

Last Modified: 5-10-2010	6.4 G	From: 200908
Model Year: 2010	Model: 4Runner	Doc ID: RM0000049SA001X
Title: 2TR-FE COOLING: COOLING SYSTEM: ON-VEHICLE INSPECTION (2010 4Runner)		

ON-VEHICLE INSPECTION

1. INSPECT FOR COOLANT LEAK

CAUTION:

To avoid being burned, do not remove the radiator cap while the engine and radiator are still hot. Thermal expansion may cause hot engine coolant and steam to blow out from the radiator.

- (a) Fill the radiator with coolant and attach a radiator cap tester.
- (b) Warm up the engine.
- (c) Using the radiator cap tester, increase the pressure inside the radiator to 123 kPa (1.3 kgf/cm², 18 psi), and then check that the pressure does not drop.

If the pressure drops, check the hose, radiator and water pump for leakage. If no external leakage is found, check the heater core, cylinder block and cylinder head.

2. INSPECT ENGINE COOLANT LEVEL

- (a) The engine coolant should be between the L and F lines when the engine is cold.

If the engine coolant is below the L line, check for leakage and add TOYOTA Super Long Life Coolant (SLLC) or similar high quality ethylene glycol based non-silicate, non-amine, non-nitrite, non-borate coolant with long-life hybrid organic acid technology to the F line.

3. INSPECT ENGINE COOLANT QUALITY

CAUTION:

To avoid the danger of being burned, do not remove the radiator cap while the engine and radiator are still hot. Fluid and steam could be blown out under pressure.

- (a) Remove the radiator cap.
- (b) Check for excessive deposits of rust or scales around the radiator reservoir cap and radiator reservoir filler hole. Also, the engine coolant should be free of oil.

If excessively dirty, replace the engine coolant.

- (c) Install the radiator cap.

Last Modified: 5-10-2010	6.4 G	From: 200908
Model Year: 2010	Model: 4Runner	Doc ID: RM000000V1Q073X
Title: 1GR-FE COOLING: COOLING SYSTEM: ON-VEHICLE INSPECTION (2010 4Runner)		

ON-VEHICLE INSPECTION

1. INSPECT FOR COOLANT LEAK

CAUTION:

To avoid being burned, do not remove the radiator reservoir cap while the engine and radiator are still hot. Thermal expansion may cause hot engine coolant and steam to blow out from the radiator.

- (a) Fill the radiator with engine coolant, and then attach a radiator cap tester.
- (b) Warm up the engine.
- (c) Using the radiator cap tester, increase the pressure inside the radiator to 123 kPa (1.3 kgf/cm², 18 psi), and then check that the pressure does not drop.

If the pressure drops, check the hoses, radiator and water pump for leakage. If there are no signs or traces of external engine coolant leakage, check the heater core, cylinder block and head.

2. INSPECT RESERVOIR TANK ENGINE COOLANT LEVEL

- (a) The engine coolant should be between the LOW and FULL lines when the engine is cold.

If the engine coolant is below the LOW line, check for leakage and add TOYOTA Super Long Life Coolant (SLLC) or similar high quality ethylene glycol based non-silicate, non-amine, non-nitrite, non-borate coolant with long-life hybrid organic acid technology to the FULL line.

NOTICE:

Do not substitute plain water for engine coolant.

3. INSPECT ENGINE COOLANT QUALITY

- (a) Remove the radiator cap.

CAUTION:

To avoid being burned, do not remove the radiator reservoir cap while the engine and radiator are still hot. Thermal expansion may cause hot engine coolant and steam to blow out from the radiator.

- (b) Check for excessive deposits of rust or scales around the radiator reservoir cap and radiator reservoir filler hole. Also, the engine coolant should be free of oil.

If excessively dirty, replace the engine coolant.

- (c) Install the radiator cap.

Last Modified: 5-10-2010	6.4 A	From: 200908
Model Year: 2010	Model: 4Runner	Doc ID: RM0000017DS01VX
Title: 1GR-FE COOLING: COOLANT: REPLACEMENT (2010 4Runner)		

REPLACEMENT

1. REMOVE UPPER RADIATOR SUPPORT SEAL

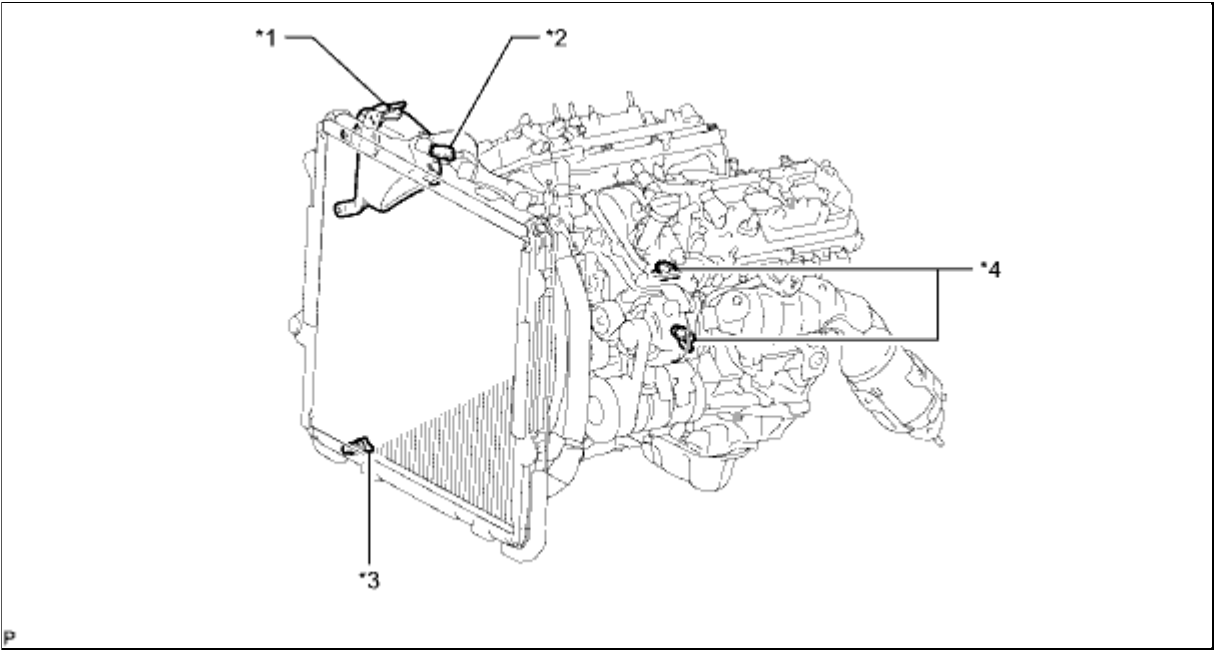
INFO
2. REMOVE FRONT BUMPER COVER LOWER

INFO
3. REMOVE NO. 1 ENGINE UNDER COVER SUB-ASSEMBLY

INFO
4. REMOVE REAR ENGINE UNDER COVER ASSEMBLY

INFO
5. DRAIN ENGINE COOLANT

CAUTION:
 Do not remove the radiator cap while the engine and radiator are still hot. Pressurized, hot engine coolant and steam may be released and cause serious burns.



Text in Illustration

* 1	Reservoir Cap	* 2	Radiator Cap
* 3	Radiator Drain Cock Plug	* 4	Cylinder Block Drain Cock Plug

- (a) Loosen the radiator drain cock plug.
- (b) Remove the radiator cap and drain the coolant.

HINT:
 Collect the coolant in a container and dispose of it according to the regulations in your area.

(c) Loosen the 2 cylinder block drain cock plugs and drain the coolant from the engine.

6. ADD ENGINE COOLANT

(a) Tighten the 2 cylinder block drain cock plugs.

Torque: 13 N·m (130 kgf·cm, 9ft·lbf)

(b) Tighten the radiator drain cock plug by hand.

(c) Add engine coolant.

Standard Capacity:

10.5 liters (11.1 US qts, 9.2 Imp. qts)

NOTICE:

Do not substitute plain water for engine coolant.

HINT:

- TOYOTA vehicles are filled with TOYOTA SLLC at the factory. In order to avoid damage to the engine cooling system and other technical problems, only use TOYOTA SLLC or similar high quality ethylene glycol based non-silicate, non-amine, non-nitrite, non-borate coolant with long-life hybrid organic acid technology (coolant with long-life hybrid organic acid technology consists of a combination of low phosphates and organic acids).
- Press the No. 1 and No. 2 radiator hoses several times by hand, and then check the coolant level. If the coolant level is low, add coolant.

(d) Slowly pour coolant into the radiator reservoir until it reaches the F line.

(e) Install the reservoir cap.

(f) Install the radiator cap.*1

(g) Start the engine and stop it immediately.*2

(h) Allow approximately 10 seconds to pass. Then remove the radiator cap and check the coolant level. If the coolant level has decreased, add coolant.*3

(i) Repeat steps *1, *2 and *3 until the coolant level does not decrease.

HINT:

Be sure to perform this step while the engine is cold, as air in the No. 1 radiator hose will flow into the radiator if the engine is warmed up and the thermostat opens.

(j) Install the radiator cap.*4

(k) Set the air conditioning as follows.*5

ITEM	CONDITION
Fan speed	Any setting except off
Temperature	Toward WARM
Air conditioning switch	Off

(l) Start the engine, warm it up until the thermostat opens, and then continue to run the engine for several minutes to circulate the coolant.*6

CAUTION:

- Wear protective gloves. Hot areas on the parts may injure your hands.

- Be careful of the fan.
- Be careful as the engine, radiator and radiator hoses are hot and can cause burns.

NOTICE:

- Immediately after starting the engine, if the radiator reservoir does not have any coolant, perform the following: 1) stop the engine, 2) wait until the coolant has cooled down, and 3) add coolant until the coolant is filled to the F line.
- Do not start the engine when there is no coolant in the radiator reservoir.
- Pay attention to the needle of the engine coolant temperature receiver gauge. Make sure that the needle does not show an abnormally high temperature.
- If there is not enough coolant, the engine may burn out or overheat.

HINT:

- Press the No. 1 and No. 2 radiator hoses several times by hand to bleed air while warming up the engine.
- The thermostat opening timing can be confirmed by pressing the No. 2 radiator hose by hand and checking when the engine coolant starts to flow inside the hose.

(m) Stop the engine, wait until the engine coolant cools down to ambient temperature. Then remove the radiator cap and check the coolant level.*7

CAUTION:

Do not remove the radiator cap while the engine and radiator are still hot. Pressurized, hot engine coolant and steam may be released and cause serious burns.

(n) If the coolant level has decreased, add coolant and warm up the engine until the thermostat opens.*8

(o) If the coolant level has not decreased, check that the coolant level in the radiator reservoir is at the F line.

If the coolant level is below the F line, repeat steps *4 through *8.

If the coolant level is above the F line, drain coolant until the coolant level reaches the F line.

7. INSPECT FOR ENGINE COOLANT LEAK



8. INSTALL REAR ENGINE UNDER COVER ASSEMBLY



9. INSTALL NO. 1 ENGINE UNDER COVER SUB-ASSEMBLY



10. INSTALL FRONT BUMPER COVER LOWER



11. INSTALL UPPER RADIATOR SUPPORT SEAL



Last Modified: 5-10-2010	6.4 A	From: 200908
Model Year: 2010	Model: 4Runner	Doc ID: RM0000049RY001X
Title: 2TR-FE COOLING: COOLANT: REPLACEMENT (2010 4Runner)		

REPLACEMENT

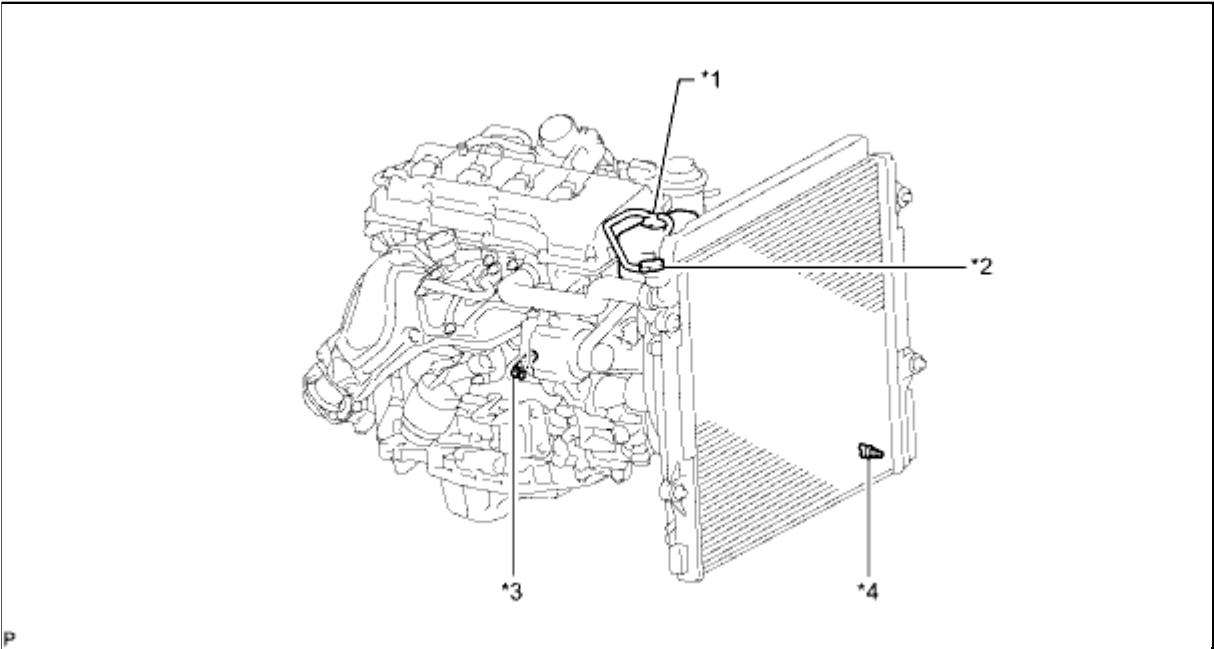
1. REMOVE UPPER RADIATOR SUPPORT SEAL

INFO
2. REMOVE FRONT BUMPER COVER LOWER

INFO
3. REMOVE NO. 1 ENGINE UNDER COVER SUB-ASSEMBLY

INFO
4. DRAIN ENGINE COOLANT

CAUTION:
Do not remove the radiator cap while the engine and radiator are still hot. Pressurized, hot engine coolant and steam may be released and cause serious burns.

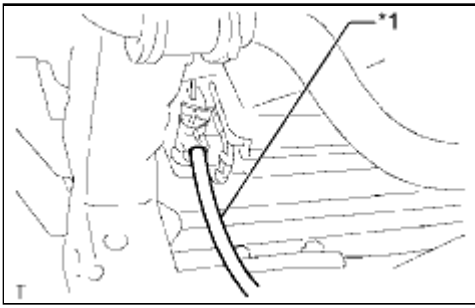


Text in Illustration

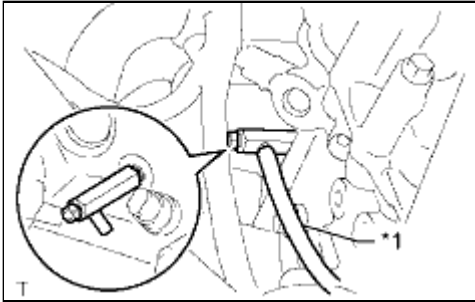
* 1	Reservoir Cap	* 2	Radiator Cap
* 3	Cylinder Block Drain Cock Plug	* 4	Radiator Drain Cock Plug

(a) Install a vinyl hose to the drain cock plug on the radiator side.

Text in Illustration



*1	Vinyl Hose
----	------------



(b) Install a vinyl hose to the drain cock plug on the engine side.

Text in Illustration

*1	Vinyl Hose
----	------------

- (c) Loosen the radiator drain cock plug.
- (d) Remove the radiator cap and drain the coolant.

HINT:

Collect the coolant in a container and dispose of it according to the regulations in your area.

- (e) Loosen the cylinder block drain cock plug and drain the coolant from the engine.

5. ADD ENGINE COOLANT

- (a) Tighten the cylinder block drain cock plug.
Torque: 13 N·m (130 kgf·cm, 9ft·lbf)
- (b) Tighten the radiator drain cock plug by hand.
- (c) Remove the 2 vinyl hoses.
- (d) Add engine coolant.

Standard Capacity:

8.1 liters (8.6 US qts, 7.1 Imp. qts)

NOTICE:

Do not substitute plain water for engine coolant.

HINT:

- TOYOTA vehicles are filled with TOYOTA SLLC at the factory. In order to avoid damage to the engine cooling system and other technical problems, only use TOYOTA SLLC or similar high quality ethylene glycol based non-silicate, non-amine, non-nitrite, non-borate coolant with long-life hybrid organic acid technology (coolant with long-life hybrid organic acid technology consists of a combination of low phosphates and organic acids).
- Press the No. 1 and No. 2 radiator hoses several times by hand, and then check the coolant level.

If the coolant level is low, add coolant.

- (e) Slowly pour coolant into the radiator reservoir until it reaches the F line.
- (f) Install the reservoir cap.
- (g) Install the radiator cap.* 1
- (h) Start the engine and stop it immediately.* 2
- (i) Allow approximately 10 seconds to pass. Then remove the radiator cap and check the coolant level. If the coolant level has decreased, add coolant.* 3
- (j) Repeat steps * 1, * 2 and * 3 until the coolant level does not decrease.

HINT:

Be sure to perform this step while the engine is cold, as air in the No. 1 radiator hose will flow into the radiator if the engine is warmed up and the thermostat opens.

- (k) Install the radiator cap.* 4
- (l) Set the air conditioning as follows.* 5

Measurement Condition

ITEM	CONDITION
Fan speed	Any setting except off
Temperature	Toward WARM
Air conditioning switch	Off

- (m) Start the engine, warm it up until the thermostat opens, and then continue to run the engine for several minutes to circulate the coolant.* 6

CAUTION:

- Wear protective gloves. Hot areas on the parts may injure your hands.
- Be careful of the fan.
- Be careful as the engine, radiator and radiator hoses are hot and can cause burns.

NOTICE:

- Immediately after starting the engine, if the radiator reservoir does not have any coolant, perform the following: 1) stop the engine, 2) wait until the coolant has cooled down, and 3) add coolant until the coolant is filled to the F line.
- Do not start the engine when there is no coolant in the radiator reservoir.
- Pay attention to the needle of the engine coolant temperature receiver gauge. Make sure that the needle does not show an abnormally high temperature.
- If there is not enough coolant, the engine may burn out or overheat.

