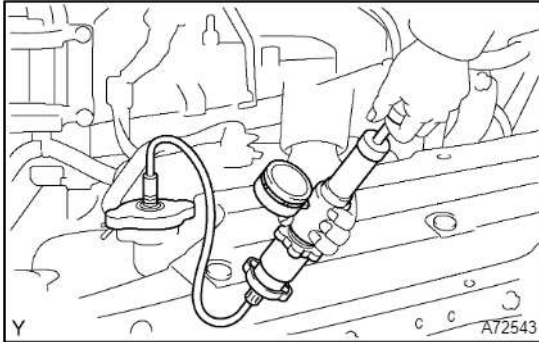


COOLING SYSTEM (1GR-FE)(From August, 2003)

ON-VEHICLE INSPECTION

160RA-01



1. INSPECT COOLING SYSTEM FOR LEAKS

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.

- Fill the radiator with coolant, then attach a radiator cap tester.
- Warm up the engine.
- Pump it to 118 kPa (1.2 kgf/cm², 17.1 psi), then check that the pressure does not drop.

HINT:

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

2. CHECK ENGINE COOLANT LEVEL AT RESERVOIR

- The engine coolant level should be between the "LOW" and "FULL" lines. If low, check for leaks and add "Toyota Super Long Life Coolant" or similar high quality ethylene glycol based non-silicate, non-amine, non-nitrite, and non-borate coolant with long-life hybrid organic acid technology up to the "FULL" line.

3. CHECK ENGINE COOLANT QUALITY

- Remove the radiator cap.

CAUTION:

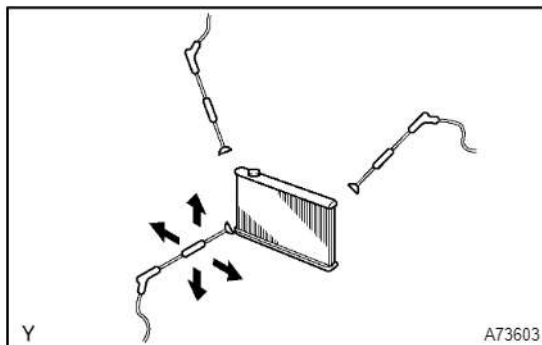
To avoid the danger of being burned, do not remove the radiator cap while the engine and radiator are still hot as fluid and steam can be blown out under pressure.

- Check the radiator cap and radiator filler hole for rust and dirt. The coolant should be free from oil.

HINT:

If the coolant is excessively dirty, replace the coolant.

- Reinstall the radiator cap.



4. INSPECT FIN BLOCKAGE

- (a) If the fins are clogged, wash them with water or a steam cleaner. After cleaning, dry the fins with compressed air.

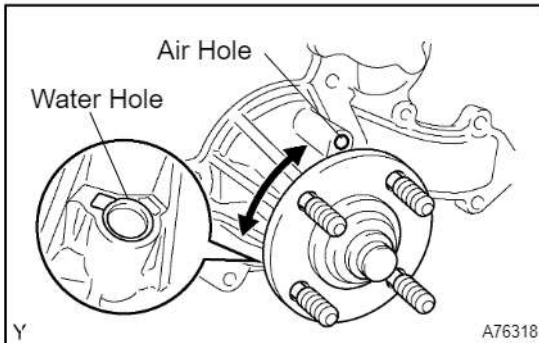
NOTICE:

- If the distance between the steam cleaner and core is too close, there is a possibility of damaging the fins, so keep the following injection distance.

Injection Pressure kPa (kg/cm ² , psi)	Injection Distance mm (in.)
2,942 to 4,903 (30 to 50, 427 to 711)	300 (11.811)
4,903 to 7,845 (50 to 80, 711 to 1,138)	500 (19.685)

- If the fins are bent, straighten them with a screwdriver or plier.
- Never apply water directly to the electronic components.

INSPECTION



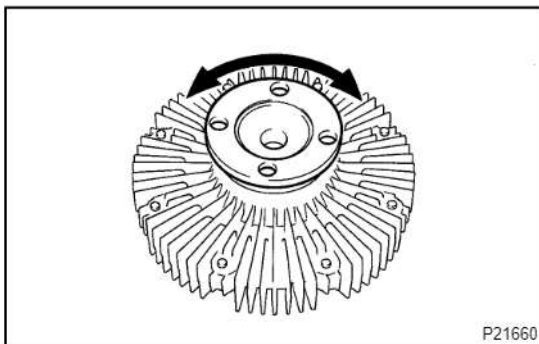
1. INSPECT WATER PUMP ASSY

- (a) Visually check the air hole and water hole for coolant leakage.

If leakage is found, replace the water pump.

- (b) Turn the pulley, then check that the water pump bearing moves smoothly and quietly.

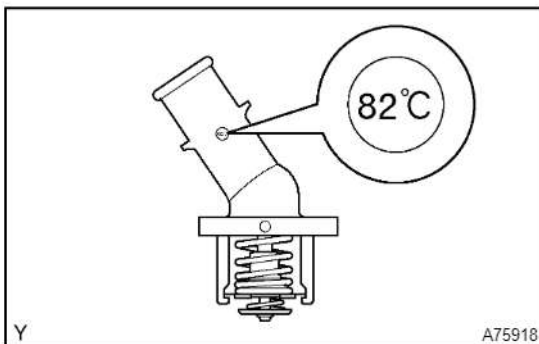
If necessary, replace the water pump.



2. INSPECT FLUID COUPLING ASSY

- (a) Check the fluid coupling for damage or silicon oil leaks.

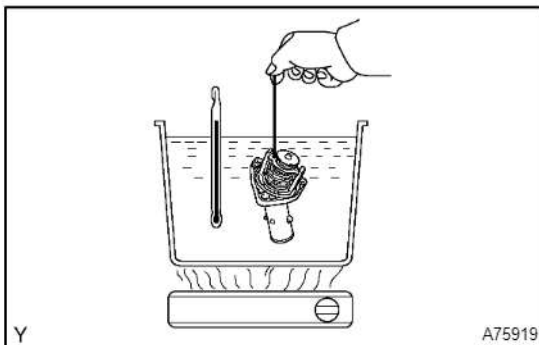
If necessary, replace the fluid coupling.



3. INSPECT WATER INLET W/THERMOSTAT

HINT:

The valve opening temperature is inscribed on the thermostat.



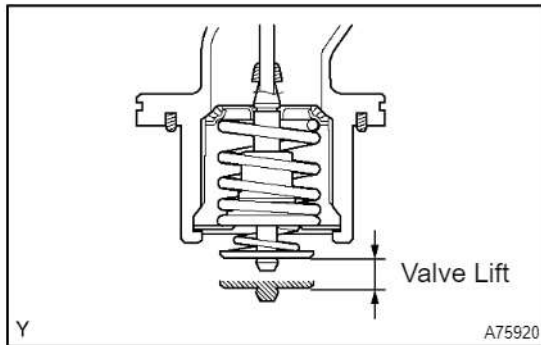
- (a) Immerse the thermostat in the water, then heat the water gradually.

- (b) Check the valve opening temperature of the thermostat.

Valve opening temperature:

80 to 84°C (176 to 183°F)

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



(c) Check the valve lift.

