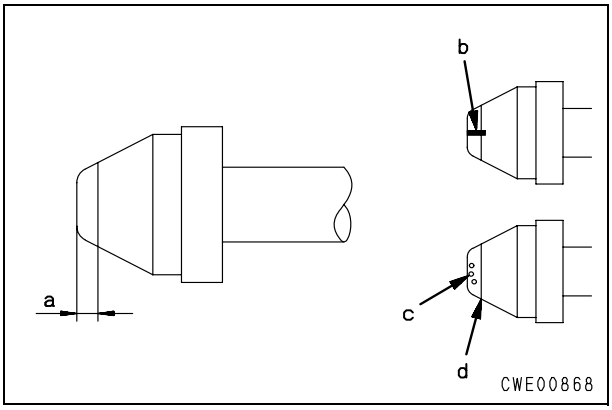
[*9], [*10]
- High-pressure pipes and common rail

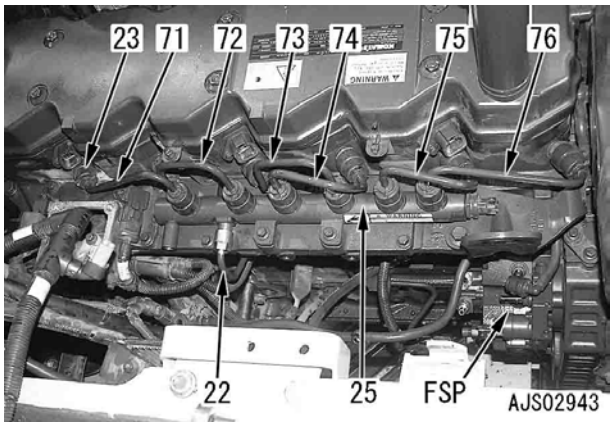
⚠ **Do not use high-pressure pipes with bending modification.**

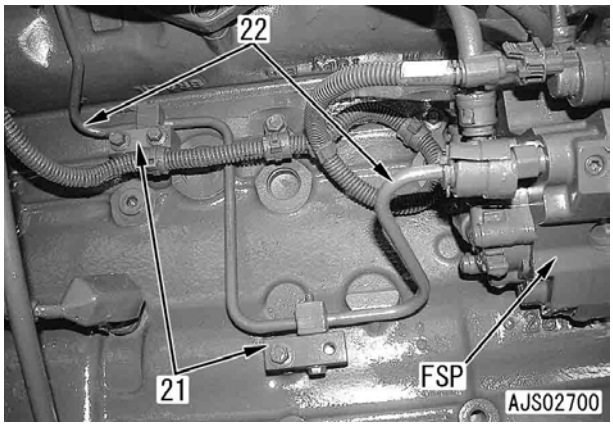
⚠ **Be sure to use a genuine high-pressure pipe fixing clamp and observe strictly the tightening torque.**

★ A high-pressure pipe which has depressions such as visible vertical slit scar (b), patchy scars (c) etc. on the taper seal section of its connector ((a) part: within 2 mm from the tip), or a high-pressure pipe whose (d) part (end of the taper seal section: 2 mm from the tip) catches on a finger nail due to fatigue, may cause fuel leakage. In these cases, replace the high-pressure pipe.



1) Assemble common rail (25) and high-pressure pipes (71) – (76) temporarily.
   Sleeve nut and mounting bolt:
   0.2 – 0.8 Nm {0.02 – 0.08 kgm}
2) Tighten high-pressure pipes (71) – (76) according to the following procedure.
   Sleeve nut:
   35 ± 3.5 Nm {3.6 ± 0.4 kgm}
   1] Head side of high-pressure pipes (71) and (76)
   2] Common rail side of high-pressure pipes (76) and (71)
   3] Head side of high-pressure pipes (72), (73), (74) and (75)
   4] Common rail side of high-pressure pipes (72), (73), (74) and (75)
3) Tighten the sleeve nut of high-pressure pipe (22) temporarily.
4) Tighten high-pressure pipe (22) in the order of firstly pump (FSP) side, then common rail (25) side.
   Sleeve nut:
   35 ± 3.5 Nm {3.6 ± 0.4 kgm}
5) Tighten clamp (21) of high-pressure pipe (22).
   Mounting bolt:
   24 ± 4 Nm {2.4 ± 0.4 kgm}
6) Tighten common rail (25) with four bolts.
   ★ Coat the two bolt threads on the inner side of the engine with sealant (LG-7).
   Mounting bolt:
   24 ± 4 Nm {2.4 ± 0.4 kgm}
7) Install bellows (23) to each high-pressure pipe. (14 pieces)
   ★ Set the slits of each bellows out and down.
   ★ The bellows are installed so that fuel will not spout over the hot parts of the engine and catch fire when it leaks for some reason.
   ★ FSP: Fuel supply pump