HINT:

- Press the No. 1 and No. 2 radiator hoses several times by hand to bleed air while warming up the engine.
 - The thermostat opening timing can be confirmed by pressing the No. 2 radiator hose by hand and checking when the engine coolant starts to flow inside the hose.
- (n) Stop the engine and wait until the engine coolant cools down to ambient temperature. Then remove the radiator cap and check the coolant level.* 7

CAUTION:

Do not remove the radiator cap while the engine and radiator are still hot. Pressurized, hot engine coolant and steam may be released and cause serious burns.

- (o) If the coolant level has decreased, add coolant and warm up the engine until the thermostat opens.*8
- (p) If the coolant level has not decreased, check that the coolant level in the radiator reservoir is at the F line.

If the coolant level is below the F line, repeat steps *4 through *8.

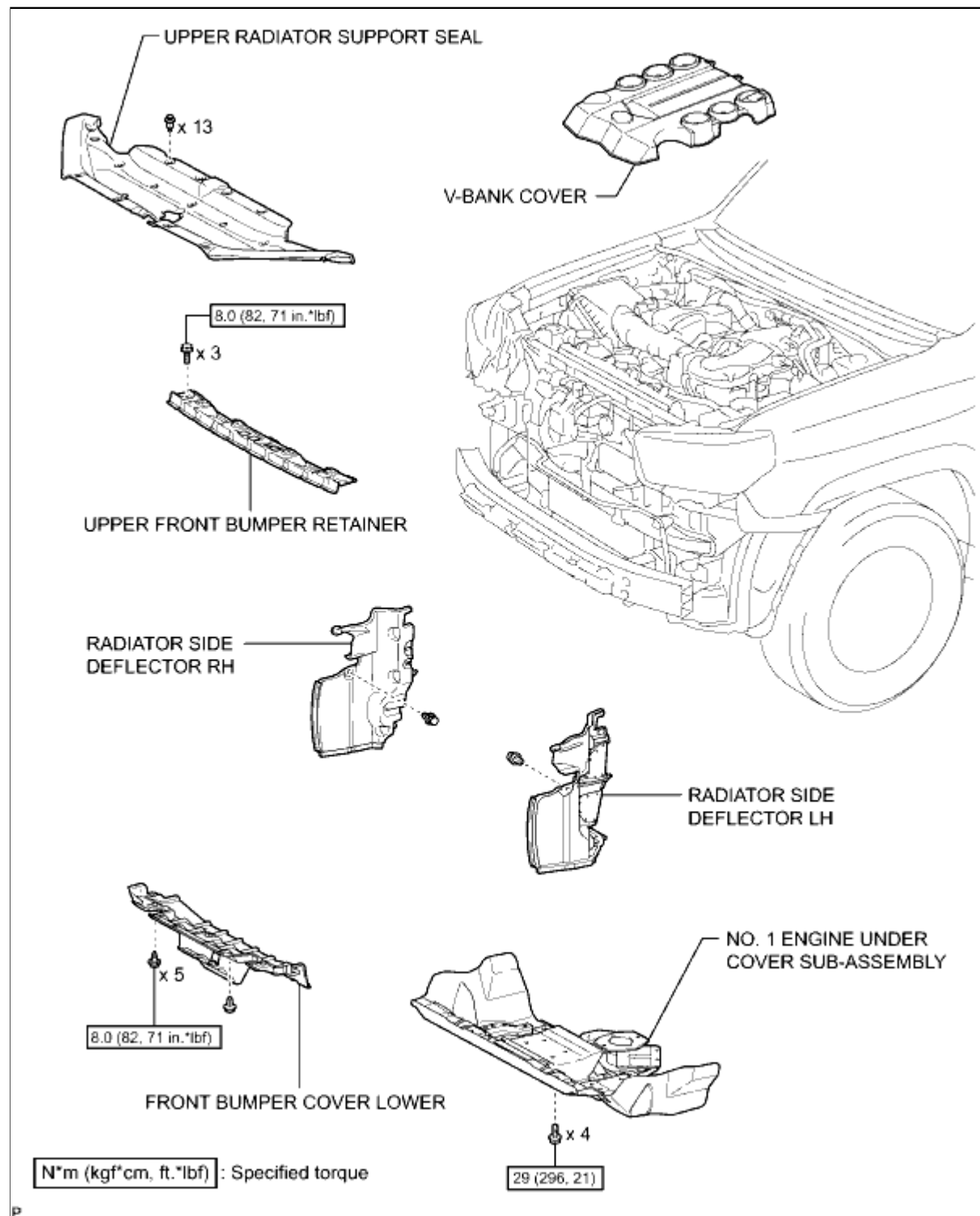
If the coolant level is above the F line, drain coolant until the coolant level reaches the F line.

6. INSPECT FOR COOLANT LEAK**7. INSTALL NO. 1 ENGINE UNDER COVER SUB-ASSEMBLY****8. INSTALL FRONT BUMPER COVER LOWER****9. INSTALL UPPER RADIATOR SUPPORT SEAL**

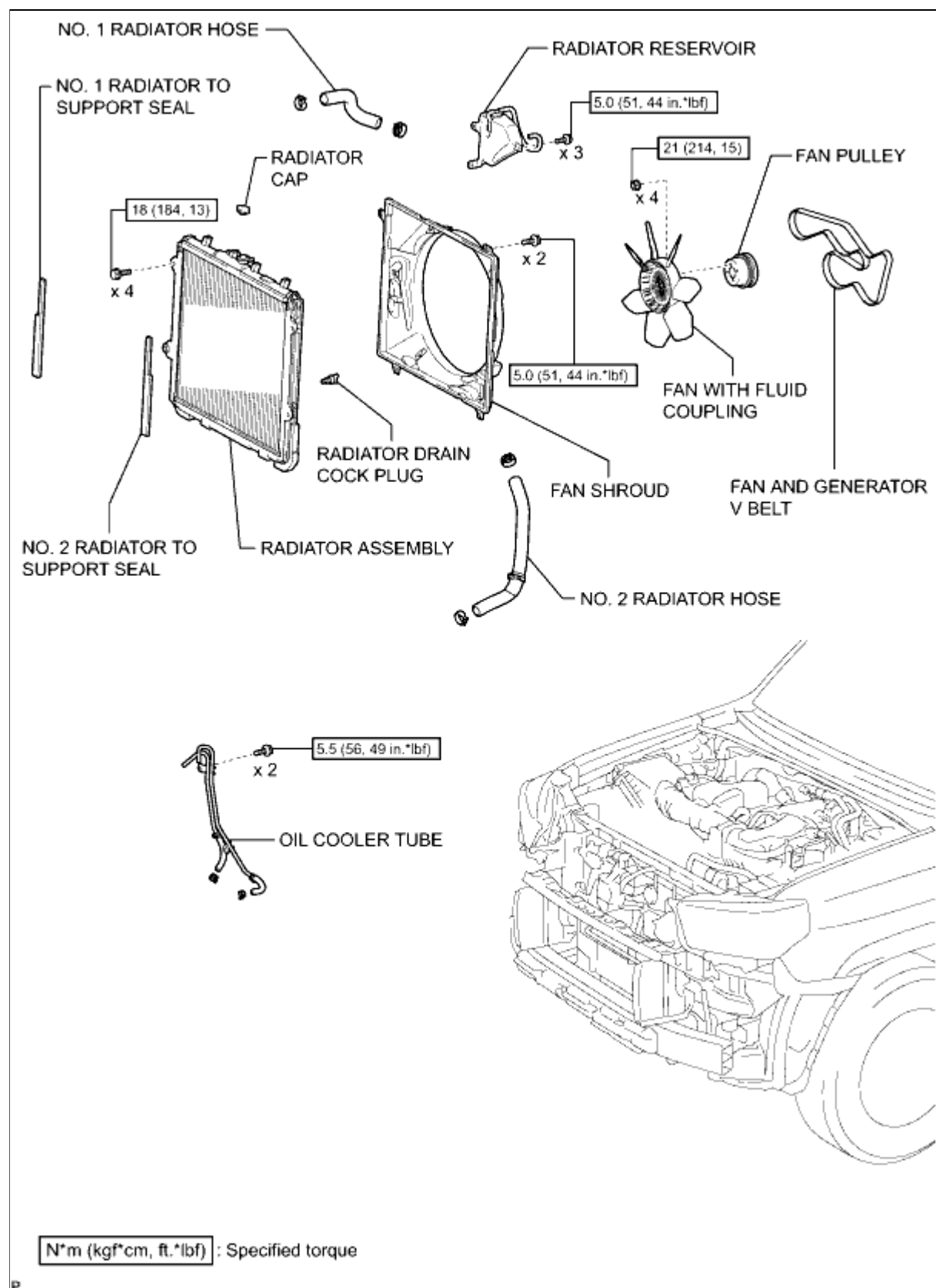
Last Modified: 5-10-2010	6.4 K	From: 200908
Model Year: 2010	Model: 4Runner	Doc ID: RM000002GUP009X
Title: 1GR-FE COOLING: RADIATOR: COMPONENTS (2010 4Runner)		

COMPONENTS

ILLUSTRATION



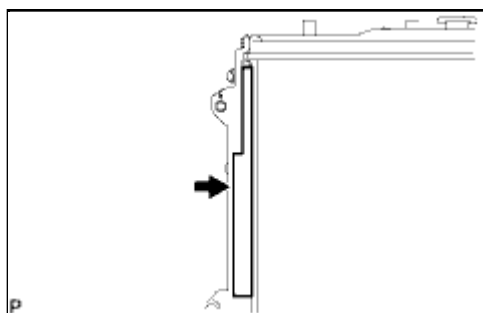
ILLUSTRATION



Last Modified: 5-10-2010	6.4 A	From: 200908
Model Year: 2010	Model: 4Runner	Doc ID: RM000001465015X
Title: 1GR-FE COOLING: RADIATOR: INSTALLATION (2010 4Runner)		

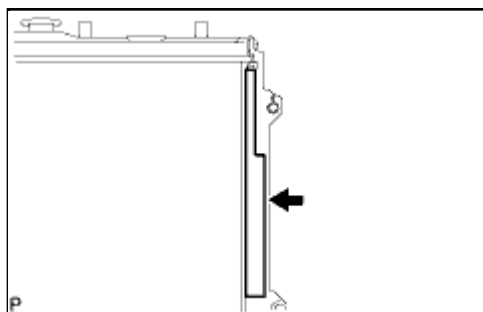
INSTALLATION

1. INSTALL NO. 1 RADIATOR TO SUPPORT SEAL



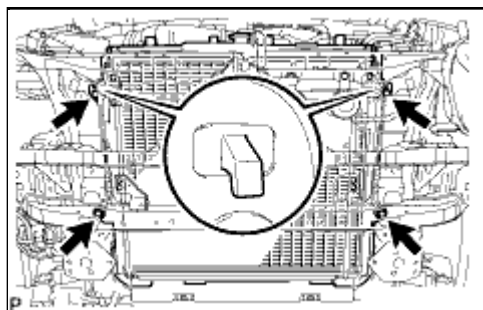
(a) Install the seal to the radiator assembly as shown in the illustration.

2. INSTALL NO. 2 RADIATOR TO SUPPORT SEAL



(a) Install the seal to the radiator assembly as shown in the illustration.

3. INSTALL RADIATOR ASSEMBLY

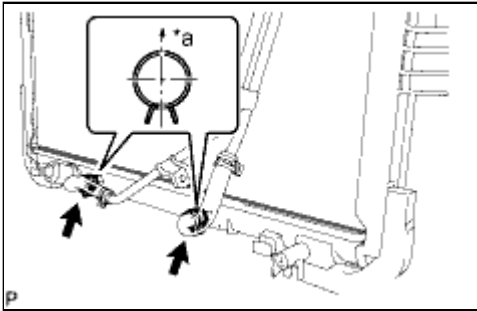


(a) Insert the radiator bracket hooks into the radiator support holes.

(b) Install the radiator with the 4 bolts.

Torque: 18 N·m (184 kgf·cm, 13ft·lbf)

(c) Connect the 2 oil cooler hoses.



Text in Illustration

*a	Upper
----	-------

HINT:

Make sure the direction of the hose clamp is as shown in the illustration.

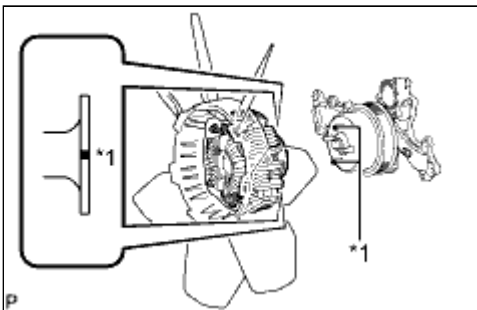
4. INSTALL FAN SHROUD

(a) Install the fan pulley to the water pump.

(b) Place the shroud together with the coupling fan between the radiator and engine.

NOTICE:

Be careful not to damage the radiator core.



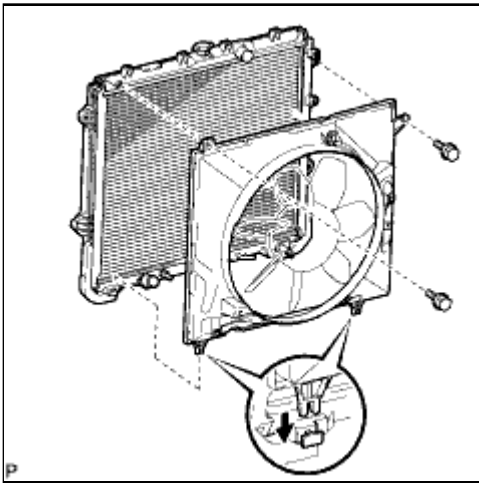
(c) Align the paint marks on the heads of the water pump stud bolts with the paint marks of the same color on the outer edge of the fluid coupling flange and install the fluid coupling to the water pump.

Text in Illustration

*1	Paint Mark
----	------------

(d) Temporarily install the fluid coupling fan to the water pump with the 4 nuts. Tighten the nuts as much as possible by hand.

(e) Attach the claws of the shroud to the radiator as shown in the illustration.



(f) Install the shroud with the 2 bolts.

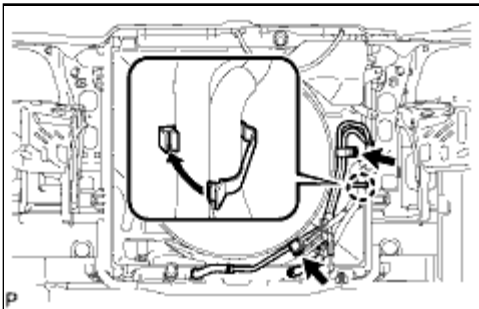
Torque: 5.0 N·m (51 kgf·cm, 44in·lbf)

(g) Install the fan and generator V-belt INFO.

(h) Tighten the 4 nuts of the fluid coupling fan.

Torque: 21 N·m (214 kgf·cm, 15ft·lbf)

5. CONNECT OIL COOLER TUBE



(a) Connect the oil cooler tube with the 2 bolts, and attach the claw to close the flexible hose clamp.

Torque: 5.5 N·m (56 kgf·cm, 49in·lbf)

6. INSTALL RADIATOR RESERVOIR

(a) Install the radiator reservoir with the 3 bolts.

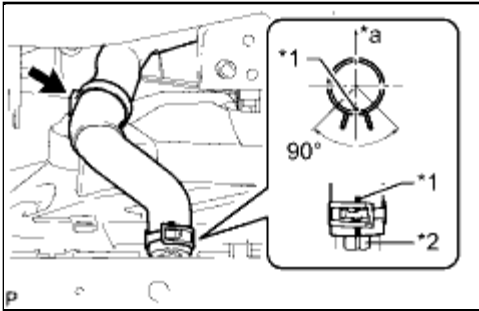
Torque: 5.0 N·m (51 kgf·cm, 44in·lbf)

(b) Connect the reservoir hose to upper side of the radiator tank upper.

7. INSTALL NO. 2 RADIATOR HOSE

(a) Connect the No. 2 radiator hose so that its paint mark aligns with the radiator protrusion as shown in the illustration.

Text in Illustration



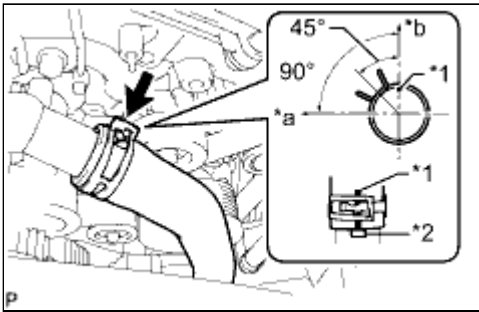
* 1	Paint Mark
* 2	Protrusion
* a	Upper

HINT:

Make sure the direction of the hose clamp is as shown in the illustration.

- (b) Connect the No. 2 radiator hose so that its paint mark aligns with the water inlet housing protrusion as shown in the illustration.

Text in Illustration



* 1	Paint Mark
* 2	Protrusion
* a	Front
* b	Upper

HINT:

Make sure the direction of the hose clamp is as shown in the illustration.

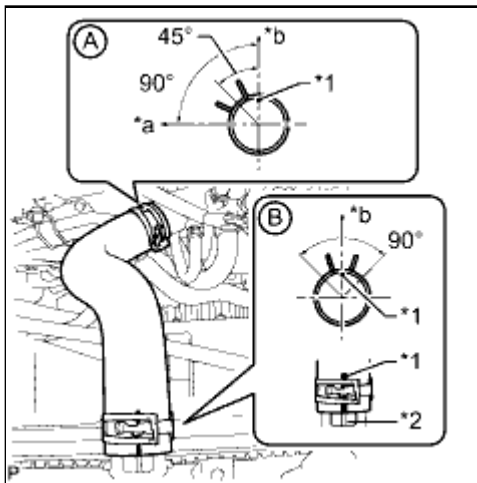
8. INSTALL NO. 1 RADIATOR HOSE

- (a) Connect the No. 1 radiator hose to the water inlet housing shown in the illustration labeled A .

Text in Illustration

* 1	Paint Mark
* 2	Protrusion
* a	Front
* b	Upper

HINT:



- Make sure the paint mark of the No. 1 radiator hose is facing upward.
- Make sure the direction of the hose clamp is as shown in the illustration.

