

COOLANT INSPECTION

CO15W-01

HINT:

Check the coolant level when the engine is cold.

1. CHECK ENGINE COOLANT LEVEL AT RADIATOR RESERVOIR

The engine coolant level should be between the "LOW" and "FULL" lines at normal temperature (20°C (68°F)).

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, clean the coolant passages and replace the coolant.

(c) Reinstall the radiator cap.

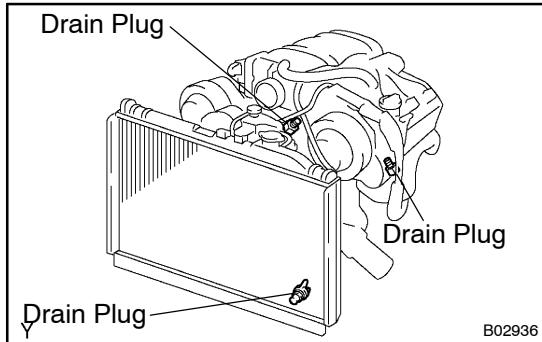
REPLACEMENT

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 radiator drain plug (on the left side of the radiator lower tank) and engine drain plug (on the cylinder block), and drain the coolant.
- (c) Close the 3 drain plugs.

Torque: 24.5 N·m (250 kgf·cm, 18 ft·lbf) for engine

2. FILL WITH ENGINE COOLANT

- (a) Slowly fill the system with coolant.
 - Use of improper coolants may damage engine cooling system.
 - Use "Toyota Long Life Coolant" or equivalent and mix it with plain water according to the manufacturer's directions.

Grade:

"TOYOTA LONG LIFE Antifreeze Coolant" or equivalent

- Use of the coolant which includes more than 50% (freezing protection down to -35°C (-31°F)) or 60% (freezing protection down to -50°C (-58°F)) of Ethylene-glycol is recommended, but not more than 70%.

NOTICE:

- **Do not use an alcohol type coolant or plain water alone.**
- **The coolant should be mixed with plain water (preferably demineralized water or distilled water).**

Capacity: 9.8 liters (10.4 US qts, 8.6 Imp. qts)

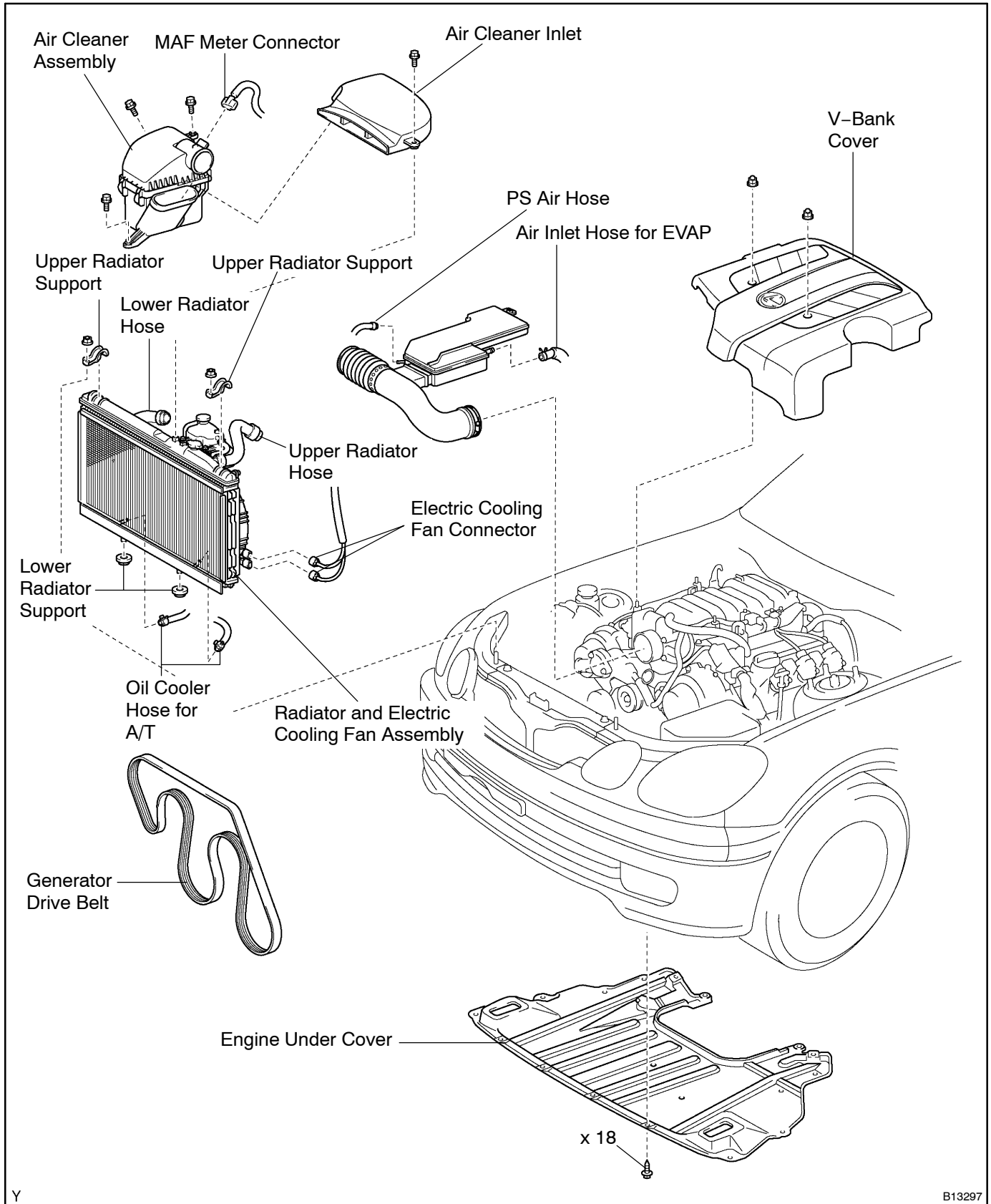
- (b) Install the radiator cap.
- (c) Bleed the cooling system.
 - (1) Start the engine, and open the heater water valve.
 - (2) Maintain the engine speed at 2,000 – 2,500 rpm, and warm up the engine.
- (d) Stop the engine, and wait until the engine coolant cools down.
- (e) Refill the radiator reservoir with coolant until it reaches the "FULL" line.

