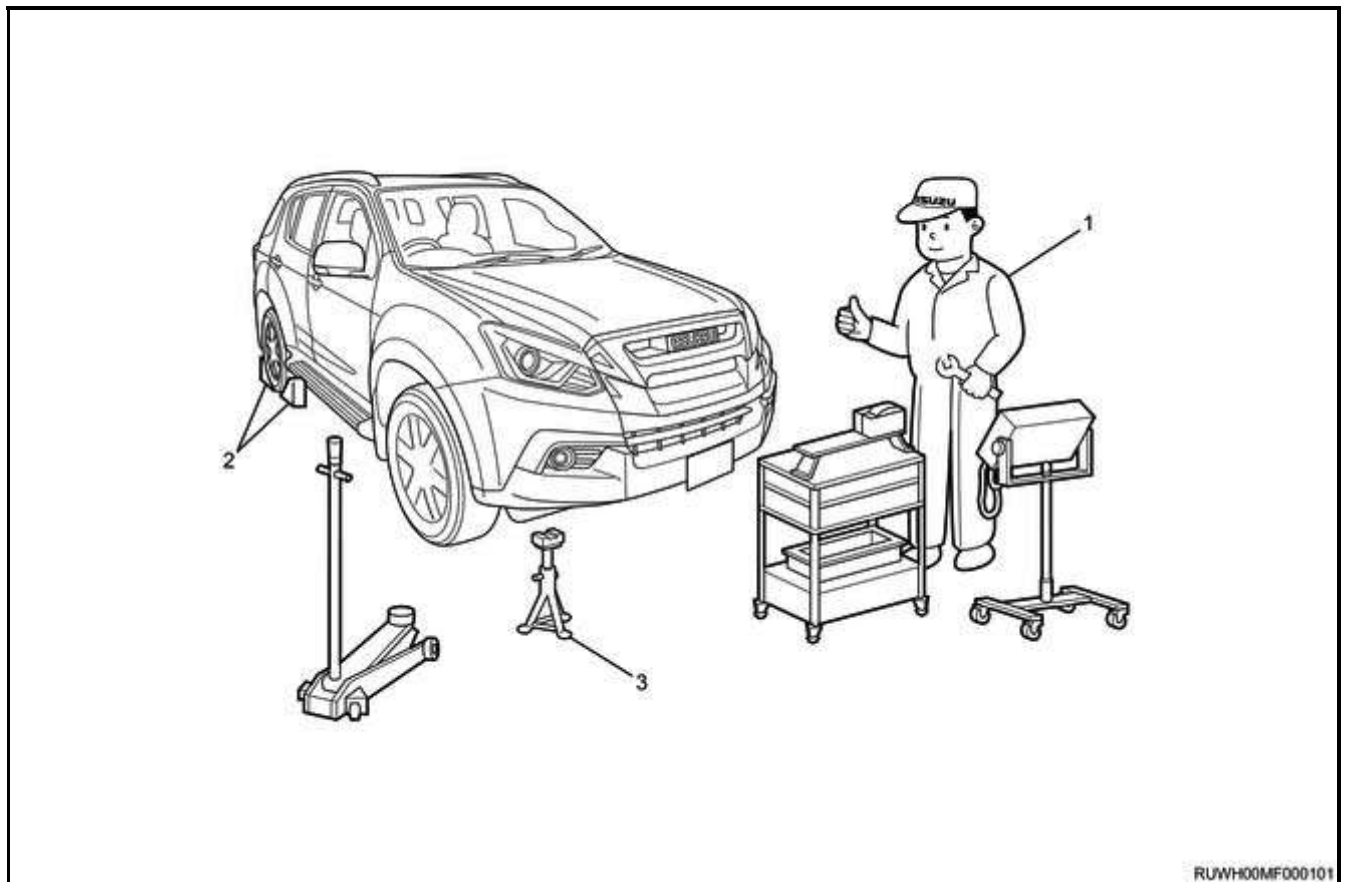




RUWH00MF000101

Legend

1. Clean and safe work clothes
2. Installation of chock blocks
3. Support using a rigid rack after jacking up vehicle

Caution

- Prepare tools, instruments, and special tools in advance.
- Prepare the parts that require replacements and parts that cannot be re-used in advance.
- The service technician must wear a clean service technician uniform, hat, and safety footwear.
- Make sure to use a seat cover, etc.
- Disconnect the negative terminal of the battery cable in advance.
- Always remember to perform operations in a safe manner.
- Make sure to use chock blocks when the vehicle is jacked up.
- After jacking up, make sure to support the specified position using a rigid rack.
- When lifting up the vehicle using a lift, make sure to set the safety device.
- When performing a procedure with two or more people, make sure to ensure each other's safety before performing an action.
- Do not leave the engine running for an extended period of time or perform painting in a poorly ventilated working environment.
- Make sure to use the special tools if the procedure requires them for the work.
- Do not use tools such as a wrench that has lost its edges, a hammer with frayed edges, or a chipped chisel.
- When performing work using a device such as a grinder, crane, or welder, make sure that a qualified technician performs the procedure while paying sufficient attention to the handling precautions.
- When performing maintenance on the fuel system, make sure to check that there is no fuel leakage.

