
COOLING

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E14AA--

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SPECIFICATIONS

GENERAL SPECIFICATIONS

E14CA-

Items	Specifications
Cooling method	Water-cooled pressurized, forced circulation with electrical fan
Radiator	
Type	Pressurized corrugated fin type
Performance	J/h (kcal/h, BTU/h) 211,814 × 10 ³ (50,600, 200,793)
Radiator cap	
High pressure valve opening pressure	kPa (kg/cm ² , psi) 75–105 (0.75–1.05, 11–15)
Vacuum valve opening pressure	kPa (kg/cm ² , psi) –5 (–0.05, –0.7) or less
Automatic transmission oil cooler <Vehicles with A/T>	
Performance	J/h (kcal/h, BTU/h) 7,116 × 10 ³ (1,700, 6,746)
Thermostat	
Type	Wax pellet type with jiggle valve
Water pump	
Type	Impeller of centrifugal type

SERVICE SPECIFICATIONS

E14CB-

Items	Specifications
Standard value	
Range of coolant antifreeze concentration	% 30–60
Thermostat	
<DOHC>	
Valve opening temperature of thermostat	°C (°F) 82 (180)
Full-opening temperature of thermostat	°C (°F) 95 (203) or more
<SOHC>	
Valve opening temperature of thermostat	°C (°F) 88 (190)
Full-opening temperature of thermostat	°C (°F) 100 (212) or more
Engine coolant temperature switch (on radiator)	
<For low temperature>	
Opening temperature	OFF → ON °C (°F) ON → OFF °C (°F) 82–88 (180–190) 78 (172) or less
<For high temperature>	
Opening temperature	OFF → ON °C (°F) ON → OFF °C (°F) 96–104 (205–219) 92 (198) or less
Resistor	
Resistance	Ω 0.26–0.32

LUBRICANTS

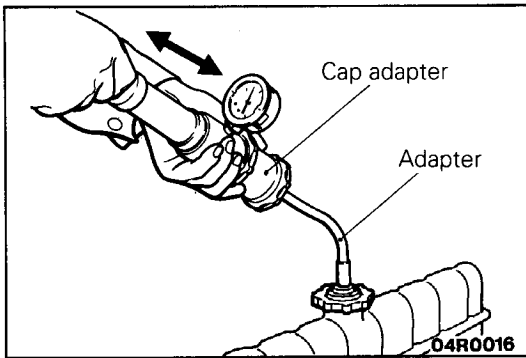
E14CD--

Items	Quantity		
	lit.	U.S.qts.	Imp.qts.
Engine coolant HIGH QUALITY ETHYLENE GLYCOL ANTIFREEZE COOLANT	8.0	8.5	7.0

SEALANT

E14CE--

Items	Specified sealant	Remarks
Cylinder block drain plug	3M Nut Locking Part No. 4171 or equivalent	Drying sealant



SERVICE ADJUSTMENT PROCEDURES

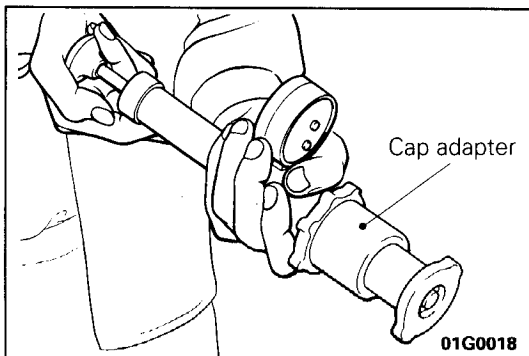
E14FAAAa

COOLANT LEAK CHECKING

1. Confirm that the engine coolant lever is up to the filler neck. Install an adapter and cap adapter to the water outlet fitting and apply 160 kPa (23 psi) pressure. Hold pressure for two minutes, while checking for leakage from the radiator, hose of connections.

Caution

1. **Be sure to completely clean away any moisture from the places checked.**
 2. **When the tester is taken out, be careful not to spill any coolant from it.**
 3. **Be careful, when installing and removing the tester and when testing, not to deform the filler neck of the radiator.**
2. If there is leakage, repair or replace the appropriate part.



