

OIL COOLER > INSTALLATION

for Preparation [Click here](#)

1. INSTALL OIL COOLER ASSEMBLY (w/ Off Road Package)

- a. Install the 2 oil cooler brackets with the 2 bolts.

Torque:

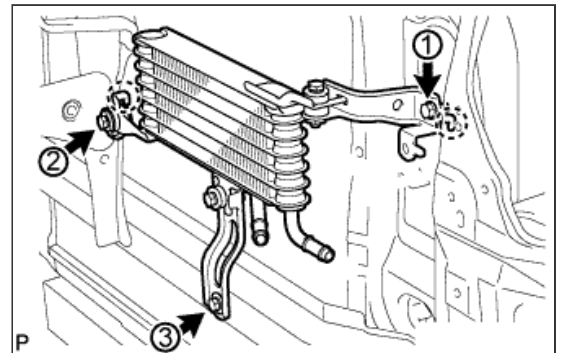
5.5 N*m { 56 kgf*cm , 49 in.*lbf }

- b. Attach the claws of the oil cooler to the hole of the radiator support and the center brace in that order to install the oil cooler.

- c. Install the 3 bolts and tighten the bolts in the order shown in the illustration.

Torque:

5.5 N*m { 56 kgf*cm , 49 in.*lbf }



2. INSTALL NO. 3 OIL COOLER TUBE SUB-ASSEMBLY (w/ Off Road Package)

- a. Pass the No. 3 oil cooler tube through the hole of the radiator support from the rear of the vehicle and install it to the oil cooler bracket with the bolt.

Torque:

5.5 N*m { 56 kgf*cm , 49 in.*lbf }

3. INSTALL NO. 5 OIL COOLER INLET HOSE AND NO. 5 OIL COOLER OUTLET HOSE (w/ Off Road Package)

- a. Connect the No. 5 oil cooler inlet hose and No. 5 oil cooler outlet hose to the oil cooler.

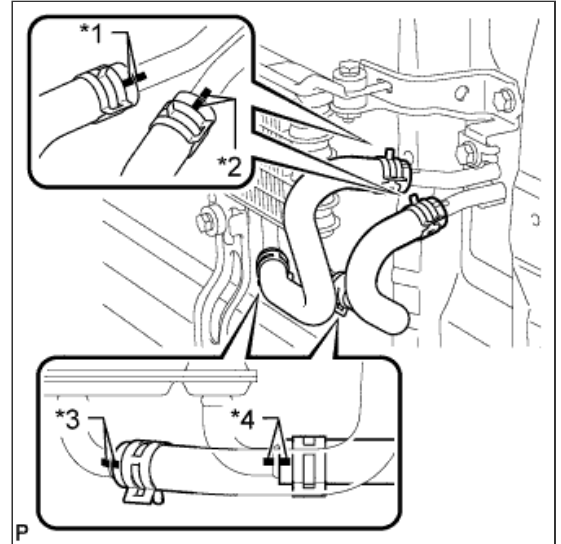
Text in Illustration

*1	Blue Paint Mark
*2	Pink Paint Mark
*3	Yellow Paint Mark
*4	White Paint Mark

- b. Connect the 2 hoses to the No. 3 oil cooler tube to install them.

NOTICE:

Make sure the pinching portion of each clip is facing the direction shown in the illustration and the paint marks are aligned as shown in the illustration.



4. INSTALL NO. 2 OIL COOLER TUBE SUB-ASSEMBLY

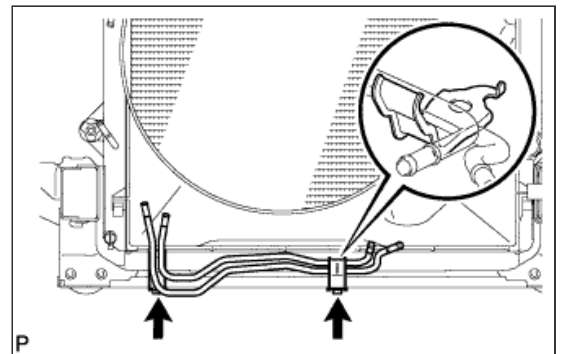
- a. Install the No. 2 oil cooler tube with the 2 bolts.

Torque:

14 N*m { 143 kgf*cm , 10 ft.*lbf }

NOTICE:

Make sure the rotation stopper of the tube contacts the crossmember.



