SECTION CO
ENGINE COOLING SYSTEM

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1.6L/2.0L TURBO ENGINE

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PRECAUTION

PRECAUTIONS

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

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Risk of injury

There is a risk of injury caused by parts becoming projectiles if uncontrolled deployment of air bag or seat belt pre-tensioner occurs, or by storing air bag with the deployment side facing downwards. When scrapping air bag or seat belt pre-tensioner by means of controlled deployment, there is also a danger present if a sufficiently safe distance is not maintained, or if opening using cutting torches or other cutting tools, or due to smelting or if parts that are not yet triggered are exposed to a blaze or a smoldering fire at landfills.

Safety instructions/precautions

- Removed air bag must always be stored with deployment side facing up.
- Acquisition, transportation, storage, testing and assembly work should only be performed or supervised by properly trained personnel.
- Install air bag or seat belt pre-tensioner immediately following retrieval from storage.
- Air bag and seat belt pre-tensioner must be protected from flying sparks, open fires and temperature exceeding 100°C (212°F).
- Never transport air bag and seat belt pre-tensioner in the passenger compartment. Store them securely in the luggage room of the vehicle in their original replacement part packaging and secure them so that they cannot slip around.
- Never allow air bag and seat belt pre-tensioner to come into contact with grease, oil, or cleaning agents.
- Perform system tests using approved testing equipment only, and only when the units are properly installed and the vehicle is unoccupied.
- Before the initial hookup of the battery or an external power supply, the ignition must be switched on and the vehicle unoccupied.
- Air bag and seat belt pre-tensioner that fall from a height of more than 0.5 m must be replaced.
- When scrapping by means of controlled deployment of air bag and seat belt pre-tensioner, a safe distance of at least 10 m must be maintained.
- Before starting work on air bag and seat belt pre-tensioner and work on components that are connected to air bag and seat belt pre-tensioner or require and intervention in their electric circuit (e.g. when removing the steering wheel):

- Disconnect any external power sources (e.g. charger).
- Disconnect and insulate ground line of battery

- Before starting bodywork in combination with welding or retrofitting, during which work is performed on uninsulated, current-carrying lines or require an intervention in their electric circuit (e.g. when removing the steering wheel):

- Disconnect any external power sources (e.g. charger).
- Disconnect and insulate ground line of battery.
- During welding, disconnect plug connection and from control unit of air bag.

- When the air bag deploys, the pyrofuse activates and the power source from the battery is disconnected. This prevents possible fires caused by electric leakage after an accident occurs.

Precautions for Removing Battery Terminal

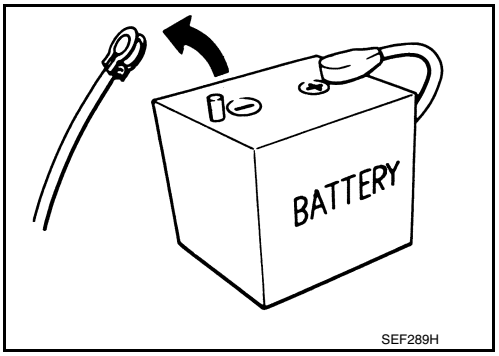
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When disconnecting the battery terminal, pay attention to the following.

- Always use a 12V battery as power source.
- Never disconnect battery terminal while engine is running.

- When removing the 12V battery terminal, turn OFF the ignition switch and wait at least 30 seconds.
- For vehicles with the engine listed below, remove the battery terminal after a lapse of the specified time:

BR08DE	: 4 minutes	YD25DDTi	: 2 minutes
D4D engine	: 20 minutes	YS23DDT	: 4 minutes
HRA2DDT	: 12 minutes	YS23DDTT	: 4 minutes
K9K engine	: 4 minutes	ZD30DDTi	: 60 seconds
M9R engine	: 4 minutes	ZD30DDTT	: 60 seconds
R9M engine	: 4 minutes		
V9X engine	: 4 minutes		



NOTE:
ECU may be active for several tens of seconds after the ignition switch is turned OFF. If the battery terminal is removed before ECU stops, then a DTC detection error or ECU data corruption may occur.

- After high-load driving, if the vehicle is equipped with the V9X engine, turn the ignition switch OFF and wait for at least 15 minutes to remove the battery terminal.

NOTE:
- Turbocharger cooling pump may operate in a few minutes after the ignition switch is turned OFF.
- Example of high-load driving
  - Driving for 30 minutes or more at 140 km/h (86 MPH) or more.
  - Driving for 30 minutes or more on a steep slope.

- For vehicles with the 2-batteries, be sure to connect the main battery and the sub battery before turning ON the ignition switch.

NOTE:
If the ignition switch is turned ON with any one of the terminals of main battery and sub battery disconnected, then DTC may be detected.

- After installing the 12V battery, always check "Self Diagnosis Result" of all ECUs and erase DTC.

NOTE:
The removal of 12V battery may cause a DTC detection error.

Precautions For Engine Service

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DISCONNECTING FUEL PIPING

- Before starting work, check no fire or spark producing items are in the work area.
- Release fuel pressure before disconnecting and disassembly.
- After disconnecting pipes, plug openings to stop fuel leakage.

DRAINING ENGINE COOLANT

Drain engine coolant and engine oil when the engine is cooled.

INSPECTION, REPAIR AND REPLACEMENT

Before repairing or replacing, thoroughly inspect parts. Inspect new replacement parts in the same way, and replace if necessary.

REMOVAL AND DISASSEMBLY

- When instructed to use SST, use specified tools. Always be careful to work safely, avoid forceful or uninstructed operations.
- Exercise maximum care to avoid damage to mating or sliding surfaces.
- Dowel pins are used for several parts alignment. When replacing and reassembling parts with dowel pins, check that dowel pins are installed in the original position.
- Must cover openings of engine system with a tape or equivalent, to seal out foreign materials.
- Mark and arrange disassembly parts in an organized way for easy troubleshooting and reassembly.
- When loosening nuts and bolts, as a basic rule, start with the one furthest outside, then the one diagonally opposite, and so on. If the order of loosening is specified, do exactly as specified. Power tools may be used in the step.

ASSEMBLY AND INSTALLATION

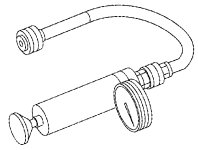
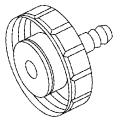
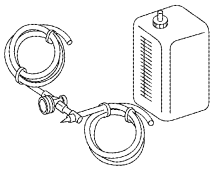
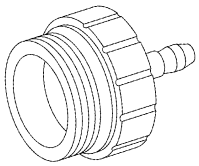
- Use torque wrench to tighten bolts or nuts to specification.
- When tightening nuts and bolts, as a basic rule, equally tighten in several different steps starting with the ones in center, then ones on inside and outside diagonally in this order. If the order of tightening is specified, do exactly as specified.
- Replace with new gasket, packing, oil seal or O-ring.
- Thoroughly wash, clean, and air-blow each part. Carefully check engine oil or engine coolant passages for any restriction and blockage.
- Avoid damaging sliding or mating surfaces. Completely remove foreign materials such as cloth lint or dust. Before assembly, oil sliding surfaces well.
- After disassembling, or exposing any internal engine parts, change engine oil and replace oil filter with a new one.
- Release air within route when refilling after draining engine coolant.
- After repairing, start the engine and increase engine speed to check engine coolant, fuel, engine oil, and exhaust gases for leakage.

