






COOLING SYSTEM

PREPARATION

SST (SPECIAL SERVICE TOOLS)

	09230-01010 Radiator Service Tool Set	
	09231-14010 Punch	2JZ-GE only (Aluminum type)

RECOMMENDED TOOLS

	09040-00010 Hexagon Wrench Set ◆	
	09082-00050 TOYOTA Electrical Tester Set ◆	
	09258-00030 Hose Plug Set ◆	

EQUIPMENT

Radiator cap tester	
Heater	Thermostat ECT switch (2JZ-GTE)
Thermometer	Thermostat ECT switch (2JZ-GTE)
Torque wrench	

COOLANT

Item	Capacity	Classification
Engine coolant (w/ Heater)		Ethylene-glycol base
2JZ-GE M/T	7.3 liters (7.7 US qts, 6.4 Imp. qts)	
A/T	8.3 liters (8.8 US qts, 7.3 Imp. qts)	
2JZ-GTE M/T	9.5 liters (10.0 US qts, 8.4 Imp. qts)	
A/T	9.4 liters (9.9 US qts, 8.3 Imp. qts)	

COOLANT CHECK

1. CHECK ENGINE COOLANT LEVEL AT RADIATOR RESERVOIR

The engine coolant level should be between the "LOW" and "FULL" lines.

If low, check for leaks and add engine coolant up to the "FULL" line.

2. CHECK ENGINE COOLANT QUALITY

(a) Remove the radiator cap.

CAUTION: To avoid the danger of being burned, do not remove the radiator cap while the engine and radiator are still hot, as fluid and steam can be blown out under pressure.

(b) There should not be any excessive deposits of rust or scale around the radiator cap or radiator filler hole, and the coolant should be free from oil.

If excessively dirty, replace the coolant.

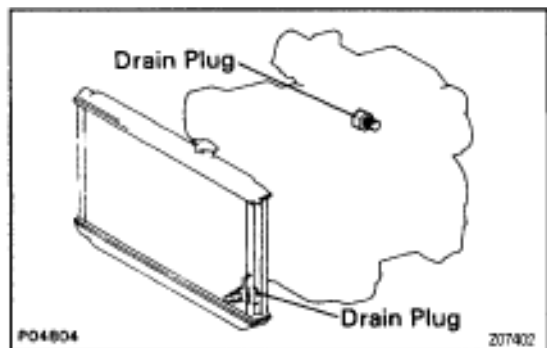
(c) Reinstall the radiator cap.

COOLANT REPLACEMENT

1. DRAIN ENGINE COOLANT

- (a) Remove the radiator cap.

CAUTION: To avoid the danger of being burned, do not remove the radiator cap while the engine and radiator are still hot, as fluid and steam can be blown out under pressure.



- (b) Loosen the 2 drain plugs (for the engine and radiator), and drain the coolant.

- (c) Close the drain plugs.

Torque:

Engine drain plug

29 N·m (300 kgf·cm, 22 ft·lbf)

2. FILL ENGINE COOLANT

- (a) Slowly fill the system with coolant.

- Use a good brand of ethylene–glycol base coolant and mix it according to the manufacturer's directions.
- Using coolant which includes more than 50 % ethylene–glycol (but not more than 70 %) is recommended.

NOTICE:

- Do not use an alcohol type coolant.
- The coolant should be mixed with demineralized water or distilled water.

Capacity (w/ Heater):

2JZ–GE

M/T

7.3 liters (7.7 US qts, 6.4 Imp. qts)

A/T

8.3 liters (8.8 US qts, 7.3 Imp. qts)

2JZ–GTE

M/T

9.5 liters (10.0 US qts, 8.4 Imp. qts)

A/T

9.4 liters (9.9 US qts, 8.3 Imp. qts)

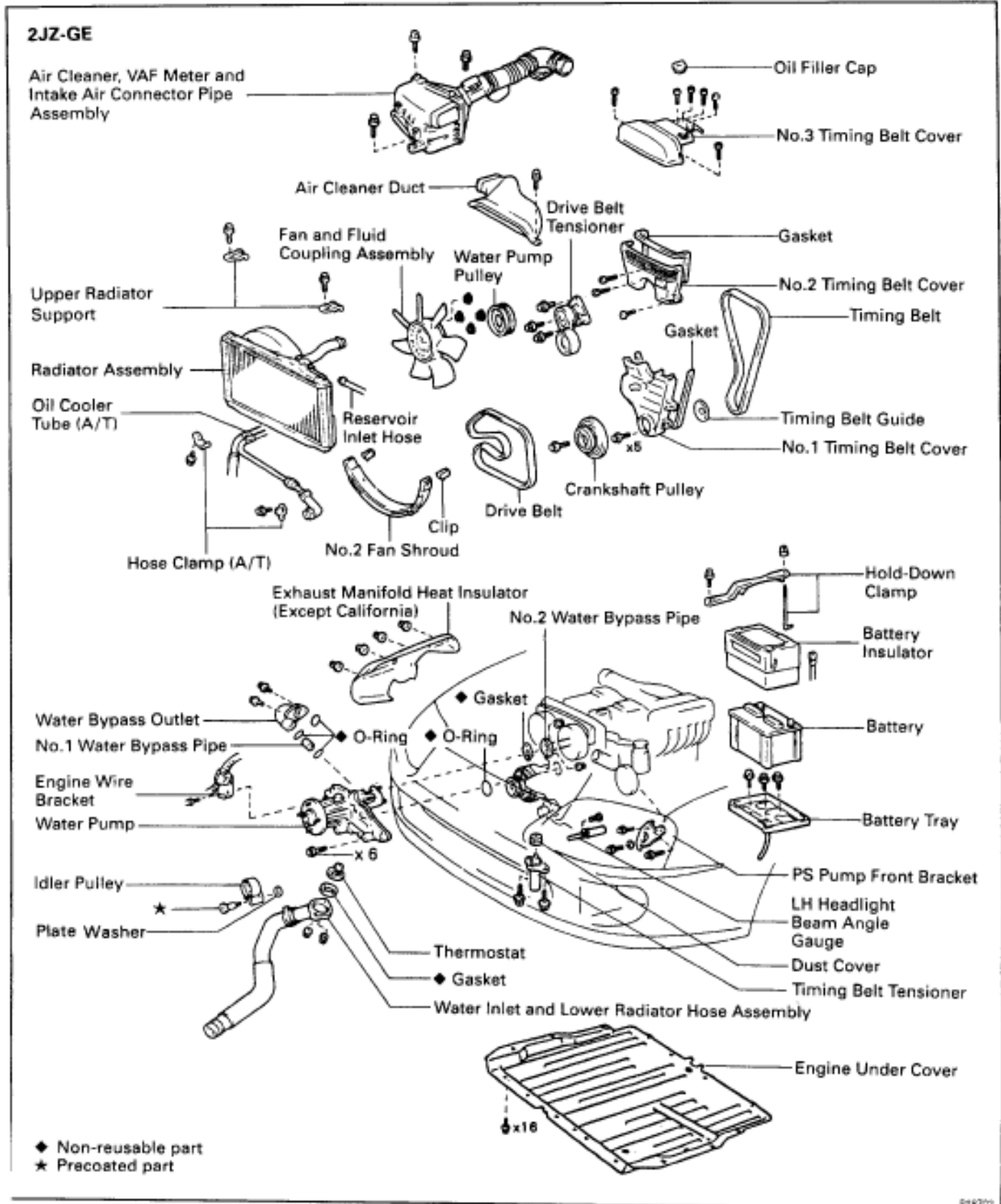
- (b) Install the radiator cap.

- (c) Start the engine, and bleed the cooling system.

- (d) Refill the reservoir with coolant until it reaches the "FULL" line.

3. CHECK ENGINE COOLANT FOR LEAKS

WATER PUMP COMPONENTS FOR REMOVAL AND INSTALLATION



2JZ-GTE

M/T

Drive Belt Tensioner
Drive Belt Tension Damper

Air Cleaner and MAF Meter Assembly

No.1 Air Hose

Oil Filter Cap

x10

No.3 Timing Belt Cover

Air Cleaner Duct

Upper Radiator Support

Reservoir Intake Hose

No.5 Air Hose

Radiator Assembly

Drive Belt Tensioner

Oil Cooler Tube (A/T)

Electric Cooling Fan Connector

Gasket

No.2 Timing Belt Cover

ECT Switch Connector

Gasket

Timing Belt

Timing Belt Guide

Hose Clamp (A/T)

Clip

Water Pump Pulley

x5

No.1 Timing Belt Cover

No.2 Fan Shroud

Fan and Fluid Coupling Assembly

Crankshaft Pulley

Turbo Water Hose

Gasket

Drive Belt

No.2 Water Bypass Pipe

Hold-Down Clamp

Water Outlet

Gasket

Battery Insulator

ECT Sensor Gauge Connector

O-Ring

Battery

ECT Sensor Connector

No.3 Turbo Water Hose

Battery Tray

No.1 Water Bypass Pipe

Water Pump

Generator

Tube Clamp (A/T)

Thermostat

LH Headlight Beam Angle Gauge

Idler Pulley

Gasket

Dust Cover

Plate Washer

Timing Belt Tensioner

Water Inlet and Lower Radiator Hose Assembly

No.2 Air Tube

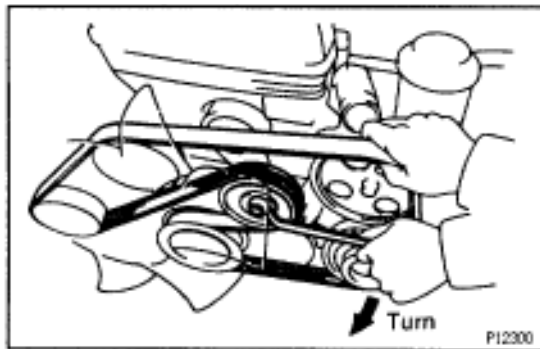
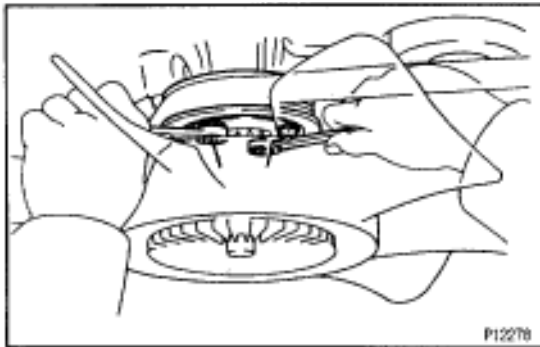
Engine Under Cover

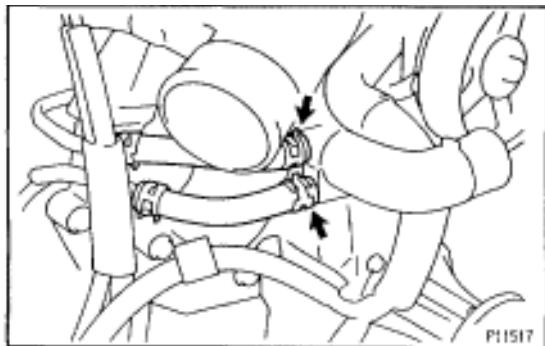
x18

◆ Non-reusable part
★ Precoated part

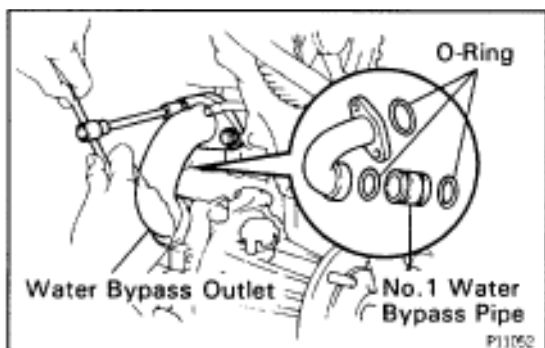
WATER PUMP REMOVAL

1. **2JZ-GTE:**
REMOVE NO.1 AIR HOSE
2. **2JZ-GE:**
REMOVE AIR CLEANER, VAF METER AND INTAKE AIR CONNECTOR PIPE ASSEMBLY
(See step 6 in engine removal in Engine Mechanical)
3. **2JZ-GTE:**
REMOVE AIR CLEANER AND MAF METER ASSEMBLY
(See step 7 in engine removal in Engine Mechanical)
4. **REMOVE RADIATOR ASSEMBLY**
(See radiator removal)
5. **2JZ-GTE M/T:**
REMOVE DRIVE BELT TENSIONER DAMPER
(See step 2 in timing belt removal in Engine Mechanical)
6. **REMOVE DRIVE BELT, FAN, FLUID COUPLING ASSEMBLY AND WATER PUMP PULLEY**
 - (a) Loosen the 4 nuts holding the fluid coupling to the water pump.
 - (b) Loosen the drive belt tension by turning the drive belt tensioner clockwise, and remove the drive belt.
 - (c) Remove the 4 nuts, the fan, fluid coupling assembly and water pump pulley.
7. **REMOVE WATER INLET, LOWER RADIATOR HOSE ASSEMBLY AND THERMOSTAT**
(See step 2 to 4 in thermostat removal)
8. **REMOVE TIMING BELT**
(See steps 4 to 15 in timing belt removal in Engine Mechanical)
9. **2JZ-GTE:**
REMOVE GENERATOR
(See step 6 in generator removal in Charging System)
10. **2JZ-GE Except California:**
REMOVE EXHAUST MANIFOLD HEAT INSULATOR