3. CHECK FOR ENGINE COOLANT LEAKS

4. CHECK ENGINE COOLANT SPECIFIC GRAVITY CORRECTLY

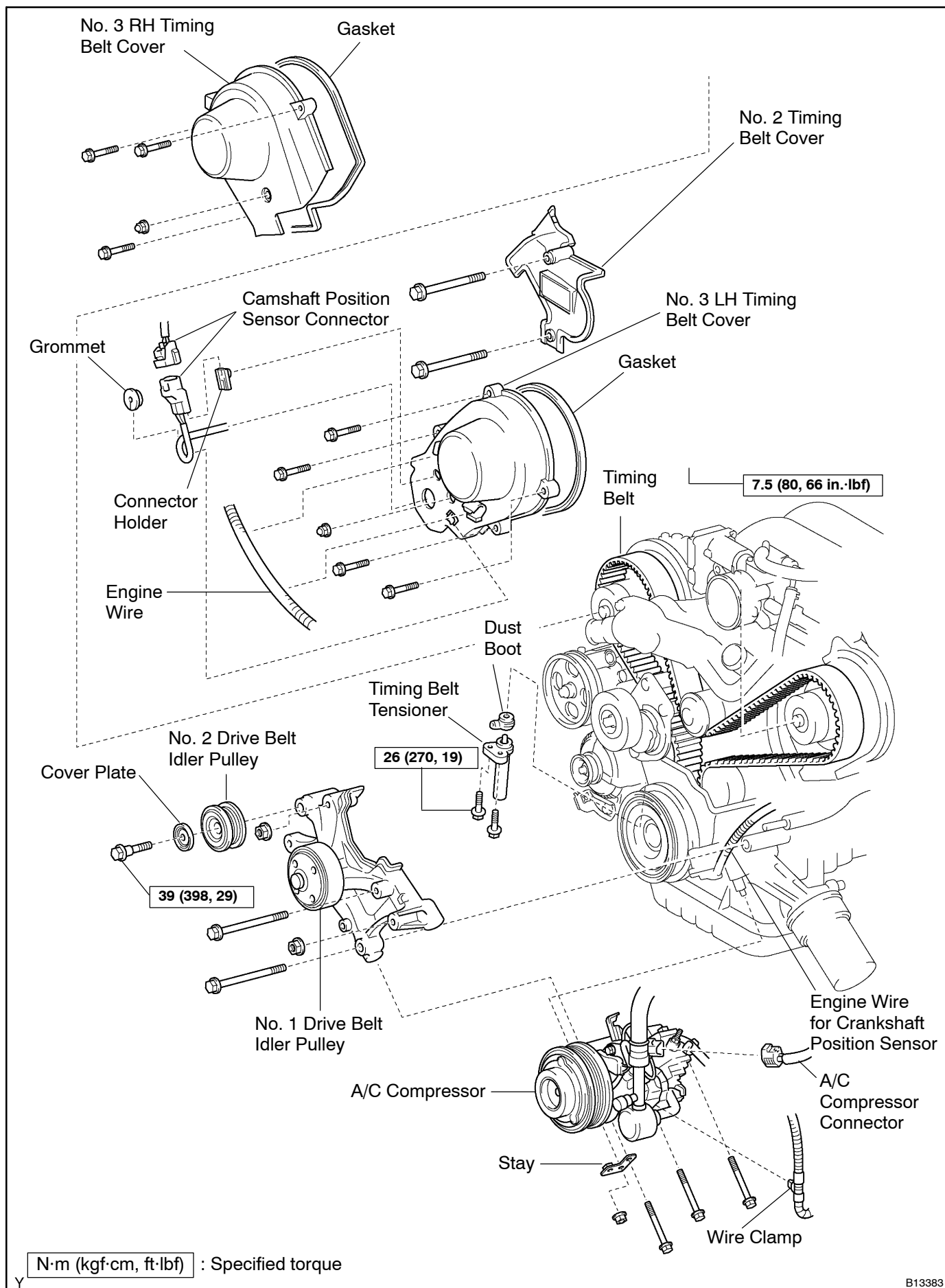
WATER PUMP COMPONENTS

CO161-01

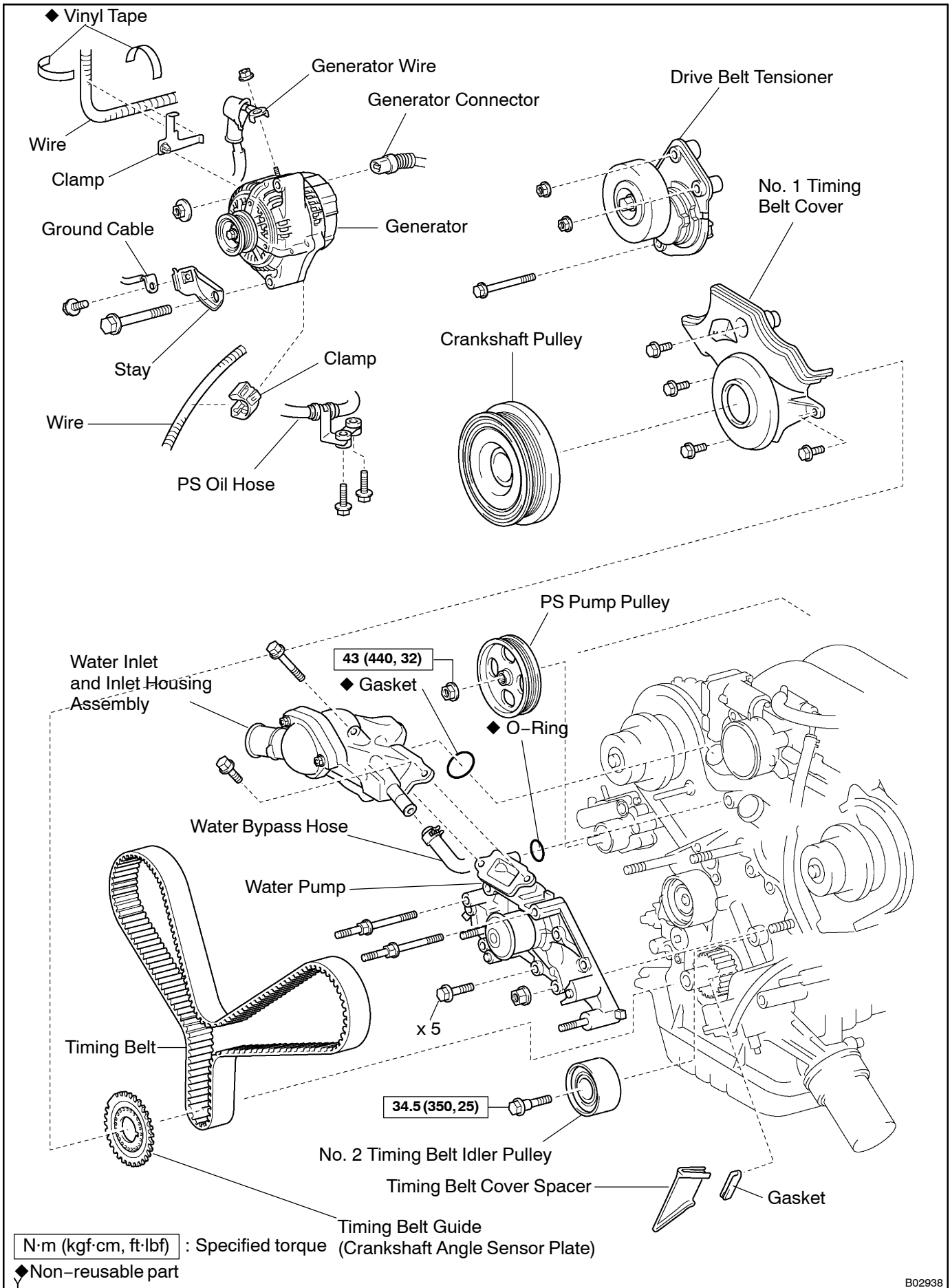


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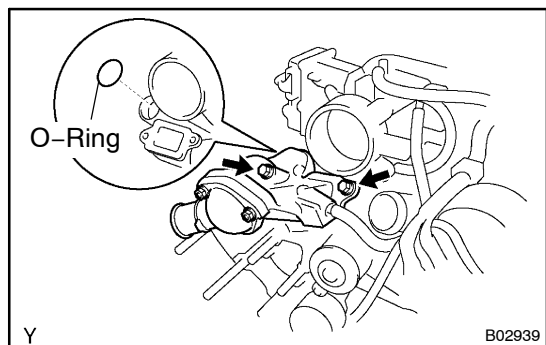
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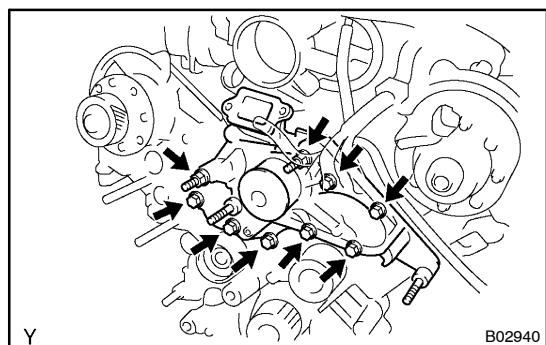
REMOVAL

1. DRAIN ENGINE COOLANT
2. REMOVE TIMING BELT (See page EM-15)
3. REMOVE NO. 2 IDLER PULLEY (See page EM-15)



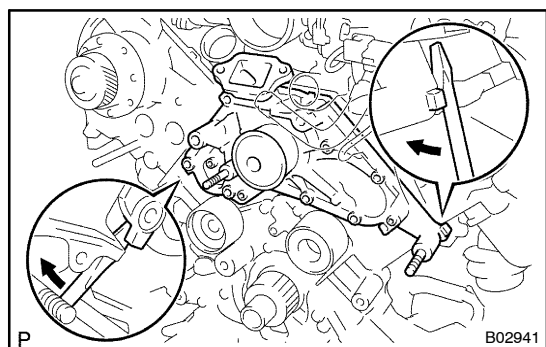
4. REMOVE WATER INLET AND INLET HOUSING ASSEMBLY

- (a) Disconnect the water bypass hose from the water inlet housing.
- (b) Remove the 2 bolts holding the water inlet housing to the water pump.
- (c) Disconnect the water inlet housing from the front water bypass joint, and remove the water inlet and inlet housing assembly.
- (d) Remove the O-ring from the water inlet housing.

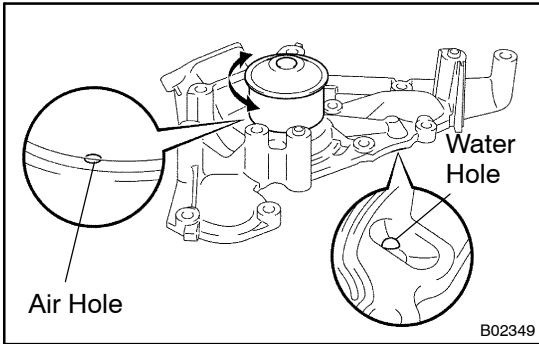


5. REMOVE WATER PUMP

- (a) Remove the 5 bolts, 2 stud bolts and nut.



- (b) Using a screwdriver, remove the water pump by prying the portions between the water pump and cylinder block.
- (c) Remove the O-ring from the water bypass pipe.



INSPECTION

1. INSPECT WATER PUMP

- (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, and check that the water pump bearing moves smoothly and quietly.

If necessary, replace the water pump.

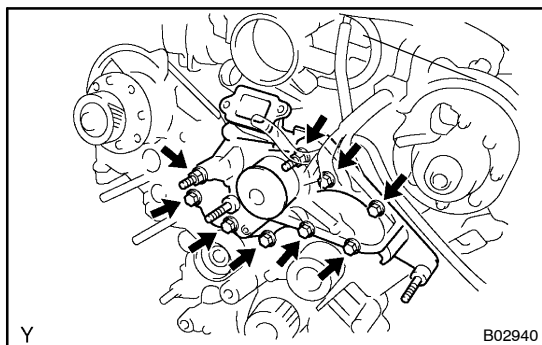
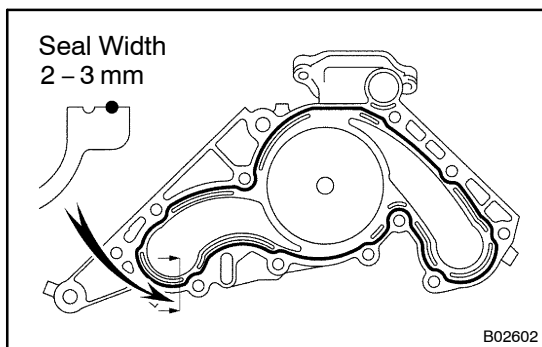
2. INSPECT TIMING BELT COMPONENTS

(See [page EM-20](#))

INSTALLATION

1. INSTALL WATER PUMP

- (a) Remove any old packing (FIPG) material and be careful not to drop any oil on the contact surfaces of the water pump and cylinder block.
 - 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 water pump as shown in the illustration.

Seal packing: Part No. 08826-00100 or equivalent

- Install a nozzle that has been cut to a 2 – 3 mm (0.08 – 0.12 in.) opening.
 - Parts must be assembled within 5 minutes of application. Otherwise the material must be removed and reapplied.
 - Immediately remove nozzle from the tube and reinstall cap.
- (c) Install a new O-ring to the water bypass pipe end.
 - (d) Apply soapy water to the O-ring.
 - (e) Connect the water pump to the water bypass pipe end.
 - (f) Install the water pump with the 5 bolts, 2 stud bolts and nut. Uniformly tighten the bolts, stud bolts and nut in several passes.

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

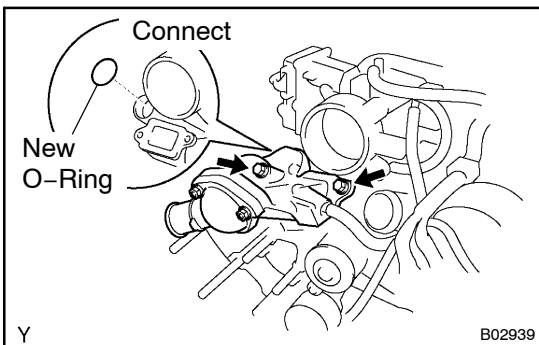
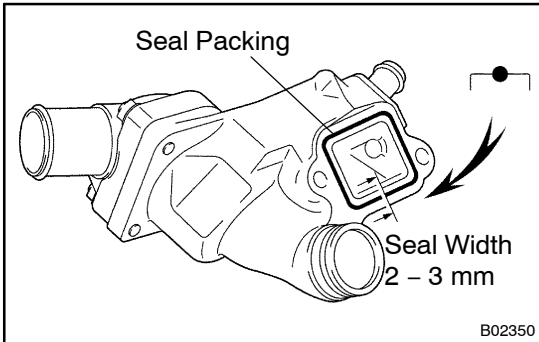
HINT:

Use bolts 30 mm (1.18 in.) in length.

2. INSTALL WATER INLET AND INLET HOUSING ASSEMBLY

- (a) 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

- Install a nozzle that has been cut to a 2 – 3 mm (0.08 – 0.12 in.) opening.
 - Parts must be assembled within 5 minutes of application. Otherwise the material must be removed and reapplied.
 - Immediately remove nozzle from the tube and re-install 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)

HINT:

Each bolt length is indicated in the illustration.

Bolt length:

