

SECTION CO

ENGINE COOLING SYSTEM

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DESCRIPTION

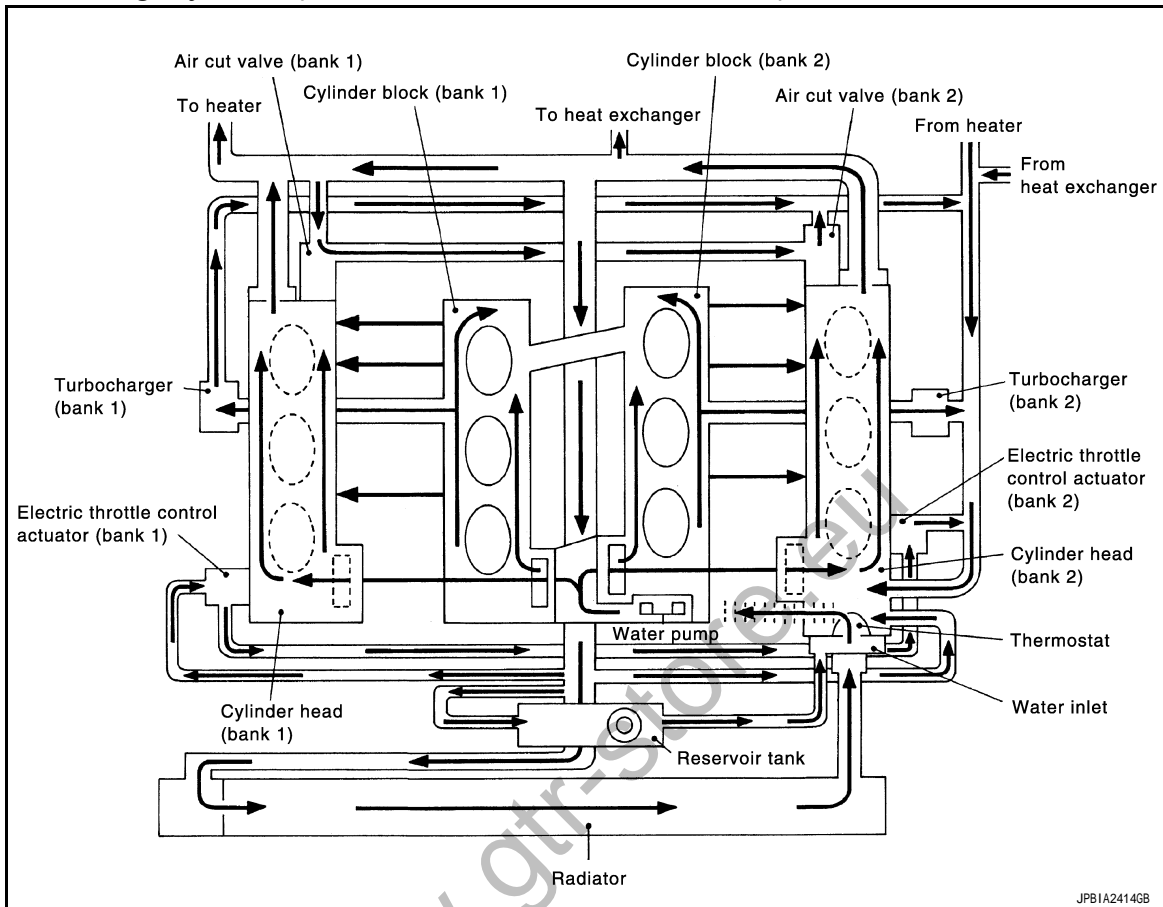
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FUNCTION DIAGNOSIS

DESCRIPTION

Engine Cooling System (GT-R certified NISSAN dealer)

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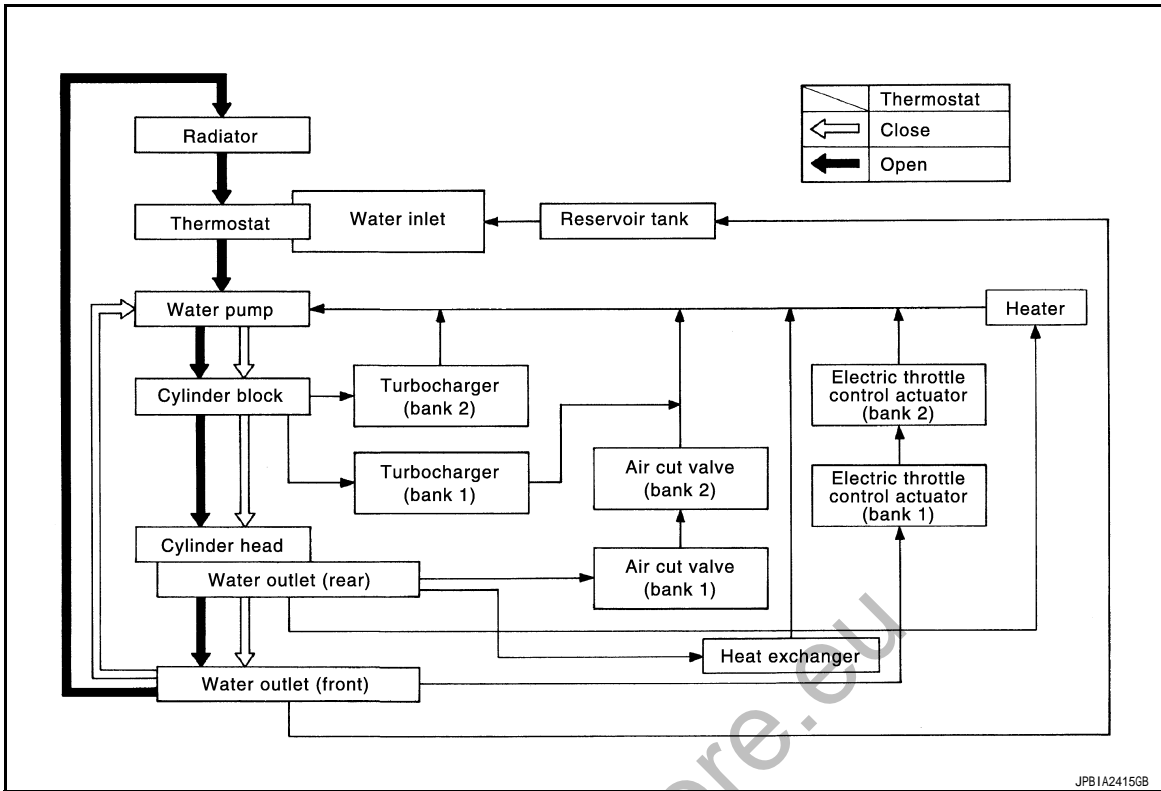
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DESCRIPTION

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Engine Cooling System Schematic (GT-R certified NISSAN dealer)

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OVERHEATING CAUSE ANALYSIS

< SYMPTOM DIAGNOSIS >

SYMPTOM DIAGNOSIS

OVERHEATING CAUSE ANALYSIS

Troubleshooting Chart (GT-R certified NISSAN dealer)

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| | | Symptom | Check items | |
|----------------------------------|---|---------------------------------------|--|--|
| Cooling system parts malfunction | Poor heat transfer | Water pump malfunction | Worn or loose drive belt | — |
| | | Thermostat stuck closed | — | |
| | | Damaged fins | Dust contamination or paper clogging | |
| | | | Physical damage | |
| | | Clogged radiator cooling tube | Excess foreign material (rust, dirt, sand, etc.) | |
| | Reduced air flow | Cooling fan does not operate | Fan assembly | — |
| | | High resistance to fan rotation | | |
| | | Damaged fan blades | | |
| | | Damaged radiator shroud | — | — |
| | | Improper engine coolant mixture ratio | — | — |
| | | Poor engine coolant quality | — | Engine coolant density |
| | Insufficient engine coolant | Engine coolant leakage | Cooling hose | Loose clamp |
| | | | | Cracked hose |
| | | | Water pump | Poor sealing |
| | | | Radiator cap | Loose |
| | | | | Poor sealing |
| | | | Radiator | O-ring for damage, deterioration or improper fitting |
| Cracked radiator tank | | | | |
| Cracked radiator core | | | | |
| Reservoir tank | | | Cracked reservoir tank | |
| Reservoir tank cap | | | Loose | |
| | Poor sealing | | | |
| Overflowing reservoir tank | Exhaust gas leakage into cooling system | Cylinder head deterioration | | |
| | | Cylinder head gasket deterioration | | |