(b) Connect the No. 1 radiator hose so that its paint mark aligns with the radiator protrusion as shown in the illustration labeled B.

HINT:

- Make sure the paint mark of the No. 1 radiator hose is facing upward.
- Make sure the direction of the hose clamp is as shown in the illustration.

9. INSTALL RADIATOR SIDE DEFLECTOR LH

- Attach the 3 claws.
- Install the deflector with the clip.

10. INSTALL RADIATOR SIDE DEFLECTOR RH

- Attach the 3 claws.
- Install the deflector with the clip.

11. INSTALL UPPER FRONT BUMPER RETAINER

- Install the retainer with the 3 bolts.

Torque: 8.0 N·m (82 kgf·cm, 71in·lbf)

12. INSTALL FRONT BUMPER COVER

- Install the front bumper cover [INFO](#).

13. ADD ENGINE COOLANT [INFO](#)

14. INSPECT FOR ENGINE COOLANT LEAK [INFO](#)

15. INSTALL NO. 1 ENGINE UNDER COVER SUB-ASSEMBLY [INFO](#)

16. INSTALL FRONT BUMPER COVER LOWER [INFO](#)

17. INSTALL V-BANK COVER [INFO](#)

18. INSTALL UPPER RADIATOR SUPPORT SEAL [INFO](#)

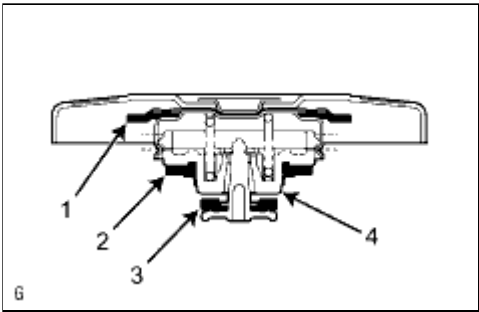
Last Modified: 5-10-2010	6.4 G	From: 200908
Model Year: 2010	Model: 4Runner	Doc ID: RM000000XYW05KX
Title: 1GR-FE COOLING: RADIATOR: ON-VEHICLE INSPECTION (2010 4Runner)		

ON-VEHICLE INSPECTION

1. INSPECT RADIATOR CAP SUB-ASSEMBLY

CAUTION:

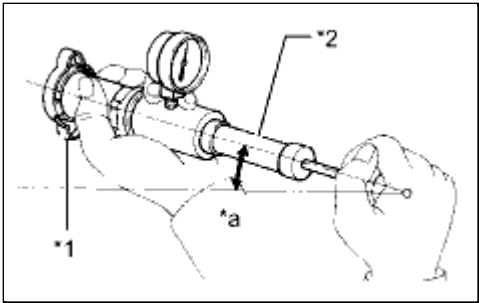
Do not remove the radiator reservoir cap while the engine and radiator are still hot. Pressurized, hot engine coolant and steam may be released and cause serious burns.



(a) Measure the valve opening pressure.

- (1) If there are water stains or foreign matter on rubber packing 1, 2 or 3, clean it by using water and finger scouring.
- (2) Check that rubber packing 1, 2 and 3 are not deformed, cracked or swollen.
- (3) Check that rubber packing 3 and 4 are not stuck together.
- (4) Apply engine coolant to rubber packing 2 and 3.

(5) When using the cap tester, tilt it more than 30°.



Text in Illustration

*1	Radiator Cap
*2	Radiator Cap Tester
*a	More than 30°

(6) Pump the cap tester several times and check the maximum pressure.*1

Pumping speed:
1 pump per second

HINT:

***1: Even if the cap cannot maintain the maximum pressure, it is not necessarily defective.**

Standard Judgment Criterion:

ITEM	SPECIFIED CONDITION
Standard Value (for brand-new cap)	93 to 123 kPa (1.0 to 1.3 kgf/cm ² , 13.5 to 18 psi)
Minimum Standard Value (for used cap)	79 kPa (0.8 kgf/cm ² , 11.4 psi)

If the maximum pressure is less than the minimum standard value, replace the radiator cap sub-assembly.

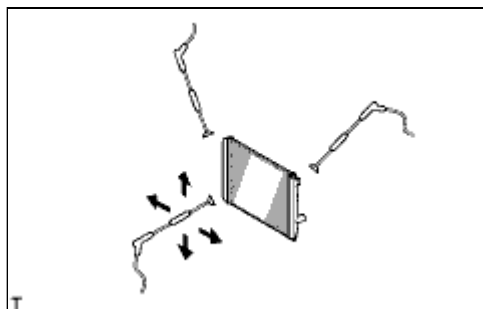
2. INSPECT FINS FOR BLOCKAGE

- (a) If the fins are clogged, wash them with water or a steam cleaner and dry them with compressed air.

NOTICE:

- To avoid damaging the fins, the injection direction should be at right angles to the core surface.
- If the steam cleaner is too close to the core, there is a possibility of damaging the fins, so keep the following injection distances.

Standard Injection Distance:



INJECTION PRESSURE	SPECIFIED CONDITION
2942 to 4903 kPa (30.0 to 50.0 kgf/cm ² , 427 to 711 psi)	300 mm (11.8 in.)
4903 to 7845 kPa (50.0 to 80.0 kgf/cm ² , 711 to 1138 psi)	500 mm (19.7 in.)

- If the fins are bent, straighten them with a screwdriver or pliers.
- Do not expose electronic components to water.

- (b) Dry the fins with compressed air.

Last Modified: 5-10-2010	6.4 A	From: 200908
Model Year: 2010	Model: 4Runner	Doc ID: RM000002BGI01MX
Title: 1GR-FE COOLING: RADIATOR: REMOVAL (2010 4Runner)		

REMOVAL

1. REMOVE UPPER RADIATOR SUPPORT SEAL


2. REMOVE FRONT BUMPER COVER LOWER

3. REMOVE NO. 1 ENGINE UNDER COVER SUB-ASSEMBLY

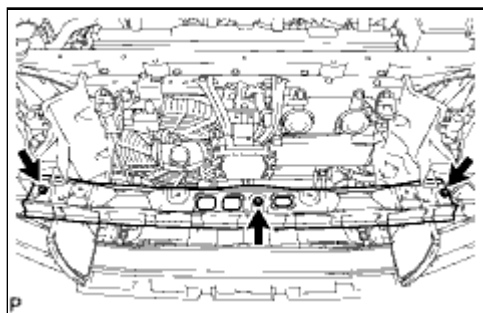
4. DRAIN ENGINE COOLANT

5. REMOVE V-BANK COVER

6. REMOVE FRONT BUMPER COVER

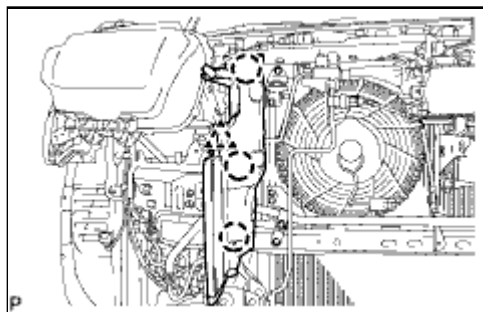
(a) Remove the front bumper cover  .

7. REMOVE UPPER FRONT BUMPER RETAINER



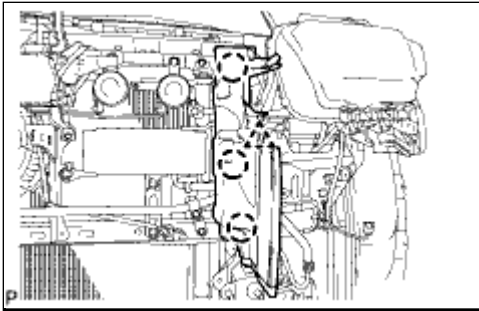
(a) Remove the 3 bolts and retainer.

8. REMOVE RADIATOR SIDE DEFLECTOR RH

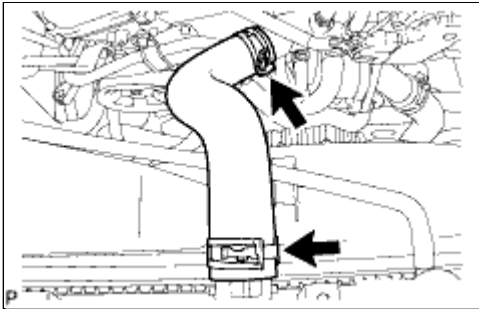


(a) Using a clip remover, detach the 3 claws and remove the clip. Then move the side deflector so that the radiator can be removed in the step below.

9. REMOVE RADIATOR SIDE DEFLECTOR LH

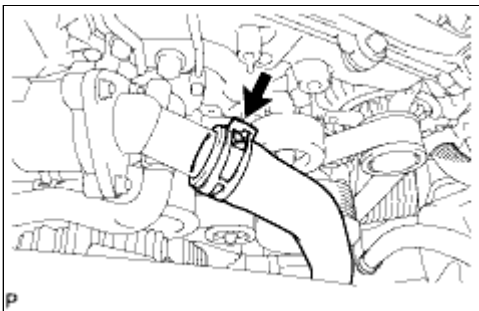


(a) Using a clip remover, detach the 3 claws and remove the clip. Then move the side deflector so that the radiator can be removed in the step below.



10. REMOVE NO. 1 RADIATOR HOSE

11. REMOVE NO. 2 RADIATOR HOSE

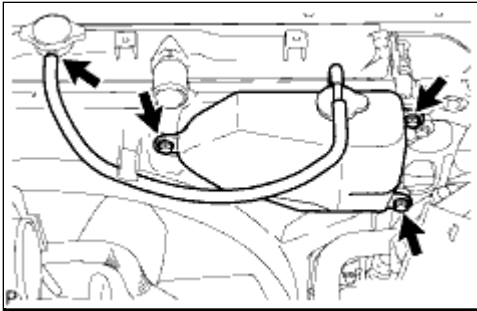


(a) Disconnect the radiator hose from the water inlet.



(b) Detach the clamp and remove the radiator hose.

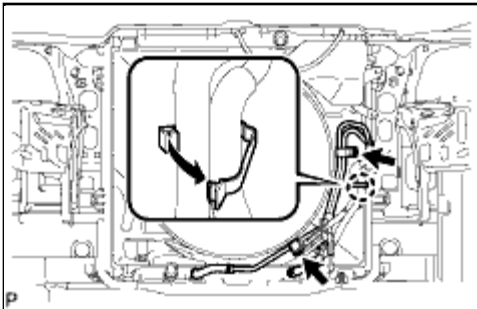
12. REMOVE RADIATOR RESERVOIR



(a) Disconnect the reservoir hose from the upper side of the radiator tank.

(b) Remove the 3 bolts and radiator reservoir.

13. DISCONNECT OIL COOLER TUBE




(a) Detach the claw to open the flexible hose clamp, and then remove the 2 bolts to disconnect the oil cooler tube from the fan shroud.

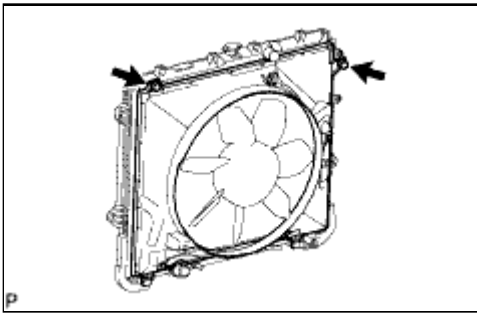
14. REMOVE FAN SHROUD



(a) Loosen the 4 nuts holding the fluid coupling fan.

(b) Remove the fan and generator V-belt .

(c) Remove the 2 bolts holding the fan shroud.



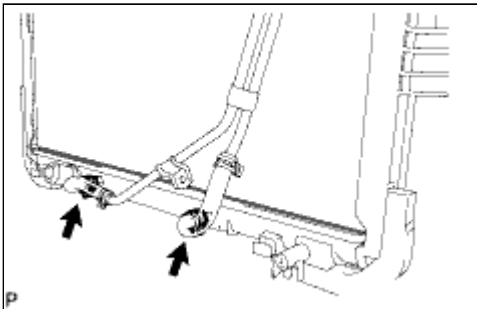
- (d) Remove the 4 nuts of the fluid coupling fan, and then remove the shroud together with the coupling fan.

NOTICE:

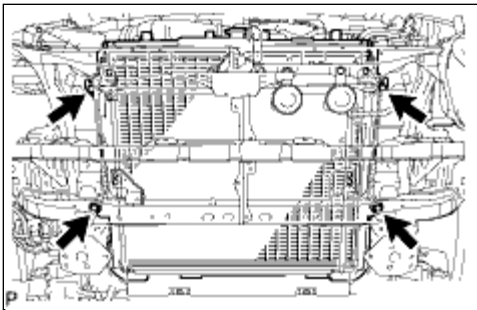
Be careful not to damage the radiator core.

- (e) Remove the fan pulley from the water pump.

15. REMOVE RADIATOR ASSEMBLY



- (a) Disconnect the 2 oil cooler hoses.



- (b) Remove the 4 bolts and radiator.

16. REMOVE NO. 1 RADIATOR TO SUPPORT SEAL

- (a) Remove the seal from the radiator assembly.

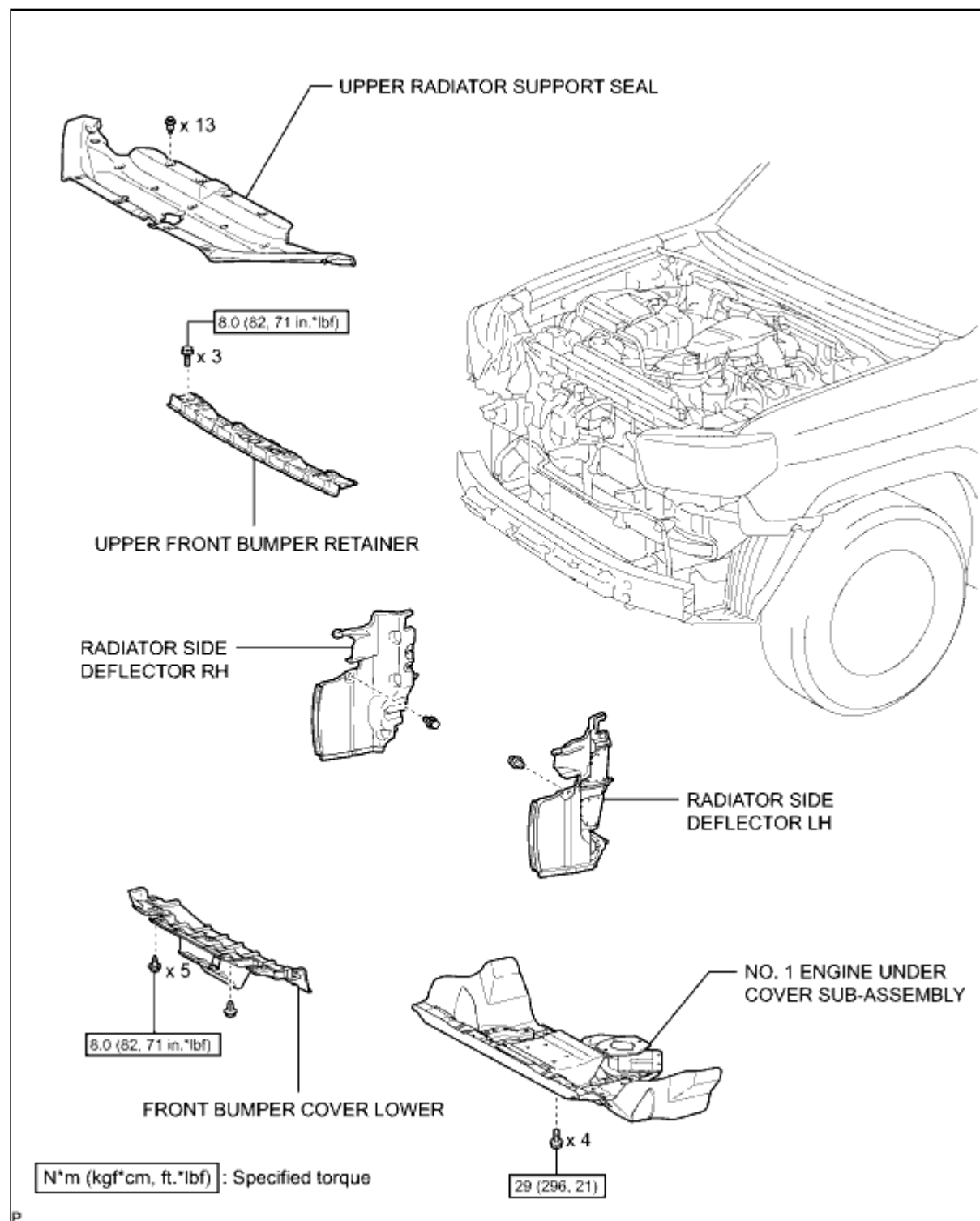
17. REMOVE NO. 2 RADIATOR TO SUPPORT SEAL

- (a) Remove the seal from the radiator assembly.