Contents included in service information

1. Contents included in service information

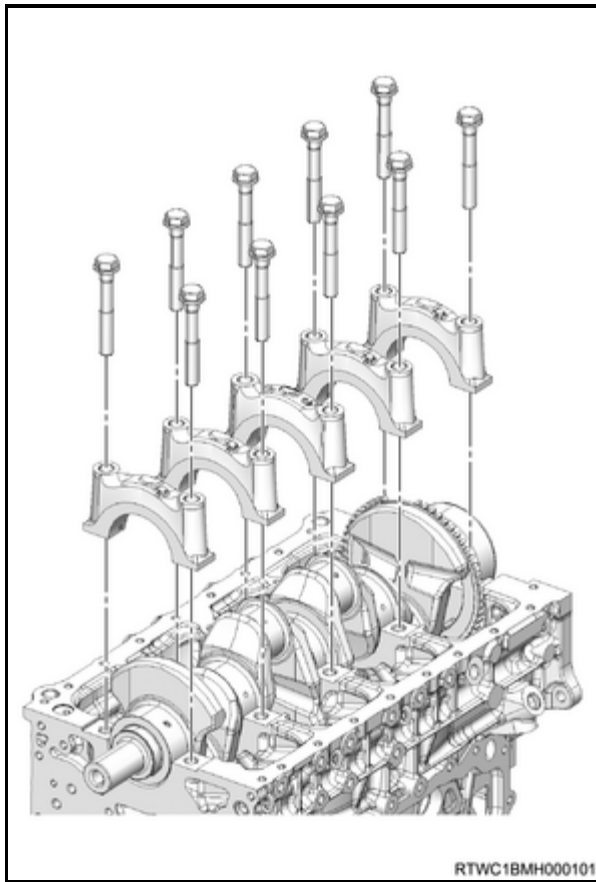
- Removal
Includes the removal procedure when repairing parts, devices, etc.
- Installation
Includes the installation procedure when repairing parts, devices, etc.
- Disassembly
Includes the disassembly procedure when overhauling a unit, assembly part, etc.
- Assembly
Includes the assembly procedure when overhauling a unit, assembly part, etc.
- Inspection
Includes inspection items for parts requiring inspection to ensure continued performance of parts, devices, etc.
Values are listed for parts whose standard values, setting values, and use conditions have been determined.
- Cleaning
Includes the cleaning procedure for parts, devices, etc.
- Preparation
Includes the preparatory procedure necessary before removing parts, devices, etc.
- Adjustment
Includes the adjustment procedure if adjustment to the setting values or standard values is necessary when performing assembly or installation.
- Measurement
Includes the measurement procedure for determining if the installation position of parts is correct, etc.
- Drain
Includes the draining procedure for oil, etc.
- Refill
Includes the refilling procedure for oil, etc.
- Air removal
Includes the air removal procedure when air removal is necessary after changing oil, etc.
- Writing
Includes the writing procedure necessary when replacing the ECM or supply pump.
- Precaution
Includes the maintenance precautions specific to each item.
- Disconnection
Includes the disconnection procedures for wiring, piping, etc.
- Connection
Includes the connection procedures for wiring, piping, etc.
- Setting
Includes the setting procedure necessary when replacing the ECM, etc.
- Replacement
Includes the procedure for replacing parts, changing oil, etc.
- Prioritized DTC
Includes DTCs which should be prioritized for each DTC code.
- Diagnosis
Includes the diagnostic procedure for troubleshooting symptoms.
DTCs are listed in order of priority.
- Repair verification
Includes the procedure for verifying resolution of the symptom by using numerical values, etc., other than the verification that DTCs are cleared.
- Functional description
Includes the detailed functional description related to the functional inspection.
- Symptom description
Includes the detailed symptom descriptions related to a diagnosis by symptom.
- DTC description
Includes the circuit description related to DTCs.
- Condition for setting
Includes information related to conditions for setting DTCs.
- Action taken when set
Includes the information related to the control actions taken by the ECU, etc., when DTCs are set.
- Items related to ETM
Items related to the ETM are described in the instructions on how to view the wiring diagram.

2. Symbols

1A-70 Engine Control System (4JJ1)