RADIATOR CAP VALVE OPENING PRESSURE CHECKING

E14FBADa

1. Use a cap adapter to attach the cap to the tester.
2. Increase the pressure until the indicator of the gauge stops moving.

Limit: 65 kPa (0.65 kg/cm², 9.2 psi)

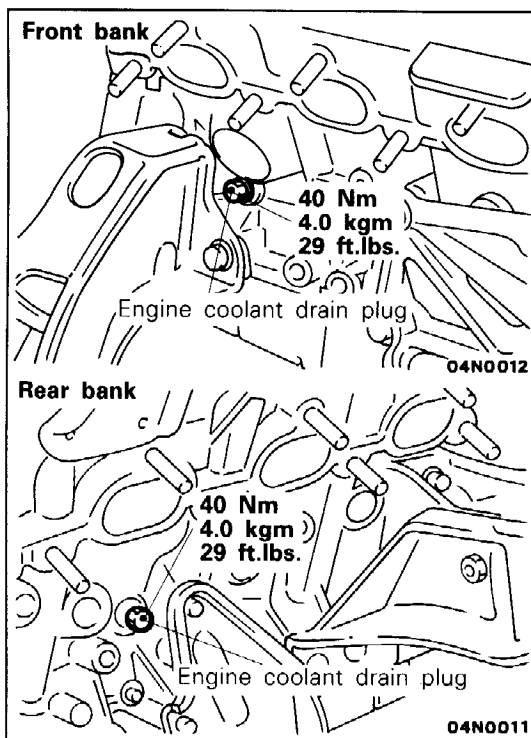
Standard value: 75–105 kPa

(0.75–1.05 kg/cm², 11–15 psi)

3. Replace the radiator cap if the reading does not remain at or above the limit.

NOTE

Be sure that the cap is clean before testing, since rust or other foreign material on the cap seal will cause an improper indication.



COOLANT REPLACEMENT

E14FCAR

1. Drain the engine coolant by removing the drain plug and then the radiator cap.
2. Pull out the exhaust manifold heat protectors from the front bank (DOHC only) and the rear bank.
3. Remove the drain plug from the front and rear bank sides of the cylinder block to drain the engine coolant.
4. Remove the reserve tank to drain the engine coolant.
5. When the engine coolant has drained, pour in water from the radiator cap to clean the engine coolant line.
6. Coat the thread of the cylinder block drain plug with the specified sealant and tighten to the specified torque.

Specified sealant: 3M Nut Locking Part No. 4171 or equivalent

7. Securely tighten the radiator drain plug.
8. Install the reserve tank.

9. Slowly pour the engine coolant into the mouth of the radiator until the radiator is full, and pour also into the reserve tank up to the FULL line.

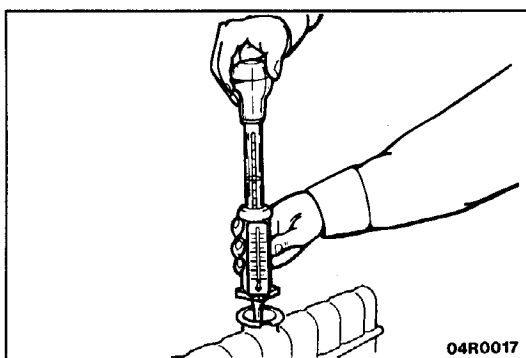
**Recommended antifreeze:
HIGH QUALITY ETHYLENE GLYCOL ANTIFREEZE
COOLANT**

Quantity **lit. (U.S.qts., Imp.qts.)**
8.0 (8.5, 7.0)

NOTE

For Norway, the non-amine type of antifreeze should be used.

10. Install the radiator cap securely.
11. Start the engine and warm the engine until the thermostat opens.
12. After racing the engine several times up to a limit of 3,000 r/min, stop the engine.
13. When engine is cold, remove the radiator cap and once again add engine coolant until the radiator is full, and also refill the reserve tank up to the FULL line.



CONCENTRATION MEASUREMENT

E14FDAB

Measure the temperature and specific gravity of the engine coolant to check the antifreeze concentration.