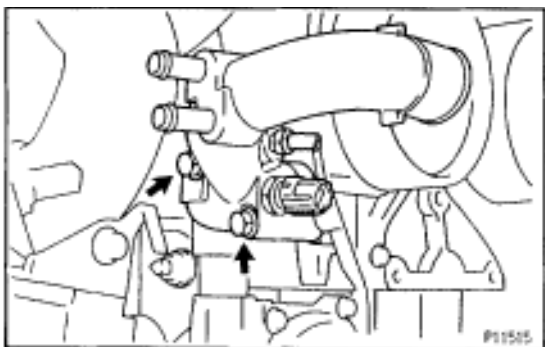




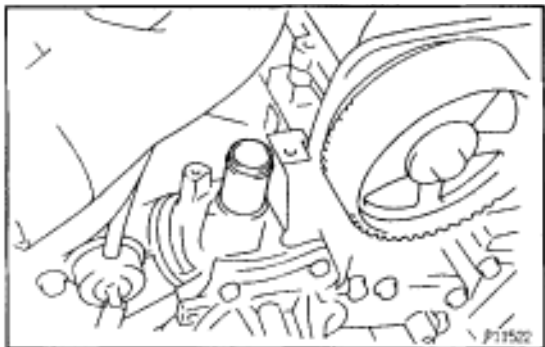
11. **2JZ-GTE:**
DISCONNECT TURBO WATER HOSES FROM WATER OUTLET



12. **2JZ-GE:**
REMOVE WATER BYPASS OUTLET AND NO.1 WATER BYPASS PIPE
- Remove the 2 bolts, water bypass outlet and No.1 water bypass pipe.
 - Remove the 3 O-rings from the water bypass outlet and No.1 water bypass pipe.

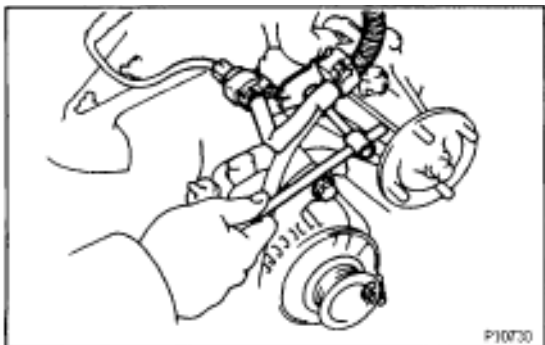


13. **2JZ-GTE:**
REMOVE WATER OUTLET AND NO.1 WATER BYPASS PIPE
- Disconnect the ECT sensor and sender gauge connectors.
 - Remove the 2 bolts, water outlet and gasket.

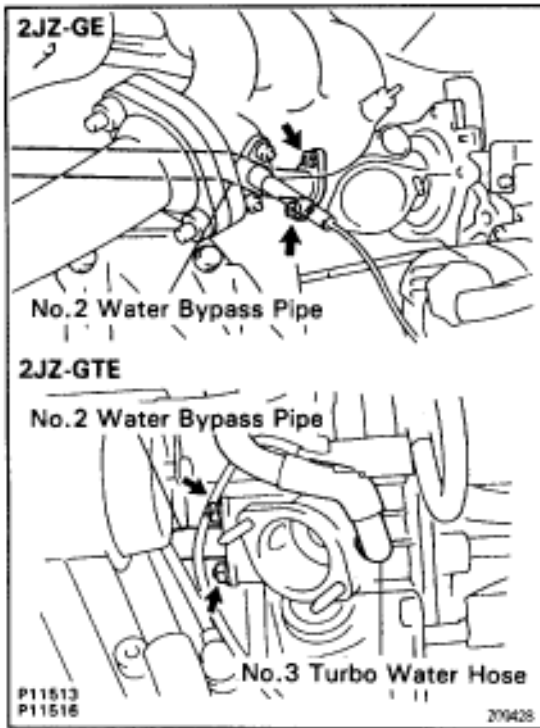


- Remove the No.1 water bypass pipe and 2 O-rings.

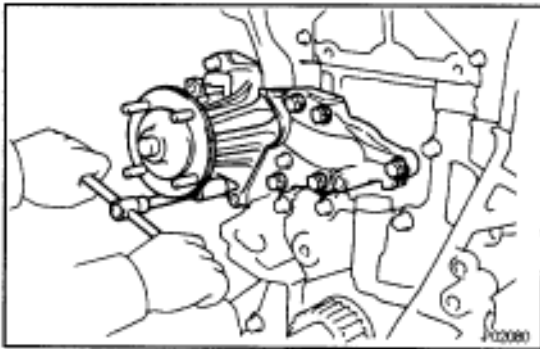
14. **REMOVE IDLER PULLEY**
(See steps 16 in timing belt removal in Engine Mechanical)



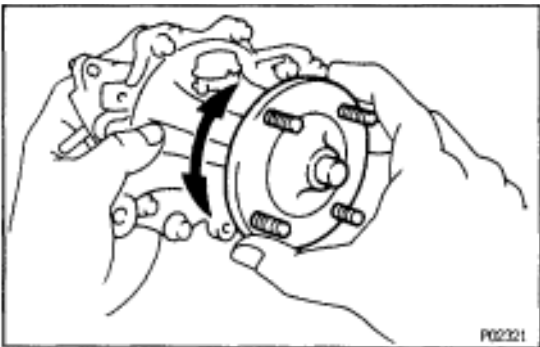
15. **REMOVE WATER PUMP**
- 2JZ-GE:**
Remove the mounting bolt, and disconnect the engine wire bracket.
 - 2JZ-GE:**
Loosen the generator mounting nut.
 - 2JZ-GE:**
Remove the generator mounting bolt, and disconnect the generator from the water pump.



- (d) Remove the 2 nuts, and disconnect the No.2 water bypass pipe from the water pump.
- (e) 2JZ-GTE:
Disconnect the No.3 turbo water hose from the water pump.



- (f) Remove the 6 bolts, water pump and gasket.
- (g) Remove the O-ring from the cylinder block.

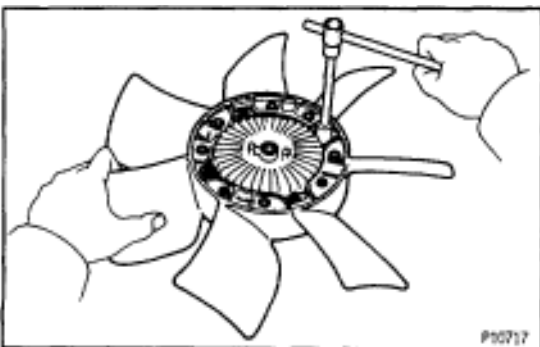


WATER PUMP COMPONENTS INSPECTION

1. INSPECT WATER PUMP

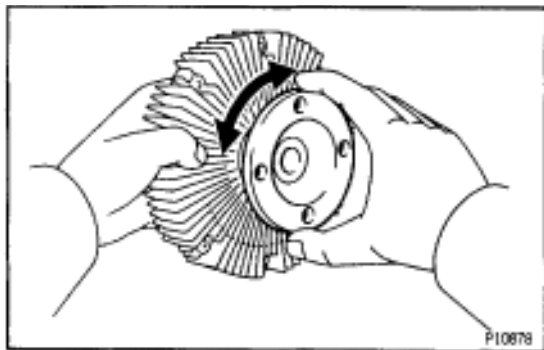
Turn the pulley seat, and check that the water pump bearing is not rough or noisy.

If necessary, replace the water pump.

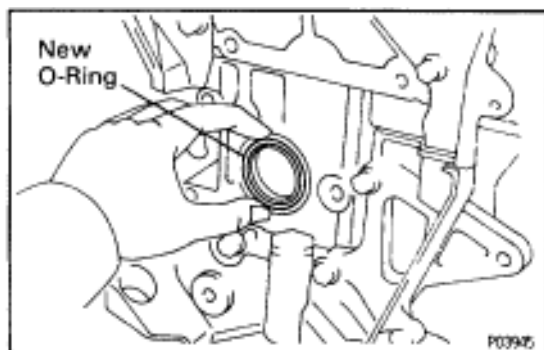


2. INSPECT FLUID COUPLING

- (a) Remove the 4 nuts and fan from the fluid coupling.



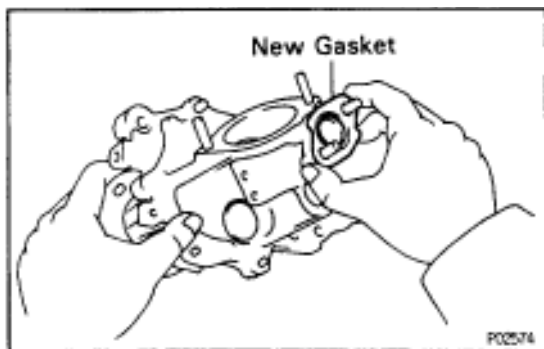
- (b) Check that the fluid coupling is not damaged and that no silicon oil leaks.
If necessary, replace the fluid coupling.
- (c) Reinstall the fan to the fluid coupling with the 4 nuts.
Torque: 7.4 N·m (75 kgf·cm, 65 in·lbf)



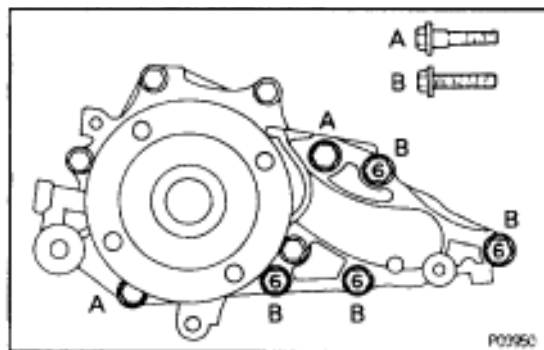
WATER PUMP INSTALLATION

1. INSTALL WATER PUMP

- (a) Install a new O-ring to the cylinder block.

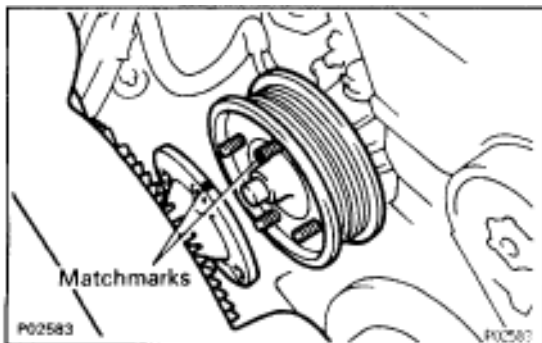


- (b) Install a new gasket to the water pump.
- (c) Connect the water pump to the water bypass pipe. Do not install the nut yet.



- (d) Install the water pump with the 2 bolts (A) and 4 bolts (B).
Torque: 21 N·m (210 kgf·cm, 15 ft·lbf)
HINT: Hand tighten the (A) bolts first.
- (e) Install the 2 nuts holding the No.2 water bypass pipe to the water pump.
Torque: 21 N·m (210 kgf·cm, 15 ft·lbf)
- (f) 2JZ-GTE:
Connect the No.3 turbo water hose to the water pump.
- (g) 2JZ-GE:
Install the generator mounting bolt.
Torque: 37 N·m (380 kgf·cm, 27 ft·lbf)
- (h) 2JZ-GE:
Tighten the generator mounting nut.
Torque: 37 N·m (380 kgf·cm, 27 ft·lbf)
- (i) 2JZ-GE:
Install the engine wire bracket with the bolt.