PREPARATION

PREPARATION

Special Service Tools

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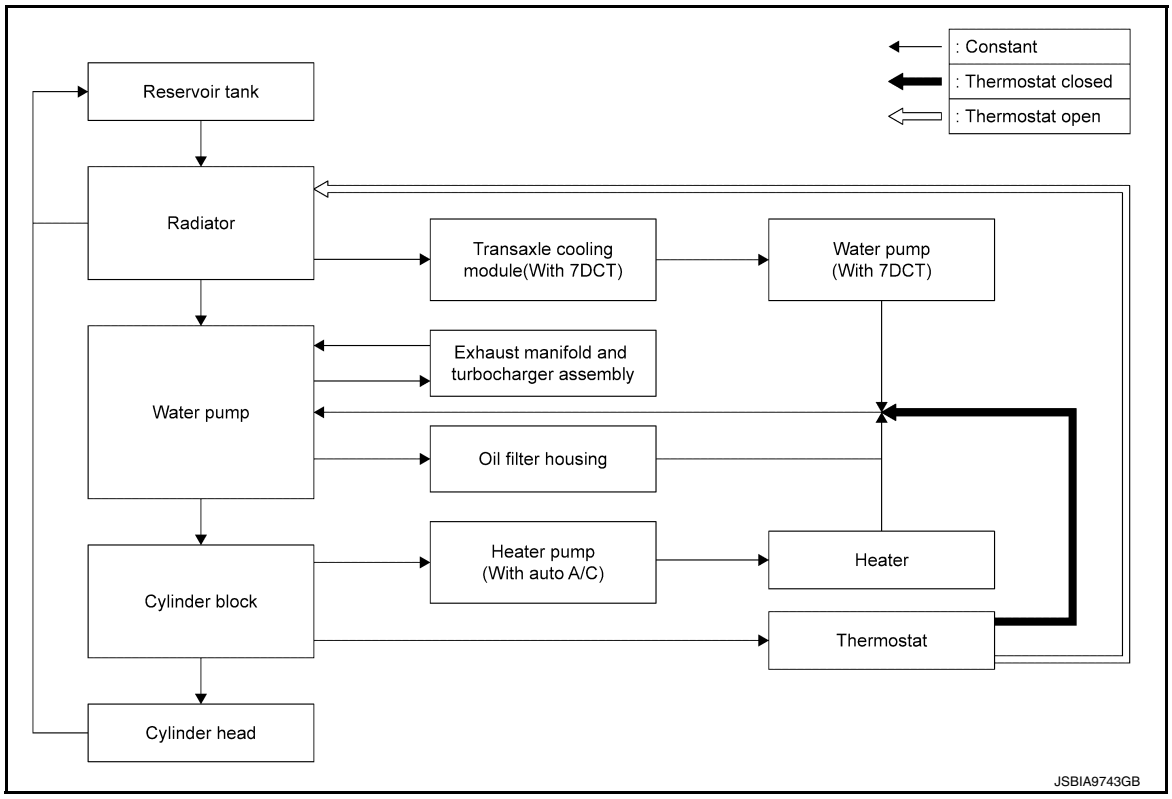
Tool number (DAIMLER tool No.) Tool name	Description
KV115H0870 (DAIMLER tool No.124 589 24 21 00) Pump press  JSBIA3887ZZ	Cooling system check
KV115H0880 (DAIMLER tool No.210 589 00 91 00) Cap  JSBIA3888ZZ	Test cap for cooling system check
KV115H0890 (DAIMLER tool No.285 589 00 21 00) Device cooler filling  JSBIA3889ZZ	Replace engine coolant
KV115H0900 (DAIMLER tool No.210 589 03 63 00) Adapter  JSBIA3890ZZ	Test cap for reservoir tank cap check

SYSTEM DESCRIPTION

DESCRIPTION

Engine Cooling System Schematic

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PERIODIC MAINTENANCE

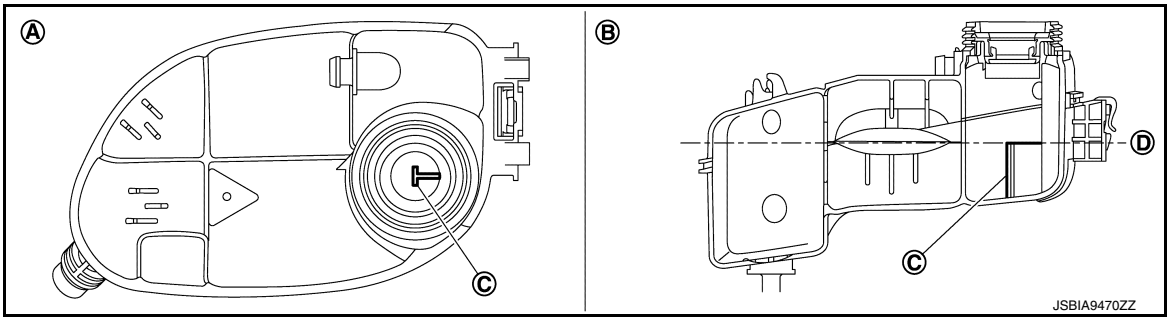
ENGINE COOLANT

Inspection

INFOID:0000000013536994

LEVEL

- Check if the reservoir tank engine coolant level is “MAX” Ⓓ when the engine is cool.



Ⓐ : Reservoir tank top view Ⓑ : Reservoir tank side sectional view Ⓒ : T-lib

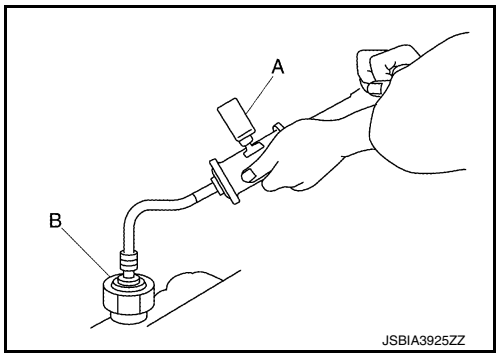
- Adjust the engine coolant level if necessary.
- Check that the reservoir tank cap is tightened.

CAUTION:

Refill Genuine NISSAN Long Life Antifreeze/Coolant (BASF Glysantin® G40®) or equivalent in its quality mixed with water (distilled or demineralized). Refer to MA-12, "FOR NORTH AMERICA : Fluids and Lubricants" (FOR NORTH AMERICA) or MA-13, "FOR MEXICO : Fluids and Lubricants" (FOR MEXICO).

LEAKAGE

- To check for leakage, apply pressure to the cooling system with the pump press [SST: KV115H0870 (124 589 24 21 00)] (A) and cap [SST: KV115H0880 (201 589 00 91 00)] (B).



Testing pressure : Refer to CO-23, "Radiator".

WARNING:

Never remove reservoir tank cap when engine is hot. Serious burns could occur from high-pressure engine coolant escaping from engine cooling system.

CAUTION:

Higher test pressure than specified may cause radiator damage.

NOTE:

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

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

Draining

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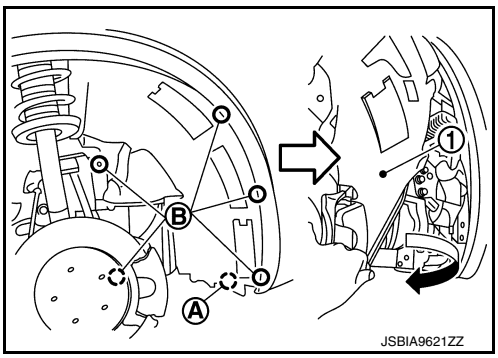
WARNING:

- **To avoid being scalded, never change engine coolant when the engine is hot.**
- **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 front wheel (RH). Refer to WT-70, "Exploded View".
2. Remove engine under cover. Refer to EXT-44, "ENGINE UNDER COVER : Removal and Installation".
3. Remove screws and clips of apron bracket. Refer to EXT-17, "Exploded View".