OVERHEATING CAUSE ANALYSIS

< SYMPTOM DIAGNOSIS >

| | Symptom | | Check items | | | |
|---|--------------------------------|--------------------------|-------------------------------------|--|-----------|---|
| Except cooling system parts malfunction | — | Overload on engine | Abusive driving | High engine rpm under no load | A | |
| | | | | Driving in low gear for extended time | CO | |
| | | | | Driving at extremely high speed | C | |
| | | | | Power train system malfunction | — | D |
| | | | | Installed improper size wheels and tires | | E |
| | | | | Dragging brakes | | F |
| | | Improper ignition timing | G | | | |
| | Blocked or restricted air flow | Blocked bumper | — | H | | |
| | | Blocked radiator grille | Installed car brassiere | I | | |
| | | | Mud contamination or paper clogging | J | | |
| | | Blocked radiator | — | K | | |
| | | Blocked condenser | Blocked air flow | L | | |
| Installed large fog lamp | M | | | | | |

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PRECAUTIONS

< PRECAUTION >

PRECAUTION

PRECAUTIONS

Precaution for Supplemental Restraint System (SRS) "AIR BAG" and "SEAT BELT PRE-TENSIONER"

INFOID:000000004171303

The Supplemental Restraint System such as "AIR BAG" and "SEAT BELT PRE-TENSIONER", used along with a front seat belt, helps to reduce the risk or severity of injury to the driver and front passenger for certain types of collision. This system includes seat belt switch inputs and dual stage front air bag modules. The SRS system uses the seat belt switches to determine the front air bag deployment, and may only deploy one front air bag, depending on the severity of a collision and whether the front occupants are belted or unbelted. Information necessary to service the system safely is included in the "SRS AIRBAG" and "SEAT BELT" of this Service Manual.

WARNING:

- To avoid rendering the SRS inoperative, which could increase the risk of personal injury or death in the event of a collision which would result in air bag inflation, all maintenance must be performed by an authorized NISSAN/INFINITI dealer.
- Improper maintenance, including incorrect removal and installation of the SRS, can lead to personal injury caused by unintentional activation of the system. For removal of Spiral Cable and Air Bag Module, see the "SRS AIRBAG".
- Never use electrical test equipment on any circuit related to the SRS unless instructed to in this Service Manual. SRS wiring harnesses can be identified by yellow and/or orange harnesses or harness connectors.

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PREPARATION

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PREPARATION

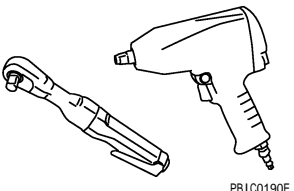
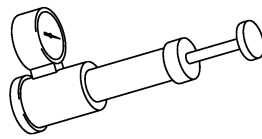
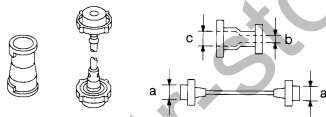
PREPARATION

Commercial Service Tools

INFOID:000000003880618

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| Tool name | Description |
|--|---|
| <p>Power tool</p>  <p>PB1C0190E</p> | <p>Loosening bolts and nuts</p> |
| <p>Radiator cap tester</p>  <p>PB1C1982E</p> | <p>Checking radiator and reservoir tank cap</p> |
| <p>Radiator cap tester adapter</p>  <p>S-NT564</p> | <p>Adapting radiator cap tester to reservoir tank cap and water outlet (front) filler neck a: 28 (1.10) dia. b: 31.4 (1.236) dia. c: 41.3 (1.626) dia. Unit: mm (in)</p> |

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ENGINE COOLANT

< ON-VEHICLE MAINTENANCE >

ON-VEHICLE MAINTENANCE

ENGINE COOLANT

Inspection

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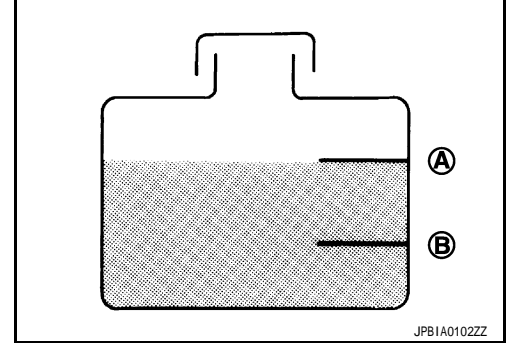
LEVEL

- Check if the reservoir tank engine coolant level is within the "MIN" to "MAX" when the engine is cool.

A : MAX

B : MIN

- Adjust the engine coolant level if necessary.
- Check that the reservoir tank cap is tightened.



LEAKAGE

- To check for leakage, apply pressure to the cooling system with the radiator cap tester and radiator cap tester adapter (commercial service tool) (A).

Testing pressure : Refer to [CO-25, "Radiator"](#).

WARNING:

Never remove radiator cap when engine is hot. Serious burns could occur from high-pressure engine coolant escaping from water outlet (front).

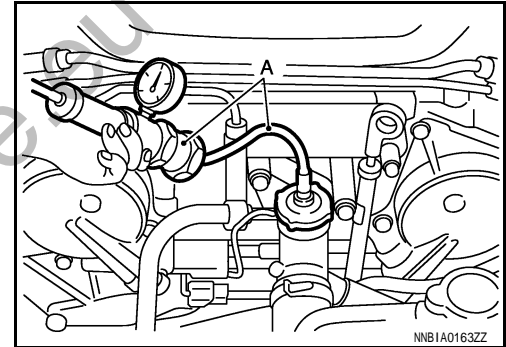
CAUTION:

Higher test pressure than that specified may cause radiator damage.

NOTE:

In a case that engine coolant decreases, fill radiator with engine coolant.

- If anything is found, repair or replace damaged parts.



Draining

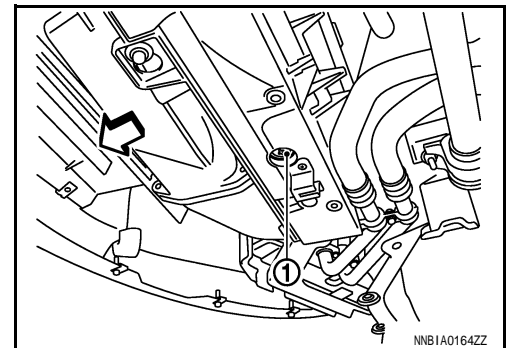
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WARNING:

- Never change engine coolant when the engine is hot to avoid being scalded.
- Wrap a thick cloth around reservoir tank cap and carefully remove reservoir tank cap. First, turn reservoir tank cap a quarter of a turn to release built-up pressure. Then turn reservoir tank cap all the way.

1. Remove under cover.
2. Open radiator drain plug (1) at the bottom of radiator, and then remove reservoir tank cap.

← : Vehicle front



When draining all of engine coolant in the system, open water drain plugs on cylinder block. Refer to [EM-53, "Setting \(GT-R certified NISSAN dealer\)"](#).

ENGINE COOLANT

< ON-VEHICLE MAINTENANCE >

3. Remove reservoir tank if necessary, drain engine coolant, and clean reservoir tank before installing.
4. Check drained engine coolant for contaminants such as rust, corrosion or discoloration.
If contaminated, flush the engine cooling system. Refer to [CO-10. "Flushing"](#).

Refilling

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1. Install reservoir tank if removed.
2. Install radiator drain plug.