76 mm (3.00 in.) for A

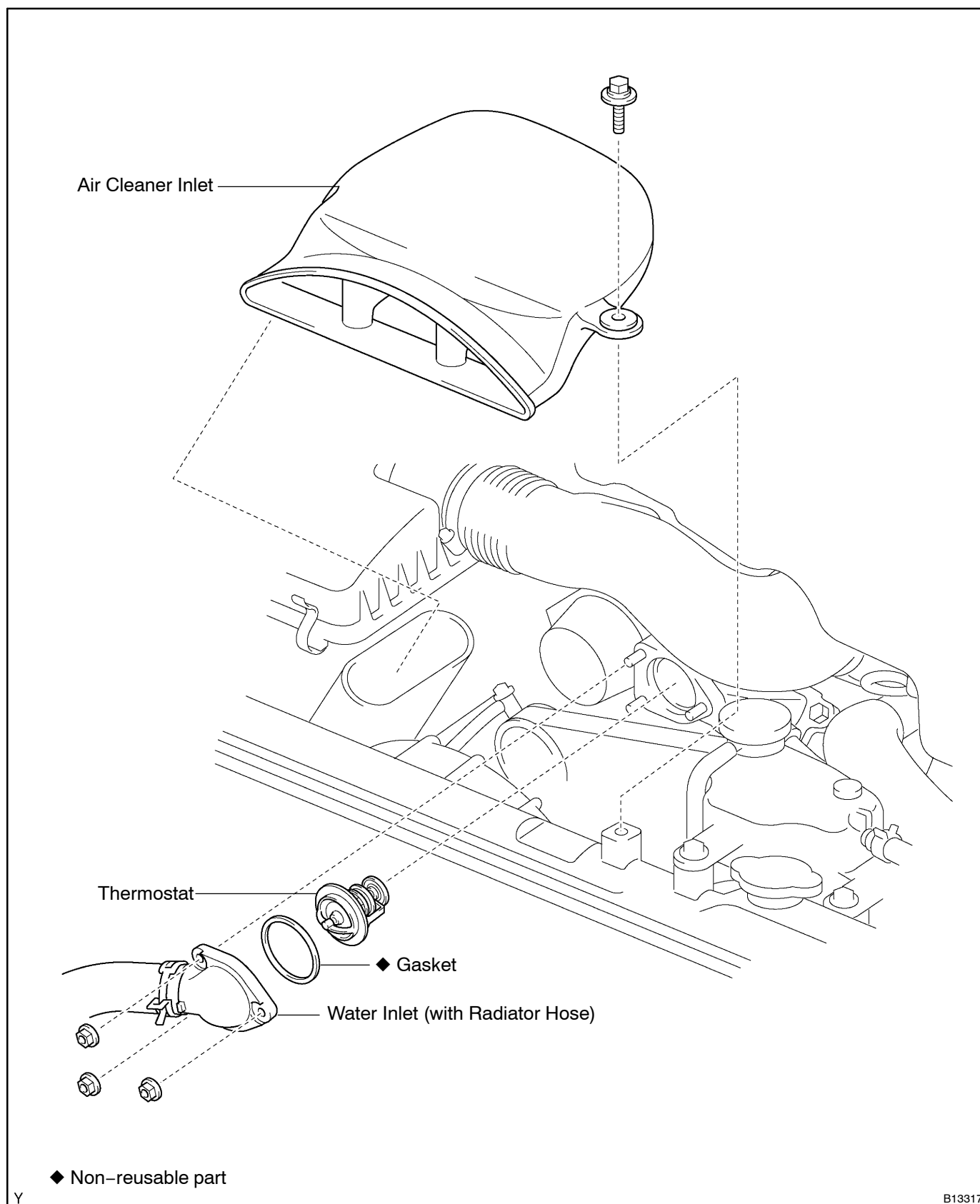
22 mm (0.87 in.) for B

- (g) Connect the water bypass hose to the water inlet housing.

3. **INSTALL NO. 2 IDLER PULLEY** (See page EM-22)
4. **INSTALL TIMING BELT** (See page EM-22)
5. **FILL WITH ENGINE COOLANT** (See page CO-2)
6. **START ENGINE AND CHECK FOR ENGINE COOLANT LEAKS**

THERMOSTAT COMPONENTS

C0162-01

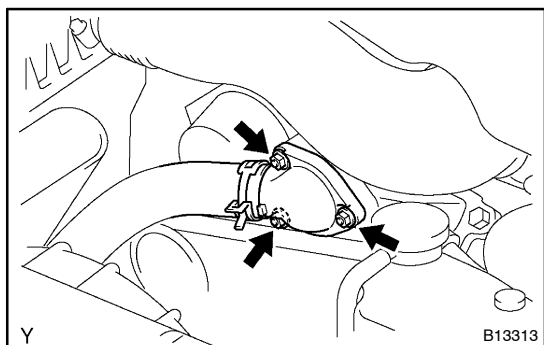


REMOVAL

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. **DRAIN ENGINE COOLANT**
2. **REMOVE AIR CLEANER INLET**

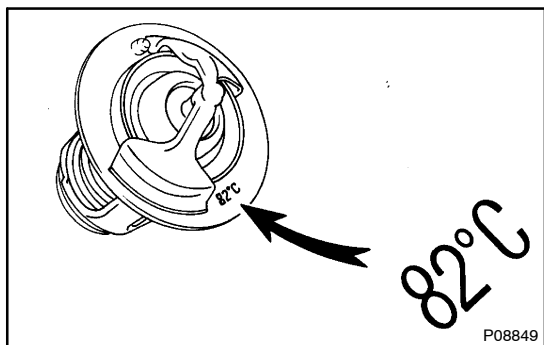


3. **DISCONNECT WATER INLET FROM WATER INLET HOUSING**

Remove the 3 nuts, and disconnect the water inlet from the water inlet housing.

4. **REMOVE THERMOSTAT**

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

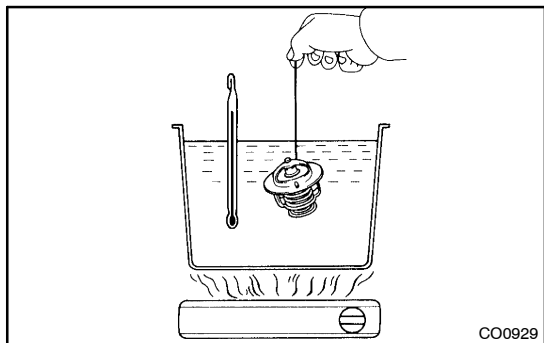


INSPECTION

INSPECT THERMOSTAT

HINT:

The thermostat is numbered with the valve opening temperature.

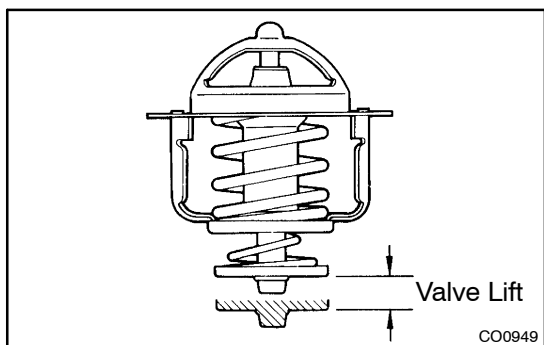


(a) Immerse the thermostat in water and gradually heat the water.

(b) 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.



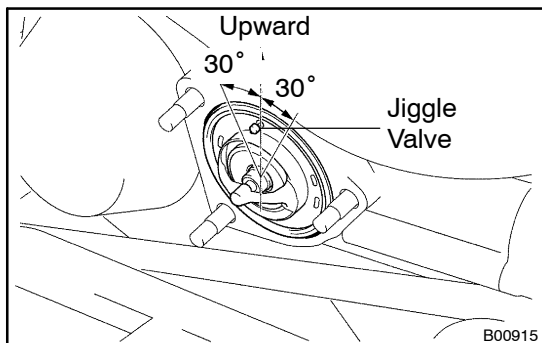
(c) Check the valve lift.

Valve lift: 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 closed, replace the thermostat.



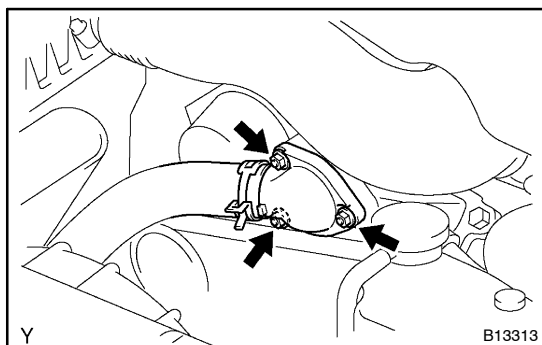
INSTALLATION

1. PLACE THERMOSTAT IN WATER INLET HOUSING

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

HINT:

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



2. INSTALL WATER INLET

Install the water inlet with the 3 nuts.

Torque: 19 N·m (195 kgf·cm, 14 ft·lbf)

3. ☐ **FILL WITH ENGINE COOLANT** ([See page CO-2](#))
4. **START ENGINE AND CHECK FOR ENGINE COOLANT LEAKS**
5. **INSTALL AIR CLEANER INLET**

RADIATOR

ON-VEHICLE CLEANING

CO166-01

CLEAN RADIATOR

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

NOTICE:

If using a high pressure type cleaner, be careful not to deform the fins of the radiator core. (i.e. Maintain a distance between the cleaner nozzle and radiator core.)

ON-VEHICLE INSPECTION

1. REMOVE RADIATOR CAP

Remove the radiator cap from the radiator.

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:

- If the radiator cap has contaminations, always rinse it with water.
- Before using a radiator cap tester, wet the relief valve and pressure valve with engine coolant or water.
- When performing steps (a) and (b) below, keep the 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 vacuum valve.

Pump speed: 1 push/(3 seconds or more)

NOTICE:

Push the pump at a constant speed.

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

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

Pump speed: 1 push within 1 seconds

NOTICE:

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

Standard opening pressure:

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

Minimum opening pressure:

79 kPa (0.8 kgf/cm², 11.5 psi)

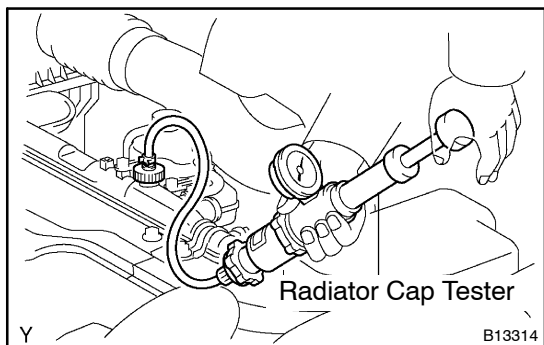
HINT:

Use the tester's maximum reading as the opening pressure.

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

3. INSPECT COOLING SYSTEM FOR LEAKS

- (a) Fill the radiator and engine with coolant and attach a radiator cap tester to the water filler.