5. INSTALL NO. 6 OIL COOLER OUTLET HOSE (w/ Off Road Package)

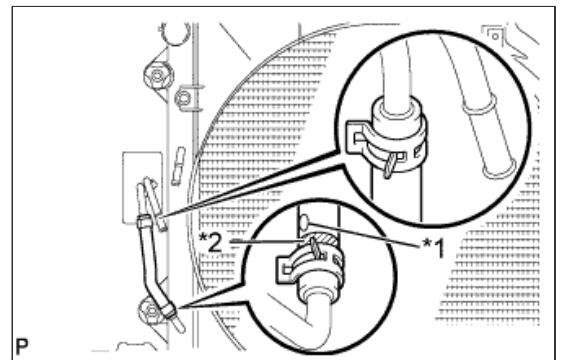
- a. Connect the No. 6 oil cooler outlet hose to the radiator and No. 3 oil cooler tube to install it.

Text in Illustration

*1	Yellow Paint Mark
*2	White Paint Mark

NOTICE:

- When connecting the hose to the tube, support the tube by hand and be careful to prevent the tube from being deformed.
- Make sure the paint mark and pinching portion of each clip are facing the directions shown in the illustration.



6. INSTALL NO. 4 OIL COOLER INLET HOSE AND NO. 4 OIL COOLER OUTLET HOSE (w/ Off Road Package)

a. Connect the No. 4 oil cooler inlet hose and No. 4 oil cooler outlet hose to the No. 2 oil cooler tube.

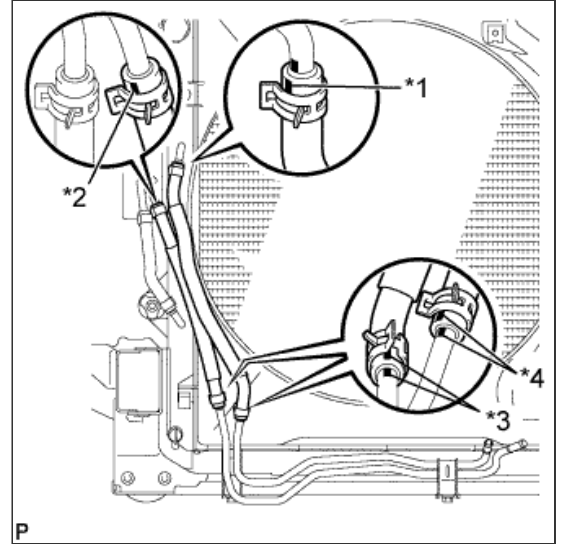
b. Connect the 2 hoses to the radiator and No. 3 oil cooler tube to install them.

Text in Illustration

*1	Yellow Paint Mark
*2	White Paint Mark
*3	Pink Paint Mark
*4	Blue Paint Mark

NOTICE:

- When connecting the hose to the tube, support the tube by hand and be careful to prevent the tube from being deformed.
- Make sure the paint mark and pinching portion of each clip are facing the directions shown in the illustration.



7. INSTALL OIL COOLER ACCESSORY ASSEMBLY

a. Connect the 2 hoses to the No. 2 oil cooler tube.

NOTICE:

When connecting the hoses to the tube, support the tube by hand and be careful to prevent the tube from being deformed.

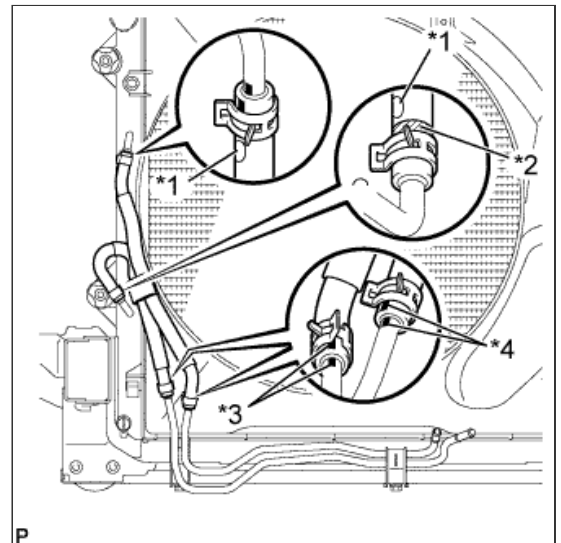
b. Connect the 2 hoses to the radiator to install the oil cooler accessory.

Text in Illustration

*1	Yellow Paint Mark
*2	White Paint Mark
*3	Pink Paint Mark
*4	Blue Paint Mark

NOTICE:

Make sure the paint mark and pinching portion of each clip are facing the directions shown in the illustration.



8. INSTALL NO. 1 OIL COOLER INLET TUBE AND NO. 1 OIL COOLER OUTLET TUBE

- a. Install the 2 No. 2 flexible hose clamps with the 2 bolts.