2. **INSTALL IDLER PULLEY**
(See step 2 in timing belt installation in Engine Mechanical)
3. **2JZ-GTE:**
INSTALL WATER OUTLET AND NO.1 WATER BYPASS PIPE
 - (a) Install 2 new O-rings to the No.1 water bypass pipe.
 - (b) Apply soapy water to the O-rings.
 - (c) Install the No.1 water pass pipe to the water pump.
 - (d) Install a new gasket and the water outlet with the 2 bolts.
Torque: 21 N·m (210 kgf·cm, 15 ft·lbf)
 - (e) Connect the ECT sensor and sender gauge connectors.
4. **2JZ-GE:**
INSTALL WATER BYPASS OUTLET AND NO.1 WATER BYPASS PIPE
 - (a) Install 2 new O-rings to the No.1 water bypass pipe.
 - (b) Install a new O-ring and the water bypass outlet with the 2 bolts.
Torque: 8.8 N·m (90 kgf·cm, 78 in·lbf)
5. **2JZ-GTE:**
CONNECT TURBO WATER HOSES TO WATER OUTLET
6. **2JZ-GE Except California:**
INSTALL EXHAUST MANIFOLD HEAT INSULATOR
7. **2JZ-GTE:**
INSTALL GENERATOR
(See generator installation in Charging System)
8. **INSTALL TIMING BELT**
(See steps 10 to 14 in timing belt installation in Engine Mechanical)
9. **INSTALL WATER INLET AND LOWER RADIATOR HOSE ASSEMBLY**
(See thermostat installation)

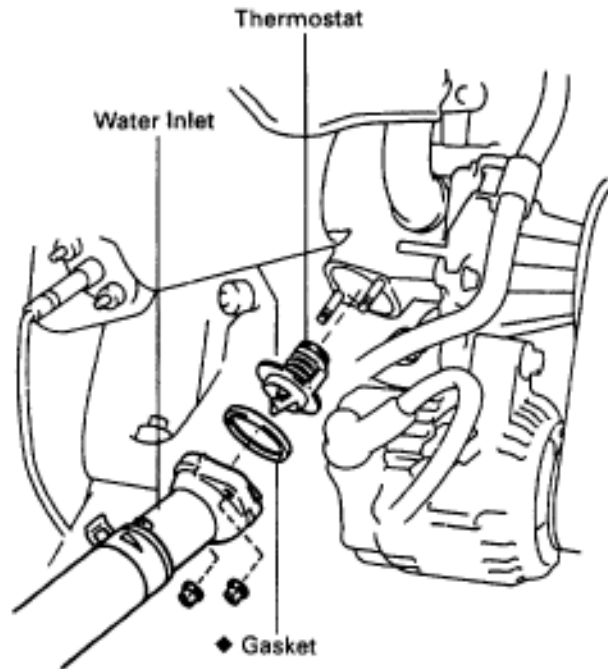


10. **INSTALL WATER PUMP PULLEY, FAN, FLUID COUPLING ASSEMBLY AND DRIVE BELT**
 - (a) Align the matchmarks, and install the water pump pulley, the fan and fluid coupling assembly with the 4 nuts.
 - (b) Install the drive belt by turning the drive belt tensioner clockwise.
 - (c) Stretch the belt tight, and tighten the 4 nuts.
Torque: 16 N·m (165 kgf·cm, 12 ft·lbf)

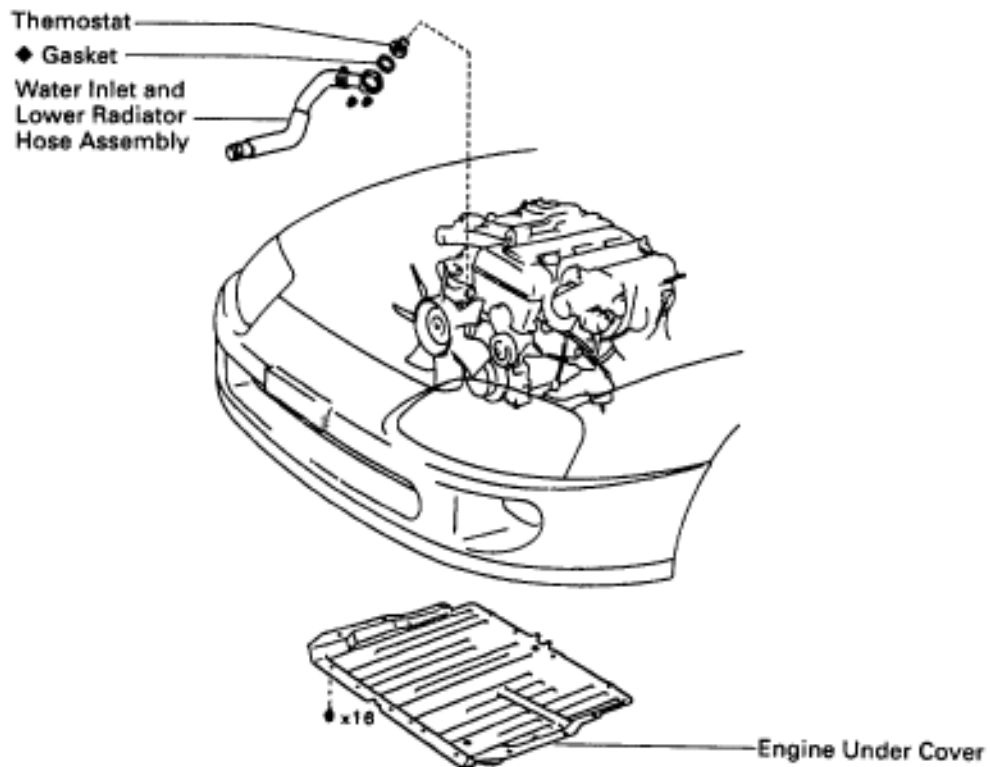
11. **2JZ-GTE M/T:**
INSTALL DRIVE BELT TENSIONER DAMPER
12. **INSTALL RADIATOR ASSEMBLY**
(See radiator installation)
13. **2JZ-GE:**
INSTALL AIR CLEANER, VAF METER AND INTAKE AIR CONNECTOR PIPE ASSEMBLY
14. **2JZ-GTE:**
INSTALL AIR CLEANER AND MAF METER ASSEMBLY
15. **2JZ-GTE:**
INSTALL NO.1 AIR HOSE
16. **ROAD TEST VEHICLE**
Check for abnormal noise, shock, slippage, correct shift points and smooth operation.

THERMOSTAT COMPONENTS FOR REMOVAL AND INSTALLATION

2JZ-GE



2JZ-GTE



◆ Non-reusable part

THERMOSTAT REMOVAL

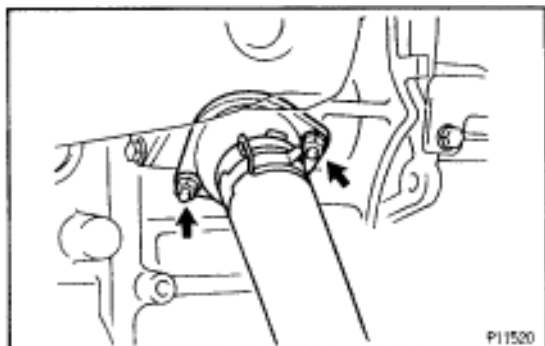
HINT: Removal of the thermostat would have an adverse effect, causing a lowering of cooling efficiency.

Do not remove the thermostat, even if the engine tends to overheat.

1. 2JZ-GTE:

REMOVE ENGINE UNDER COVER

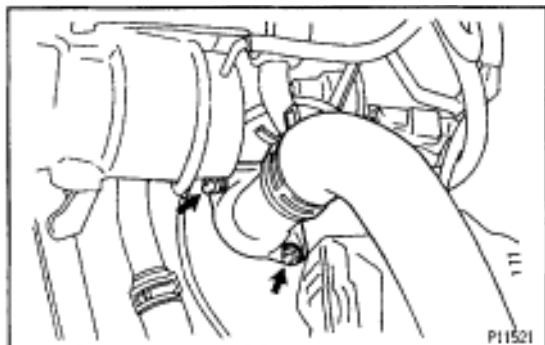
2. DRAIN ENGINE COOLANT



3. 2JZ-GE:

DISCONNECT WATER INLET FROM WATER PUMP, AND REMOVE THERMOSTAT

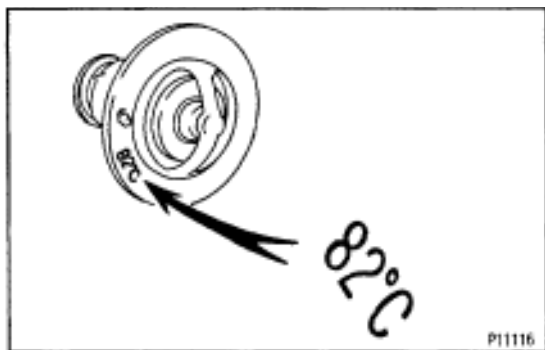
- Remove the 2 nuts holding the water inlet to the water pump, and disconnect the water inlet from the water pump.
- Remove the thermostat.
- Remove the gasket from the thermostat.



4. 2JZ-GTE:

REMOVE WATER INLET, LOWER RADIATOR HOSE ASSEMBLY AND THERMOSTAT

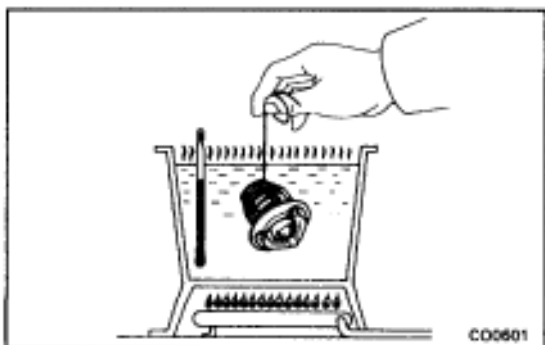
- Disconnect the lower radiator hose from the radiator.
- Remove the 2 nuts holding the water inlet to the water pump, and disconnect the water inlet and lower radiator hose from the water pump.
- Remove the thermostat.
- Remove the gasket from the thermostat.



THERMOSTAT INSPECTION

INSPECT THERMOSTAT

HINT: The thermostat is numbered with the valve opening temperature.

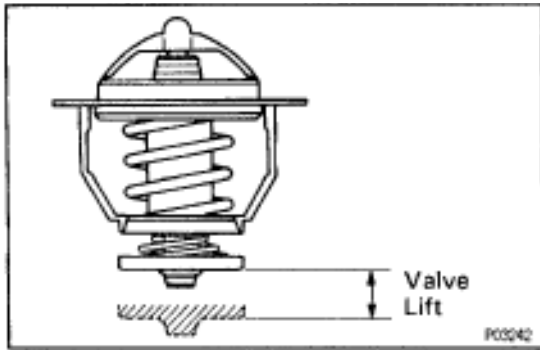


- Immerse the thermostat in water and gradually heat the water.
- Check the valve opening temperature.

Valve opening temperature:

80–84°C (176–183°F)

If the valve opening temperature is not as specified, replace the thermostat.



- (c) Check the valve lift.

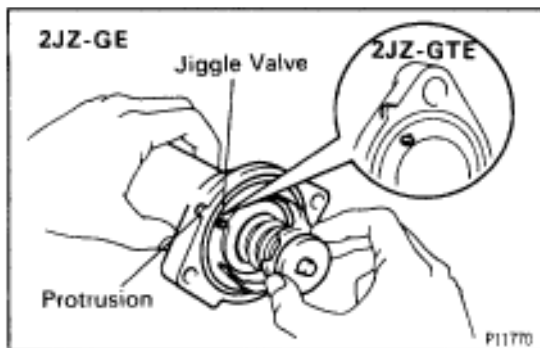
Valve lift:

8.5 mm (0.335 in.) or more at 95°C (203°F)

If the valve lift is not as specified, replace the thermostat.

- (d) Check that the valve spring is tight when the thermostat is fully closed.

If not closed, replace the thermostat.



THERMOSTAT INSTALLATION

1. PLACE THERMOSTAT IN WATER INLET

- (a) Install a new gasket to the thermostat.
 (b) Align the jiggle valve of the thermostat with the protrusion of the water inlet.