4. Peel (⬅) front side of fender protector (RH) ①.

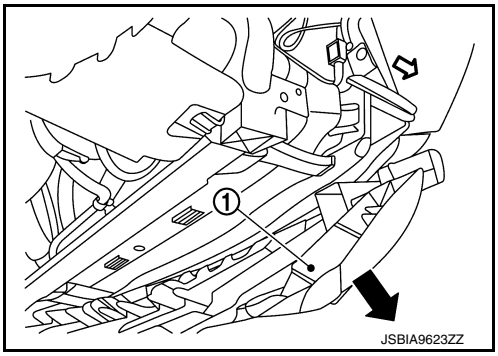
Ⓐ : Screw
Ⓑ : Clip



5. Pull right side of apron bracket backward.
6. Remove radiator core support lower member RH. Refer to DLK-236, "Exploded View".

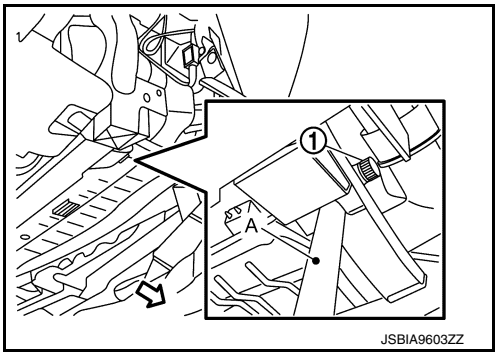
7. To expand the clearance between apron bracket ① and radiator core support lower.

⇦ : Vehicle front
⬅ : Move direction



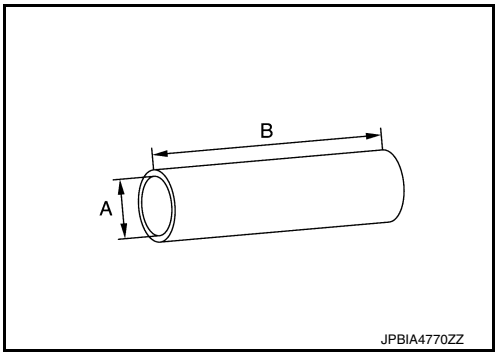
8. Connect drain hose (A).

① : Drain cock
⇦ : Vehicle front

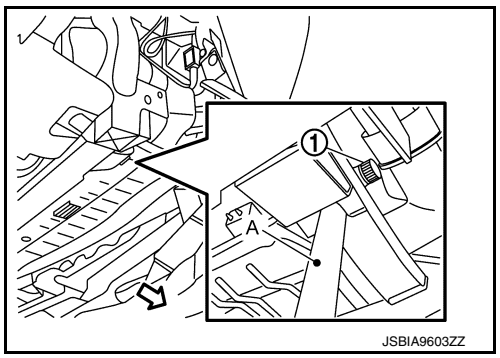


NOTE:
Use a general-purpose hose with the dimensions shown in the figure.

A : ϕ 10 mm (0.39 in)
B : More than 500 mm (19.69 in)



9. Open radiator drain cock ① at the bottom of radiator, and then remove reservoir tank cap.



A : Drain hose

⇦ : Vehicle front

10. Check drained engine coolant for contaminants such as rust, corrosion or discoloration.
If contaminated, flush the engine cooling system. Refer to CO-11, "Flushing".
11. Install in the reverse order after this step.

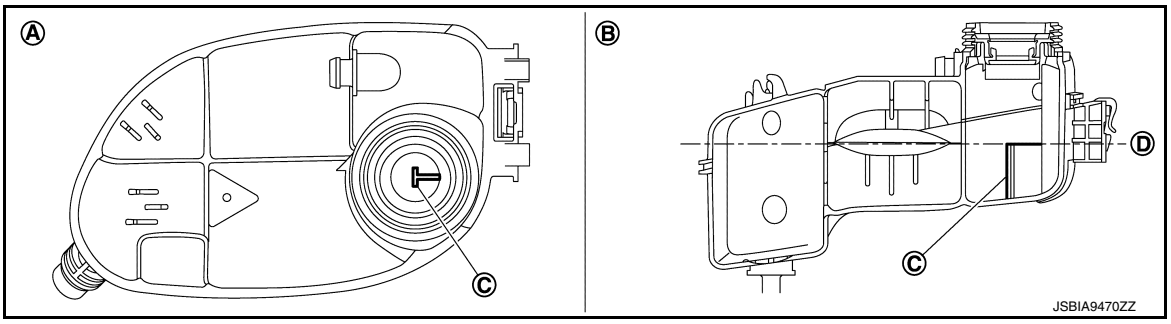
Refilling

INFOID:0000000013536996

CAUTION:
When refilling use Genuine NISSAN Long Life Antifreeze/Coolant (BASF Glysantin® G40®) or equivalent in its quality mixed with water (distilled or demineralized). Refer to MA-12, "FOR NORTH AMERICA : Fluids and Lubricants" (FOR NORTH AMERICA) or MA-13, "FOR MEXICO : Fluids and Lubricants" (FOR MEXICO).

Without device cooler filling [SST:KV115H0890 (285 589 00 21 00)]

1. Check that each hose clamp has been firmly tightened.
2. Refill reservoir tank to “MAX” Ⓓ level line with engine coolant.



Ⓐ : Reservoir tank top view Ⓑ : Reservoir tank side sectional view Ⓒ : T-lib

CAUTION:
Never adhere the engine coolant to electronic equipments (alternator etc.).
- **Pour coolant slowly of less than 3 ℓ (3-1/8 US qt, 2-5/8 Imp qt) a minute to allow air in system to escape.**
- **When engine coolant overflows disconnected heater hose, connect heater hose, and continue filling the engine coolant.**

Engine coolant capacity (With reservoir tank at “MAX” level)	**: Refer to CO-23, "Periodical Maintenance Specification".**

3. Install reservoir tank cap.
4. Warm up engine until opening thermostat. 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.

5. 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.

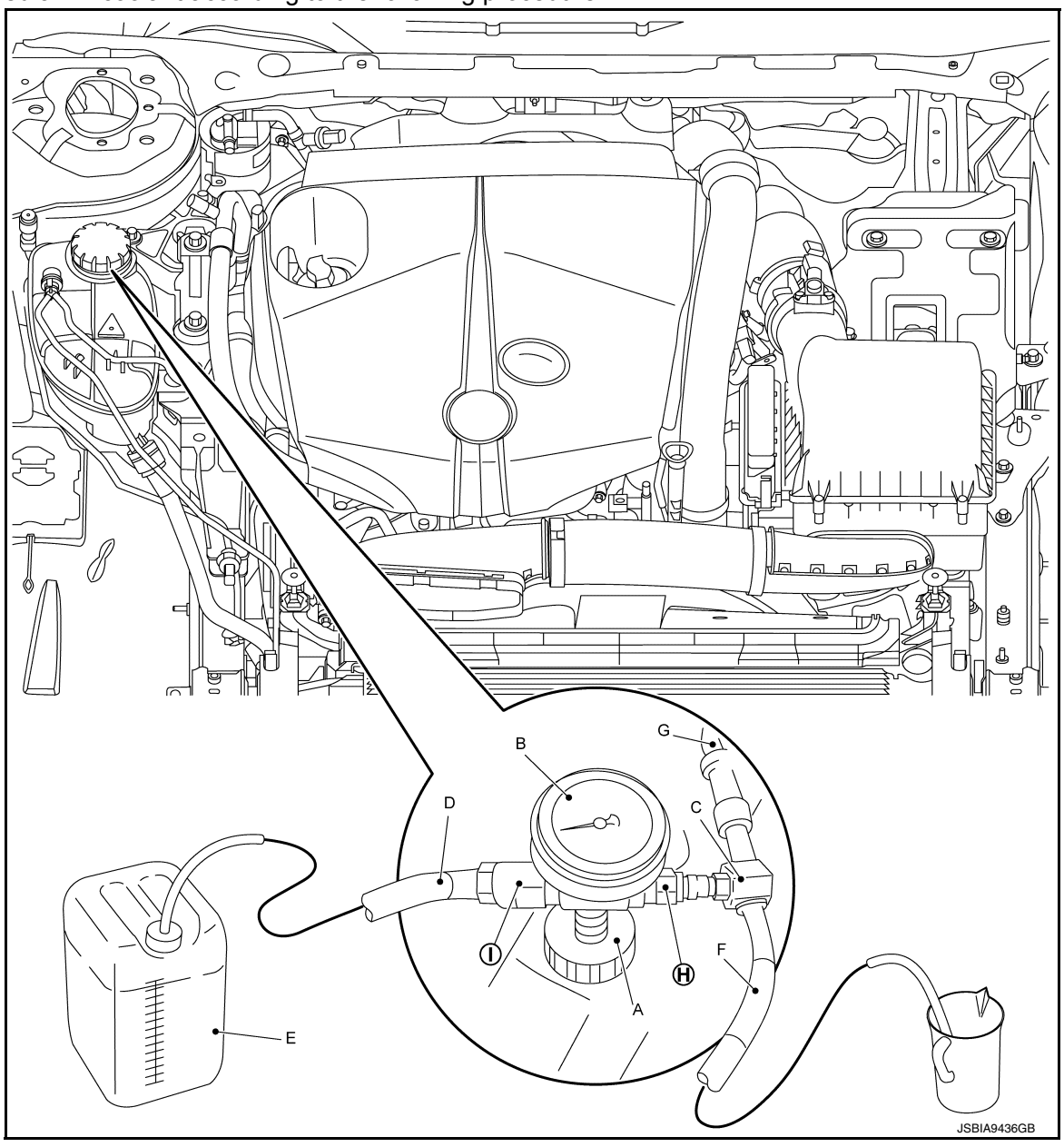
CAUTION:
Never adhere the engine coolant to electronic equipments (alternator etc.).

