maintenance is provided under "SCHEDULED MAINTENANCE TABLE".

Three schedules are provided; one for "Required Maintenance", one for "General Maintenance" and one for "Severe Usage Service".

SEVERE SERVICE

Vehicles operating under severe service conditions will require more frequent service.

Component service information is included in appropriate units for vehicles operating under one or more of the following conditions:

1. Trailer towing or police, taxi, or commercial type operation.
2. Operation of Vehicle
 - (1) Short-trip operation at freezing temperature (engine not thoroughly warmed up)
 - (2) More than 50% operation in heavy city traffic during hot weather above 32°C (90°F)
 - (3) Extensive idling
 - (4) Driving in sandy areas
 - (5) Driving in salty areas
 - (6) Driving in dusty conditions
 - (7) Driving on-off-road

ENGINE OIL

The SAE grade number indicates the viscosity of engine oils, for example, SAE 30, which is a single grade oil. Engine oils are also identified by a dual number, for example, SAE 10W-30, which indicates a multigrade oil.

The API classification system defines oil performance in terms of engine usage. Only engine oil designed "For Service SF" or "For Service SF/CC", when available, should be used. These oils contain sufficient chemical additives to provide maximum engine protection. Both the SAE grade and the API designation can be found on the container.

Caution

Test results submitted to EPA have shown that laboratory animals develop skin cancer after prolonged contact with used engine oil. Accordingly, the potential exists for humans to develop a number of skin disorders, including cancer, from such exposure to used engine oil.

Care should be taken, therefore, when changing engine oil, to minimize the amount and length of exposure time to used engine oil on your skin. Protective clothing and gloves, that cannot be penetrated by oil, should be worn. The skin should be thoroughly washed with soap and water, or use waterless hand cleaner, to remove any used engine oil. Do not use gasoline, thinners, or solvents.

GEAR LUBRICANTS

The SAE grade number also indicates the viscosity of Multi-Purpose Gear Lubricants.

The API classification system defines gear lubricants in terms of usage. Typical gear lubricants conforming to API GL-4 or GL-5 with a viscosity of SAE 80W, SAE 90 are recommended for manual transmission, front axle and rear axle (conventional differential), and MITSUBISHI genuine gear oil Part No. 8149630EX or equivalent, for rear axle (limited-slip differential).

LUBRICANTS-GREASES

Semi-solid lubricants bear the NLGI designation and are further classified as grades 0, 1, 2, 3 etc.. Whenever "Chassis Lubricant" is specified, Multi-Purpose Grease, NLGI grade No. 2, should be used.

FUEL USAGE STATEMENT

Use gasolines having a minimum anti-knock index (Octane Value) of 87, (R + M)/2. This designation is comparable to a Research Octane Number of 91. Unleaded gasolines only must be used in vehicles equipped with catalyst emission control systems. All vehicles, so equipped, have labels located on the instrument panel and on the back of fuel filler lid that state, "UNLEADED GASOLINE ONLY". These vehicles also have fuel filler tubes especially designed to accept the smaller diameter unleaded gasoline dispensing nozzles only.

MATERIALS ADDED TO FUEL

Indiscriminate use of fuel system cleaning agents should be avoided. Many of these materials intended for gum and varnish removal may contain highly active solvents or similar ingredients that can be harmful to gasket and diaphragm materials used in fuel system component parts.

SCHEDULED MAINTENANCE TABLE

N000A-

SCHEDULED MAINTENANCE SERVICE FOR EMISSION CONTROL AND PROPER VEHICLE PERFORMANCE

Inspection and service should be performed any time a malfunction is observed or suspected. Retain receipts for all vehicle emission services to protect your emission warranty.

Emission Control System Maintenance	Service Intervals	Kilometers in Thousands	24	48	72	80	96	120	128	144	160	168	192
		Mileage in Thousands	15	30	45	50	60	75	80	90	100	105	120
Check Valve Clearance (Jet Valve Only); Adjust as Required	at	X	X	X		X	X		X		X	X	
Check Engine Idle Speed* ¹ ; Adjust as Required	at	X	X	X		X	X		X		X	X	
Clean Carburetor Choke Mechanism and Linkage* ²	at		X			X			X				X
Replace Fuel Filter Every 5 years* ²	or					X					X		
Check Fuel System (Tank, Line, Connection and Fuel Filler Cap) for Leaks Every 5 Years	or					X					X		
Replace Vacuum Hoses, Secondary Air Hoses, Crankcase Ventilation Hoses and Water Hoses Every 5 Years	or						X						X
Replace Fuel Hoses and Vapor Hoses Every 5 Years	or					X					X		
Replace Air Cleaner Element	at		X				X			X			X
Clean Crankcase Emission Control System (Positive Crankcase Ventilation Valve) Every 5 Years* ³	or								X				
Check Evaporative Emission Control System (Except Canister) for Leaks and Clogging Every 5 Years* ³	or						X						X
Replace Canister* ³	at										X		
Replace Spark Plugs	at		X				X			X			X
Replace Ignition Cables Every 5 Years* ³	or						X						X
Replace EGR Valve* ³	at					X					X		
Replace Oxygen Sensor* ³									X				
Check Distributor Cap, Rotor and Spark Advancer System* ³ Every 5 Years	or						X						X
Check Intake Temperature Control System* ³ Every 5 Years	or						X						X
Replace Solenoid Valve Air Cleaner Element of Vacuum Control System* ¹ Every 5 Years	or						X						X

NOTE

- (1) *¹ : Shows recommended maintenance items for California vehicles only, but are required for vehicles except for California. <2.6L Engine>
 (2) *² : <2.6L Engine>
 (3) *³ : Except for California

GENERAL MAINTENANCE SERVICE FOR PROPER VEHICLE PERFORMANCE

General Maintenance	Service Interval	Kilometers in Thousands	12	24	36	48	60	72	84	96
		Mileage in Thousands	7.5	15	22.5	30	37.5	45	52.5	60
Timing Belt	Replace	at								X
Drive-Belt (for Water Pump and Alternator)	Replace	at				X				X
Engine Oil	Change Oil Every 12 Months	or	X	X	X	X	X	X	X	X
Engine Oil Filter	Replace Every 12 Months	or		X		X		X		X
Manual Transmission and Transfer Oil	Check Oil Level	at				X				X
Automatic Transmission Fluid	Check Fluid Level Every 12 Months	or		X		X		X		X
Automatic Transmission and Transfer Fluid	Change Fluid	at				X				X
Engine Coolant	Change Coolant Every 2 Years	or				X				X
Front Disc Brake Pads	Inspect for Wear Every 12 Months	or		X		X		X		X
Rear Drum Brake Linings and Wheel Cylinders	Inspect for Wear and Leaks Every 2 Years	or				X				X
Brake Hoses	Check for Deterioration or Leaks Every 12 Months	or		X		X		X		X
Ball Joint and Steering Linkage Seals	Inspect for Grease Leaks and Damage Every 2 Years	or				X				X
Drive Shaft Boots	Inspect for Grease Leaks and Damage Every 12 Months	or		X		X		X		X
Ball Joints with Grease Fitting	Lubricate Grease Every 12 Months	or		X		X		X		X
Front Wheel Bearing	Lubricate Grease Every 2 Years	or				X				X
Front Axle and Rear Axle	With LSD*	Change Oil	at			X				X
	Without LSD*	Inspect Oil Level	at			X				X
Propeller Shaft Joint	Lubricate Grease Every 2 Years	or				X				X
Exhaust System (Connection Portion of Muffler, Pipings and Converter Heat Shields)	Check and Service as Required Every 2 Years	or				X				X

NOTE

* : LSD – Limited-slip differential

SCHEDULED MAINTENANCE UNDER SEVERE USAGE CONDITIONS

The maintenance items should be performed according to the following table:

Maintenance Item	Service to be Performed	Mileage Intervals Kilometers in Thousands (Miles in Thousands)				Severe Usage Conditions								
		24 (15)	48 (30)	72 (45)	96 (60)	A	B	C	D	E	F	G	H	
Engine Oil	Change Every 3 Months or	Every 4,800 km (3,000 miles)				x	x	x	x				x	
Engine Oil Filter	Replace Every 6 Months or	Every 9,600 km (6,000 miles)				x	x	x	x				x	
Air Cleaner Element	Replace	More Frequently				x				x				
Crankcase Emission Control System	Check and Clean as Required	More Frequently				x								
Spark Plugs	Replace at	x	x	x	x		x		x					
Front Disc Brake Pads	Inspect for Wear	More Frequently				x						x		
Rear Drum Brake Linings and Rear Wheel Cylinders	Inspect for Wear and Leaks	More Frequently				x						x		
Manual Transmission and Transfer Case	Change oil at		x		x		x					x	x	

Severe usage conditions

- A–Driving in dusty conditions
- B–Trailer towing, or police, taxi, or commercial type operation
- C–Extensive idling
- D–Short-trip operation at freezing temperatures (engine not thoroughly warmed up)
- E–Driving in sandy areas
- F–Driving in salty areas
- G–More than 50% operation in heavy city traffic during hot weather above 32°C (90°F)
- H–Driving on off-road

RECOMMENDED LUBRICANTS AND LUBRICANT CAPACITIES TABLE

NOORA-B

RECOMMENDED LUBRICANTS

Parts		Specifications	Remarks
Engine oil		API classification SF or SF/CC	For further details, refer to SAE viscosity number
Manual transmission		API classification GL-4 or higher	SAE grade number: SAE 80W or 75W/85W
Automatic transmission		Automatic transmission fluid DEXRON type	
Transfer case		API classification GL-4 or higher	SAE grade number: SAE 80W or 75W/85W
Front axle		API classification GL-5 or higher	For further details, refer to SAE viscosity number
Rear axle	Conventional differential	API classification GL-5 or higher	For further details, refer to SAE viscosity number
	Limited-slip differential		Mitsubishi Genuine Gear Oil Part No. 8149630EX or equivalent
Power steering		Automatic Transmission Fluid DEXRON type	
Brakes and clutch		Conforming to DOT 3	
Engine coolant			DIA-QUEEN LONG-LIFE COOLANT (Part No. 0103044) or HIGH QUALITY ETHYLENE GLYCOL ANTIFREEZE COOLANT
Door hinges, back door hinges		Engine oil	

LUBRICANT CAPACITIES TABLE

Description	<2.6L Engine>		<3.0L Engine>	
	Metric measure	U.S. measure	Metric measure	U.S. measure
Engine oil				
Crankcase (except for oil filter)	4.9 liters	5.0 qts.	4.71 liters	5.0 qts.
Oil filter	0.4 liter	1/2 qt.	0.4 liter	1/2 qt.
Oil cooler	—	—	0.3 liter	1/2 qt.
Cooling system (including front heater and coolant reserve tank)	8.0 liters	8-1/2 qts.	9.1 liters	9-1/2 qts.
Manual transmission	2.2 liters	4.7 pints.	2.5 liters	5.3 pints.
Automatic transmission	—	—	7.2 liters	15.2 pints.
Transfer case	2.2 liters	4.7 pints.	2.2 liters	4.7 pints.
Front axle	1.1 liters	2.3 pints.	1.1 liters	2.3 pints.
Rear axle				
Conventional differential	1.8 liters	3.8 pints.	2.6 liters	5.5 pints.
Limited-slip differential	1.8 liters	3.8 pints.	2.6 liters	5.5 pints.
Power steering	1.06 liters	2.2 pints.	1.06 liters	2.2 pints.
Fuel tank	60 liters	15.9 gals.	75 liters* ¹	19.8 gals.* ¹
			92 liters* ²	24.3 gals.* ²

*1: 2-door models

*2: 4-door models

SELECTION OF LUBRICANTS

Anticipated barometric temperature range		SAE viscosity No.
°C	°F	
49	120	
38	100	
27	80	
16	60	
0	32	
-12	10	
-23	-10	
-29	-20	

53E531

*SAE 5W-20 Not recommended for sustained high speed vehicle operation.