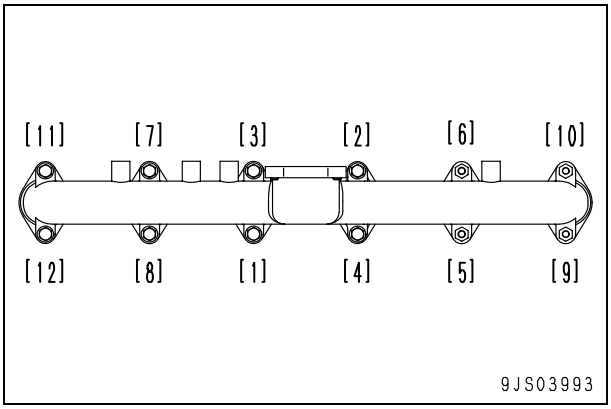
[*11]
Air tube clamp:
10.0 – 11.0 Nm {1.02 – 1.12 kgm}

[*12]
- MIKALOR clamp

★ Reference
Length of insertion: 40 mm (turbocharger side)
★ Refer to [*3].

[*13]
Lubrication inlet hose tightening nut:
35 ± 5 Nm {3.5 ± 0.5 kgm}
Lubrication outlet hose mounting bolt:
24 ± 4 Nm {2.4 ± 0.4 kgm}

[*14]
★ Tighten the bolts in the order shown below.
Exhaust manifold mounting bolt:
First time: in the order of [1] – [12]
Tighten to a torque of
24 ± 4 Nm {2.4 ± 0.4 kgm}.
Second time: in the order of [2] – [12]
Tighten to a torque of
53 ± 6 Nm {5.4 ± 0.6 kgm}.
Third time: in the order of [1] – [4]
Tighten to a torque of
53 ± 6 Nm {5.4 ± 0.6 kgm}.



[*15]
Fan mounting bolt:
43 ± 6 Nm {4.4 ± 0.6 kgm}

[*16]
★ Refer to the Inspection and Adjustment of Air Compressor Belt Tension section in the Testing and adjusting chapter of this manual.

- Refilling engine coolant
  Refill water through the water filler port up to the specified level. Start the engine and circulate the water, and then check the water level.
  Coolant: **Approx. 21.4ℓ**

Removal and installation of radiator assembly

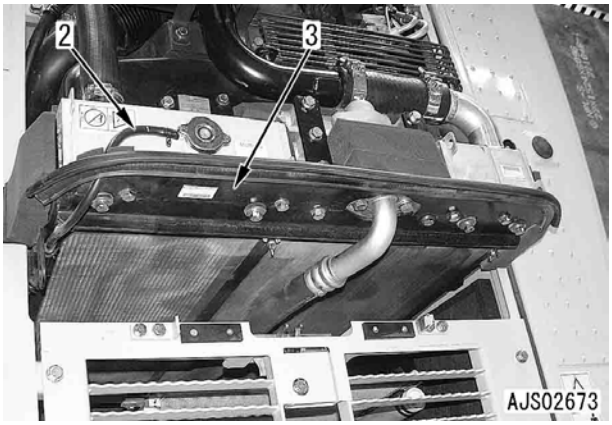
Removal

1. Turn the upper structure by 90 degrees.
2. Remove cover (1).

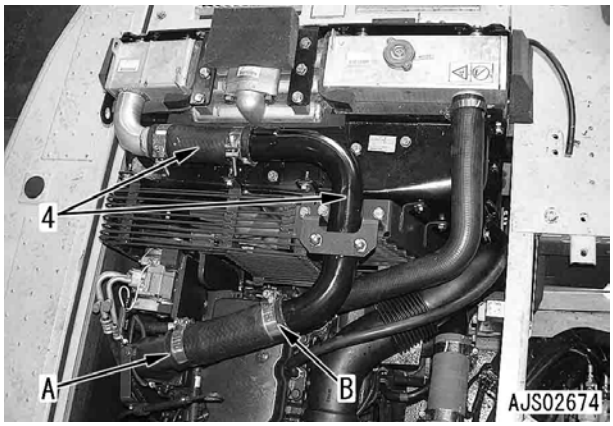
3. Drain the engine cooling water.
   Coolant:
   Approx. 21ℓ (PC210, 230)
   Approx. 20.4ℓ (PC240)