Standard value: 30–60 % (allowable concentration range)

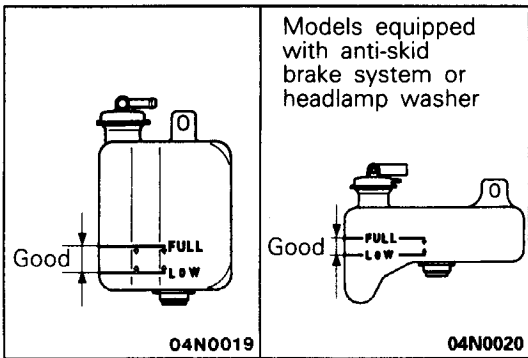
RECOMMENDED ANTIFREEZE

Antifreeze	Allowable concentration
HIGH QUALITY ETHYLENE GLYCOL ANTIFREEZE COOLANT	30–60 %

Caution

If the concentration of the antifreeze is below 30%, the anti-corrosion property will be adversely affected.

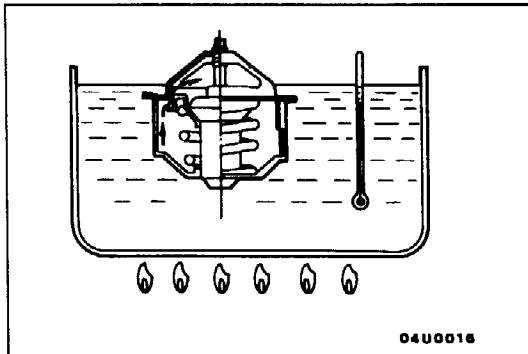
In addition, if the concentration is above 60%, both the anti-freezeing and engine cooling properties will decrease, affecting the engine adversely. For these reasons, be sure to maintain the concentration level within the specified range.



COOLANT INSPECTION

E14FHAA

1. Check that the coolant level in the reserve tank is within FULL and LOW limits.
2. Check for presence of oil in the coolant.



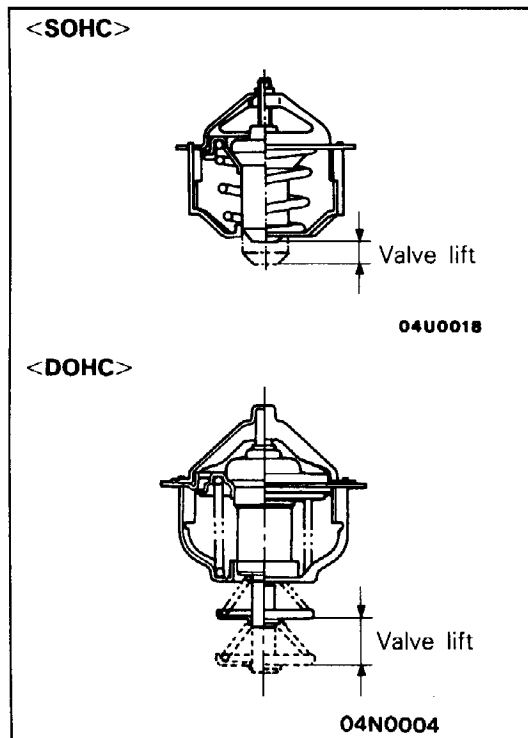
THERMOSTAT CHECKING

E14FIAB

Immerse the thermostat in water, and heat the water while stirring. Check that the thermostat valve opening and fully open temperatures (valve lift when fully open is 8 mm [0.31 in.] or more <SOHC> or 10 mm [0.39 in.] or more <DOHC>) are at standard temperatures.

Standard value

Item	Valve opening temperature °C (°F)	Fully open temperature °C (°F)
<SOHC>	88 (190)	100 (212)
<DOHC>	82 (180)	95 (203)