Valve lift: 8 mm (0.31 in.) or more at 95°C (203°F)

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

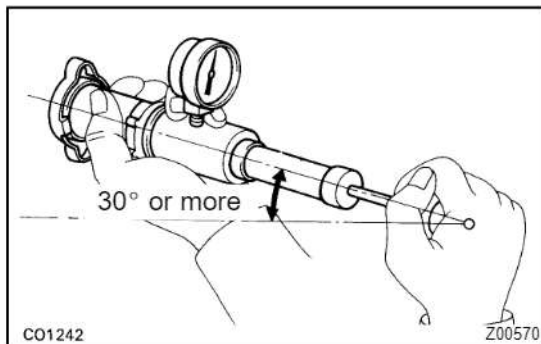
(d) Check that the valve is fully closed when the thermostat is at low temperature (below 40 °C (104 °F)).

If not fully closed, replace the thermostat.

4. INSPECT RADIATOR CAP SUB-ASSY

NOTICE:

- If the radiator cap is contaminated, rinse it with water.
- Before using a radiator cap tester, wet the relief valve and pressure valve with engine coolant or water.



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

Pumping speed: 1 push per 3 seconds or longer

NOTICE:

Push the pump at a constant speed.

HINT:

If air is not coming from the vacuum valve, replace the reservoir cap.

(b) Pump the tester, then measure the relief valve opening pressure.

Standard opening pressure:

93 to 123 kPa (0.95 to 1.25 kgf/cm², 13.5 to 17.8 psi)

Minimum opening pressure:

78 kPa (0.8 kgf/cm², 11.4 psi)

NOTICE:

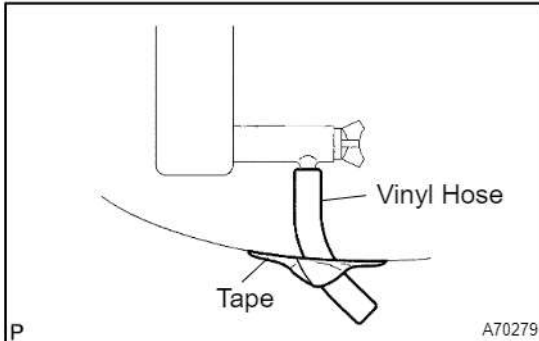
The following pumping speed is for the first time (in order to close the vacuum valve). After the first pumping, the pumping speed can be reduced.

HINT:

- Pumping speed: 1 push within 1 second
- The tester's maximum reading is the opening pressure value.
- If the opening pressure is less than minimum, replace the radiator cap.

COOLANT (1GR-FE)(From August, 2003) REPLACEMENT

160RC-01

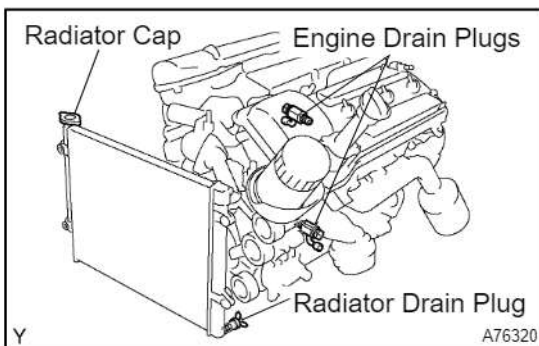


1. DRAIN ENGINE COOLANT

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.

- (a) Remove the service hole cover from the engine under cover.
- (b) Install a vinyl hose to the drain on the radiator side.
- (c) Fix the vinyl hose with tape.
- (d) Loosen the 3 drain plugs on the engine and radiator, then drain the coolant.
- (e) Remove the radiator cap.
- (f) Drain the coolant from the reservoir tank.
- (g) Put in the 3 drain plugs.
- Torque: 13 N·m (130 kgf·cm, 9 ft·lbf) for the engine**
- (h) Remove the vinyl hose from the radiator.



2. ADD ENGINE COOLANT

- (a) Slowly fill the system with engine coolant.
Capacity: 9.8 liters (10.4 US qts, 8.6 Imp. qts)

HINT:

- Use of improper coolants may damage the engine cooling system.
- Use "Toyota Super Long Life Coolant" or similar high quality ethylene glycol based non-silicate, non-amine, non-nitrite, and non-borate coolant with long-life hybrid organic acid technology.
- New Toyota vehicles are filled with Toyota Super Long Life Coolant (color is pink, premixed ethylene-glycol concentration is approximately 50% and freezing temperature is -35°C (-31°F)). When replacing the coolant, Toyota Super Long Life Coolant is recommended.
- Observe the coolant level inside the radiator by pressing the inlet and outlet radiator hoses several times by hand. If the coolant level goes down, add the coolant.

NOTICE:

Do not use plain water alone.

- (b) Install the radiator cap.
- (c) Bleed the cooling system.
 - (1) Start the engine, then open the heater water valve.
 - (2) Maintain the engine speed at 2,000 to 2,500 rpm to warm up the engine.
- (d) Stop the engine, then wait until the engine coolant cools down.
- (e) Add coolant into the reservoir until the coolant level is "FULL".

3. CHECK FOR ENGINE COOLANT LEAKS

- (a) Fill the radiator with coolant, then attach a radiator cap taster.
- (b) Pump it to 118 kPa (1.2 kgf/cm² 17.1 psi), then check for leakage.

WATER PUMP ASSY (1GR-FE)

160J5-02

REPLACEMENT

1. REMOVE ENGINE UNDER COVER SUB-ASSY NO.1

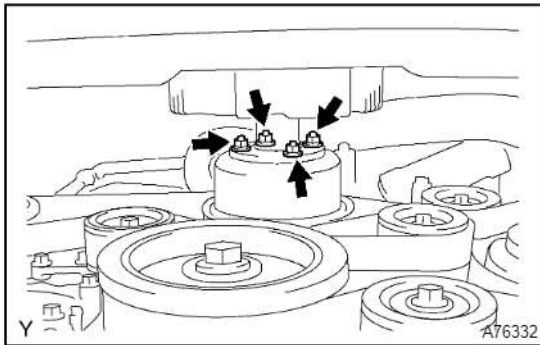
- (a) Remove the 4 bolts and engine under cover.

2. DRAIN ENGINE COOLANT (See page 16-5)

3. REMOVE V-BANK COVER (See page 10-7)

4. REMOVE RADIATOR SUPPORT SEAL UPPER

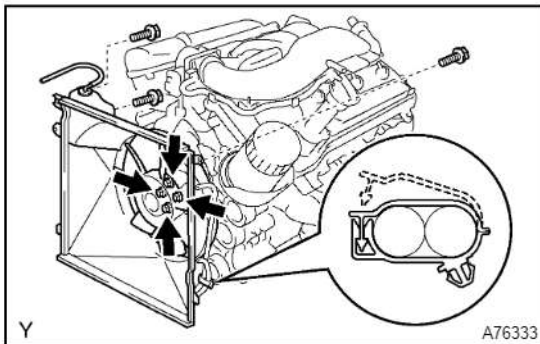
- (a) Remove the 11 clips and radiator support seal upper.



5. LOOSEN FAN W/ FLUID COUPLING

- (a) Loosen the 4 fluid coupling bolts.