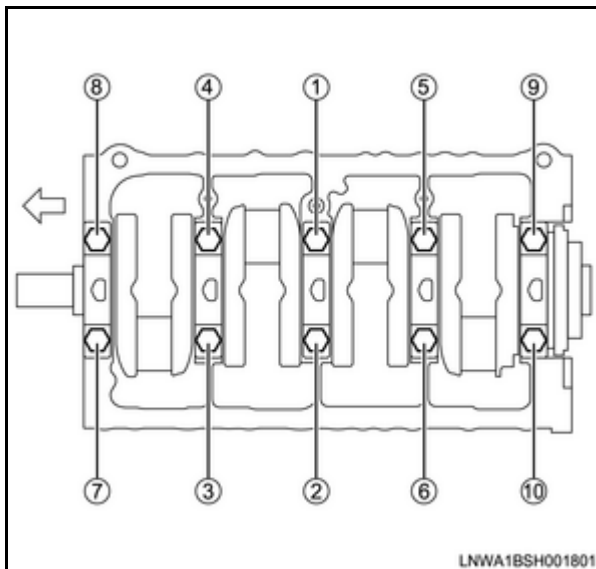
Circuit/ System Testing DTC P0080

Step	Action	Value(s)	Yes	No
1	Did you perform the Diagnostic System Check - Engine Controls?	—	Go to Step 2	Go to Diagnostic System Check - Engine Controls
2	1. Install a scan tool. 2. Perform the Exhaust Throttle Control with a scan tool. 3. Command the solenoid ON and OFF. Does the exhaust throttle solenoid valve click with each command?	—	Go to Diagnostic Aids	Go to Step 3
3	1. Turn OFF the ignition. 2. Remove the exhaust throttle solenoid valve. 3. Turn ON the ignition, with the engine OFF. 4. Monitor the DTC Information with a scan tool. Is DTC P0079 set, but not DTC P0080?	—	Go to Step 5	Go to Step 4
4	1. Test the control circuit between the ECM (pin 102 of E-12) and the solenoid valve (pin 1 of J-59) for a short to battery or ignition voltage. 2. Repair the circuit(s) as necessary. Did you find and correct the condition?	—	Go to Step 7	Go to Step 6
5	Replace the exhaust throttle solenoid valve. Did you complete the replacement?	—	Go to Step 7	—
6	Important: Replacement ECM must be programmed and learned. Replace the ECM. Refer to ECM Replacement. Did you complete the replacement?	—	Go to Step 7	—
7	1. Reconnect all previously disconnected harness connector(s). 2. Clear the DTCs with a scan tool. 3. Turn OFF the ignition for 30 seconds. 4. Perform the Exhaust Throttle Control with a scan tool. 5. Command the relay ON and OFF. Does the exhaust throttle solenoid valve click with each command?	—	Go to Step 8	Go to Step 3
8	Observe the DTC Information with a scan tool. Are there any DTCs that you have not diagnosed?	—	Go to DTC List	System OK



15) Final tighten the bearing cap bolts gradually to the cylinder block in the order shown in the diagram.

Tightening torque: 167 N·m { 17.0 kgf·m / 123 lb·ft }



16) Check that the crankshaft turns smoothly by rotating it manually after tightening each bearing cap location.

3. CKP sensor installation

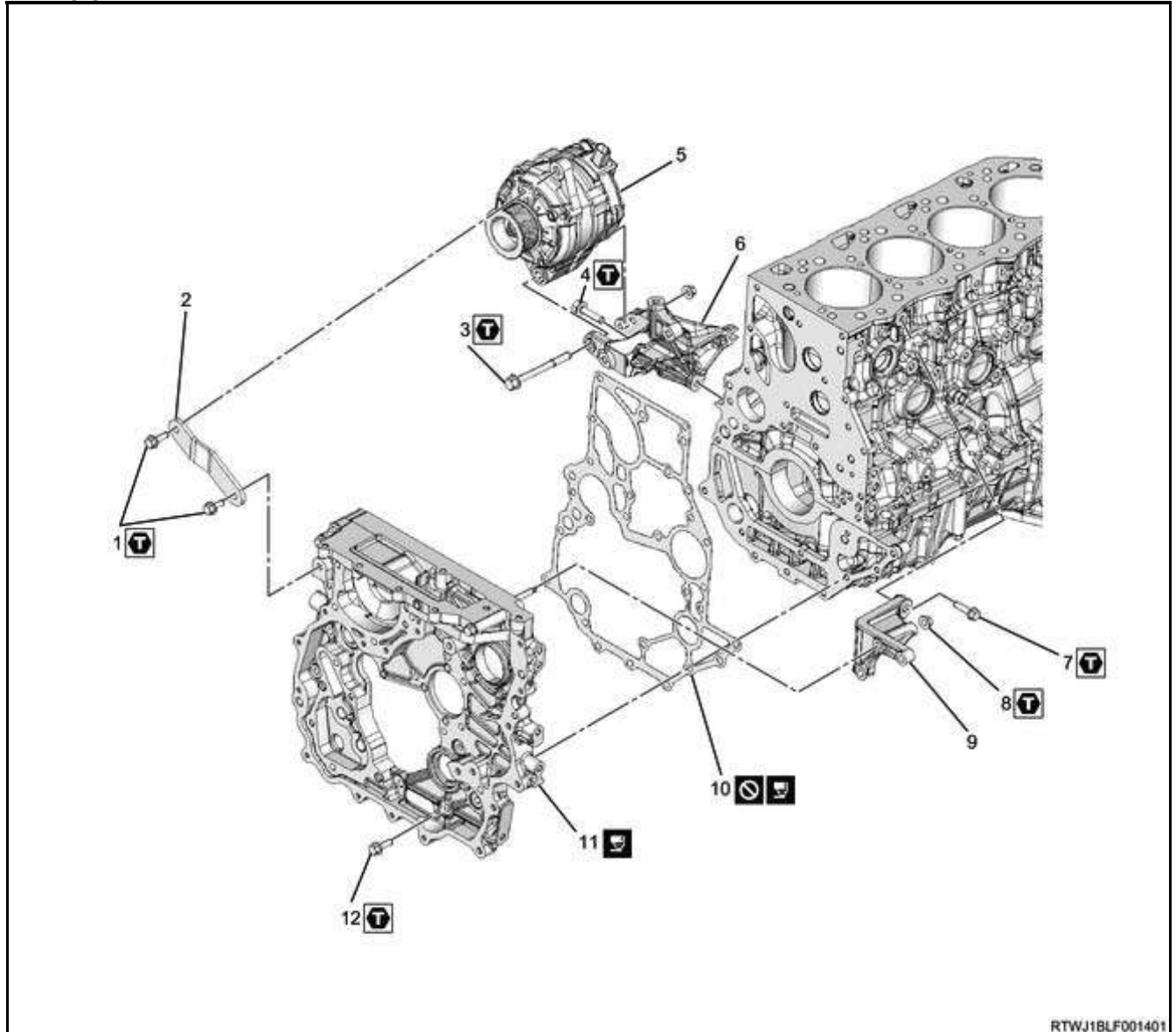
1) Install the CKP sensor to the cylinder block.