CAUTION:

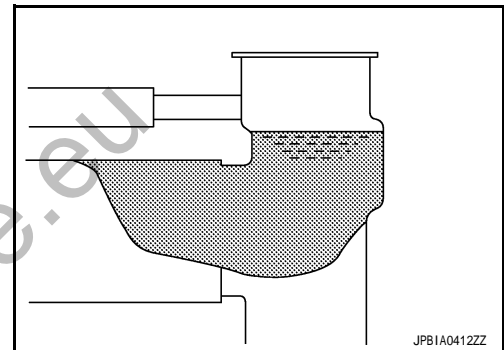
Be sure to clean drain plug and install with new O-ring.

Tightening torque : Refer to [CO-13. "Exploded View \(GT-R certified NISSAN dealer\)"](#).

If water drain plugs on cylinder block are removed, close and tighten them. Refer to [EM-110. "Disassembly and Assembly \(GT-R certified NISSAN dealer\)"](#).

3. Check that each hose clamp has been firmly tightened.
4. Fill radiator to specified level.
 - Pour engine coolant through engine coolant filler neck slowly of less than 2 ℓ (2-1/8 US qt, 1-3/4 Imp qt) a minute to allow air in system to escape.
 - Use Genuine NISSAN Long Life Antifreeze/Coolant or equivalent mixed with water (distilled or demineralized). Refer to [MA-13. "Fluids and Lubricants"](#).

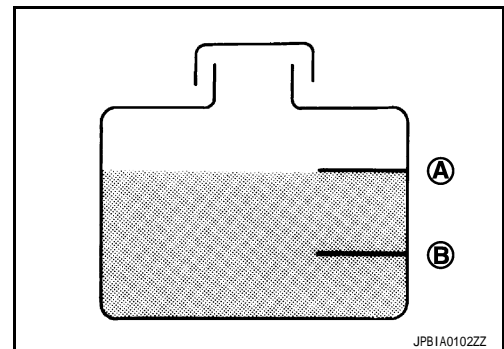
Engine coolant capacity (With reservoir tank at "MAX" level) : Refer to [CO-25. "Periodical Maintenance Specification"](#).



5. Install radiator cap.
6. Fill reservoir tank to "MAX" level line with engine coolant if necessary.

A : MAX
B : MIN

Reservoir tank engine coolant capacity (At "MAX" level) : Refer to [CO-25. "Periodical Maintenance Specification"](#).



7. Install reservoir tank cap, and then start the engine.
 8. Warm up engine until thermostat opens. Standard for warming-up time is approximately 10 minutes at 3,000 rpm.
 - Check thermostat opening condition by touching radiator hose (lower) to see a flow of warm water.
- CAUTION:**
Watch water temperature gauge so as not to overheat engine.
9. Stop the engine and cool down to less than approximately 50°C (122°F).
 - Cool down using fan to reduce the time.
 - If necessary, refill radiator up to filler neck with engine coolant.
 10. Refill reservoir tank to "MAX" level line with engine coolant.
 11. Repeat steps 6 through 9 two or more times with radiator cap and reservoir tank cap installed until engine coolant level no longer drops.
 12. Check cooling system for leakage with engine running.
 13. Warm up the engine, and check for sound of engine coolant flow while running engine from idle up to 3,000 rpm with heater temperature controller set at several positions between "COOL" and "WARM".
 - Sound may be noticeable at heater unit.
 14. Repeat step 13 three times.

ENGINE COOLANT

< ON-VEHICLE MAINTENANCE >

15. If sound is heard, bleed air from cooling system by repeating steps from 3 to 13 until engine coolant level no longer drops.

Flushing

INFOID:000000003880622

1. Install reservoir tank if removed, and radiator drain plug.

CAUTION:

Be sure to clean drain plug and install with new O-ring.

Tightening torque : Refer to [CO-13, "Exploded View \(GT-R certified NISSAN dealer\)"](#).

If water drain plugs on cylinder block are removed, close and tighten them. Refer to [EM-110, "Disassembly and Assembly \(GT-R certified NISSAN dealer\)"](#).

2. Fill radiator and reservoir tank with water.
3. Run the engine and warm it up to normal operating temperature.
4. Rev the engine two or three times under no-load.
5. Stop the engine and wait until it cools down.
6. Drain water from the system. Refer to [CO-8, "Draining"](#).
7. Repeat steps 1 through 6 until clear water begins to drain from radiator.

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RADIATOR

< ON-VEHICLE MAINTENANCE >

RADIATOR

RESERVOIR TANK CAP

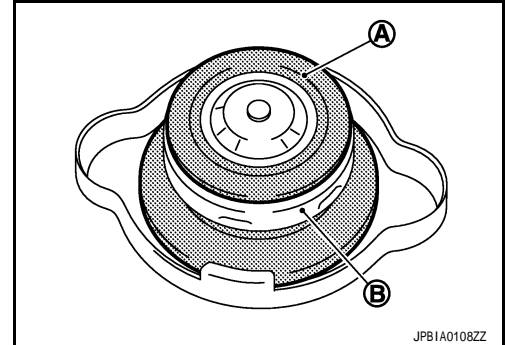
RESERVOIR TANK CAP : Inspection

INFOID:000000003880623

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- Check valve seat of reservoir tank cap.
- Check if valve seat (A) is swollen to the extent that the edge of the metal plunger (B) cannot be seen when watching it vertically from the top.
- Check if valve seat has no soil and damage.

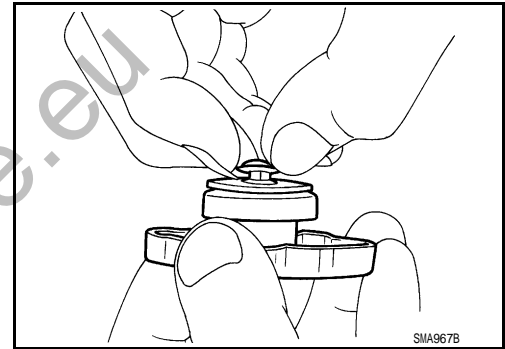


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- Pull negative-pressure valve to open it, and check that it close completely when released.
- Check that there is no dirt or damage on the valve seat of reservoir tank cap negative-pressure valve.
- Check that there are no unusualness in the opening and closing conditions of negative-pressure valve.



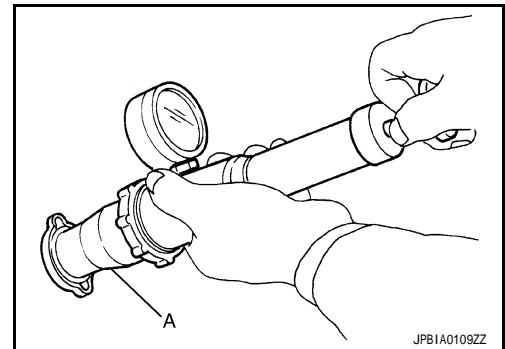
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- Check reservoir tank cap relief pressure.
- When connecting reservoir tank cap to the radiator cap tester (commercial service tool) and the radiator cap tester adapter (commercial service tool) (A), apply engine coolant to the cap seal surface.

Standard and limit : Refer to [CO-25, "Radiator"](#).



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- Replace reservoir tank cap if there is an unusualness related to the above three.

CAUTION:

When installing reservoir tank cap, thoroughly wipe out the reservoir tank filler neck to remove any waxy residue or foreign material.

RADIATOR

RADIATOR : Inspection

INFOID:000000003880624

N

O

Check radiator for mud or clogging. If necessary, clean radiator as follows:

- Be careful not to bend or damage radiator fins.
 - Tape harness and connectors to prevent water from entering.
1. Apply water by hose to the back side of the radiator core vertically downward.
 2. Apply water again to all radiator core surfaces once per minute.
 3. Stop washing if any stains no longer flow out from radiator.

P

RADIATOR

< ON-VEHICLE MAINTENANCE >

4. Blow air into the back side of radiator core vertically downward.
 - Use compressed air lower than 490 kPa (5 kg/cm², 71 psi) and keep distance more than 30 cm (11.8 in).
5. Blow air again into all the radiator core surfaces once per minute until no water sprays out.