6. REMOVE FAN AND GENERATOR V BELT (See page 14-5)

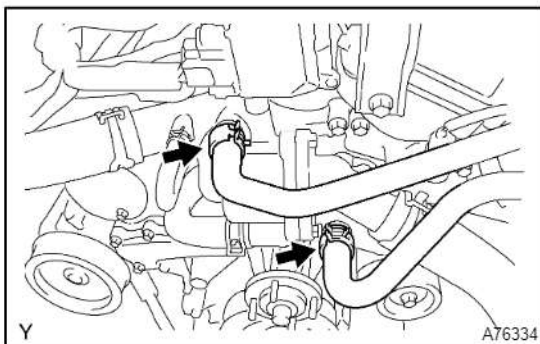


7. REMOVE FAN W/ FLUID COUPLING

- (a) Unfasten the hose clamp, and then separate the 2 oil cooler hoses from the fan shroud.
 (b) Disconnect the radiator reserve tank hose.
 (c) Remove the 2 fan shroud bolts and radiator reserve tank bolt.
 (d) Remove the 4 fluid coupling nuts, and then remove the fan w/ fluid coupling and fan shroud together.
 (e) Remove the fan pulley.

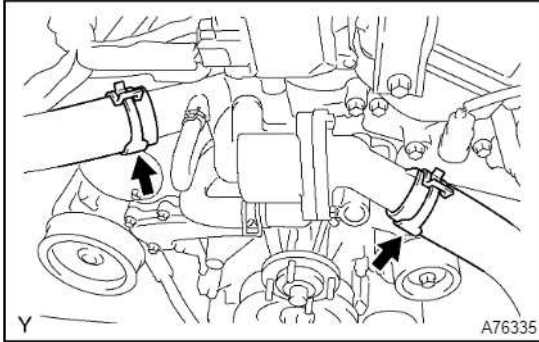
8. DISCONNECT VENTILATION HOSE NO.2

9. REMOVE AIR CLEANER ASSY (See page 10-7)

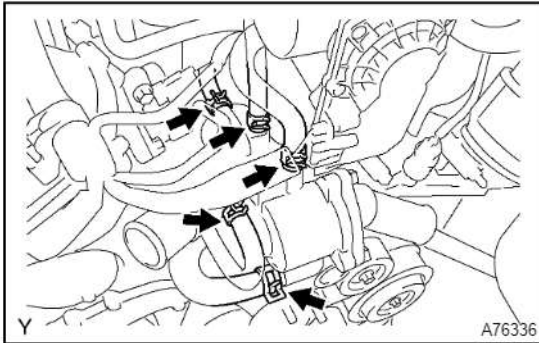


10. REMOVE WATER INLET

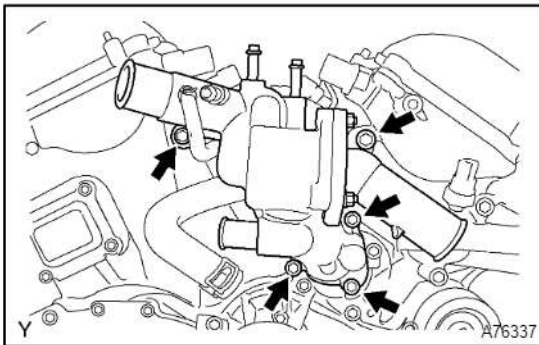
- (a) Disconnect the 2 oil cooler hoses (w/ oil cooler).



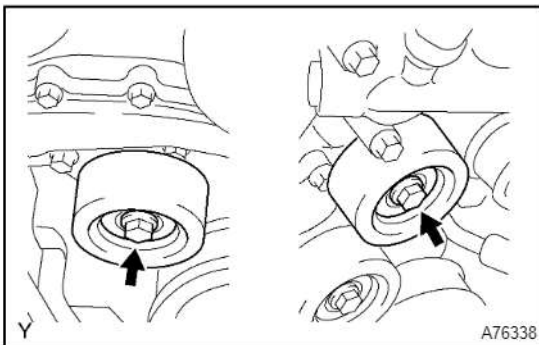
- (b) Disconnect the 2 radiator hoses.



- (c) Disconnect the 5 water by-pass hoses.



- (d) Remove the 5 bolts and water inlet.
 (e) Remove the O-ring from the water outlet pipe.
 (f) Remove the gasket from the water pump.



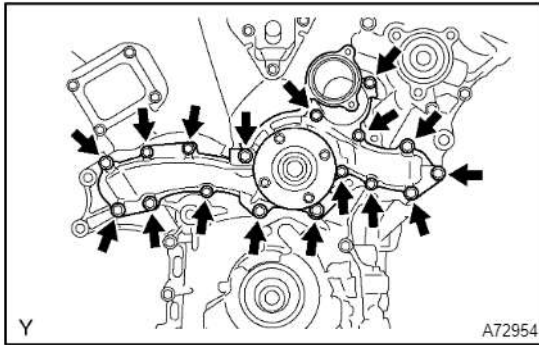
11. REMOVE IDLER PULLEY SUB-ASSY NO.2

- (a) Remove the 2 bolts and 2 idler pulleys.

12. REMOVE GENERATOR ASSY (See page 19-26)

13. SEPARATE COOLER COMPRESSOR ASSY (See page 18-7)

14. REMOVE V-RIBBED BELT TENSIONER ASSY (See page 14-119)

**15. REMOVE WATER PUMP ASSY**

- (a) Remove the 17 bolts, water pump and gasket.

16. INSTALL WATER PUMP ASSY

- (a) Install a new gasket and the water pump with the 17 bolts.

Torque:

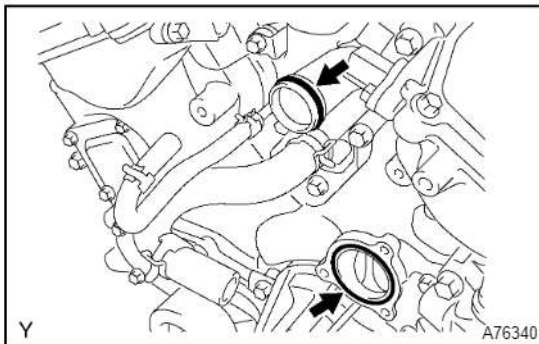
9.0 N·m (92 kgf·cm, 80 in·lbf) for 10 mm (0.39 in.) head

23 N·m (235 kgf·cm, 17 ft·lbf) for 12 mm (0.47 in.) head

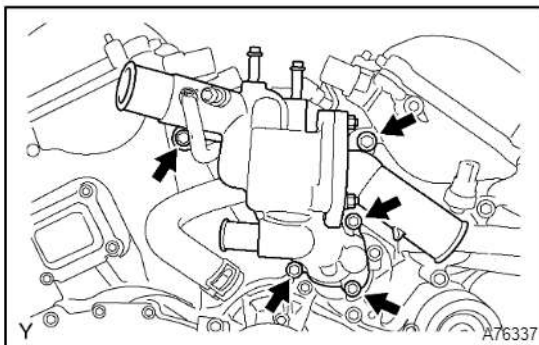
17. INSTALL V-RIBBED BELT TENSIONER ASSY (See page 14-119)**18. INSTALL COOLER COMPRESSOR ASSY (See page 18-7)****19. INSTALL GENERATOR ASSY (See page 19-26)****20. INSTALL IDLER PULLEY SUB-ASSY NO.2**

- (a) Install the 2 idler pulleys with the 2 bolts.

Torque: 39 N·m (398 kgf·cm, 29 ft·lbf)

**21. INSTALL WATER INLET**

- (a) Install a new O-ring to the water outlet pipe.
 (b) Install a new gasket to the water pump.
 (c) Apply soapy water to the O-ring.