2. INSTALL WATER INLET

- (a) Install the water inlet with the 2 nuts.

Torque:

2JZ-GE

8.8 N·m (90 kgf·cm, 78 in.-lbf)

2JZ-GTE

21 N·m (210 kgf·cm, 15 ft-lbf)

- (b) 2JZ-GTE:

Connect the lower radiator hose to the radiator.

3. 2JZ-GTE:

INSTALL ENGINE UNDER COVER

4. FILL WITH ENGINE COOLANT

5. START ENGINE AND CHECK FOR COOLANT LEAKS

RADIATOR

RADIATOR CLEANING

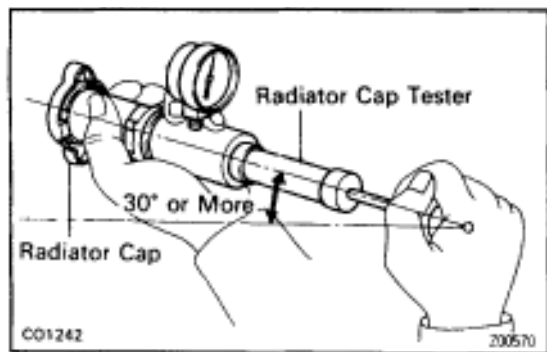
Using water or a steam cleaner, remove any mud and dirt from the radiator core.

NOTICE: If using a high pressure type cleaner, be careful not to deform the fins of the radiator core. If the cleaner nozzle pressure is 2,942–3,432 kPa (30–35 kgf/cm², 427–498 psi), keep a distance of at least 40 cm (15.75 in.) between the radiator core and cleaner nozzle.

RADIATOR INSPECTION

1. REMOVE RADIATOR CAP

CAUTION: To avoid the danger of being burned, do not remove the radiator cap while the engine and radiator are still hot, as fluid and steam can be blown out under pressure.



2. INSPECT RADIATOR CAP

NOTICE: When performing steps (a) and (b) below, keep the radiator pump tester at an angle of over 30° above the horizontal.

- (a) Using a radiator cap tester, slowly pump the tester and check that air is coming from the relief valve.

Pump speed:

1 push/3 seconds or more

NOTICE: Push the pump at a constant speed.

If air is not coming from the relief valve, replace the radiator cap.

- (b) Pump the tester several times and measure the relief valve opening pressure.

Pump speed:

1st time

1 push/1 second or less

2nd time or more

Any speed

Standard opening pressure:

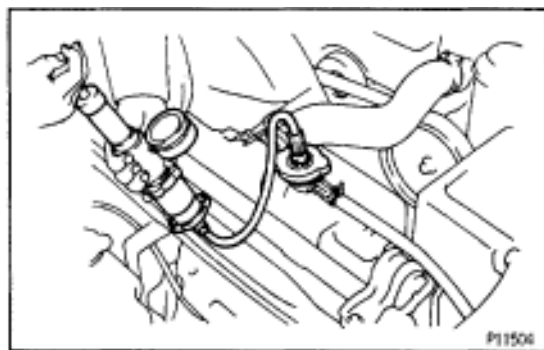
93–123 kPa

(0.95–1.25 kgf/cm², 13.5–17.8 psi)

Minimum opening pressure:

78 kPa (0.8 kgf/cm², 11.4 psi)

If the opening pressure is less than minimum, replace the radiator cap.



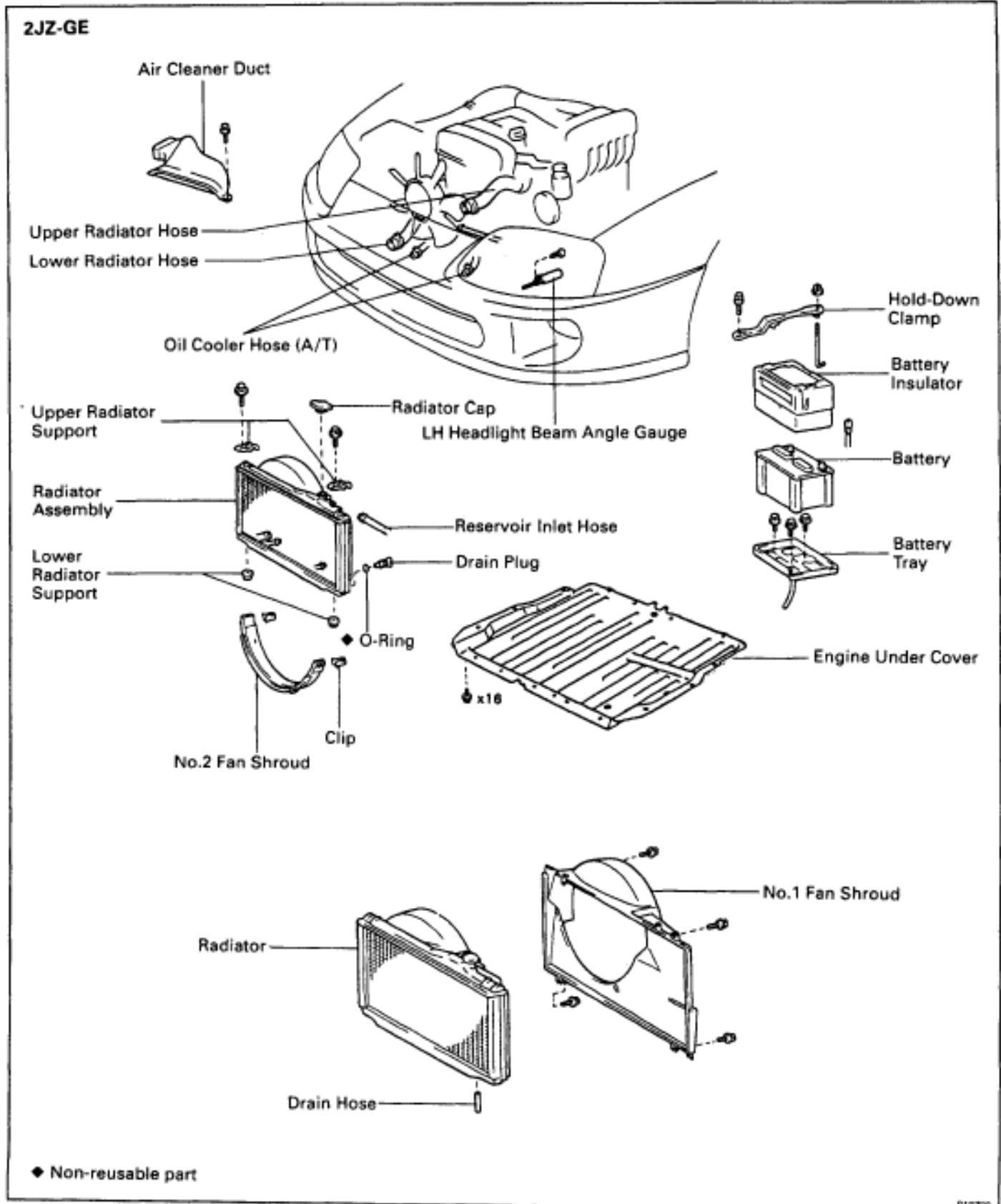
3. INSPECT COOLING SYSTEM FOR LEAKS

- (a) Fill the radiator with coolant, and attach a radiator cap tester.
 (b) Warm up the engine.
 (c) Pump it to 147 kPa (1.5 kgf/cm², 21.3 psi), and check that the pressure does not drop.

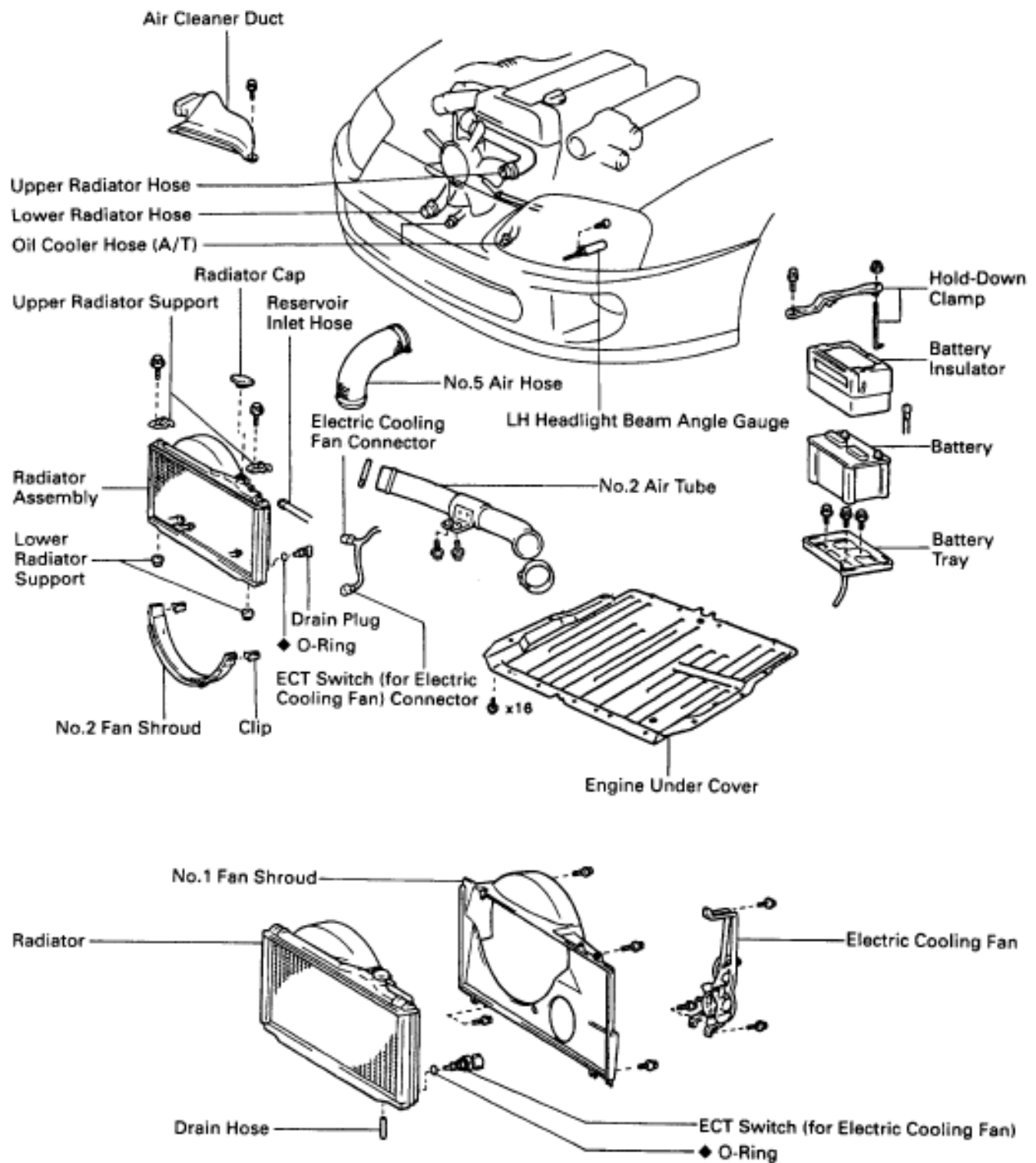
If the pressure drops, check the hoses, radiator or water pump for leaks. If no external leaks are found, check the heater core, cylinder block and cylinder head.

4. REINSTALL RADIATOR CAP

COMPONENTS FOR REMOVAL AND INSTALLATION



2JZ-GTE



◆ Non-reusable part

RADIATOR REMOVAL

Installation is in the reverse order of removal.

1. REMOVE ENGINE UNDER COVER

INSTALLATION HINT: Start the engine, and check for coolant and A/T fluid leaks.

2. REMOVE BATTERY AND BATTERY TRAY

3. DRAIN ENGINE COOLANT

4. 2JZ-GTE:

REMOVE NO.2 AIR TUBE

5. REMOVE NO.2 FAN SHROUD

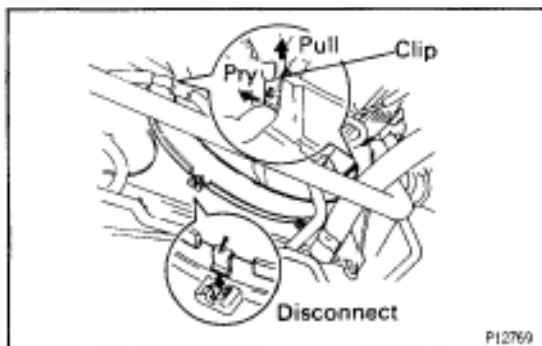
(a) Remove the 2 clips.