Tightening torque: 5.0 N·m { 0.5 kgf·m / 44 lb·in }

Timing gear case installation (4JJ1 without DPD)

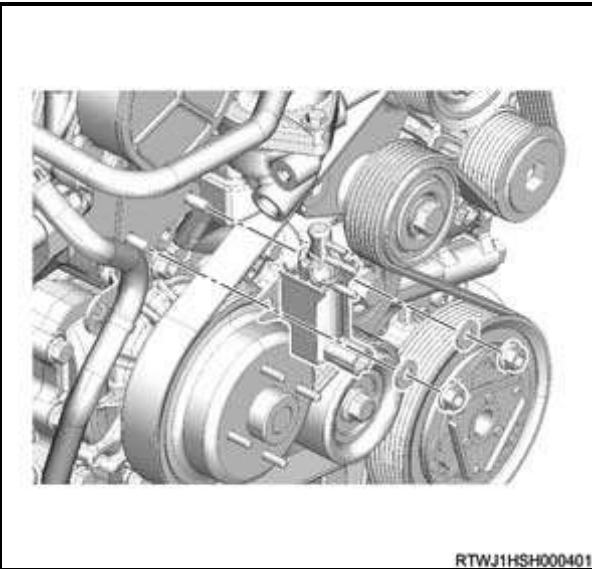
1. Component views

Timing gear case



Part name

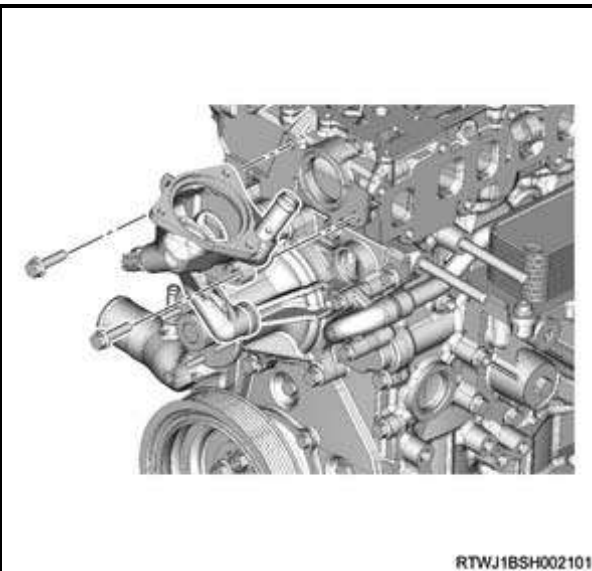
1. Bolt
2. Upper generator bracket
3. Bolt
4. Bolt
5. Generator
6. Lower generator bracket
7. Bolt
8. Nut
9. Timing gear case bracket



- 4) Remove the bracket from the cylinder head.

25. Thermostat housing removal

- 1) Disconnect the connector from the engine coolant temperature sensor.
- 2) Remove the thermostat housing from the cylinder head and front cover.

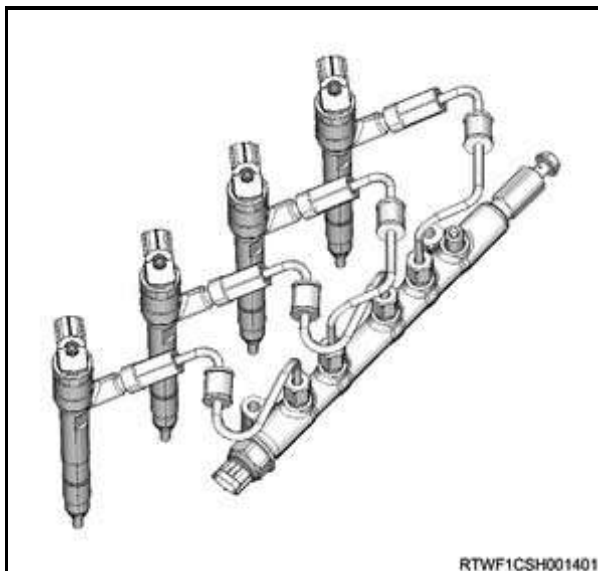


26. Camshaft carrier removal

- 1) Remove the cam angle sensor rotor from the inlet camshaft.

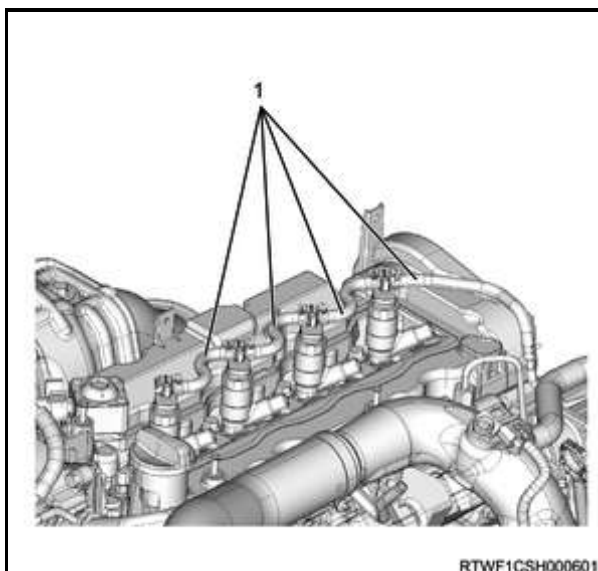
Note

- Referring to the diagram, secure the section indicated by the arrow.



4. Injector removal

- 1) Disconnect the connector from the injector.
- 2) Remove the injector leak-off hose from the injector leak-off pipe and fuel leak-off pipe.