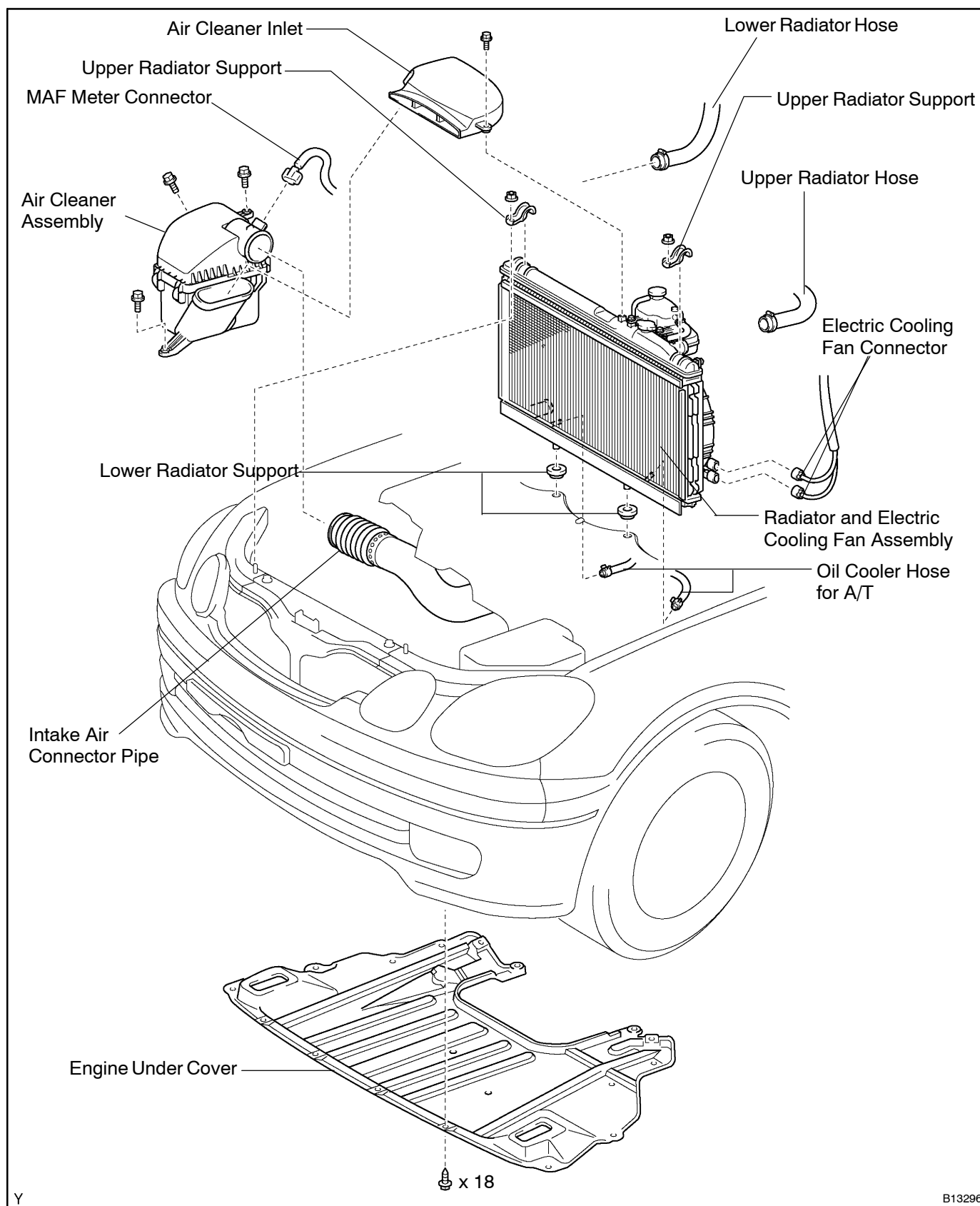


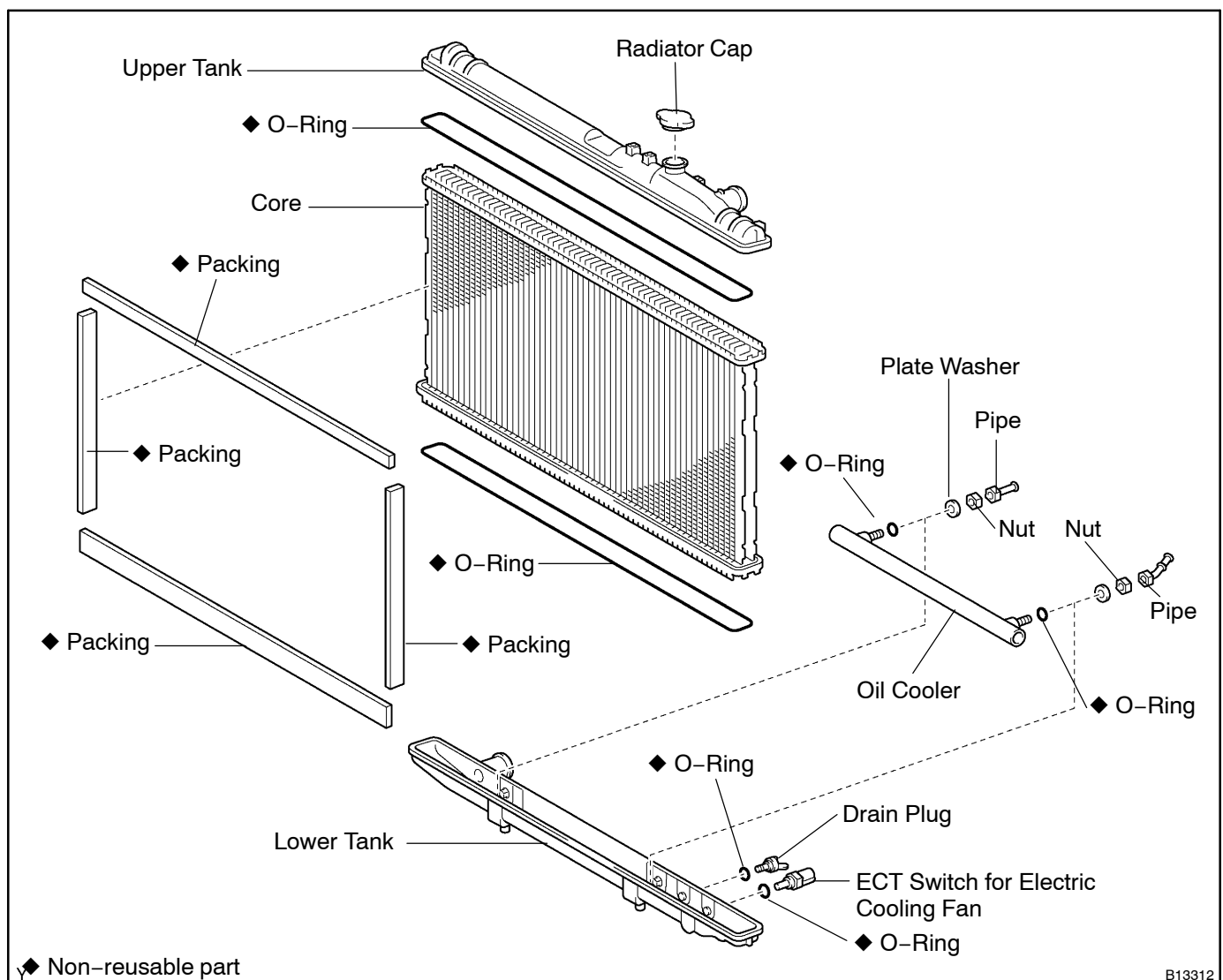
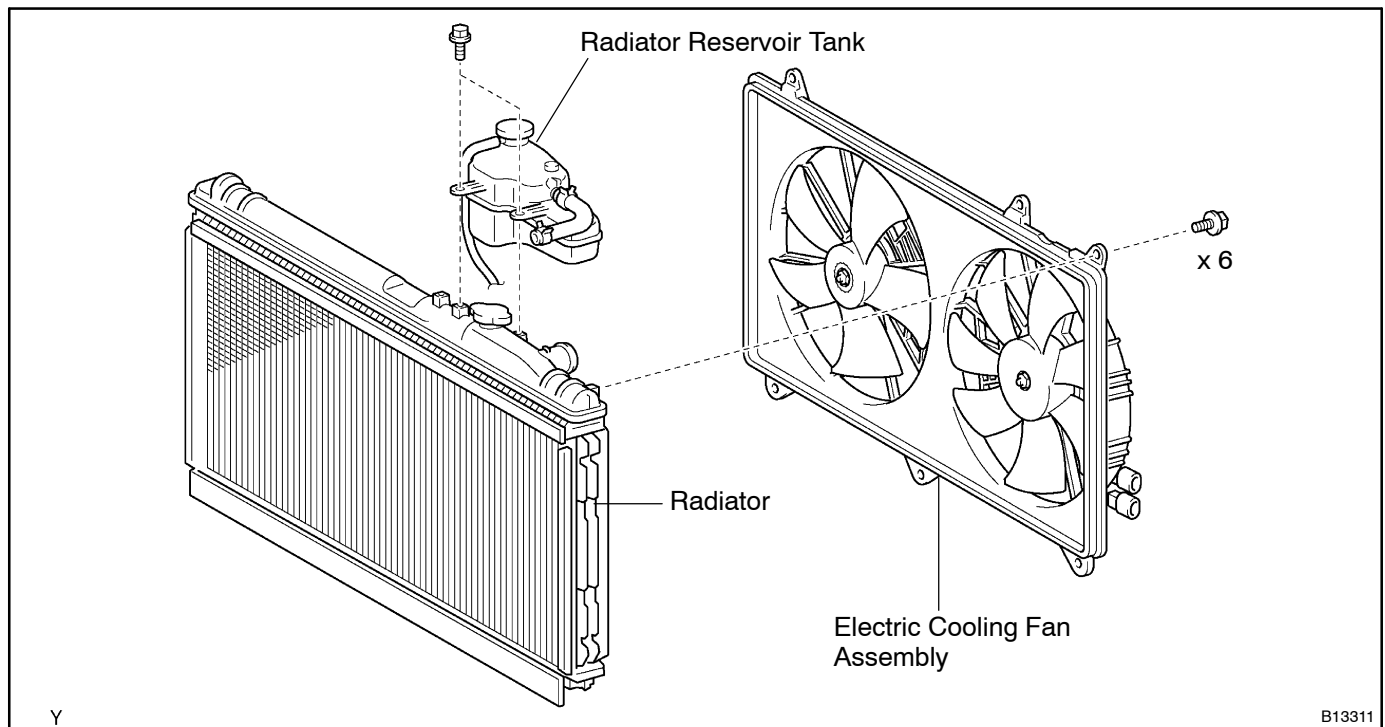
- (b) Warm up the engine.
- (c) Pump it to 118 kPa (1.2 kgf/cm², 17.1 psi), and check that the pressure does not drop.

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 head.

4. REINSTALL RESERVOIR CAP

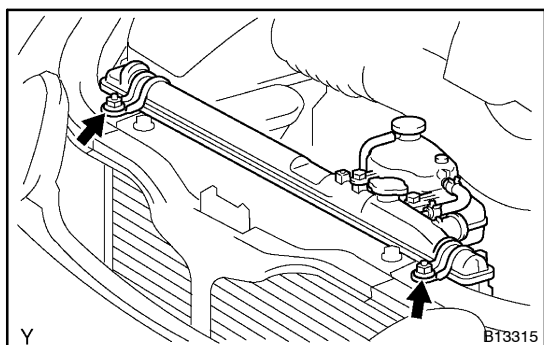
COMPONENTS





REMOVAL

1. REMOVE ENGINE UNDER COVER
 2. DRAIN ENGINE COOLANT
 3. REMOVE AIR CLEANER INLET
 4. REMOVE AIR CLEANER ASSEMBLY
 5. REMOVE RADIATOR AND ELECTRIC COOLING FAN AND RESERVOIR TANK ASSEMBLY
- (a) Disconnect these parts:
- Upper radiator hose from radiator
 - Lower radiator hose from radiator
 - ECM outlet duct from ECM box
 - Wire for electric cooling fan from clamp on electric cooling fan
 - 2 electric cooling fan connectors
 - ECT switch connector for electric cooling fan
 - 2 oil cooler hoses for A/T from radiator
 - Lower reservoir tank hose from reservoir tank



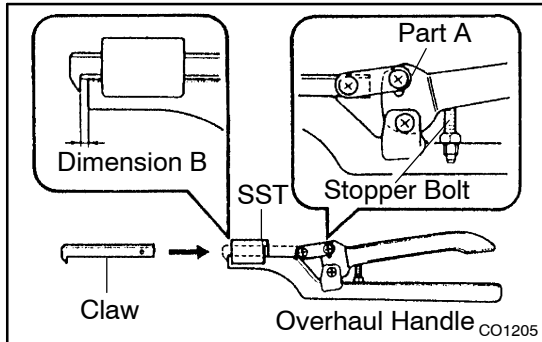
- (b) Remove the 2 nuts and 2 upper radiator supports.
 (c) Lift out the radiator and cooling fan assembly.
 (d) Remove the 2 lower radiator supports.
6. REMOVE RESERVOIR TANK FROM RADIATOR AND ELECTRIC COOLING FAN
- (a) Disconnect the upper reservoir tank hose from the radiator.
 (b) Remove the 2 bolts from the radiator.
 (c) Remove the lower reservoir tank support.
7. REMOVE ELECTRIC COOLING FAN FROM RADIATOR

Remove the 6 bolts and electric cooling fan.

DISASSEMBLY

1. REMOVE PACKINGS
2. REMOVE RADIATOR CAP
3. REMOVE DRAIN PLUG

- (a) Remove the drain plug.
- (b) Remove the O-ring.
4. REMOVE ECT SWITCH
- (a) Remove the ECT switch.
- (b) Remove the O-Ring.



5. ASSEMBLE SST

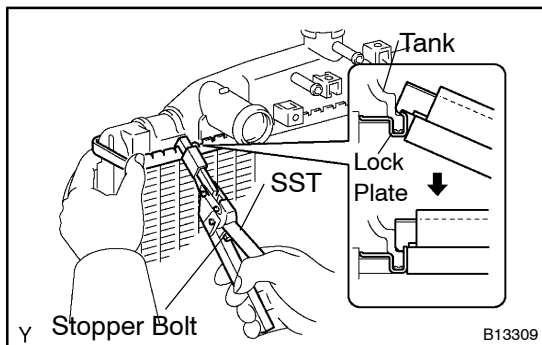
SST 09230-01010

- (a) Install the claw to the overhaul handle, inserting it in the hole in part A as shown in the diagram.
- (b) While gripping the handle, adjust the stopper bolt so that dimension B is as shown in the illustration.