ENGINE OIL

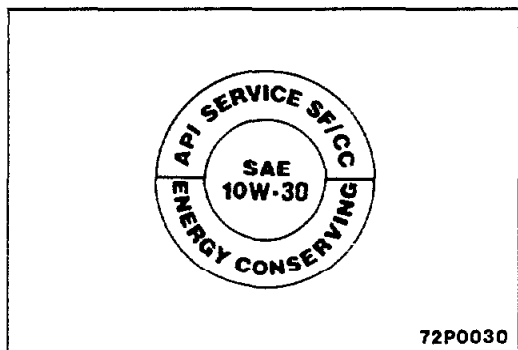
Only those engine oils should be used which conform to the requirements of the API classification "For Service SF" or "For Service SF/CC", and have the proper SAE grade number for the expected temperature range.

Caution

Nondetergent or straight mineral oil must never be used.

Energy Conserving Oil

In order to improve fuel economy and conserve energy new, lower friction engine oils have been developed. These oils are readily available and can be identified by such labels as "Energy conserving", "Energy saving", "Improved fuel economy", etc.



Oil Identification Symbol

A standard symbol appears on the top of oil containers and has three distinct areas for identifying various aspects of the oil. The top portion will indicate the quality of the oil. The center portion will show the SAE viscosity grade, such as SAE 10W-30. "Energy Conserving" shown in the lower portion, indicates that the oil has fuel-saving capabilities.

FRONT AXLE/REAR AXLE (CONVENTIONAL DIFFERENTIAL)

Lubricant	API classification GL-5 or higher
Anticipated temperature range	Viscosity range
Above -23°C (-10°F)	SAE 90 SAE 85W-90 SAE 80W-90
-20°C to -34°C (-10°F to -30°F)	SAE 80W SAE 80W-90
Below -34°C (-30°F)	SAE 75W

REAR AXLE (LIMITED-SLIP DIFFERENTIAL)

Refer to P.3-4.

COOLANT

Relation between Coolant Concentration and Specific Gravity

Coolant temperature °C (°F) and specific gravity					Freezing temperature °C (°F)	Safe operating temperature °C (°F)	Coolant concentration (Specific volume)
10 (50)	20 (68)	30 (86)	40 (104)	50 (122)			
1.054	1.050	1.046	1.042	1.036	-16 (3.2)	-11 (12.2)	30%
1.063	1.058	1.054	1.049	1.044	-20 (-4)	-15 (5)	35%
1.071	1.067	1.062	1.057	1.052	-25 (-13)	-20 (-4)	40%
1.079	1.074	1.069	1.064	1.058	-30 (-22)	-25 (-13)	45%
1.087	1.082	1.076	1.070	1.064	-36 (-32.8)	-31 (-23.8)	50%
1.095	1.090	1.084	1.077	1.070	-42 (-44)	-37 (-35)	55%
1.103	1.098	1.092	1.084	1.076	-50 (-58)	-45 (-49)	60%

Example

The safe operating temperature is -15°C (5°F) when the measured specific gravity is 1.058 at the coolant temperature of 20°C (68°F).

Cautions

1. If the concentration of the coolant is below 30%, the anti-corrosion property will be adversely affected. In addition, if the concentration is above 60%, both the anti-freeze and engine cooling properties will decrease, affecting the engine adversely. For these reasons, be sure to maintain the concentration level within the specified range.
2. Do not use a mixture of different brands of anti-freeze.

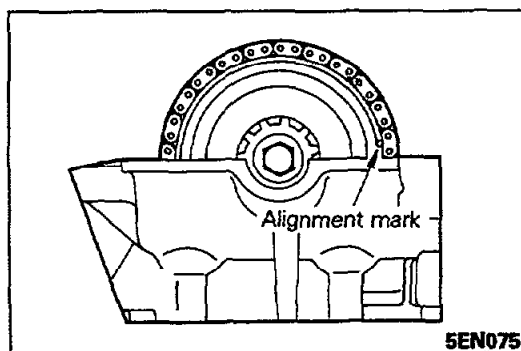
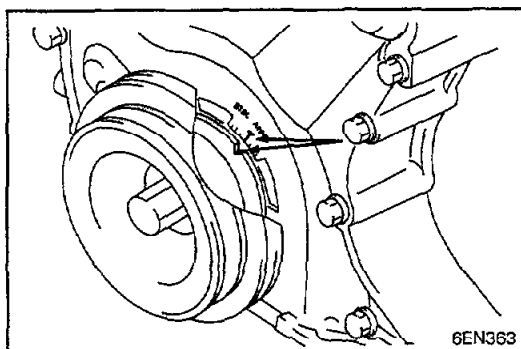
MAINTENANCE SERVICE

N00SACO

VALVE CLEARANCE (Jet valve) (Check and adjust as required)

<2.6L Engine>

- (1) Warm up the engine until the coolant temperature reaches 85°–95°C (185°–205°F).
- (2) Remove the air cleaner assembly.
- (3) Remove the all spark plugs.
- (4) Remove the rocker cover.



- (5) Align the notch in the crankshaft pulley with the "T" mark on the timing chain cover. Check to be sure that the camshaft sprocket and the timing chain's mating mark are in the position shown in the figure.

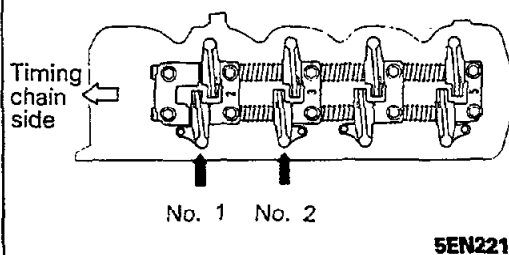
Caution

Be sure not to rotate the crankshaft counterclockwise direction.

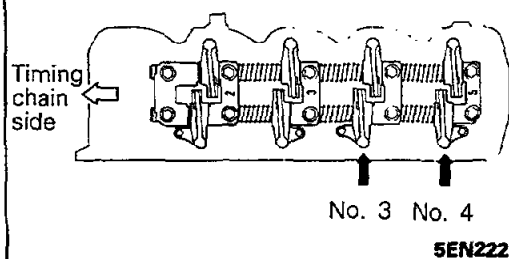
Note

If the camshaft sprocket's mating mark is at the 180° opposite position, the No. 4 cylinder is at top dead center.

With the No. 1 cylinder at compression top dead center.



With the No. 4 cylinder at compression top dead center.



- (6) Measure the jet valve clearance at the places shown by the arrows in the figure.

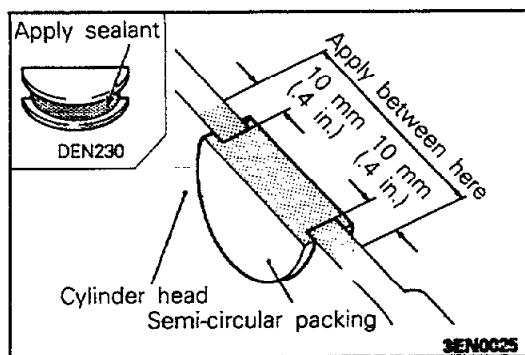
Standard value (when hot engine) : 0.25 mm (.0098 in.)

Note

The valve clearance when cold is 0.17 mm (.0067 in.)

Caution

Be careful not to press the jet valve in, because the jet valve spring's force is not strong.



(7) Apply specified sealant to portions indicated in illustration.

Specified sealant : 3M ART Part No. 8660

- (8) Install the rocker cover.
 (9) Install the spark plugs.
 (10) Install the air cleaner assembly.

ENGINE IDLING SPEED <2.6L Engine>

N00SADG

Caution

The improper setting (throttle valve opening) will increase exhaust gas temperature at deceleration, reducing catalyst life greatly and deteriorating exhaust gas cleaning performance. It also has effect on fuel consumption and engine braking.

Inspection Conditions

- Engine Coolant temperature: 85–90°C (185–205°F)
 - Lights and accessories (air-conditioner, etc.): OFF
 - Transmission: Neutral
 - Steering wheel: Centered (for power steering equipped vehicles)
- (1) Prepare a timing light and tachometer.
 - (2) Start the engine and allow it to idle.
 - (3) Depress accelerator pedal once to release the fast idle.
 - (4) Inspect the ignition timing. Adjust the ignition timing if necessary.

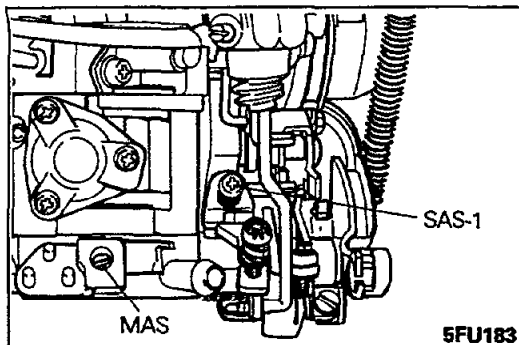
Standard ignition timing : 7° BTDC ± 2°*

*: When inspecting the standard ignition timing at high altitudes, disconnect the white striped vacuum hose from the distributor auxiliary compression chamber and temporarily close the end of the hose with a blind plug. (Federal indicated high-altitude specification vehicles, California).