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RADIATOR

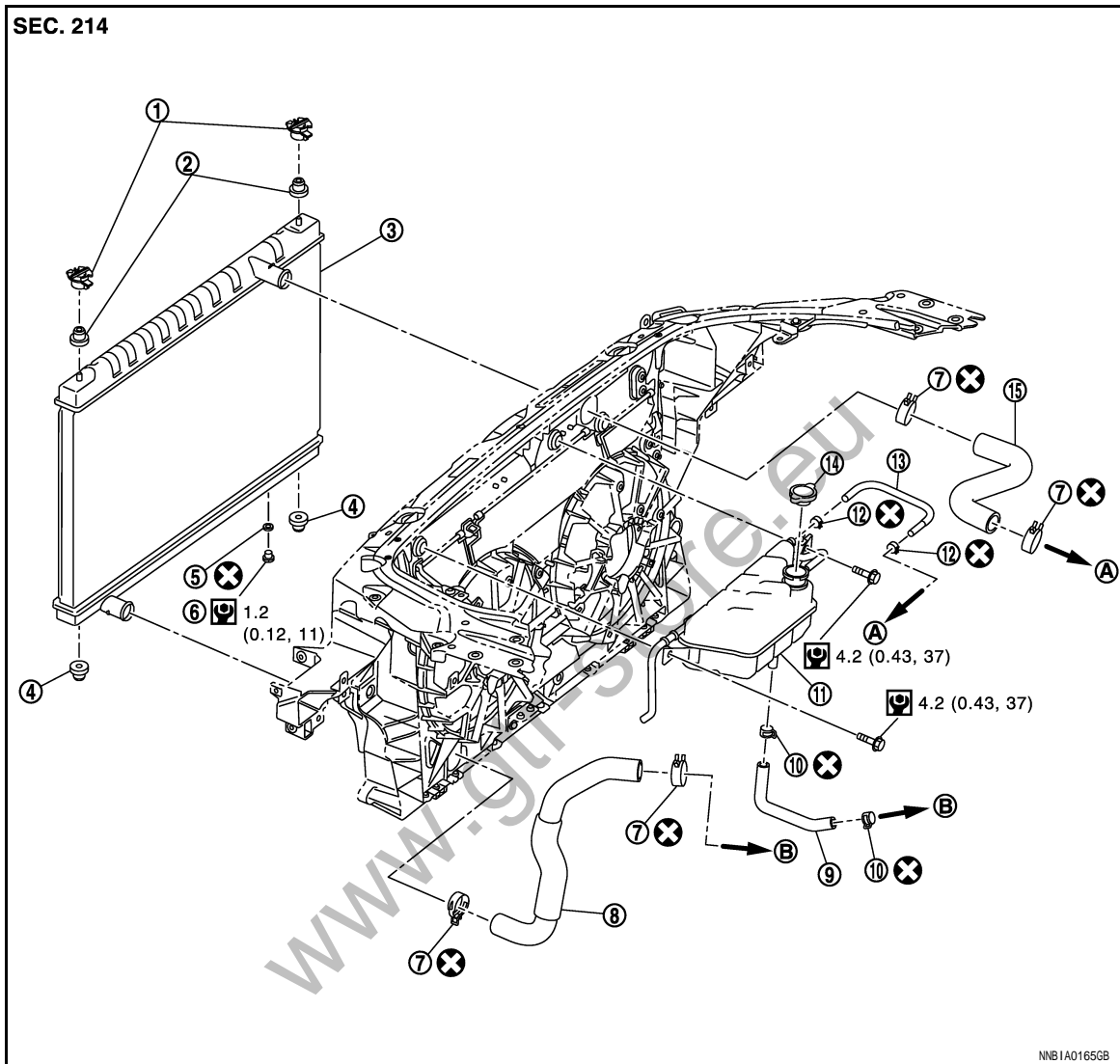
< ON-VEHICLE REPAIR >

ON-VEHICLE REPAIR

RADIATOR

Exploded View (GT-R certified NISSAN dealer)

INFOID:000000003880625



- | | | |
|---------------------------------|---|---------------------------|
| 1. Radiator upper mount bracket | 2. Mounting rubber (upper) | 3. Radiator |
| 4. Mounting rubber (lower) | 5. O-ring | 6. Drain plug |
| 7. Clamp | 8. Radiator hose (lower) | 9. Water hose |
| 10. Clamp | 11. Reservoir tank | 12. Clamp |
| 13. Water hose | 14. Reservoir tank cap | 15. Radiator hose (upper) |
| A. To water outlet (front) | B. To water inlet and thermostat assembly | |

Refer to [GI-4. "Components"](#) for symbols in the figure.

Removal and Installation (GT-R certified NISSAN dealer)

INFOID:000000003880626

REMOVAL

WARNING:

RADIATOR

< ON-VEHICLE REPAIR >

Never remove radiator cap and reservoir tank cap when engine is hot. Serious burns could occur from high-pressure engine coolant escaping from radiator. Wrap a thick cloth around the cap. Slowly turn it a quarter of a turn to release built-up pressure. Carefully remove cap by turning it all the way.

1. Drain engine coolant from radiator. Refer to [CO-8, "Draining"](#).

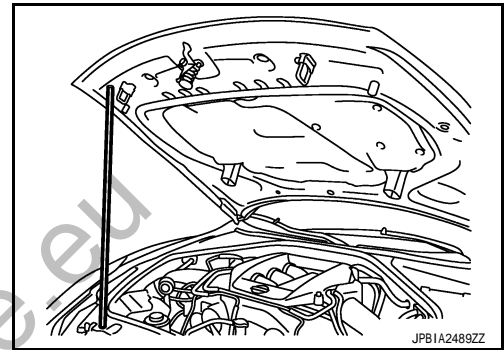
CAUTION:

- Perform this step when the engine is cold.
- Never spill engine coolant on drive belt.

2. Remove air cleaner case (RH and LH). Refer to [EM-26, "Exploded View"](#).
3. Remove air intake duct assembly with charge air cooler. Refer to [DLK-212, "Exploded View \(GT-R certified NISSAN dealer\)"](#).
4. Remove condenser. Refer to [HA-48, "Exploded View \(GT-R certified NISSAN dealer\)"](#).
5. Remove reservoir tank if necessary.
6. Remove radiator hoses (upper and lower) and reservoir tank hose.
7. Support the hood with a proper tool to prevent the hood from falling.

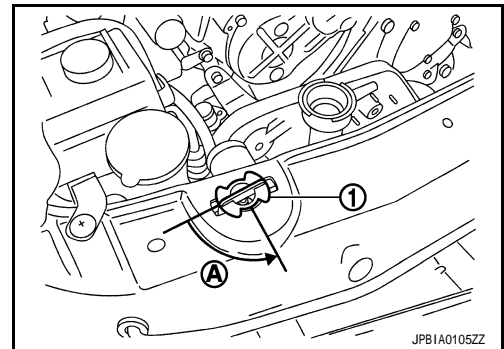
CAUTION:

Check that the tool surely supports the hood so as not to accidentally fall down during the work.



8. Remove hood support rod and hood lock bracket assembly. Refer to [DLK-209, "HOOD SUPPORT ROD : Exploded View"](#) and [DLK-212, "Exploded View \(GT-R certified NISSAN dealer\)"](#).
9. Rotate two radiator upper mount brackets 90 degrees in direction as shown in the figure, and remove them.

- 1 : Radiator upper mount bracket
A : Turn 90° counterclockwise



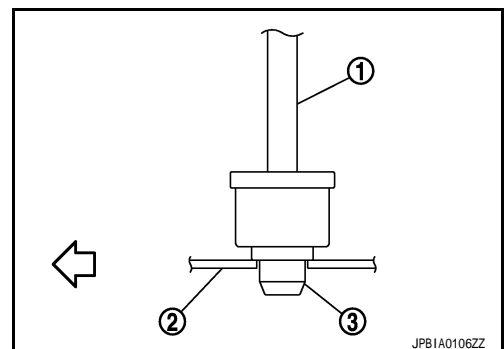
10. Remove radiator as follows:

CAUTION:

Be careful not to damage radiator core.

- a. Lift up and pull the radiator (1) forward, and then remove the mounting rubber (lower) (3) from the radiator core support (2).