(b) Disconnect the claw of the No.2 fan shroud from the hook of the No.1 fan shroud, and remove the No.2 fan shroud.

6. REMOVE AIR CLEANER DUCT

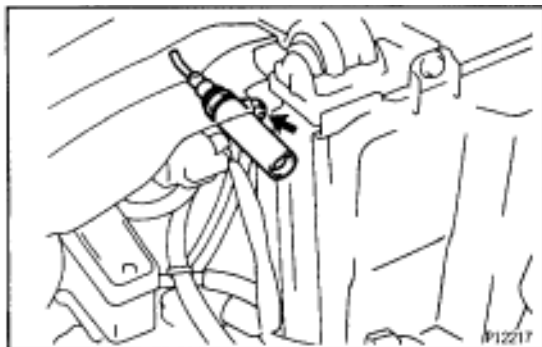
7. 2JZ-GTE:

REMOVE NO.5 AIR HOSE



8. REMOVE LH HEADLIGHT BEAM ANGLE GAUGE

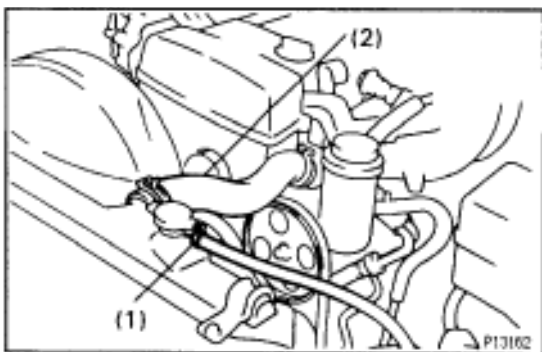
Remove the screw and beam angle gauge.



9. DISCONNECT HOSES FROM RADIATOR

Disconnect these hoses from the radiator:

- (1) Reservoir inlet hose
- (2) Upper radiator hose



(3) Lower radiator hose

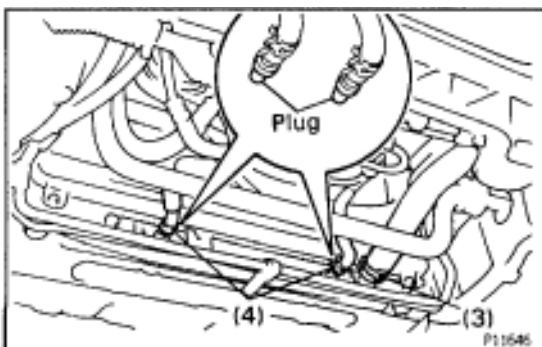
(4) A/T:

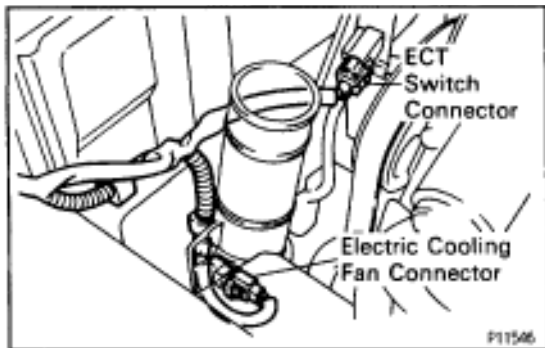
2 oil cooler hoses

Plug the hose ends.

INSTALLATION HINT: Check the A/T fluid level.

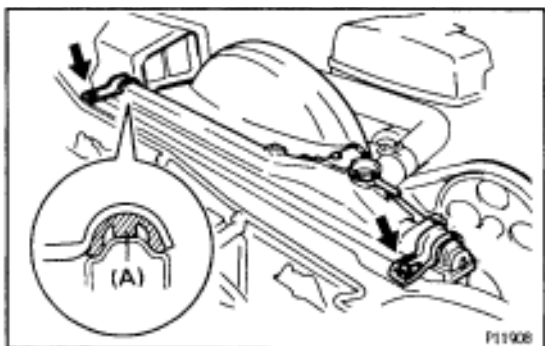
(See item 21 in Maintenance)



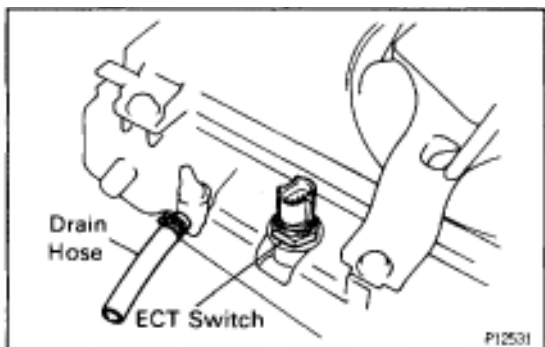


10. REMOVE RADIATOR ASSEMBLY

- (a) 2JZ-GTE:
Disconnect the ECT switch (for electric cooling fan connector) and wire harness.
- (b) 2JZ-GTE:
Disconnect the electric cooling fan connector and wire harness.



- (c) Remove the bolt and upper radiator support. Remove the 2 upper radiator supports.
INSTALLATION HINT: After installation, check that the rubber cushion (A) of the support is not depressed.
Torque: 15 N·m (155 kgf·cm, 11 ft·lbf)
- (d) Lift out the radiator assembly.
- (e) Remove the 2 lower radiator supports.

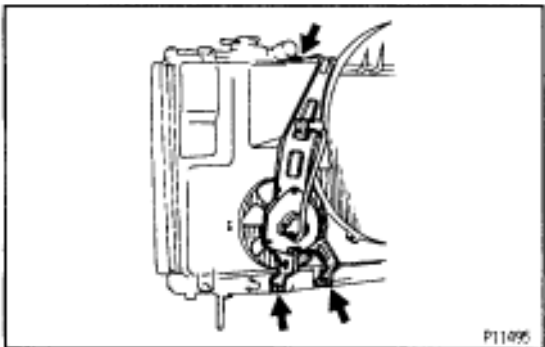


11. REMOVE DRAIN HOSE FROM RADIATOR

12. 2JZ-GTE:

REMOVE ENGINE COOLANT TEMPERATURE (ECT) SWITCH FROM RADIATOR

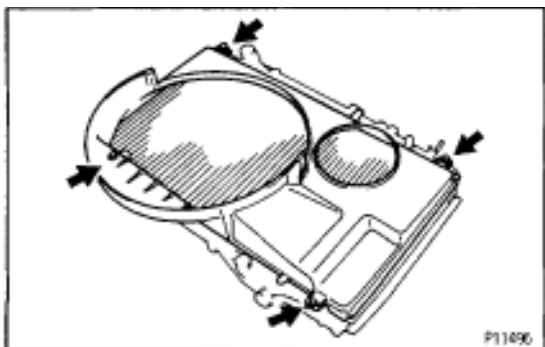
- (a) Remove the ECT switch.
INSTALLATION HINT: Apply soapy water to the O-ring, and install the ECT switch.
Torque: 7.4 N·m (75 kgf·cm, 65 in·lbf)
- (b) Remove the O-ring from the ECT switch.
INSTALLATION HINT: Use a new O-ring.



13. 2JZ-GTE:

REMOVE ELECTRIC COOLING FAN FROM RADIATOR

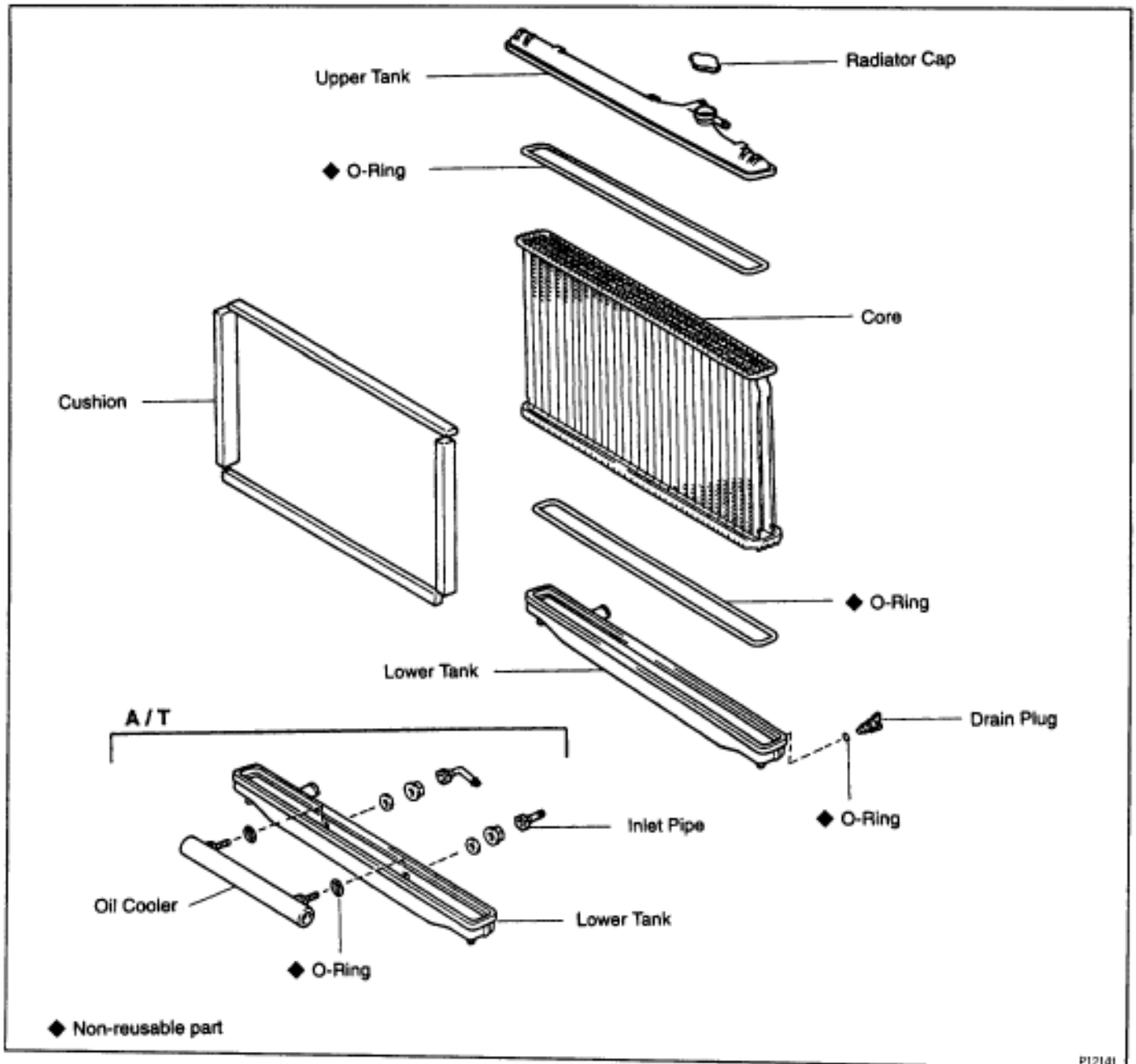
Remove the 3 bolts and cooling fan.



14. REMOVE NO.1 FAN SHROUD FROM RADIATOR

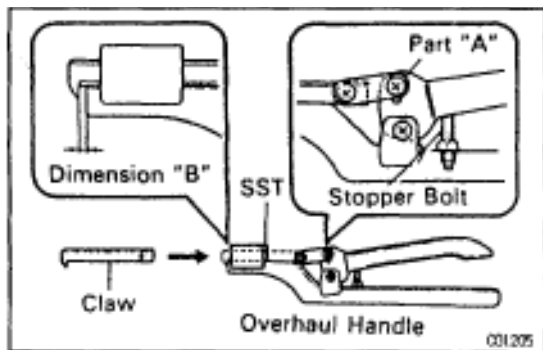
Remove the 4 bolts and No.1 fan shroud.