Legend

1. Injector leak-off hose

- 3) Remove the clip from the injector.
- 4) Remove the injector leak-off pipe from the injector.

Caution

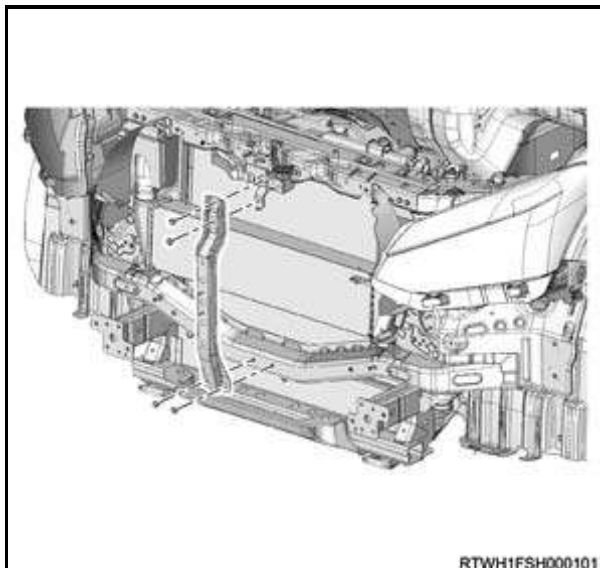
- Do not reuse the injector leak-off pipe or clip.

2. Intake throttle side intake air hose

2. Front end engine hood stay installation

1) Install the front end engine hood stay to the frame.

Tightening torque: 10.0 N•m { 1.0 kgf•m / 89 lb•in }



3. Front bumper installation

Refer to "[9.Body, Cab, Accessories 9H.Cab Structure front bumper installation](#)".

4. Preliminary and post procedures

1. Post procedures

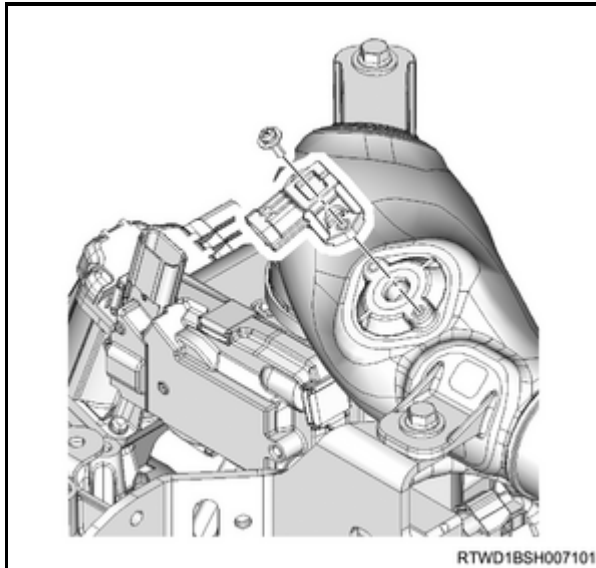
1) Close the engine hood.

Boost pressure sensor installation (4JJ1 without DPD)

1. Boost pressure sensor installation

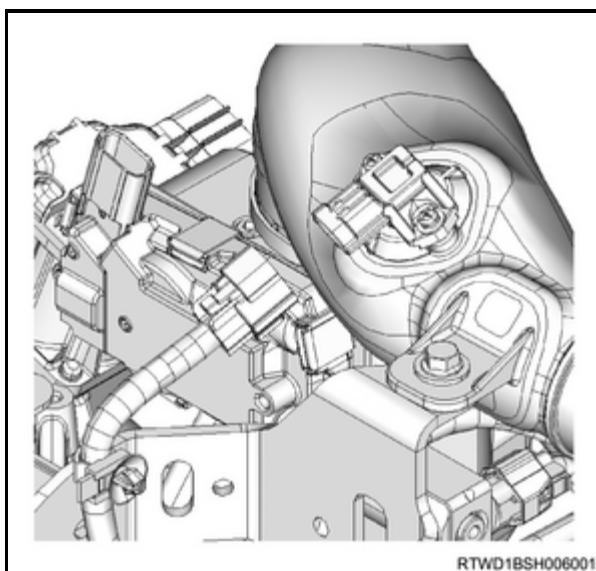
- 1) Install the boost pressure sensor to the intake air duct.

Tightening torque: 2.0 N·m { 0.2 kgf·m / 18 lb·in }



2. Boost pressure sensor connect

- 1) Connect the connector to the boost pressure sensor.



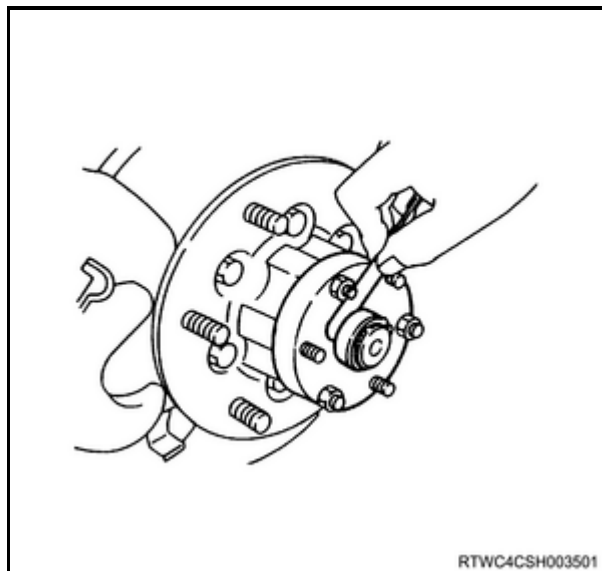
3. Engine cover installation

- 1) Install the engine cover to the engine.