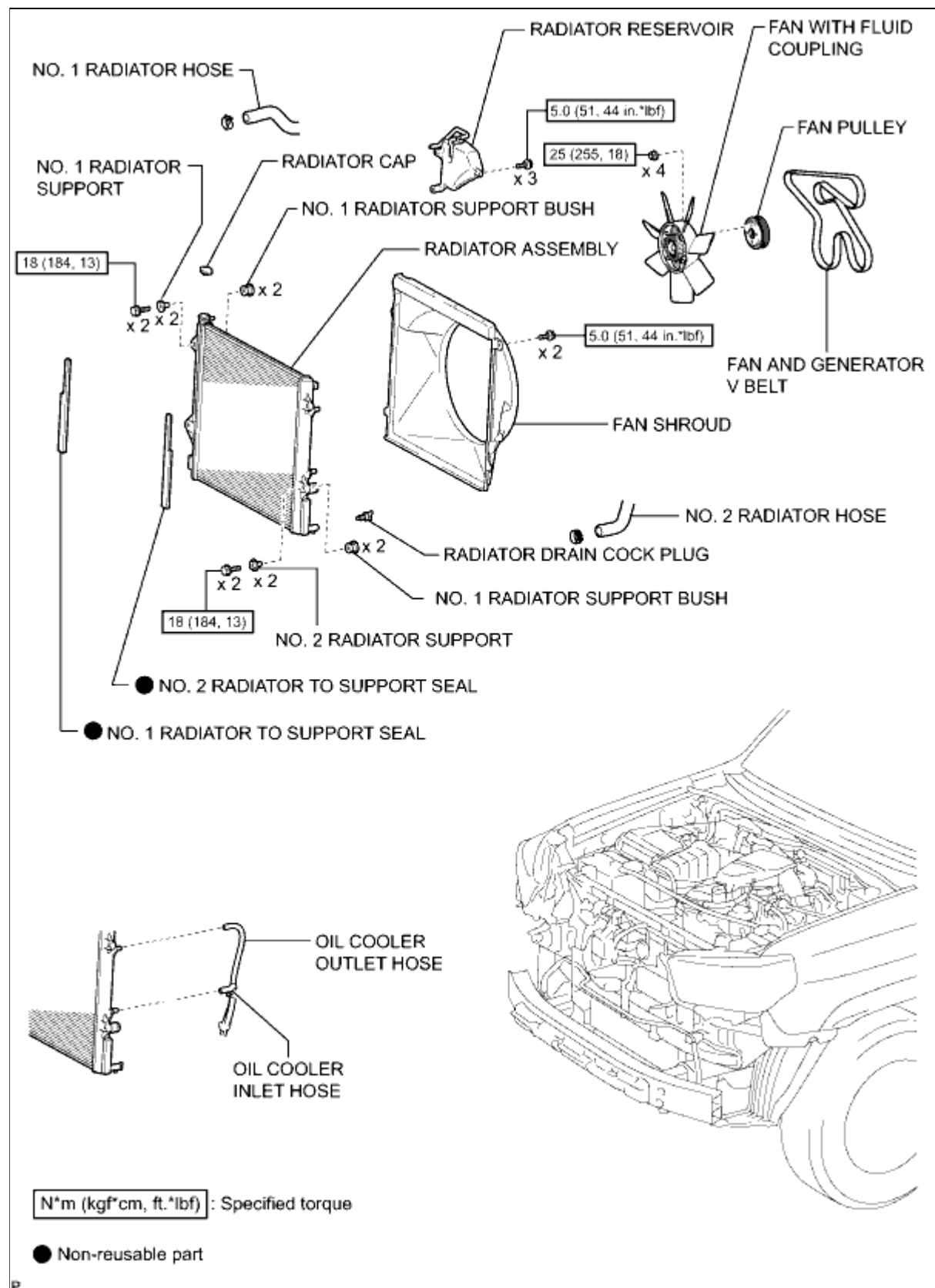
Last Modified: 5-10-2010	6.4 K	From: 200908
Model Year: 2010	Model: 4Runner	Doc ID: RM0000049S7001X
Title: 2TR-FE COOLING: RADIATOR: COMPONENTS (2010 4Runner)		

COMPONENTS

ILLUSTRATION



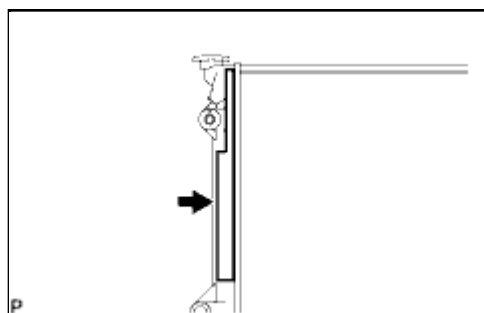
ILLUSTRATION



Last Modified: 5-10-2010	6.4 A	From: 200908
Model Year: 2010	Model: 4Runner	Doc ID: RM0000049S6001X
Title: 2TR-FE COOLING: RADIATOR: INSTALLATION (2010 4Runner)		

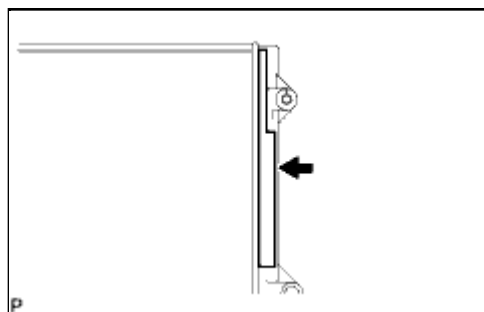
INSTALLATION

1. INSTALL NO. 1 RADIATOR TO SUPPORT SEAL



(a) Install a new seal to the radiator as shown in the illustration.

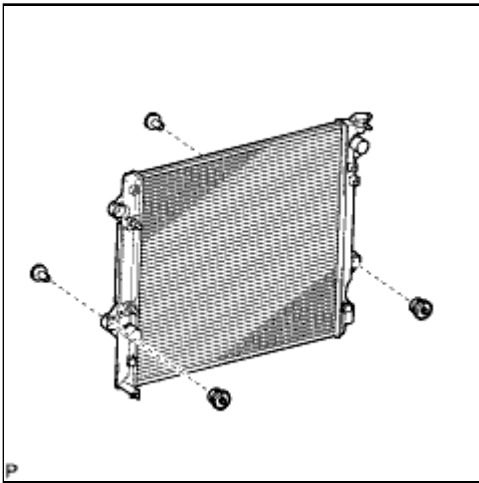
2. INSTALL NO. 2 RADIATOR TO SUPPORT SEAL



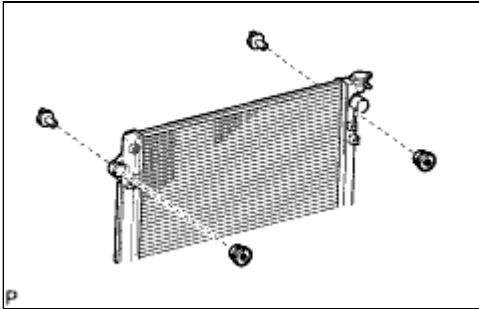
(a) Install a new seal to the radiator as shown in the illustration.

3. INSTALL NO. 2 RADIATOR SUPPORT

(a) Install the 2 radiator supports and 2 No. 1 radiator support bushes as shown in the illustration.

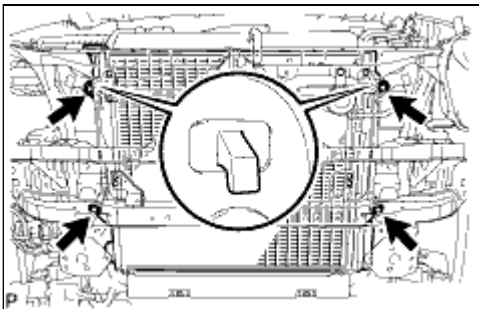


4. INSTALL NO. 1 RADIATOR SUPPORT



- (a) Install the 2 radiator supports and 2 No. 1 radiator support bushes as shown in the illustration.

5. INSTALL RADIATOR ASSEMBLY



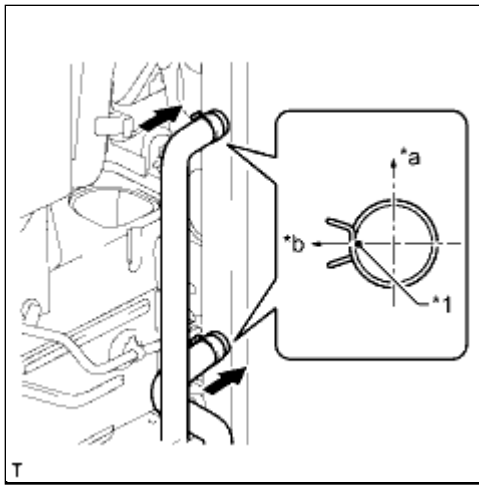
- (a) Insert the No. 1 radiator support hooks into the radiator support holes.

- (b) Install the radiator with the 4 bolts.

Torque: 18 N·m (184 kgf·cm, 13ft·lbf)

6. CONNECT OIL COOLER OUTLET HOSE

- (a) Connect the oil cooler outlet hose to the radiator.



Text in Illustration

* 1	Paint Mark
* a	Upper
* b	LH Side

HINT:

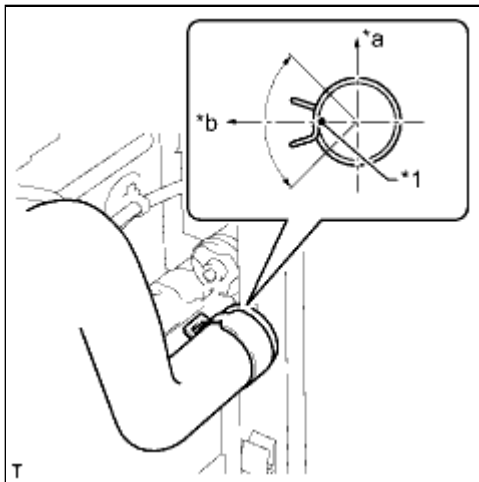
Make sure the direction of the hose clamp is as shown in the illustration.

7. CONNECT OIL COOLER INLET HOSE

(a) Connect the oil cooler inlet hose to the radiator.

8. CONNECT NO. 2 RADIATOR HOSE

(a) Connect the No. 2 radiator hose to the radiator.



Text in Illustration

* 1	Paint Mark
* a	Upper
* b	LH Side

HINT:

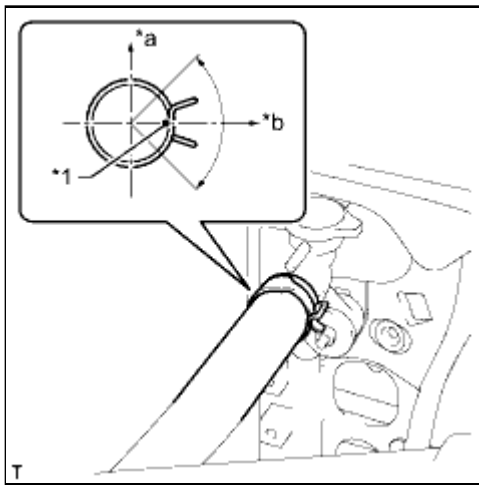
Make sure the direction of the hose clamp is as shown in the illustration.

9. CONNECT NO. 1 RADIATOR HOSE

(a) Connect the No. 1 radiator hose to the radiator.

Text in Illustration

* 1	Paint Mark
* a	Upper



*b

RH Side

HINT:

Make sure the direction of the hose clamp is as shown in the illustration.

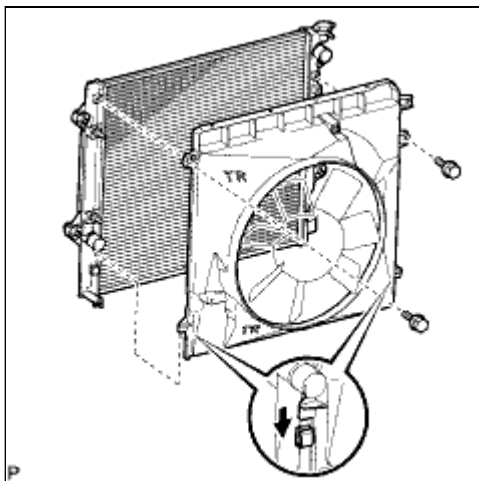
10. INSTALL FAN SHROUD

- (a) Install the fan pulley to the water pump.
- (b) Place the shroud together with the coupling fan between the radiator and engine.

NOTICE:

Be careful not to damage the radiator core.

- (c) Temporarily install the fluid coupling fan to the water pump with the 4 nuts. Tighten the nuts as much as possible by hand.



- (d) Attach the claws of the shroud to the radiator as shown in the illustration.

- (e) Install the shroud with the 2 bolts.

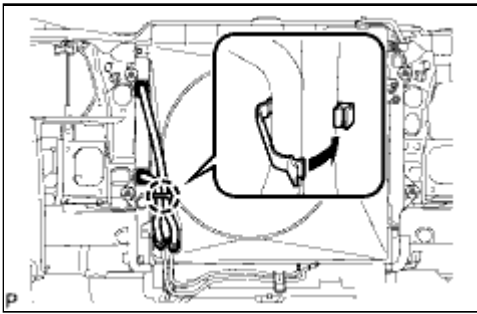
Torque: 5.0 N·m (51 kgf·cm, 44in·lbf)

- (f) Install the fan and generator V belt INFO.

- (g) Tighten the 4 nuts of the fluid coupling fan.

Torque: 25 N·m (255 kgf·cm, 18ft·lbf)

- (h) Attach the claw to close the flexible hose clamp as shown



in the illustration.

11. INSTALL RADIATOR RESERVOIR

(a) Install the radiator reservoir with the 3 bolts.

Torque: 5.0 N·m (51 kgf·cm, 44in·lbf)

(b) Connect the reservoir hose to the radiator.

12. INSTALL RADIATOR SIDE DEFLECTOR LH

(a) Attach the 3 claws.

(b) Install the deflector with the clip.

13. INSTALL RADIATOR SIDE DEFLECTOR RH

(a) Attach the 3 claws.


(b) Install the deflector with the clip.

14. INSTALL UPPER FRONT BUMPER RETAINER

(a) Install the upper front bumper retainer with the 3 bolts.

Torque: 8.0 N·m (82 kgf·cm, 71in·lbf)

15. INSTALL FRONT BUMPER COVER

(a) Install the front bumper cover .

16. ADD ENGINE COOLANT

17. INSPECT FOR COOLANT LEAK

18. INSTALL NO. 1 ENGINE UNDER COVER SUB-ASSEMBLY

19. INSTALL FRONT BUMPER COVER LOWER

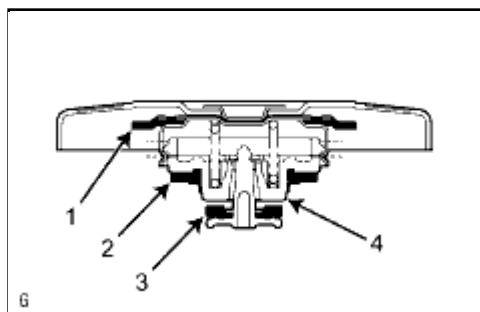
20. INSTALL UPPER RADIATOR SUPPORT SEAL



Last Modified: 5-10-2010	6.4 G	From: 200908
Model Year: 2010	Model: 4Runner	Doc ID: RM0000049S9001X
Title: 2TR-FE COOLING: RADIATOR: ON-VEHICLE INSPECTION (2010 4Runner)		

ON-VEHICLE INSPECTION

1. INSPECT RADIATOR CAP SUB-ASSEMBLY



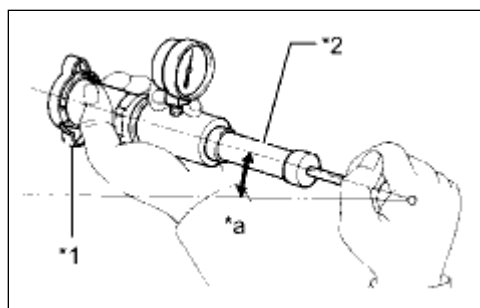
CAUTION:

Do not remove the radiator cap while the engine and radiator are still hot. Pressurized, hot engine coolant and steam may be released and cause serious burns.

(a) Measure the valve opening pressure.

- (1) If there are water stains or foreign matter on rubber packing 1, 2 or 3, clean it by using water and finger scouring.
- (2) Check that rubber packing 1, 2 and 3 are not deformed, cracked or swollen.
- (3) Check that rubber packing 3 and 4 are not stuck together.
- (4) Apply engine coolant to rubber packing 2 and 3.

(5) When using the cap tester, tilt it more than 30°.



Text in Illustration

*1	Radiator Cap
*2	Radiator Cap Tester
*a	More than 30°

(6) Pump the cap tester several times and check the maximum pressure.*1

Pumping speed:

1 pump per second

HINT:

***1: Even if the cap cannot maintain the maximum pressure, it is not necessarily defective.**

Standard Judgment Criterion:

ITEM	SPECIFIED CONDITION
Standard Value (for Brand-new Cap)	93 to 123 kPa (1.0 to 1.3 kgf/cm ² , 13.5 to 18 psi)
Minimum Standard Value (for Used Cap)	79 kPa (0.8 kgf/cm ² , 11.4 psi)

If the maximum pressure is less than the minimum standard value, replace the radiator cap sub-assembly.

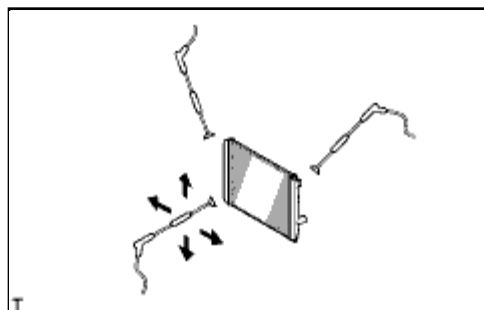
2. INSPECT FINS FOR BLOCKAGE

(a) If the fins are clogged, wash them with water or a steam cleaner and dry them with compressed air.

NOTICE:

- To avoid damaging the fins, the injection direction should be at right angles to the core surface.
- If the steam cleaner is too close to the core, there is a possibility of damaging the fins, so keep the following injection distances.

Standard Injection Distance:



INJECTION PRESSURE	SPECIFIED CONDITION
2942 to 4903 kPa (30.0 to 50.0 kgf/cm ² , 427 to 711 psi)	300 mm (11.8 in.)
4903 to 7845 kPa (50.0 to 80.0 kgf/cm ² , 711 to 1138 psi)	500 mm (19.7 in.)

- If the fins are bent, straighten them with a screwdriver or pliers.
- Do not expose electronic components to water.

(b) Dry the fins with compressed air.

Last Modified: 5-10-2010	6.4 A	From: 200908
Model Year: 2010	Model: 4Runner	Doc ID: RM0000049S8001X
Title: 2TR-FE COOLING: RADIATOR: REMOVAL (2010 4Runner)		

REMOVAL

1. REMOVE UPPER RADIATOR SUPPORT SEAL



2. REMOVE FRONT BUMPER COVER LOWER



3. REMOVE NO. 1 ENGINE UNDER COVER SUB-ASSEMBLY



4. DRAIN ENGINE COOLANT

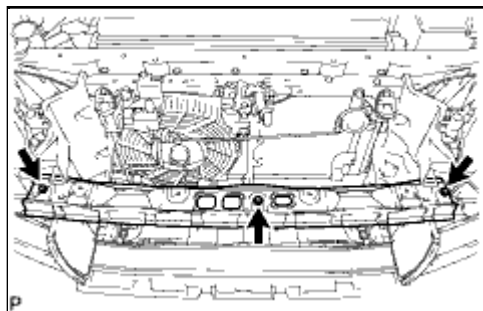


5. REMOVE FRONT BUMPER COVER

(a) Remove the front bumper cover

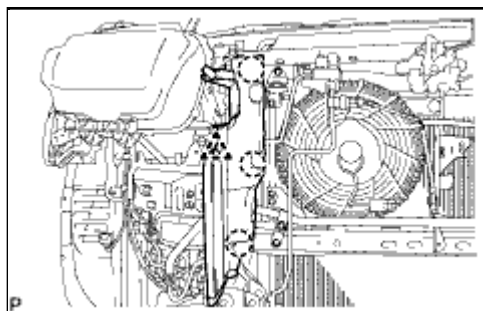


6. REMOVE UPPER FRONT BUMPER RETAINER



(a) Remove the 3 bolts and upper front bumper retainer.