NOTE

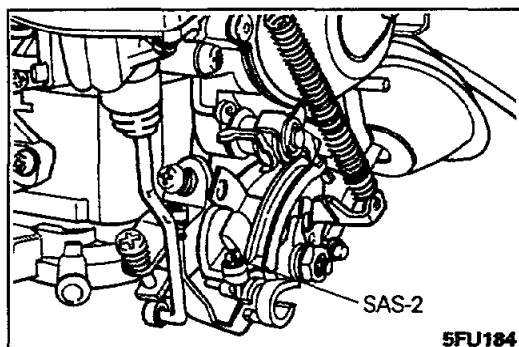
Inspect and adjust ignition timing as described in GROUP 8–Ignition System.

- (5) Run the engine for more than 5 seconds at an engine speed of 2,000 to 3,000 rpm.
- (6) Run the engine at idle for 2 minutes.

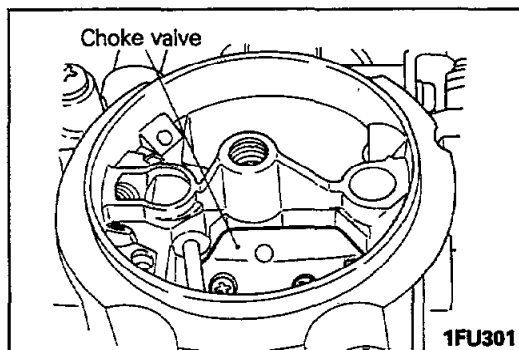


(7) Read the idling speed.
If outside specified limits, readjust the speed to the specified value by adjusting the idle speed adjusting screw No. 1 (SAS-1).

Curb idle speed (rpm)	
For the First 500 km (300 miles)	After 500 km (300 miles)
$725 \begin{matrix} +150 \\ -100 \end{matrix}$	800 ± 100



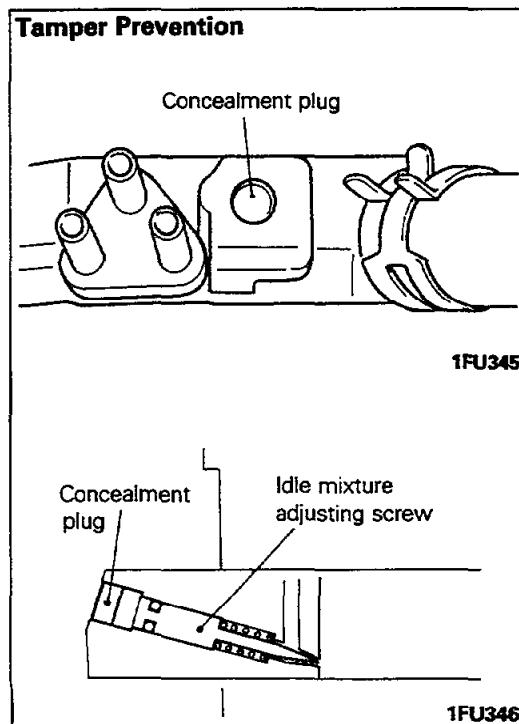
Caution
DO NOT TOUCH SAS-2. The idle speed adjusting screw (SAS-2) is the preset screw that determines the relationship between the throttle valve and free lever, and has been accurately set at the factory. If this setting is disturbed, throttle opener adjustment and dash pot adjustment cannot be done accurately.



CARBURETOR CHOKE MECHANISM AND LINKAGE (Clean) <2.6L Engine>

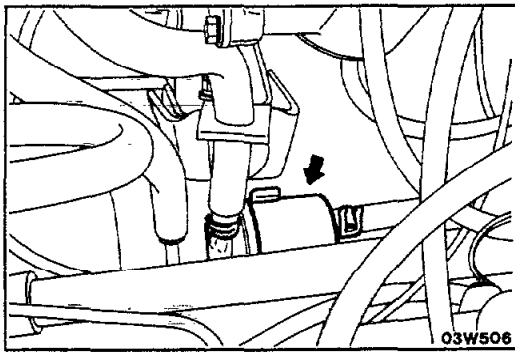
N00SAEBa

The choke mechanism is used to facilitate engine starting during cold weather. Inject a solvent into the end of the auto-choke and the throttle valves (where they pass through the air horn) to prevent the choke from becoming stuck by gum deposits on the shaft. At the same time, inject a solvent to clean dirt from the fast idle cam and link.



Caution

1. All carburetors have a tamper-proof choke. The choke-related parts are factory adjusted. The choke adjustment is required during service, except when major carburetor service or overhaul choke calibration related parts adjustments are needed by state or local inspections.
2. All carburetors also have a tamper-resistant idle mixture adjusting screw. The CO setting has been done as a factory adjustment. Neither removal of the plug nor adjustment of the mixture screw is required during service unless a major carburetor overhaul, throttle body replacement, or high idle-CO adjustments are needed by state or local inspections.



FUEL FILTER (Replace) <2.6L Engine>

N00SAFA*

The fuel filter should be replaced regularly because its performance is reduced by dirt and water collected over an extended period of use. Replace as required.

FUEL SYSTEM (Check for leaks) TANK, LINES AND FUEL FILLER CAP CONNECTIONS

N00SAGA*

1. Check for damage or leakage in the fuel lines and connections.
2. Inspect the surface of fuel hoses for heat and mechanical damage. Hard and brittle rubber, cracking, checking, tears, cuts, abrasions and excessive swelling indicate deterioration of the rubber.
3. If the fabric casing of the rubber hose is exposed by cracks and abrasions in the fuel system, the hoses should be changed.

VACUUM HOSES, SECONDARY AIR HOSES, CRANKCASE VENTILATION HOSES AND WATER HOSES (Replace)

N00SAHA*

Replace them and make sure that the hoses do not come in contact with any heat source or moving component which might cause heat damage or mechanical wear.

FUEL HOSES, AND VAPOR HOSES (Replace)

N00SAIF

Service procedures to check the hoses for damage are the same as those described in the section "Vacuum hoses, secondary air hoses, crankcase ventilation hoses and water hoses".

For removal and installation procedures, refer to GROUP 14 – Fuel Line and Vapor Line.

AIR CLEANER ELEMENT (Replace)

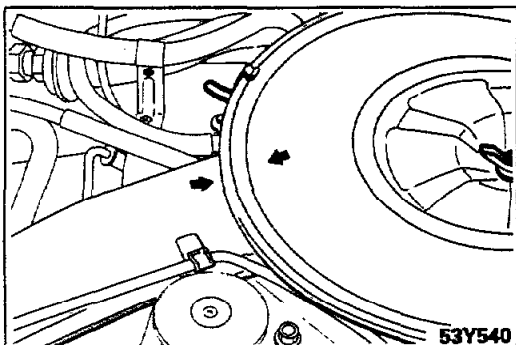
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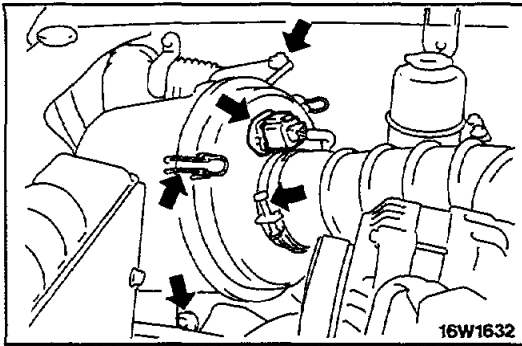
The air cleaner element will become dirty and loaded with dust during use, and the filtering effect will be substantially reduced. Replace it with a new one.

REPLACEMENT OF AIR CLEANER ELEMENT

<2.6L Engine>

1. Remove the wing nut. Use pliers only if the wing nut is difficult to remove.
2. Unsnap the finger clips.
3. Remove the element by hand, and replace it with a new element.
4. Install the air cleaner element, and then install the cover and housing, taking care that the arrows are aligned.
5. Tighten the wing nut by hand.





<3.0L Engine>

- (1) Loosen the clamp coupling the air intake hose and the air cleaner cover, and separate the hose.
- (2) Disconnect the air flow sensor connectors.
- (3) Disconnect the air cleaner cover clip.
- (4) Lifting the air intake hose, remove the air cleaner cover.

Caution

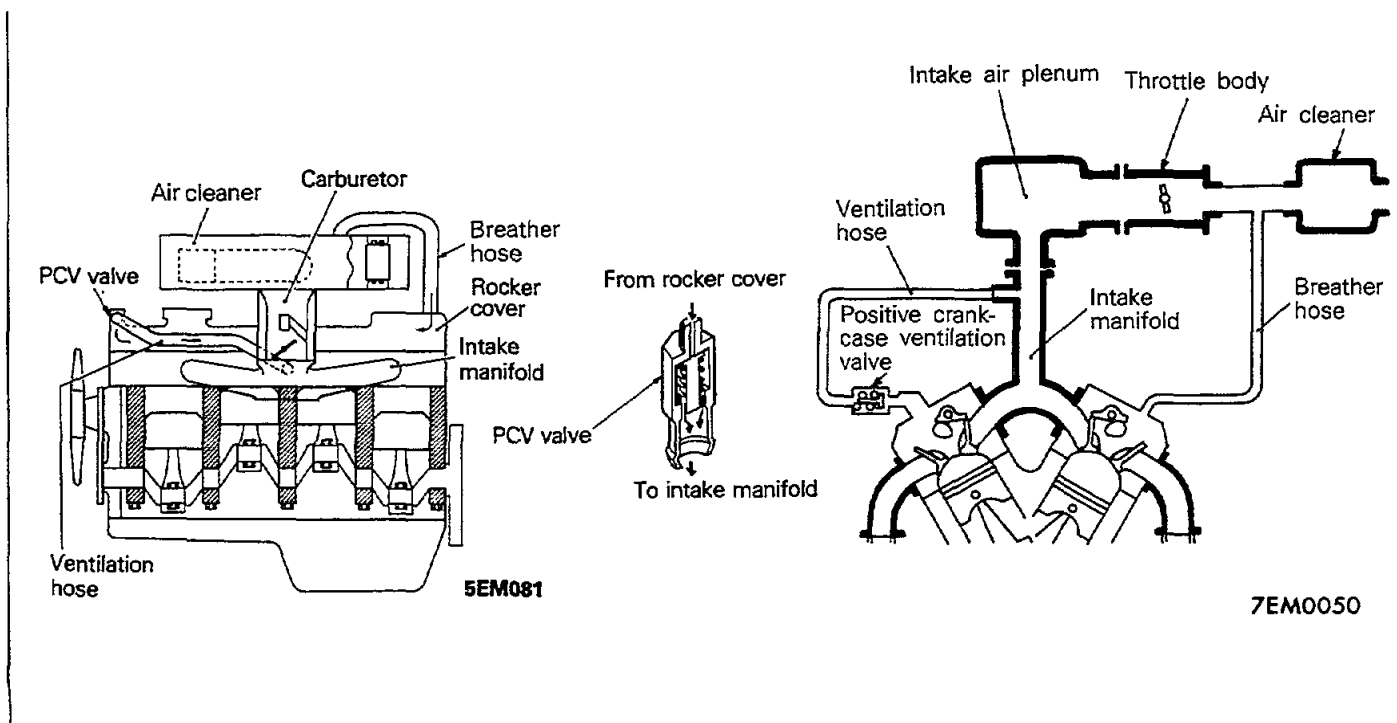
The air cleaner cover should be removed carefully, because it includes the air-flow sensor.