NOTE

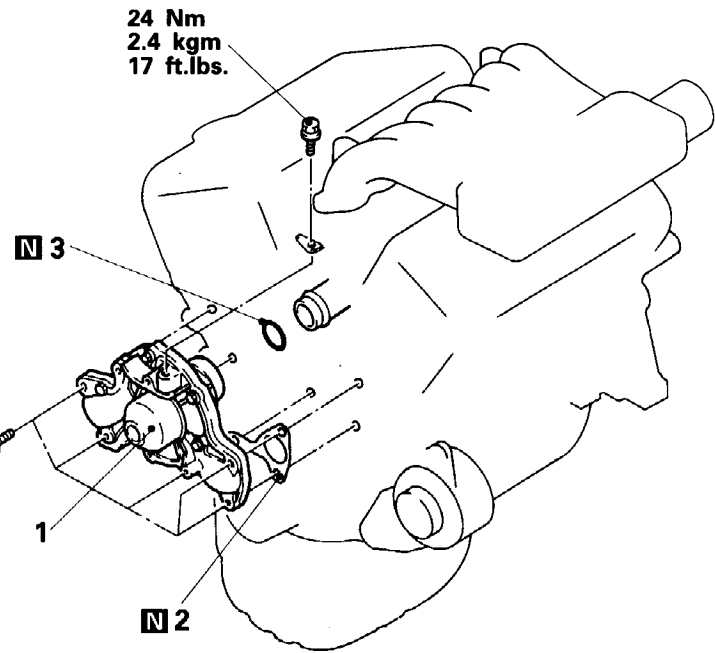
1. Measure valve height when fully closed. Calculate lift by measuring the height when fully open.
2. If valve opens even a little at normal temperature, the thermostat should be replaced.
3. If there is any serious warping, visible damage or breakage, the thermostat should be replaced.
4. Remove any rust or deposits if present.

WATER PUMP

REMOVAL AND INSTALLATION

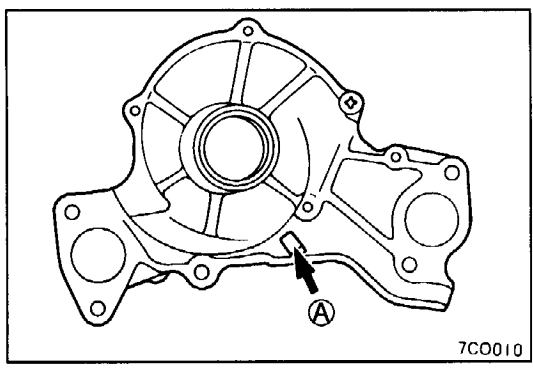
Pre-removal and Post-installation Operation

- Draining and Adding of Engine Coolant
- Removal and Installation of Timing Belt (Refer to GROUP 11 – Timing Belt.)



- Removal steps**
- ➡➡ 1. Water pump
 - ➡➡ 2. Gasket
 - ➡➡ 3. O-ring

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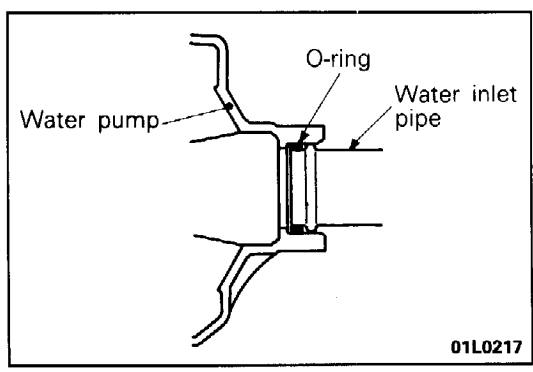
INSPECTION

WATER PUMP

E14MCAO

If any of the following irregularities are observed, replace the water pump as an assembly.

- (1) Damage or crack on the water pump body.
- (2) Water leakage. With improper sealing, a water leakage mark may be observed around hole (A).



SERVICE POINTS OF INSTALLATION

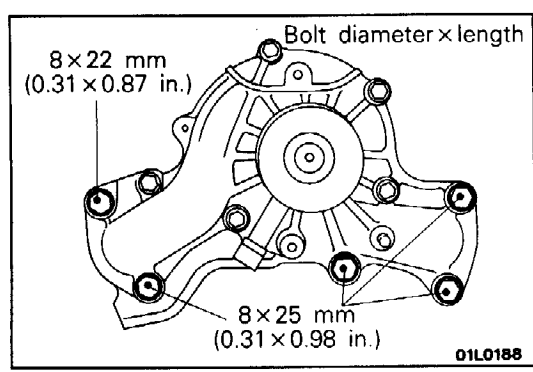
E14MDBB

3. INSTALLATION OF O-RING

Insert the O-ring to the water inlet pipe, and coat the outer circumference of the O-ring with water.