6. Repeat steps 2 through 5 two or more times with reservoir tank cap installed until engine coolant level no longer drops.

7. Refill reservoir tank to “MAX” level line with engine coolant.
8. Check cooling system for leakage with engine running.
9. After refilling engine coolant, check to see whether or not the engine coolant flowing noise is heard.
   - Cool down to less than approximately 50°C (122°F).
   - Close the windows, doors and hood and turn off the radio, as so on.
   - Start the engine.
   - After keeping the engine at a speed of 1000 rpm for 30 sec. repeat a slow acceleration from 1000 rpm to 3000 rpm three times
10. Check to see whether the coolant flowing noise is heard from the heater core.
11. If sound is heard, repeat the step 7 until the flowing noise is no longer heard.

With device cooler filling [SST:KV115H0890 (285 589 00 21 00)]

1. Install radiator drain cock if removed.
   CAUTION:
   Be sure to clean drain cock and install with new O-ring.
2. Check that each hose clamp has been firmly tightened.
3. Bleed air in coolant according to the following procedure.



A. Cap
B. Control unit
C. Venturi nozzle
D. Feed hose
E. Coolant reservoir
F. Air drain hose
G. Air hose
Ⓗ Drain valve
Ⓘ Feed valve

NOTE:
The figure shows 2.2L DIESEL models.

a. Remove reservoir tank cap, and install cap [SST:KV115H0880 (210 589 00 91 00)] (A).
b. Connect control unit (B) of device cooler filling [SST:KV115H0890 (285 589 00 21 00)] to cap [SST: KV115H0880 (210 589 00 91 00)] (A).
c. Install venturi nozzle (C) and feed hose (D) to control unit (B) of device cooler filling [SST:KV115H0890 (285 589 00 21 00)].
d. Close drain valve Ⓗ and feed valve Ⓘ of device cooler filling [SST:KV115H0890 (285 589 00 21 00)].
e. Fill coolant to coolant reservoir (E) of device cooler filling [SST:KV115H0890 (285 589 00 21 00)].
CAUTION:
Fill coolant with 2 ℓ (2-1/8 US qt, 1-6/8 Imp qt) more than the total coolant capacity for preventing air from entering due to insufficient coolant during air bleeding operation.
f. Install feed hose (D) to coolant reservoir (E) of device cooler filling [SST:KV115H0890 (285 589 00 21 00)].
g. Set air drain hose (F) to device cooler filling [SST:KV115H0890 (285 589 00 21 00).
h. Connect air hose (G) to venturi nozzle (C) of device cooler filling [SST:KV115H0890 (285 589 00 21 00)].
CAUTION:
Continue sending air pressure of 810 kPa (8.2 kgf/cm^2, 117 psi) or more intermittently.
i. Open drain valve Ⓗ of device cooler filling [SST:KV115H0890 (285 589 00 21 00)].
j. Open feed valve Ⓘ until feed hose (D) of device cooler filling [SST:KV115H0890 (285 589 00 21 00)] is filled with coolant.
k. Close feed valve Ⓘ.
l. When the indication of control unit (B) of device cooler filling [SST:KV115H0890 (285 589 00 21 00)] reaches the green zone, close drain valve Ⓗ.
m. Remove air hose (G) from venturi nozzle (C) of device cooler filling [SST:KV115H0890 (285 589 00 21 00)], and check that the vacuum is constant for 30 seconds.
CAUTION:
If not constant, apply vacuum again without leakage after checking each connection.
n. Open feed valve Ⓘ of device cooler filling [SST:KV115H0890 (285 589 00 21 00)], and suck coolant.
o. Open drain valve Ⓗ when the suction of coolant stops.
p. Remove device cooler filling [SST:KV115H0890 (285 589 00 21 00)] assembly.
q. Check the reservoir tank engine coolant level. Refer to CO-7, "Inspection".

Flushing

INFOID:0000000013536997

1. Install reservoir tank if removed, and radiator drain cock.
CAUTION:
Be sure to clean drain cock and install with new O-ring.
2. Fill radiator and reservoir tank with water and reinstall reservoir tank cap.
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-7, "Draining".
7. Repeat steps 1 through 6 until clear water begins to drain from radiator.
8. Check that the reservoir tank cap is tightened.

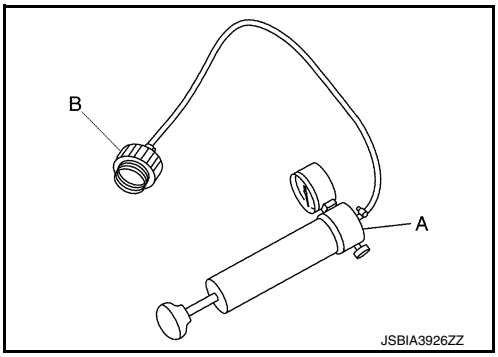
RADIATOR

RESERVOIR TANK CAP

RESERVOIR TANK CAP : Inspection

INFOID:0000000013536998

- Fit the adapter [SST: KV115H0900 (210 589 03 63 00)] (B) to the pump press [SST: KV115H0870 (124 589 24 21 00)] (A) as shown.
- When connecting the reservoir tank cap to the pump press, apply water or Genuine NISSAN Long Life Antifreeze/Coolant (BASF Glysantin® G40®) to the reservoir tank cap seal part.
- Check reservoir tank cap relief pressure.



Standard : CO-23, "Radiator"

- Replace the reservoir tank cap if the engine coolant passes through it, or if any fur signs is detected.

CAUTION:

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

RADIATOR

RADIATOR : Inspection

INFOID:0000000013536999

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

- Never bend or damage radiator fins.
- When radiator is cleaned without removal, remove all surrounding parts such as radiator cooling fan assembly and horns. Then tape harness and connectors to prevent water from entering.