Dimension B: 0.2 – 0.3 mm (0.008 – 0.012 in.)

NOTICE:

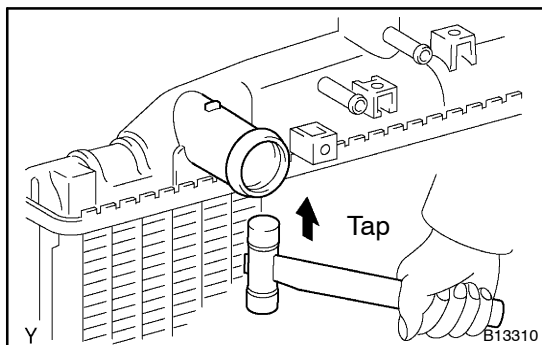
If this adjustment is not done the claw may be damaged.



6. UNCAULK LOCK PLATES

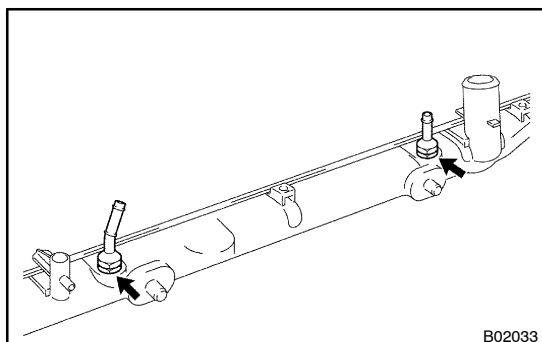
Using SST to release the caulking, squeeze the handle until stopped by the stopper bolt.

SST 09230-01010



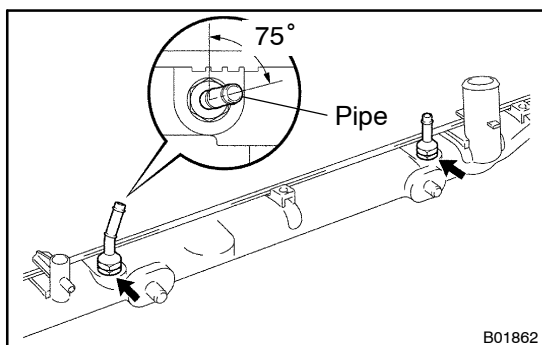
7. REMOVE TANKS AND O-RINGS

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



8. REMOVE OIL COOLER FROM LOWER TANK

- (a) Loosen the nut, and remove the cooler pipe. Remove the 2 cooler pipes.
- (b) Remove the 2 nuts and 2 plate washers.
- (c) Remove the oil cooler and 2 O-rings.



REASSEMBLY

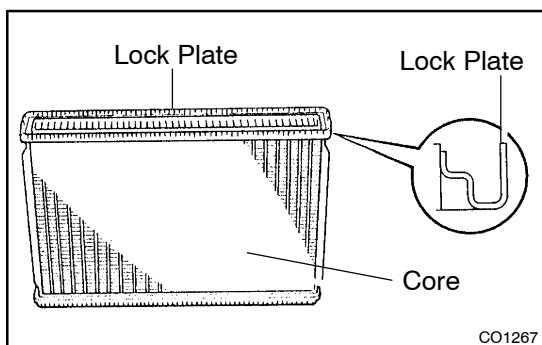
1. INSTALL OIL COOLER TO LOWER TANK

- Install 2 new O rings to the oil cooler.
- Install the oil cooler to the lower tank with the 2 plate washers and 2 nuts.

Torque: 8.3 N·m (85 kgf·cm, 73 in·lbf)

- Install the cooler pipes in the direction indicated in the illustration.

Torque: 14.7 N·m (150 kgf·cm, 11 ft·lbf)



2. INSPECT 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.

NOTICE:

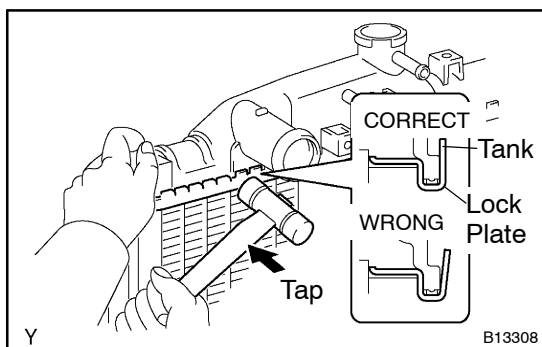
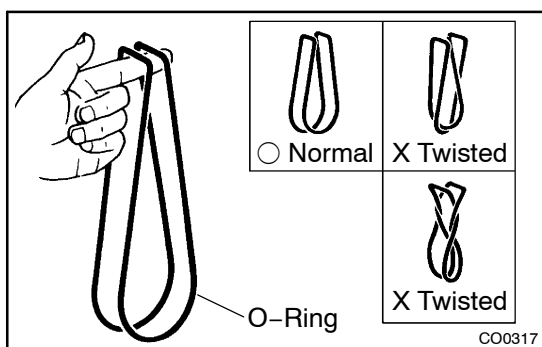
The radiator can only be recauked 2 times. After the 2nd time, the radiator core must be replaced.

3. INSTALL NEW O-RINGS AND TANKS

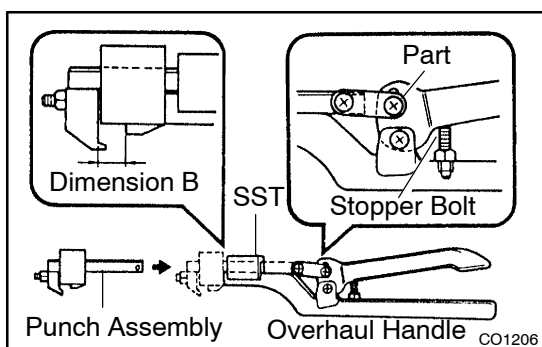
- After checking that there are no foreign objects in the lock plate groove, install a new O-ring without twisting it.

HINT:

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



- Install the tank without damaging the O-ring.
- Tap the lock plate with a soft-faced hammer so that there is no gap between it and the tank.

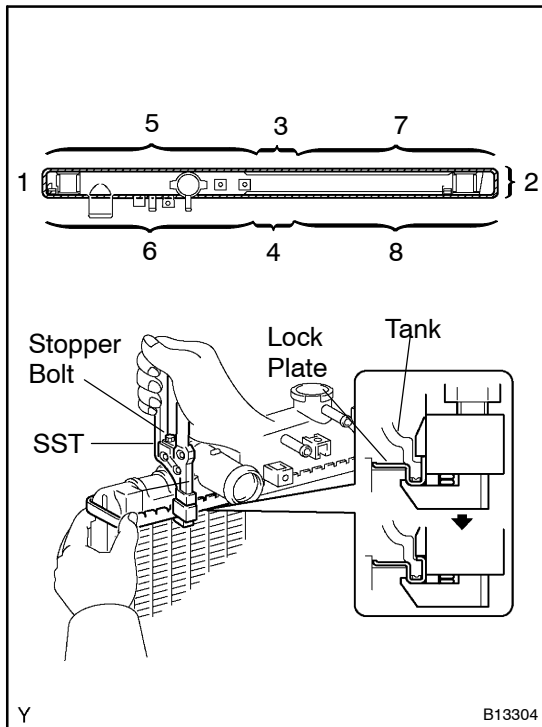


4. ASSEMBLE SST

SST 09230-01010, 09231-14010

- 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 is as shown in the illustration.

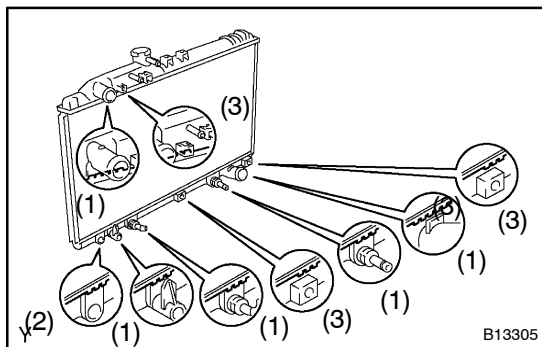
Dimension B: 8.4 mm (0.331 in.)



5. CAULK LOCK PLATE

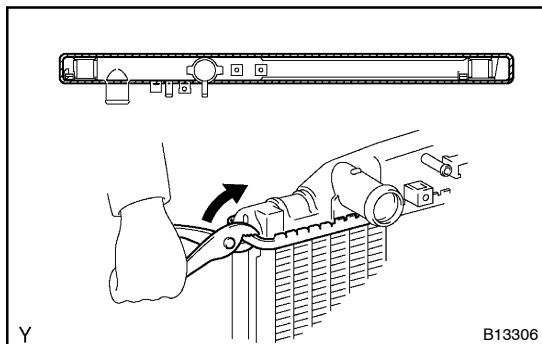
- (a) Lightly press SST against the lock plate in the order shown in the illustration. After repeating this a few times, fully caulk the lock plate by squeezing the handle until stopped by the stopper plate.

SST 09230-01010

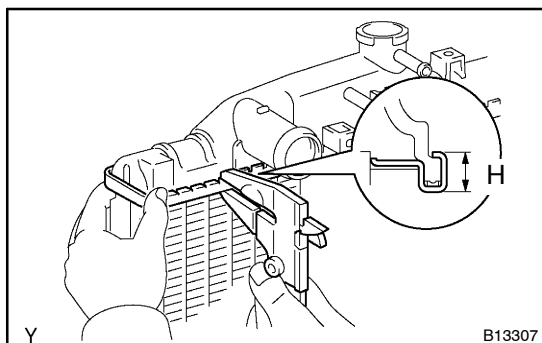


HINT:

- Do not stake the areas protruding around the ports (1), (3) flange (2) and bracket (3).



- The points shown in the illustration cannot be staked with the SST. Use pliers 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 (H): 7.40 – 7.80 mm (0.2913 – 0.3071 in.)

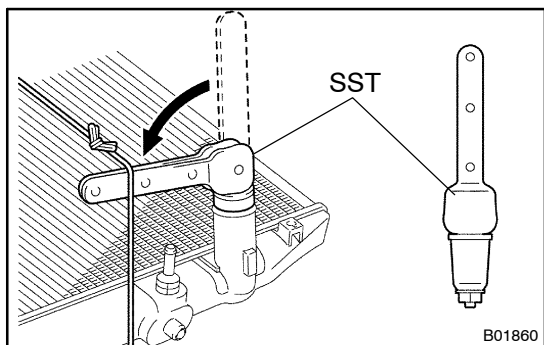
If not within the specified height, adjust the stopper bolt of the handle again and caulk again.

6. INSTALL ECT SWITCH

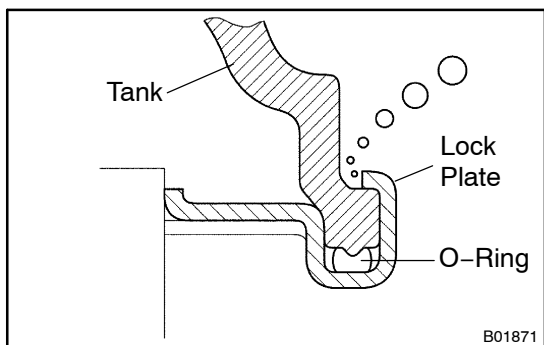
- (a) Install a new O-ring to the ECT switch.
(b) Install the ECT switch.

7. INSTALL DRAIN PLUG

- (a) Install a new O-ring to the drain plug.
- (b) Install the drain plug.