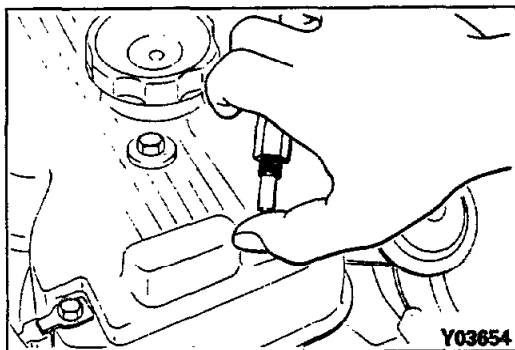
- (5) Remove the air cleaner element.
- (6) Set a new air cleaner element and clamp the air cleaner cover.

CRANKCASE EMISSION CONTROL SYSTEM (Positive crankcase ventilation valve) (Clean)

N00SALF

The crankcase ventilation system must be kept clean to maintain good engine performance.





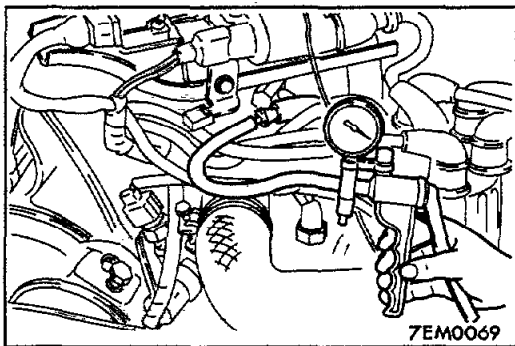
<2.6L Engine>

- (1) Disconnect the ventilation hose from the positive crankcase ventilation valve. Then, remove Positive Crankcase Ventilation valve from the rocker cover and reconnect it to the ventilation hose.
- (2) Idle the engine and put a finger to the open end of Positive Crankcase Ventilation valve to make sure that intake manifold vacuum is felt on the finger.

NOTE

At this time, the plunger inside the Positive Crankcase Ventilation valve moves back and forth.

- (3) If vacuum is not felt on finger, clean the Positive Crankcase Ventilation valve and ventilation hose in cleaning solvent or replace if necessary.
- (4) After completion of the work, set the reset switch (at the rear of the meter) to switch OFF the "maintenance-required" warning light.
(Refer to GROUP 8 – Meters and Gauges.)



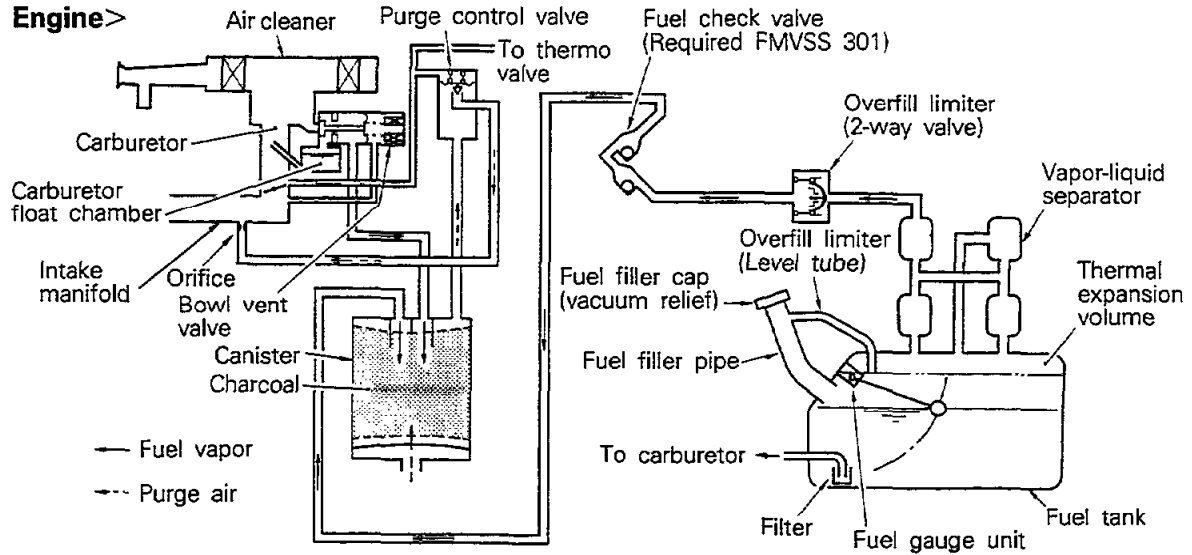
<3.0L Engine>

- (1) Disconnect the ventilation hose from the air-intake plenum, and connect a hand vacuum pump to the ventilation hose.
- (2) At this time, make sure that there is leakage when vacuum is applied. If there is no leakage when vacuum is applied, either clean the positive crankcase ventilation valve or replace it.
- (3) After completion of the work, set the reset switch (at the rear of the meter) to switch OFF the "maintenance-required" warning light.
(Refer to GROUP 8 – Meters and Gauges.)

EVAPORATIVE EMISSION CONTROL SYSTEM (Check for leaks and clogging) – except canister

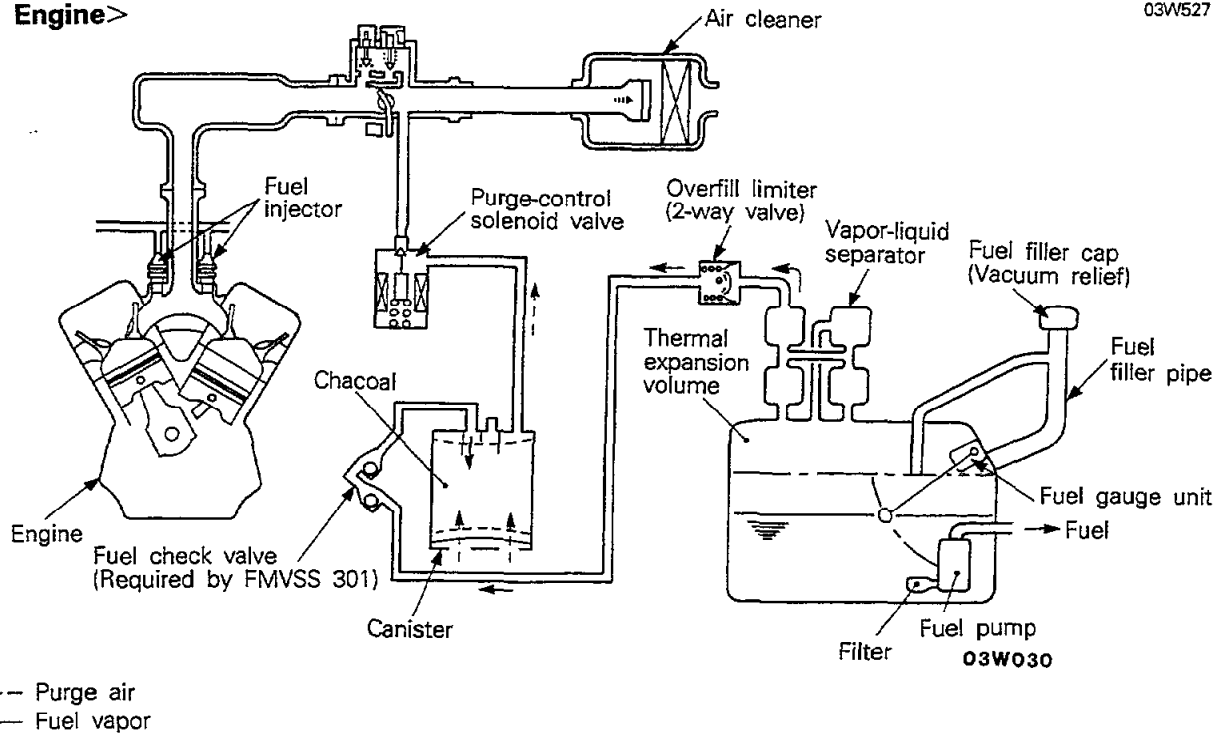
NO0SAMBa

<2.6L Engine>



<3.0L Engine>

03W527



1. If the fuel-vapor vent line is clogged or damaged, a fuel-vapor mixture escapes into the atmosphere causing excessive emissions. Disconnect the line at both ends, and blow it clean with compressed air. Remove the filler cap from the filler pipe and check to see if there is evidence that the packing makes improper contact to the filler pipe.
2. The overfill limiter (Two-way valve) installed on the vapor line should be checked for correct operation.

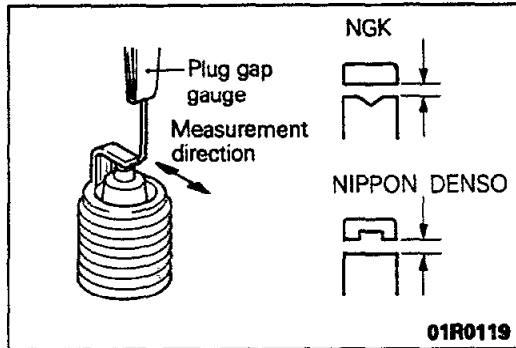
CANISTER (Replace)

N00SANGa

If or when the canister filter becomes clogged, the purge air volume will decrease and consequently, the canister capacity will be reduced.

After completion of the work, set the reset switch (at the rear of the meter) to switch OFF the "maintenance-required" warning light.

(Refer to GROUP 8 – Meters and Gauges.)

**SPARK PLUGS (Replace)**

N00SA0Aa

1. Spark plugs must fire properly to assure proper engine performance and emission-control. Therefore, they should be replaced periodically with new ones.
2. The new plugs should be checked for the proper gap.

Spark plug gap : 1.0–1.1 mm (.039–.043 in.)