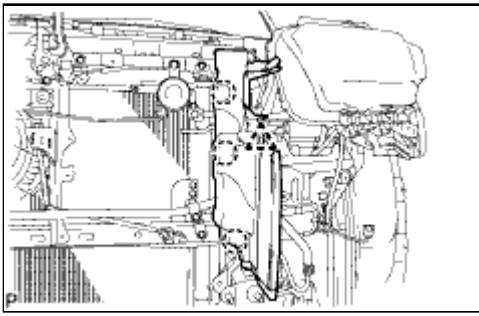
7. REMOVE RADIATOR SIDE DEFLECTOR RH



(a) Using a clip remover, detach the 3 claws and remove the clip. Then move the side deflector so that the radiator can be removed in the step below.

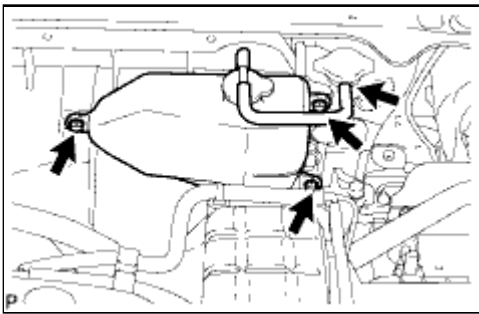
8. REMOVE RADIATOR SIDE DEFLECTOR LH

(a) Using a clip remover, detach the 3 claws and remove the clip. Then move the side deflector so that the radiator can



be removed in the step below.

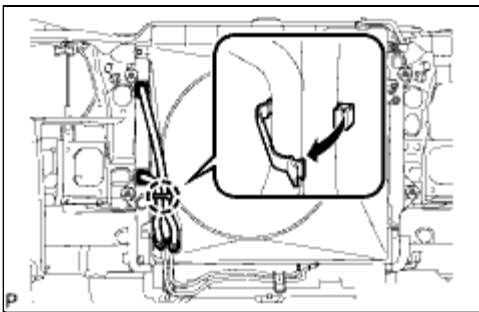
9. REMOVE RADIATOR RESERVOIR



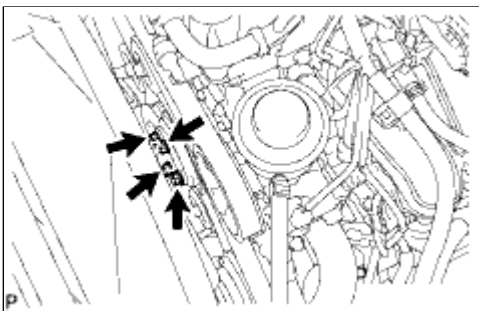
(a) Disconnect the reservoir hose from the radiator.

(b) Remove the 3 bolts and radiator reservoir.


10. REMOVE FAN SHROUD

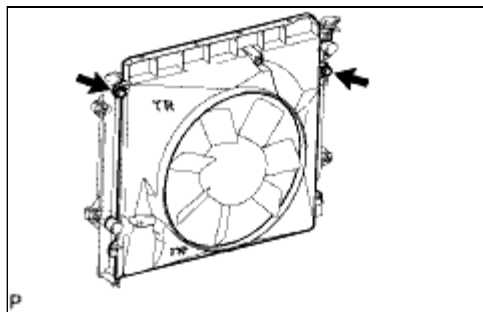


(a) Detach the claw to open the flexible hose clamp.



(b) Loosen the 4 nuts holding the fluid coupling fan.

(c) Remove the fan and generator V belt .



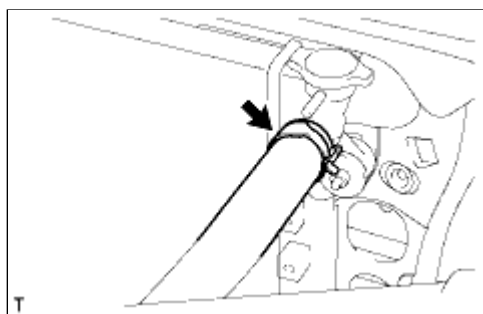
(d) Remove the 2 bolts holding the fan shroud.

(e) Remove the 4 nuts of the fluid coupling fan, and then remove the shroud together with the coupling fan.

NOTICE:

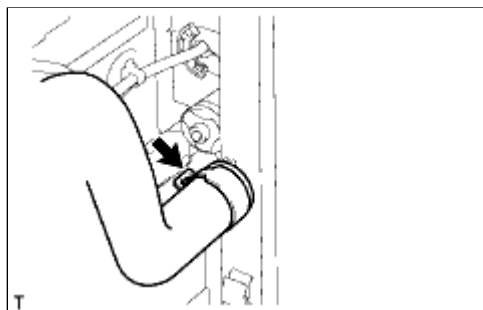
Be careful not to damage the radiator core.

11. DISCONNECT NO. 1 RADIATOR HOSE



(a) Disconnect the No. 1 radiator hose from the radiator.

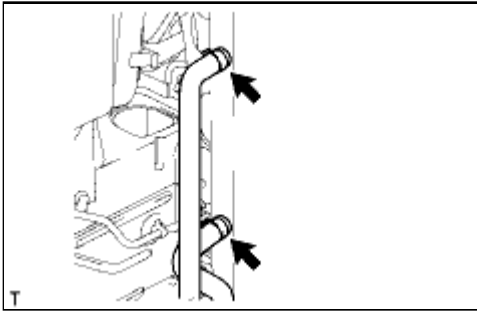
12. DISCONNECT NO. 2 RADIATOR HOSE



(a) Disconnect the No. 2 radiator hose from the radiator.

13. DISCONNECT OIL COOLER INLET HOSE

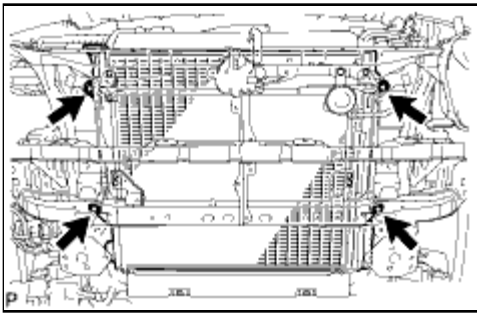
(a) Disconnect the oil cooler inlet hose from the radiator.



14. DISCONNECT OIL COOLER OUTLET HOSE

(a) Disconnect the oil cooler outlet hose from the radiator.

15. REMOVE RADIATOR ASSEMBLY



(a) Remove the 4 bolts and radiator.

16. REMOVE NO. 1 RADIATOR SUPPORT

(a) Remove the 2 radiator supports and 2 No. 1 radiator support bushes.

17. REMOVE NO. 2 RADIATOR SUPPORT

(a) Remove the 2 radiator supports and 2 No. 1 radiator support bushes.

18. REMOVE NO. 1 RADIATOR TO SUPPORT SEAL

(a) Remove the seal from the radiator.

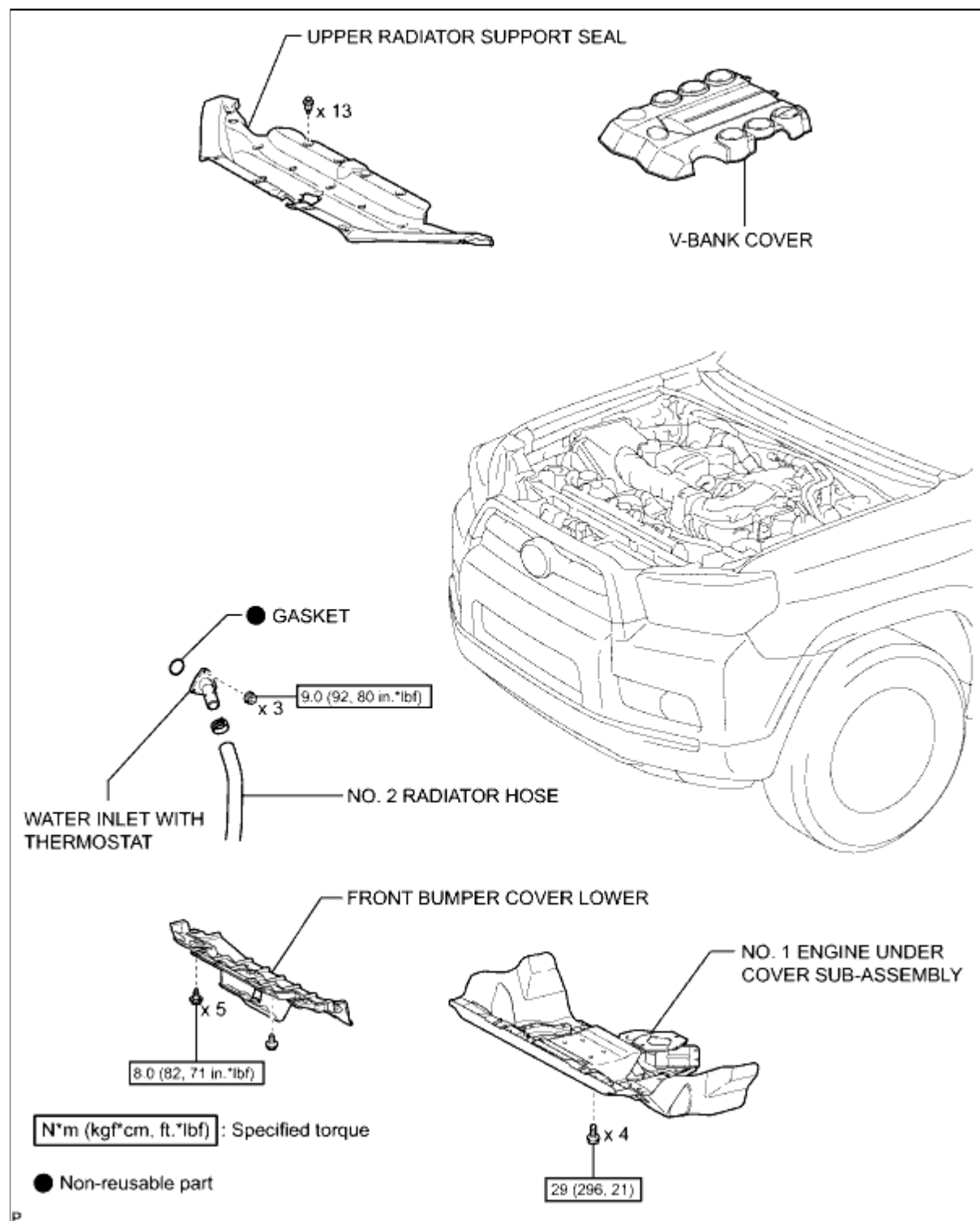
19. REMOVE NO. 2 RADIATOR TO SUPPORT SEAL

(a) Remove the seal from the radiator.

Last Modified: 5-10-2010	6.4 K	From: 200908
Model Year: 2010	Model: 4Runner	Doc ID: RM000002GUO009X
Title: 1GR-FE COOLING: THERMOSTAT: COMPONENTS (2010 4Runner)		

COMPONENTS

ILLUSTRATION



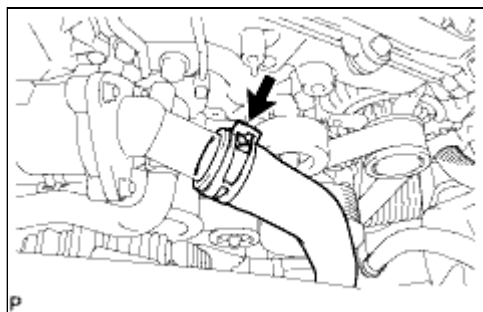


TOYOTA

Last Modified: 5-10-2010	6.4 A	From: 200908
Model Year: 2010	Model: 4Runner	Doc ID: RM000002BG8013X
Title: 1GR-FE COOLING: THERMOSTAT: REMOVAL (2010 4Runner)		

REMOVAL

1. REMOVE UPPER RADIATOR SUPPORT SEAL INFO
2. REMOVE FRONT BUMPER COVER LOWER INFO
3. REMOVE NO. 1 ENGINE UNDER COVER SUB-ASSEMBLY INFO
4. DRAIN ENGINE COOLANT INFO
5. REMOVE V-BANK COVER INFO
6. DISCONNECT NO. 2 RADIATOR HOSE

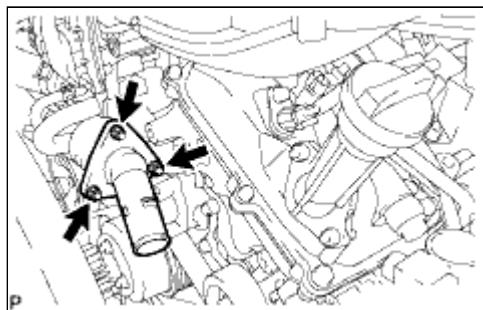


(a) Disconnect the No. 2 radiator hose.

7. REMOVE WATER INLET WITH THERMOSTAT

HINT:

If the thermostat was not installed, cooling efficiency would decrease. Even if the engine tends to overheat, do not remove the thermostat.



(a) Remove the 3 nuts, water inlet with thermostat and gasket.



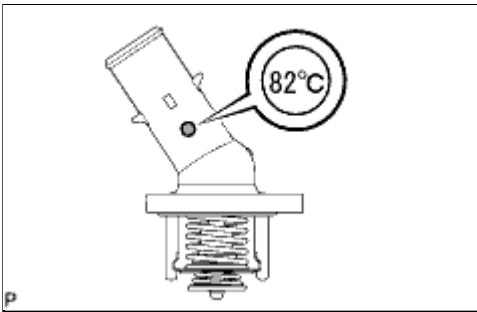
Last Modified: 5-10-2010	6.4 G	From: 200908
Model Year: 2010	Model: 4Runner	Doc ID: RM000000V1K030X
Title: 1GR-FE COOLING: THERMOSTAT: INSPECTION (2010 4Runner)		

INSPECTION

1. INSPECT WATER INLET WITH THERMOSTAT

HINT:

The valve opening temperature is inscribed on the thermostat.

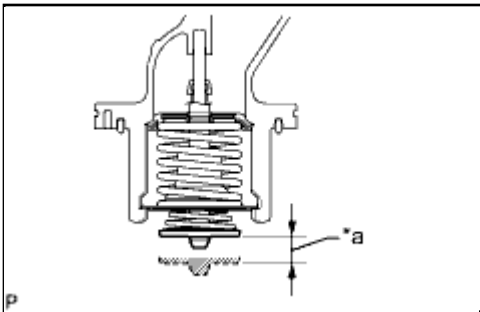


- (a) Immerse the thermostat in water, and then gradually heat the water.
- (b) Check the valve opening temperature of the thermostat.

Standard valve opening temperature:
80 to 84°C (176 to 183°F)

If the valve opening temperature is not as specified, replace the water inlet with thermostat.

- (c) Check the valve lift.



Text in Illustration

*a	Valve Lift
----	------------

Standard valve lift:
8.0 mm (0.315 in.) or more at 95°C (203°F)

If the valve lift is not as specified, replace the water inlet with thermostat.

- (d) Check that the valve is fully closed when the water inlet with thermostat is at a low temperature (below 77°C (171°F)).

If not fully closed, replace the thermostat.

Last Modified: 5-10-2010	6.4 A	From: 200908
Model Year: 2010	Model: 4Runner	Doc ID: RM000002BG9013X
Title: 1GR-FE COOLING: THERMOSTAT: INSTALLATION (2010 4Runner)		

INSTALLATION

1. INSTALL WATER INLET WITH THERMOSTAT

(a) Install a new gasket and the water inlet with thermostat with the 3 nuts.

Torque: 9.0 N·m (92 kgf·cm, 80in·lbf)

2. CONNECT NO. 2 RADIATOR HOSE

(a) Connect the No. 2 radiator hose.

