RADIATOR

CO075-02

ON–VEHICLE CLEANING

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 radiator core)

CO077-01

ON–VEHICLE INSPECTION

1. REMOVE RADIATOR CAP

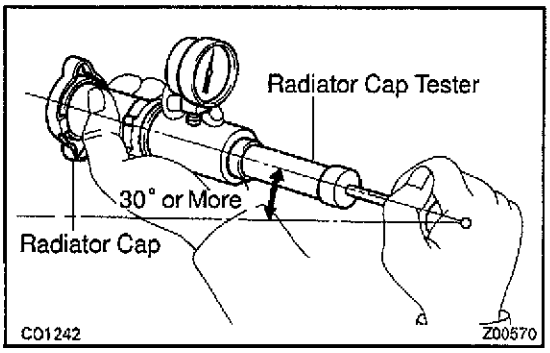
CAUTION:

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:

- **If the radiator cap contaminations, always rinse it with water.**
- **When performing steps (a) and (b) below, keep the radiator pump tester at an angle of over 30° above the horizotal.**
- **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 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 radiator cap.

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

Pump speed: 1 push within 1 second

NOTICE:

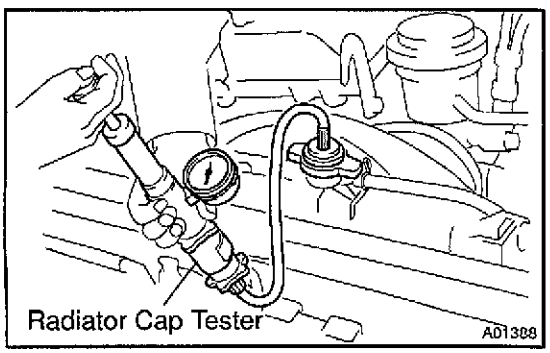
This pump speed is for the first pump only (in order to close the vacuum valve). After this, the pump speed can be reduced.

Standard opening pressure:
93 – 123 kPa (0.95 – 1.25 kgf/cm^2, 13.1 – 18.2 psi)
Minimum opening pressure:
59 kPa (0.6 kgf/cm^2, 8.5 psi)

HINT:

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

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.

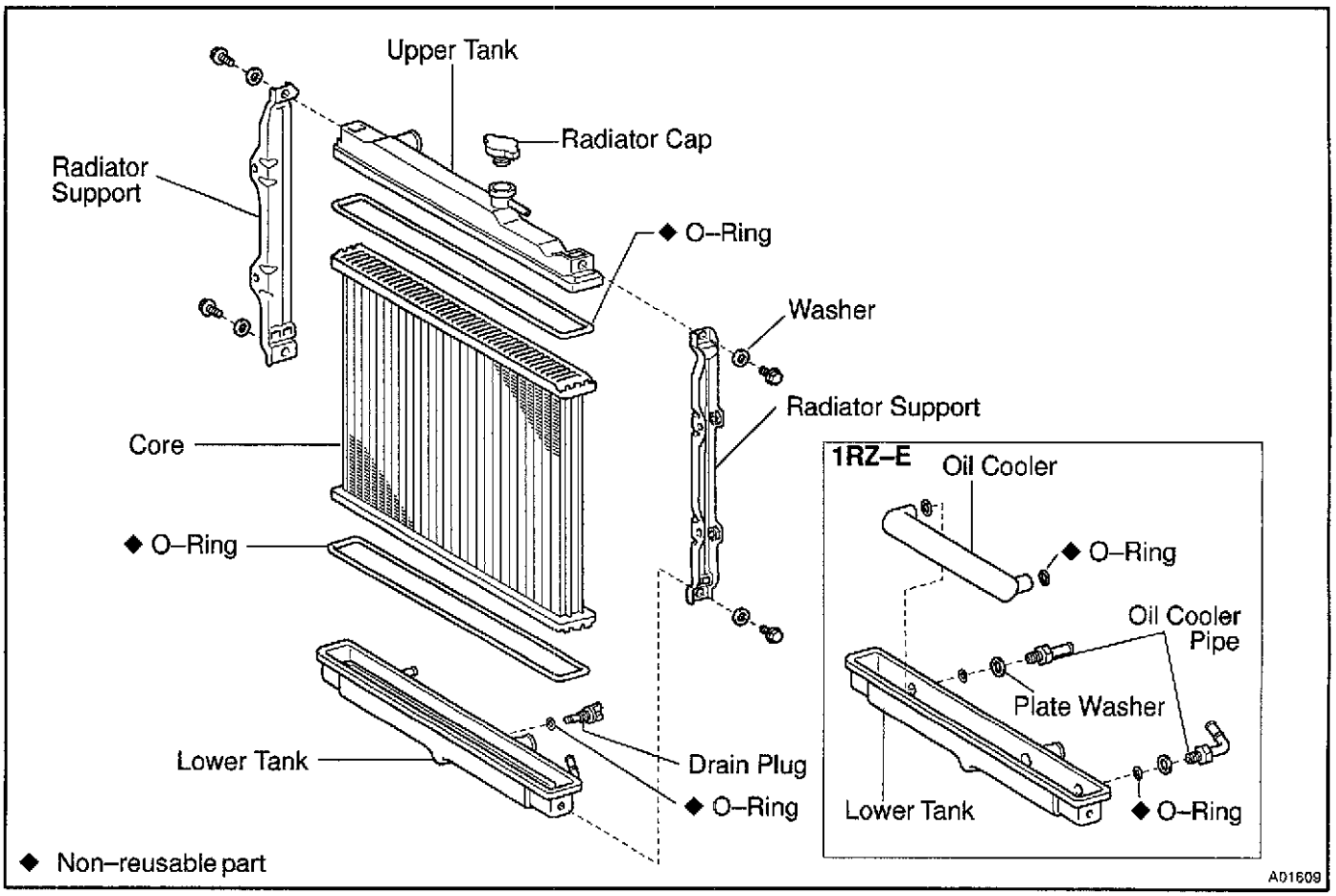
(c) Pump it to 118 kPa (1.2 kgf/cm^2, 17.1 psi), and check that the pressure does not drop.