COMPONENTS FOR DISASSEMBLY AND ASSEMBLY



RADIATOR DISASSEMBLY

1. REMOVE CUSHIONS FROM RADIATOR

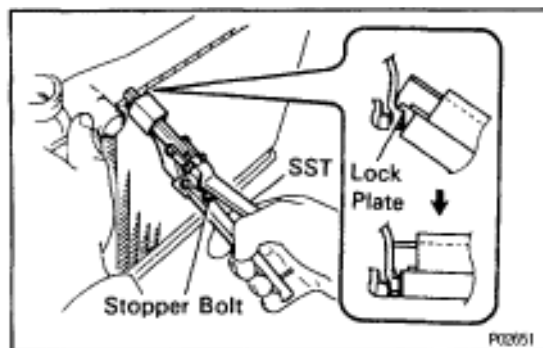


2. ASSEMBLE SST

SST 09230-01010

- Install the claw to the overhaul handle, inserting it in the hole in part "A" as shown in the installation.
- While gripping the handle, adjust the stopper bolt so that dimension "B" shown in the diagram is 0.2–0.5 mm (0.008–0.020 in.).

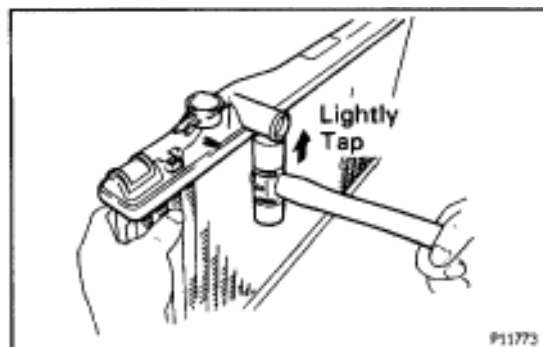
NOTICE: If this adjustment is not done, the claw may be damaged.



3. UNCAULK LOCK PLATES

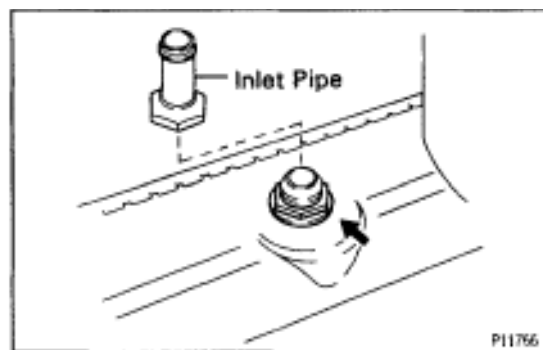
Using SST to release the caulking, squeeze the handle until stopped by the stopper bolt.

SST 09230-01010



4. REMOVE TANKS AND O-RINGS

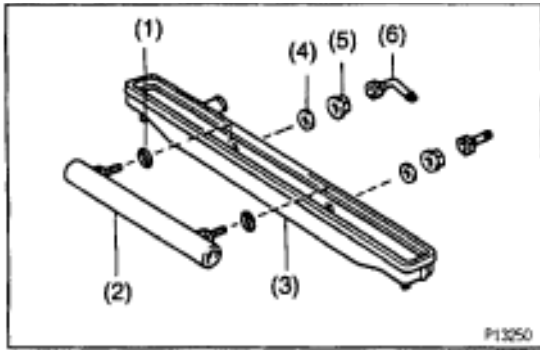
- Lightly tap the radiator hose inlet (or outlet) with a soft-faced hammer and remove the tank.
- Remove the O-ring.



5. A/T:

REMOVE OIL COOLER FROM LOWER TANK

- Remove the inlet pipes.
HINT: Make a note of the direction to face the pipes.
- Remove the nuts, plate washers and oil cooler.
- Remove the O-rings from the oil cooler.



RADIATOR ASSEMBLY

1. A/T:

INSTALL OIL COOLER TO LOWER TANK

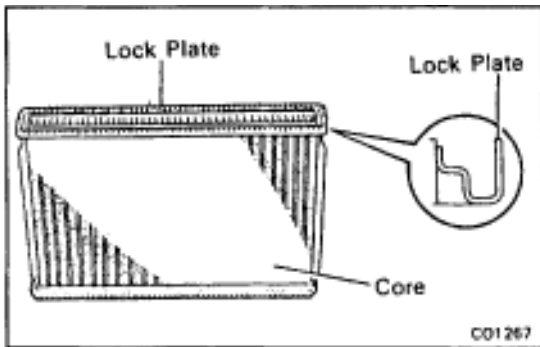
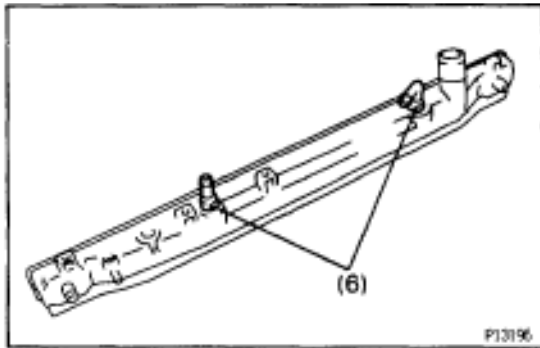
- (a) Clean the O-ring contact surface of the lower tank and oil cooler.
- (b) Install new O-ring (1) to the oil cooler (2).
- (c) Install the oil cooler (2) to the lower tank (3).
- (d) Install the plate washers (4), and nuts (5).

Torque: 8.3 N·m (85 kgf·cm, 74 in·lbf)

- (e) Install the inlet pipes (6).

Torque: 15 N·m (150 kgf·cm, 11 ft·lbf)

HINT: Face the inlet pipes in the same direction they were before disassembly.

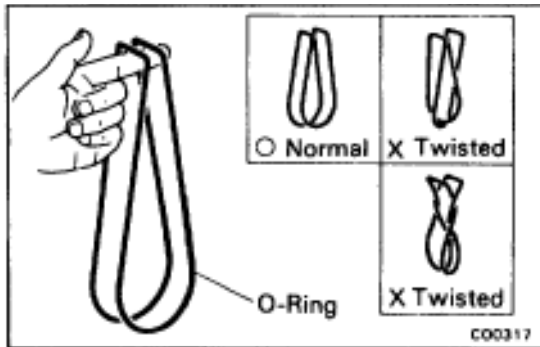


2. INSPECT LOCK PLATE

Inspect the lock plate for damage.

HINT:

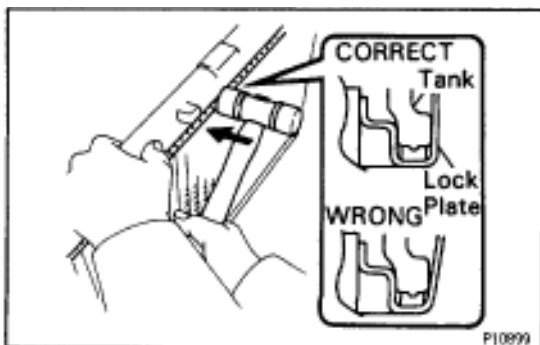
- If the sides of the lock plate groove are deformed, reassembly of the tank will be impossible.
- Therefore, first correct any deformation with pliers or similar object. Water leakage will result if the bottom of the lock plate groove is damaged or dented. Therefore, repair or replace if necessary.



3. INSTALL NEW O-RINGS AND TANKS

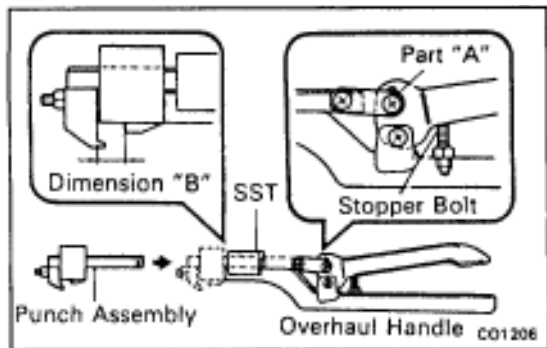
- (a) After checking that there are no foreign objects in the lock plate groove, install the new O-ring without twisting it.

HINT: When cleaning the lock plate groove, lightly rub it with sand paper without scratching it.



- (b) Install the tank without damaging the O-ring.

- (c) Tap the lock plate with a soft-faced hammer so that there is no gap between it and the tank.



4. ASSEMBLE SST

SST 09230-01010,

09231-14010 (Punch (2JZ-GE only))

- Install the punch assembly to the overhaul handle, inserting it in the hole in part "A" as shown in the illustration.
- While gripping the handle, adjust the stopper bolt so that dimension "B" shown in the diagram.

Dimension "B":

2JZ-GE

8.4 mm (0.34 in)

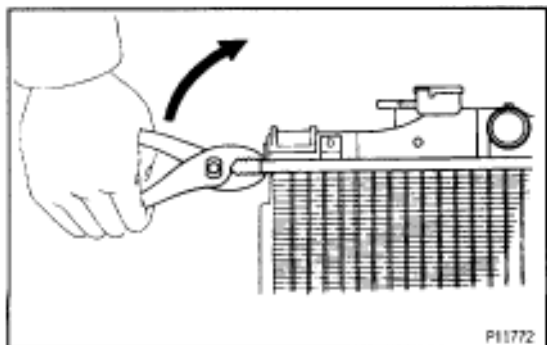
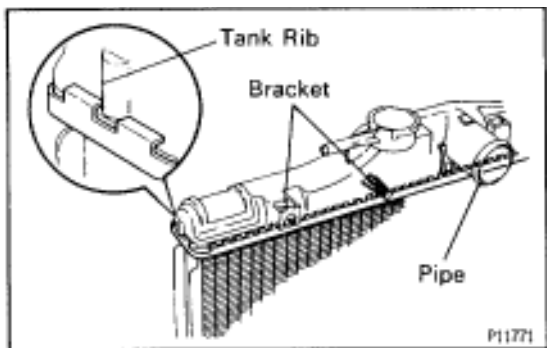
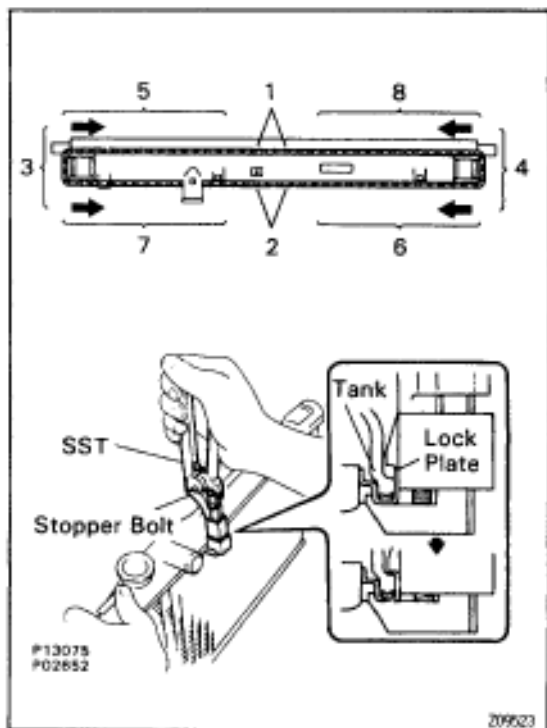
2JZ-GTE

7.7 mm (0.31 in)

5. CAULK LOCK PLATE

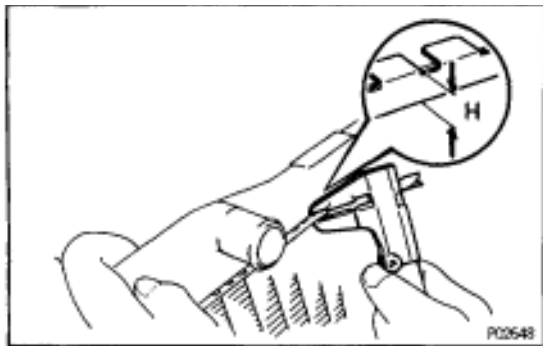
- Lightly press SST against the lock plate in the order shown in the illustration. After repeating this a few times, fully caulk the lock plate by squeezing the handle until stopped by the stopper plate.

SST 09230-01010



HINT:

- Do not stake the areas protruding around the pipes, brackets or tank ribs.
- The points shown in the rib sides and oil cooler near here cannot be staked with SST. Use a plier or similar object and be careful not to damage the core plates.



- (b) Check the lock plate height (H) after completing the caulking.

Plate height:

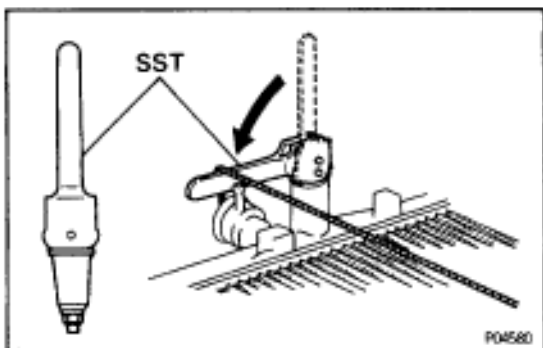
2JZ-GE

7.40–7.80 mm (0.2959–0.3119 in)

2JZ-GTE

7.76–8.24 mm (0.3055–0.3244 in.)