Caution

Care must be taken not to permit engine oil or other greases to adhere to the O-ring.



1. INSTALLATION OF WATER PUMP <DOHC>

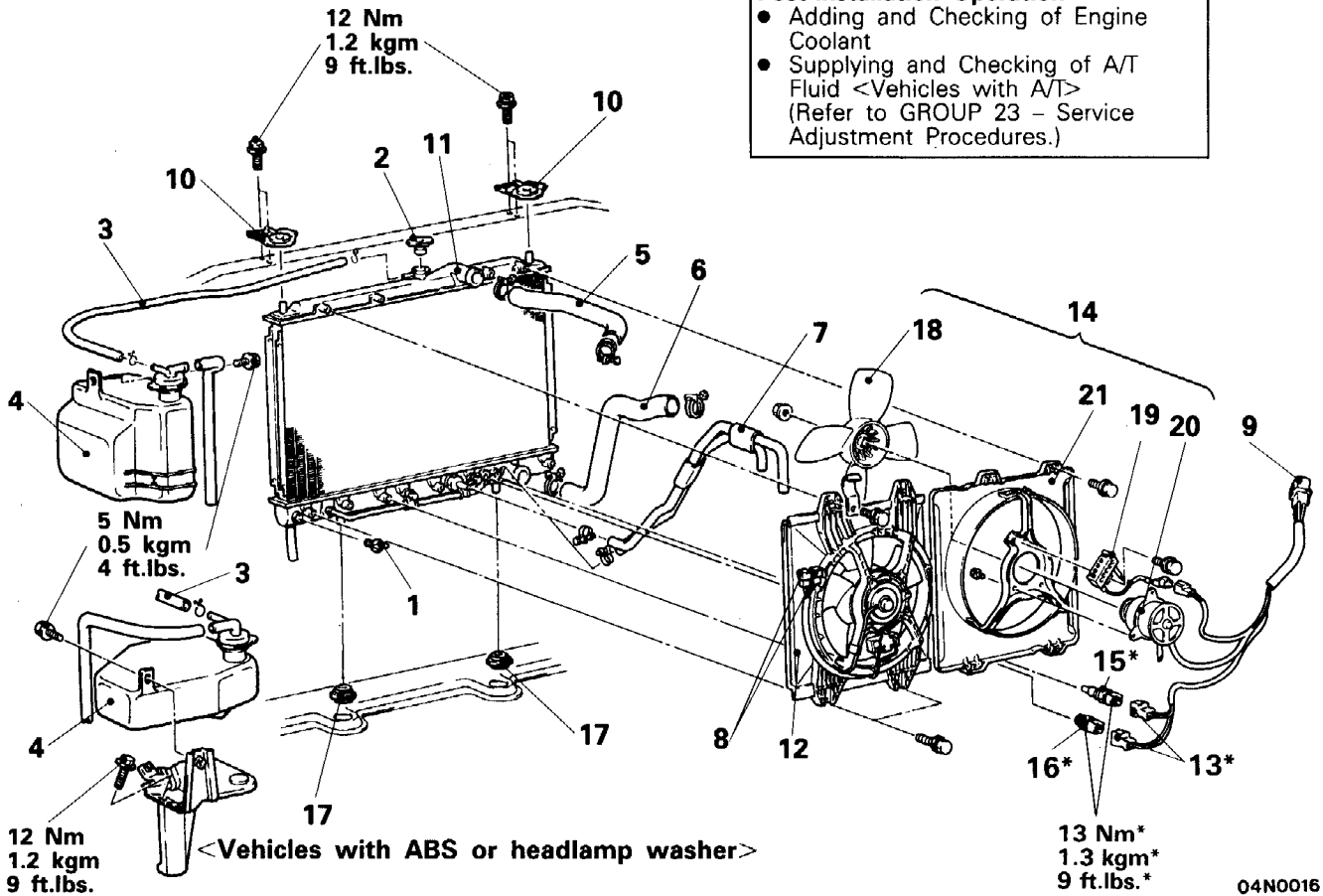
Water pump installation bolt size are different and caution must be paid to ensure that they are properly installed.