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 RADIATOR CAP

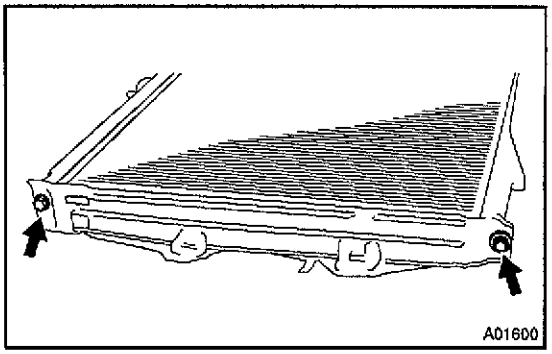
CO073-01

COMPONENTS



CO078-01

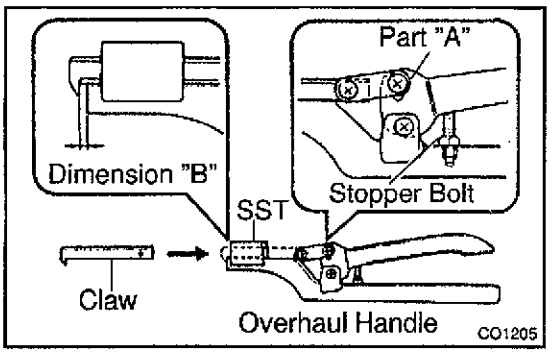
DISASSEMBLY



1. REMOVE RADIATOR SUPPORTS

(a) Remove the 4 bolts and 2 radiator supports.

2. REMOVE DRAIN PLUG



3. ASSEMBLE SST

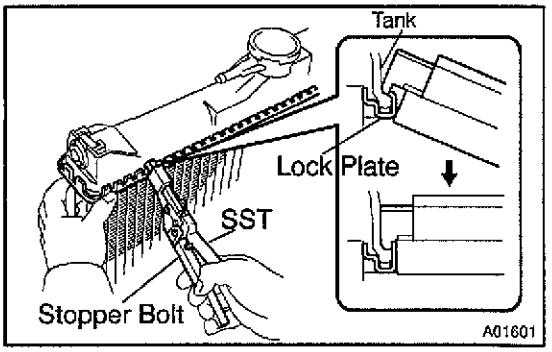
SST 09230–01010

(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" shown in the diagram is 0.2 – 0.3 mm (0.008 – 0.012 in.).