If not within the specified height, adjust the stopper bolt of the handle again and caulk again.

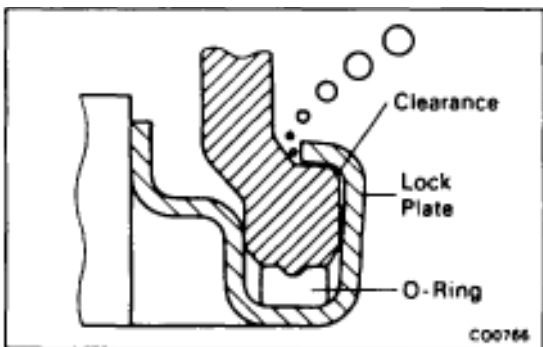


6. INSPECT FOR WATER LEAKS

- (a) Tighten the drain plug.
 (b) Plug the inlet and outlet pipes of the radiator with SST.
 SST 09230-01010
 (c) Using a radiator cap tester, apply pressure to the radiator.

Test pressure:

177 kPa (1.8 kgf/cm², 26 psi)



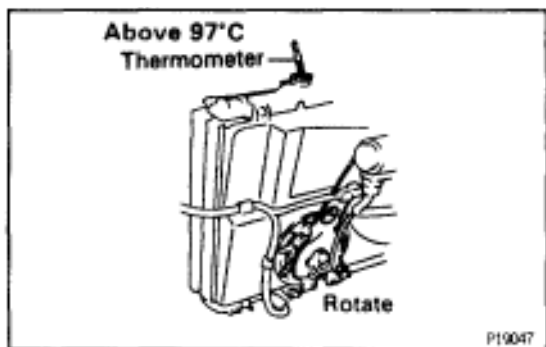
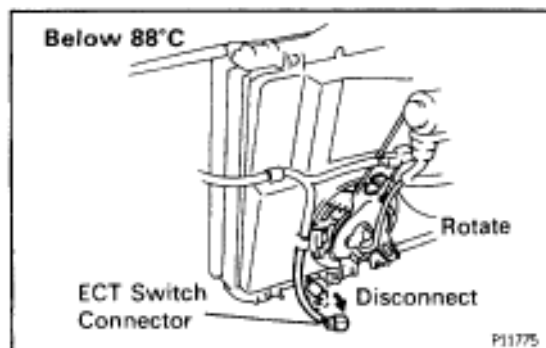
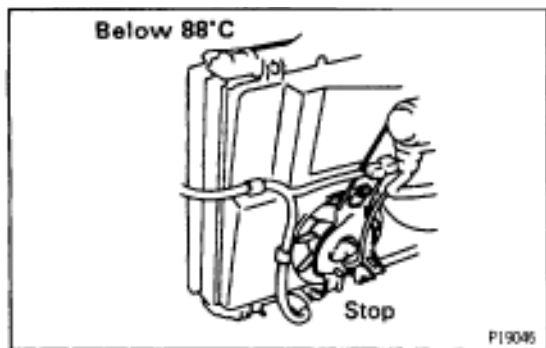
- (d) Inspect for water leaks.

HINT: On radiators with resin tanks, there is a clearance between the tank and lock plate where a minute amount of air will remain, giving the appearance of an air leak when the radiator is submerged in water. Therefore, before doing the water leak test, move the radiator around in the water until all air bubbles disappear.

7. PAINT LOCK PLATES

HINT: If the water leak test checks out okay, allow the radiator to completely dry and then paint the lock plates.

8. INSTALL CUSHIONS TO RADIATOR



ELECTRIC COOLING FAN (2JZ-GTE) On-Vehicle Inspection

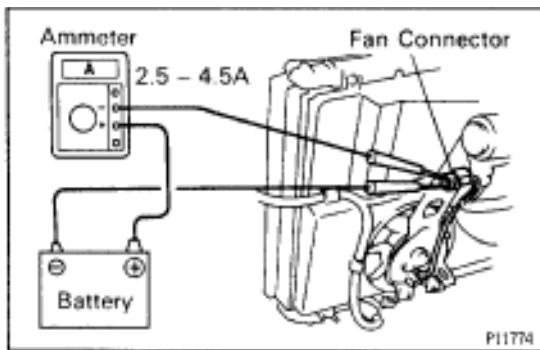
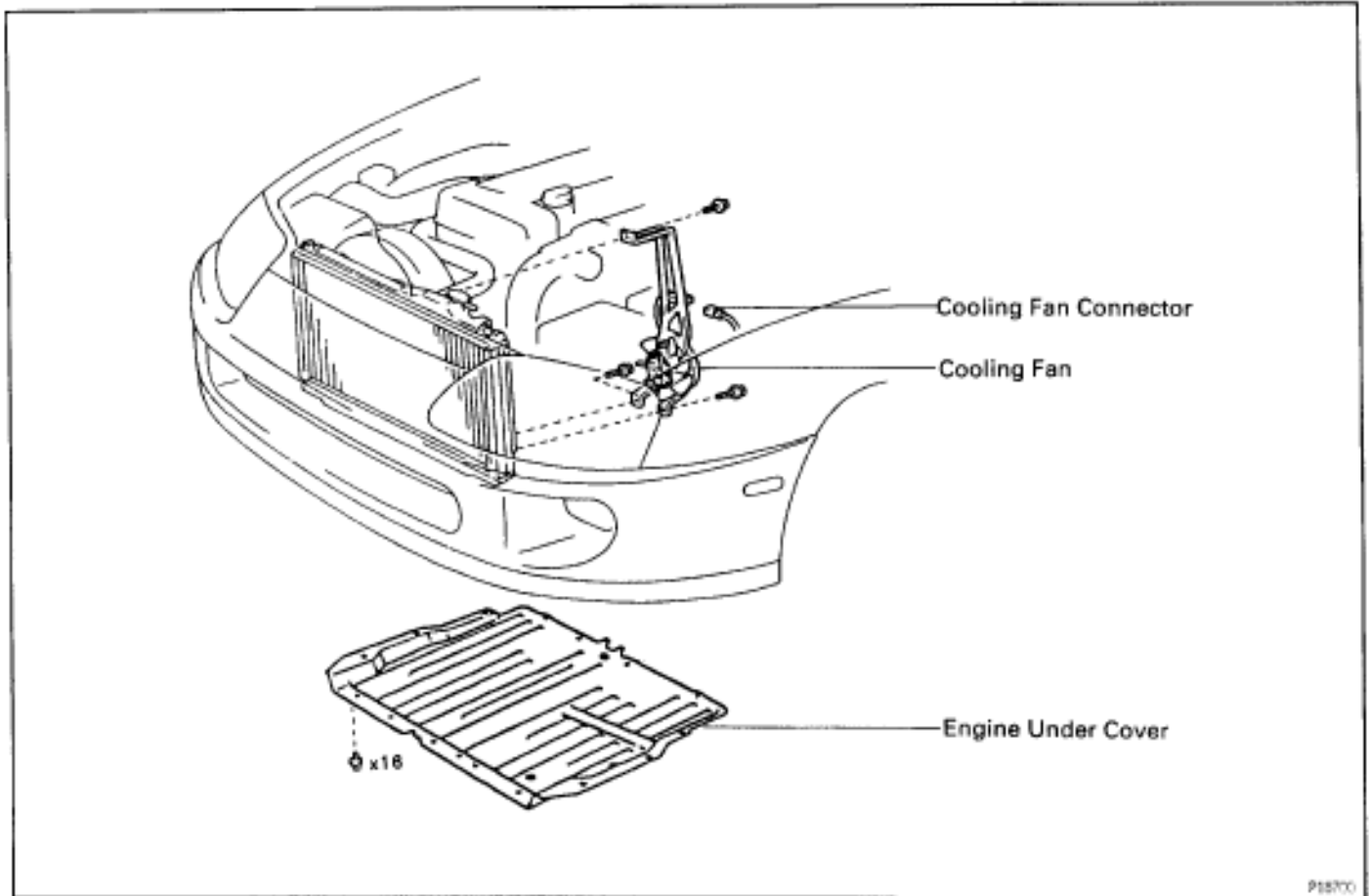
1. CHECK COOLING FAN OPERATION WITH LOW TEMPERATURE (Below 88°C (190°F))

- (a) Turn the ignition switch ON.
- (b) Check that the cooling fan stops.
If not, check the cooling fan relay and ECT switch, and check for a separated connector or severed wire between the No.1 radiator fan relay and ECT switch.
- (c) Disconnect the ECT switch connector.
- (d) Check that the cooling fan rotates.
If not, check the No.1 radiator relay, No.2 radiator fan relay, cooling fan, fuses, and check for short circuit between the No.1 radiator fan relay and ECT switch.
- (e) Reconnect the ECT switch connector.

2. CHECK COOLING FAN OPERATION WITH HIGH TEMPERATURE (Above 97°C (207°F))

- (a) Start the engine, and raise coolant temperature to above 97°C (207°F).
- (b) Check that the cooling fan rotates.
If not, replace the ECT switch.

Cooling Fan COMPONENTS FOR REMOVAL AND INSTALLATION



COOLING FAN INSPECTION

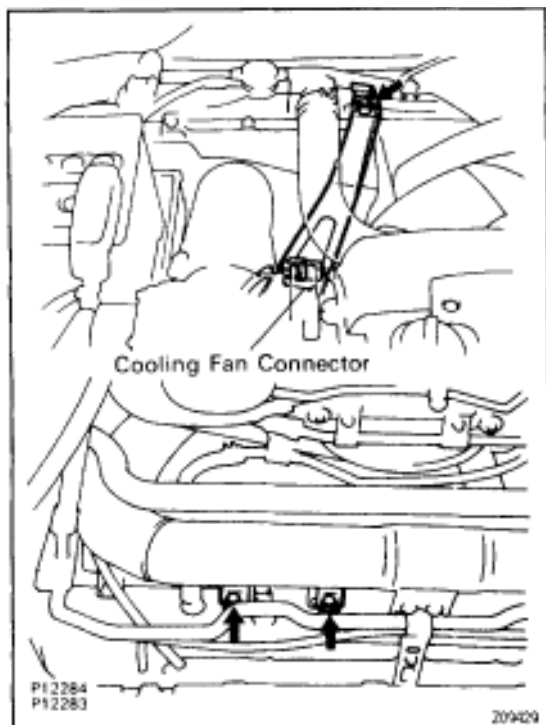
INSPECT COOLING FAN

- Disconnect the fan connector.
- Connect battery and ammeter to the cooling fan connector.
- Check that the cooling fan rotates smoothly, and check the reading on the ammeter.

Standard amperage:

2.5-4.5 A

- Reconnect the fan connector.

