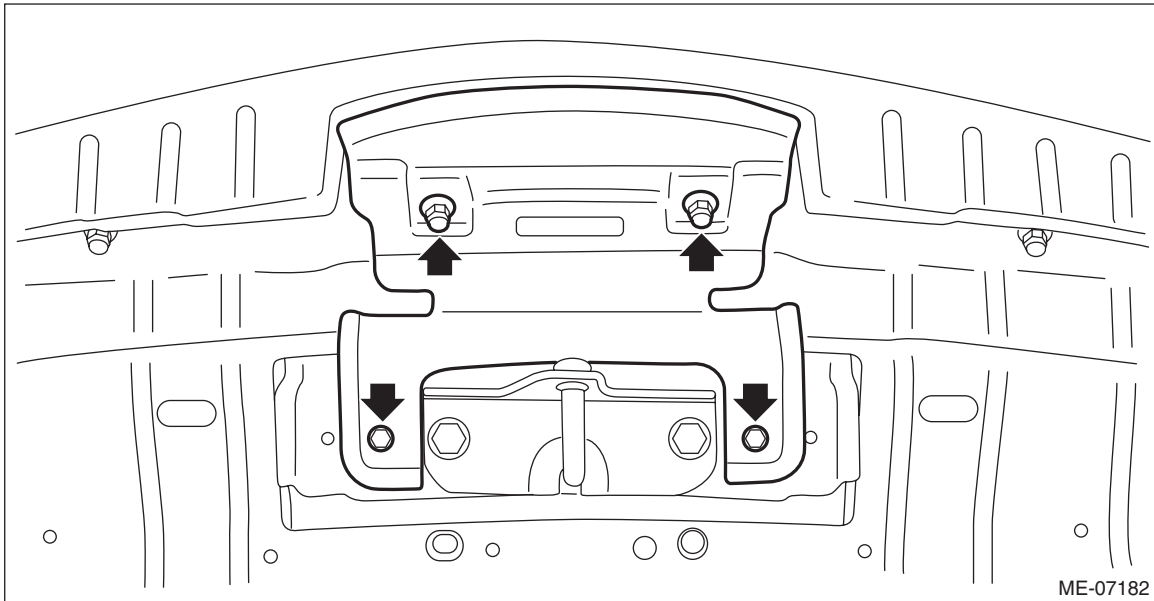


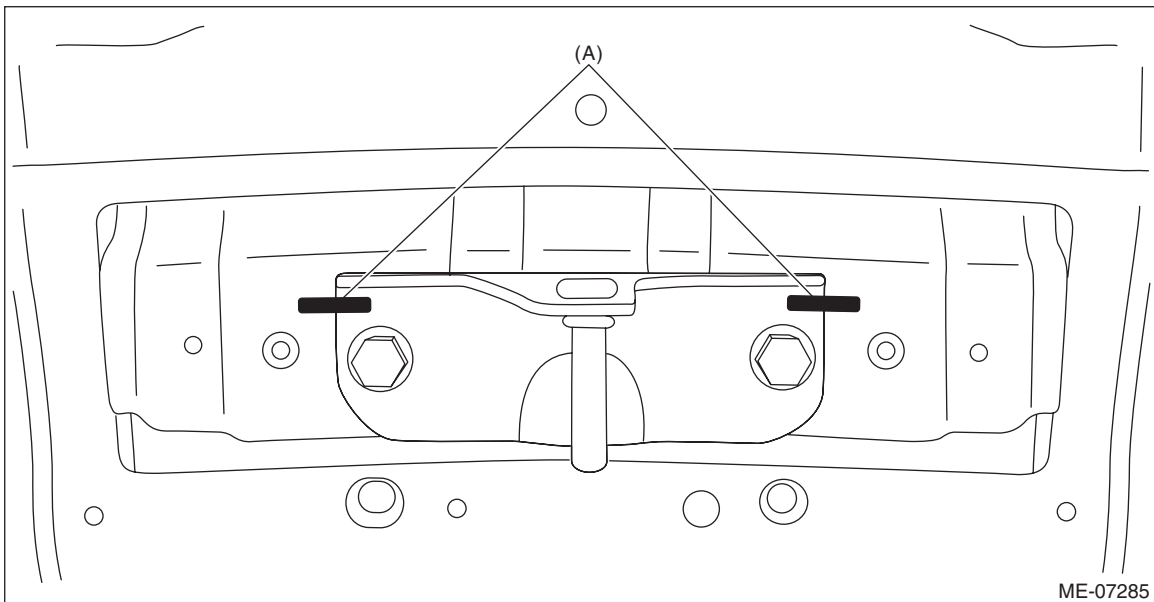
9. Engine Assembly

A: REMOVAL

- 1) Open the front hood, and remove the upper grille bracket from the front hood.



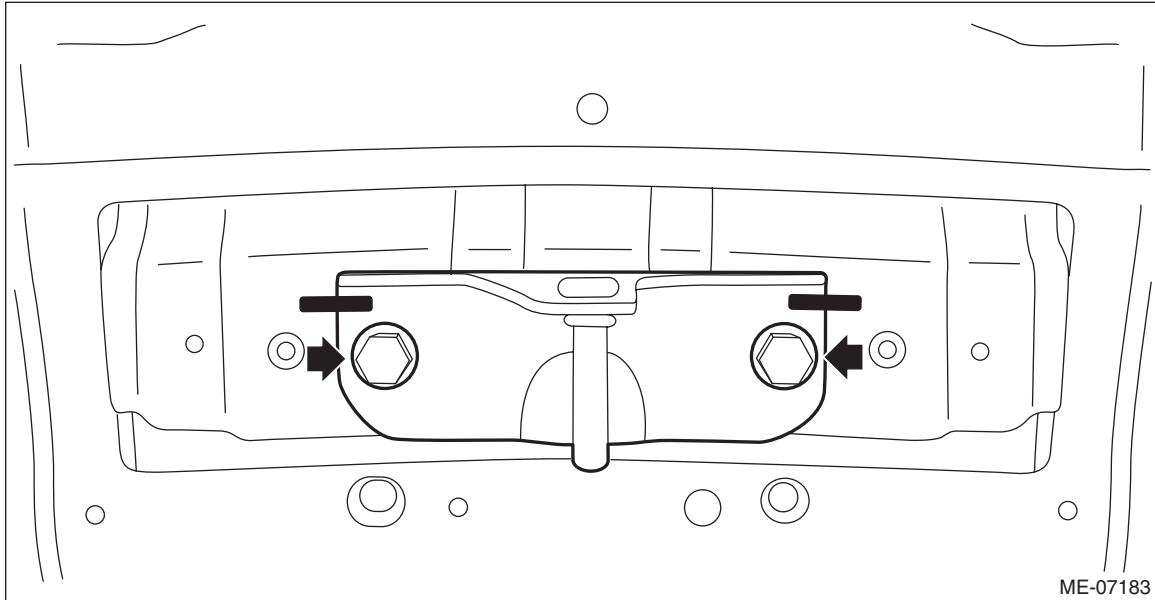
- 2) Using a marker pen, make alignment marks (A) on both the front hood and the front hood striker.



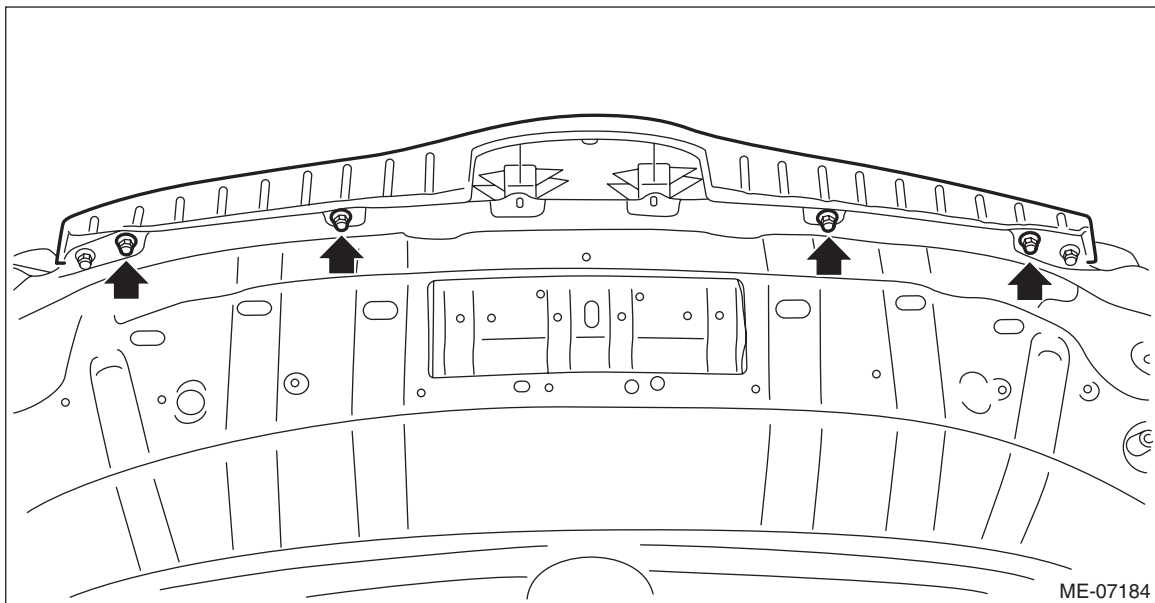
Engine Assembly

MECHANICAL

3) Remove the front hood striker from the front hood.



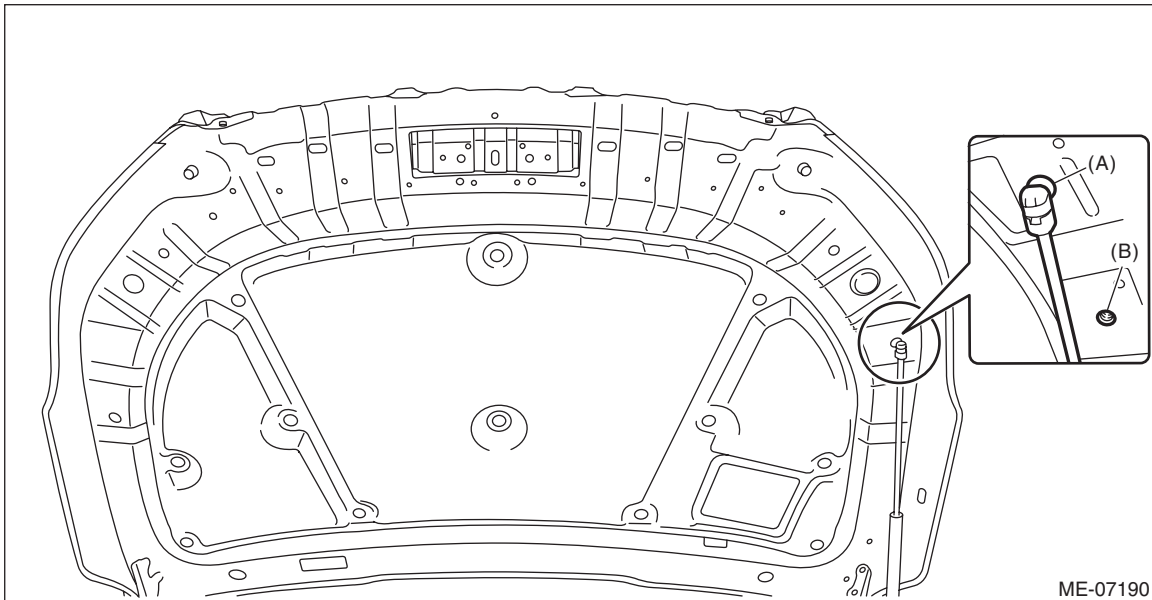
4) Remove the front center grille assembly from the front hood.



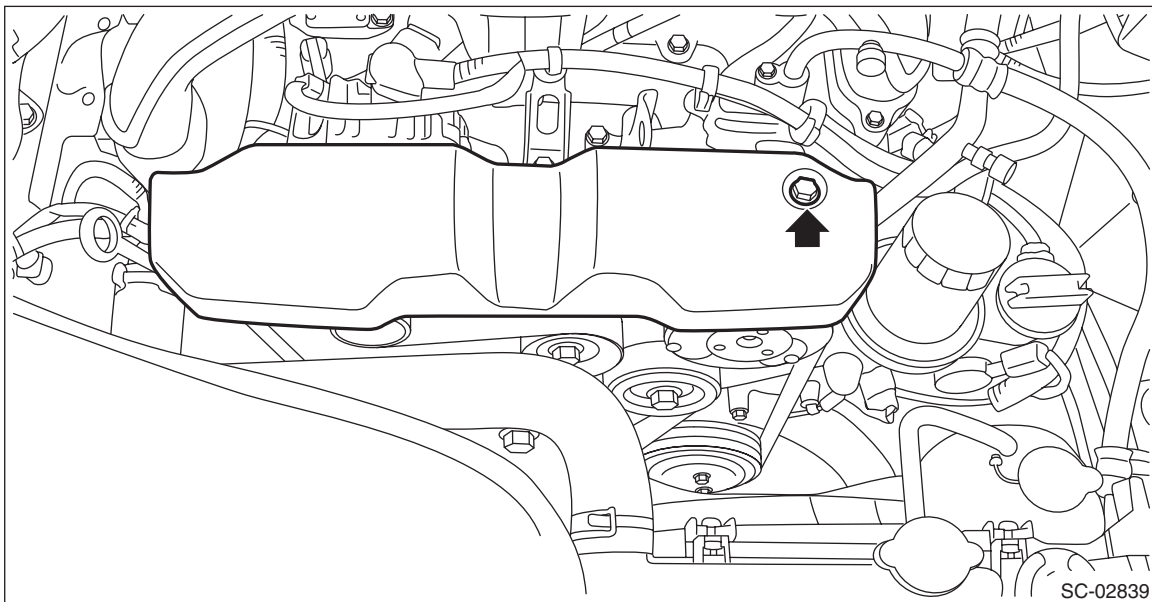
- 5) Change the front hood damper mounting position from (A) to (B), and completely open the front hood.

Tightening torque:

20 N·m (2.0 kgf-m, 14.8 ft-lb)



- 6) Remove the V-belt covers.



- 7) Collect the refrigerant from A/C system.<Ref. to AC-28, Refrigerant Recovery Procedure.>
8) Release the fuel pressure.<Ref. to FU(H4DO)-103, RELEASING OF FUEL PRESSURE, PROCEDURE, Fuel.>
9) Open the fuel filler lid and remove the fuel filler cap.

NOTE:

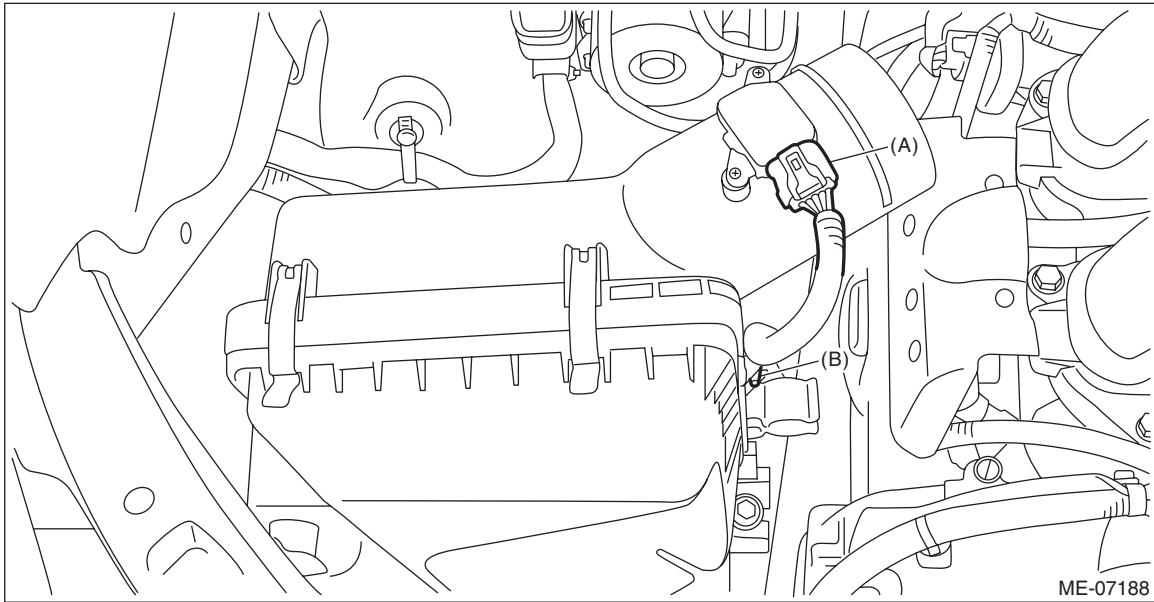
This operation is required to release the inner pressure of the fuel tank.