3. ADD ENGINE COOLANT

4. INSPECT FOR ENGINE COOLANT LEAK

5. INSTALL NO. 1 ENGINE UNDER COVER SUB-ASSEMBLY

6. INSTALL FRONT BUMPER COVER LOWER

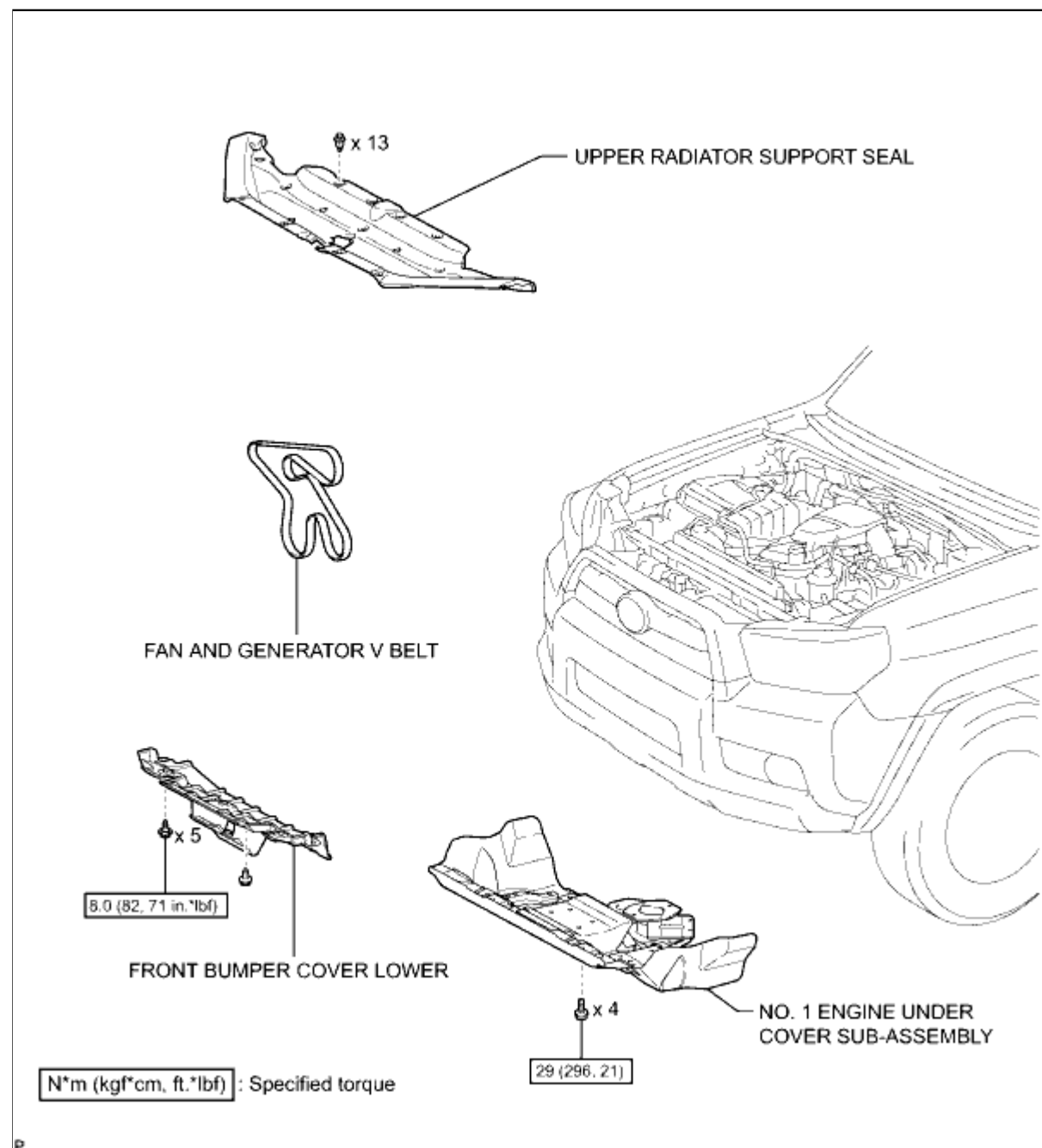
7. INSTALL V-BANK COVER

8. INSTALL UPPER RADIATOR SUPPORT SEAL

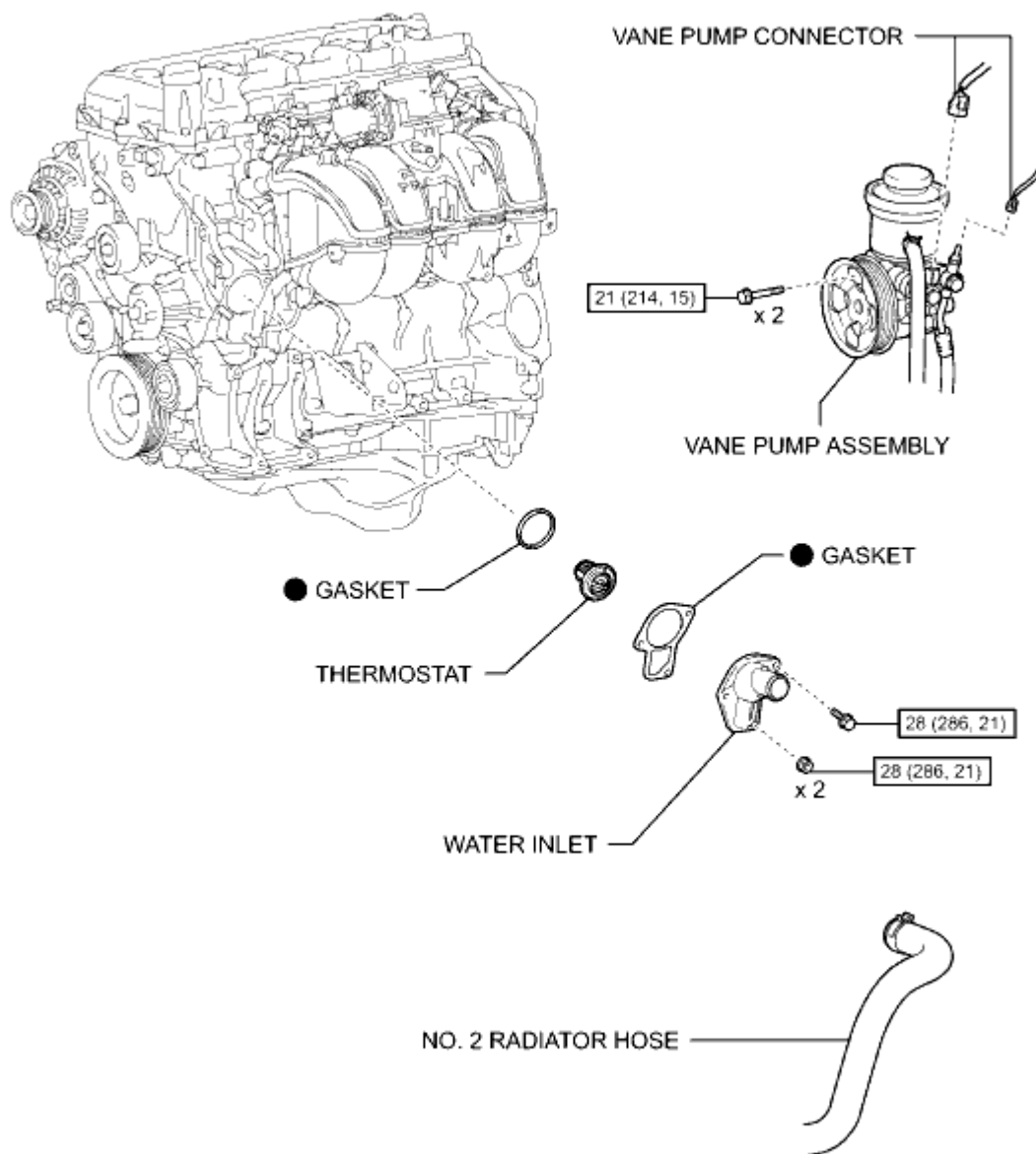
Last Modified: 5-10-2010	6.4 K	From: 200908
Model Year: 2010	Model: 4Runner	Doc ID: RM0000049S4001X
Title: 2TR-FE COOLING: THERMOSTAT: COMPONENTS (2010 4Runner)		

COMPONENTS

ILLUSTRATION



ILLUSTRATION



N*m (kgf*cm, ft.*lbf) : Specified torque

● Non-reusable part

P

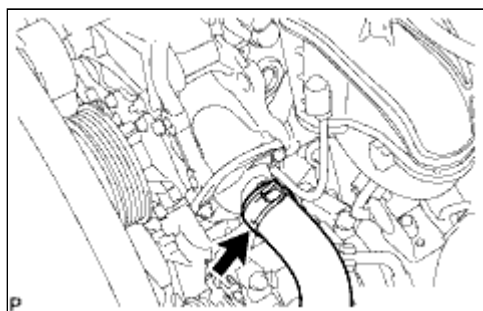


TOYOTA

Last Modified: 5-10-2010	6.4 A	From: 200908
Model Year: 2010	Model: 4Runner	Doc ID: RM0000049S5001X
Title: 2TR-FE COOLING: THERMOSTAT: REMOVAL (2010 4Runner)		

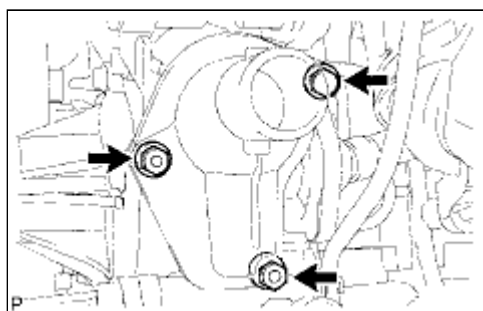
REMOVAL

1. REMOVE UPPER RADIATOR SUPPORT SEAL INFO
2. REMOVE FRONT BUMPER COVER LOWER INFO
3. REMOVE NO. 1 ENGINE UNDER COVER SUB-ASSEMBLY INFO
4. DRAIN ENGINE COOLANT INFO
5. REMOVE FAN AND GENERATOR V BELT INFO
6. DISCONNECT VANE PUMP ASSEMBLY INFO
7. DISCONNECT NO. 2 RADIATOR HOSE



(a) Disconnect the No. 2 radiator hose from the water inlet.

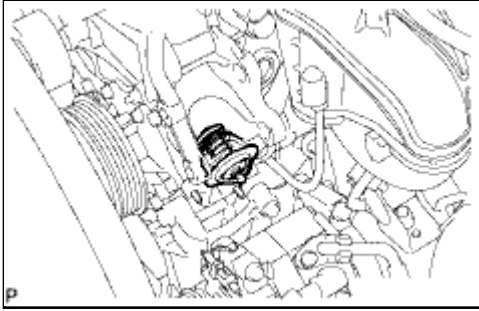
8. REMOVE WATER INLET



(a) Remove the bolt, 2 nuts and water inlet.

(b) Remove the gasket from the timing chain cover.

9. REMOVE THERMOSTAT



(a) Remove the thermostat from the timing chain cover.

(b) Remove the gasket from the thermostat.



Last Modified: 5-10-2010	6.4 G	From: 200908
Model Year: 2010	Model: 4Runner	Doc ID: RM0000049S3001X
Title: 2TR-FE COOLING: THERMOSTAT: INSPECTION (2010 4Runner)		

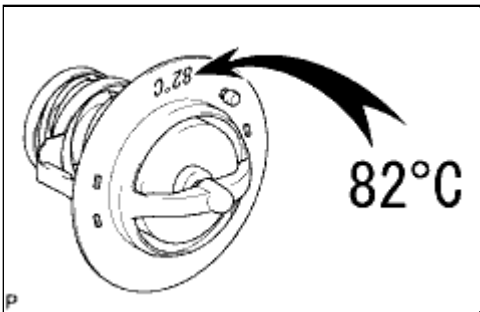
INSPECTION

1. INSPECT THERMOSTAT

HINT:

The valve opening temperature is inscribed on the thermostat.

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



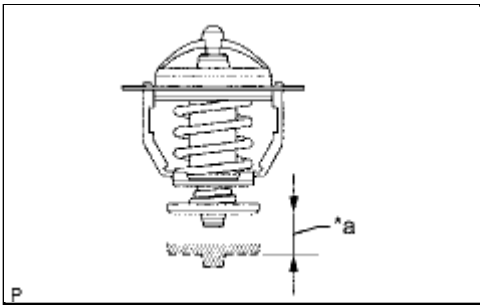
(b) Check the valve opening temperature of the thermostat.

Standard valve opening temperature:
80 to 84°C (176 to 183°F)

If the valve opening temperature is not as specified,
replace the thermostat.

(c) Check the valve lift.

Standard valve lift:
8.5 mm (0.335 in.) or more at 95°C (203°F)



Text in Illustration

*a	Valve Lift
----	------------

If the valve lift is not as specified, replace the thermostat.

(d) Check that the valve is fully closed when the thermostat is at low temperatures (below 77°C (171°F)).

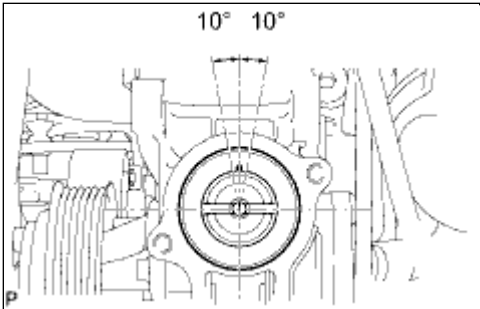
If the valve is not fully closed, replace the thermostat.

Last Modified: 5-10-2010	6.4 A	From: 200908
Model Year: 2010	Model: 4Runner	Doc ID: RM0000049SB001X
Title: 2TR-FE COOLING: THERMOSTAT: INSTALLATION (2010 4Runner)		

INSTALLATION

1. INSTALL THERMOSTAT

(a) Install a new gasket to the thermostat.



(b) Install the thermostat with the jiggle valve upward.

HINT:

The jiggle valve may be set within 10° of either side of the prescribed position.

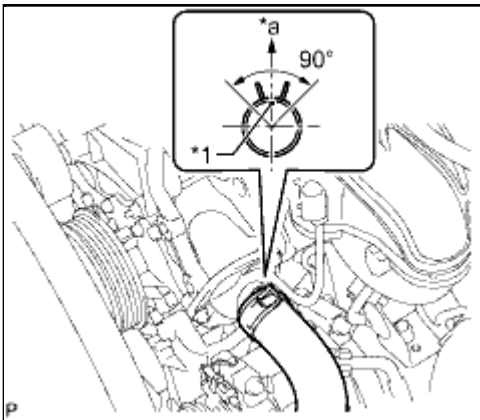
2. INSTALL WATER INLET

(a) Install a new gasket and the water inlet with the bolt and 2 nuts.

Torque: 28 N·m (286 kgf·cm, 21ft·lbf)

3. CONNECT NO. 2 RADIATOR HOSE

(a) Connect the No. 2 radiator hose to the water inlet.



Text in Illustration

*1	Paint Mark
*a	Upper

HINT:

Make sure the direction of the hose clamp is as shown in the illustration.