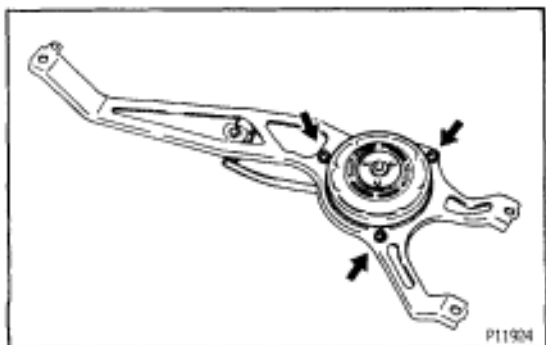
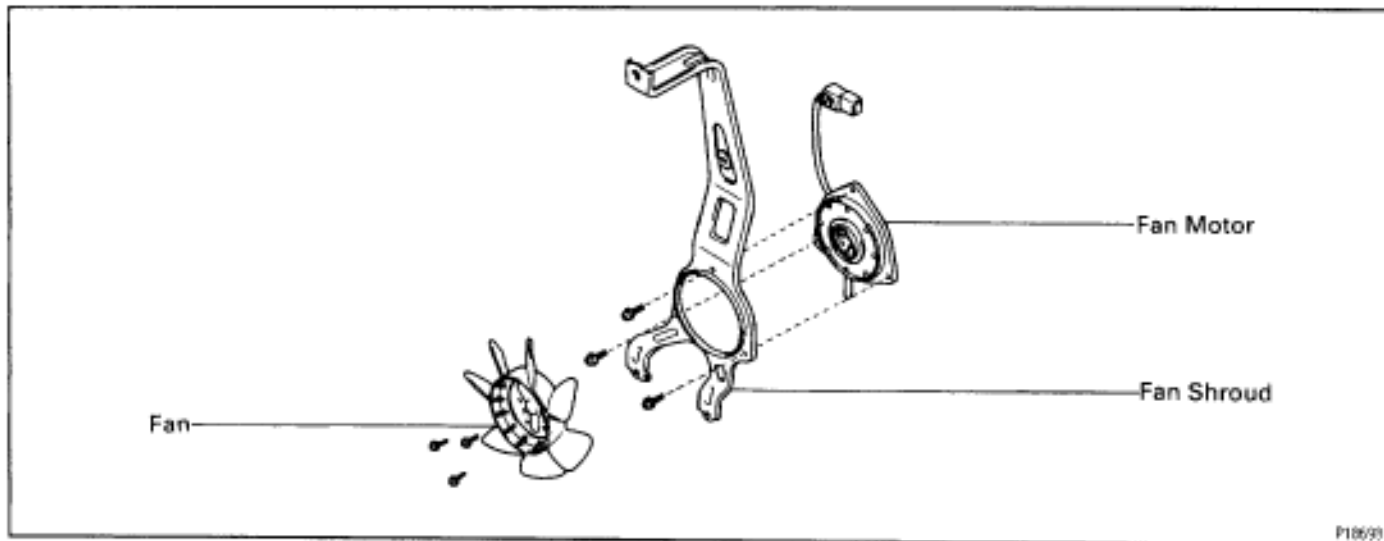


COOLING FAN REMOVAL

Installation is in the reverse order of removal.

1. **REMOVE ENGINE UNDER COVER**
2. **REMOVE COOLING FAN**
 - (a) Disconnect the cooling fan connector.
 - (b) Remove the 3 bolts and cooling fan.

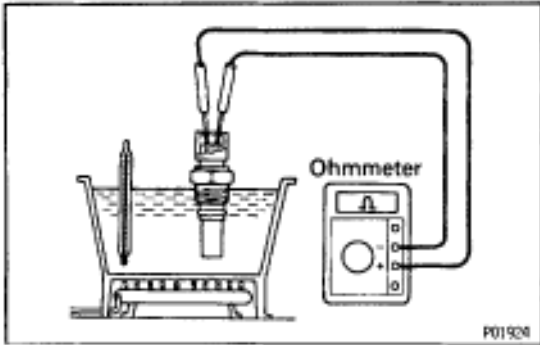
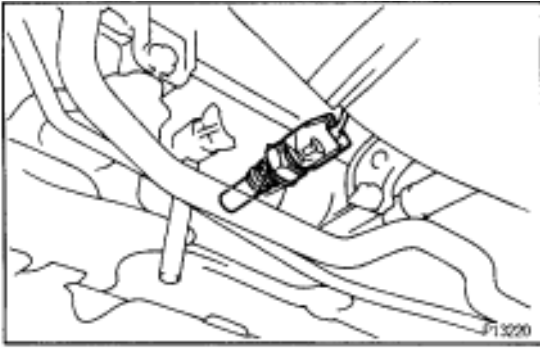
COMPONENTS FOR DISASSEMBLY AND ASSEMBLY



COOLING FAN DISASSEMBLY

Assembly is in the reverse order of disassembly.

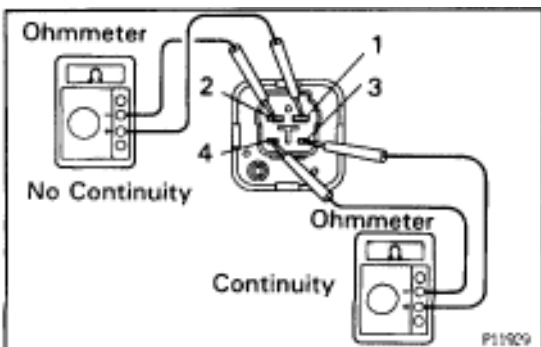
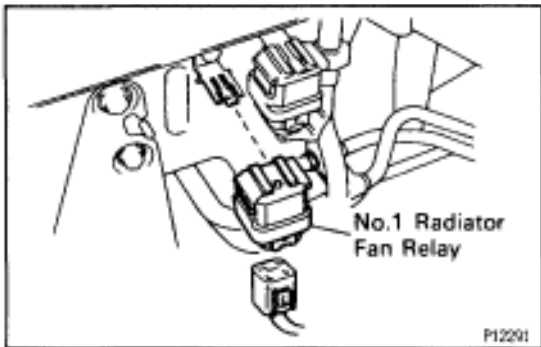
1. **REMOVE FAN**
Remove the 3 screws and fan.
2. **REMOVE FAN MOTOR**
 - (a) Disconnect the connector from the fan shroud.
 - (b) Remove the 3 screws and fan motor.



Engine Coolant Temperature (ECT) Switch

ECT SWITCH INSPECTION

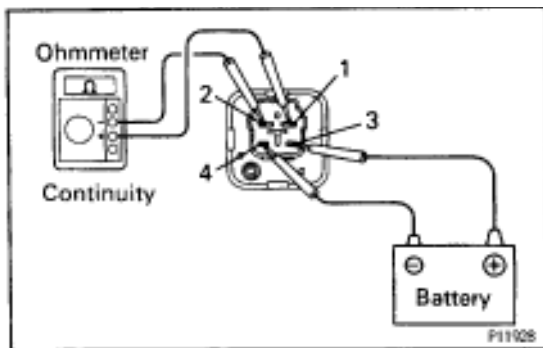
1. REMOVE ENGINE UNDER COVER
2. DRAIN ENGINE COOLANT
3. REMOVE ECT SWITCH
 - (a) Disconnect the ECT switch connector.
 - (b) Remove the ECT switch.
 - (c) Remove the O-ring from the ECT switch.
4. INSPECT ECT SWITCH
 - (a) Using an ohmmeter, check that there is no continuity between the terminals when the coolant temperature is above 97°C (207°F).
 - (b) Using an ohmmeter, check that there is continuity between the terminals when the coolant temperature is below 88°C (190°F).
If continuity is not as specified, replace the switch.
5. REINSTALL ECT SWITCH
 - (a) Install a new O-ring to the ECT switch.
 - (b) Apply soapy water to the O-ring.
 - (c) Install the ECT switch.
Torque: 7.4 N·m (75 kgf·cm, 65 in.·lbf)
 - (d) Connect the ECT switch connector.
6. REFILL WITH ENGINE COOLANT
7. START ENGINE AND CHECK FOR LEAKS
8. REINSTALL ENGINE UNDER COVER



No.1 Radiator Fan Relay ("RADIATOR FAN RELAY")

RADIATOR FAN RELAY INSPECTION

1. w/ Auto Spoiler:
REMOVE LH HEADLIGHT
2. w/o Auto Spoiler:
REMOVE ENGINE UNDER COVER
3. REMOVE RADIATOR FAN RELAY
4. INSPECT RADIATOR FAN RELAY
 - A. Inspect relay continuity
 - (a) Using an ohmmeter, check that there is continuity between terminals 3 and 4.
 - (b) Check that there is no continuity between terminals 1 and 2.
If continuity is as specified, replace the relay.

**B. Inspect relay operation**

- (a) Apply battery voltage across terminals 3 and 4.
- (b) Using an ohmmeter, check that there is continuity between terminals 1 and 2.

If operation is not as specified, replace the relay.

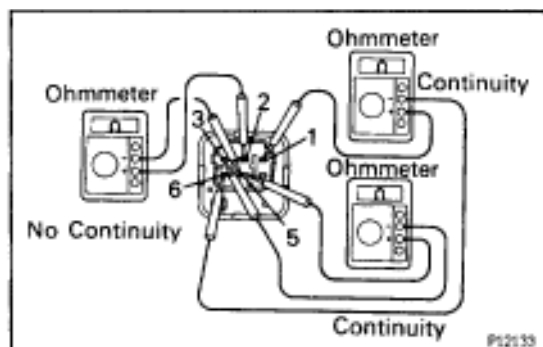
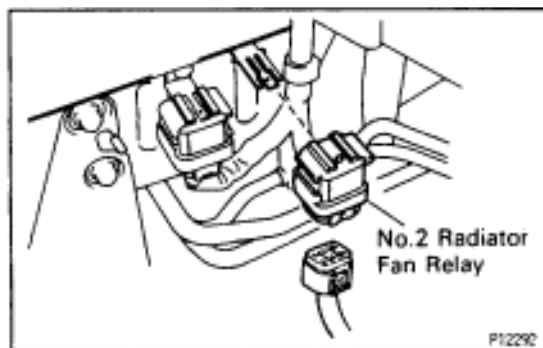
5. REINSTALL RADIATOR FAN RELAY

6. **w/ Auto Spoiler:**
REINSTALL LH HEADLIGHT

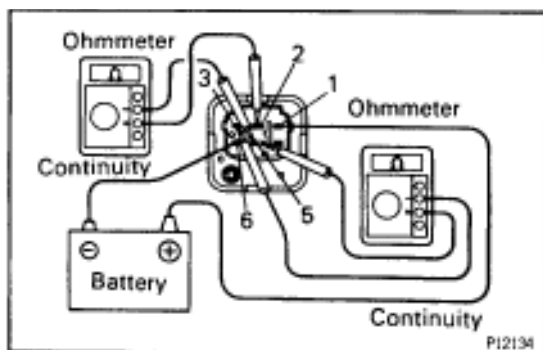
7. **w/o Auto Spoiler:**
REINSTALL ENGINE UNDER COVER

No.2 Radiator Fan Relay ("A.B.S. (TRAC) RELAY") RADIATOR FAN RELAY INSPECTION

1. **w/ Auto Spoiler:**
REMOVE LH HEADLIGHT
2. **w/o Auto Spoiler:**
REMOVE ENGINE UNDER COVER
3. **REMOVE RADIATOR FAN RELAY**

**4. INSPECT RADIATOR FAN RELAY****A. Inspect relay continuity**

- (a) Using an ohmmeter, check that there is continuity between terminals 1 and 6.
 - (b) Check that there is continuity between terminals 3 and 5.
 - (c) Check that there is no continuity between terminals 2 and 5.
- If continuity is not as specified, replace the relay.

**B. Inspect relay operation**

- (a) Apply battery voltage across terminals 1 and 6.
- (b) Using an ohmmeter, check that there is no continuity between terminals 3 and 5.
- (c) Check that there is continuity between terminals 2 and 5.

If operation is not as specified, replace the relay.

5. REINSTALL RADIATOR FAN RELAY

6. **w/ Auto Spoiler:**
REINSTALL LH HEADLIGHT

7. **w/o Auto Spoiler:**
REINSTALL ENGINE UNDER COVER

SERVICE SPECIFICATIONS

SERVICE DATA

Thermostat	Valve opening temperature Valve lift	80–84°C (176–183°F) 8.5 mm (0.335 in.) or more
Radiator cap	Relief valve opening pressure STD Minimum	93–123 kPa (0.95–1.25 kgf/cm ² , 13.5–17.8 psi) 78 kPa (0.8 kgf/cm ² , 11.4 psi)
Electric cooling fan	Rotating amperage	2.5–4.5 A

TORQUE SPECIFICATIONS

Part tightened	N·m	kgf·cm	ft·lbf
Engine drain plug x Cylinder block	29	300	22
Fan x Fluid coupling	7.4	75	65 in.·lbf
Water pump x Cylinder block	21	210	15
Water pump x No.2 water bypass pipe	21	210	15
Generator x Water pump	37	380	27
Generator x Cylinder block	37	380	27
Water bypass outlet x Cylinder head (2JZ–GE)	8.8	90	78 in.·lbf
Water outlet x Cylinder head (2JZ–GTE)	21	210	15
Water inlet x Water pump (2JZ–GE)	8.8	90	78 in.·lbf
Water inlet x Water pump (2JZ–GTE)	21	210	15
Upper radiator support x Body	15	155	11
ECT switch x Radiator (2JZ–GTE)	7.4	75	65 in.·lbf
Fluid coupling x Water pump	16	165	12
Oil cooler x Radiator lower tank (A/T)	8.3	85	74 in.·lbf
Oil cooler x Oil cooler pipe (A/T)	15	150	11