- 10) Disconnect the ground cable from battery.
11) Remove the air intake duct.<Ref. to IN(H4DO)-12, REMOVAL, Air Intake Duct.>
12) Remove the air intake boot.<Ref. to IN(H4DO)-11, REMOVAL, Air Intake Boot.>

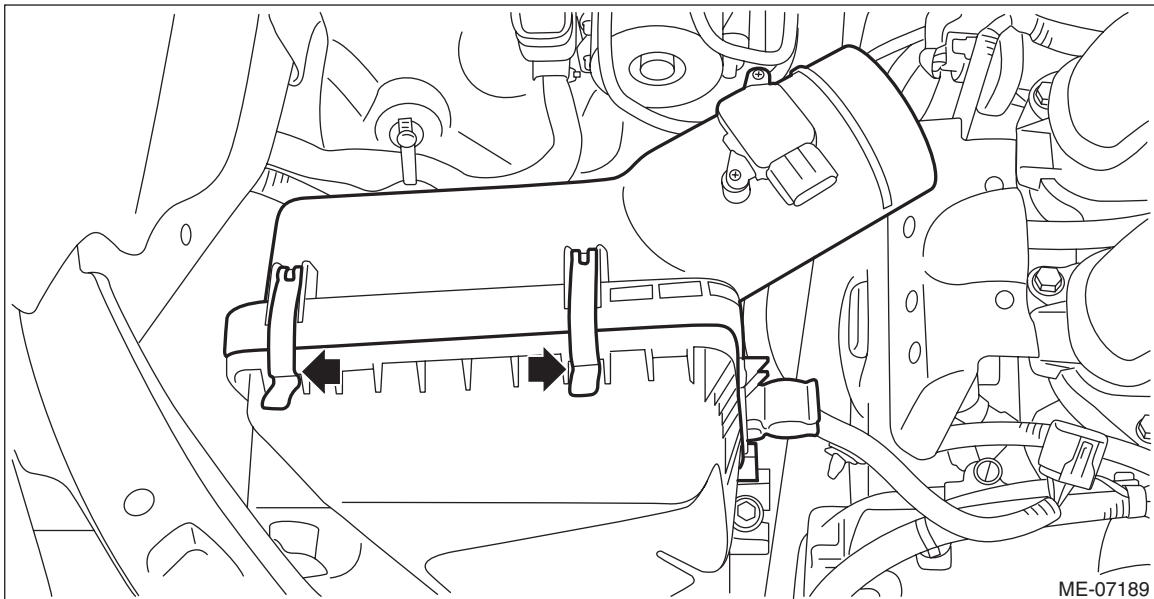
Engine Assembly

MECHANICAL

- 13) Disconnect the connector (A) from the mass air flow and intake air temperature sensor, and remove the clip (B) which holds the mass air flow and intake air temperature sensor harness.

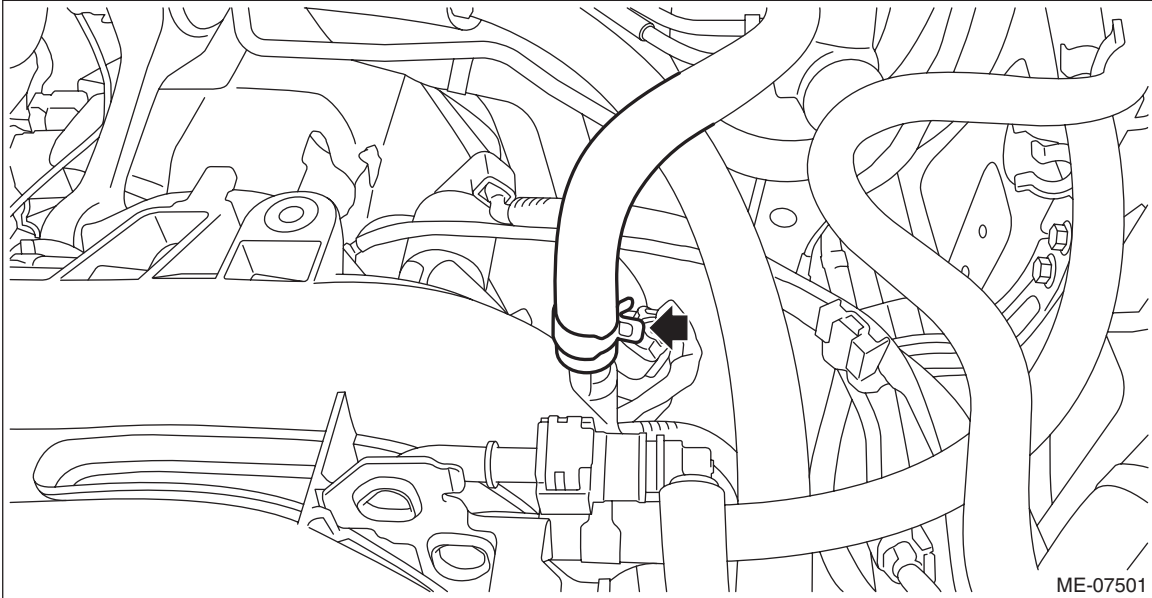


- 14) Remove the air cleaner case (rear).

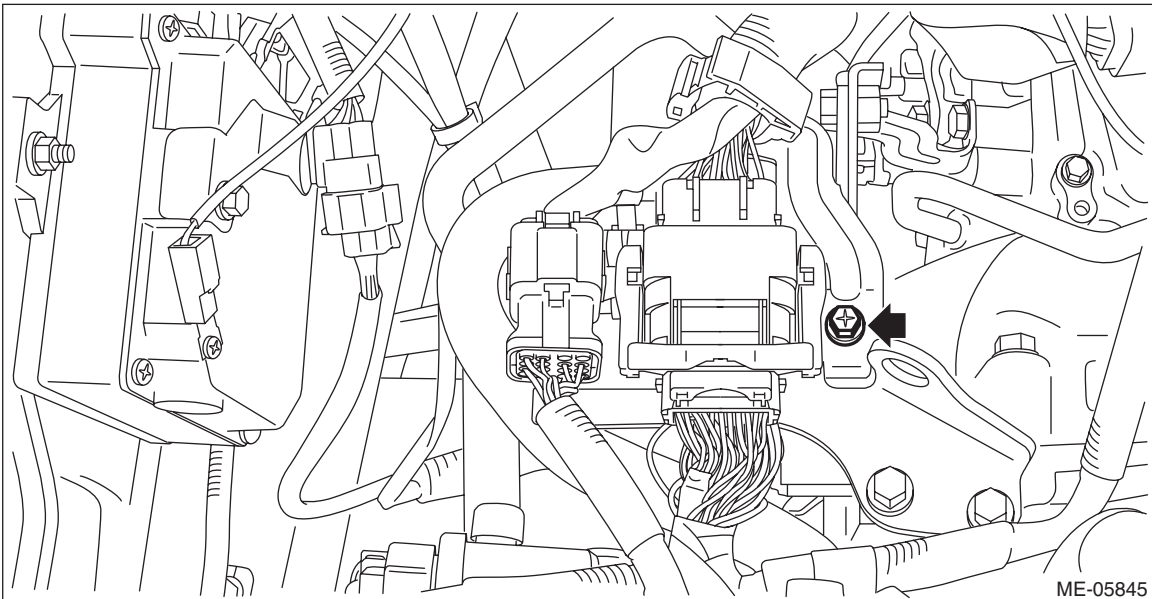


- 15) Remove the radiator.<Ref. to CO(H4DO)-50, REMOVAL, Radiator.>

- 16) Disconnect the brake booster vacuum hose from the intake manifold.



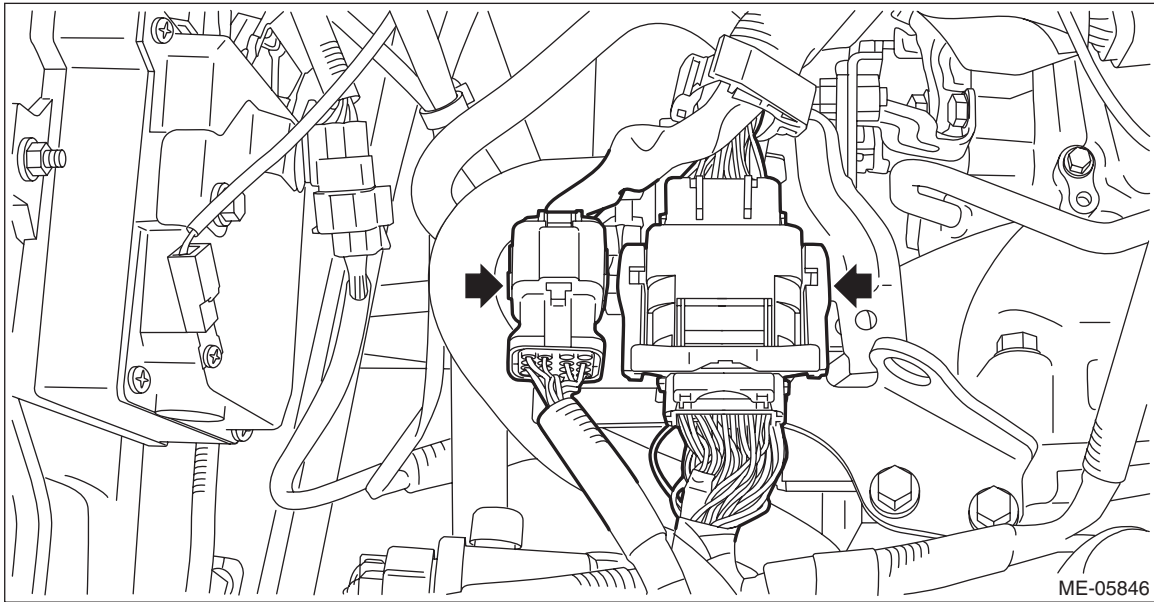
- 17) Disconnect the engine harness connector.
(1) Remove the bolt securing the bulkhead harness connector bracket.



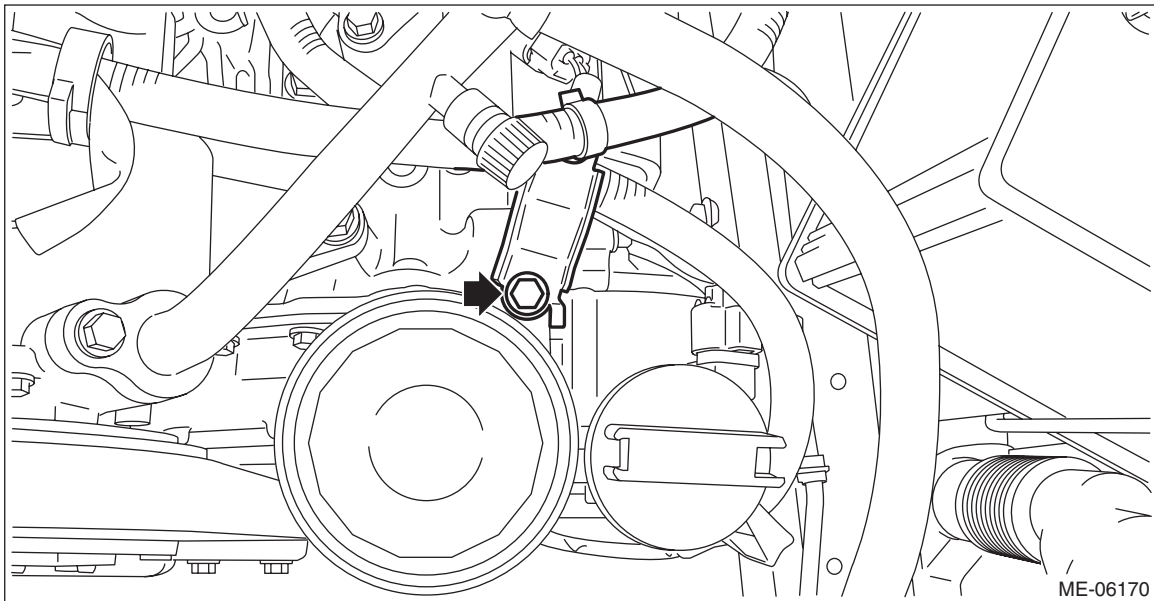
Engine Assembly

MECHANICAL

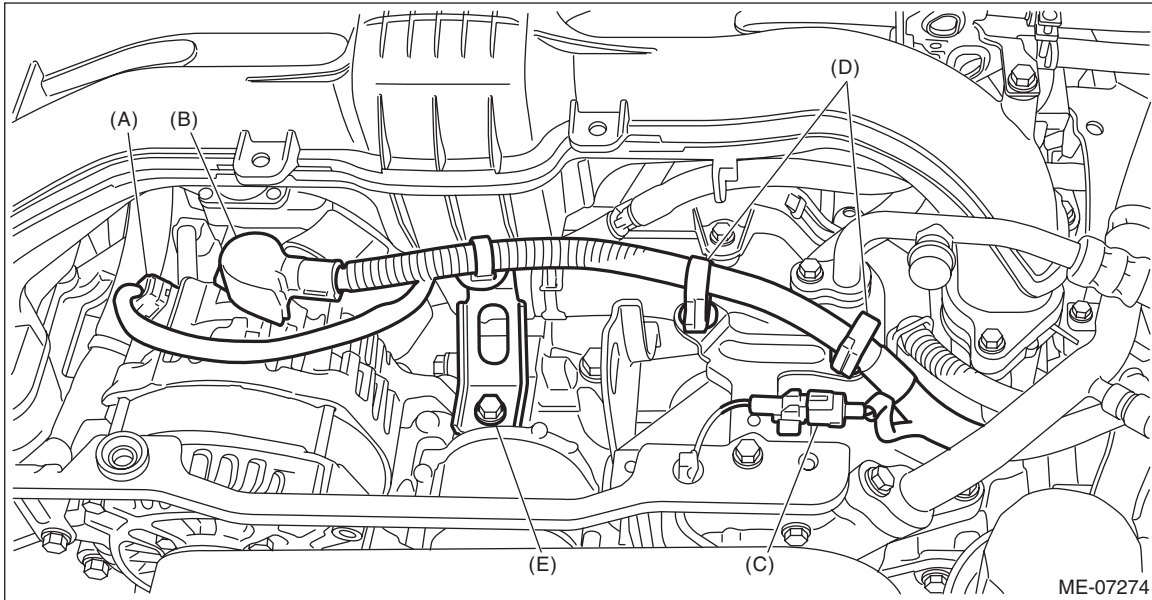
- (2) Disconnect the bulkhead harness connector from the engine harness connector (black) and engine harness connector (brown).



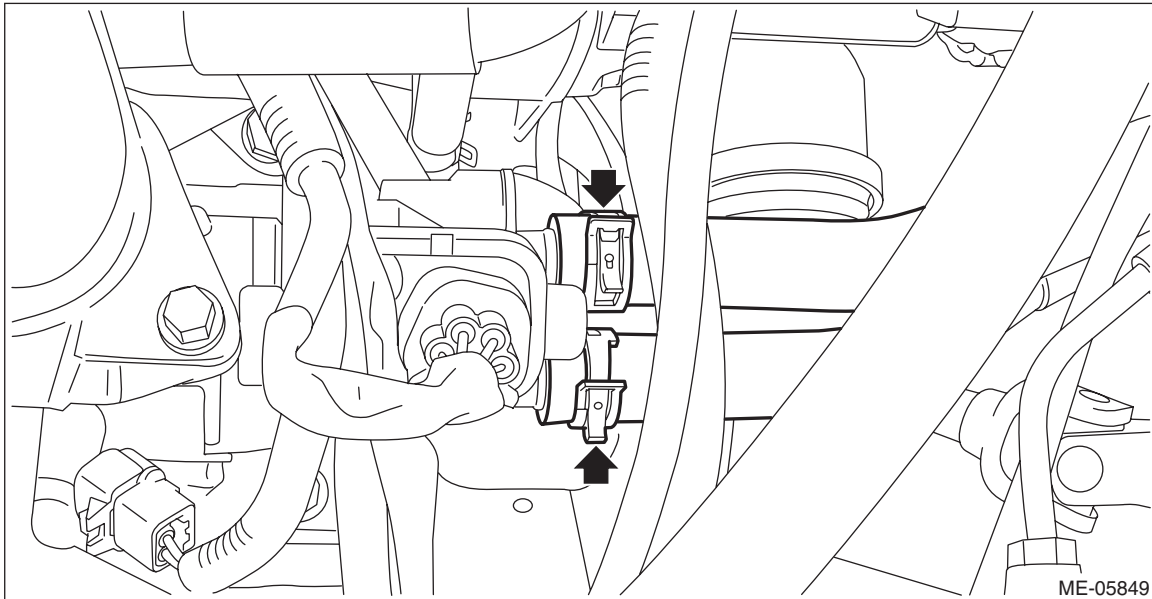
- 18) Remove the bolt which secures the generator cord stay A to the chain cover.



- 19) Disconnect connector (A) and terminal (B) from the generator, and disconnect connector (C) from A/C compressor.
- 20) Remove the bolt (E) securing the generator cord stay B to the generator bracket.
- 21) Remove the generator cord from the clip (D) and move the generator cord to the left side wheel apron.