Note

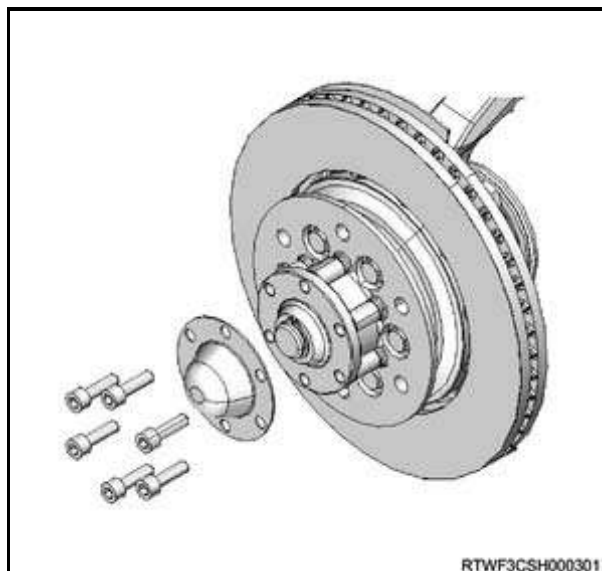
- If the standard value cannot be obtained, change the type of shims and measure again.

0.2 mm { 0.008 in }
0.3 mm { 0.012 in }
0.5 mm { 0.020 in }
1.0 mm { 0.039 in }



12) Install the hub cap to the front hub.

Tightening torque: 59 N·m { 6.0 kgf·m / 44 lb·ft }



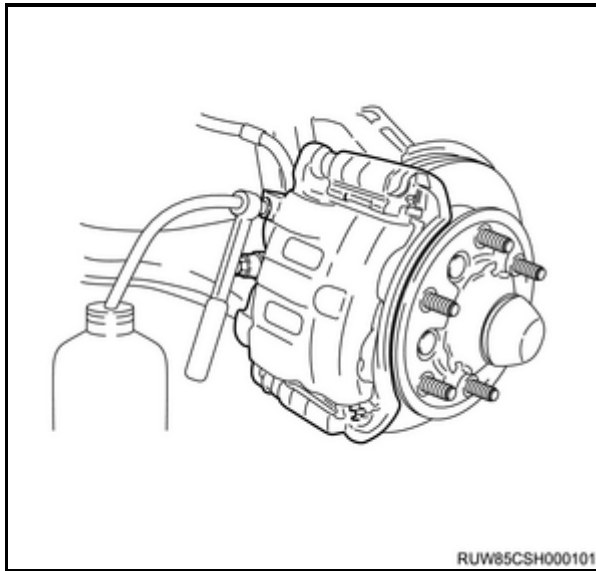
19. Brake caliper installation

1) Install the brake support to the knuckle.

Tightening torque: 205 to 245 N·m { 21.0 to 25.0 kgf·m / 151 to 181 lb·ft }

2) Connect a clear tube to the bleeder.

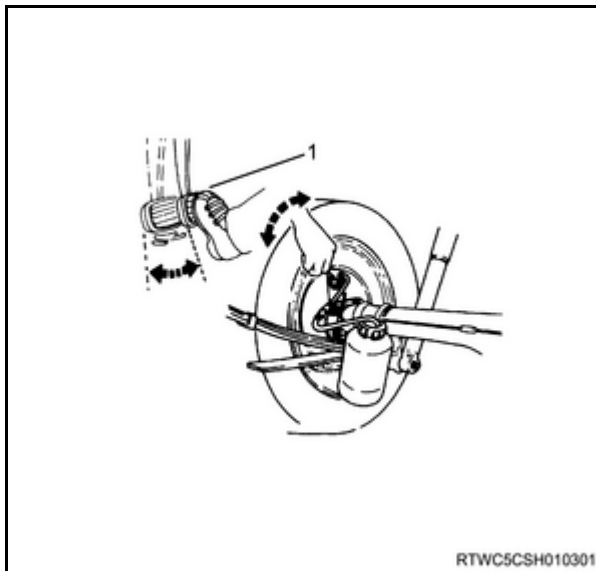
3) Dip one end of the tube into a clear container filled with brake fluid.



Note

- The container should be approximately 1/3 full of brake fluid.

4) Slowly depress the brake pedal 3 times with a speed of once per second and hold it down.



Legend

1. Brake pedal

5) Loosen the bleeder approximately 1/2 a turn and bleed the air from the brake fluid.

6) Tighten the bleeder.

7) Release the brake pedal.