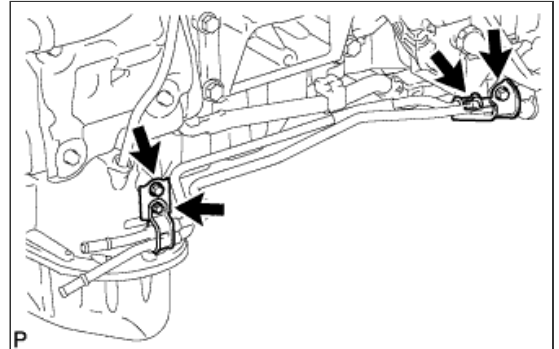
Torque:

14 N*m { 143 kgf*cm , 10 ft.*lbf }

- b. Install the No. 1 oil cooler inlet tube and No. 1 oil cooler outlet tube and close the 2 No. 2 flexible hose clamps with the 2 bolts.

Torque:

5.5 N*m { 56 kgf*cm , 49 in.*lbf }



9. INSTALL NO. 3 OIL COOLER INLET HOSE AND NO. 3 OIL COOLER OUTLET HOSE

- a. Connect the No. 3 oil cooler inlet hose and No. 3 oil cooler outlet hose to the No. 1 oil cooler inlet tube and No. 1 oil cooler outlet tube.

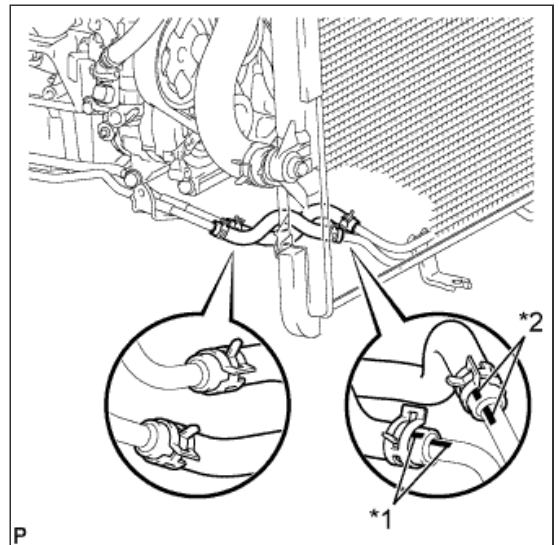
Text in Illustration

*1	Blue Paint Mark
*2	Pink Paint Mark

- b. Connect the 2 hoses to the No. 2 oil cooler tube to install them, and then pass the 2 hoses through the No. 1 flexible hose clamp and close the clamp.

NOTICE:

- **When connecting the hoses to the tube, support the tube by hand and be careful to prevent the tube from being deformed.**
- **Make sure the paint marks and pinching portion of each clip are facing the directions shown in the illustration.**



10. INSTALL TRANSMISSION OIL COOLER ASSEMBLY

- a. Coat 2 new O-rings with ATF and install the O-rings to the grooves of the transmission oil cooler.

Text in Illustration

--	--

*1 New O-Ring

- b. Align the transmission oil cooler with the transmission oil thermostat and assemble them with the 3 bolts.

Torque:

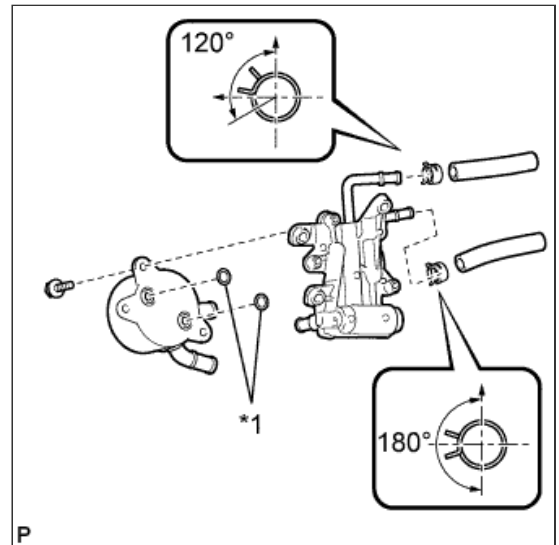
14 N*m { 143 kgf*cm , 10 ft.*lbf }

- c. Connect the No. 1 oil cooler inlet hose and No. 1 oil cooler outlet hose to the transmission oil thermostat.

NOTICE:

Make sure the pinching portion of each clip is facing the direction shown in the illustration.