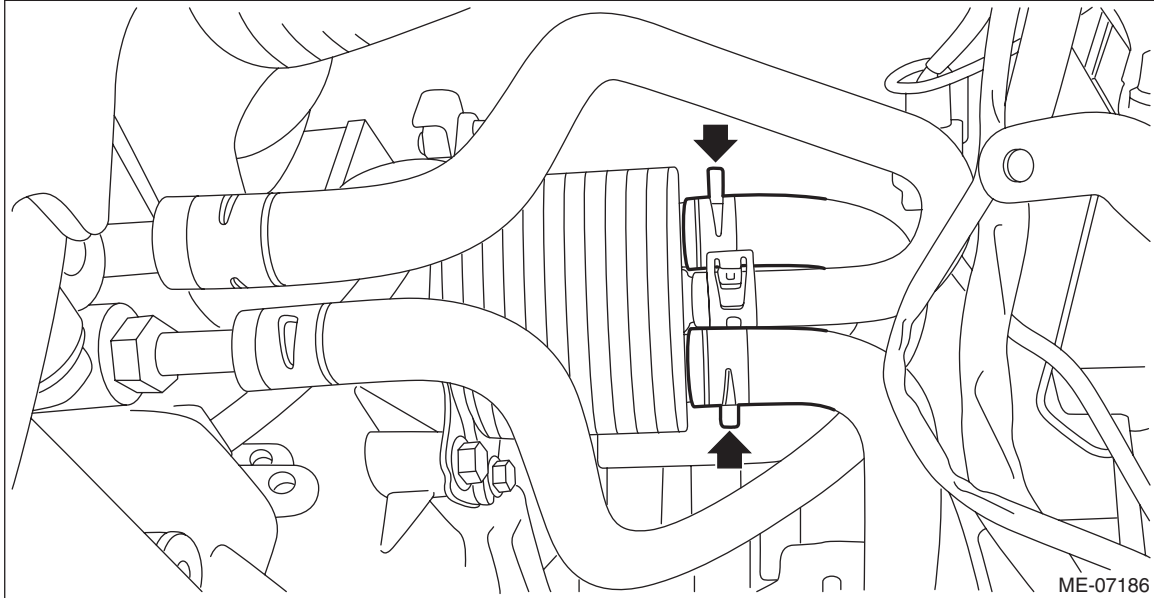
- 22) Disconnect the following hoses.
 - (1) A/C pressure hose<Ref. to AC-74, REMOVAL, Hose and Pipe.>
 - (2) Heater inlet hose and heater outlet hose



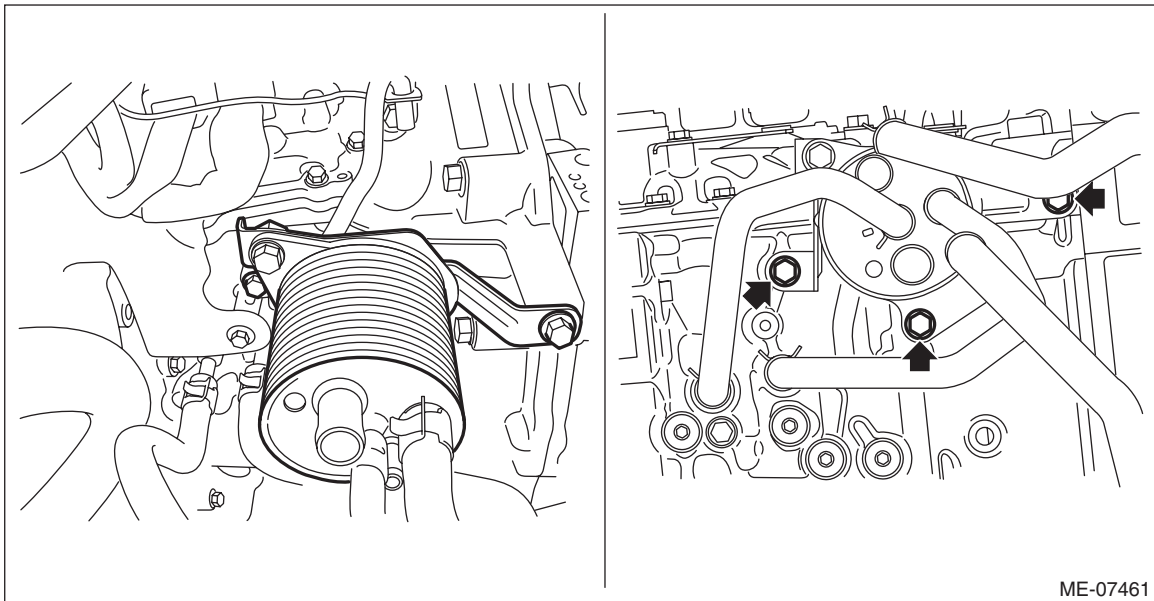
Engine Assembly

MECHANICAL

23) Disconnect the water hose from CVTF cooler (with warmer feature). (CVT model)



24) Remove the bolt which secures the CVTF cooler (with warmer feature) to the transmission, and move the CVTF cooler (with warmer feature) to the right side of the transmission. (CVT model)

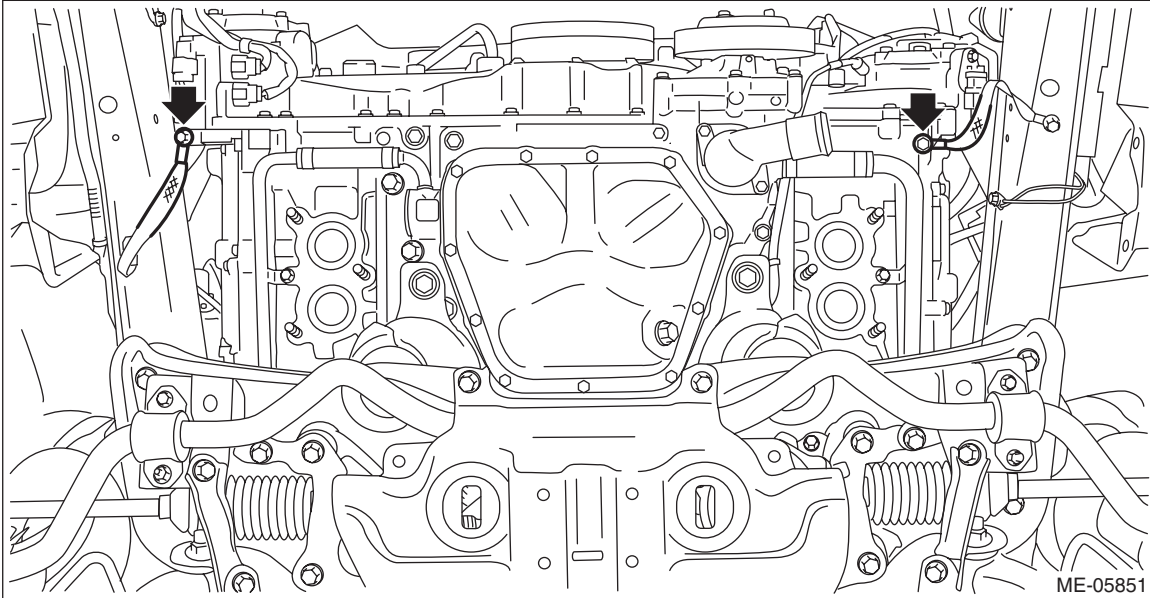


25) Lift up the vehicle.

26) Remove the front exhaust pipe.<Ref. to EX(H4DO)-6, REMOVAL, Front Exhaust Pipe.>

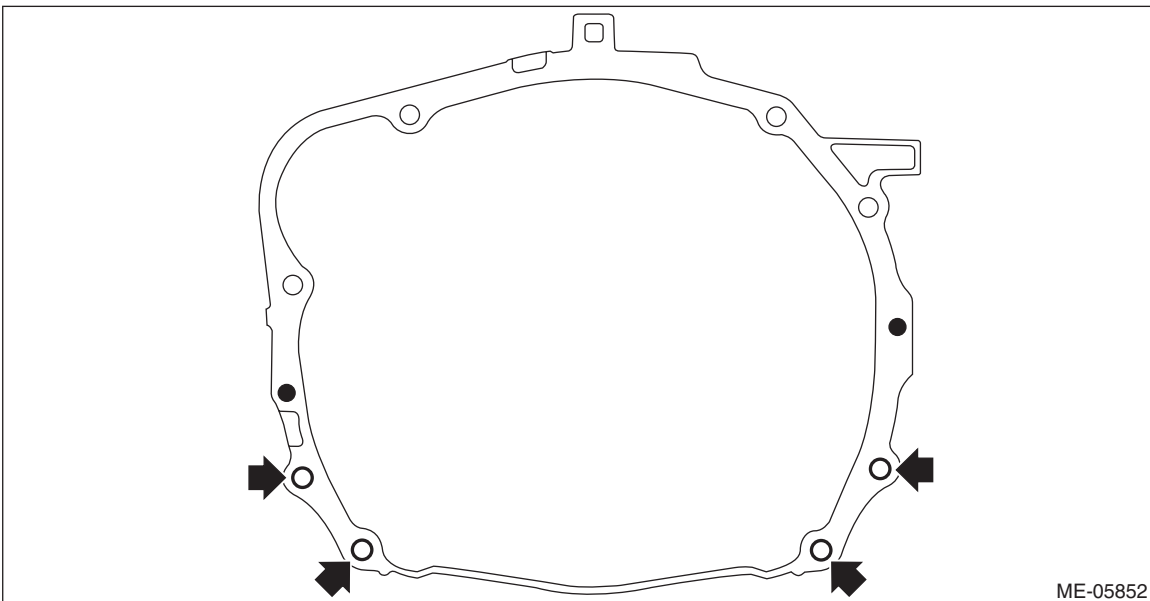
27) Remove the under cover front - transmission.

28) Disconnect the ground cable on the engine side.



29) Remove the bolts and nuts which hold the lower side of transmission to the engine.

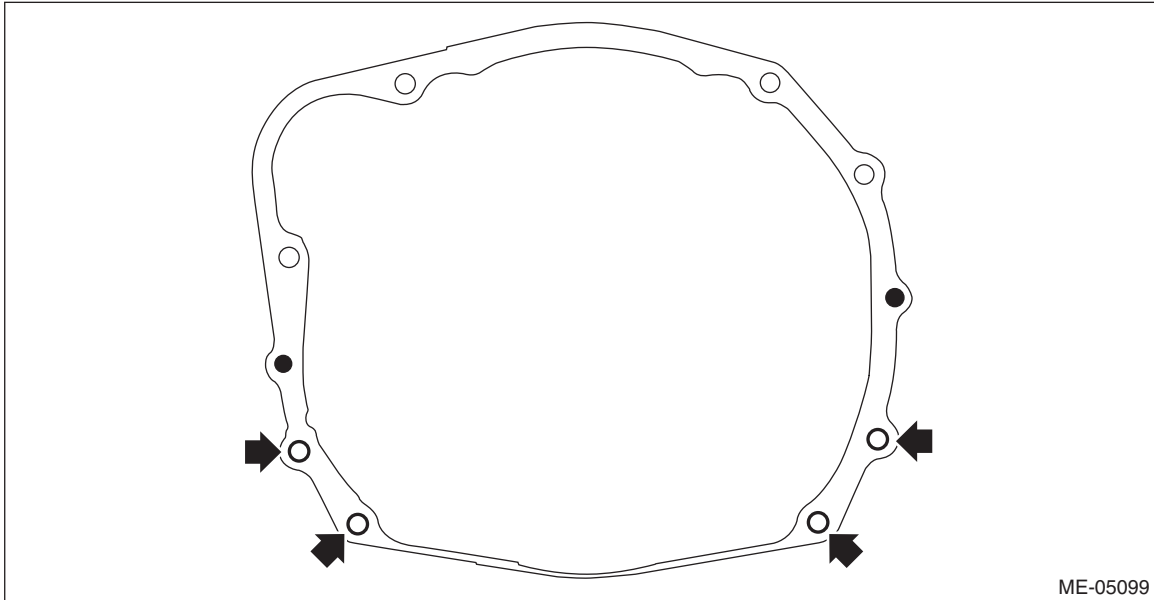
- CVT model



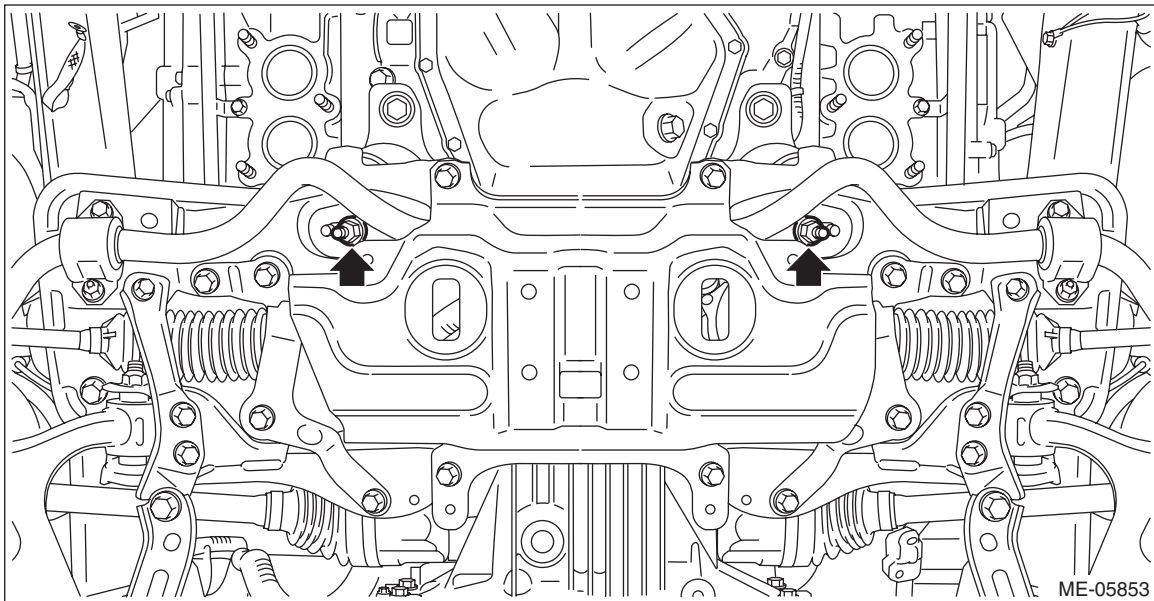
Engine Assembly

MECHANICAL

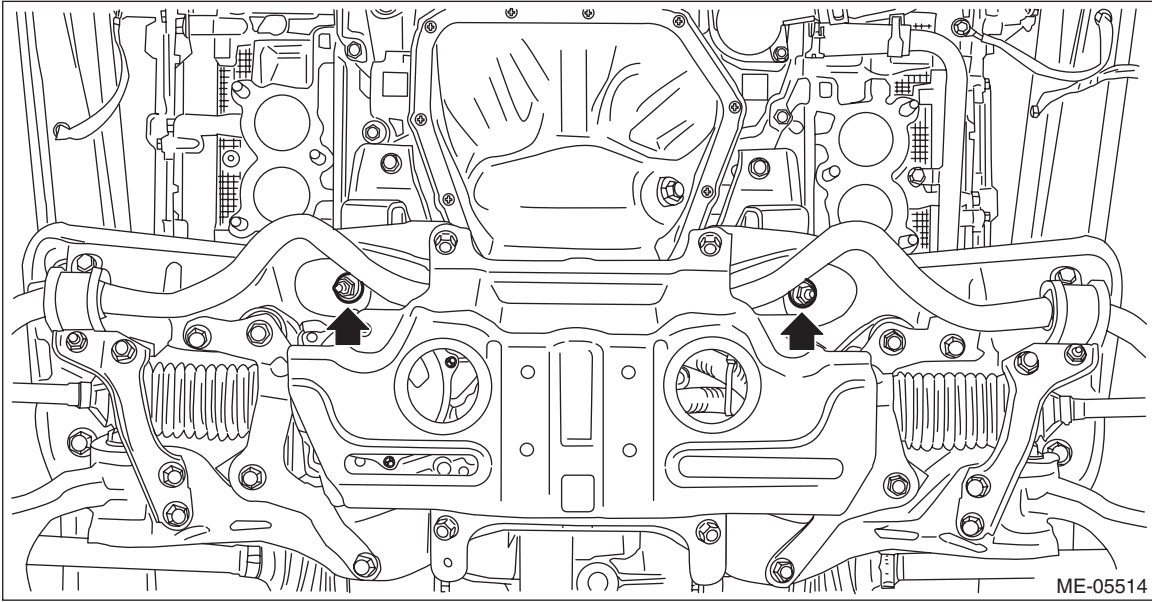
- MT model



30) Remove the nuts which secure the engine mounting to the front crossmember. (Hydraulic engine mounting model)



31) Remove the nuts which secure the engine mounting to the front crossmember. (Solid engine mounting model)

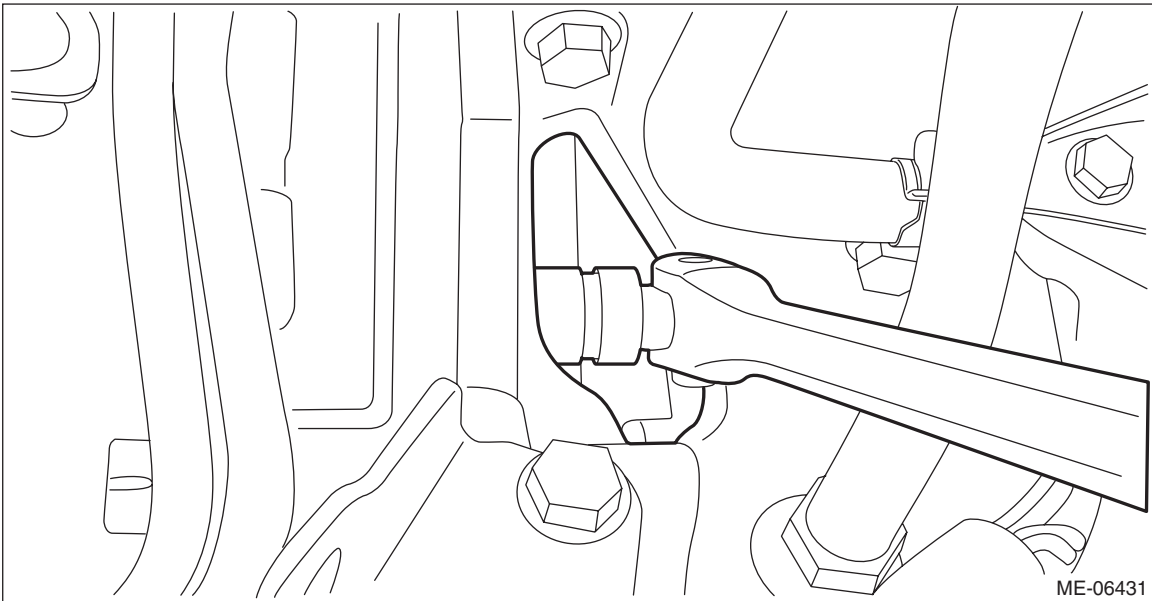


32) Lower the vehicle.