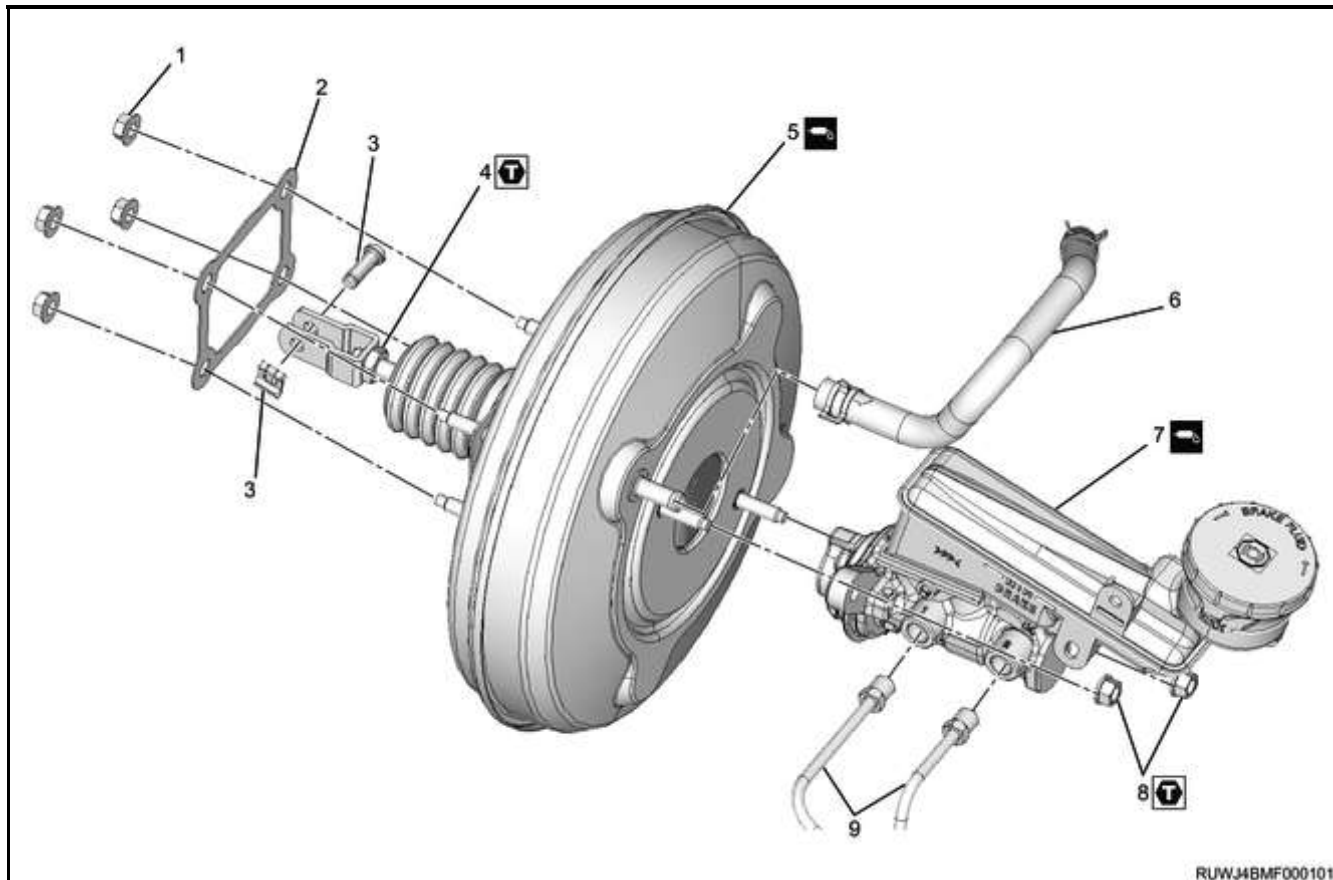
Caution

- Repeat the process mentioned above until no air bubbles are found in the discharged brake fluid.

Brake booster installation

1. Component views

Brake booster



Part name

1. Brake booster fixing nut
2. Gasket
3. Push rod pin
4. Nut
5. Brake booster
6. Vacuum hose
7. Master cylinder
8. Master cylinder fixing nut
9. Brake pipe

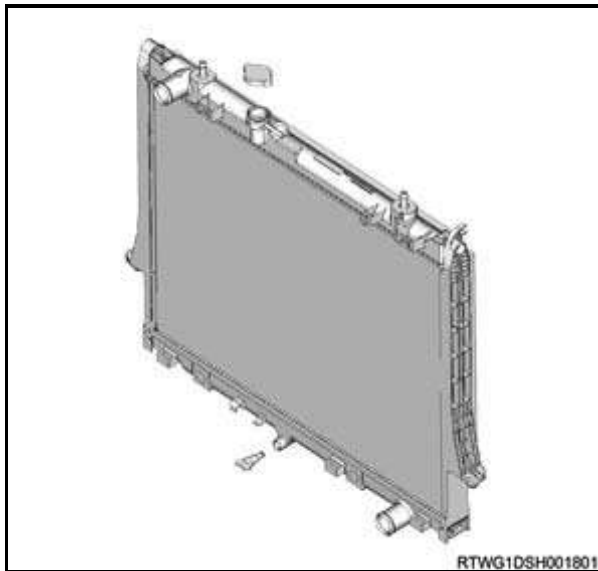
Tightening torque

- 4: 15 to 25 N·m { 1.5 to 2.5 kgf·m / 11 to 18 lb·ft }
- 8: 10 to 16 N·m { 1.0 to 1.6 kgf·m / 89 to 142 lb·in }