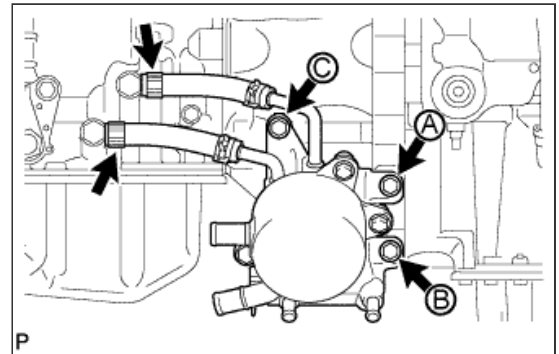
- d. Connect the 2 hoses to the oil cooler tube unions.



- e. Temporarily install the transmission oil cooler together with the transmission oil thermostat with bolt A. Install bolts B and C and tighten them to the specified torque. Then tighten bolt A to the specified torque.

Torque:

21 N*m { 214 kgf*cm , 15 ft.*lbf }



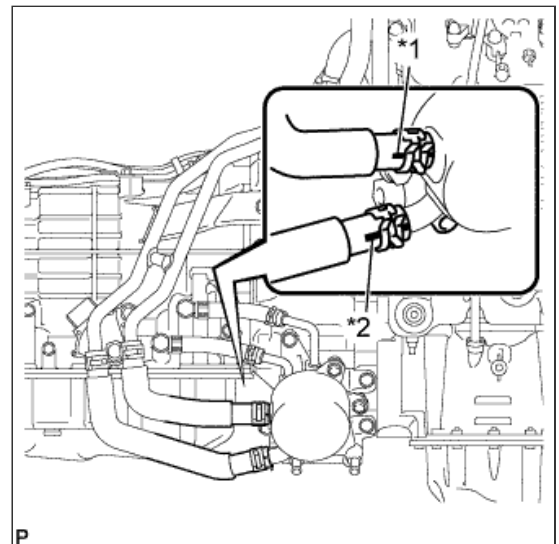
- f. Connect the 2 water by-pass hoses to the transmission oil cooler.

Text in Illustration

*1	White Paint Mark
*2	Blue Paint Mark

NOTICE:

- Make sure the pinching portion of each clip is facing the direction shown in the illustration.
- Make sure the paint mark of each hose is facing outward.



11. INSTALL NO. 2 OIL COOLER INLET HOSE AND NO. 2 OIL COOLER OUTLET HOSE

- a. Connect the No. 2 oil cooler inlet hose and No. 2 oil cooler outlet hose to the transmission oil thermostat.

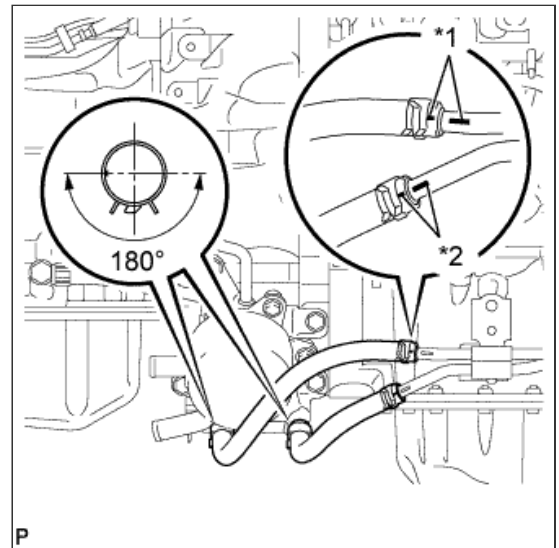
Text in Illustration

*1	Blue Paint Mark
*2	Pink Paint Mark

- b. Connect the 2 hoses to the No. 1 oil cooler inlet tube and No. 1 oil cooler outlet tube to install them.

NOTICE:

- Make sure the pinching portion of each clip is facing the direction shown in the illustration.
- Make sure the paint mark of each hose is facing outward.



12. INSTALL FRONT EXHAUST PIPE ASSEMBLY

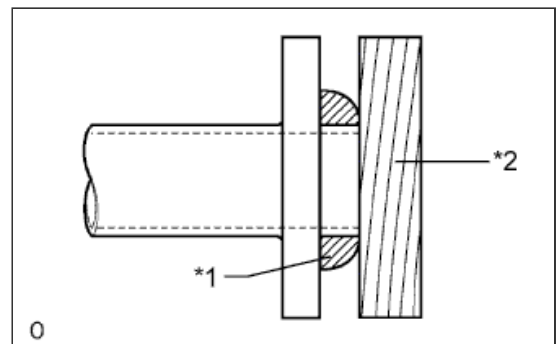
- a. Using a plastic-faced hammer and wooden block, tap in a new gasket until its surface is flush with the front exhaust pipe.