NOTICE:

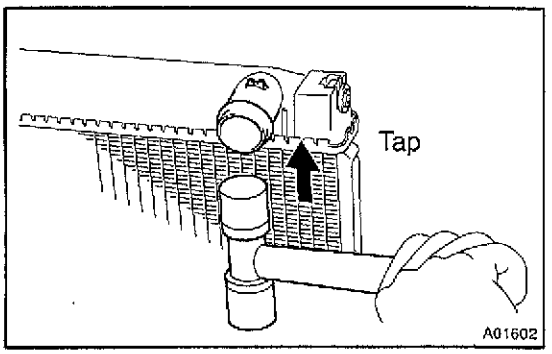
If this adjustment is not done, the claw may be damaged.



4. UNCAULK LOCK PLATES

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

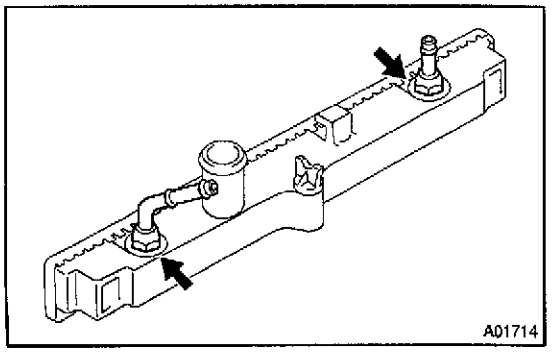
SST 09230–01010



5. REMOVE TANKS AND O–RINGS

(a) Lightly tap the radiator port (inlet or outlet) with a soft–faced hammer, and remove the tank.

(b) Remove the O–ring.



6. 1RZ–E:

REMOVE OIL COOLER FROM LOWER TANK

(a) Remove the pipes.

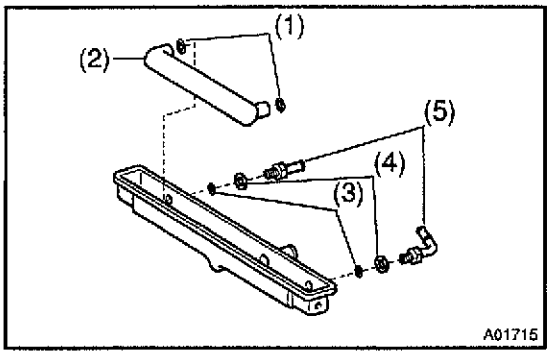
HINT:

Make a note of the direction to face the pipes.

(b) Remove the nuts and plate washers.

(c) Remove the oil cooler and O–rings.

CO07A-01

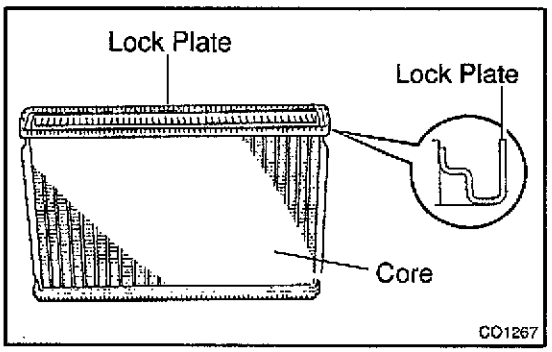


REASSEMBLY

1. 1RZ–E:
INSTALL OIL COOLER TO LOWER TANK

(a) Clean the O–ring contact surface of the lower tank and oil cooler.
(b) Install new O–rings (1) to the oil cooler (2).
(c) Install the oil cooler with the O–rings to the lower tank (3).
(d) Install the plate washers (4)
Torque:8.3 N·m (85 kgf·cm, 74 in.·lbf)
(e) Install the pipes (5).
Torque:22 N·m (220 kgf·cm, 16 ft·lbf)

HINT:
Face the pipes in the same direction as before disassembly.