8. INSTALL RADIATOR CAP**9. INSPECT FOR WATER LEAKS**

- (a) Tighten the drain plug.
- (b) Plug the inlet 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) Submerge the radiator in water.



- (e) Inspect for 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, first swish the radiator around in the water until all air bubbles disappear.

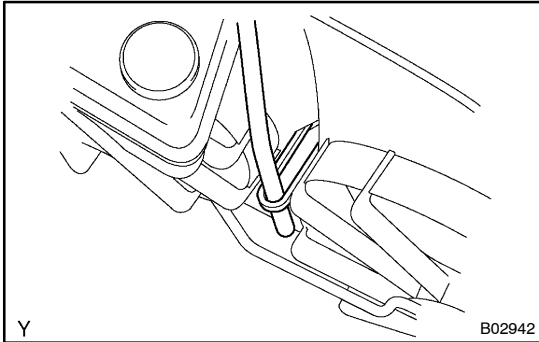
10. INSTALL NEW PACKINGS

INSTALLATION

1. INSTALL ELECTRIC COOLING FAN TO RADIATOR

Install the electric cooling fan with the 6 bolts.

Torque: 5.0 N·m (50 kgf·cm, 44 in·lbf)



2. INSTALL RESERVOIR TANK TO RADIATOR AND ELECTRIC COOLING FAN

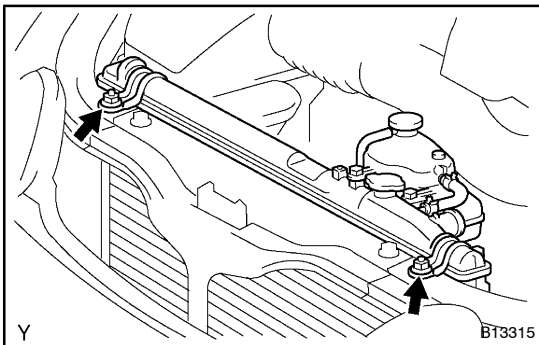
(a) Attach the lower reservoir tank support to the electric cooling fan.

(b) Install the reservoir tank with the 2 bolts.

Torque: 5.0 N·m (50 kgf·cm, 48 in·lbf)

(c) Connect the upper reservoir tank hose to the radiator.

(d) Insert the reservoir hose to the fan shroud.



3. INSTALL RADIATOR AND ELECTRIC COOLING FAN AND RESERVOIR TANK ASSEMBLY

(a) Install the 2 lower radiator supports to the radiator.

(b) Attach the 2 lower radiator supports on the radiator to the body bracket.

(c) Install the radiator and electric cooling fan and reservoir tank assembly with the 2 upper radiator supports and 2 nuts.

Torque: 13.5 N·m (135 kgf·cm, 10 ft·lbf)

(d) Connect these parts:

- Upper radiator hose to radiator
- Lower radiator hose to radiator
- ECM outlet duct to ECM box
- Wire for electric cooling fan to clamp on electric cooling fan
- 2 electric cooling fan connectors
- ECT switch connector for electric cooling fan
- 2 oil cooler hoses for A/T to radiator
- Lower reservoir tank hose to reservoir tank

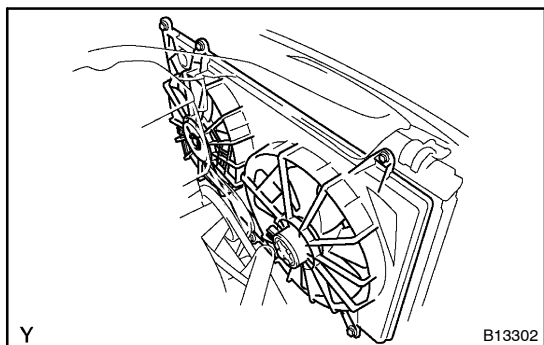
4. INSTALL AIR CLEANER ASSEMBLY

5. INSTALL AIR CLEANER INLET

6. FILL WITH ENGINE COOLANT (See page CO-2)

7. START ENGINE AND CHECK FOR ENGINE COOLANT AND A/T FLUID LEAKS

8. INSTALL ENGINE UNDER COVER

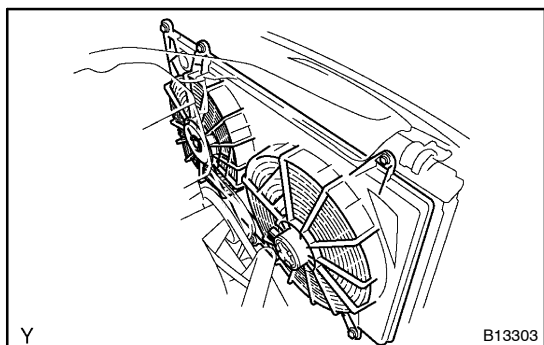


ELECTRIC COOLING FAN ON-VEHICLE INSPECTION

CO16D-01

1. CHECK COOLING FAN OPERATION WITH LOW TEMPERATURE (Below 83°C (181°F))

- Turn the ignition switch ON.
- Check that the cooling fan stops.
- Disconnect the water temperature switch connector.



- Check that the cooling fan rotates.
If not, check the fuse, cooling fan relay, cooling fan, and check for a short circuit between the cooling fan relay and water temperature switch.

- Reconnect the water temperature switch connector.

2. CHECK COOLING FAN OPERATION WITH HIGH TEMPERATURE (Above 93°C (199°F))

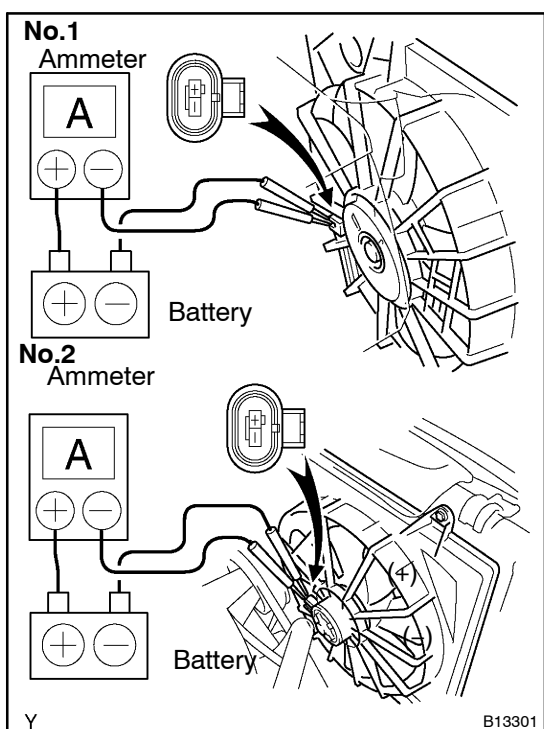
- Start the engine, and raise coolant temperature to above 93°C (199°F).

HINT:

Coolant temperature is the detected value by the water temperature switch on the radiator lower tank.

- Check that the cooling fan rotates.

If not, replace the water temperature switch.



3. INSPECT COOLING FANS

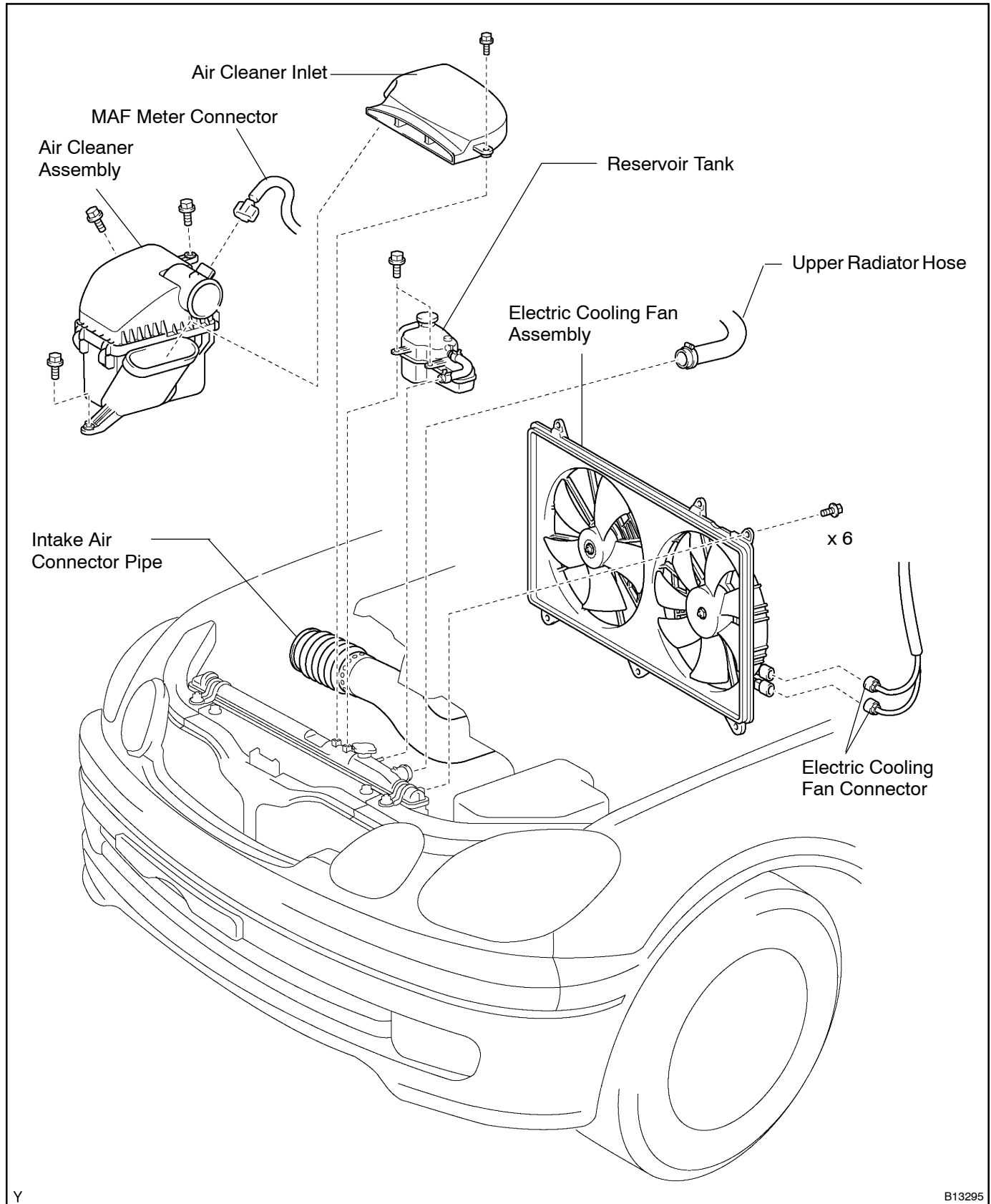
- Disconnect the cooling fan connector.
- Connect battery and ammeter to the cooling fan connector.
- Check that the cooling fan rotates smoothly, and check the reading on the ammeter.