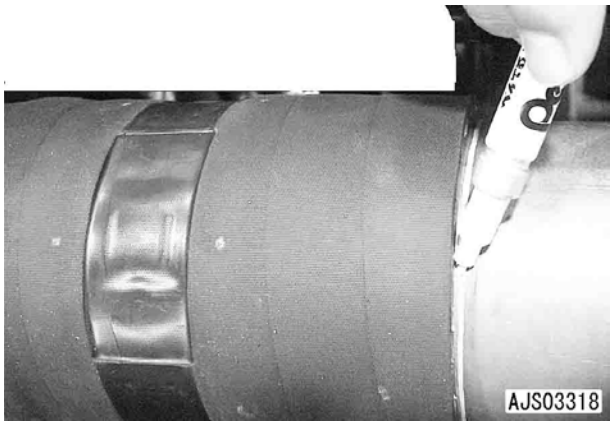
4. Open up the engine hood.

5. Disconnect reservoir tank hose (2).
6. Remove cover (3).

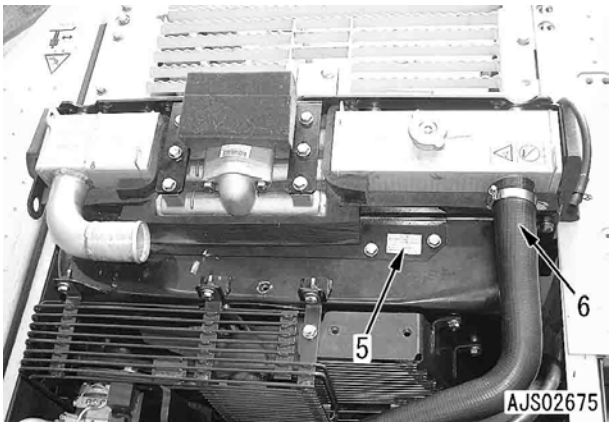


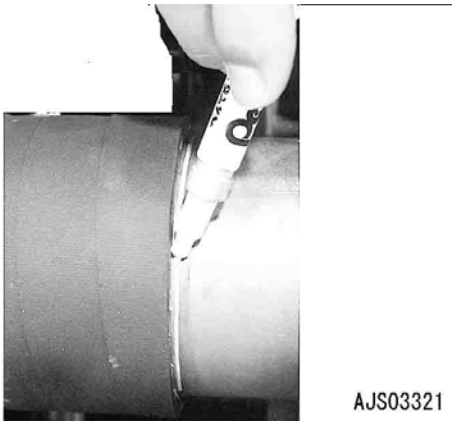
7. Remove hose and tube assembly (4). [*1]
   - ★ Remove it without separating from the bracket.
   - ★ MIKALOR clamp
   - ★ Mark the hose edge and tube to show the original hose installation positions. (See figure below.)
   - ★ Inserted air hose length
     - **A**: 80 mm
     - **B**: 65 mm



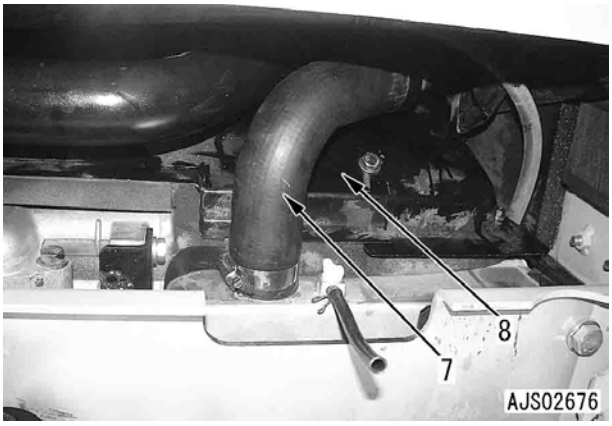


8. Remove cover (5).
9. Disconnect radiator hose (6). [*2]
   ★ Mark the hose edge and tube to show the original hose installation positions. (See figure below.)

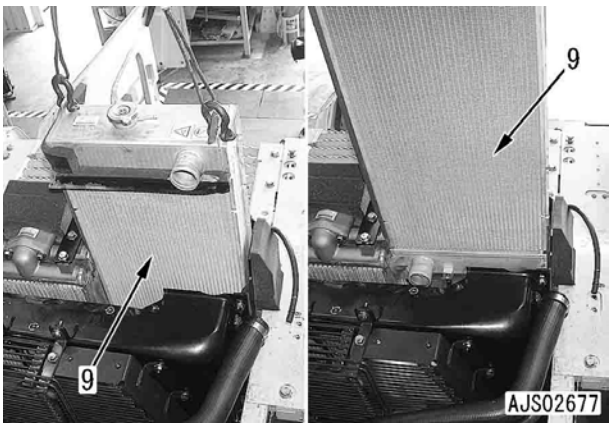




10. Disconnect radiator hose (7). [*2]
    ★ Mark the hose edge and tube to show the original hose installation positions. (Refer to the above figure.)
11. Move cover (8).
    ★ In order to avoid the contact with the flange.