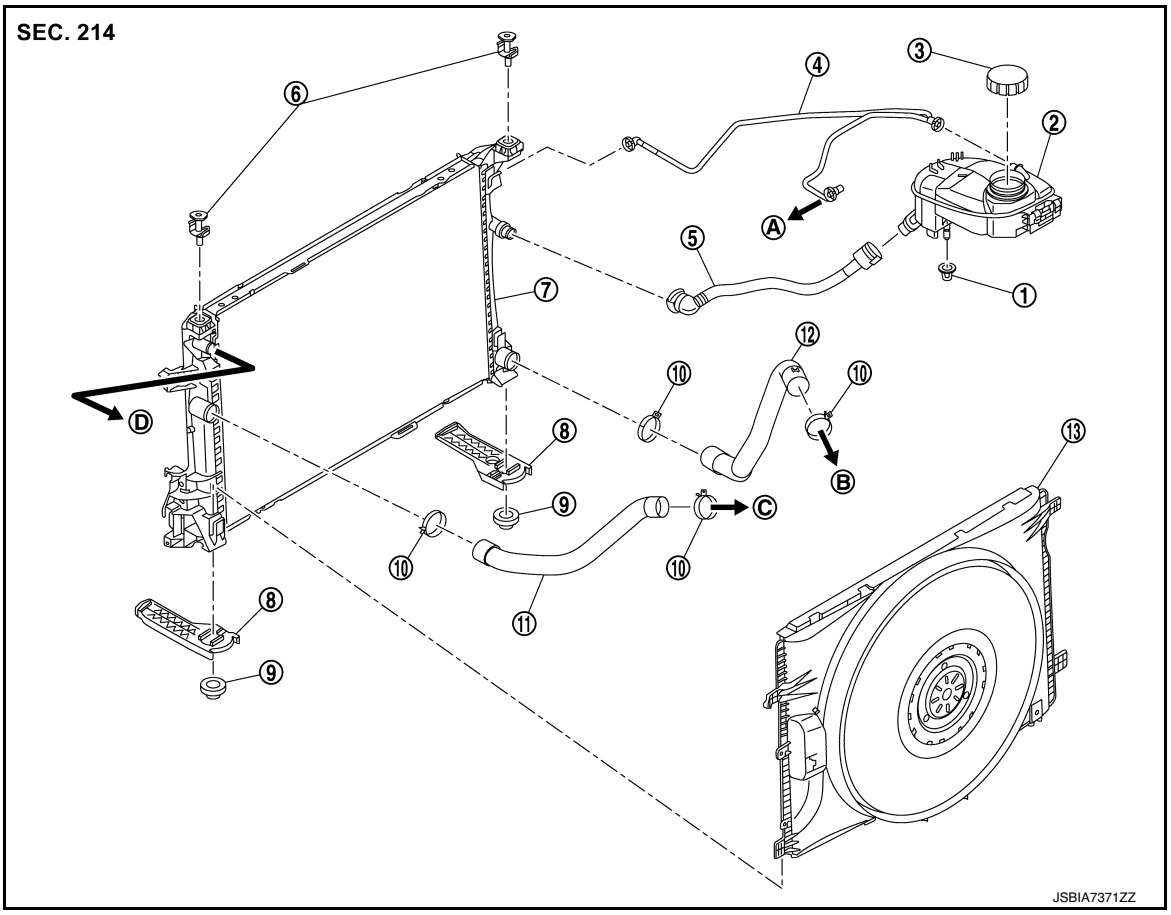
1. Apply water by hose to the back side of the radiator core vertically downward.
2. Apply water again to all radiator core surfaces once per minute.
3. Stop washing if any stains no longer flow out from radiator.
4. Blow air into the back side of radiator core vertically downward.
   - Use compressed air lower than 490 kPa (5 kg/cm^2, 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.

REMOVAL AND INSTALLATION

RADIATOR

Exploded View

INFOID:0000000013537000



① Mounting rubber	② Reservoir tank	③ Reservoir tank cap
④ Reservoir tank tube (return)	⑤ Reservoir tank hose	⑥ Upper holder
⑦ Radiator	⑧ Holder	⑨ Mounting rubber
⑩ Clamp	⑪ Coolant hose (upper)	⑫ Coolant hose (lower)
⑬ Cooling fan assembly		
Ⓐ To cylinder head	Ⓑ To water pump	Ⓒ To thermostat
Ⓓ To transaxle cooling module		

Removal and Installation

INFOID:0000000013537001

REMOVAL

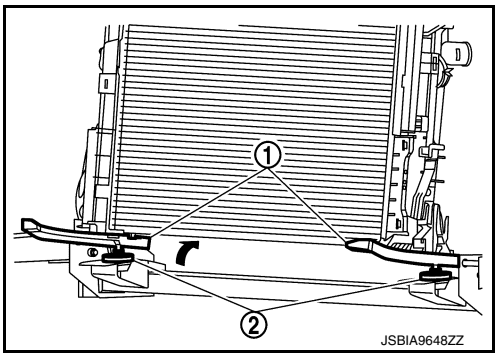
WARNING:

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

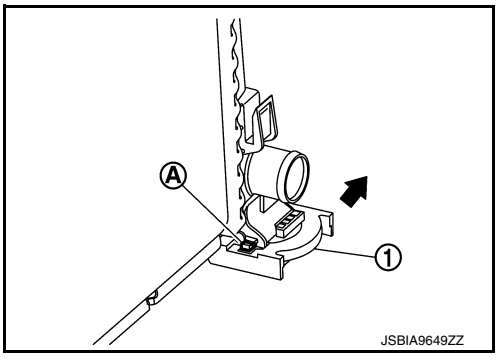
1. Remove front bumper fascia and apron bracket. Refer to EXT-21, "Removal and Installation".
2. Drain engine coolant. Refer to CO-7, "Draining".
3. Remove air cleaner housing assembly. Refer to EM-23, "Removal and Installation".

4. Remove charge air cooler, charge air hose and charge air tube. Refer to EM-37, "Removal and Installation".
5. Remove air guides. Refer to DLK-236, "Exploded View".
6. Remove the following from radiator:
   - Water hose C. Refer to TM-225, "Exploded View".
   - Reservoir tank hose
   - Coolant hose (lower)
7. Remove cooling fan assembly. Refer to CO-16, "Removal and Installation".
   CAUTION:
   Never damage radiator core.
8. Remove radiator as follows:
   CAUTION:
   Never damage radiator and condenser core.

a. Lift up and pull the radiator & condenser assembly backward (⬅) and then remove holder ① from mounting rubber (lower) ②.

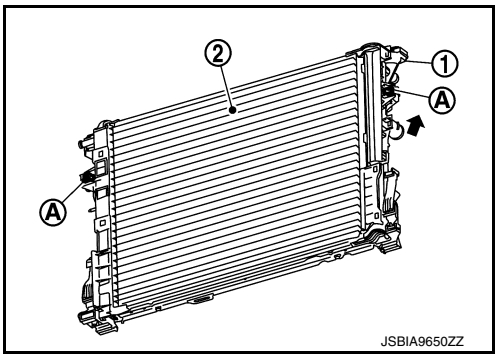


b. Remove holder ① from radiator.
   - Push tab Ⓐ and slide holder (⬅).



c. Remove radiator ① from condenser ②, and then remove radiator upward.

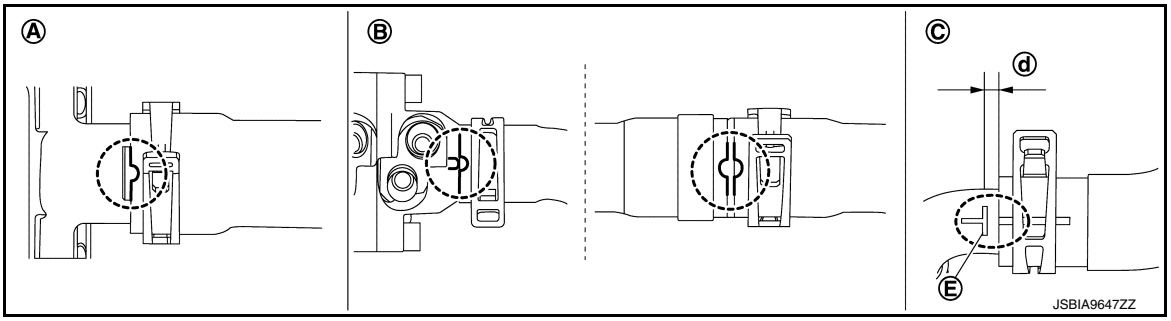
Ⓐ : Tab



INSTALLATION

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

CAUTION:
Do not reuse O-rings.
NOTE:
- Insert the radiator hose all the way to the stopper. (Except for positioning type).