IGNITION CABLES (Replace)

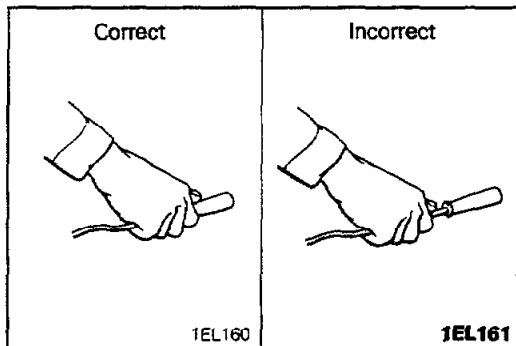
N00SAPBa

The ignition cables should be replaced periodically with new ones.

After replacing, make sure that the ignition cables and terminals are properly connected and full seated.

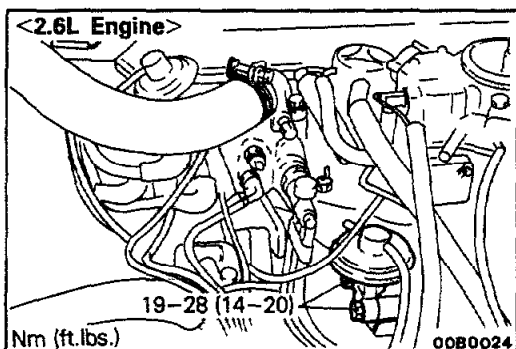
NOTE

When disconnecting an ignition cable, be sure to hold cable cap. If the cable is disconnected by pulling on the cable alone, an open circuit might result.

**EGR VALVE (Replace)**

N00SARG

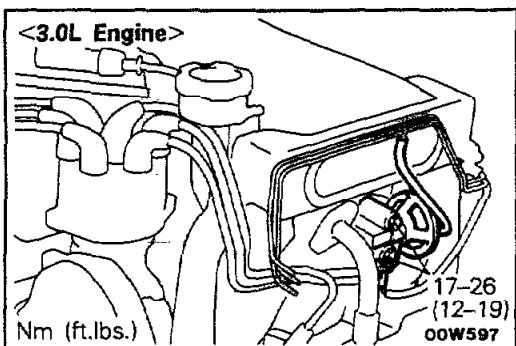
Replace EGR valve to a new one.

**REMOVAL OF EGR VALVE****<2.6L Engine>**

1. Disconnect the vacuum hoses from the EGR valve.
2. Remove the EGR valve from the intake manifold.
3. Replace the EGR valve gasket with a new one.
4. Install the EGR valve on the intake manifold and tighten to the specified torque.

After completion of the work, set the reset switch (at the rear of the meter) to switch OFF the "maintenance-required" warning light.

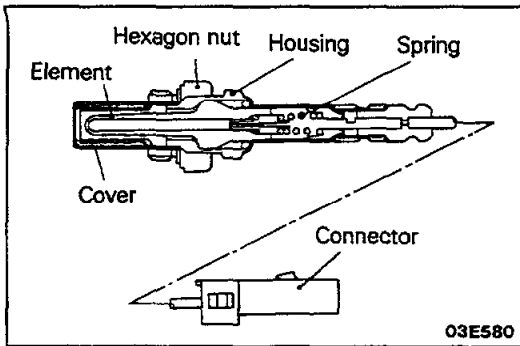
(Refer to GROUP 8 – Meters and Gauges.)

**<3.0L Engine>**

1. Disconnect the vacuum hoses from the EGR valve.
2. Remove the EGR valve from the air intake plenum.
3. Replace the EGR valve gasket with a new one.
4. Install the EGR valve on the air intake plenum and tighten to the specified torque.

After completion of the work, set the reset switch (at the rear of the meter) to switch OFF the "maintenance-required" warning light.

(Refer to GROUP 8 – Meters and Gauges.)



03E580

OXYGEN SENSOR (Replace)

N00SAQF

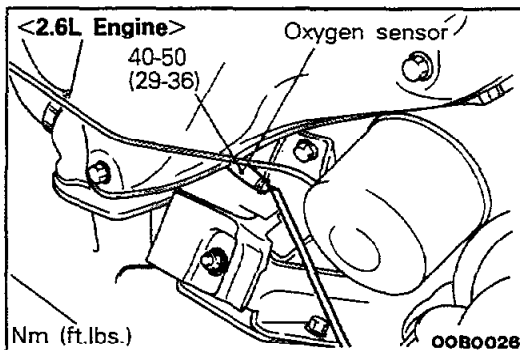
The oxygen sensor is a device which controls the fuel mixture. If the oxygen sensor is damaged, the exhaust-gas cleaning effect as well as driveability deteriorates. Therefore, it should be replaced periodically with a new one.

After completion of the work, set the reset switch (at the rear of the meter) to switch OFF the "maintenance-required" warning light.

(Refer to GROUP 8 – Meters and Gauges.)

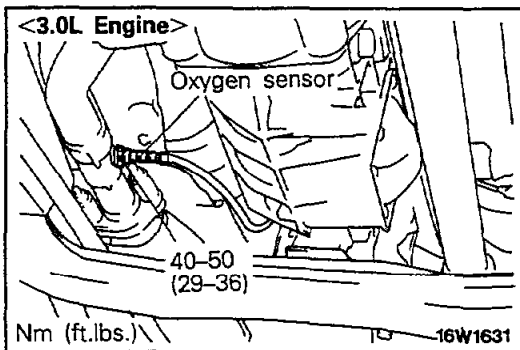
REMOVAL OF OXYGEN SENSOR**<2.6L Engine>**

1. Disconnect the connector of the oxygen sensor.
2. Remove the oxygen sensor from the exhaust manifold.
3. Replace the oxygen sensor on the exhaust manifold and tighten to the specified torque.



Nm (ft.lbs.)

00B0028



Nm (ft.lbs.)

16W1631

<3.0L Engine>

1. Disconnect the connector of the oxygen sensor.
2. Remove the oxygen sensor from the front exhaust pipe.
3. Replace the oxygen sensor on the front exhaust pipe and tighten to the specified torque.

DISTRIBUTOR CAP, ROTOR AND ADVANCED ANGLE SYSTEM (Check) <2.6L Engine>

N00SASB

Check the distributor cap, rotor and spark advance system to maintain driveability and good exhaust gas.

INSPECTION OF DISTRIBUTOR CAP AND ROTOR

Inspect in accordance with the following procedure. Repair or replace as necessary.

- Check the cap for cracks.
- Check the cap and rotor electrodes for damage.
- Wipe clean the cap and rotor.

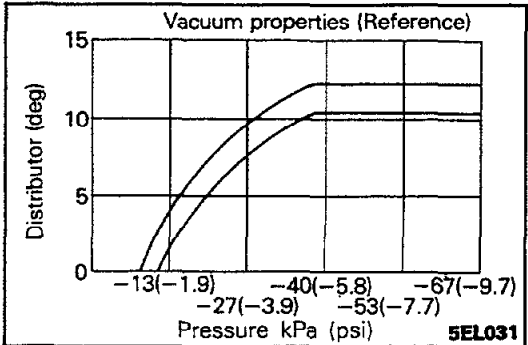
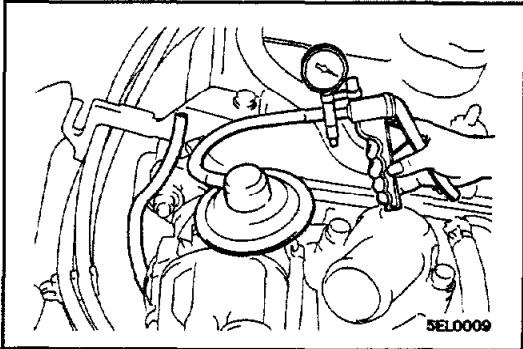
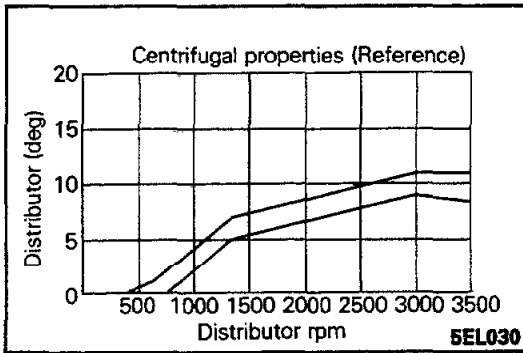
INSPECTION OF CENTRIFUGAL SPARK ADVANCE DEVICE

1. Start the engine and allow it to idle.
2. Disconnect the vacuum hoses from the vacuum chambers*.

*: Disconnect the vacuum hoses from both the main and sub vacuum chambers. (High-altitude areas nationwide, California)

3. Inspect the advance angle while slowly increasing engine speed.

The advance angle should change smoothly as engine speed increases.



NOTE

Symptom	Probable Cause
Advance angle is too large	Governor spring weak or missing
Advance angle changes suddenly	Spring is broken
Angle too small or hysteresis is too large	Poor governor weight or cam operation

- When any of the above symptoms appear, disassemble and inspect the distributor.

INSPECTION OF VACUUM ADVANCE DEVICE

- Start the engine and allow it to idle.
- Disconnect the vacuum hoses from the vacuum chamber*. Connect a vacuum pump to the nipple.
 - *: Disconnect the vacuum hoses from the main vacuum chambers. (High-altitude areas nationwide, California)
- Slowly apply vacuum with the vacuum pump and inspect the advance angle. The advance angle should change smoothly as the vacuum increases.

NOTE

Symptom	Probable Cause
Advance angle is too large	Vacuum controller spring is weak or missing
Advance angle changes suddenly	Spring is broken
Angle too small or hysteresis is too large	Poor breaker base operation
Does not advance	Diaphragm is damaged

- When any of the above symptoms appear, disassemble and inspect the distributor. After removing the distributor, inspect each part as described in GROUP 8 – Ignition System.