33) Separate the torque converter clutch from the drive plate. (CVT model)

(1) Remove the service hole plug.

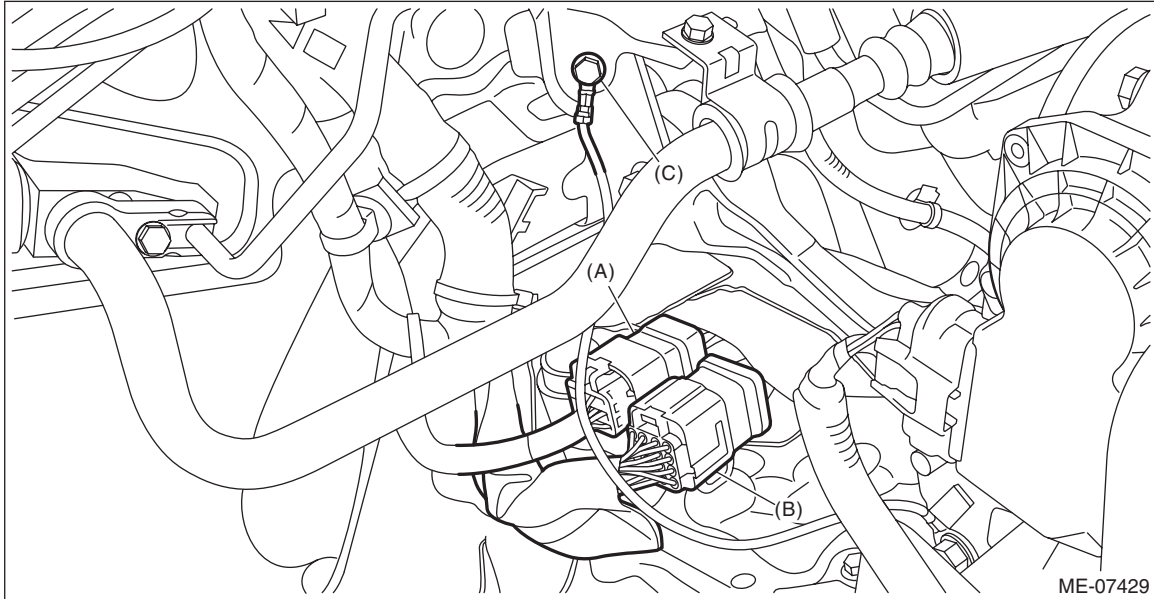
(2) Insert the wrench into the crank pulley bolt and rotate the crank pulley to remove the bolts which hold torque converter clutch to drive plate.



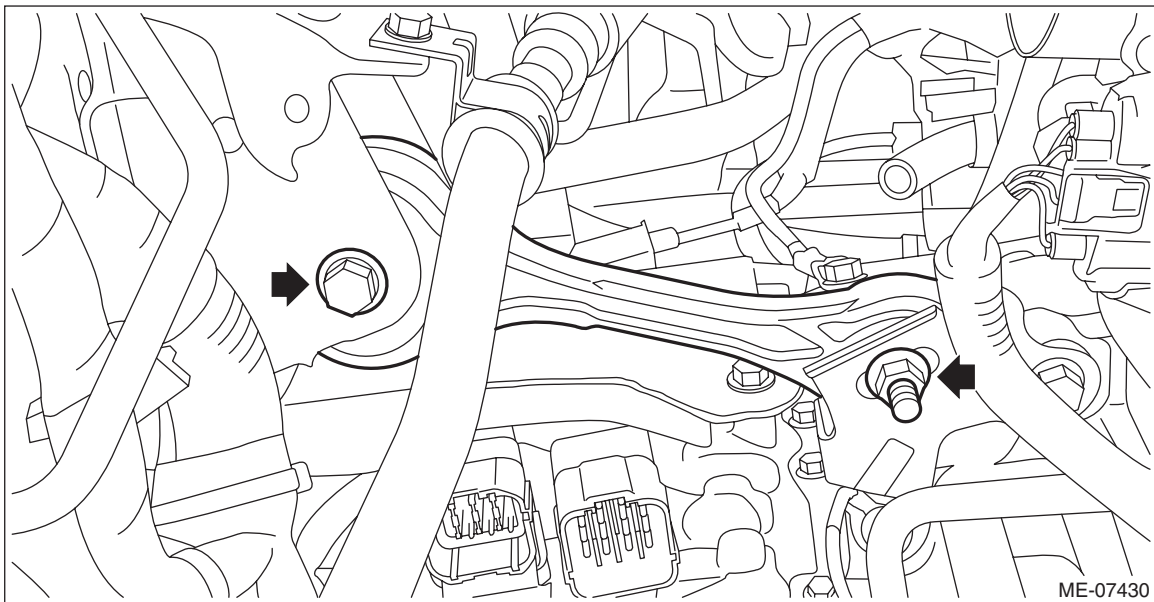
Engine Assembly

MECHANICAL

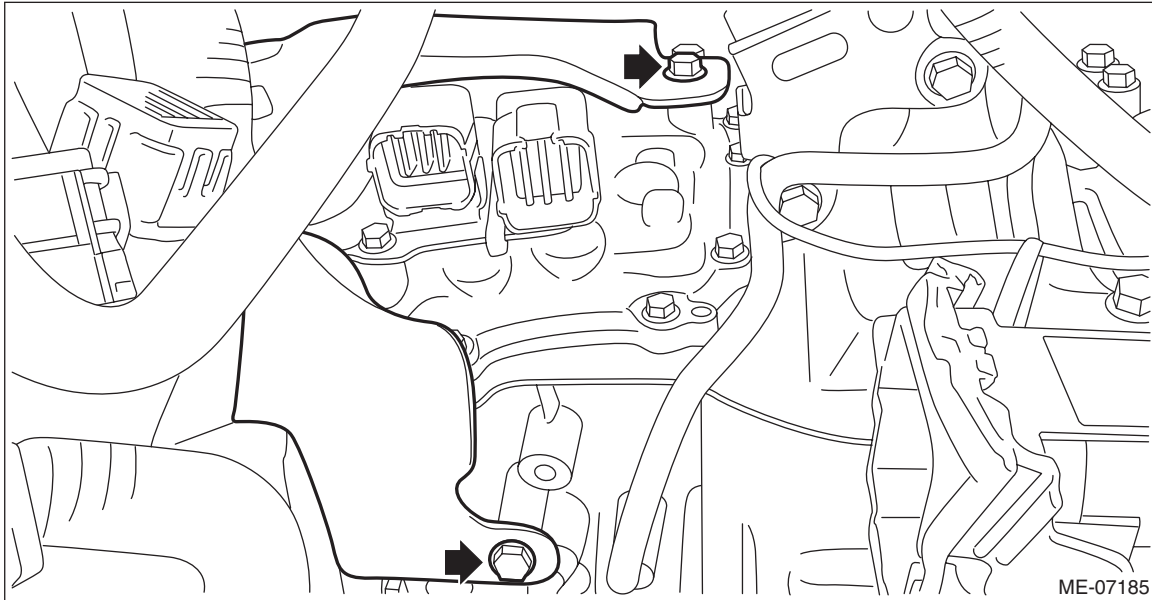
34) Disconnect the bulkhead harness connector from the transmission harness connector (A) and the inhibitor harness connector (B), and disconnect the transmission radio ground terminal (C) from the vehicle body. (CVT model)



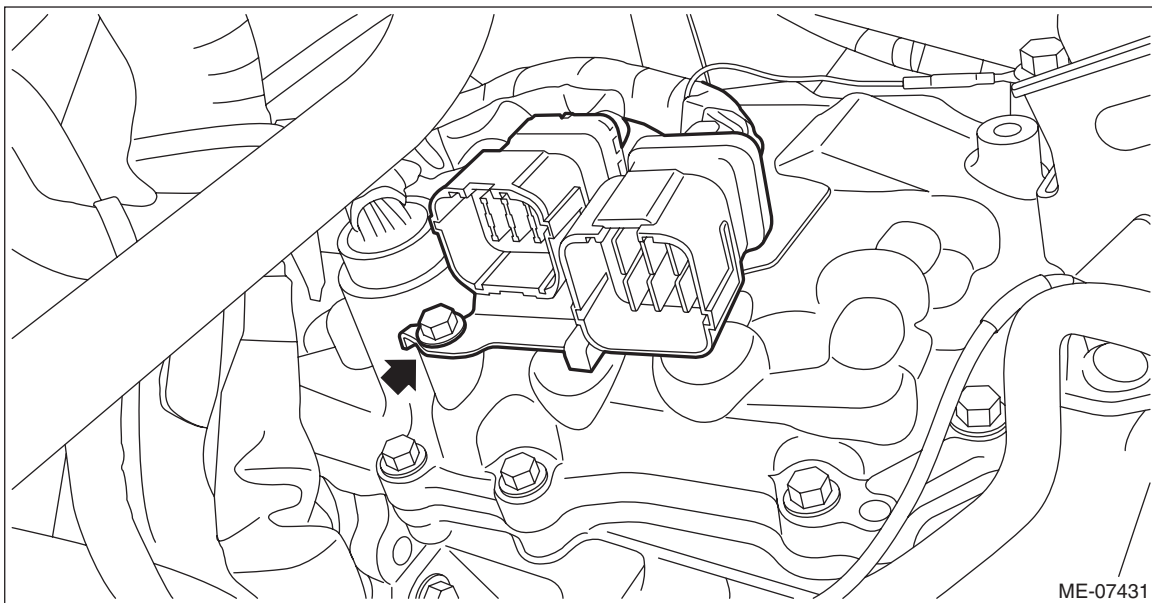
35) Remove the pitching stopper.



36) Remove the transmission case cover. (CVT model)



37) Remove the transmission harness stay and move to the engine side. (CVT model)



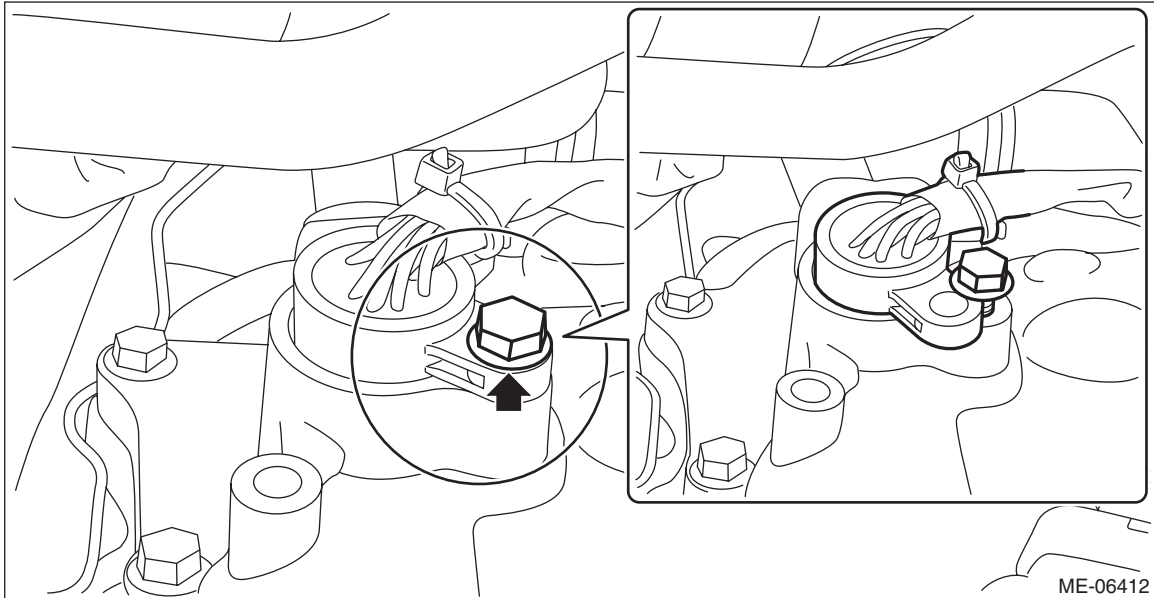
Engine Assembly

MECHANICAL

38) Remove the bolt which holds the transmission harness to the control valve body, and turn the transmission harness clockwise till the bolt hole can be seen as shown in the figure, and tighten the bolt to temporary lock the harness. (CVT model)

NOTE:

This procedure is required to prevent the transmission harness from touching the vehicle body during engine removal/installation.



39) Disconnect the fuel delivery tube and evaporation hose.