← : Vehicle front

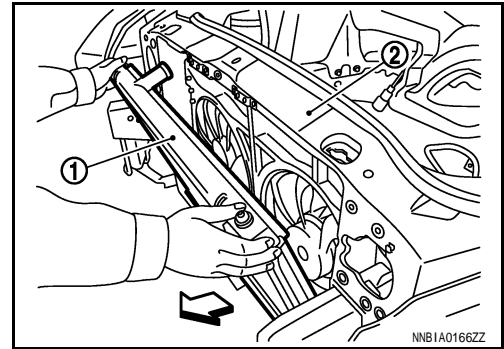


RADIATOR

< ON-VEHICLE REPAIR >

- b. Remove radiator (1) from front of radiator core support (2).

← : Vehicle front



INSTALLATION

Install in the reverse order of removal.

CAUTION:

Replace water hose clamp if it is removed.

Inspection (GT-R certified NISSAN dealer)

INFOID:000000003880627

INSPECTION AFTER INSTALLATION

- Check for leakage of engine coolant using the radiator cap tester adapter (commercial service tool) and the radiator cap tester (commercial service tool). Refer to [CO-8, "Inspection"](#).
- Start and warm up the engine. Visually check that there is no leakage of engine coolant.

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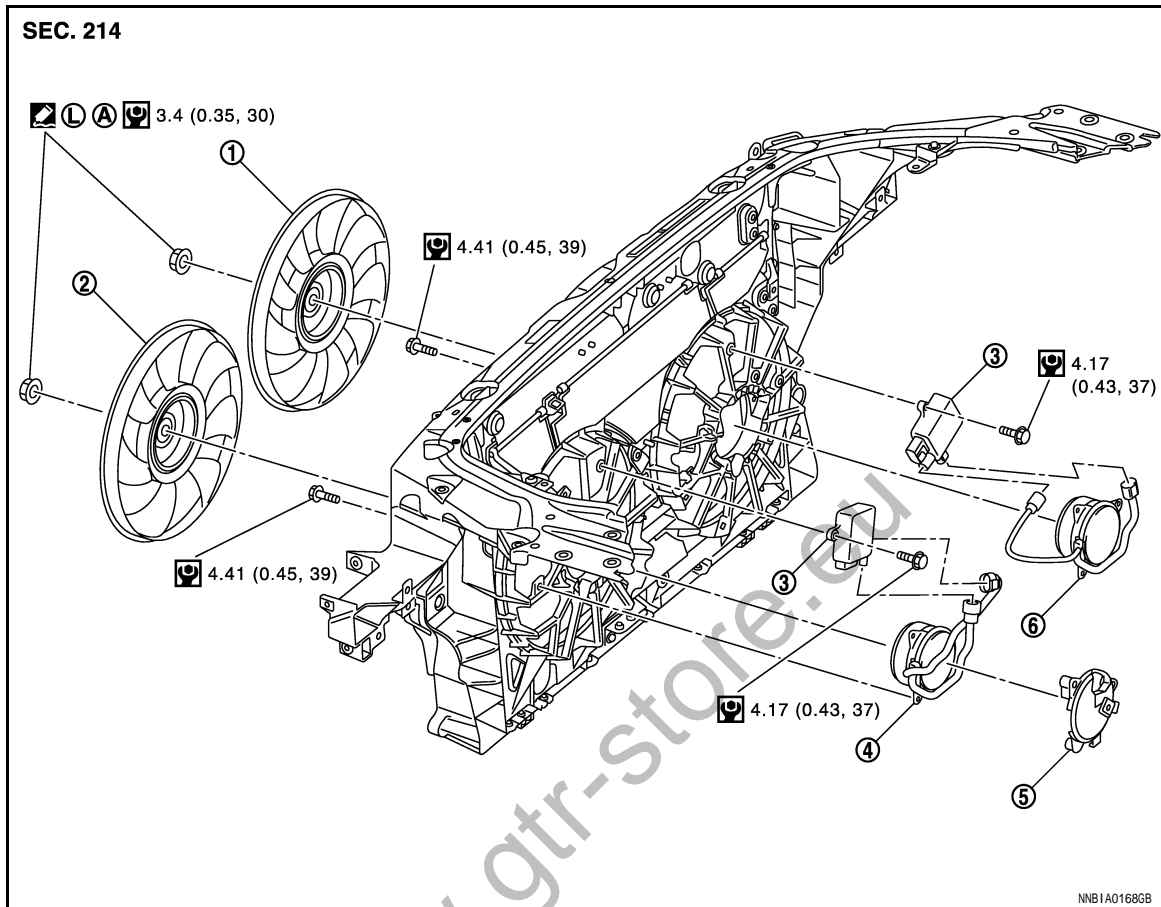
COOLING FAN

< ON-VEHICLE REPAIR >

COOLING FAN

Exploded View (GT-R certified NISSAN dealer)

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|-----------------------------|---------------------|-------------------------------|
| 1. Cooling fan (RH) | 2. Cooling fan (LH) | 3. Cooling fan control module |
| 4. Fan motor (LH) | 5. Fan motor cover | 6. Fan motor (RH) |
| A. Apply on fan motor shaft | | |

: Apply high strength thread locking sealant or equivalent.

Refer to [GI-4, "Components"](#) for symbols not described on the above.

Removal and Installation (GT-R certified NISSAN dealer)

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REMOVAL

1. Remove radiator. Refer to [CO-13, "Exploded View \(GT-R certified NISSAN dealer\)"](#).
2. Disconnect harness connector from cooling fan control module, and move harness to aside.
3. Remove cooling fan control module.
CAUTION:
Handle carefully to avoid dropping and shocks.
4. Remove cooling fan mounting nuts, and then remove the cooling fans (RH and LH).
5. Remove fan motors (RH and LH).
 - Identify installation positions, and store them without mixing them up.

INSTALLATION

Note the following, and install in the reverse order of removal.

CAUTION:

RH and LH fan motors are different. Be careful not to misassemble them.

- Install each fan in the following position.

COOLING FAN

< ON-VEHICLE REPAIR >

CAUTION:

RH and LH cooling fans are different. Be careful not to misassemble them.

Right side : 9 blades

Left side : 7 blades

- Apply high strength thread locking sealant on fan motor shaft.
- Secure the harness tightly to the fan shroud to prevent the fan rotation area from being loose.

Inspection (GT-R certified NISSAN dealer)

INFOID:000000003880631

INSPECTION AFTER REMOVAL

- Check that fan motors operate normally.

NOTE:

Cooling fans are controlled by cooling fan control module. For details, refer to [EC-72, "System Diagram \(GT-R certified NISSAN dealer\)"](#).

- Inspect cooling fan for crack or unusual bend.
- If anything is found, replace cooling fan.

INSPECTION AFTER INSTALLATION

- Check for leakage of engine coolant using the radiator cap tester adapter (commercial service tool) and the radiator cap tester (commercial service tool). Refer to [CO-8, "Inspection"](#).
- Start and warm up the engine. Visually check that there is no leakage of engine coolant.