- (d) Install the water inlet with the 5 bolts.

Torque: 9.0 N·m (92 kgf·cm, 80 in·lbf)

- (e) Connect the 5 water by-pass hoses.
 (f) Connect the 2 radiator hoses.
 (g) Connect the 2 oil cooler hoses (w/ oil cooler).

22. INSTALL AIR CLEANER ASSY (See page 10-7)**23. CONNECT VENTILATION HOSE NO.2**

24. INSTALL FAN W/ FLUID COUPLING

- (a) Put the fan pulley to the water pump.
- (b) Put the fan w/ fluid coupling and fan shroud together.
- (c) Temporarily install the 4 fluid coupling nuts.
- (d) Tighten the 2 fan shroud bolts and radiator reserve tank bolt.

Torque: 5.0 N·m (51 kgf·cm, 44 in·lbf)

- (e) Connect the reserve tank hose.
- (f) Fasten the 2 oil cooler hoses with the hose clamp.

25. INSTALL FAN AND GENERATOR V BELT (See page 14-5)**26. FULLY TIGHTEN FAN W/ FLUID COUPLING**

- (a) Tighten the 4 fluid coupling bolts.

Torque: 21 N·m (214 kgf·cm, 15 ft·lbf)

27. INSTALL RADIATOR SUPPORT SEAL UPPER**28. ADD ENGINE COOLANT (See page 16-5)****29. CHECK FOR ENGINE COOLANT LEAKS (See page 16-1)****30. INSTALL V-BANK COVER**

- (a) Install the V-bank cover with the 2 nuts.

Torque: 7.5 N·m (76 kgf·cm, 66 in·lbf)

31. INSTALL ENGINE UNDER COVER SUB-ASSY NO.1

- (a) Install the engine under cover with the 4 bolts.

Torque: 29 N·m (296 kgf·cm, 21 ft·lbf)

WATER INLET W/THERMOSTAT (1GR-FE)

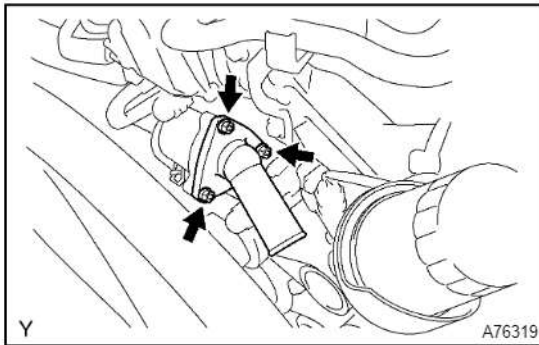
REPLACEMENT

160J6-02

HINT:

If the thermostat was not installed, cooling efficiency would be harmed. If the engine should tend to overheat, do not remove the thermostat.

1. **DRAIN ENGINE COOLANT** (See page 16-5)
2. **REMOVE V-BANK COVER** (See page 10-7)
3. **DISCONNECT RADIATOR OUTLET, NO.2 HOSE CLAMP OR CLIP**

**4. REMOVE WATER INLET W/THERMOSTAT**

- (a) Remove the 3 nuts, water inlet w/ thermostat and gasket.

5. INSTALL WATER INLET W/THERMOSTAT

- (a) Install a new gasket to the water inlet w/ thermostat.
- (b) Install the water inlet w/ thermostat with the 3 nuts.

Torque: 9.0 N·m (92 kgf·cm, 80 in·lbf)

6. CONNECT RADIATOR OUTLET, NO.2 HOSE CLAMP OR CLIP**7. ADD ENGINE COOLANT** (See page 16-5)**8. CHECK FOR ENGINE COOLANT LEAKS** (See page 16-1)**9. INSTALL V-BANK COVER**

- (a) Install the V-bank cover with the 2 nuts.

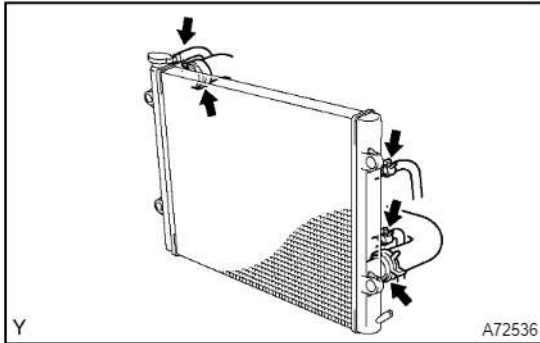
Torque: 7.5 N·m (76 kgf·cm, 66 in·lbf)

RADIATOR ASSY (1GR-FE)

160J3-02

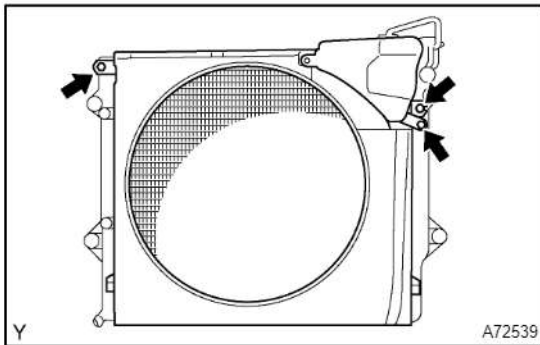
Removal & Installation and Disassembly & Reassembly

1. **DRAIN ENGINE COOLANT** (See page 16-5)
2. **REMOVE RADIATOR SUPPORT SEAL UPPER**
 - (a) Remove the 11 clips and radiator support upper.



3. SEPARATE FAN SHROUD

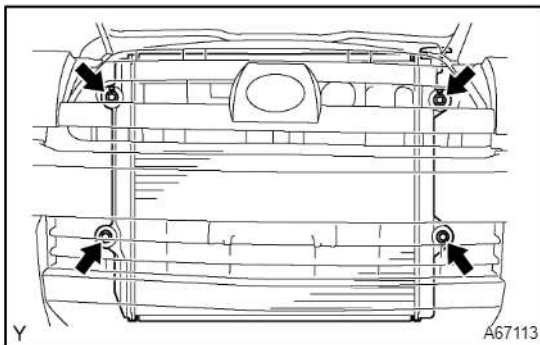
- (a) Disconnect the reserve tank hose from the radiator.
- (b) Disconnect the radiator hose No. 1 from the radiator.
- (c) Disconnect the oil cooler inlet hose from the radiator.
- (d) Disconnect the oil cooler outlet hose from the radiator.
- (e) Disconnect the radiator hose No. 2 from the radiator.



- (f) Remove the 3 bolts, and separate the fan shroud.

HINT:

Temporarily put the separated fan shroud at an appropriate location in the engine room.



4. REMOVE RADIATOR ASSY

- (a) Remove the 4 bolts and radiator.

5. REMOVE RADIATOR SUPPORT NO.1

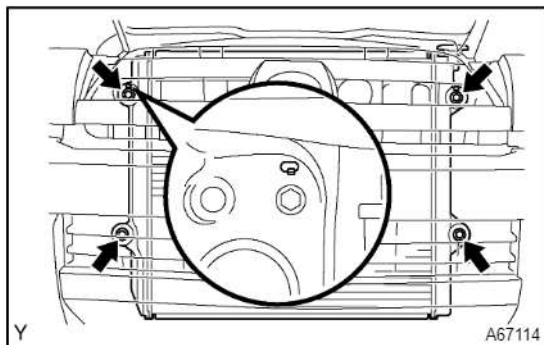
- (a) Remove the 1 radiator support No. 1.