RADIATOR

REMOVAL AND INSTALLATION

Pre-removal Operation
 ● Draining of Engine Coolant

Post-installation Operation
 ● Adding and Checking of Engine Coolant
 ● Supplying and Checking of A/T Fluid <Vehicles with A/T> (Refer to GROUP 23 – Service Adjustment Procedures.)



04N0016

Radiator removal steps

1. Drain plug
2. Radiator cap
3. Overflow tube
4. Reserve tank
5. Radiator upper hose
6. Radiator lower hose
7. Transmission fluid cooler hose (radiator side) <Vehicles with A/T>
8. Condenser fan connector <Vehicles with air conditioner>
9. Radiator fan connector
10. Upper insulator
11. Radiator assembly
12. Condenser fan motor assembly <Vehicles with air conditioner>
13. Engine coolant temperature switch connector*
14. Radiator fan motor assembly
15. Engine coolant temperature switch (LO)*
16. Engine coolant temperature switch (HI)*
17. Lower insulator
18. Fan
19. Resistor
20. Radiator fan motor
21. Shroud

Radiator fan motor removal steps

1. Drain plug
2. Radiator cap
5. Radiator upper hose
8. Condenser fan connector <Vehicles with air conditioner>
9. Radiator fan connector
12. Condenser fan motor assembly <Vehicles with air conditioner>
13. Engine coolant temperature switch connector*
14. Radiator fan motor assembly
18. Fan
19. Resistor
20. Radiator fan motor
21. Shroud

NOTE

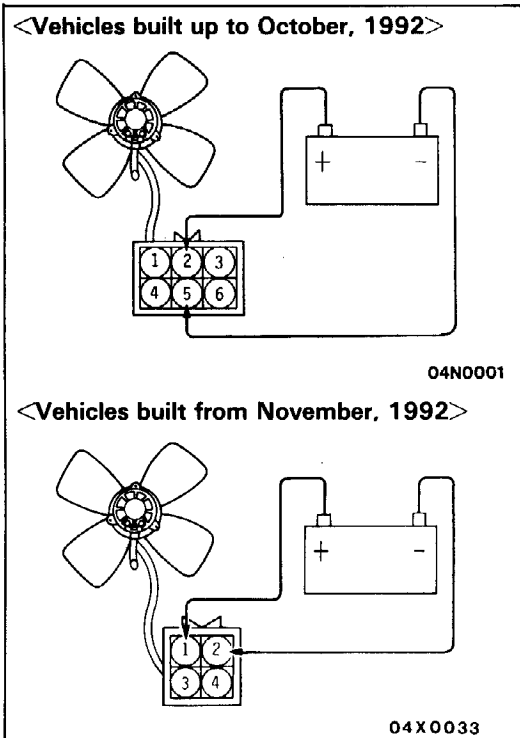
* : Vehicles built up to October, 1992

SERVICE POINTS OF REMOVAL

E14QBAK

7. DISCONNECTION OF AUTOMATIC TRANSMISSION OIL COOLER HOSES

Use a plug or otherwise cover the hose and nipple part of the radiator so that dust, dirt, foreign materials, etc. do not enter after the hose has been disconnected from the radiator.