Text in Illustration

*1	Gasket
*2	Wooden Block

NOTICE:

- Be sure to install the gasket so that it faces the correct direction.
- Do not reuse the gasket.
- Do not damage the gasket.
- When connecting the exhaust pipe, do not push in the gasket with the exhaust pipe.



- b. Install a new gasket and the front exhaust pipe to the exhaust manifold RH with 2 new nuts.

Torque:

54 N*m { 554 kgf*cm , 40 ft.*lbf }

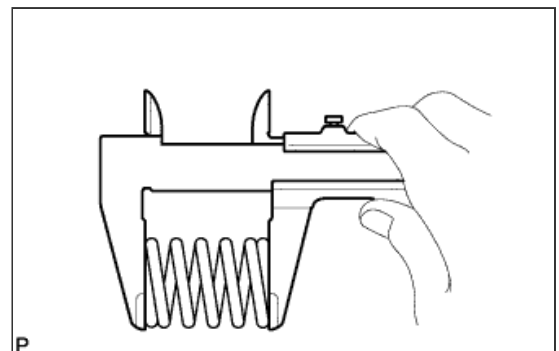
- c. Using a vernier caliper, measure the free length of the compression spring.

Minimum free length:

42 mm (1.65 in.)

If the free length is less than the minimum, replace the compression spring.

- d. Connect the front exhaust pipe to the center exhaust pipe with the 2 compression springs and 2 bolts.



Torque:

43 N*m{ 438 kgf*cm , 32 ft.*lbf }

- e. Connect the heated oxygen sensor connector.

HINT:

Hook the wire harness to the bracket.

13. ADD ENGINE COOLANT

- a. Add engine coolant.

Standard Capacity:

15.4 liters (16.3 US qts, 13.6 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.**
- b. Slowly pour coolant into the radiator reservoir until it reaches the F line.
- c. Install the reservoir cap.
- d. Install the radiator cap.*1
- e. Start the engine and stop it immediately.*2
- f. 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
- g. 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.

- h. Install the radiator cap.*4
- i. Set the air conditioning as follows.*5

Item	Condition
Fan speed	Any setting except off
Temperature	Toward WARM
Air conditioning switch	Off

- j. 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.**

- k. 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.

- l. If the coolant level has decreased, add coolant and warm up the engine until the thermostat opens.*8
- m. 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.

14. ADJUST AUTOMATIC TRANSMISSION FLUID LEVEL

- a. Adjust the automatic transmission fluid level ([Click here](#)).

15. INSPECT FOR COOLANT LEAK

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. 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 118 kPa (1.2 kgf/cm², 17 psi), and check that the pressure does not drop. If the pressure drops, check the hoses, radiator and water pump for leaks. If no external leaks are found, check the heater core, cylinder block and head.

16. INSTALL FRONT BUMPER COVER (w/ Off Road Package)

a. Install the front bumper cover ([Click here](#)).

17. INSTALL FRONT NO. 1 FENDER APRON TO FRAME SEAL RH

a. Install the front No. 1 fender apron to frame seal RH with the 5 clips.

18. INSTALL FRONT FENDER APRON SEAL RH

a. Install the front fender apron seal RH with the 4 clips.

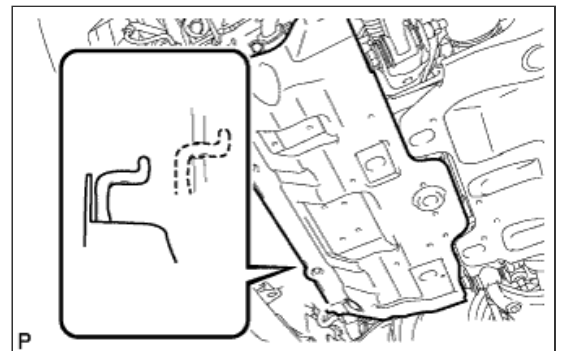
19. INSTALL NO. 1 ENGINE UNDER COVER SUB-ASSEMBLY

a. Hook the No. 1 engine under cover to the vehicle body as shown in the illustration.

b. Install the 4 bolts.

Torque:

29 N*m{ 296 kgf*cm , 21 ft.*lbf }



20. INSTALL REAR ENGINE UNDER COVER ASSEMBLY

a. Install the rear engine under cover with the 4 bolts.

Torque:

29 N*m{ 296 kgf*cm , 21 ft.*lbf }