4. CONNECT VANE PUMP ASSEMBLY

INFO

5. INSTALL FAN AND GENERATOR V BELT

INFO

6. ADD ENGINE COOLANT

INFO

7. INSPECT FOR COOLANT LEAK

INFO

8. INSTALL NO. 1 ENGINE UNDER COVER SUB-ASSEMBLY



9. INSTALL FRONT BUMPER COVER LOWER



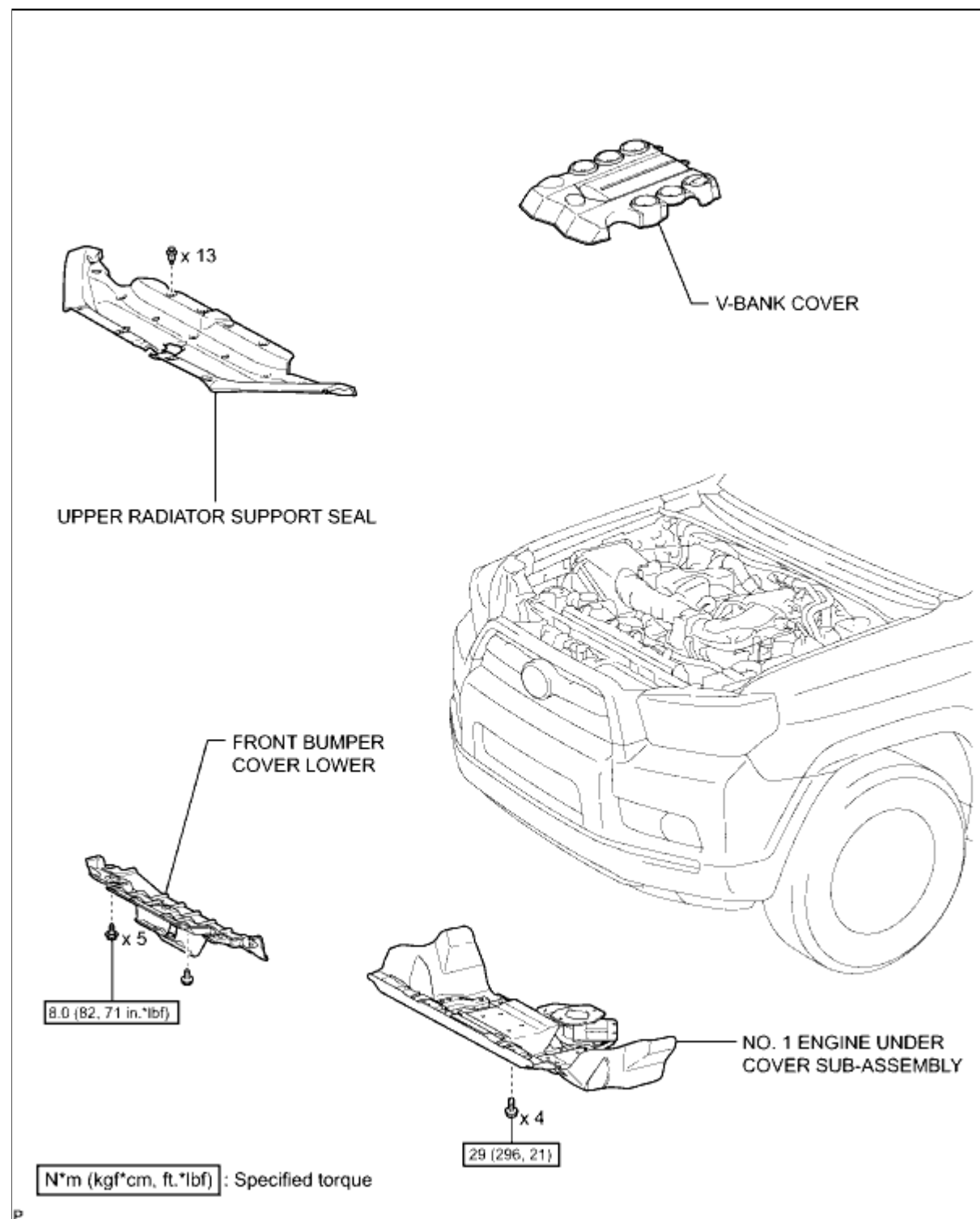
10. INSTALL UPPER RADIATOR SUPPORT SEAL



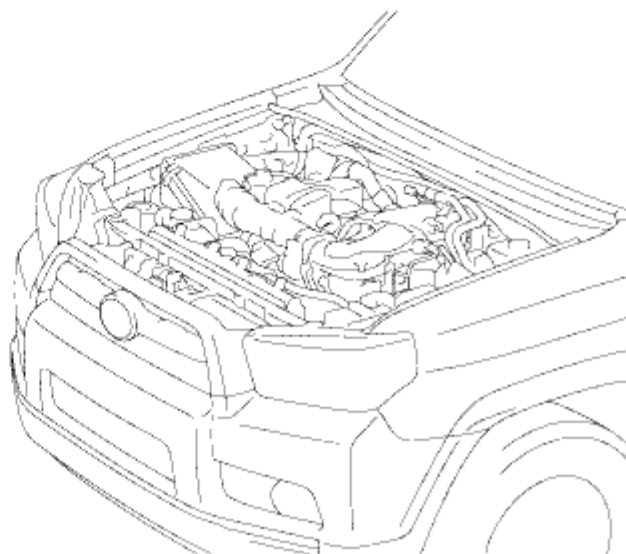
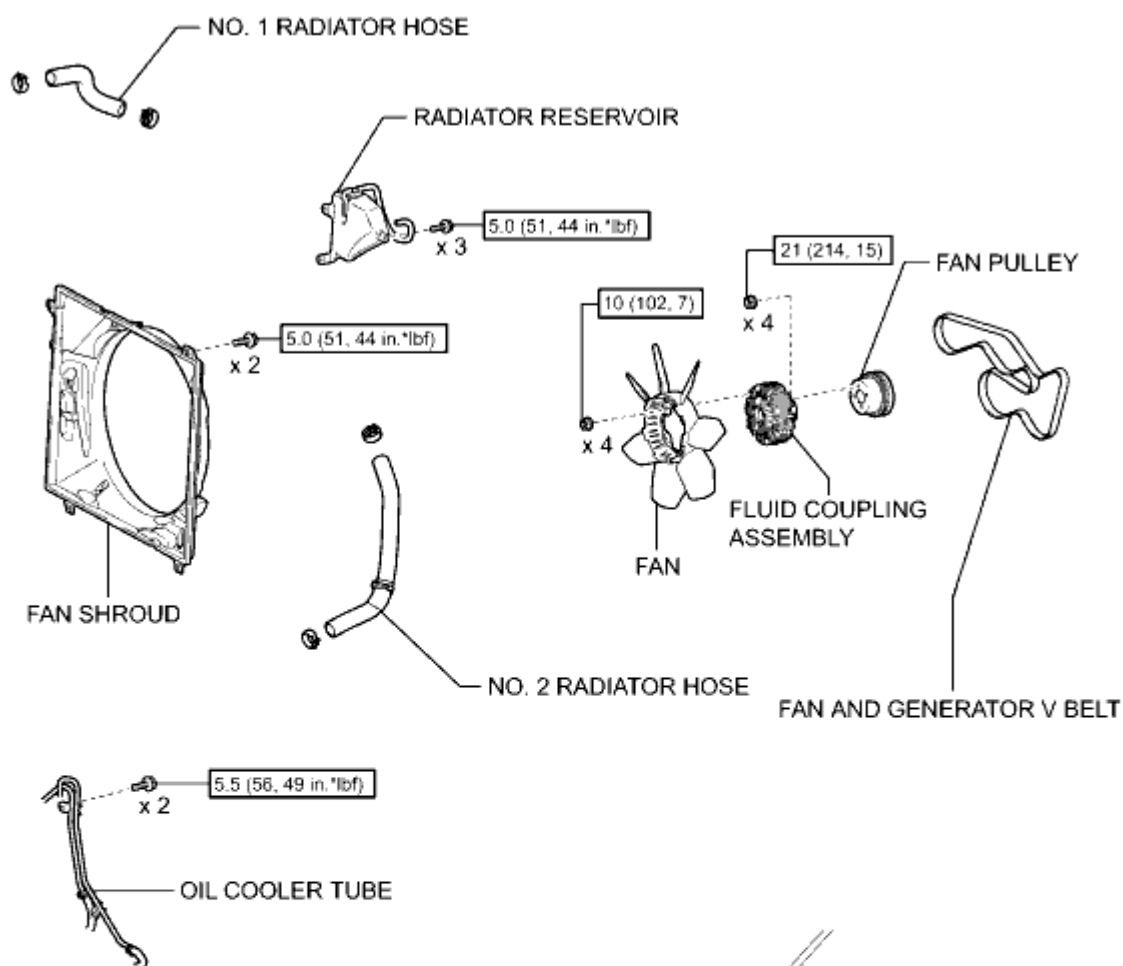
Last Modified: 5-10-2010	6.4 K	From: 200908
Model Year: 2010	Model: 4Runner	Doc ID: RM000002GUN009X
Title: 1GR-FE COOLING: WATER PUMP: COMPONENTS (2010 4Runner)		

COMPONENTS

ILLUSTRATION

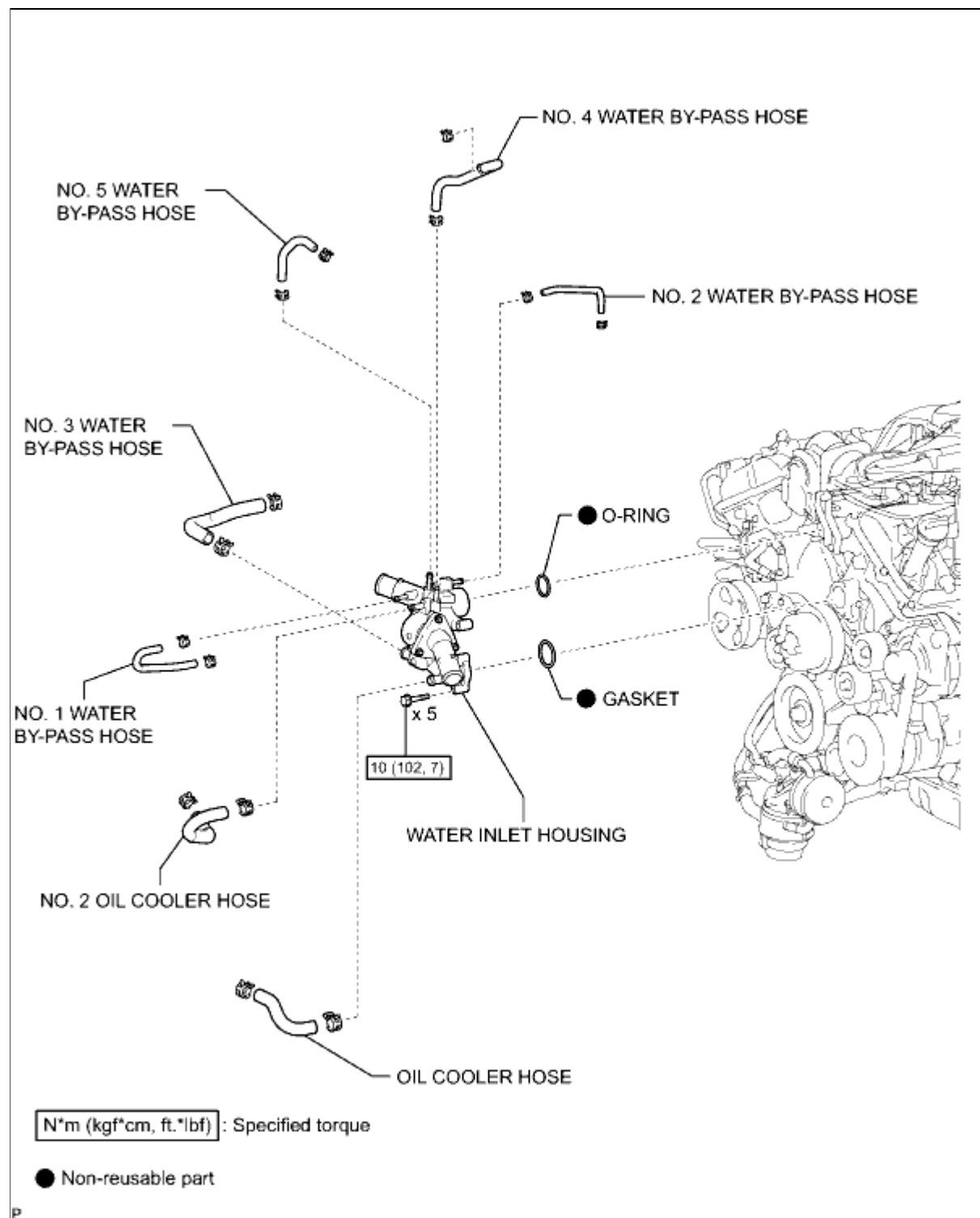


ILLUSTRATION



N*m (kgf*cm, ft.*lbf) : Specified torque

ILLUSTRATION



ILLUSTRATION

for Separate Type:

IDLER PULLEY COVER PLATE

54 (551, 40)

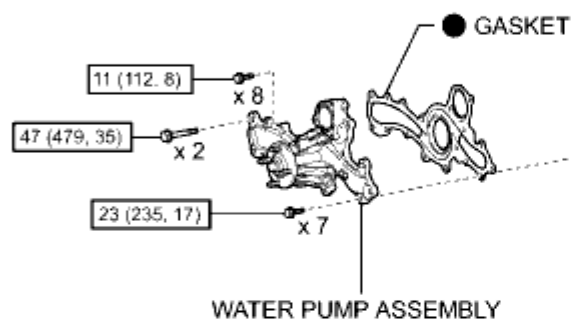
NO. 2 IDLER PULLEY COVER PLATE

NO. 2 IDLER PULLEY SUB-ASSEMBLY

for Integrated Type:

54 (551, 40)

NO. 2 IDLER PULLEY SUB-ASSEMBLY



VANE PUMP ASSEMBLY

43 (438, 32)

V-RIBBED BELT TENSIONER ASSEMBLY

x 4

36 (367, 27)

N*m (kgf*cm, ft.*lbf) : Specified torque

● Non-reusable part

P




TOYOTA

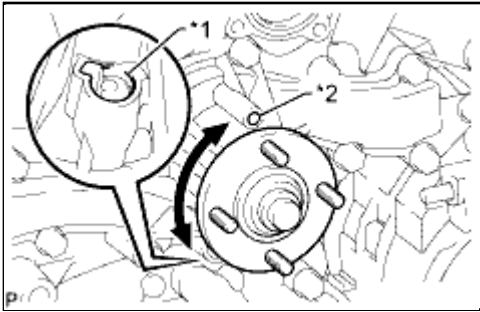
Last Modified: 5-10-2010	6.4 G	From: 200908
Model Year: 2010	Model: 4Runner	Doc ID: RM000000V1G01MX
Title: 1GR-FE COOLING: WATER PUMP: ON-VEHICLE INSPECTION (2010 4Runner)		

ON-VEHICLE INSPECTION

1. REMOVE FAN SHROUD

(a) Remove the fan shroud .

2. INSPECT WATER PUMP ASSEMBLY



(a) Visually check the air hole and water hole for coolant leakage.

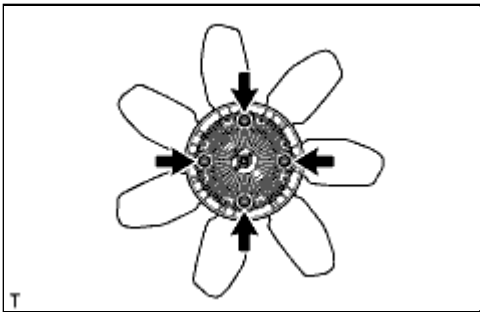
Text in Illustration

* 1	Water Hole
* 2	Air Hole

If leakage is found, replace the water pump assembly.

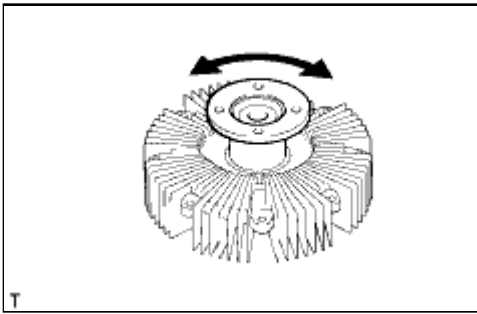
(b) Turn the pulley and check that the water pump bearing moves smoothly and quietly.
If necessary, replace the water pump assembly.

3. INSPECT FLUID COUPLING ASSEMBLY



(a) Remove the 4 nuts and fan.


(b) Check the fluid coupling for damage or silicon oil leaks.
If necessary, replace the fluid coupling.



(c) Install the fan with the 4 nuts.

Torque: 10 N·m (102 kgf·cm, 7ft·lbf)

4. INSTALL FAN SHROUD

(a) Install the fan shroud .

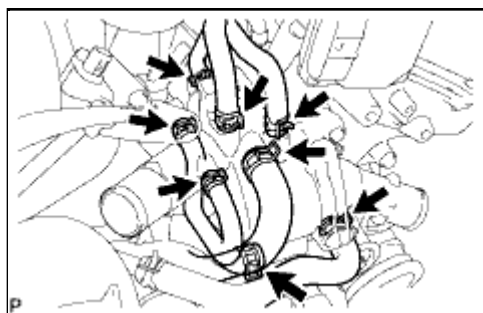


Last Modified: 5-10-2010	6.4 A	From: 200908
Model Year: 2010	Model: 4Runner	Doc ID: RM00000146000EX
Title: 1GR-FE COOLING: WATER PUMP: REMOVAL (2010 4Runner)		

REMOVAL

- 1. REMOVE UPPER RADIATOR SUPPORT SEAL** INFO
- 2. REMOVE FRONT BUMPER COVER LOWER** INFO
- 3. REMOVE NO. 1 ENGINE UNDER COVER SUB-ASSEMBLY** INFO
- 4. DRAIN ENGINE COOLANT** INFO
- 5. REMOVE V-BANK COVER** INFO
- 6. REMOVE NO. 1 RADIATOR HOSE** INFO
- 7. REMOVE NO. 2 RADIATOR HOSE** INFO
- 8. REMOVE RADIATOR RESERVOIR** INFO
- 9. DISCONNECT OIL COOLER TUBE** INFO
- 10. REMOVE FAN SHROUD** INFO
- 11. REMOVE WATER INLET HOUSING**

(a) Disconnect the throttle body connector.

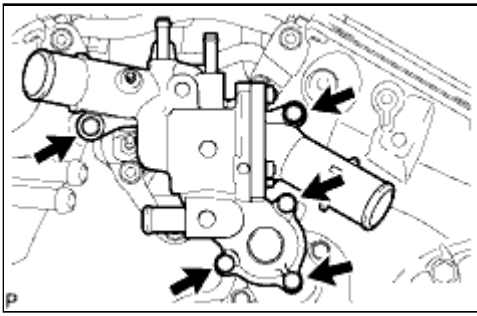


(b) Disconnect the 5 water by-pass hoses.

(c) Disconnect the oil cooler hose.

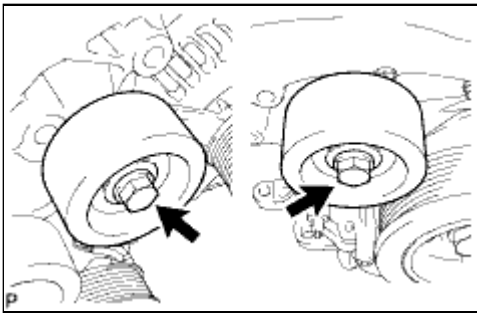
(d) Disconnect the No. 2 oil cooler hose.

(e) Remove the 5 bolts and water inlet.



(f) Remove the O-ring from the water outlet pipe.

(g) Remove the gasket from the water pump.



12. REMOVE NO. 2 IDLER PULLEY SUB-ASSEMBLY

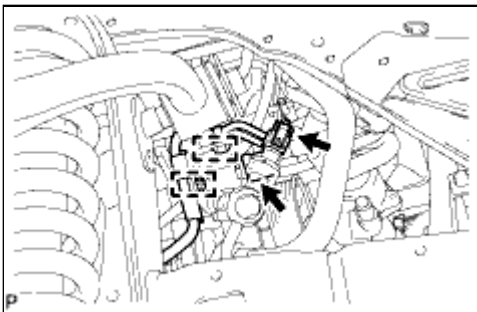
(a) for Separate Type:

Remove the 2 bolts, 2 idler pulley cover plates, 2 No. 2 idler pulleys and 2 No. 2 idler pulley cover plates.

(b) for Integrated Type:

Remove the 2 bolts and 2 No. 2 idler pulleys.

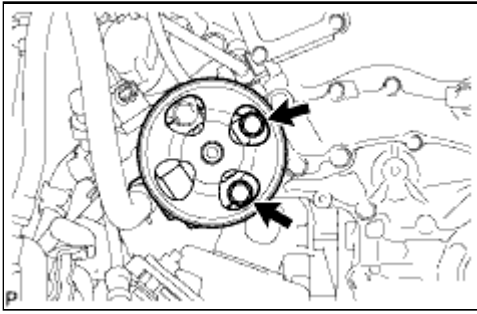
13. DISCONNECT VANE PUMP ASSEMBLY



(a) Disconnect the 2 connectors.

(b) Detach the 2 wire harness clamps.

(c) Remove the 2 bolts and disconnect the vane pump.



14. REMOVE GENERATOR ASSEMBLY

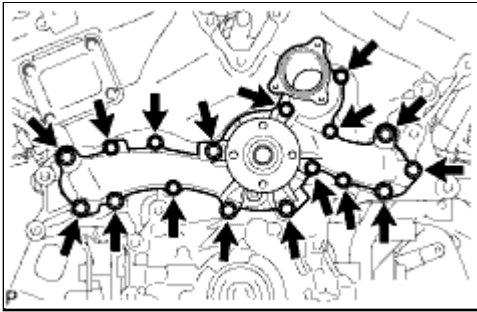
- (a) Remove the generator assembly [INFO](#) .

15. REMOVE COOLER COMPRESSOR ASSEMBLY

- (a) Remove the cooler compressor assembly (See page [INFO](#)).

16. REMOVE V-RIBBED BELT TENSIONER ASSEMBLY [INFO](#)

17. REMOVE WATER PUMP ASSEMBLY



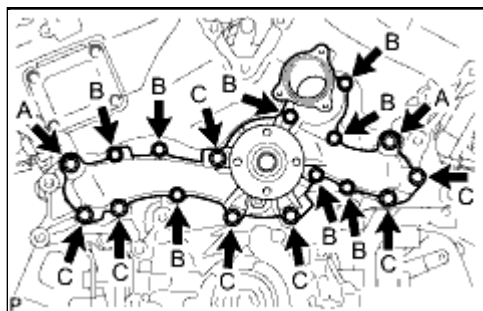
- (a) Remove the 17 bolts, water pump and gasket.



Last Modified: 5-10-2010	6.4 A	From: 200908
Model Year: 2010	Model: 4Runner	Doc ID: RM00000145X00EX
Title: 1GR-FE COOLING: WATER PUMP: INSTALLATION (2010 4Runner)		

INSTALLATION

1. INSTALL WATER PUMP ASSEMBLY



(a) Install a new gasket and the water pump with the 17 bolts.

for bolt A - Torque: 47 N·m (479 kgf·cm, 35ft·lbf)

for bolt B - Torque: 11 N·m (112 kgf·cm, 8ft·lbf)

for bolt C - Torque: 23 N·m (235 kgf·cm, 17ft·lbf)

2. INSTALL V-RIBBED BELT TENSIONER ASSEMBLY INFO

3. INSTALL COOLER COMPRESSOR ASSEMBLY

(a) Install the cooler compressor assembly INFO.