6. REMOVE RADIATOR SUPPORT NO.2

- (a) Remove the 3 radiator support No. 2.

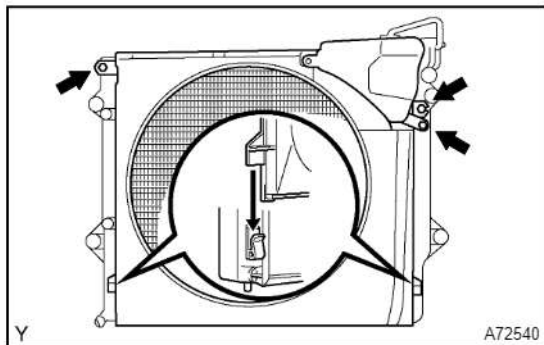
7. REMOVE RADIATOR SUPPORT NO.1 BUSH

- (a) Remove the 4 radiator support No. 1 bush.

**8. INSTALL RADIATOR ASSY**

- (a) Insert the tabs of the radiator support through the radiator service holes.
- (b) Install the radiator assy with the 4 bolts.

Torque: 18 N·m (184 kgf·cm, 13 ft·lbf)

**9. INSTALL FAN SHROUD**

- (a) Insert the tabs in the slots shown in the illustration, attach the fan shroud with the 3 bolts.

Torque: 5.0 N·m (51 kgf·cm, 44 in·lbf)

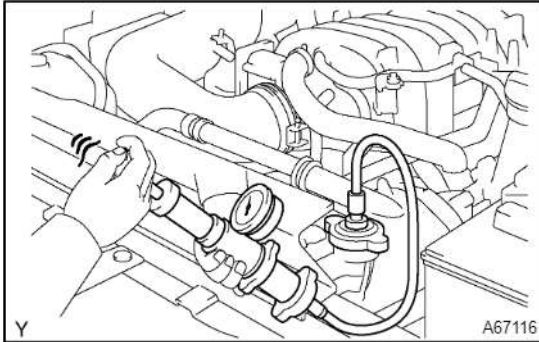
10. ADD ENGINE COOLANT (See page 16-5)

11. CHECK FOR ENGINE COOLANT LEAKS (See page 16-1)

COOLING SYSTEM (2UZ-FE)(From August, 2003)

ON-VEHICLE INSPECTION

160EP-03



1. INSPECT COOLING SYSTEM FOR LEAKS

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.

- Fill the radiator with coolant, then attach a radiator cap tester.
- Warm up the engine.
- Pump it to 118 kPa (1.2 kgf/cm², 17.1 psi), then check that the pressure does not drop.

HINT:

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 head.

2. CHECK ENGINE COOLANT LEVEL AT RESERVOIR

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

HINT:

If low, check for leaks and add "Toyota Super Long Life Coolant" or similar high quality ethylene glycol based non-silicate, non-amine, non-nitrite, and non-borate coolant with long-life hybrid organic acid technology up to the "FULL" line.

3. CHECK ENGINE COOLANT QUALITY

- Remove the radiator cap.

CAUTION:

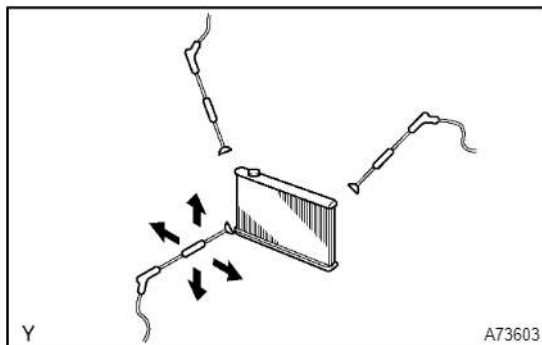
To avoid the danger of being burned, do not remove the radiator cap while the engine and radiator are still hot as fluid and steam can be blown out under pressure.

- Check the radiator cap and radiator filler hole for rust and dirt. The coolant should be free from oil.

HINT:

If the coolant is excessively dirty, replace the coolant.

- Reinstall the radiator cap.



4. INSPECT FIN BLOCKAGE

- (a) If the fins are clogged, wash them with water or a steam cleaner, then dry with compressed air.

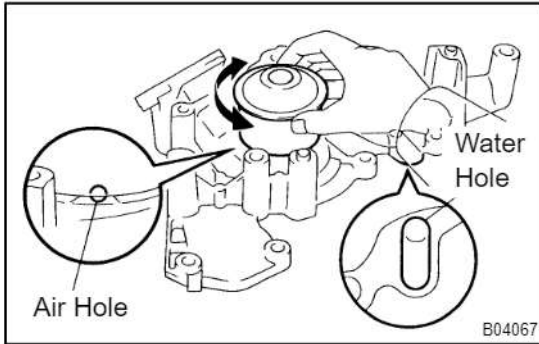
NOTICE:

- If the distance between the steam cleaner and core is too close, there is a possibility of damaging the fins, so keep the following injection distance.

Injection Pressure kPa (kg/cm ² , psi)	Injection Distance mm (in.)
2,942 to 4,903 (30 to 50, 427 to 711)	300 (11.811)
4,903 to 7,845 (50 to 80, 711 to 1,138)	500 (19.685)

- If the fins are bent, straighten them with a screwdriver or pliers.
- Never apply water directly onto the electronic components.

INSPECTION



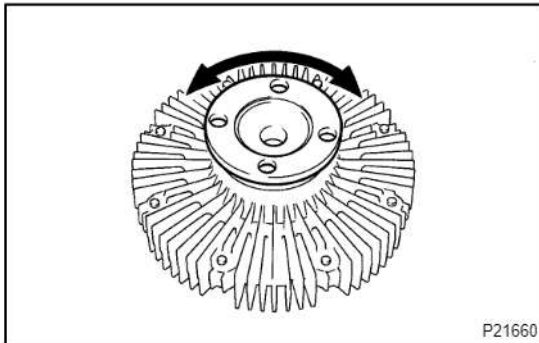
1. WATER PUMP ASSY

- (a) Visually check the air hole and water hole for coolant leakage.

If leakage is found, replace the water pump and timing belt.

- (b) Turn the pulley, then check that the water pump bearing moves smoothly and quietly.

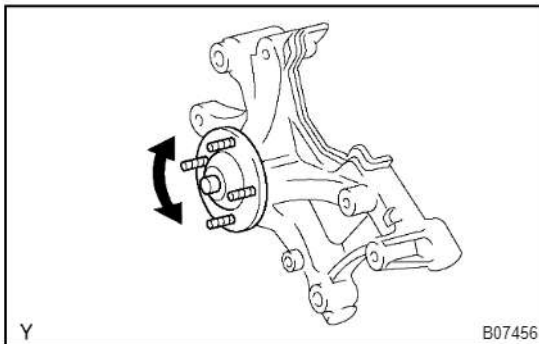
If necessary, replace the water pump.



2. FLUID COUPLING ASSY

- (a) Check that the fluid coupling for damage or silicon oil leaks.

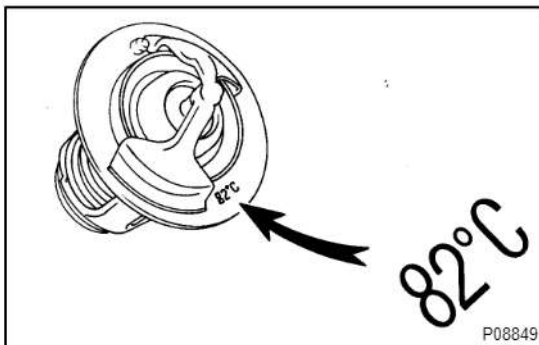
If necessary, replace the fluid coupling.