INTAKE TEMPERATURE CONTROL SYSTEM (Check)

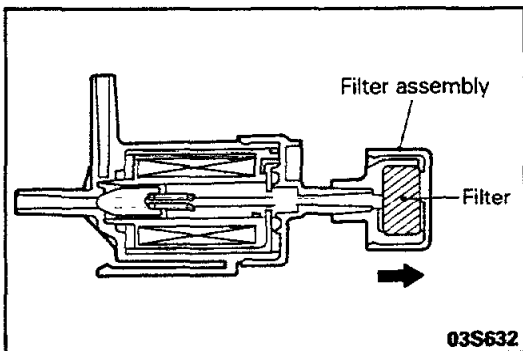
N00SATB

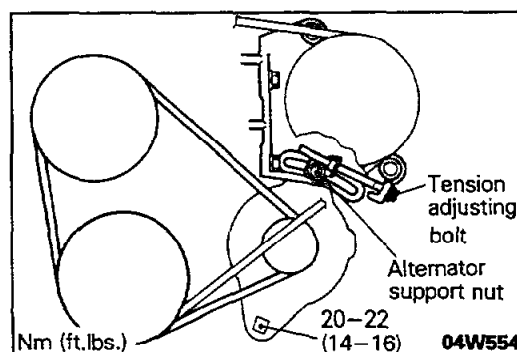
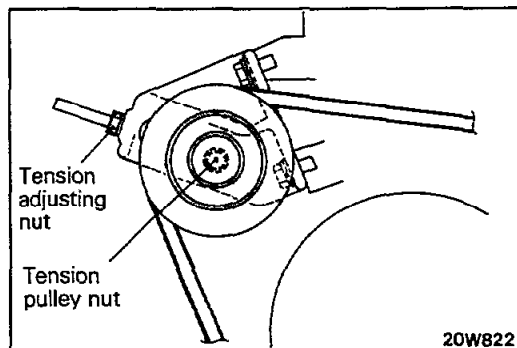
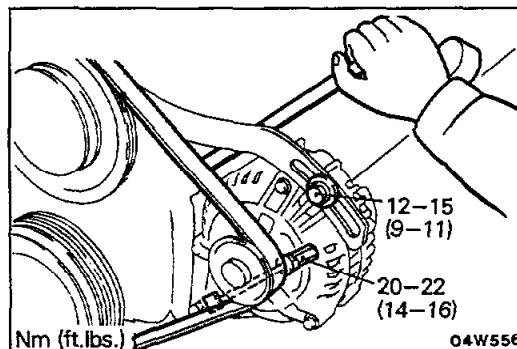
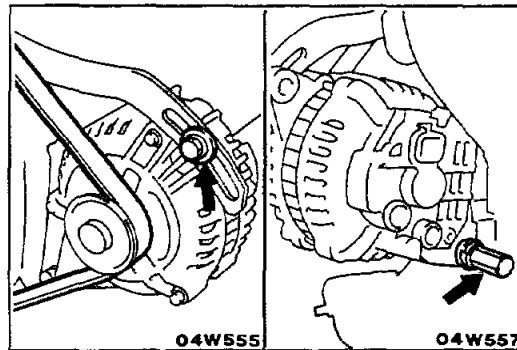
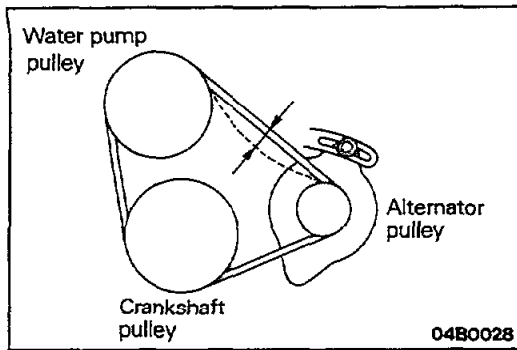
Check the vacuum motor of the intake temperature control system to protect driveability and fuel consumption.
 2.6 L Engine, refer to GROUP 25 – Exhaust Emission Control System.
 3.0 L Engine, refer to GROUP 14 – MPI-Service Adjustment Procedure.

SOLENOID VALVE AIR FILTER OF VACUUM CONTROL SYSTEM (Replace) <2.6L Engine>
[Secondary air control solenoid valve, throttle opener control solenoid valve]

N00SAVA

Pull out the filter assembly in the direction of the arrow and replace with a new filter assembly.





TIMING BELT (Replace)

N00SBAC

Replace the belt with a new one periodically to assure proper engine performance.
For removal and installation procedures, refer to GROUP 9 – Timing belt.

DRIVE BELT (For water pump and alternator) (Replace)

N00SBBK

<2.6L Engine>

Replace them with new ones, and make sure there is no interference between the belt and other engine components. Then check the tension of the belt for the water pump and alternator.

The deflection of the belt must be specified, when depressed at a point midway between the water pump pulley and the alternator pulley with a force of 100 N (22 lbs.).

REPLACEMENT OF DRIVE BELT

Vehicles without an air conditioner

1. Loosen the alternator brace bolt and alternator support nut, and then remove the alternator drive belt.
2. Install a new alternator drive belt.
3. Contact a bar or similar object to the stator part of the alternator in order to provide the appropriate tension, and then adjust the amount of belt deflection.

Standard value : 9–12 mm (.35–.47 in.)

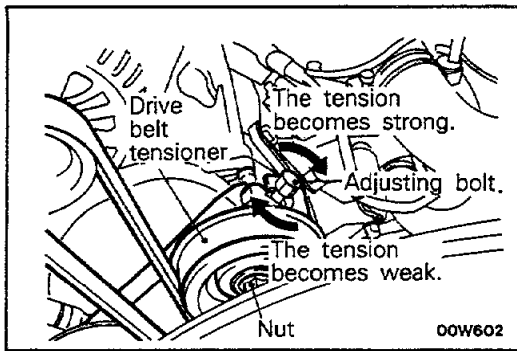
4. Tighten the alternator brace bolt and alternator support nut at the specified torque.

Vehicles with an air conditioner

1. Loosen the tension pulley nut.
2. Loosen the tension adjustment nut and then remove the air conditioner compressor's drive belt.
3. Loosen the alternator brace bolt and alternator support nut.
4. Loosen the tension adjustment bolt, and remove the alternator drive belt.
5. Install a new alternator drive belt.
6. Adjust the amount of deflection of the belt by using the tension adjustment bolt.

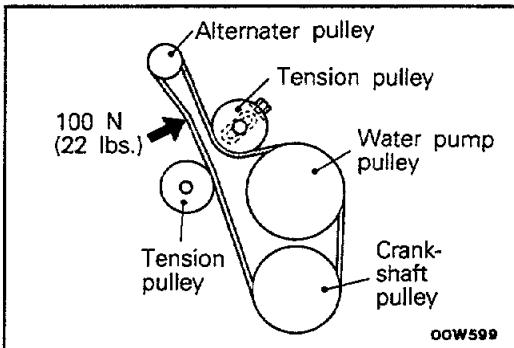
Standard value : 9–12 mm (.35–.47 in.)

7. Tighten the alternator support nut, and the alternator brace bolt at the specified torque.
8. Install the air conditioner compressor's drive belt, and adjust the amount of deflection of the drive belt. Refer to GROUP 24 – Service Adjustment Procedures.

**<3.0L Engine>**

Replace them with new ones, and make sure there is no interference between the belt and other engine components.

- (1) Remove the air conditioner compressor belt and power steering belt.
- (2) Back the nut off 1/8 turn.
- (3) Loosen the adjusting bolt and remove the drive belt.
- (4) Attach a new drive belt.



- (5) Apply 100 N (22 lbs.) to the belt back at the middle point between the alternator pulley and the drive belt lower tensioner.

Turn the adjusting bolt to adjust the drive belt sag to the standard value.

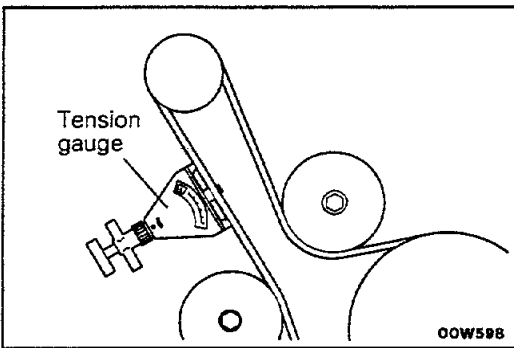
Standard value: 6.5–8.0 mm (.215–.315 in.)

Otherwise, use the tension gauge to adjust the sag to the standard value.

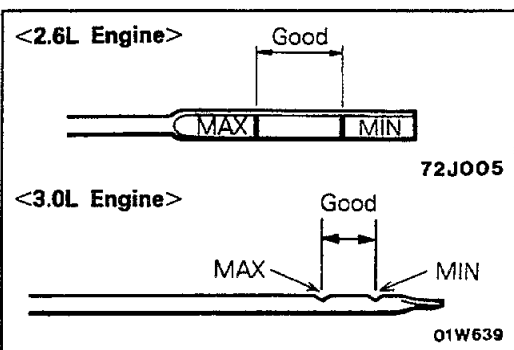
Standard value : 500–700 N (110–155 lbs.)

NOTE

When the tension gauge is used, select any part between any pulleys.



- (6) Tighten the nut.

**ENGINE OIL INSPECTION**

N00SBSA

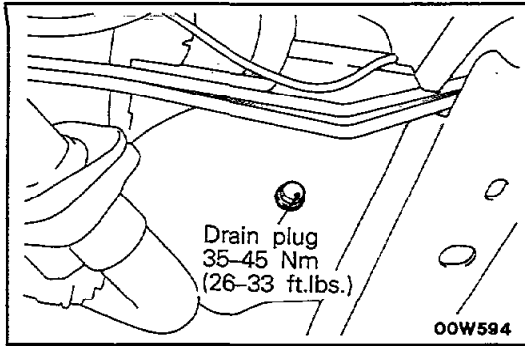
- (1) Check to ensure that the engine oil level is within the level range indicated on the oil dip stick.
- (2) Check to ensure that the oil is not noticeably dirty or mixed with coolant or gasoline, and that it has the proper viscosity.

ENGINE OIL (Change)

N00SAABb

Always use lubricants which conform to the requirements of the API classification "For Service SF" or "For Service SF/CC" when available, and have the proper SAE grade number for the expected temperature range.

Never use nondetergent or straight mineral oil.



- (1) After warming up the engine, remove the oil filler cap.
- (2) Remove the drain plug to allow the engine oil to drain.
- (3) Replace the drain plug gasket with a new one and tighten the drain plug.
- (4) Supply new engine oil through the oil filler.

Engine oil total capacity :

<2.6L Engine>

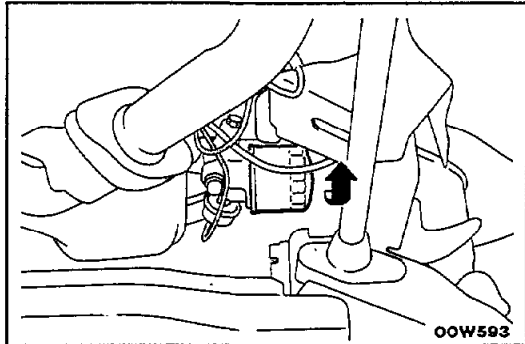
4.9 liters (5.0 qts.)

<3.0L Engine>

4.7 liters (5.0 qts.)