4. INSTALL GENERATOR ASSEMBLY

(a) Install the generator assembly INFO.

5. CONNECT VANE PUMP ASSEMBLY

(a) Connect the vane pump with the 2 bolts.

Torque: 43 N·m (438 kgf·cm, 32ft·lbf)

(b) Attach the 2 wire harness clamps.

(c) Connect the 2 connectors.

6. INSTALL NO. 2 IDLER PULLEY SUB-ASSEMBLY

(a) for Separate Type:

Install the 2 idler pulley cover plates, 2 No. 2 idler pulleys and 2 No. 2 idler pulley cover plates with the 2 bolts.

Torque: 54 N·m (551 kgf·cm, 40ft·lbf)

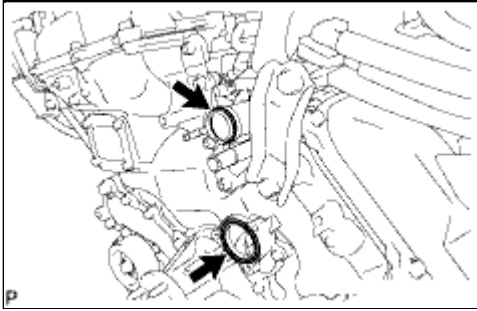
(b) for Integrated Type:

Install the 2 No. 2 idler pulleys with the 2 bolts.

Torque: 54 N·m (551 kgf·cm, 40ft·lbf)

7. INSTALL WATER INLET HOUSING

(a) Install a new O-ring to the water outlet pipe.



- (b) Install a new gasket to the water pump.
- (c) Apply soapy water to the gasket of the water outlet pipe.
- (d) Install the water inlet with the 5 bolts.

Torque: 10 N·m (102 kgf·cm, 7ft·lbf)

- (e) Connect the 5 water by-pass hoses.
- (f) Connect the No. 2 oil cooler hose.
- (g) Connect the oil cooler hose.
- (h) Connect the throttle body connector.

8. INSTALL FAN SHROUD [INFO](#)

9. CONNECT OIL COOLER TUBE [INFO](#)

10. INSTALL RADIATOR RESERVOIR [INFO](#)

11. INSTALL NO. 2 RADIATOR HOSE [INFO](#)

12. INSTALL NO. 1 RADIATOR HOSE [INFO](#)

13. INSTALL V-BANK COVER [INFO](#)

14. ADD ENGINE COOLANT [INFO](#)

15. INSPECT FOR ENGINE COOLANT LEAK [INFO](#)

16. INSTALL NO. 1 ENGINE UNDER COVER SUB-ASSEMBLY [INFO](#)

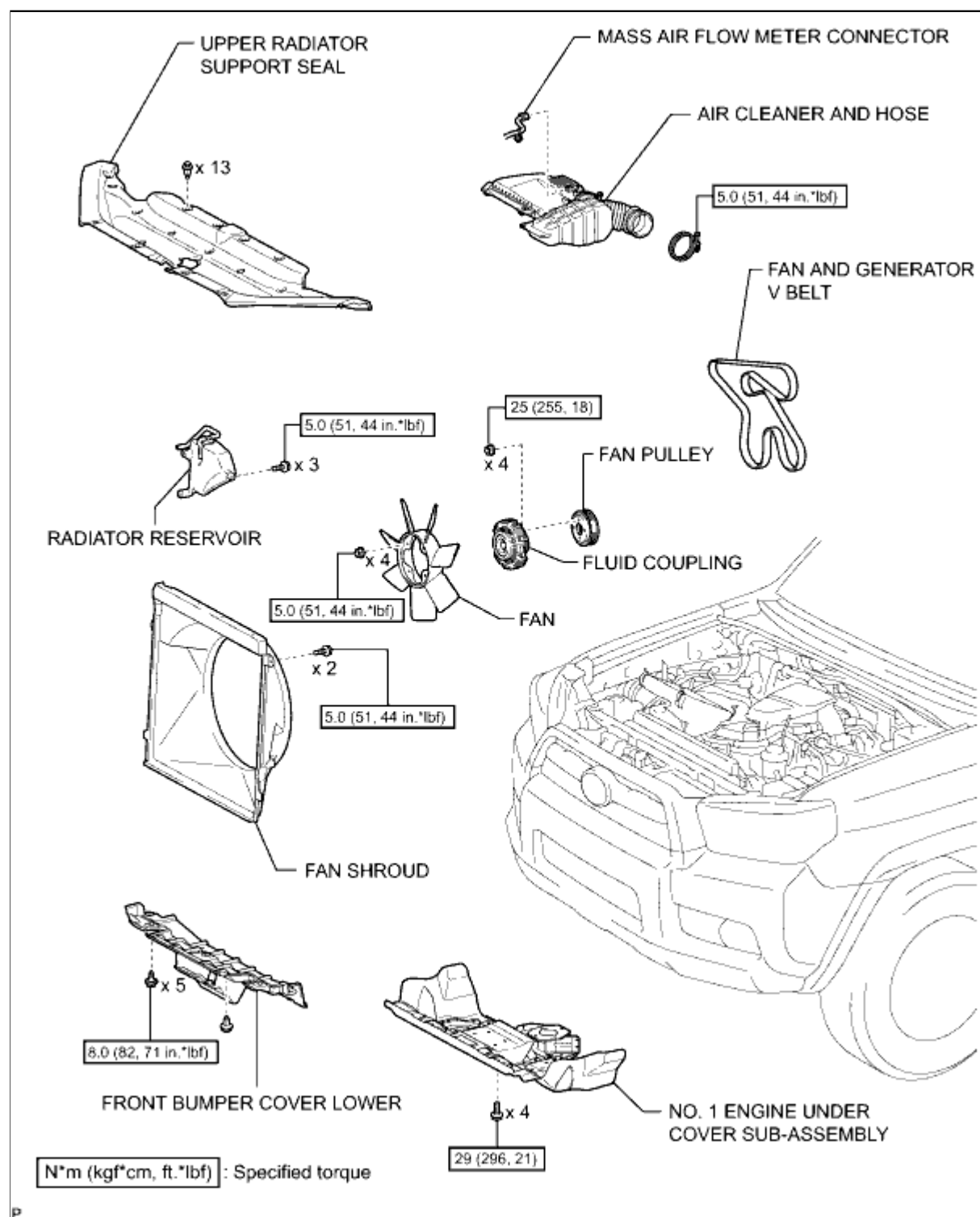
17. INSTALL FRONT BUMPER COVER LOWER [INFO](#)

18. INSTALL UPPER RADIATOR SUPPORT SEAL [INFO](#)

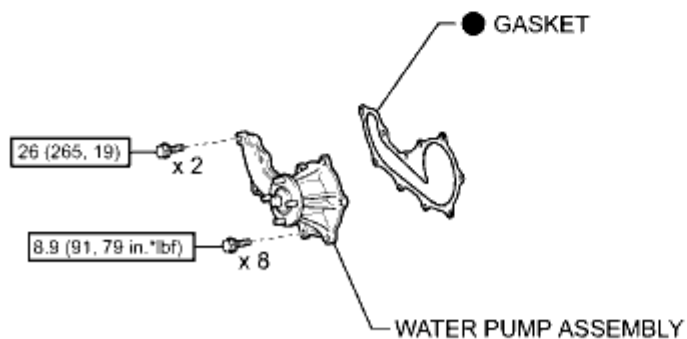
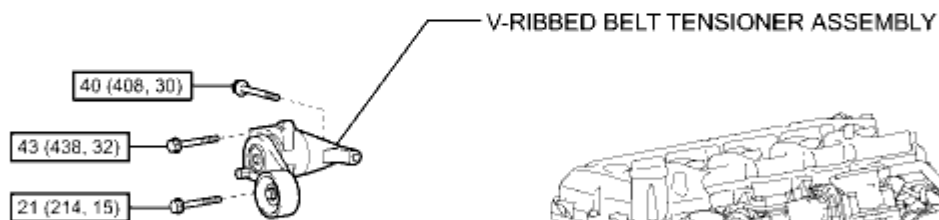
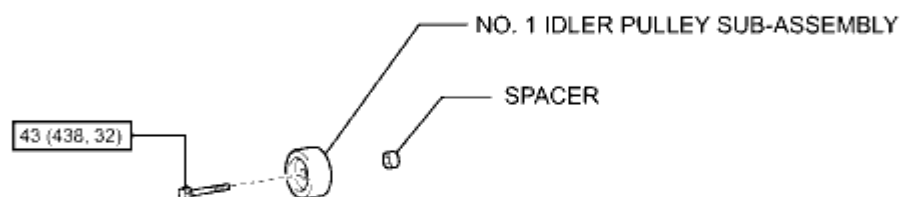
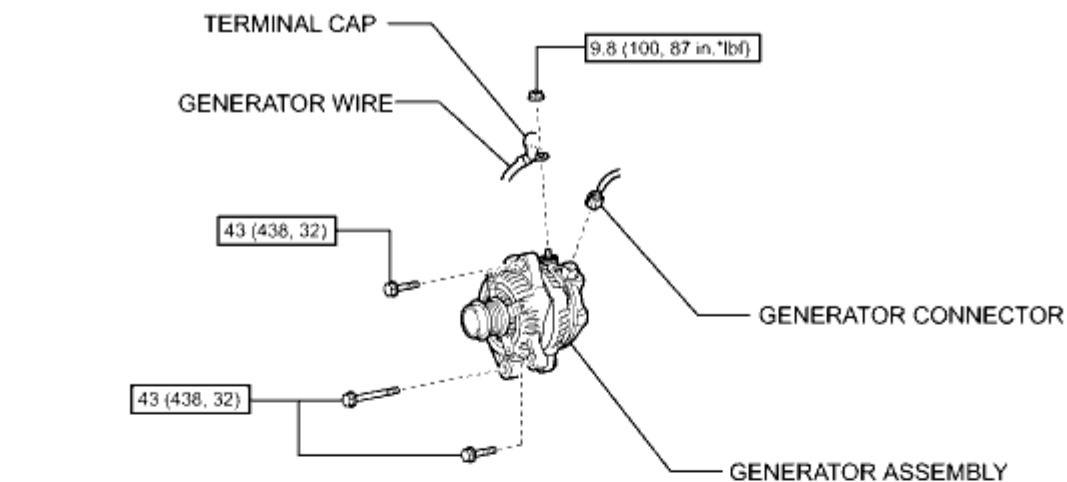
Last Modified: 5-10-2010	6.4 K	From: 200908
Model Year: 2010	Model: 4Runner	Doc ID: RM0000049S0001X
Title: 2TR-FE COOLING: WATER PUMP: COMPONENTS (2010 4Runner)		

COMPONENTS

ILLUSTRATION



ILLUSTRATION



N*m (kgf*cm, ft.*lbf) : Specified torque

● Non-reusable part

P

Last Modified: 5-10-2010	6.4 G	From: 200908
Model Year: 2010	Model: 4Runner	Doc ID: RM0000049S2001X
Title: 2TR-FE COOLING: WATER PUMP: ON-VEHICLE INSPECTION (2010 4Runner)		

ON-VEHICLE INSPECTION

1. INSPECT FOR COOLANT LEAK

HINT:

Perform this inspection when the engine is cold.

(a) Visually inspect the engine compartment for the following conditions:


- (1) There is a large amount of coolant in the engine compartment or on the underside of the hood near the fan and generator V belt.
- (2) Liquid coolant is dripping from around the water pump.
- (3) The coolant level in the reservoir is below the L line and there are traces of leakage around the water pump.

If any of the above conditions exist, replace the water pump assembly.

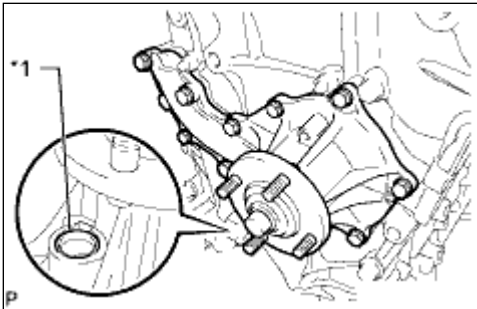
(b) Inspect the area around the water pump.

HINT:

Check for deposits around the drain plug of the water pump.

(1) Remove the fan shroud .

(2) Press a piece of paper towel against the drain plug or deposits on the lip of the drain plug and check that the paper towel is not wet.



Text in Illustration

*1	Drain Plug
----	------------

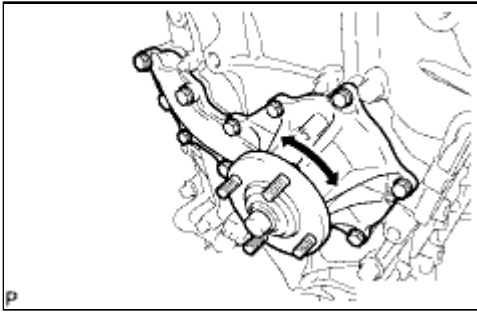
If the paper towel is wet, replace the water pump assembly.

If the paper towel is not wet, thoroughly clean the area around the water pump.

2. INSPECT WATER PUMP ASSEMBLY

(a) Turn the pulley and check that the water pump bearing moves smoothly and quietly.

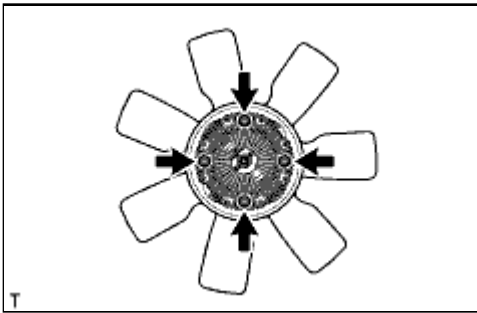
If necessary, replace the water pump assembly.



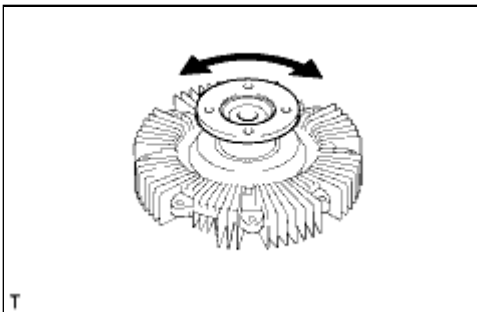
(b) Install the fan shroud INFO.

3. INSPECT FLUID COUPLING ASSEMBLY

(a) Remove the fan shroud INFO.



(b) Remove the 4 nuts and fan.



(c) Check the fluid coupling for damage or silicon oil leaks.
If necessary, replace the fluid coupling assembly.

(d) Install the fan with the 4 nuts.

Torque: 5.0 N·m (51 kgf·cm, 44in·lbf)

(e) Install the fan shroud INFO.



Last Modified: 5-10-2010	6.4 A	From: 200908
Model Year: 2010	Model: 4Runner	Doc ID: RM0000049S1001X
Title: 2TR-FE COOLING: WATER PUMP: REMOVAL (2010 4Runner)		

REMOVAL

1. DISCONNECT CABLE FROM NEGATIVE BATTERY TERMINAL

NOTICE:

When disconnecting the cable, some systems need to be initialized after the cable is reconnected

INFO

2. REMOVE UPPER RADIATOR SUPPORT SEAL

INFO

3. REMOVE FRONT BUMPER COVER LOWER

INFO

4. REMOVE NO. 1 ENGINE UNDER COVER SUB-ASSEMBLY

INFO

5. DRAIN ENGINE COOLANT

INFO

6. REMOVE RADIATOR RESERVOIR

INFO

7. REMOVE FAN SHROUD

INFO

8. REMOVE AIR CLEANER AND HOSE

INFO

9. REMOVE GENERATOR ASSEMBLY

INFO

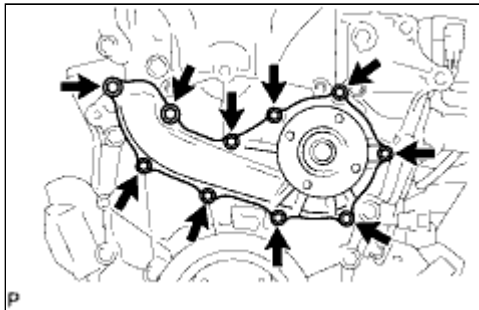
10. REMOVE NO. 1 IDLER PULLEY SUB-ASSEMBLY

INFO

11. REMOVE V-RIBBED BELT TENSIONER ASSEMBLY

INFO

12. REMOVE WATER PUMP ASSEMBLY



(a) Remove the 10 bolts, water pump and gasket.



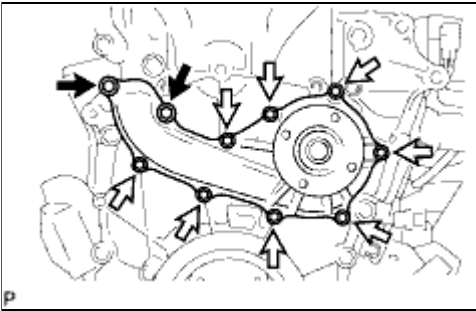
TOYOTA

Last Modified: 5-10-2010	6.4 A	From: 200908
Model Year: 2010	Model: 4Runner	Doc ID: RM0000049RZ001X
Title: 2TR-FE COOLING: WATER PUMP: INSTALLATION (2010 4Runner)		

INSTALLATION

1. INSTALL WATER PUMP ASSEMBLY

(a) Install a new gasket and the water pump with the 10 bolts.



for bolt A - Torque: 26 N·m (265 kgf·cm, 19ft·lbf)
for bolt B - Torque: 8.9 N·m (91 kgf·cm, 79in·lbf)

Text in Illustration

	for Bolt A
	for Bolt B

2. INSTALL V-RIBBED BELT TENSIONER ASSEMBLY



3. INSTALL NO. 1 IDLER PULLEY SUB-ASSEMBLY



4. INSTALL GENERATOR ASSEMBLY



5. INSTALL AIR CLEANER AND HOSE



6. INSTALL FAN SHROUD



7. INSTALL RADIATOR RESERVOIR



8. CONNECT CABLE TO NEGATIVE BATTERY TERMINAL

NOTICE:

When disconnecting the cable, some systems need to be initialized after the cable is reconnected



9. ADD ENGINE COOLANT



10. INSPECT FOR COOLANT LEAK



11. INSTALL NO. 1 ENGINE UNDER COVER SUB-ASSEMBLY



12. INSTALL FRONT BUMPER COVER LOWER



13. INSTALL UPPER RADIATOR SUPPORT SEAL