3. FAN BRACKET SUB-ASSY

- (a) Check that the fan pulley turns smoothly.

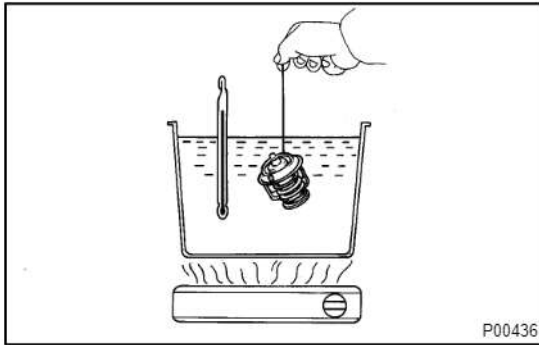
If necessary, replace the pulley bracket.



4. THERMOSTAT

HINT:

The thermostat is inscribed with the valve opening temperature.

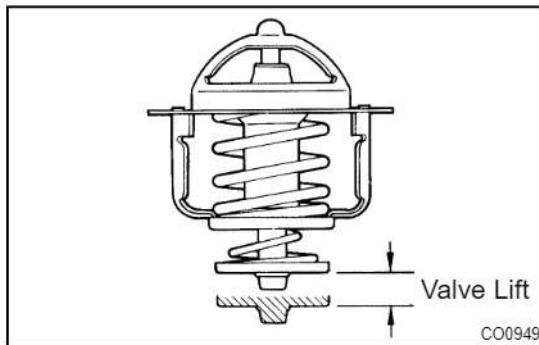


- (a) Immerse the thermostat in the water and gradually heat the water.
- (b) Check the valve opening temperature.

Valve opening temperature:

80 to 84°C (176 to 183°F)

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

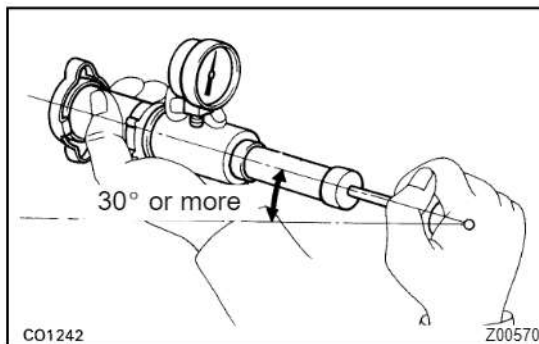


- (c) Check the valve lift.
Valve lift: 10 mm (0.39 in.) or more at 95°C (203°F)
If the valve lift is not as specified, replace the thermostat.
- (d) Check that the valve is fully closed when the thermostat is at low temperatures (below 40°C (104°F)).
If not fully closed, replace the thermostat.

5. RADIATOR CAP SUB-ASSY

NOTICE:

- If the radiator cap is contaminated, always rinse it with water.
- Before using a radiator cap tester, wet the relief valve and pressure valve with engine coolant or water.



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

Pumping speed: 1 push / 3 seconds or longer

NOTICE:

Push the pump at a constant speed.

HINT:

- Pumping speed: 1 push / 3 seconds or longer
 - If air is not coming from the vacuum valve, replace the reservoir cap.
- (b) Pump the tester, then measure the relief valve opening pressure.

Standard opening pressure:

93 to 123 kPa (0.95 to 1.25 kgf/cm², 13.5 to 17.8 psi)

Minimum opening pressure:

78 kPa (0.8 kgf/cm², 11.4 psi)

NOTICE:

This pumping speed is for the first pump only (in order to close the vacuum valve). After this, the pumping speed can be reduced.

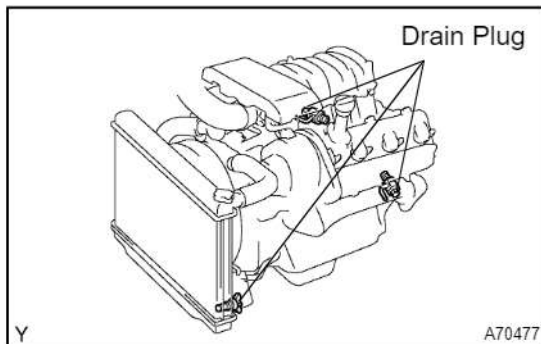
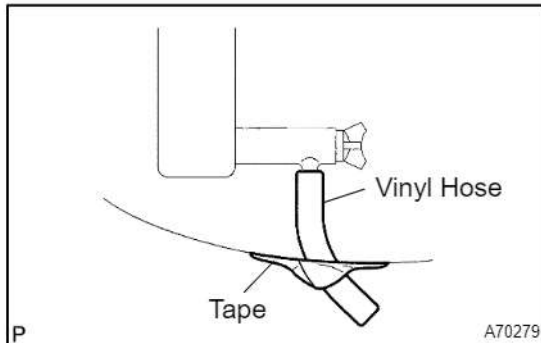
HINT:

- Pumping speed: 1 push within 1 second
- Use the tester's maximum reading as the opening pressure.
- If the opening pressure is less than minimum, replace the radiator cap.

COOLANT (2UZ-FE)(From August, 2003)

REPLACEMENT

160F0-04



1. DRAIN ENGINE COOLANT

CAUTION:

To avoid the risk of burn injury, do not remove the radiator cap while the engine and radiator are still hot. Heated fluid and steam can be blown out under pressure inside the radiator.

- Remove the radiator cap.
 - Remove the service hole cover from the engine under cover No. 1.
 - Install a vinyl hose to the drain on the radiator side.
 - Loosen the radiator drain plug and engine drain plug, then drain the coolant from the radiator.
 - Drain the coolant from the reserve tank.
 - Put in the drain plugs.
- Torque: 13 N·m (130 kgf·cm, 9 ft·lbf) for the engine**
- Remove the vinyl hose from the radiator.

2. ADD ENGINE COOLANT

- Slowly fill the system with engine coolant.
Capacity: 12.3 liters (13.0 US qts, 10.8 Imp. qts)

HINT:

- Use of improper coolants may damage the engine cooling system.
- Use "Toyota Super Long Life Coolant" or similar high quality ethylene glycol based non-silicate, non-amine, non-nitrite, and non-borate coolant with long-life hybrid organic acid technology.
- New Toyota vehicles are filled with Toyota Super Long Life Coolant (color is pink, premixed ethylene-glycol concentration is approximately 50% and freezing temperature is $-35^{\circ}\text{C}(-31^{\circ}\text{F})$). When replacing the coolant, Toyota Super Long Life Coolant is recommended.
- Observe the coolant level inside the radiator by pressing the inlet and outlet radiator hoses several times by hand. If the coolant level goes down, add the coolant.

NOTICE:

Do not use plain water alone.

- Install the radiator cap.
- Bleed the cooling system.
 - Start the engine, and open the heater water valve.
 - Maintain the engine speed at 2,000 to 2,500 rpm to warm up the engine.
- Stop the engine, then wait until the engine coolant cools down.
- Add coolant into the reservoir until the coolant level is "FULL".