Ⓐ Fitting type
Ⓑ Matching type
Ⓒ Positioning type
ⓓ 2±2 mm (0.08 in)
Ⓔ Marking

Inspection

INFOID:0000000013537002

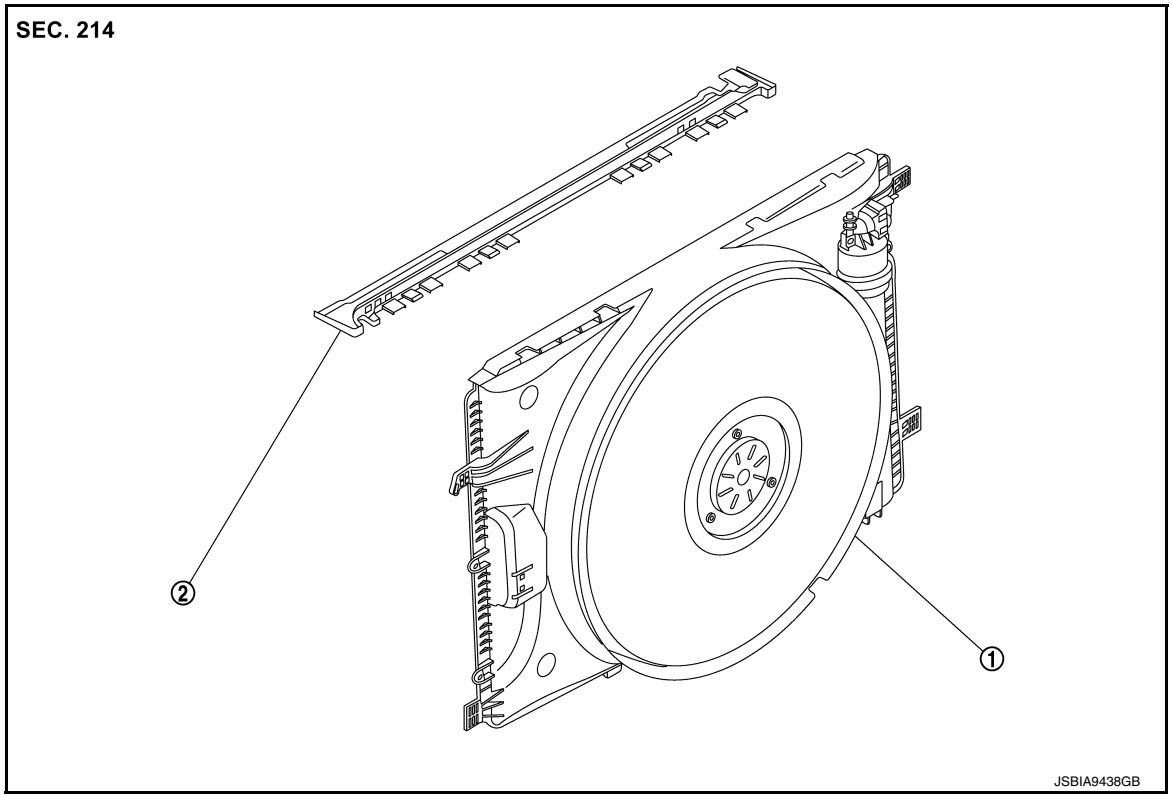
INSPECTION AFTER INSTALLATION

- Check for leakage of engine coolant. Refer to CO-7, "Inspection".
- Start and warm up the engine. Visually check that there is no leakage of engine coolant.

COOLING FAN

Exploded View

INFOID:0000000013537003



① Cooling fan assembly ② Cover

Removal and Installation

INFOID:0000000013537004

REMOVAL

WARNING:

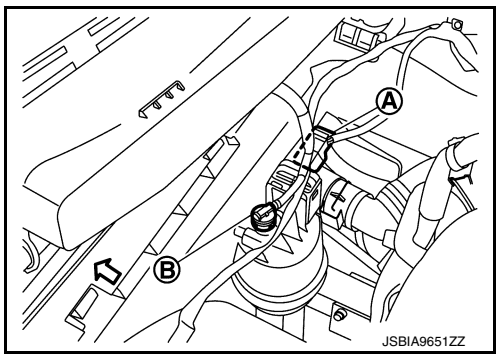
Never remove reservoir tank cap when engine is hot. Serious burns could occur from high-pressure engine coolant escaping from engine cooling system. Wrap a thick cloth around the cap. Slowly turn it a quarter of a turn to release built-up pressure. Carefully remove reservoir tank cap by turning it all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

1. Remove the following parts:
   - Engine under cover
   - Air duct (dust side): Refer to EM-23, "Removal and Installation".
2. Drain engine coolant from radiator. Refer to CO-7, "Draining".

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

3. Disconnect radiator shutters actuator harness connector Ⓐ and vacuum tube Ⓑ.

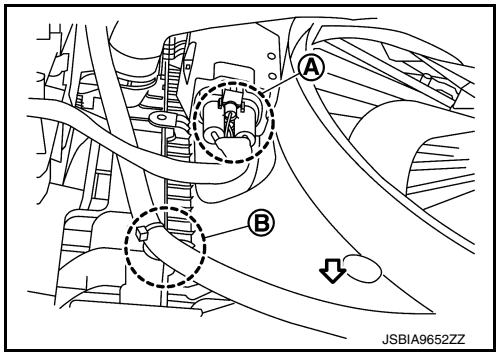
⇦ : Vehicle front



4. Disconnect cooling fan connector Ⓐ and harness clip Ⓑ.

⇦ : Vehicle front

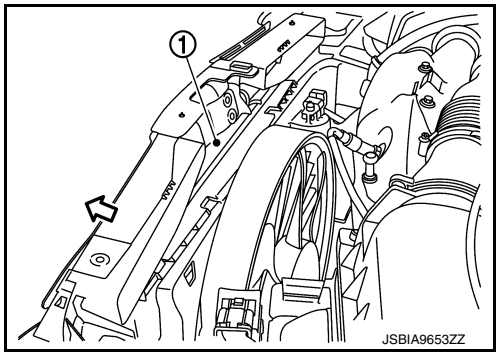
5. Remove hood lock. Refer to DLK-261, "HOOD LOCK : Removal and Installation".



6. Remove cover ①.

⇦ : Vehicle front

7. Remove reservoir tank tube (return). Refer to CO-13, "Exploded View".



8. Remove upper holder as follows:

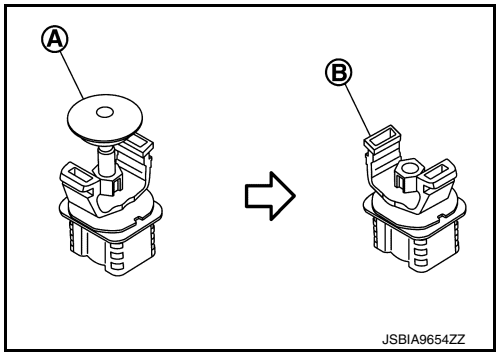
a. Remove pin Ⓐ.

b. Turn upper holder Ⓑ and remove it upward.

9. Remove cooling fan assembly.

CAUTION:

Never damage radiator core.