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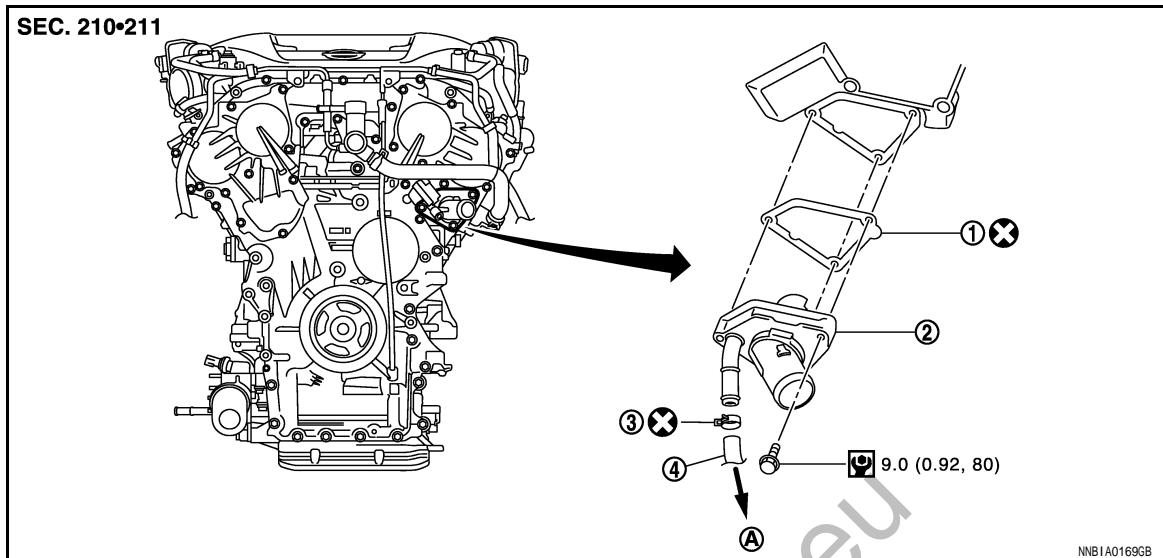
WATER INLET AND THERMOSTAT ASSEMBLY

< ON-VEHICLE REPAIR >

WATER INLET AND THERMOSTAT ASSEMBLY

Exploded View (GT-R certified NISSAN dealer)

INFOID:000000003880635



1. Gasket
2. Water inlet and thermostat assembly
3. Clamp
4. Water hose
- A. To reservoir tank

Refer to [GI-4, "Components"](#) for symbols in the figure.

Removal and Installation (GT-R certified NISSAN dealer)

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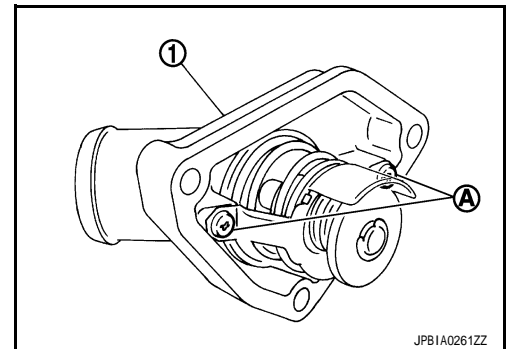
REMOVAL

1. Remove engine undercover with power tool.
2. Drain engine coolant from radiator drain plug at the bottom of radiator. Refer to [CO-8, "Draining"](#).
CAUTION:
 - Perform this step when the engine is cold.
 - Never spill engine coolant on drive belt.
3. Remove air duct and air cleaner case assembly (LH). Refer to [EM-26, "Exploded View"](#).
4. Remove reservoir tank. Refer to [CO-13, "Exploded View \(GT-R certified NISSAN dealer\)"](#).
5. Disconnect radiator hose (lower) and water hose at water inlet and thermostat assembly side.
6. Disconnect intake valve timing control solenoid valve harness connector (bank 2).
7. Remove water inlet and thermostat assembly (1).

A : Never loosen these screws.

CAUTION:

Never disassemble water inlet and thermostat assembly. Replace them as a unit, if necessary.



INSTALLATION

Note the following, and install in the reverse order of removal.

CAUTION:

- Replace water hose clamp if it is removed.
- Be careful not to spill engine coolant over engine room. Use rag to absorb engine coolant.

WATER INLET AND THERMOSTAT ASSEMBLY

< ON-VEHICLE REPAIR >

Inspection (GT-R certified NISSAN dealer)

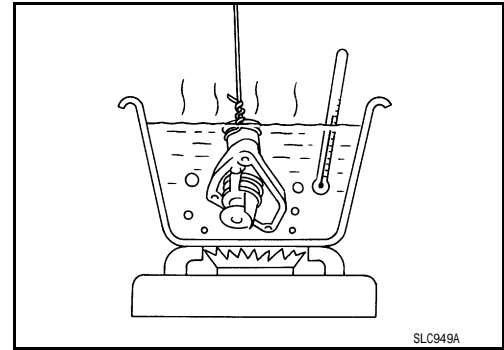
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INSPECTION AFTER REMOVAL

1. Check valve seating condition at ordinary room temperatures. It should seat tightly.
2. Check valve operation.

Thermostat (Standard) : Refer to [CO-25, "Thermostat \(GT-R certified NISSAN dealer\)"](#).

- If the malfunctioning condition, when valve seating at ordinary room temperature, or measured values are out of the standard, replace water inlet and thermostat assembly.



INSPECTION AFTER INSTALLATION

- Check for leakage of engine coolant using the radiator cap tester adapter (commercial service tool) and the radiator cap tester (commercial service tool). Refer to [CO-8, "Inspection"](#).
- Start and warm up the engine. Visually check that there is no leakage of engine coolant.

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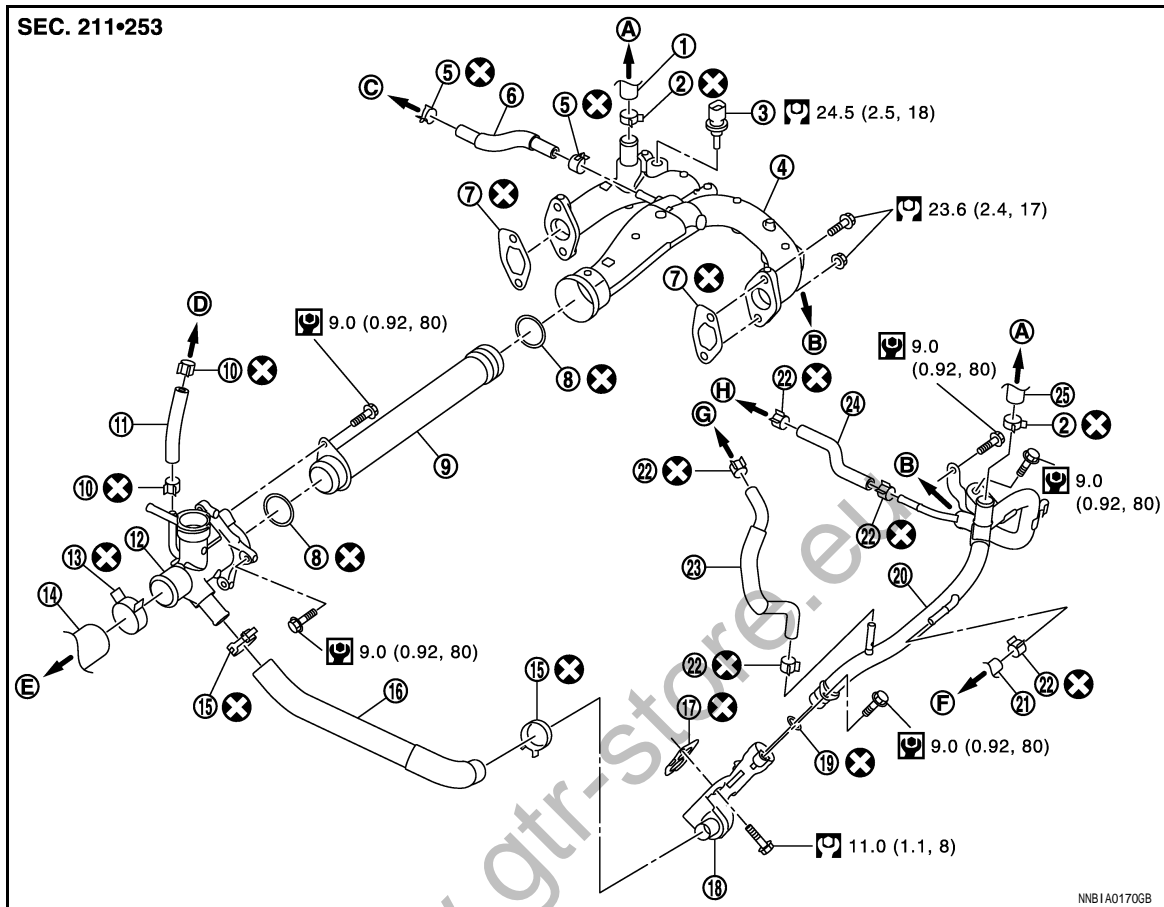
WATER OUTLET AND WATER PIPING

< ON-VEHICLE REPAIR >

WATER OUTLET AND WATER PIPING

Exploded View (GT-R certified NISSAN dealer)

INFOID:000000003880638



- | | | |
|---|-----------------------------|--------------------------------------|
| 1. Heater hose | 2. Clamp | 3. Engine coolant temperature sensor |
| 4. Water outlet (rear) | 5. Clamp | 6. Water hose |
| 7. Gasket | 8. O-ring | 9. Water outlet pipe |
| 10. Clamp | 11. Water hose | 12. Water outlet (front) |
| 13. Clamp | 14. Radiator hose (upper) | 15. Clamp |
| 16. Water bypass hose | 17. Gasket | 18. Water connector |
| 19. O-ring | 20. Heater pipe | 21. Water hose |
| 22. Clamp | 23. Water hose | 24. Water hose |
| 25. Heater hose | | |
| A. To heater core | B. To heat exchanger | C. To air cut valve (bank 1) |
| D. To electric throttle control actuator (bank 1) | E. To radiator | F. To turbocharger (bank 2) |
| G. To electric throttle control actuator (bank 2) | H. To turbocharger (bank 1) | |

Refer to [GI-4. "Components"](#) for symbols in the figure.