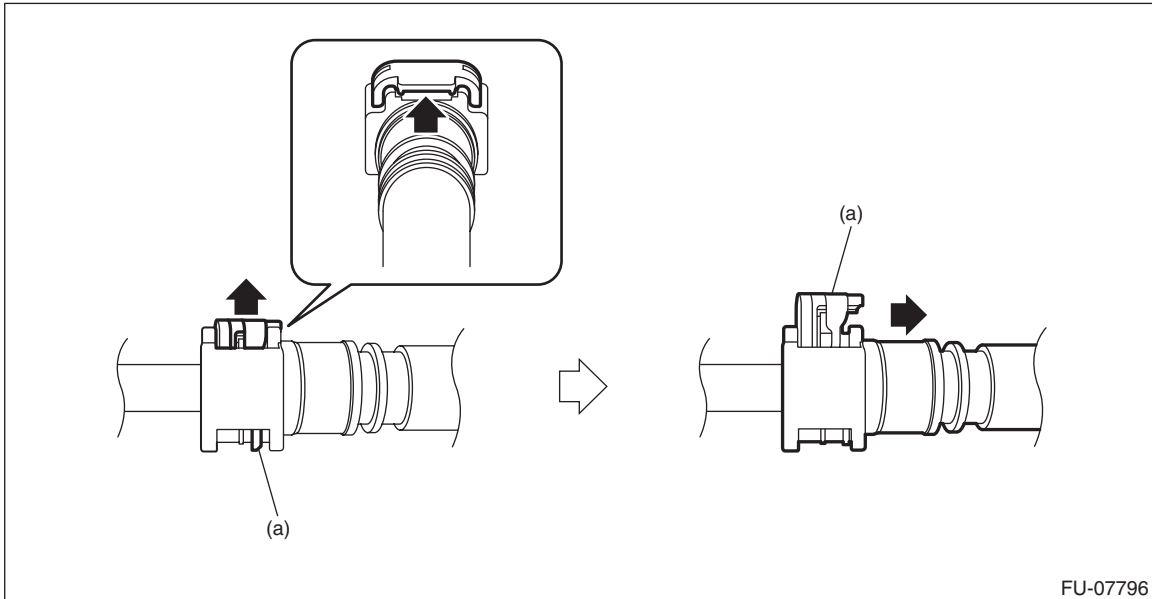
CAUTION:

- **Be careful not to spill fuel.**
- **Catch the fuel from the tubes using a container or cloth.**

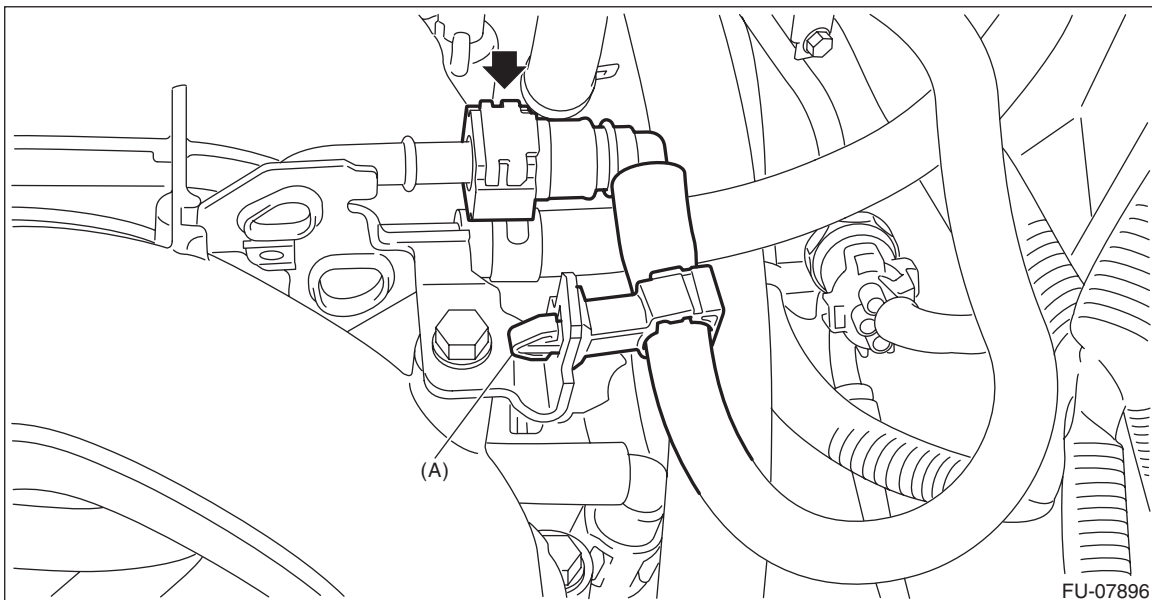
(1) Disconnect the quick connector on the fuel delivery tube from the fuel pipe assembly, and remove the clip (A) securing the fuel delivery tube.

NOTE:

Disconnect the quick connector as shown in the figure.



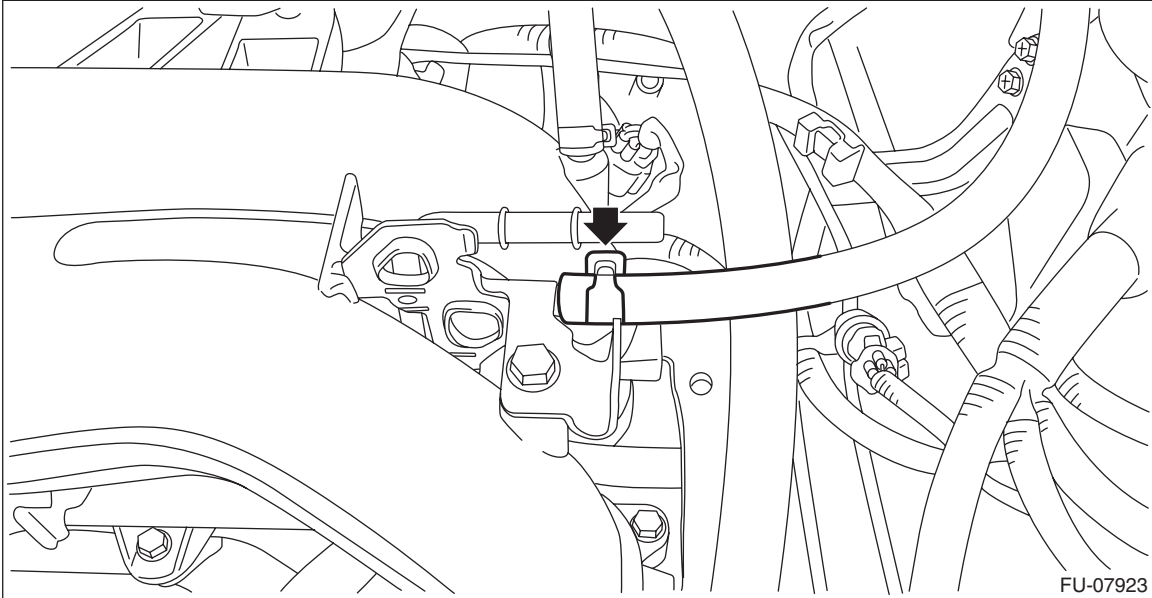
(a) Slider



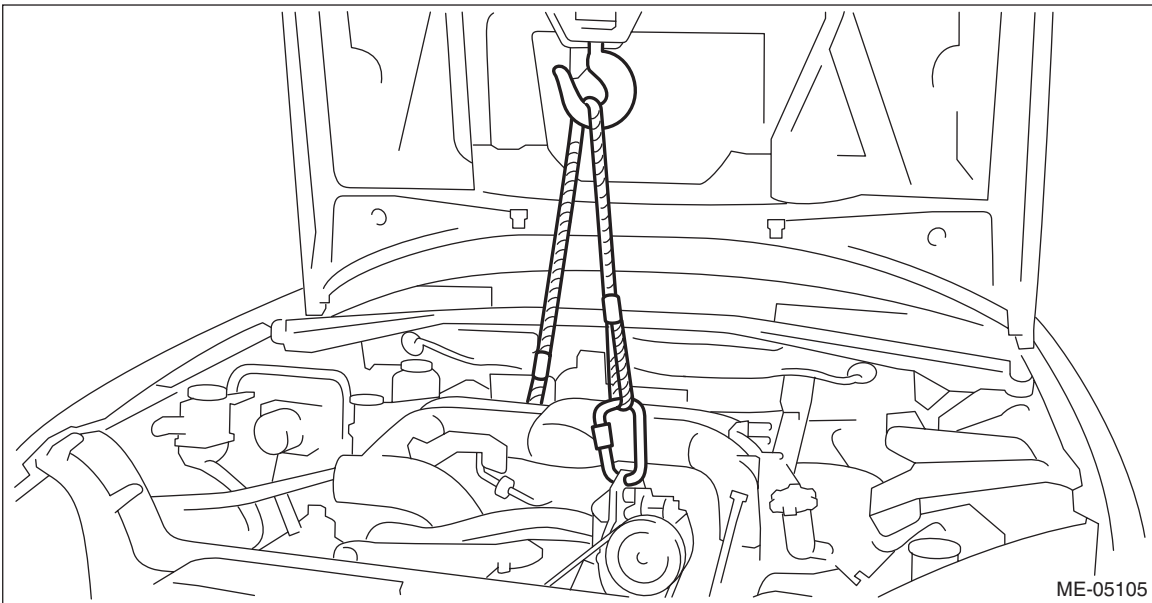
Engine Assembly

MECHANICAL

- (2) Disconnect the evaporation hose from the fuel pipe assembly.



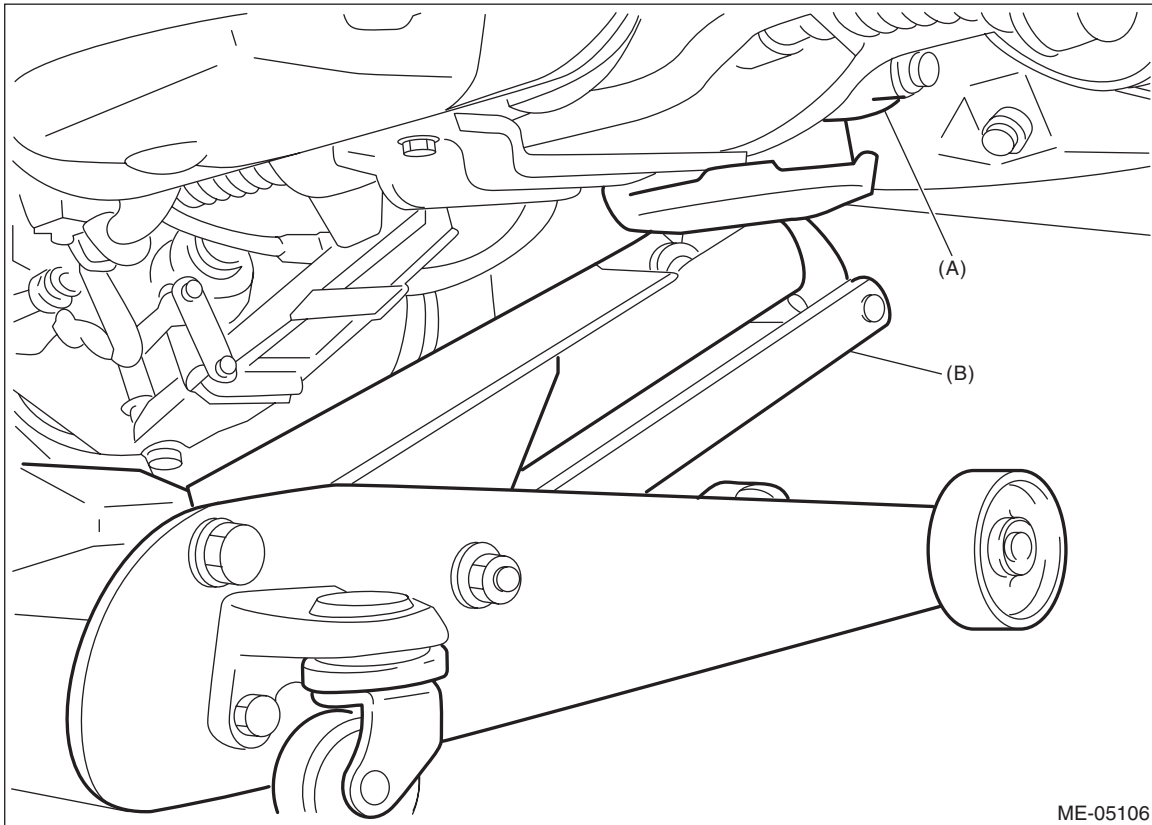
- 40) Support the engine with a lifting device and wire ropes.



41) Support the transmission with a garage jack.

CAUTION:

Be sure to perform this procedure to prevent the transmission from lowering by its own weight.



ME-05106

(A) Transmission

(B) Garage jack

Engine Assembly

MECHANICAL

42) Separate the engine and transmission.

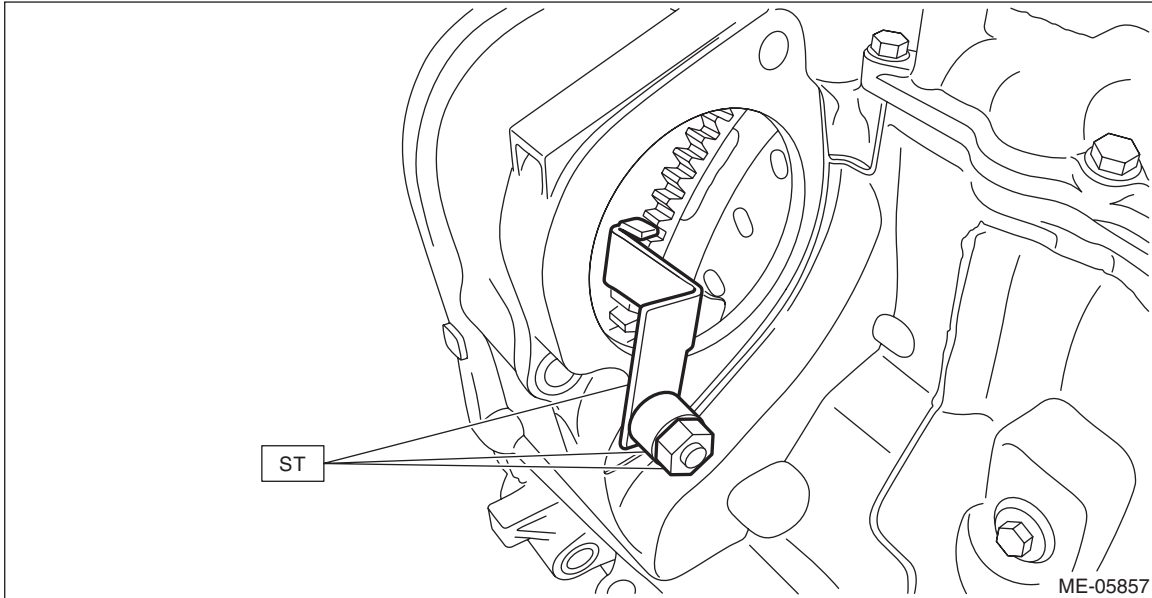
CAUTION:

Before removing the engine away from transmission, check to be sure no work has been overlooked.

(1) Remove the starter.<Ref. to SC(H4DO)-8, REMOVAL, Starter.>

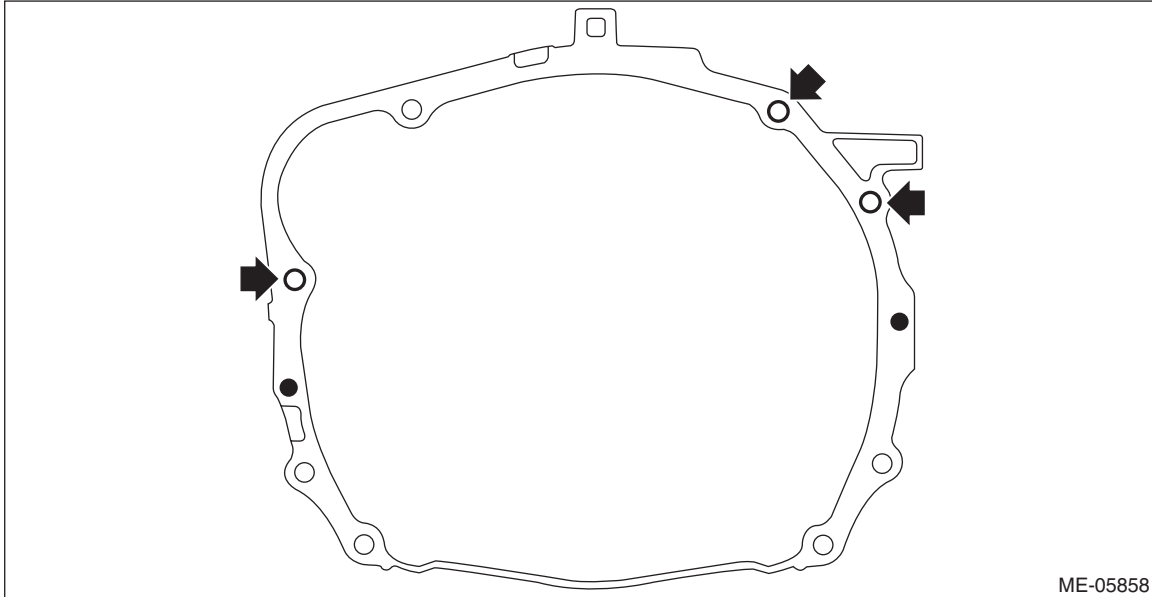
(2) Attach the ST to the torque converter clutch case. (CVT model)

ST 498277200 STOPPER SET

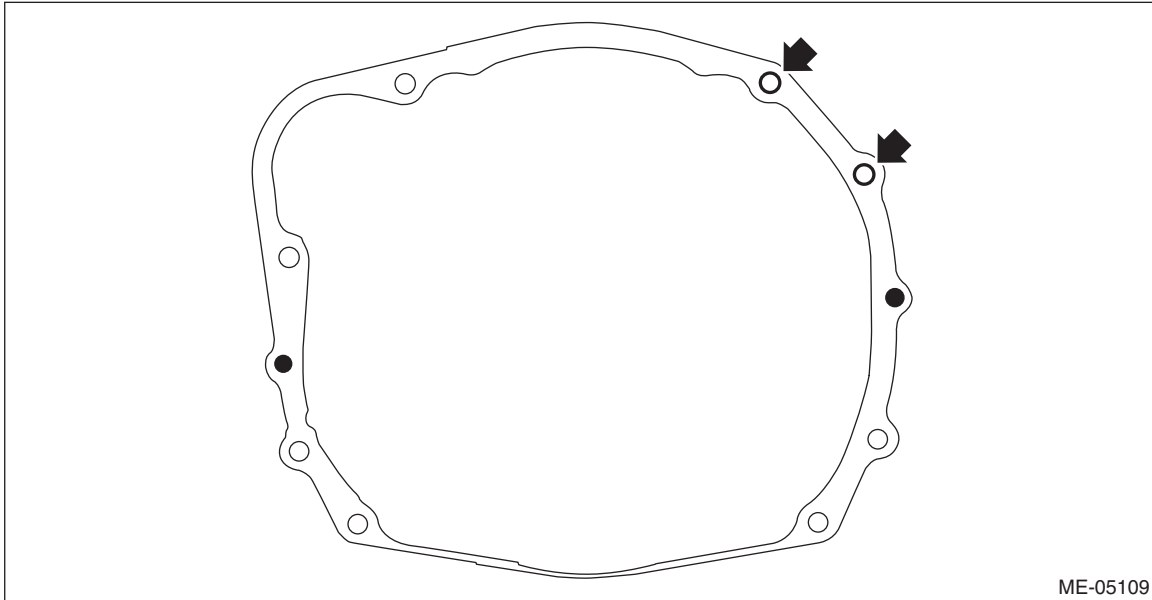


(3) Remove the bolts which hold the upper side of the transmission to the engine.