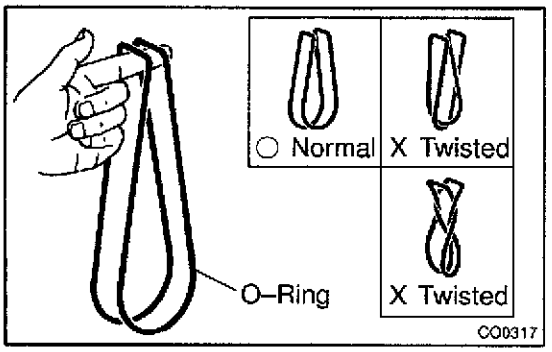


2. INSPECT LOCK PLATE

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.

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

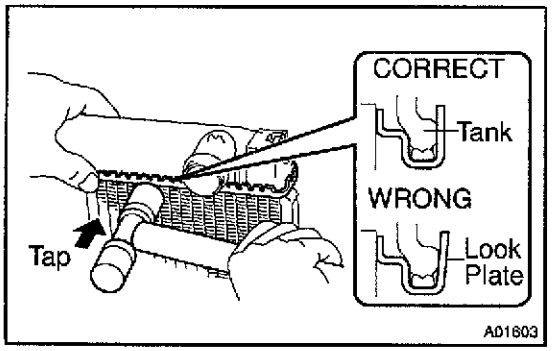


3. INSTALL NEW O–RINGS AND TANKS

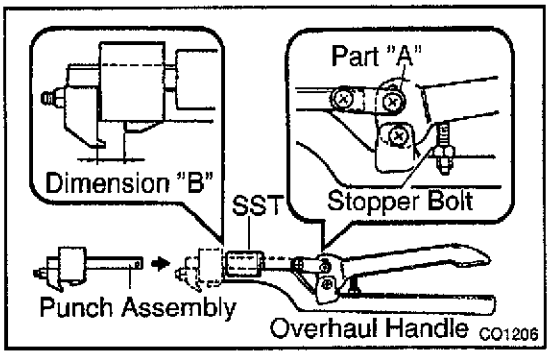
(a) After checking that there are no foreign objects in the lock plate groove, install the new O–ring without twisting it.

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.



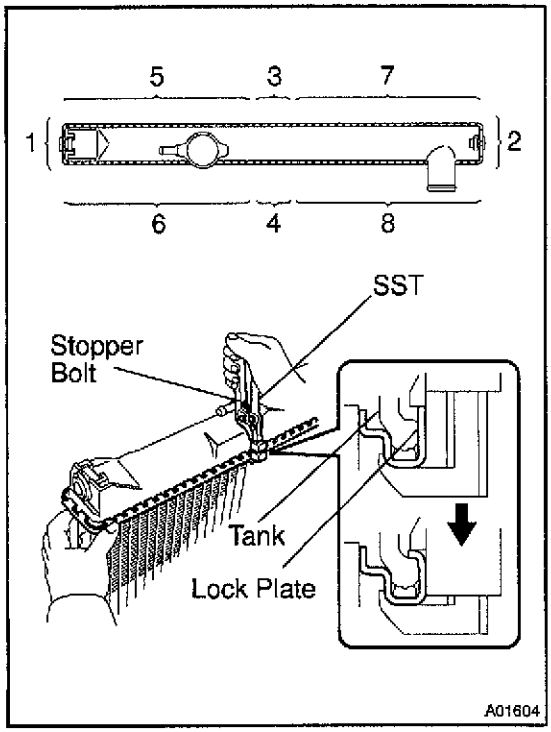
4. ASSEMBLE SST

SST 09230–01010, 09231–14010

(a) Install the punch assembly to the overhaul handle, inserting it in the hole in part "A" as shown in the illustration.

(b) While gripping the handle, adjust the stopper bolt so that dimension "B" shown in the diagram.

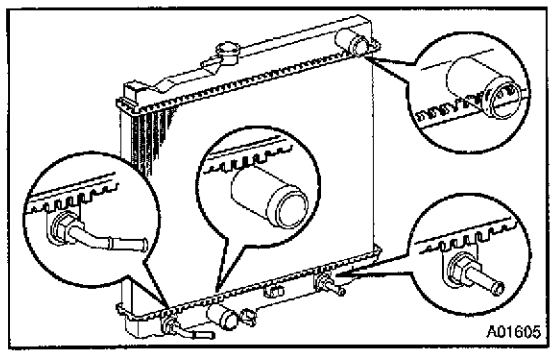
Dimension "B": 8.4 mm (0.34 in.)