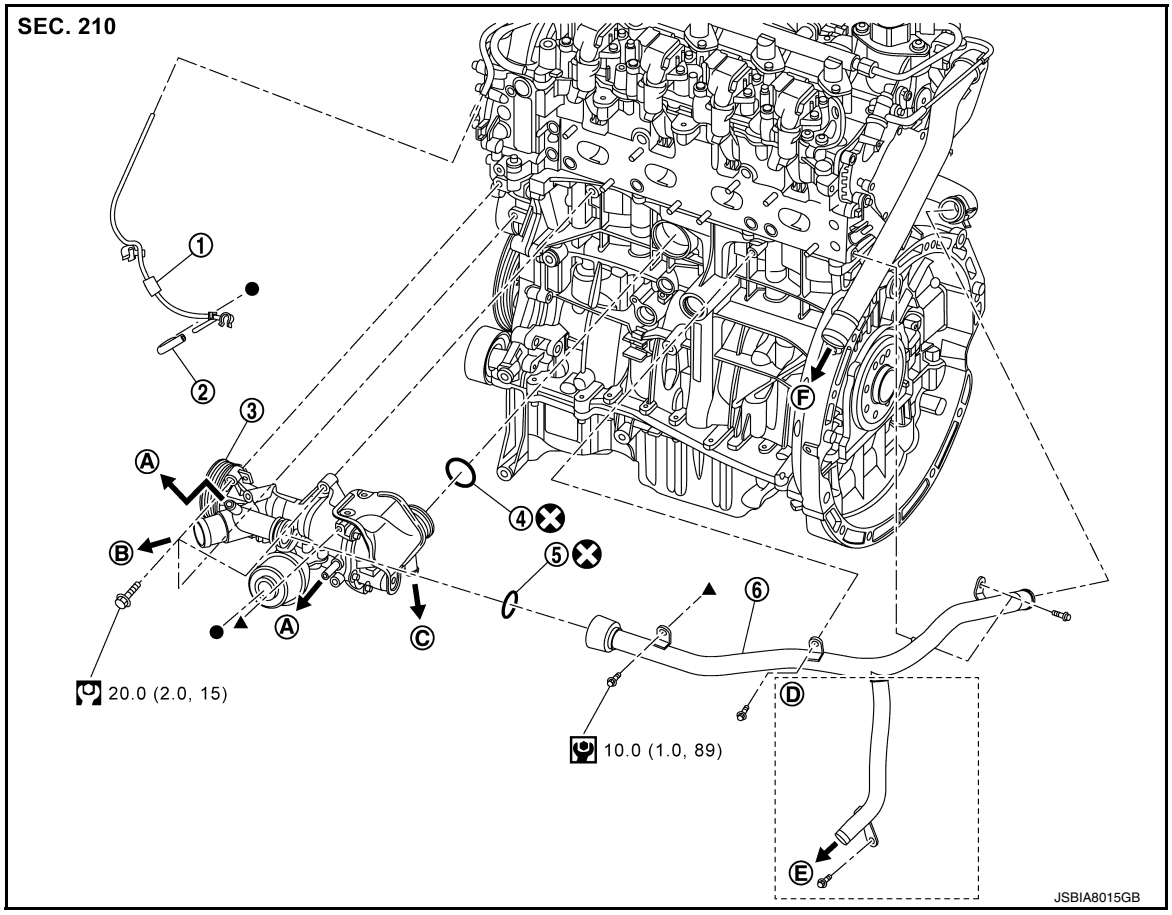
INSTALLATION

Install in the reverse order of removal.

WATER PUMP

Exploded View

INFOID:0000000013537005



① Vacuum tube	② Vacuum hose	③ Water pump
④ O-ring	⑤ O-ring	⑥ Water pipe
Ⓐ To exhaust manifold and turbocharger assembly	Ⓑ To radiator	Ⓒ To oil filter housing
Ⓓ Automatic transaxle models	Ⓔ To transmission cooling module	

: Always replace after every disassembly.

: N·m (kg-m, ft-lb)

: N·m (kg-m, in-lb)

●, ▲ : Indicates that the part is connected at points with same symbol in actual vehicle.

Removal and Installation

INFOID:0000000013537006

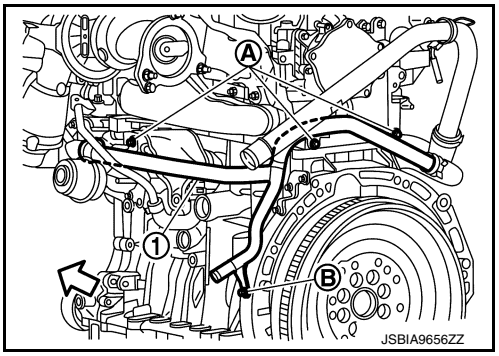
CAUTION:
- **When removing water pump assembly, never allow engine coolant to contact drive belt.**
- **Water pump cannot be disassembled and should be replaced as a unit.**
- **After installing water pump, connect hose and clamp securely, then check for leakage using pump press [SST: KV115H0870 (124 589 24 21 00)] and cap [SST: KV115H0880 (210 589 00 91 00)].**

REMOVAL

1. Remove engine cover. Refer to EM-20, "Removal and Installation".
2. Remove air cleaner housing assembly and air duct (turbocharger side). Refer to EM-23, "Removal and Installation".

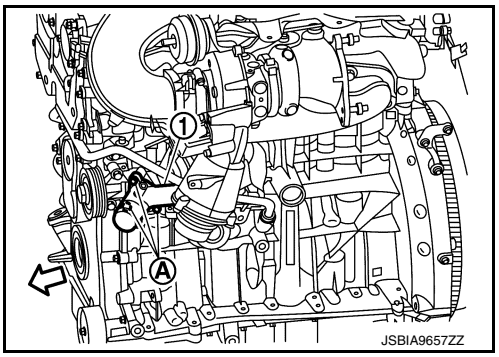
3. Remove engine under cover. Refer to EXT-44, "ENGINE UNDER COVER : Removal and Installation".
4. Drain engine coolant from radiator. Refer to CO-7, "Draining".
   CAUTION:
   - **Perform this step when the engine is cold.**
   - **Never spill engine coolant on drive belt.**
5. Disconnect charge air cooler hose (turbocharger side). Refer to EM-37, "Exploded View".
6. Remove coolant hose (lower). Refer to CO-13, "Exploded View".
7. Remove drive belt. Refer to EM-13, "Removal and Installation".
8. Remove exhaust front tube. Refer to EX-7, "Removal and Installation".
9. Remove following parts for exhaust manifold and turbocharger assembly. Refer to EM-41, "Exploded View".
   - Oil feed pipe
   - Oil return pipe
   - Coolant feed pipe
   - Coolant return pipe
10. Disconnect vacuum hose from water pump.
11. Remove oil level gauge guide upward.
12. Remove water pipe mounting bolts. Refer to LU-11, "Exploded View".
13. Remove water pipe ①.

Ⓐ : Bolts
Ⓑ : Bolt (7DCT models)
⇦ : Engine front



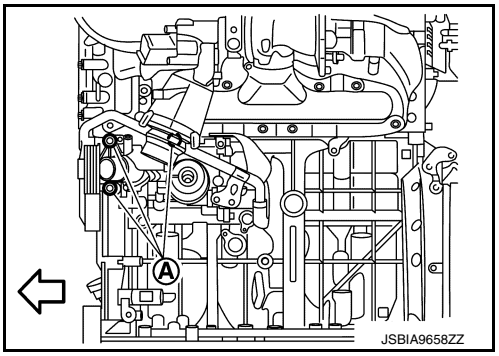
14. Remove water inlet ①.

Ⓐ : Bolts
⇦ : Engine front



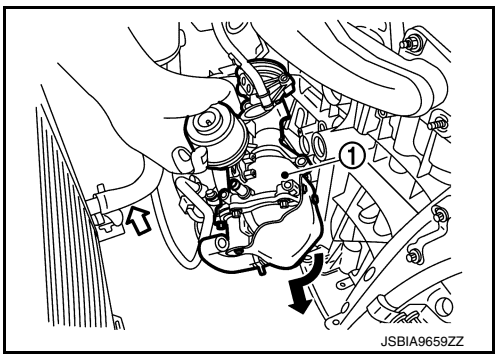
15. Remove water pump mounting bolts Ⓐ.