- CVT model



- MT model



ME-05109

43) Remove the engine from the vehicle.

NOTE:

Be careful not to damage adjacent parts or body panels with crank pulley, oil level gauge, etc.

- (1) Slightly raise the engine.
 - (2) Raise the transmission with garage jack.
 - (3) Move the engine horizontally until main shaft is withdrawn from clutch cover. (MT model)
 - (4) Slowly move the engine away from engine compartment.
- 44) Remove the engine mounting from the engine.

B: INSTALLATION

- 1) Install the engine mounting onto the engine.

Tightening torque:

35 N·m (3.6 kgf-m, 25.8 ft-lb)

- 2) Apply a small amount of grease to splines of main shaft. (MT model)

Grease:

NICHIMOLY N-130 or equivalent

- 3) Position the engine in engine compartment and align it with transmission.

NOTE:

Be careful not to damage adjacent parts or body panels with crank pulley, oil level gauge, etc.

Engine Assembly

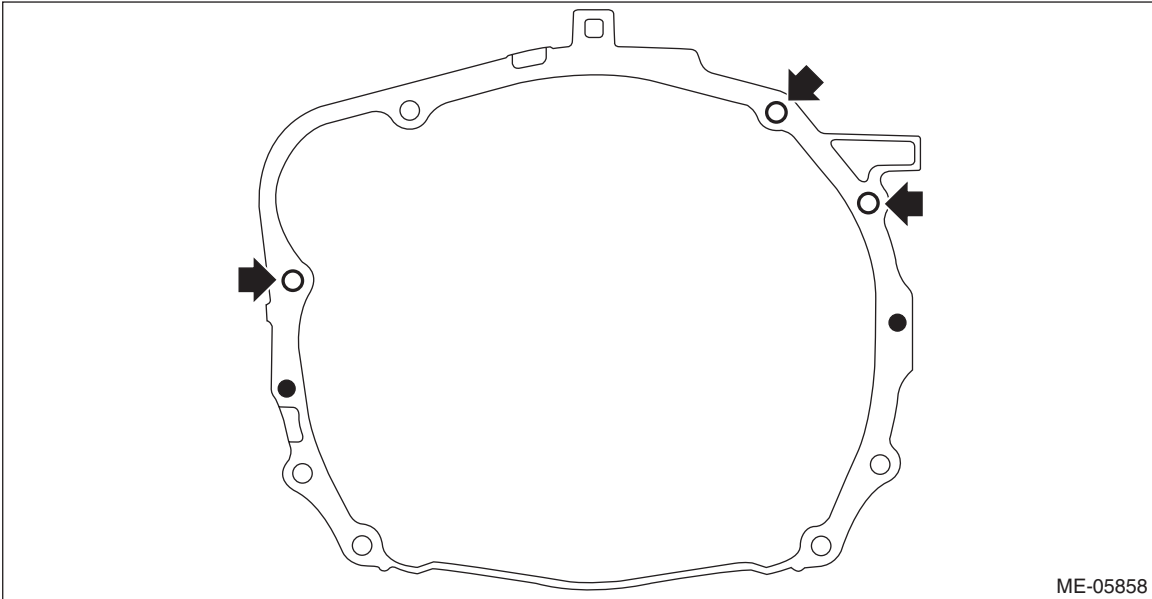
MECHANICAL

4) Install the bolts which hold upper side of transmission to engine.

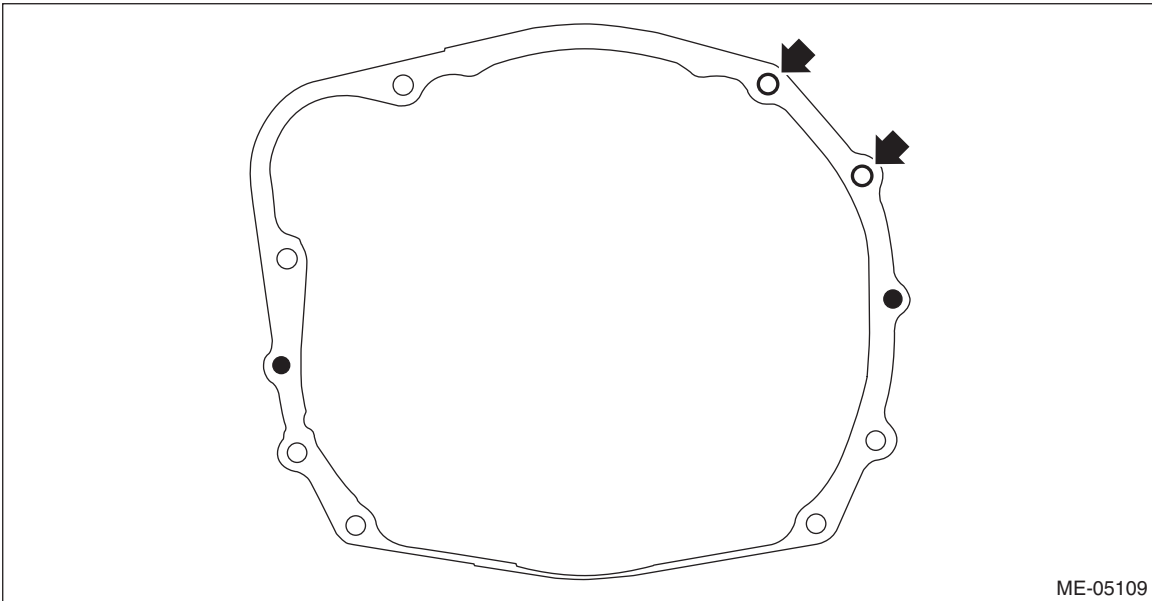
Tightening torque:

50 N·m (5.1 kgf-m, 36.9 ft-lb)

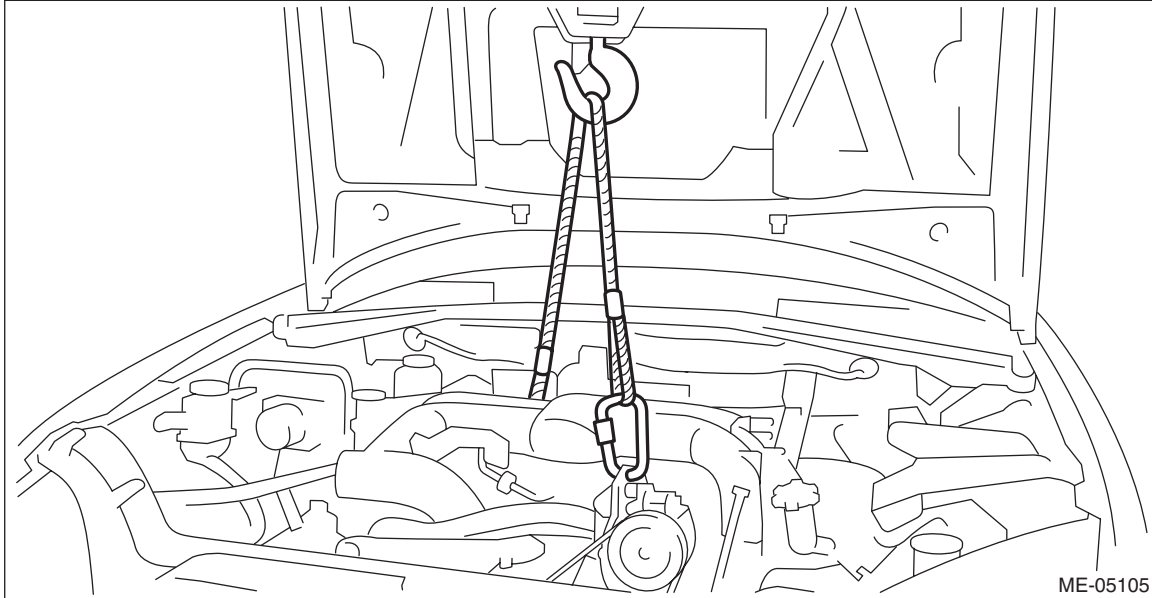
- CVT model



- MT model



5) Remove the lifting device and wire ropes.

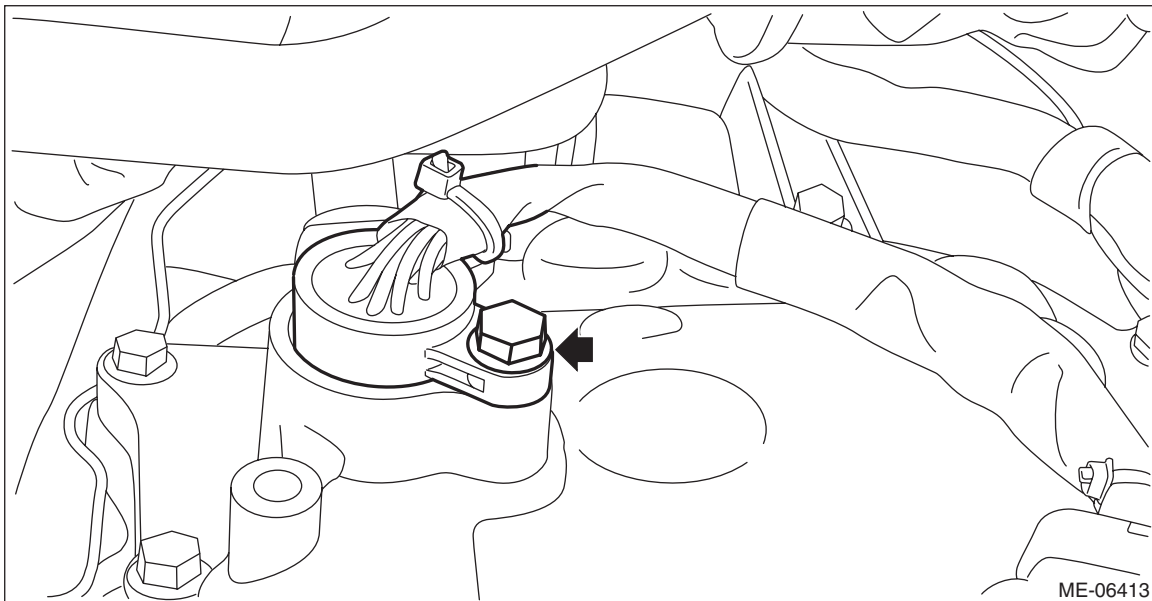


6) Remove the garage jack.

7) Remove the bolt and turn the transmission harness counterclockwise to install the transmission harness to the control valve body. (CVT model)

Tightening torque:

7 N·m (0.7 kgf-m, 5.2 ft-lb)



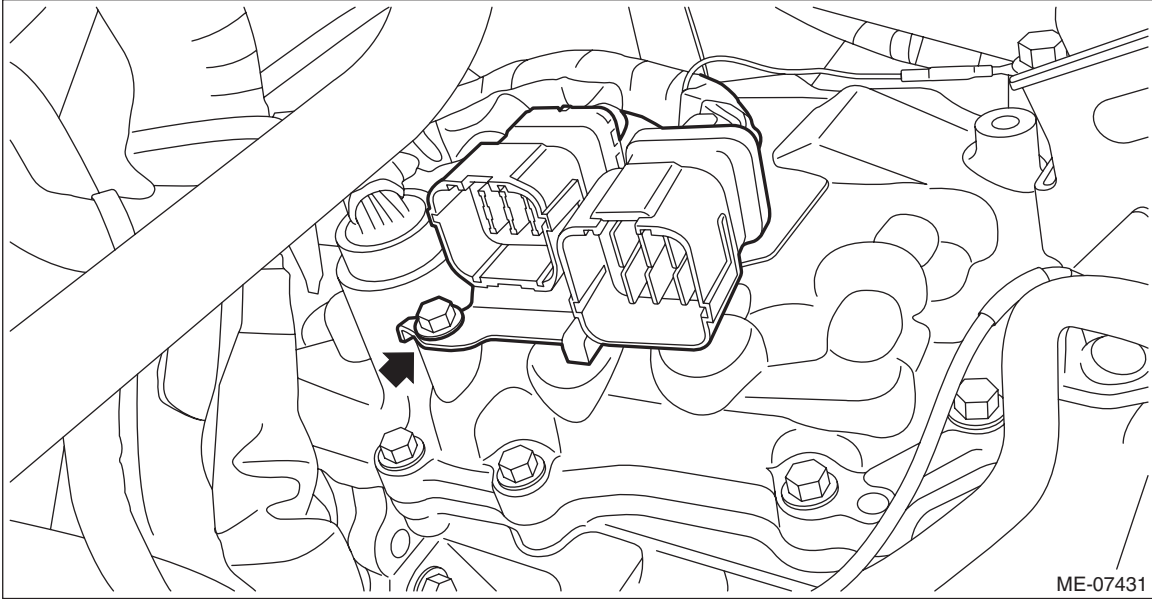
Engine Assembly

MECHANICAL

8) Install the transmission harness stay. (CVT model)

Tightening torque:

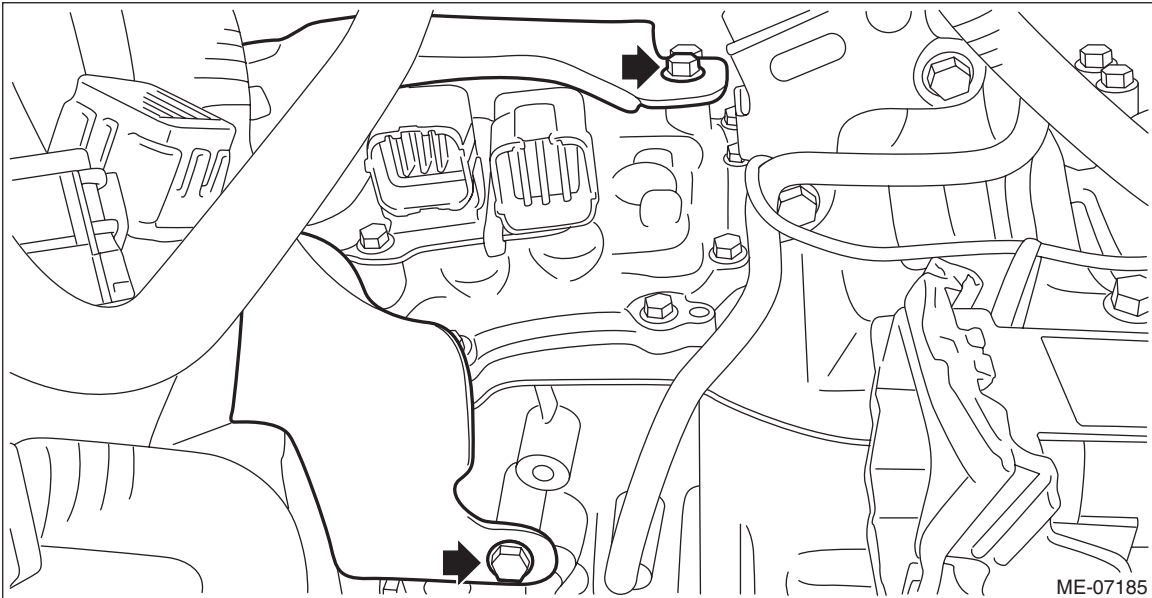
7 N·m (0.7 kgf-m, 5.2 ft-lb)



9) Install the transmission case cover. (CVT model)

Tightening torque:

8 N·m (0.8 kgf-m, 5.9 ft-lb)

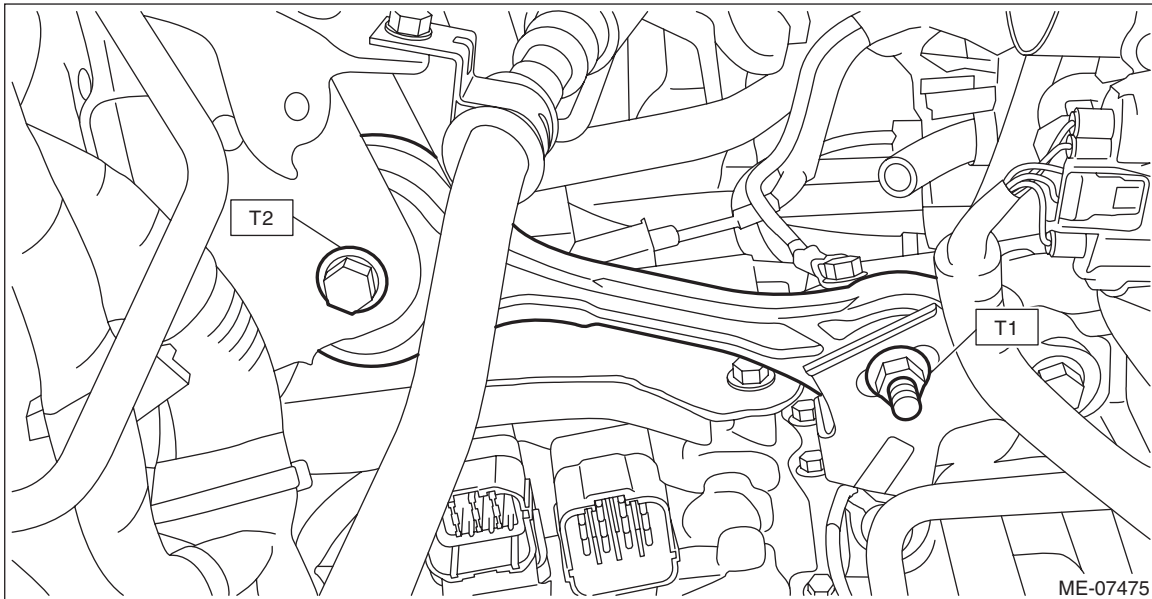


10) Install the pitching stopper.