3. CHECK FOR ENGINE COOLANT LEAKS

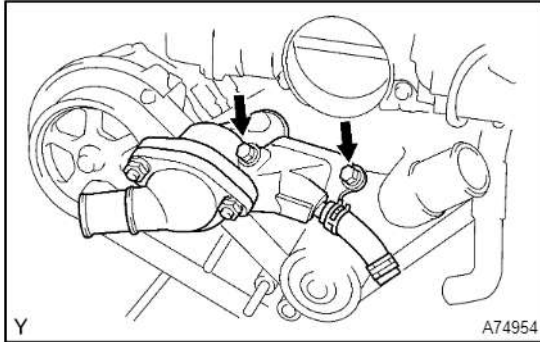
- (a) Fill the radiator with coolant, then attach a radiator cap taster.
- (b) Pump it to 118 kPa (1.2 kgf/cm² 17.1 psi), then check for leakage.

WATER PUMP ASSY (2UZ-FE)

REPLACEMENT

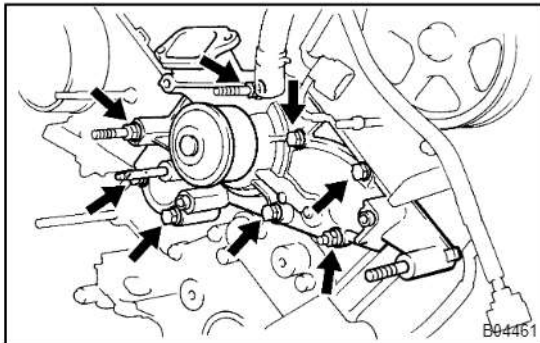
160F2-03

1. REMOVE TIMING BELT (See page 14-296)



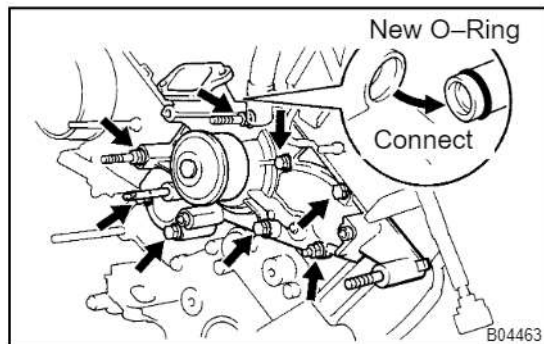
2. REMOVE WATER INLET HOUSING

- Disconnect the water bypass hose from the water inlet housing.
- Remove the 2 bolts holding the water inlet housing to the water pump.
- Disconnect the water inlet housing from the front water bypass joint, and remove the water inlet housing w/ water inlet.



3. REMOVE WATER PUMP ASSY

- Remove the 5 bolts, 2 stud bolts, nut, water pump and gasket.
- Remove the O-ring from the water bypass pipe.



4. INSTALL WATER PUMP ASSY

- Install a new O-ring to the water bypass pipe end.
- Apply soapy water to the O-ring.
- Connect the water pump to the water bypass pipe end.
- Install the water pump and new gasket with the 5 bolts, 2 stud bolts and nut. Uniformly tighten the bolts, stud bolts and nut in several passes.

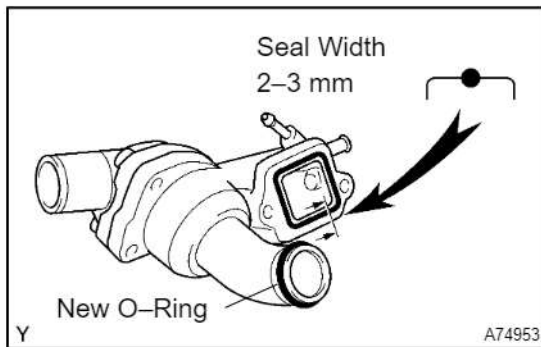
Torque:

Bolt 21 N·m (215 kgf·cm, 16 ft·lbf)

Stud bolt and nut 18 N·m (185 kgf·cm, 13 ft·lbf)

5. INSTALL WATER INLET HOUSING

- Remove any old packing (FIPG) material and be careful not to drop any oil on the contact surfaces of the water inlet housing and water pump.
 - Using a razor blade and gasket scraper, remove all the old packing (FIPG) material from the gasket surfaces and sealing groove.
 - Thoroughly clean all components to remove all the loose material.
 - Using a non-residue solvent, clean both sealing surfaces.



- (b) Apply seal packing to the sealing groove of water inlet housing as shown in the illustration.

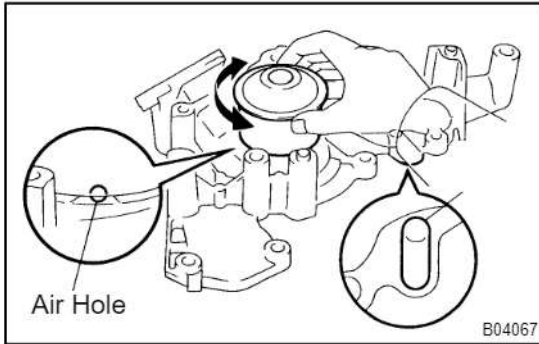
Seal packing: Part No. 08826-00100 or equivalent

- (1) Install a nozzle that has been cut to a 2 – 3 mm (0.08 – 0.12 in.) opening.
 - (2) Parts must be assembled within 5 minutes of application. Otherwise the material must be removed and reapplied.
 - (3) Immediately remove nozzle from the tube and reinstall cap.
- (c) Install a new O-ring to the water inlet housing.
 - (d) Apply soapy water on the O-ring.
 - (e) Attach the water inlet housing end to the front water bypass joint hole.
 - (f) Install the water inlet and housing assembly with the 2 bolts. Alternately tighten the bolts.

Torque: 18 N·m (185 kgf·cm, 13 ft·lbf)

6. INSTALL TIMING BELT (See page 14-296)

INSPECTION



1. INSPECT WATER PUMP ASSY

- (a) Visually check the hole and water hole for coolant leakage.

If leakage is found, replace the water pump and timing belt.

- (b) Turn the pulley, and check that the water pump bearing moves smoothly and quietly.

If necessary, replace the water pump.

THERMOSTAT (2UZ-FE)

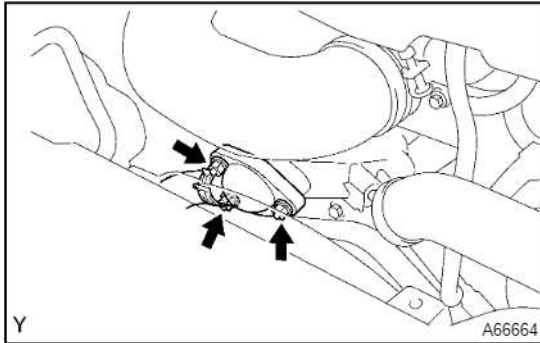
REPLACEMENT

160F1-03

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. DRAIN ENGINE COOLANT (See page 16-17)

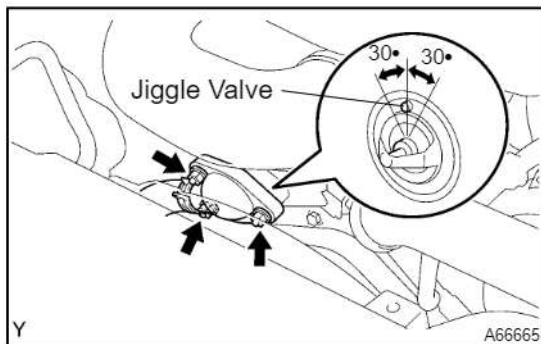


2. SEPARATE WATER INLET

- (a) Remove the 3 nuts, and separate the water inlet from the water inlet housing.