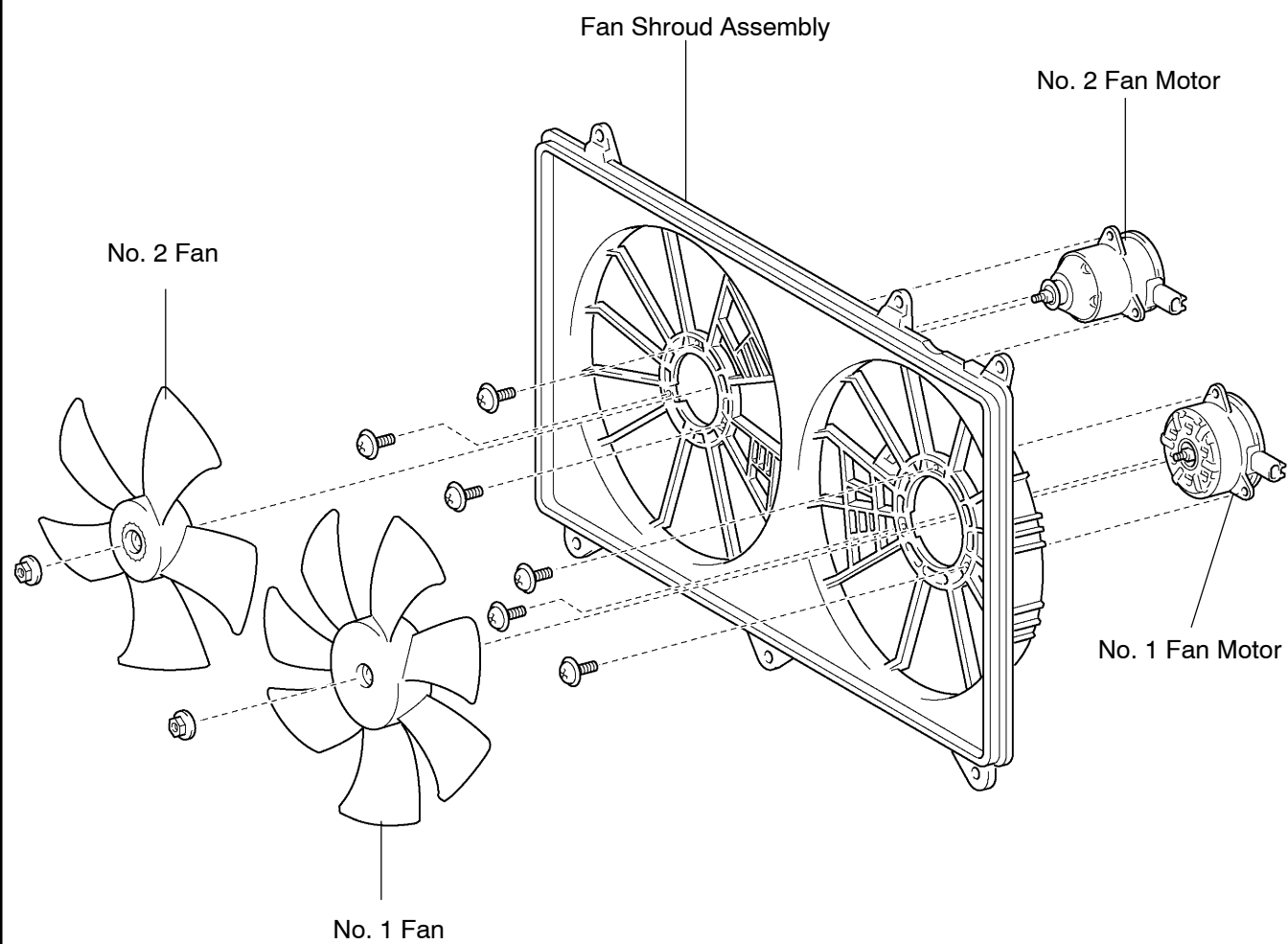
Standard amperage:

No. 1, No. 2	At 20°C (68°F)	7.8 – 11.8 A
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- Reconnect the cooling fan connector.

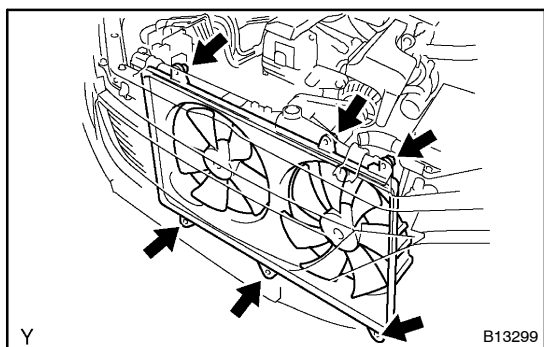
COMPONENTS

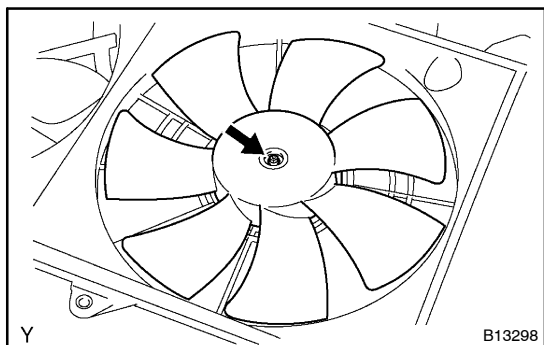




REMOVAL

1. **REMOVE NO.1 ENGINE UNDER COVER**
2. **DRAIN ENGINE COOLANT**
3. **REMOVE AIR CLEANER INLET**
4. **REMOVE RESERVOIR TANK**
 - (a) Disconnect the upper reservoir tank hose.
 - (b) Disconnect the lower reservoir tank hose.
 - (c) Remove the 2 bolts and reservoir tank.
5. **REMOVE ELECTRIC COOLING FAN**
 - (a) Remove the upper radiator hose.
 - (b) Disconnect the engine ECU outlet duct from the fan shroud.
 - (c) Disconnect the 2 electric cooling fan connector.
 - (d) Disconnect the wire for the electric cooling fan from the clamps on the electric cooling fan.
 - (e) Remove the 6 bolts and electric cooling fan.

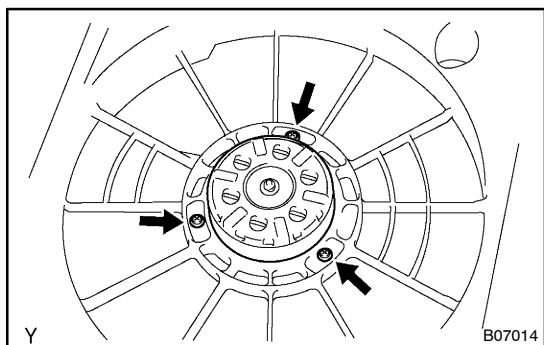




DISASSEMBLY

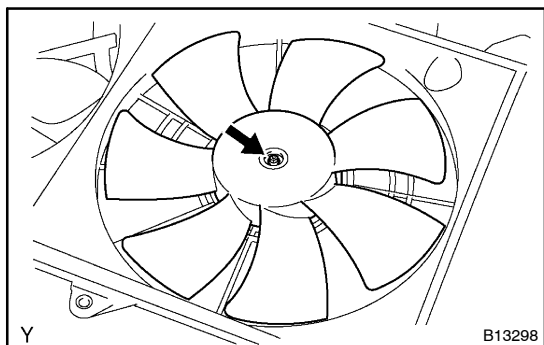
1. REMOVE FANS

Remove the nut and fan. Remove the 2 fans.



2. REMOVE FAN MOTORS

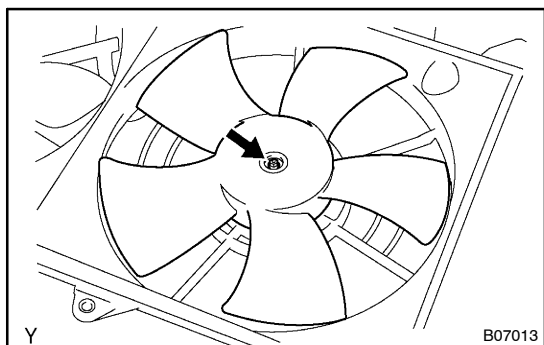
Remove the 3 screws and fan motor. Remove the 2 fan motors.



REASSEMBLY

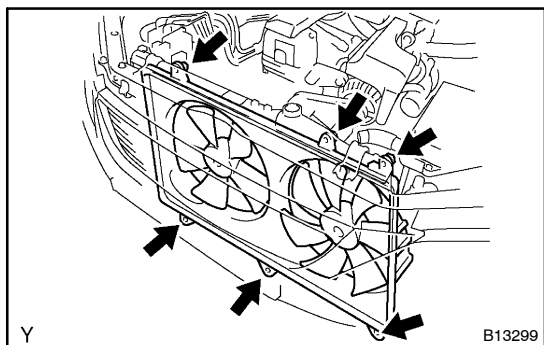
1. INSTALL FAN MOTORS

Install the fan motor with the 3 screws. Install the 2 fan motors.



2. INSTALL FANS

Install the fan with the nut. Install the 2 fans.



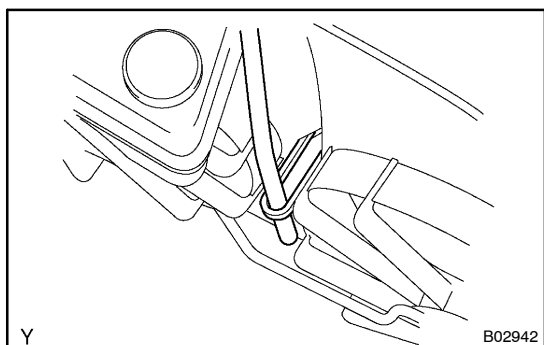
INSTALLATION

1. INSTALL ELECTRIC COOLING FAN

- (a) Install the electric cooling fan with the 6 bolts.
Torque: 5.0 N·m (50 kgf·cm, 44 in·lbf)
- (b) Connect the wire for the electric cooling fan to the clamps on the electric cooling fan.
- (c) Connect the 2 electric cooling fan connectors.
- (d) Connect the engine ECU outlet duct to the fan shroud.
- (e) Connect the upper radiator hose to the radiator.

2. INSTALL RESERVOIR TANK

- (a) Attach the lower reservoir tank support.
- (b) Install the reservoir tank with the 2 bolts.
Torque: 5.0 N·m (50 kgf·cm, 44 in·lbf)
- (c) Connect the upper reservoir tank hose to the radiator.
- (d) Connect the lower reservoir tank hose to the reservoir tank.



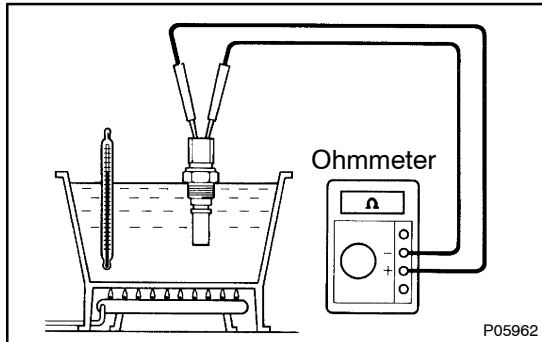
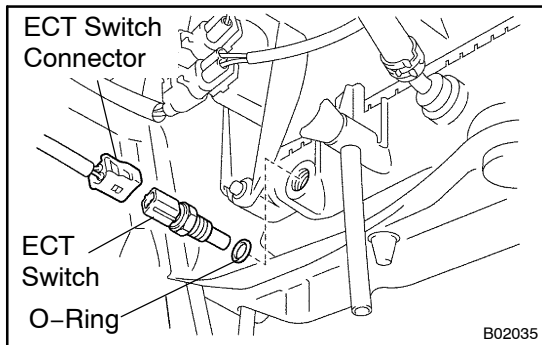
- (e) Insert the reservoir hose to the fan shroud.

3. INSTALL AIR CLEANER INLET

4. FILL WITH ENGINE COOLANT

5. INSTALL NO.1 ENGINE UNDER COVER

6. START ENGINE AND CHECK FOR COOLANT LEAK



ENGINE COOLANT TEMPERATURE (ECT) SWITCH INSPECTION

CO16J-01

1. DRAIN ENGINE COOLANT

2. REMOVE ECT SWITCH

- (a) Disconnect the connector.
- (b) Remove the ECT switch.
- (c) Remove the O-ring from the ECT switch.

3. INSPECT ECT SWITCH

- (a) Using an ohmmeter, check that there is no continuity between the terminals when the coolant temperature is above 93°C (199°F).

If there is continuity, replace the switch.

- (b) Using an ohmmeter, check that there is continuity between the terminals when the coolant temperature is below 83°C (181°F).