Tightening torque:

T1: 50 N·m (5.1 kgf-m, 36.9 ft-lb)

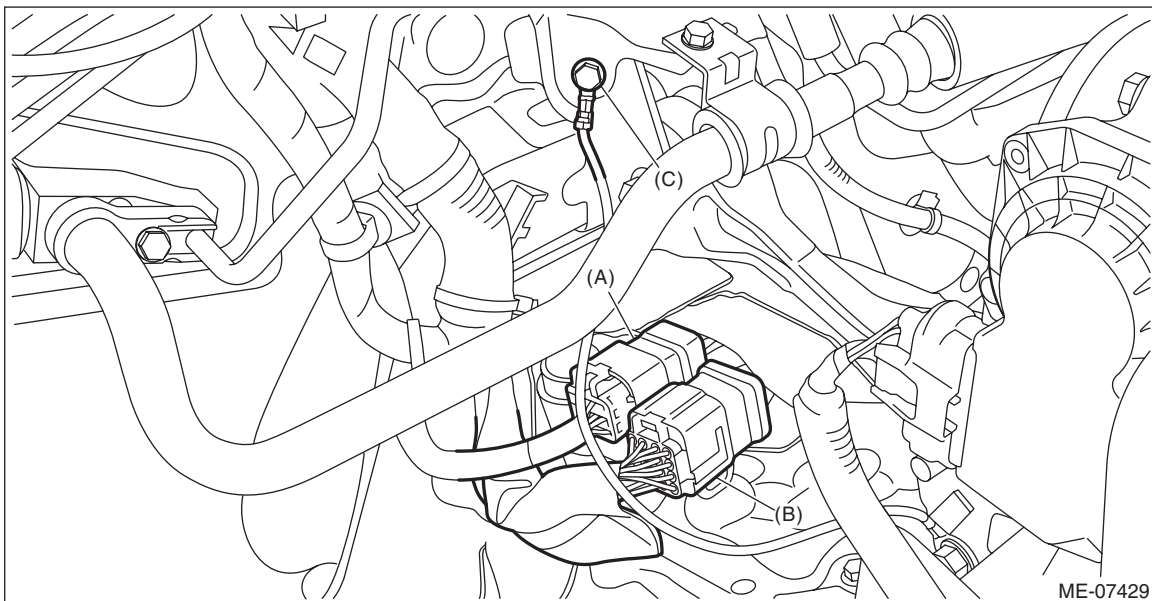
T2: 58 N·m (5.9 kgf-m, 42.8 ft-lb)



11) Connect the transmission radio ground terminal (C) to the vehicle body, and connect the bulkhead harness connector (A) to the transmission harness connector (B). (CVT model)

Tightening torque:

13 N·m (1.3 kgf-m, 9.6 ft-lb)



Engine Assembly

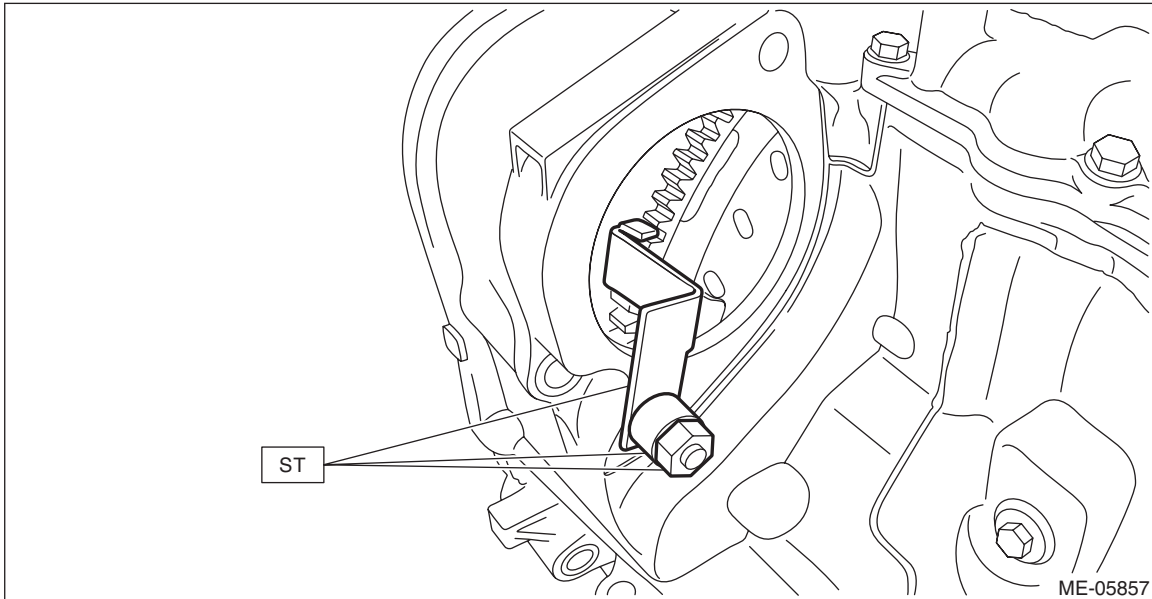
MECHANICAL

12) Remove the ST from torque converter clutch case. (CVT model)

NOTE:

Be careful not to drop the ST into the torque converter clutch case when removing the ST.

ST 498277200 STOPPER SET



13) Install the starter. <Ref. to SC(H4DO)-12, INSTALLATION, Starter.>

14) Install the torque converter clutch to drive plate. (CVT model)

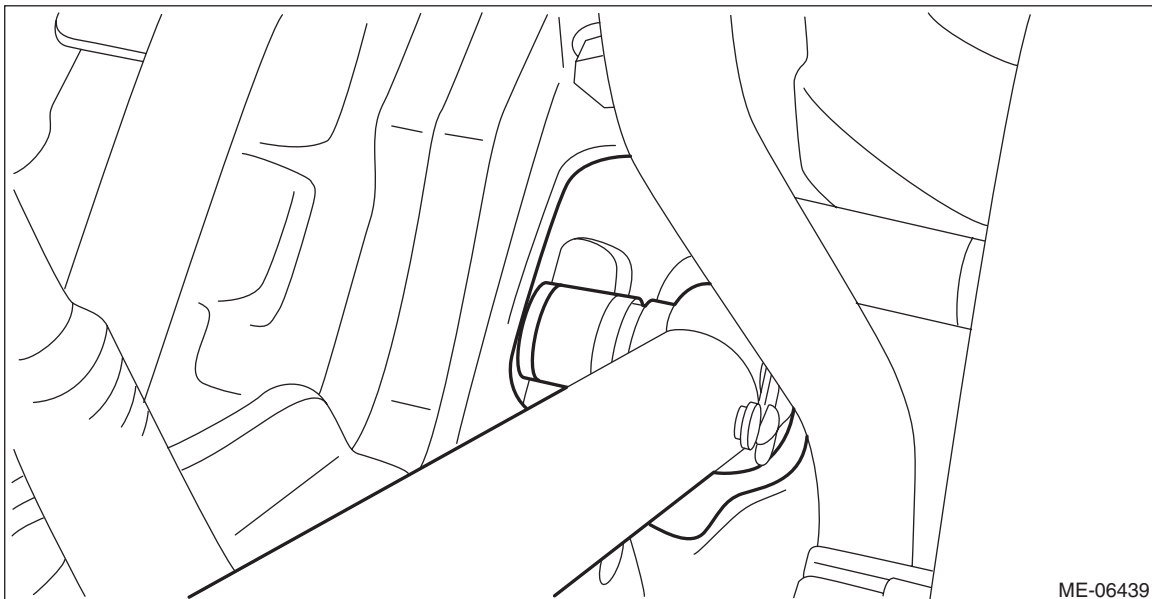
(1) Insert the wrench into the crank pulley bolt and rotate the crank pulley to install the bolts which hold torque converter clutch to drive plate.

NOTE:

Be careful not to drop bolts into the torque converter clutch case.

Tightening torque:

25 N·m (2.5 kgf-m, 18.4 ft-lb)



(2) Fit the plug to service hole.

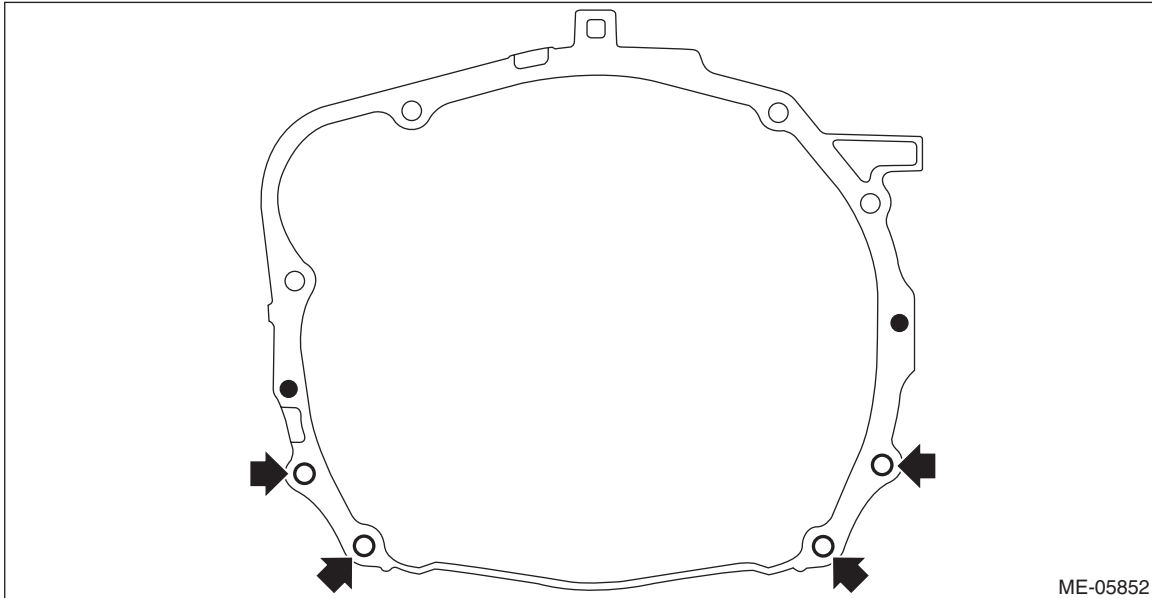
15) Lift up the vehicle.

16) Install the bolts and nuts which hold lower side of the transmission to engine.

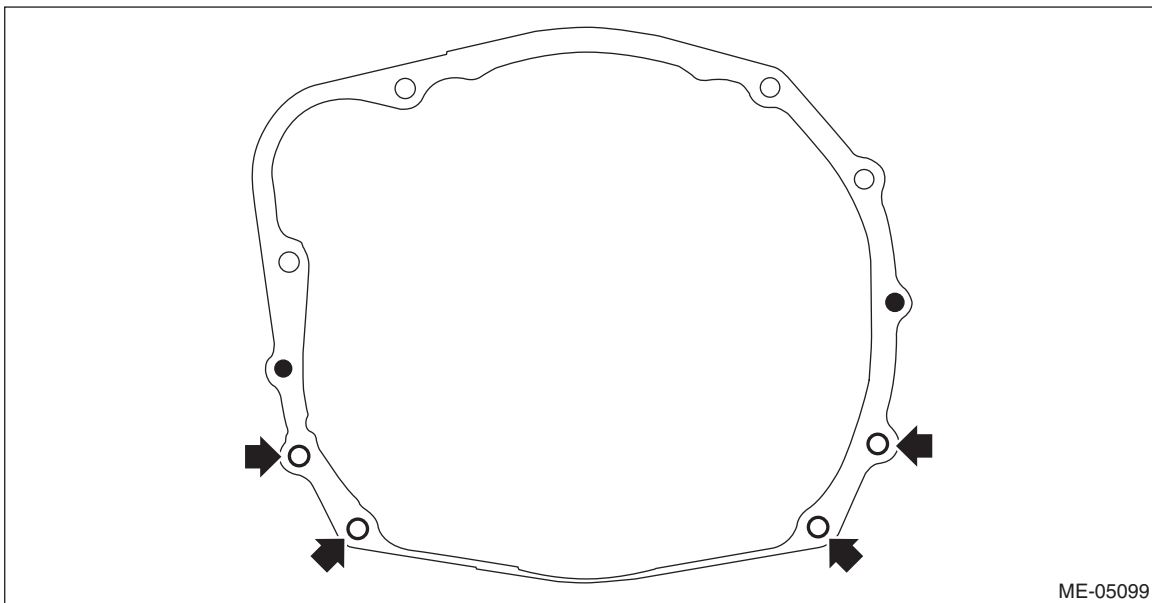
Tightening torque:

50 N·m (5.1 kgf-m, 36.9 ft-lb)

- CVT model



- MT model



Engine Assembly

MECHANICAL

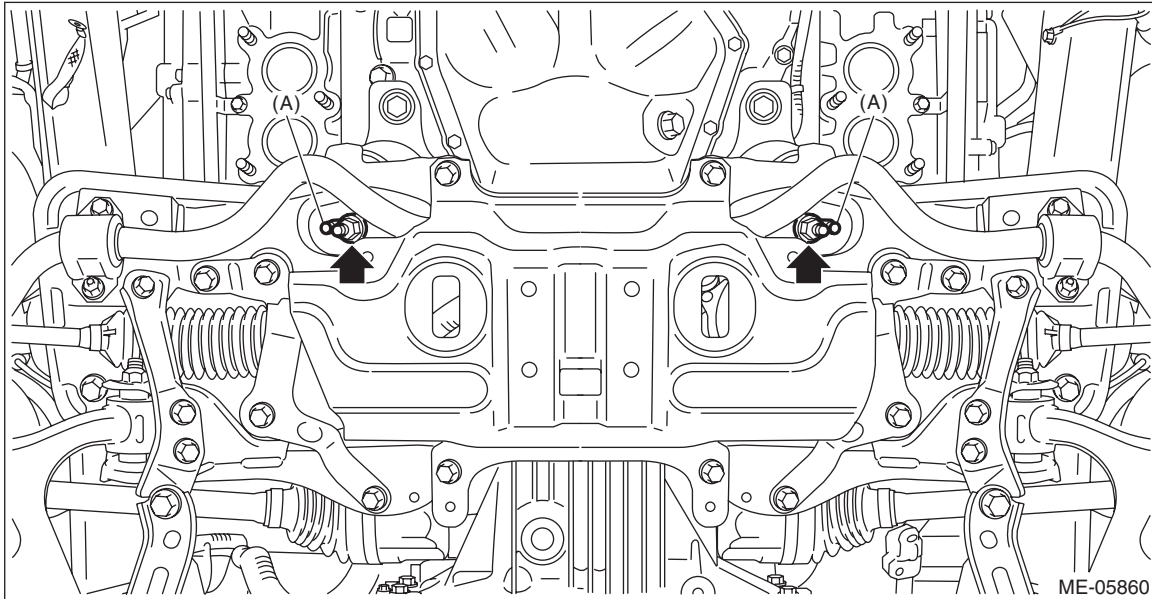
17) Install the nuts which hold the engine mounting to the crossmember. (Hydraulic engine mounting model)

NOTE:

Make sure that locators (A) of the engine mounting are securely inserted.