[including oil filter 0.4 liter (1/2 qt.)]

- (5) Start and run the engine a few minutes.
- (6) Stop the engine and check the engine oil level.



ENGINE OIL FILTER (Change)

N00SABG

The quality of replacement filters varies considerably. Only high quality filters should be used to assure most efficient service.

Genuine oil filters require that the filter is capable of withstanding a pressure of 256 psi are high quality filters and are recommended as follows:

Oil Filter Part Number

Mitsubishi Genuine Parts : MD031805 or equivalent

NOTE

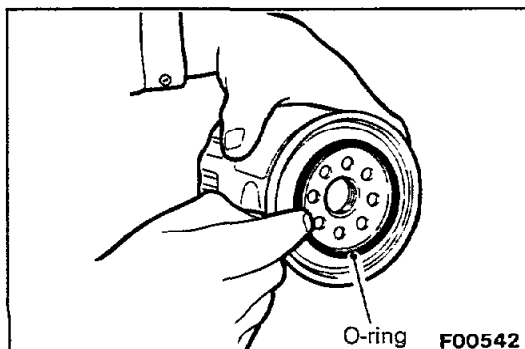
Factory installed Mitsubishi Engine Oil Filter Part No. MD084693 or MD031805.

ENGINE OIL FILTER SELECTION

This vehicle is equipped with a full-flow, throw-away oil filter. The same type of replacement filter is recommended as a replacement filter for this vehicle. It is possible, particularly in cold weather, that this vehicle may develop high oil pressure for a short duration. You should be sure that any replacement filter used on this vehicle is a high-quality filter and is capable of withstanding a pressure of 256 psi (manufacturer's specifications) to avoid filter and engine damage. The following is a high-quality filter and is strongly recommended for use on this vehicle : Mitsubishi Engine Oil Filter P/N MD031805 or MD084693.

Any replacement oil filter should be installed in accordance with the oil filter manufacturer's installation instructions.

- (1) Remove the engine oil filler cap.
- (2) Remove the engine oil drain plug, and drain out the engine oil.
- (3) Remove the engine oil filter by using the oil filter wrench.

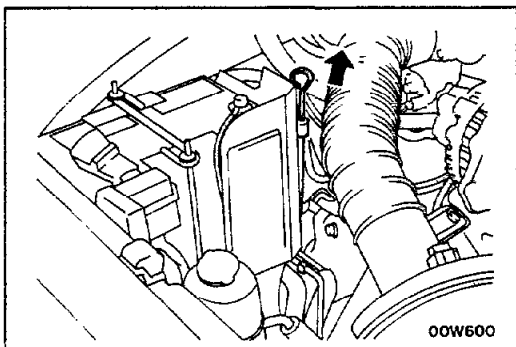
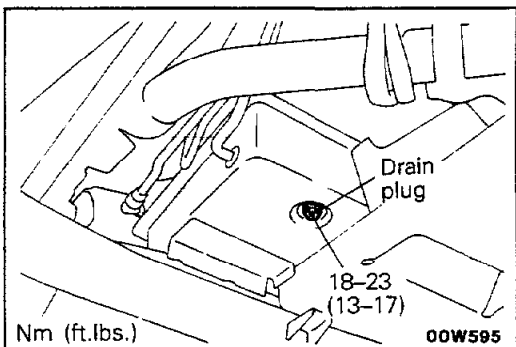
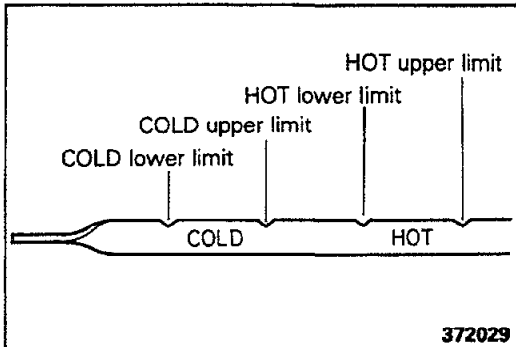
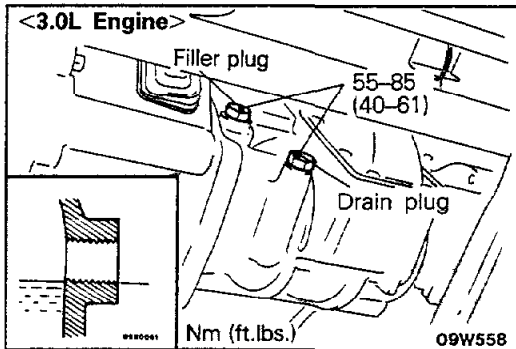
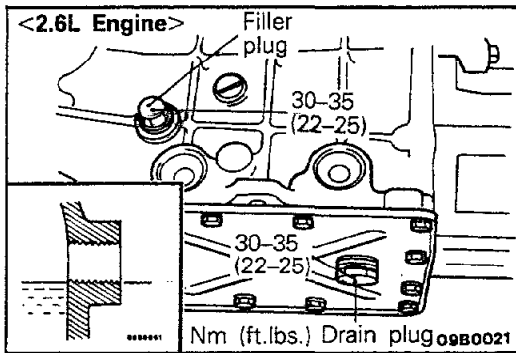


- (4) Clean the oil filter mounting surface of the oil filter bracket.
- (5) Coat engine oil to the O-ring of new oil filter.
- (6) Turn the oil filter by hand to install to the block.

NOTE

The oil filter tightening torque is 11-13 Nm (8-10 ft.lbs.)

- (7) Supply engine oil.
- (8) Start and run engine and check for engine oil leaks.
- (9) After stopping engine, check oil level and replenish as necessary.



MANUAL TRANSMISSION (Check oil level) N00SBCC

Inspect each component for evidence of leakage, and check the oil level by remaining the filler plug. If the oil is contaminated, it is necessary to replace it with new oil.

INSPECTION

- With the vehicle on a level surface, remove the filler plug and check whether or not the oil is at the same level as the bottom of the threads.
- Check whether or not the transmission oil is excessively dirty, and if the viscosity is normal.

REPLACING TRANSMISSION OIL

1. Remove the drain plug and drain the transmission oil.
2. Replace the gasket with a new one and tighten the drain plug.
3. Apply a coating of sealant to the threaded part when installing the drain plug and the filler plug of the transmission of models with the 3.0L engine.

Specified sealant: Three Bond 1105D or equivalent

4. Fill with new oil through the filler plug until the oil level reaches the plug hole.

Manual transmission oil capacity :

<2.6L Engine>	2.2 liters (4.7 pints)
<3.0L Engine>	2.5 liters (5.3 pints)

AUTOMATIC TRANSMISSION (Check fluid level) N00SBDG

Check the fluid level by removing the fluid level gauge. If the fluid is contaminated, it is necessary to replace it with new fluid.

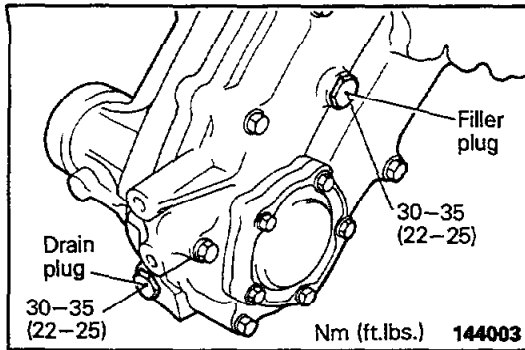
1. Place the vehicle on a level surface.
2. Wipe the area around the oil dipstick to remove accumulated dirt and then pull out the oil dipstick.
3. Set the selector lever to the "P" (Park) position and apply the parking brake. Next, start the engine.
4. Check if the engine idle speed and fluid operating temperature (50–80°C; 122–176°F) are normal.
5. Move the selector lever to each position in turn to fill the torque converter and hydraulic system with fluid and then return the selector lever to the "N" (Neutral) position.
6. Make sure the fluid level is in the "HOT" range of the oil dipstick. If the fluid level is low, add fluid until it reaches the "HOT" range.

REPLACEMENT OF AUTOMATIC TRANSMISSION FLUID

Drain the fluid and check whether there is any evidence of contamination.

Replenish with new fluid after the cause of any contamination has been corrected.

1. Place a large flat container beneath the drain plug.
2. Remove the drain plug and drain the fluid.
3. Replace the gasket with a new one and tighten the drain plug.
4. Pour 5 liters (10.6 pints) of specified ATF into case through dipstick hole. [Total quantity of ATF required is approx. 7 liters (14.8 pints). Actually however, approx. 5.5 liters (11.6 pints) of fluid can be replaced because rest of fluid remains in torque converter.]



**Specified fluid : Automatic transmission fluid
DEXRON type**

5. Check the fluid level.

TRANSFER CASE (Change oil)

N00SBNB_a

Drain the fluid and check whether there is any evidence of contamination. Replenish with new fluid after the cause of any contamination has been corrected.

1. With the vehicle on a flat, level surface, drain out the transfer case oil.
2. Replace the packing with a new one, and close the drain plug.
3. Supply new transfer case oil through the filler plug until it reaches the same level as the plug hole.

Transfer case oil total capacity : 2.2 liters (4.7 pints)

ENGINE COOLANT

N00SBEE

Check the cooling system parts such as radiator, heater and oil cooler hoses thermostat and connections for leakage and damage.

CHANGING COOLANT

1. Set the temperature control lever to the hot position.
2. Remove the radiator cap, radiator drain plug and engine drain plug to drain the coolant.

Caution

When removing the radiator cap, use care to avoid contact with hot coolant or steam. Place a shop towel over the cap and turn the cap counterclockwise a little to let pressure escape through the vinyl tube. After relieving the steam pressure, remove the cap by slowly turning it counterclockwise.

3. Remove the reserve tank and drain the coolant.
4. After draining coolant completely, reinstall the drain plugs and flush the engine and radiator using a radiator cleaning fluid.
5. After the flushing is completed, completely drain the cleaning fluid and install the radiator and engine drain plugs.
6. By referring to the section on coolant (P.O-xx), select an appropriate concentration for safe operating temperature within the range of 30 to 60%. Refill the system with a high quality ethylene glycol antifreeze at the selected concentration. A convenient mixture is a 50% water and 50% antifreeze solution [Freezing point: -36°C (-32.8°F)]. Reinstall the radiator cap.