⇦ : Engine front



16. Remove water pump ① (⬅).

⇦ : Engine front



INSTALLATION

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

CAUTION:

Do not reuse O-rings.

NOTE:

If an sensors is replaced, carry out the reset of adoption of sensors. Refer to EC-182, "Special Repair Requirement List".

Water inlet tightening torque

: 10 N·m (1.0 kg-m, 89 in-lb)

Inspection

INFOID:0000000013537007

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.

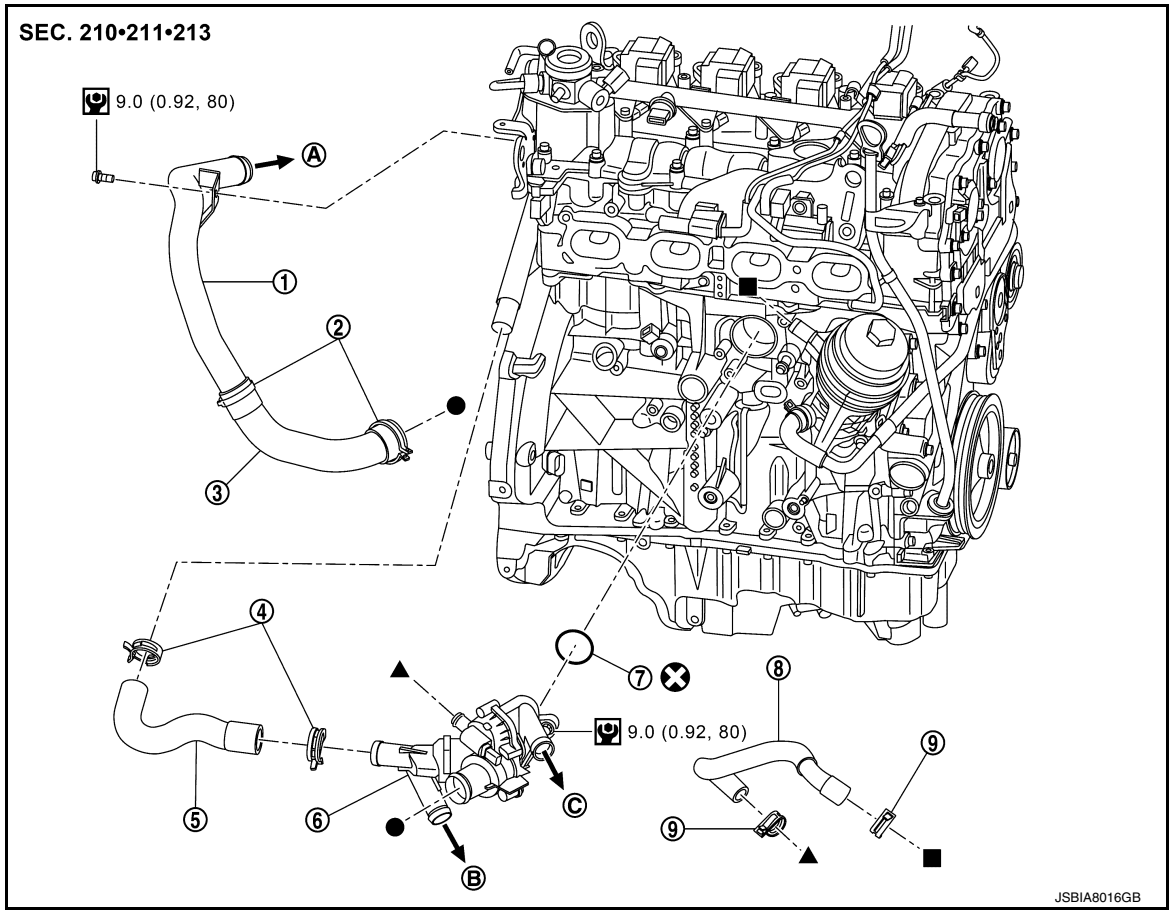
INSPECTION AFTER INSTALLATION

- Check for leakage of engine coolant using pump press [SST: KV115H0870 (124 589 24 21 00)] and cap [SST: KV115H0880 (210 589 00 91 00)]. Refer to CO-7, "Inspection".
- Start and warm up the engine. Visually check that there is no leakage of engine coolant.

THERMOSTAT

Exploded View

INFOID:0000000013537008



① Water pipe	② Clamp	③ Water hose
④ Clamp	⑤ Water hose	⑥ Thermostat
⑦ O-ring	⑧ Water hose	⑨ Clamp
Ⓐ To radiator	Ⓑ To heater/ heater pump	Ⓒ To heater

: N·m (kg-m, in-lb)

: Always replace after every disassembly.

●, ▲, ■ : Indicates that the part is connected at points with same symbol in actual vehicle.

Removal and Installation

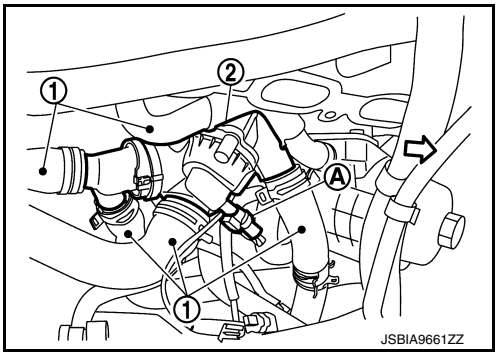
INFOID:0000000013537009

REMOVAL

1. Remove charge air manifold assembly. Refer to EM-29, "Removal and Installation".
2. Remove engine under cover. Refer to EXT-44, "ENGINE UNDER COVER : Removal and Installation".
3. Drain engine coolant. Refer to CO-7, "Draining".
   CAUTION:
   - **Perform this step when the engine is cold.**
   - **Never spill engine coolant on drive belt.**
4. Remove thermostat as follows:

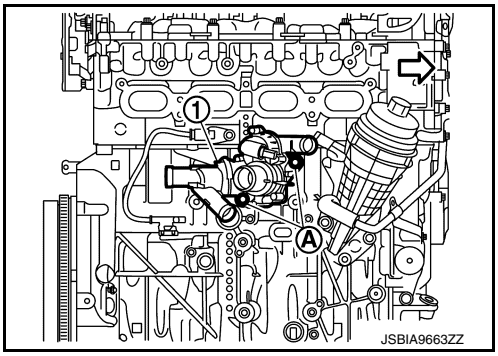
a. Disconnect water hoses ① and harness connector Ⓐ from thermostat ②.

⇦ : Engine front



b. Remove thermostat mounting bolts Ⓐ, and remove thermostat ①.

⇦ : Engine front



INSTALLATION

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

CAUTION:

- **Never spill engine coolant over engine room. Use rag to absorb engine coolant.**
- **Do not reuse O-rings.**

NOTE:

If an sensors is replaced, carry out the reset of adoption of sensors. Refer to EC-182, "Special Repair Requirement List".

SERVICE DATA AND SPECIFICATIONS (SDS)

SERVICE DATA AND SPECIFICATIONS (SDS)

Periodical Maintenance Specification

INFOID:0000000013537010

ENGINE COOLANT CAPACITY (APPROXIMATE)

Unit: ℓ (US qt, Imp qt)

Engine coolant capacity [With reservoir tank (“MAX” level)]	7.6 (8, 6-5/8)

Radiator

INFOID:0000000013537011

Unit: kPa (kg/cm^2, psi)

Cap relief pressure	Standard (Stage 1)	130.0 - 150.0 (1.33 - 1.53, 18.85 - 21.75)
	Standard (Stage 2)	190.0 - 210.0 (1.94 - 2.14, 27.55 - 30.45)
	Testing pressure	140.0 (1.42, 20.30)
Leakage testing pressure		140.0 (1.42, 20.30)