3. REMOVE THERMOSTAT

- (a) Remove the thermostat.
(b) Remove the gasket from the thermostat.



4. INSTALL THERMOSTAT

- (a) Install a new gasket to the thermostat.
(b) Insert the thermostat into the water inlet housing with the jiggle valve facing starlight upward.

HINT:

The jiggle valve may be set within 30° of either side of the prescribed position.

5. INSTALL WATER INLET

- (a) Install the water inlet with the 3 nuts.
Torque: 19 N·m (195 kgf·cm, 14 ft·lbf)

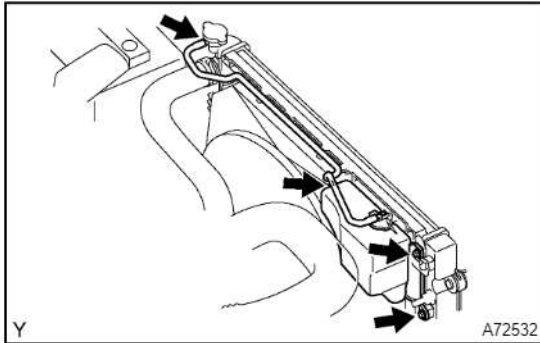
6. REFILL ENGINE COOLANT (See page 16-17)

RADIATOR ASSY (2UZ-FE)

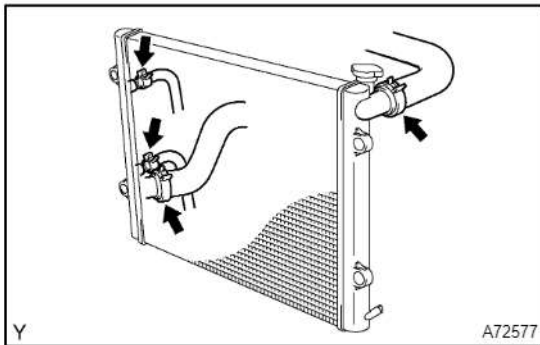
160ER-03

Removal & Installation and Disassembly & Reassembly

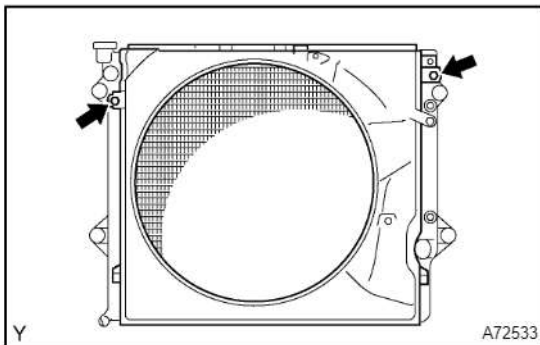
1. **DRAIN ENGINE COOLANT** (See page 16-17)
2. **REMOVE ENGINE UNDER COVER SUB-ASSY NO.1**
 - (a) Remove the 4 bolts and engine under cover.
3. **REMOVE RADIATOR SUPPORT SEAL UPPER**
 - (a) Remove the 11 clips and radiator support upper.



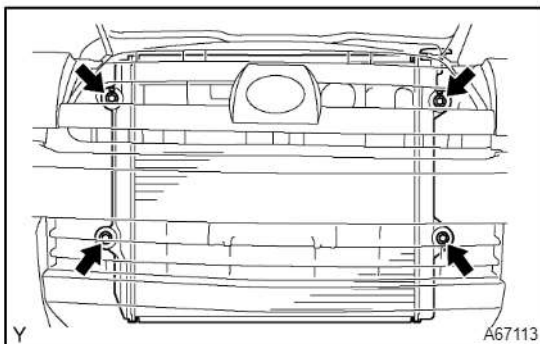
4. **REMOVE RADIATOR RESERVE TANK ASSY**
 - (a) Disconnect the reserve tank hose from the radiator.
 - (b) Remove the 3 bolts and reserve tank.



5. **SEPARATE FAN SHROUD**
 - (a) Disconnect the radiator hose No. 1 from the radiator.
 - (b) Disconnect the oil cooler inlet hose from the radiator. (A/T TRANSMISSION)
 - (c) Disconnect the oil cooler outlet hose from the radiator. (A/T TRANSMISSION)
 - (d) Disconnect the radiator hose No. 2 from the radiator.



- (e) Remove the 2 bolts, and separate the fan shroud.
- HINT:**
Temporarily put the separated fan shroud at an appropriate location in the engine room.



6. **REMOVE RADIATOR ASSY**
 - (a) Remove the 4 bolts and radiator.

7. REMOVE RADIATOR SUPPORT NO.1

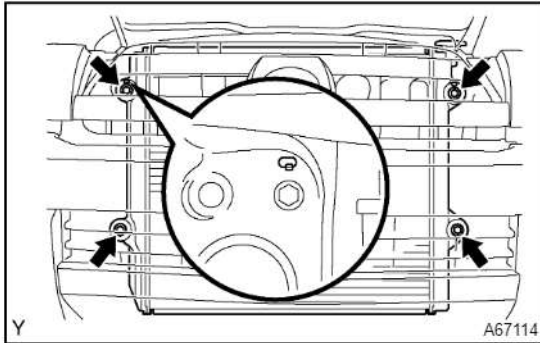
- (a) Remove the 2 radiator support No. 1 from the radiator.

8. REMOVE RADIATOR SUPPORT NO.2

- (a) Remove the 2 radiator support No. 2 from the radiator.

9. REMOVE RADIATOR SUPPORT NO.1 BUSH

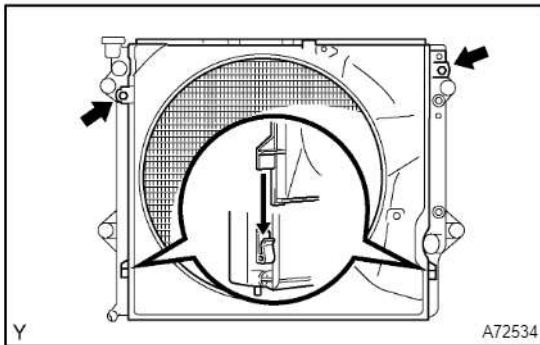
- (a) Remove the 4 radiator support No. 1 bush from the radiator.

**10. INSTALL RADIATOR ASSY**

- (a) Insert the tabs of the radiator support through the radiator service holes.

- (b) Install the radiator assy with the 4 bolts.

Torque: 18 N·m (184 kgf·cm, 13 ft·lbf)

**11. INSTALL FAN SHROUD**

- (a) Insert tabs in the slots described in the illustration, attach the fan shroud with the 2 bolts.

Torque: 5.0 N·m (51 kgf·cm, 44 in·lbf)

12. INSTALL RADIATOR RESERVE TANK ASSY

- (a) Install the reserve tank with the 3 bolts.

Torque: 5.0 N·m (51 kgf·cm, 44 in·lbf)

- (b) Connect the reserve tank hose to the radiator.

13. ADD ENGINE COOLANT (See page 16-17)**14. CHECK FOR ENGINE COOLANT LEAKS (See page 16-13)**