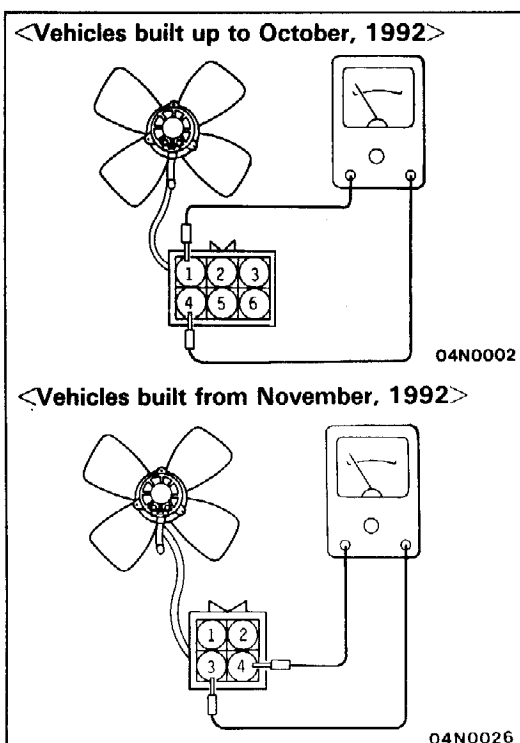
**INSPECTION**

E14QCA6

- Check for foreign material between radiator fins.
- Check the radiator fins for bent, or damage.
- Check the radiator for corrosion, damage, rust or scale.
- Check the radiator hoses for cracks, damage or deterioration.
- Check the reserve tank for damage.
- Check the automatic transmission oil cooler hoses for cracking, damage or deterioration.

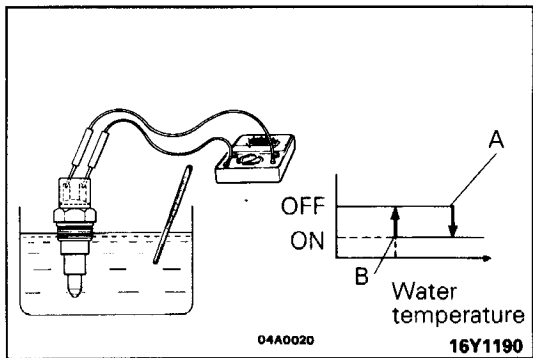
RADIATOR FAN MOTOR INSPECTION

- (1) Check to be sure that the radiator fan rotates when battery voltage is applied between terminals (as shown in the figure).
- (2) Check to see that abnormal noises are not produced, while motor is turning.

**RESISTOR INSPECTION**

- (1) Remove the radiator fan motor connector.
- (2) Measure the resistance between the terminals (as shown in the figure).
- (3) The condition can be considered to be satisfactory if the measured resistance value is within the following range.

Resistance value: 0.26 – 0.32 Ω

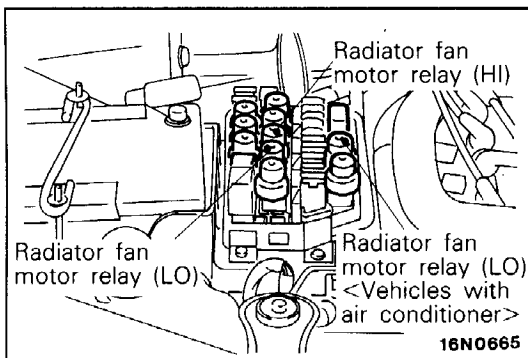


ENGINE COOLANT TEMPERATURE SWITCH INSPECTION

<Vehicles built up to October, 1992>

- (1) Dip the engine coolant temperature switch into the warm water or engine oil, as shown in the diagram.
- (2) Check the continuity at the specified temperature using a circuit tester, etc., and if it is within the following ranges, it can be considered satisfactory.

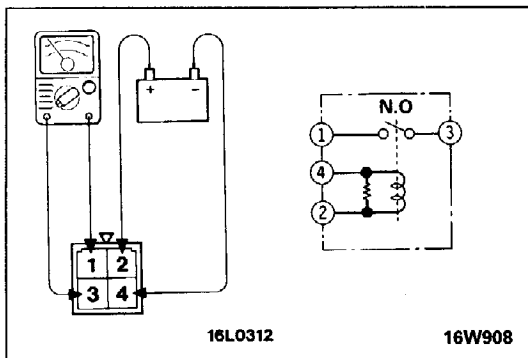
Item	Engine coolant temperature switch (HI)	Engine coolant temperature switch (LO)
Continuity (temperature at point A)	96–104°C or higher (205–219°F or higher)	82–88°C or higher (180–190°F or higher)
No continuity (temperature at point B)	92°C or lower (198°F or lower)	78°C or lower (172°F or lower)



RADIATOR FAN MOTOR RELAY INSPECTION

- (1) Remove the radiator fan motor relay HI and LO from the relay box inside the engine compartment.

- (2) Check that there is continuity between terminals when applying battery power to terminal ② and terminal ④ is earthed or when there is no current flowing.



Current	Between terminals 1 and 3	Continuity
No current	Between terminals 1 and 3	No continuity
	Between terminals 2 and 4	Continuity