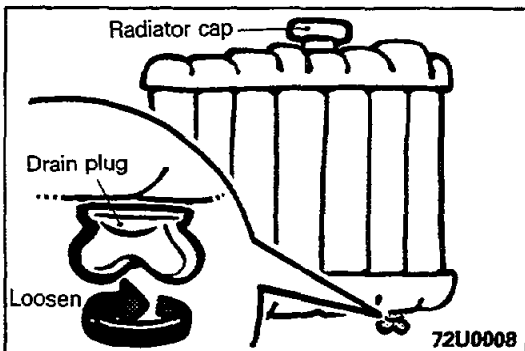
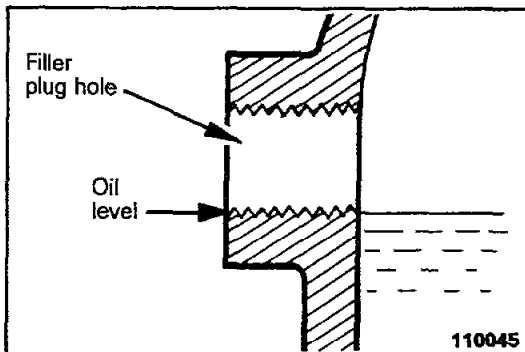
Engine coolant total capacity

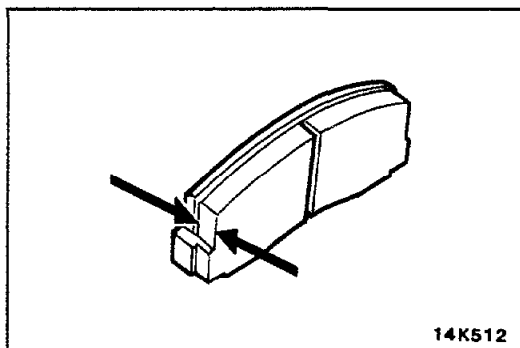
(including heater and coolant reserve tank)

<2.6L Engine> **8.0 liters (8-1/2 qts.)**

<3.0L Engine> **9.1 liters (9-1/2 qts.)**

7. Start the engine and warm it up until the thermostat opens.
8. After repeating the engine racing up to 3,000 rpm several times, stop the engine.





9. Remove the radiator cap after the engine has gotten cold, and pour in coolant up to the entrance for water supplying.
10. Add coolant to the reserve tank between the "FULL" and "LOW" mark if necessary.

Caution

Do not overfill the reserve tank.

FRONT DISC BRAKE PADS (Inspect for wear)

N00SBFA*

Check for fluid contamination and wear. Replace complete set of pads if defective.

Thickness of lining (A)

Limit: 2.0 mm (.079 in.)

Caution

The pads for the right and left wheels should be replaced at the same time. Never "split" or intermix brake pad sets. All four pads must be replaced as a complete set.

REAR DRUM BRAKE LININGS AND REAR WHEEL CYLINDERS (Inspect for wear and leaks)

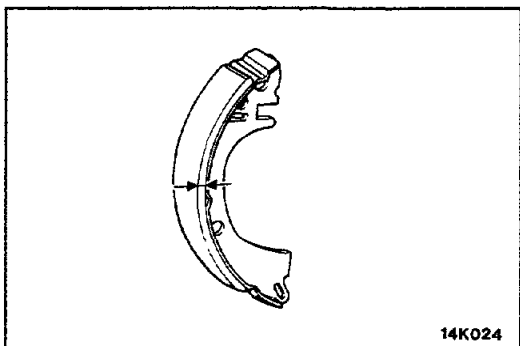
N00SBGCh

1. Remove the brake drum and check the thickness of brake shoe lining for wear. Check the automatic brake adjusting system by hand to see if it operates smoothly. Also see if the gears are in proper mesh with each other. To assure smooth functioning, apply a very thin coat of multipurpose grease to the friction surface of adjuster and link shaft.
2. Inspect the wheel cylinder boots for evidence of a brake fluid leak. Visually check the boots for cuts, tears or heat cracks. (A slight amount of fluid on the boot may not be a leak, but may be preservative fluid used at assembly.)

(1) Checking the Brake Shoes for Wear.

Thickness of lining (B)

Limit: 1.0 mm (.039 in.)

**BRAKE HOSES (Check for deterioration or leaks)**

N00SBHA

Inspection of brake hoses and tubing should be included in all brake service operations.

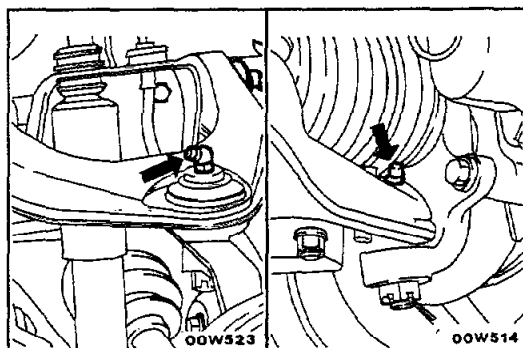
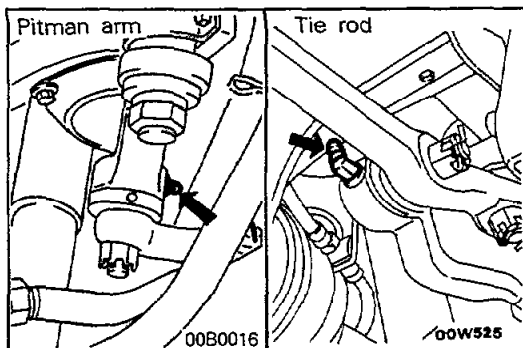
The hoses should be checked for:

1. Correct length, severe surface cracking, pulling, scuffing or worn spots. (If the fabric casing of the hoses is exposed by cracks or abrasion in the rubber hose cover, the hoses should be replaced. Eventual deterioration of hose may occur with possible bursting failure.)
2. Faulty installation, casing twisting or interference with wheel, tire or chassis.

BALL JOINT AND STEERING LINKAGE SEALS (Inspect for grease leaks and damage)

N00SBJA

1. These components, which are permanently lubricated at the factory, do not require periodic lubrication. Damaged seals and boots should be replaced to prevent leakage or contamination of the grease.
2. Inspect the dust cover and boots for proper sealing, leakage and damage. Replace them if defective.



DRIVE SHAFT BOOTS (Inspect for grease leaks and damage)

N00SBJAb

1. These components, which are permanently lubricated at the factory, do not require periodic lubrication. Damaged seals and boots should be replaced to prevent leakage or contamination of the grease.
2. Inspect the dust cover and boots for proper sealing, leakage and damage. Replace them if defective.

BALL JOINTS WITH GREASE FITTING (Lubricate grease)

N00SBOBb

Fill the multipurpose grease at the grease fitting till the grease come out of the dust seal of the pitman arm, tie rod, lower control arm and upper control arm.

FRONT WHEEL BEARINGS (Lubricate grease)

N00SBKDc

Inspect for evidence of grease leakage around the hub cap and the back of the hub. If there is leakage of grease, remove the hub and inspect its oil seal for damage. Clean the grease off the hub and bearing and repack with new multipurpose grease.

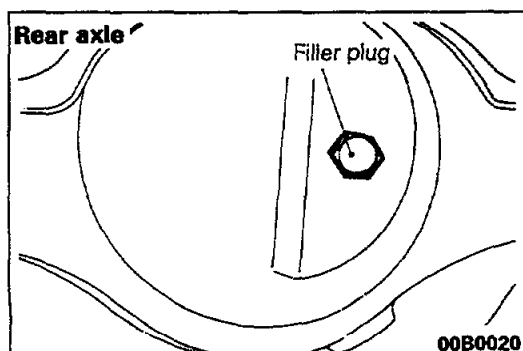
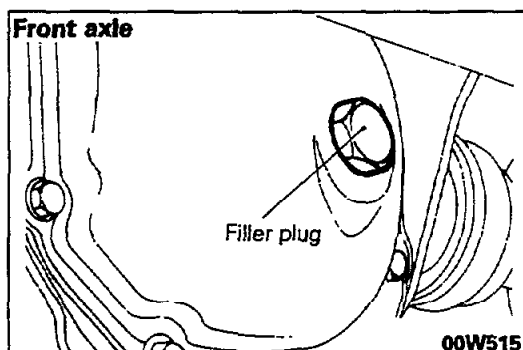
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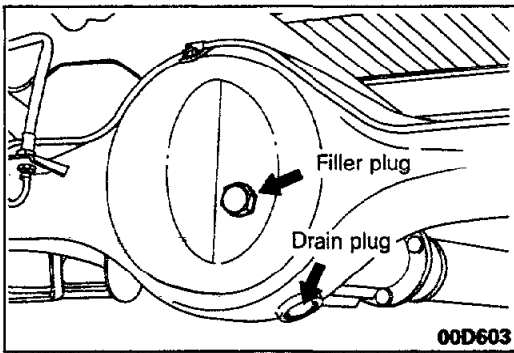
Refer to GROUP 2–Axle Hub and Freewheeling Hub, for the removal procedures of the front hub.

FRONT AXLE AND REAR AXLE (CONVENTIONAL DIFFERENTIAL (Inspect oil level)

N00SBPA

Remove the filler plug and inspect the oil level at bottom of filler hole. If the oil level is slightly below the filler hole, it is in satisfactory condition.





REAR AXLE OIL (LIMITED-SLIP DIFFERENTIAL) (Change) N00SBQA*

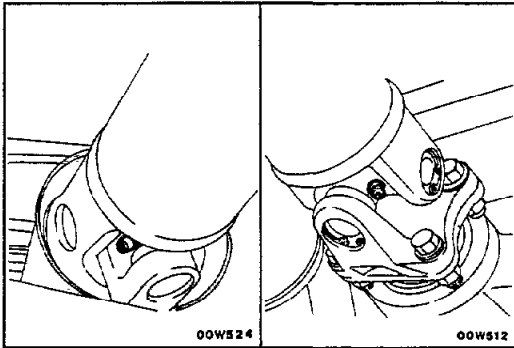
Before changing the rear axle oil, check to make sure that there is no oil leakage from the rear axle housing. Remove the drain plug and drain out of the oil. Put the oil plug back in place, and then pour new oil in through the filler hole.

Oil capacity :

<2.6L Engine>	1.8 liters (3.8 pints)
<3.0L Engine>	2.6 liters (5.5 pints)

PROPELLER SHAFT JOINTS (Lubricate grease) N00SBRB*

Lubricate grease to the propeller shaft joints. The propeller shaft joints should be repacked with multipurpose grease.



EXHAUST SYSTEM (CONNECTION PORTION OF MUFFLER, PIPINGS AND CONVERTER HEAT SHIELDS) (Check and service as required) N00SBLA*

1. Check for holes and gas leaks due to damage, corrosion, etc.
2. Check the joints and connections for looseness and gas leaks.
3. Check the hanger rubber and brackets for damage.