Removal and Installation (GT-R certified NISSAN dealer)

INFOID:000000003880639

REMOVAL

1. Remove engine undercover with power tool.
2. Drain engine coolant. Refer to [CO-8. "Draining"](#).

CAUTION:

- Perform this step when the engine is cold.

WATER OUTLET AND WATER PIPING

< ON-VEHICLE REPAIR >

- **Never spill engine coolant on drive belt.**

3. Remove the following parts:
 - Engine cover: Refer to [EM-24, "Exploded View"](#).
 - Air duct and air cleaner case assembly (RH and LH): Refer to [EM-26, "Exploded View"](#).
 - Intake manifold collector: Refer to [EM-33, "Exploded View"](#).
 - Intake manifold: Refer to [EM-38, "Exploded View"](#).
 - Reservoir tank: Refer to [CO-13, "Exploded View \(GT-R certified NISSAN dealer\)"](#).
 - Oil level gauge and guide: Refer to [EM-94, "Exploded View \(GT-R certified NISSAN dealer\)"](#).
4. Remove radiator hose (upper) and water hose from water outlet (rear).
5. Remove water outlet (front) and water outlet pipe.
6. Remove air cut valve (bank 1 and bank 2). Refer to [EM-31, "Exploded View \(GT-R certified NISSAN dealer\)"](#).
7. Disconnect engine coolant temperature sensor harness connector.
8. Separate engine harness, removing their bracket from water outlet (rear).
9. Remove water outlet tube mounting bolt [turbocharger (bank 1) side]. Refer to [EM-56, "Exploded View"](#).
10. Remove water outlet (rear).
11. Remove heater pipe.
12. Remove engine coolant temperature sensor if necessary.

CAUTION:

Be careful not to damage engine coolant temperature sensor.

INSTALLATION

Note the following, and install in the reverse order of removal.

- Securely insert each hose, and install clamp at a position where it does not interfere with the pipe bulge.

CAUTION:

Replace water hose clamp if it is removed.

- When inserting water outlet pipe and water bypass pipe into water outlet, apply neutral detergent to O-ring.

CAUTION:

Never allow water outlet (rear) to nip O-rings when installing water outlet pipe and water bypass pipe.

Inspection (GT-R certified NISSAN dealer)

INFOID:000000003880640

INSPECTION AFTER INSTALLATION

- Check that the reservoir tank cap is tightened.
- Check for leakage of engine coolant using the radiator cap tester adapter (commercial service tool) and the radiator cap tester (commercial service tool). Refer to [CO-8, "Inspection"](#).
- Start and warm up the engine. Visually check that there is no leakage of engine coolant.

WATER PUMP

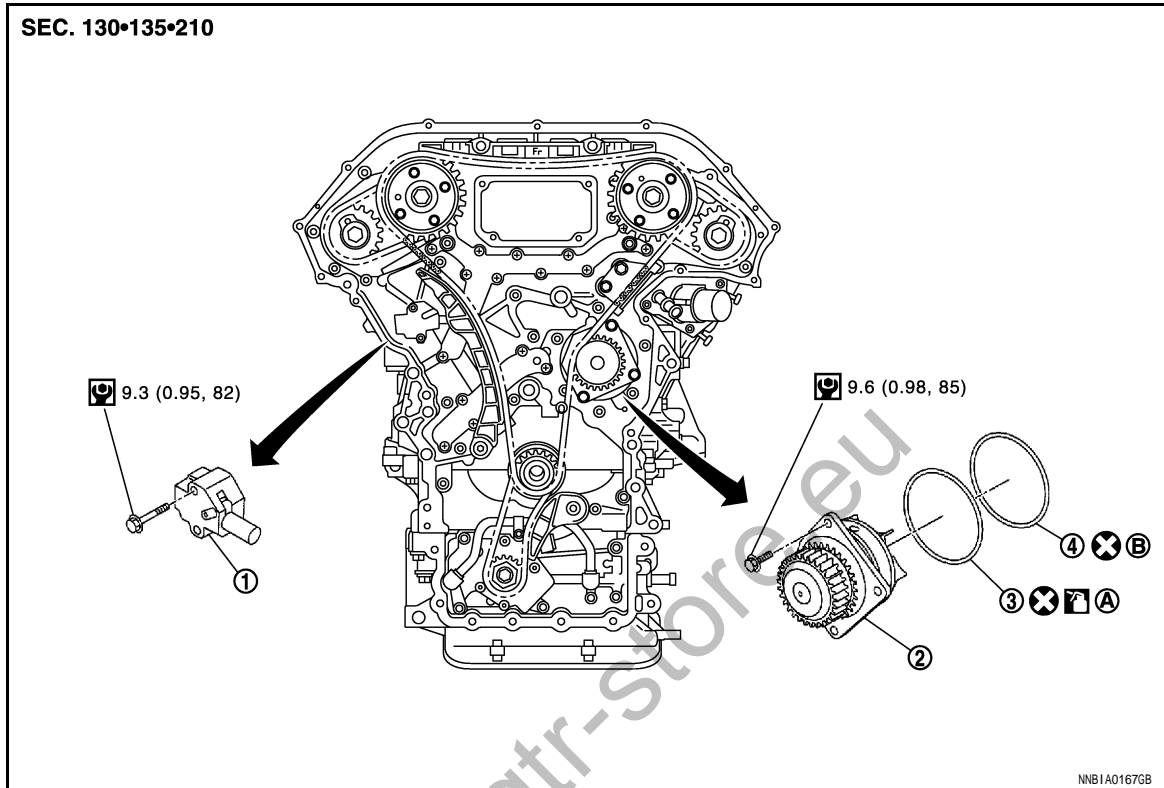
< DISASSEMBLY AND ASSEMBLY >

DISASSEMBLY AND ASSEMBLY

WATER PUMP

Exploded View (GT-R certified NISSAN dealer)

INFOID:000000003880632



1. Timing chain tensioner (primary)
 2. Water pump
 3. O-ring
 4. O-ring
- A. Identify with yellow paint mark B. Identify with light blue paint mark
Apply engine coolant

Refer to [GI-4. "Components"](#) for symbols in the figure.

Removal and Installation (GT-R certified NISSAN dealer)

INFOID:000000003880633

CAUTION:

- When removing water pump assembly, be careful not to get engine coolant on drive belt.
- Water pump cannot be disassembled and should be replaced as a unit.
- After installing water pump, connect hose and clamp securely, then check for leakage using the radiator cap tester (commercial service tool) and the radiator cap tester adapter (commercial service tool).