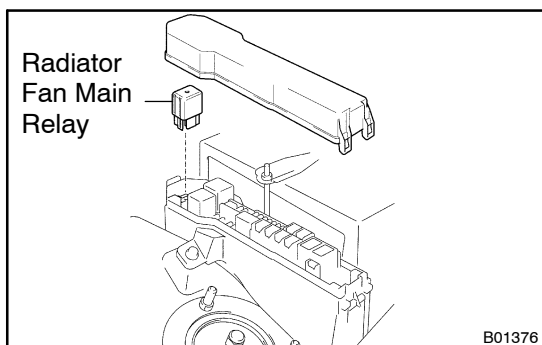
If there is no continuity, replace the switch.

4. REINSTALL ECT SWITCH

- (a) Install a new O-ring to the ECT switch.
- (b) Install the ECT switch.
- (c) Connect the connector.

5. REFILL WITH ENGINE COOLANT (See page CO-2)

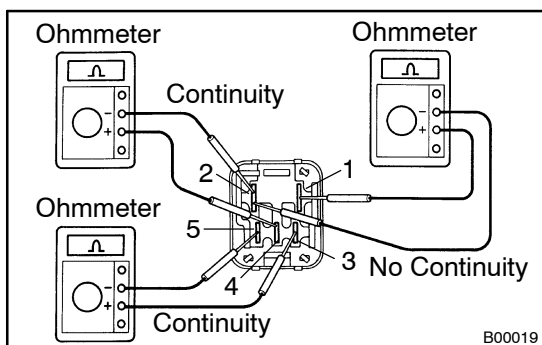
6. START ENGINE AND CHECK FOR ENGINE COOLANT LEAKS



RADIATOR FAN MAIN RELAY INSPECTION

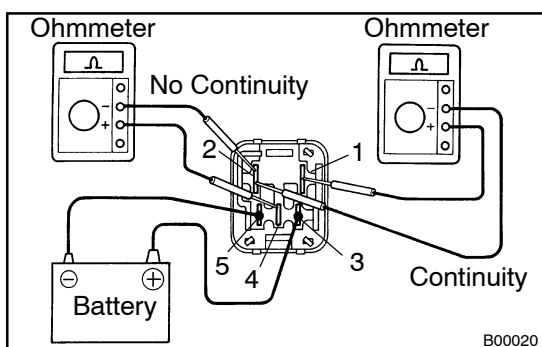
CO16K-01

1. REMOVE RELAY BOX COVER
2. REMOVE RADIATOR FAN MAIN RELAY (Marking: RAD FAN MAIN)

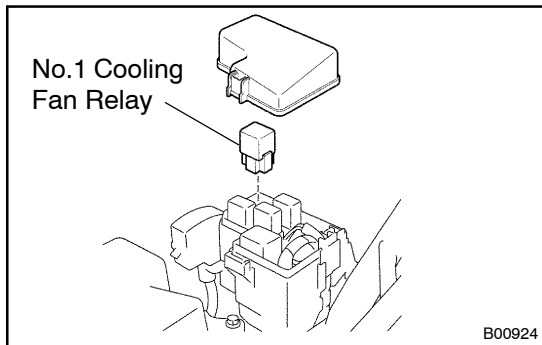


3. INSPECT RADIATOR FAN MAIN RELAY

- (a) Inspect the relay continuity
 - (1) Using an ohmmeter, check that there is continuity between terminals 3 and 5.
If there is no continuity, replace the relay.
 - (2) Check that there is continuity between terminals 2 and 4.
If there is no continuity, replace the relay.
 - (3) Check that there is no continuity between terminals 1 and 2.
If there is continuity, replace the relay.



- (b) Inspect the relay operation
 - (1) Apply battery positive voltage across terminals 3 and 5.
 - (2) Using an ohmmeter, check that there is no continuity between terminals 2 and 4.
If there is continuity, replace the relay.
 - (3) Check that there is continuity between terminals 1 and 2.
If there is no continuity, replace the relay.
4. REINSTALL RADIATOR FAN MAIN RELAY
 5. REINSTALL RELAY BOX COVER

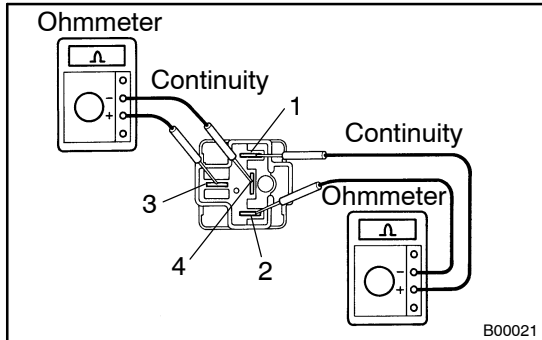


COOLING FAN RELAY INSPECTION

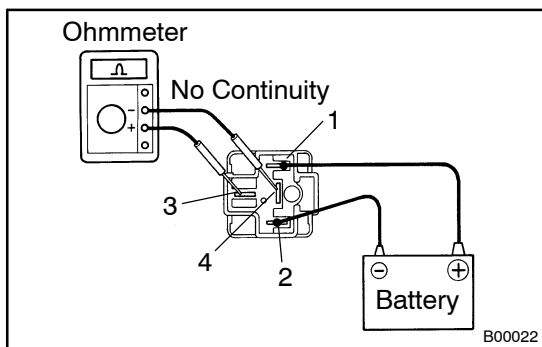
CO16L-01

1. INSPECT NO. 1 COOLING FAN RELAY

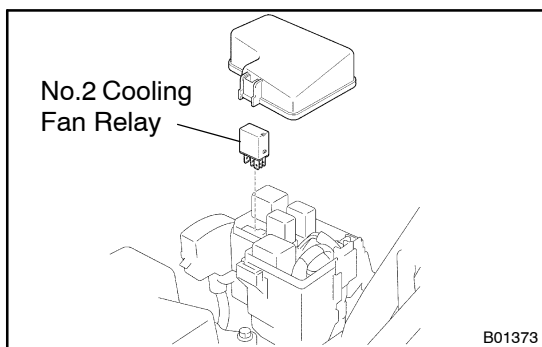
- Remove the relay box cover.
- Remove the No. 1 cooling fan relay. (Marking: FAN NO.1)



- Inspect the No. 1 cooling fan relay continuity.
 - Using an ohmmeter, check that there is continuity between terminals 1 and 2.
If there is no continuity, replace the relay.
 - Check that there is continuity between terminals 3 and 4.
If there is no continuity, replace the relay.

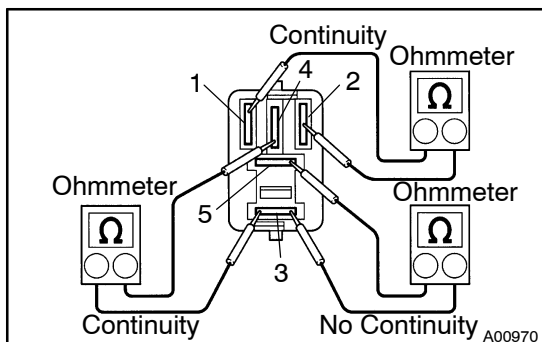


- Inspect the No. 1 cooling fan relay operation.
 - Apply battery positive voltage across terminals 1 and 2.
 - Using an ohmmeter, check that there is no continuity between terminals 3 and 4.
If there is continuity, replace the relay.
- Reinstall the No. 1 cooling fan relay.
- Reinstall the relay box cover.

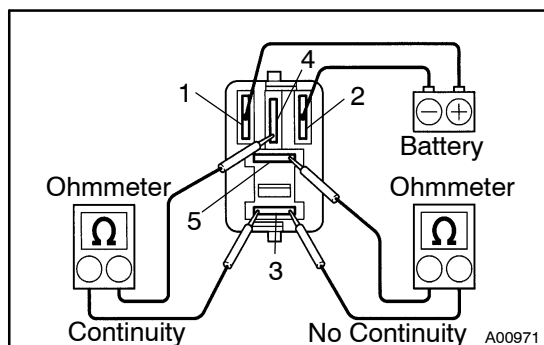


2. INSPECT NO. 2 COOLING FAN RELAY

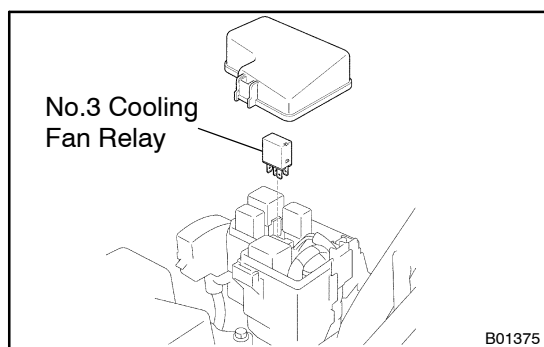
- Remove the relay box cover.
- Remove the No. 2 cooling fan relay. (Marking: FAN NO.2)



- Inspect the No. 2 cooling fan relay continuity.
 - Using an ohmmeter, check that there is continuity between terminals 1 and 2.
If there is no continuity, replace the relay.
 - Check that there is continuity between terminals 3 and 4.
If there is no continuity, replace the relay.
 - Check that there is no continuity between terminals 3 and 5.
If there is continuity, replace the relay.

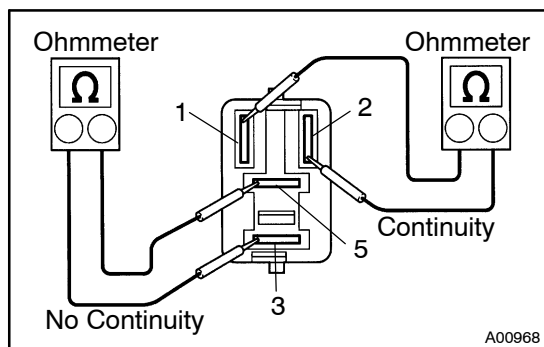


- (d) Inspect the No. 2 cooling fan relay operation.
- (1) Apply battery positive voltage across terminals 1 and 2.
 - (2) Using an ohmmeter, check that there is no continuity between terminals 3 and 4.
If there is continuity, replace the relay.
 - (3) Using an ohmmeter, check that there is continuity between terminals 3 and 5.
If there is no continuity, replace the relay.
- (e) Reinstall the No. 2 cooling fan relay.
- (f) Reinstall the relay box cover.

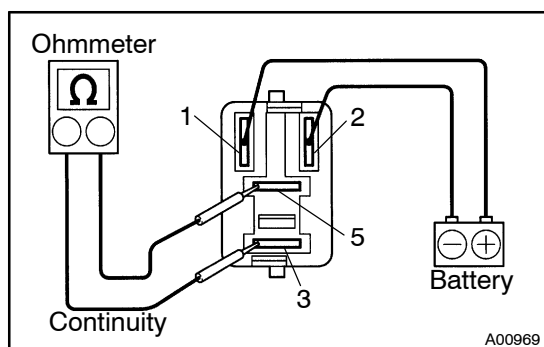


3. INSPECT NO. 3 COOLING FAN RELAY

- (a) Remove the relay box cover.
- (b) Remove the No. 3 cooling fan relay. (Marking: FAN NO.3)



- (c) Inspect the No. 3 cooling fan relay continuity.
- (1) Using an ohmmeter, check that there is continuity between terminals 1 and 2.
If there is no continuity, replace the relay.
 - (2) Check that there is no continuity between terminals 3 and 5.
If there is continuity, replace the relay.



- (d) Inspect the No. 3 cooling fan relay operation.
- (1) Apply battery positive voltage across terminals 1 and 2.
 - (2) Using an ohmmeter, check that there is continuity between terminals 3 and 5.
If there is no continuity, replace the relay.
- (e) Reinstall the No. 3 cooling fan relay.
- (f) Reinstall the relay box cover.