5. CAULK LOCK PLATE

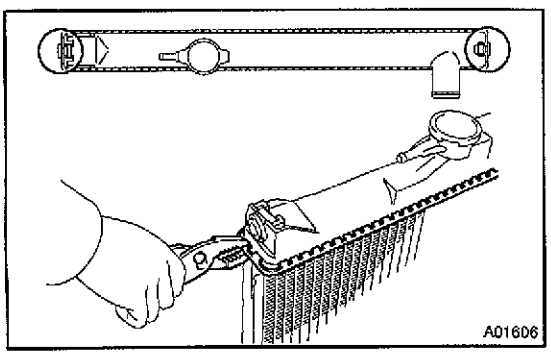
(a) Lightly press SST against the lock plate in the order shown in the illustration. After repeating this a few times, fully caulk the lock plate by squeezing the handle until stopped by the stopper bolt.

SST 09230–01010

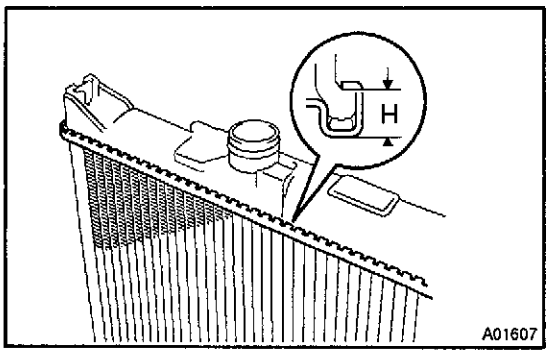


HINT:

- Do not stake the areas protruding around the ports.



- The points shown in the rib sides near here cannot be staked with 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):
7.4 – 7.8 mm (0.2959 – 0.3119 in.)

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

6. PAINT LOCK PLATES

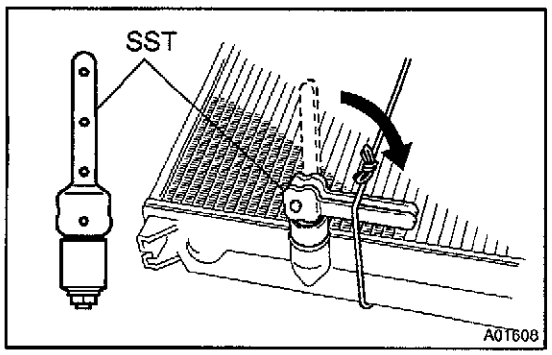
7. INSTALL DRAIN PLUG

(a) Install a new O–ring to the drain plug.
(b) Apply soapy water to the O–ring.
(c) Install the drain plug.

8. INSTALL RADIATOR SUPPORTS

Install the 4 bolt and 2 radiator supports

Torque:13 N·m (130 kgf·cm, 9.6 ft·lbf)

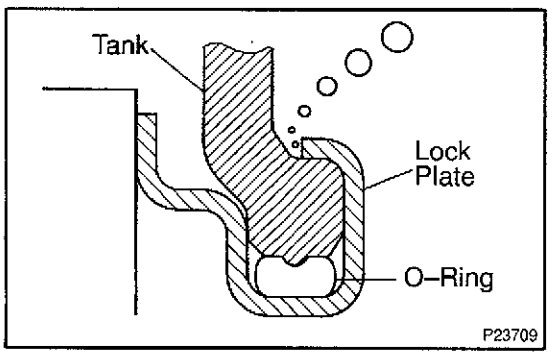


9. CHECK FOR WATER LEAKS

(a) Using SST, plug the inlet and outlet pipes of the radiator.
SST 09230–01010

(b) Using a radiator cap tester, apply pressure to the radiator.

Test pressure:
147 kPa (1.5 kgf/cm^2, 21 psi)



(c) Check for water leaks.

HINT:

On radiators with resin tanks, there is a clearance between the core plate and tank 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 performing the water leak test, first swirl the radiator around in the water until all air bubbles disappear.