12. Remove the mounting bolts and lift out radiator assembly (9). [*3]
    Radiator assembly: **15 kg**

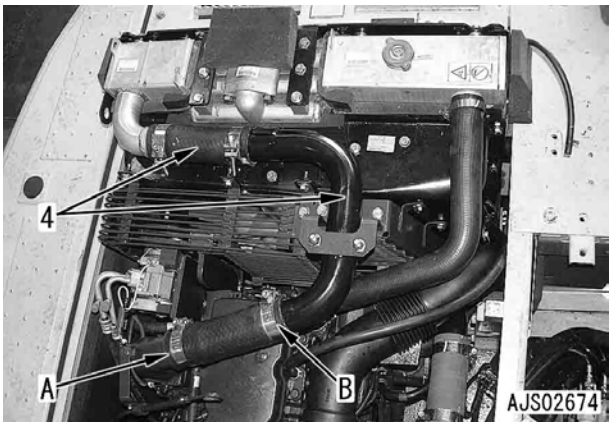


Installation

- Installation is done in the reverse order of removal.

[*1]

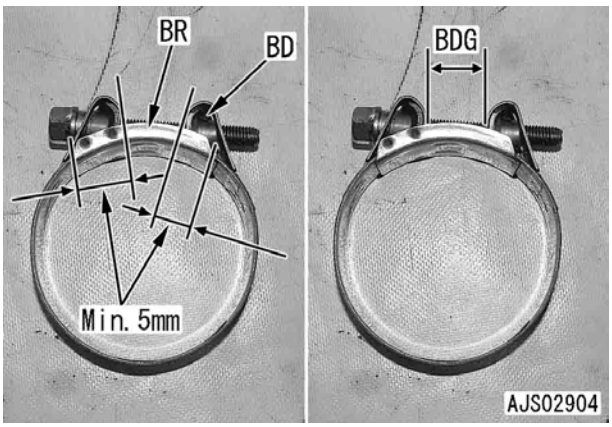
1. Install hose and tube assembly (4).
   - ★ Use brand new article for MIKALOR clamp.
   - ★ Align the hose to the original position (marking position).
   - ★ Inserted air hose length
     - Aftercooler side: 60 mm
     - Engine side **A**: 80 mm
     - Engine side **B**: 65 mm



   - ★ Set bridge (BR) under the clamp tightening bolt as the lap with band (BR) is Min.5mm.
   - ★ Align the clamp to the original position.
   - ★ Impact wrench is not applicable to use.

   MIKALOR clamp:
   16 – 17 Nm {1.6 – 1.7 kgm}

   - ★ When the tightening torque force is less than 16Nm{1.6kgm}, tighten it until the hand gap is adhered (BDG size is 0).



[*2]

- ★ Align the hose to the original position (marking position).
- ★ Align the clamp to the original position.

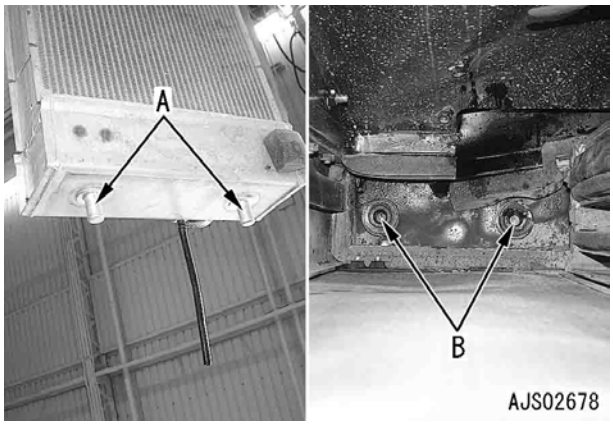
- ★ Reference
  Inserted air hose length
  - 45 mm (Both upper and lower side)

  Radiator hose clamp:
  10.8 – 11.8 Nm {1.1 – 1.2 kgm}

[*3]

- ★ Confirm that the heat insulating seal material (sponge) of the radiator peripheral part is not damaged. If the heat insulating seal material (sponge) is damaged, replace it to the new one.

  Confirm from the under cover side that convexity (A) of the radiator is correctly set to concavity (B).



- Refilling engine coolant
  Refill water through the water filler port up to the specified level. Start the engine and circulate the water, and then check the water level.

  Coolant:
  Approx. 21ℓ (PC210, 230)
  Approx. 20.4ℓ (PC240)