REMOVAL

1. Remove engine assembly from the vehicle. Refer to [EM-48. "Exploded View \(GT-R certified NISSAN dealer\)"](#).
2. Remove front timing chain case. Refer to [EM-66. "Exploded View \(GT-R certified NISSAN dealer\)"](#).
3. Remove timing chain tensioner (primary) as follows:

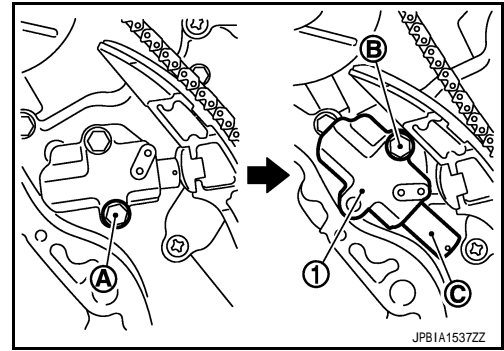
WATER PUMP

< DISASSEMBLY AND ASSEMBLY >

- a. Remove lower mounting bolt (A).
- b. Loosen upper mounting bolt (B) slowly, and then turn timing chain tensioner (primary) (1) on the upper mounting bolt so that plunger (C) is fully expanded.

NOTE:

Even if plunger is fully expanded, it is not dropped from the body of timing chain tensioner (primary).



- c. Remove upper mounting bolt, and then remove timing chain tensioner (primary).
4. Remove water pump as follows:
 - a. Remove three water pump mounting bolts. Secure a gap between water pump gear and timing chain, by turning crankshaft counterclockwise until timing chain looseness on water pump sprocket becomes maximum.

- b. Screw M8 bolts (A) [pitch: 1.25 mm (0.0492 in) length: approximately 50 mm (1.97 in)] into water pumps upper and lower mounting bolt holes until they reach timing chain case. Then, alternately tighten each bolt for a half turn, and pull out water pump (1).

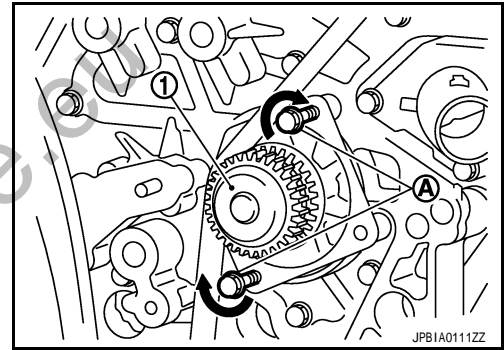
CAUTION:

- Pull straight out while preventing vane from contacting socket in installation area.
- Remove water pump without causing sprocket to contact timing chain.

- c. Remove M8 bolts and O-rings from water pump.

CAUTION:

Never disassemble water pump.



INSTALLATION

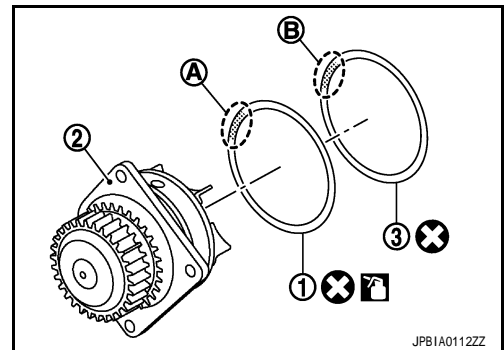
CAUTION:

Replace water hose clamp if it is removed.

1. Install new O-rings to water pump.
 - Apply engine oil to O-ring (1) and engine coolant to O-ring (3) as shown in the figure.

2 : Water pump

- Locate O-ring with yellow paint mark (A) to front side.
- Locate O-ring with light blue paint mark (B) to rear side.



2. Install water pump.

CAUTION:

Never allow cylinder block to nip O-rings when installing water pump.

- Check timing chain and water pump sprocket are engaged.
- Insert water pump by tightening mounting bolts alternately and evenly.

3. Install timing chain tensioner (primary) as follows:

- a. Turn crankshaft clockwise so that timing chain on the timing chain tensioner (primary) side is loose.

WATER PUMP

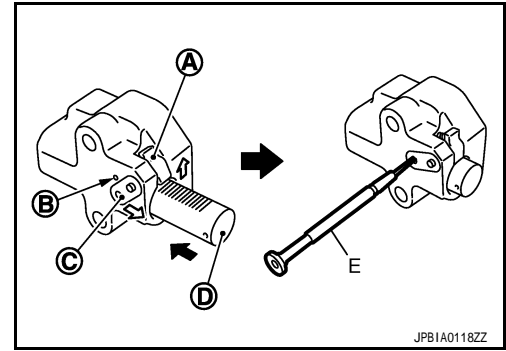
< DISASSEMBLY AND ASSEMBLY >

- b. Pull plunger stopper tab (A) up (or turn lever downward) so as to remove plunger stopper tab from the ratchet of plunger (D).

NOTE:

Plunger stopper tab and lever (C) are synchronized.

- c. Push plunger into the inside of tensioner body.
- d. Hold plunger in the fully compressed position by engaging plunger stopper tab with the tip of ratchet.
- e. To secure lever, insert stopper pin (E) through hole of lever into tensioner body hole (B).
- The lever parts and the tab are synchronized. Therefore, the plunger will be secured under this condition.



NOTE:

Figure shows the example of 1.2 mm (0.047 in) diameter thin screwdriver being used as the stopper pin.

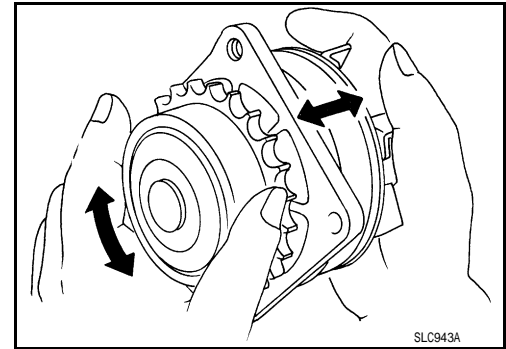
- f. Install timing chain tensioner (primary).
- Remove dust and foreign material completely from backside of timing chain tensioner (primary) and from installation area of rear timing chain case.
- g. Remove stopper pin.
- h. Check again that timing chain and water pump sprocket are engaged.
4. Install in the reverse order of removal for remaining parts.
- **After starting engine, let idle for three minutes, then rev engine up to 3,000 rpm under no load to purge air from the high-pressure chamber of chain tensioner. Engine may produce a rattling noise. This indicates that air still remains in the chamber and is not a matter of concern.**

Inspection (GT-R certified NISSAN dealer)

INFOID:000000003880634

INSPECTION AFTER REMOVAL

- Check for badly rusted or corroded water pump body assembly.
- Check for rough operation due to excessive end play.
- If anything is found, replace water pump.



INSPECTION AFTER INSTALLATION

- Check that the reservoir tank cap is tightened.
- Check for leakage of engine coolant using the radiator cap tester adapter (commercial service tool) and the radiator cap tester (commercial service tool). Refer to [CO-8. "Inspection"](#).
- Start and warm up the engine. Visually check that there is no leakage of engine coolant.

SERVICE DATA AND SPECIFICATIONS (SDS)

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SERVICE DATA AND SPECIFICATIONS (SDS)

SERVICE DATA AND SPECIFICATIONS (SDS)

Periodical Maintenance Specification

INFOID:000000003880641

ENGINE COOLANT CAPACITY (APPROXIMATELY)

Unit: ℓ (US qt, Imp qt)

| | |
|---|----------------------|
| Engine coolant capacity [With reservoir tank ("MAX" level)] | 11.0 (11-5/8, 9-5/8) |
| Reservoir tank engine coolant capacity (At "MAX" level) | 1.4 (1-1/2, 1-1/4) |

Radiator

INFOID:000000003880642

Unit: kPa (kg/cm², psi)

| | | |
|--------------------------|----------|------------------------------------|
| Cap relief pressure | Standard | 122.3 - 151.7 (1.2 - 1.5, 18 - 22) |
| | Limit | 107 (1.1, 16) |
| Leakage testing pressure | | 157 (1.6, 23) |

Thermostat (GT-R certified NISSAN dealer)

INFOID:000000003880643

| | |
|---------------------------|------------------------------|
| Thermostat | Standard |
| Valve opening temperature | 76.5°C (170°F) |
| Maximum valve lift | 8.6 mm/90°C (0.339 in/194°F) |
| Valve closing temperature | 71°C (160°F) |

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