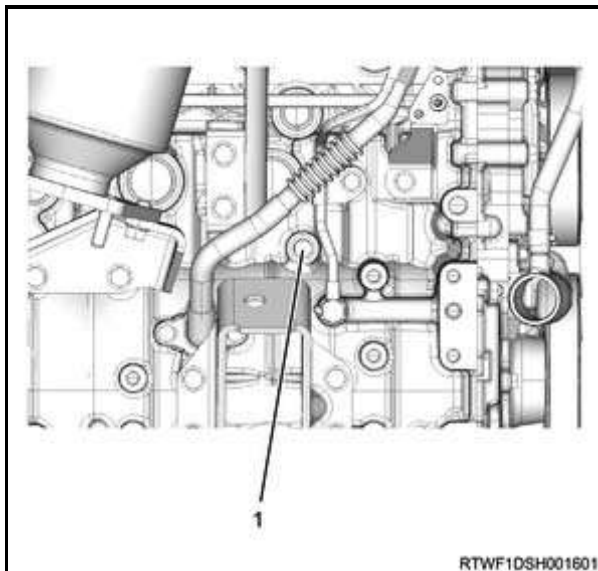
2. Brake booster installation

1	87.74 mm { 3.4543 in }	74.2 mm { 2.921 in }	85.6 mm { 3.370 in }	71.9 mm { 2.831 in }	-	-
2	52.8 mm { 2.079 in }	40.0 mm { 1.575 in }	52.0 mm { 2.047 in }	34.6 mm { 1.362 in }	-	-
3	-	-	41.1 mm { 1.618 in }	21.3 mm { 0.839 in }	44.8 mm { 1.764 in }	22.6 mm { 0.890 in }
4	56.5 mm { 2.224 in }	38.40 mm { 1.512 in }	56.6 mm { 2.228 in }	33.3 mm { 1.311 in }	-	-
5	-	-	52.8 mm { 2.079 in }	39.6 mm { 1.559 in }	52.8 mm { 2.079 in }	40.83 mm { 1.6075 in }
6	-	-	61.2 mm { 2.409 in }	37.1 mm { 1.461 in }	62.8 mm { 2.472 in }	44.0 mm { 1.732 in }
7	86.3 mm { 3.398 in }	65.8 mm { 2.591 in }	78.8 mm { 3.102 in }	63.3 mm { 2.492 in }	-	-
8	78.9 mm { 3.106 in }	66.3 mm { 2.610 in }	78.8 mm { 3.102 in }	63.3 mm { 2.492 in }	-	-
9	-	-	76.4 mm { 3.008 in }	55.7 mm { 2.193 in }	74.0 mm { 2.913 in }	53.7 mm { 2.114 in }
10	49.0 mm { 1.929 in }	33.4 mm { 1.315 in }	49.35 mm { 1.9429 in }	32.1 mm { 1.264 in }	49.0 mm { 1.929 in }	32.1 mm { 1.264 in }
11	-	-	41.5 mm { 1.634 in }	21.0 mm { 0.827 in }	41.5 mm { 1.634 in }	23.13 mm { 0.9106 in }
12	-	-	61.0 mm { 2.402 in }	43.55 mm { 1.7146 in }	67.1 mm { 2.642 in }	47.1 mm { 1.854 in }
13	51.2 mm { 2.016 in }	37.0 mm { 1.457 in }	52.5 mm { 2.067 in }	36.1 mm { 1.421 in }	51.0 mm { 2.008 in }	36.1 mm { 1.421 in }

Transmission case



3) Loosen the drain plug on the cylinder block, and drain the coolant to a pan.



Legend

1. Drain plug

4) Apply LOCTITE 262 or equivalent to the threaded portion of the drain plug.

5) Tighten the drain plug on the cylinder block.

Tightening torque: 21.6 N·m { 2.2 kgf·m / 16 lb·ft }

6) Tighten the radiator drain plug.

5. Engine cover removal

1) Remove the engine cover from the engine.

Tightening torque

2: 46 N•m { 4.7 kgf•m / 34 lb•ft }

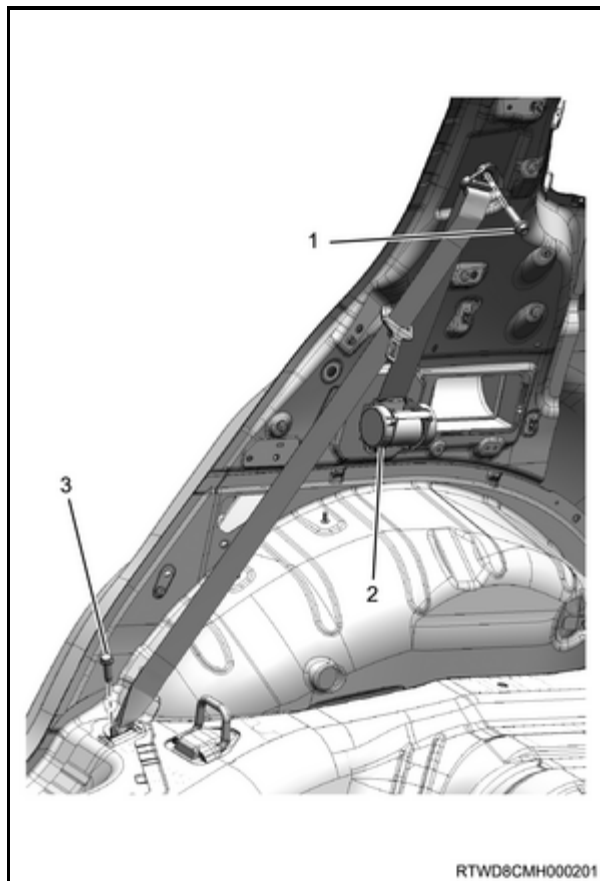
6: 46 N•m { 4.7 kgf•m / 34 lb•ft }

7: 46 N•m { 4.7 kgf•m / 34 lb•ft }

2. Tongue side 2ND seat belt installation

1) Install the tongue side 2nd seat belt to the panel.

Tightening torque: 46 N•m { 4.7 kgf•m / 34 lb•ft }



Legend

- 1. Seat belt upper anchor bolt
- 2. Tongue side 2nd seat belt
- 3. Seat belt lower anchor bolt

3. Quarter upper trim cover installation

Refer to "[9.Body, Cab, Accessories 9L.Exterior, Interior Trim quarter upper trim cover installation](#)".