Tightening torque:

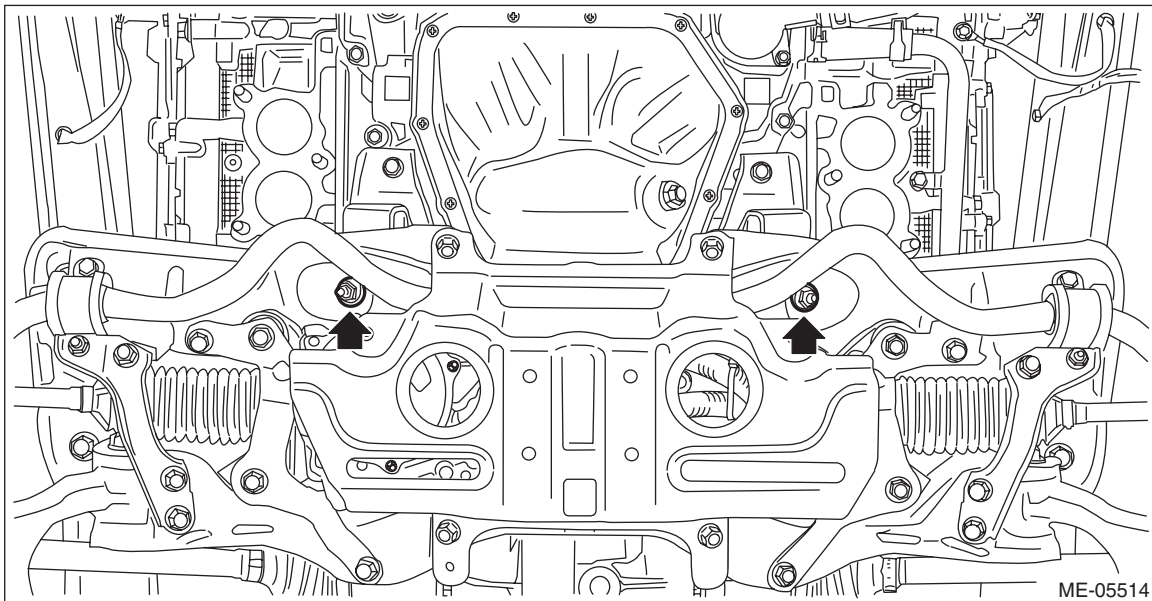
45 N·m (4.6 kgf-m, 33.2 ft-lb)



18) Install the nuts which hold the engine mounting to the crossmember. (Solid engine mounting model)

Tightening torque:

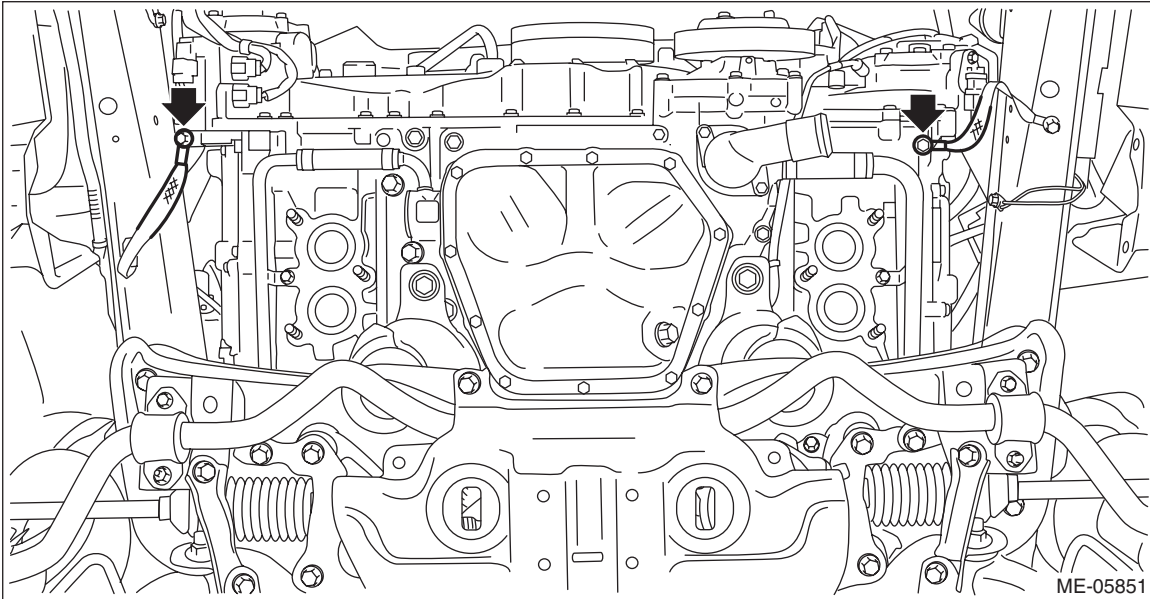
45 N·m (4.6 kgf-m, 33.2 ft-lb)



19) Connect the ground cable.

Tightening torque:

7.5 N·m (0.8 kgf-m, 5.5 ft-lb)



20) Install the under cover front - transmission.

Tightening torque:

18 N·m (1.8 kgf-m, 13.3 ft-lb)

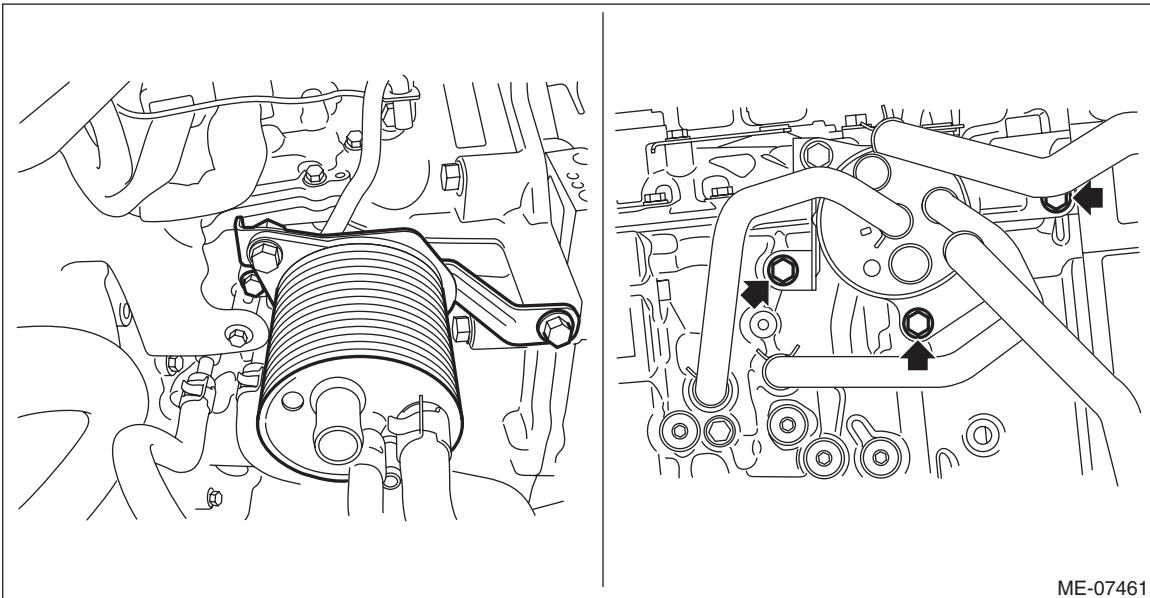
21) Install the front exhaust pipe. <Ref. to EX(H4DO)-8, INSTALLATION, Front Exhaust Pipe.>

22) Lower the vehicle.

23) Install the CVTF cooler (with warmer feature) to the transmission. (CVT model)

Tightening torque:

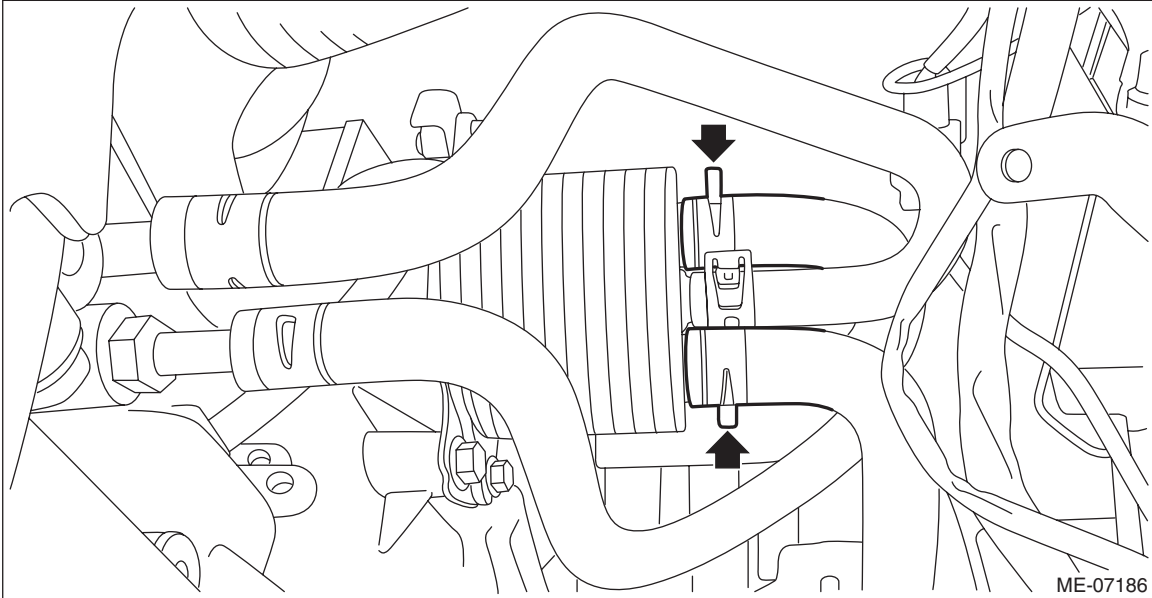
23 N·m (2.3 kgf-m, 17.0 ft-lb)



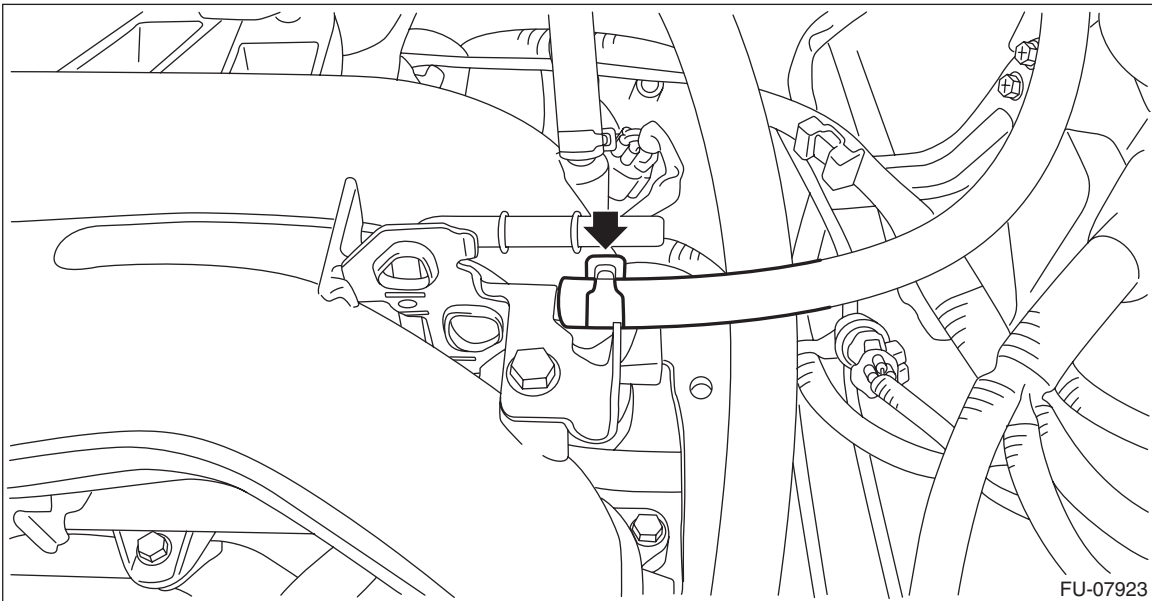
Engine Assembly

MECHANICAL

24) Connect the water hose to the CVTF cooler (with warmer feature). (CVT model)



25) Connect the fuel delivery tube and evaporation hose.
(1) Connect the evaporation hose to fuel pipe assembly.



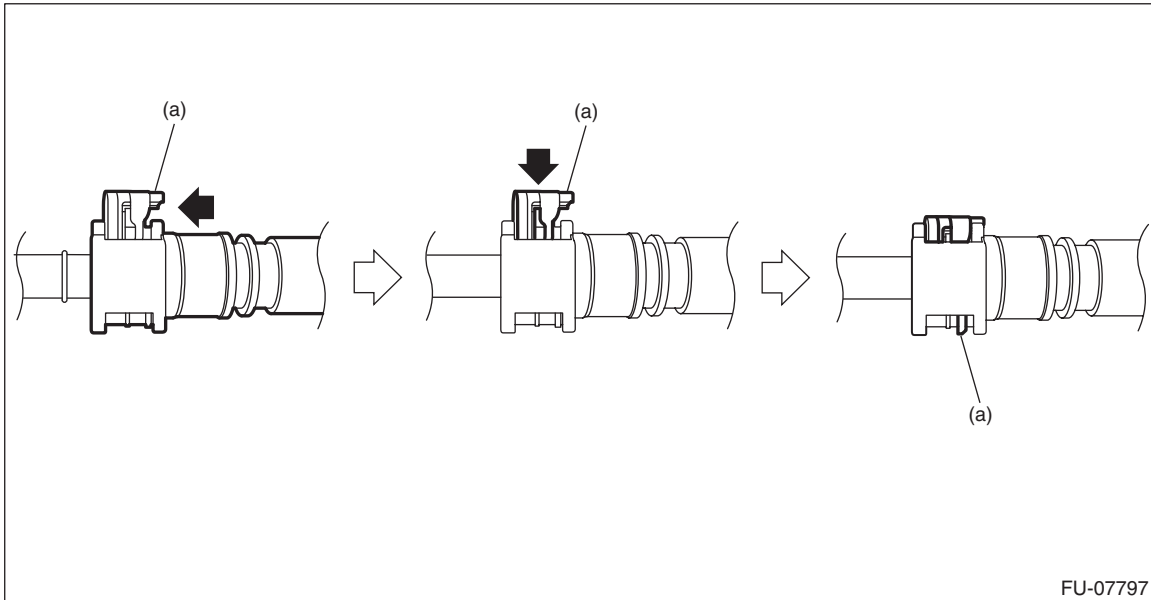
(2) Connect the quick connector on the fuel delivery tube to the fuel pipe assembly, and fix the fuel delivery tube using clip (A).

CAUTION:

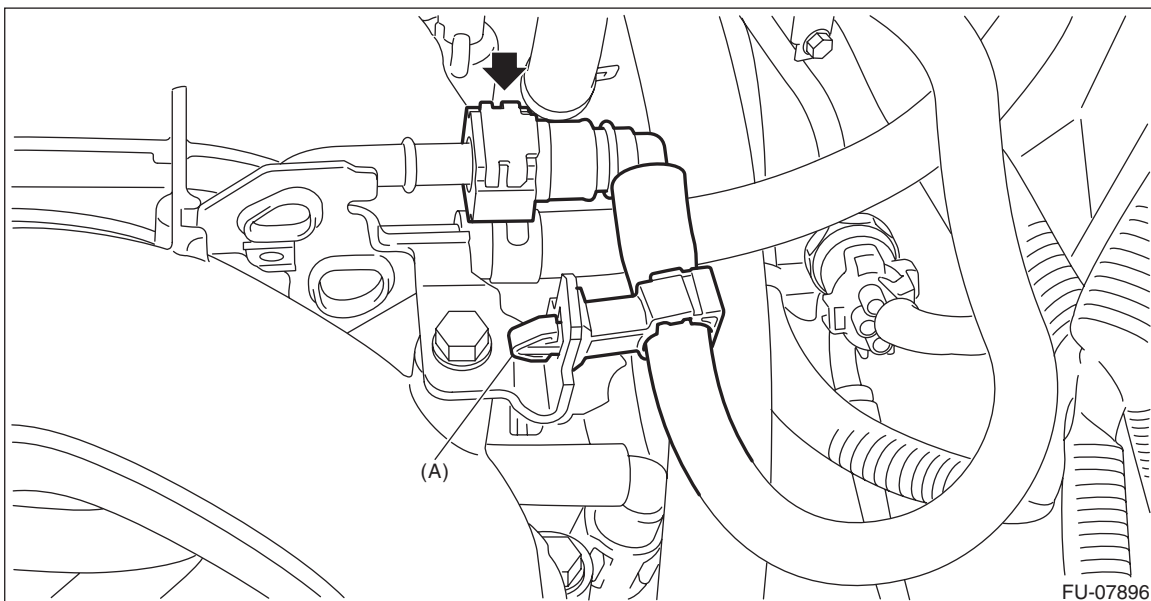
- Check that there is no damage or dust on the quick connector. If necessary, clean the seal surface of the pipe.
- When connecting the quick connector, make sure to insert the pipe all the way in before locking the slider.
- When it is difficult to lock the slider, check that the pipe is fully inserted.
- Make sure that the quick connector is securely connected.

NOTE:

Connect the quick connector as shown in the figure.



(a) Slider



Engine Assembly

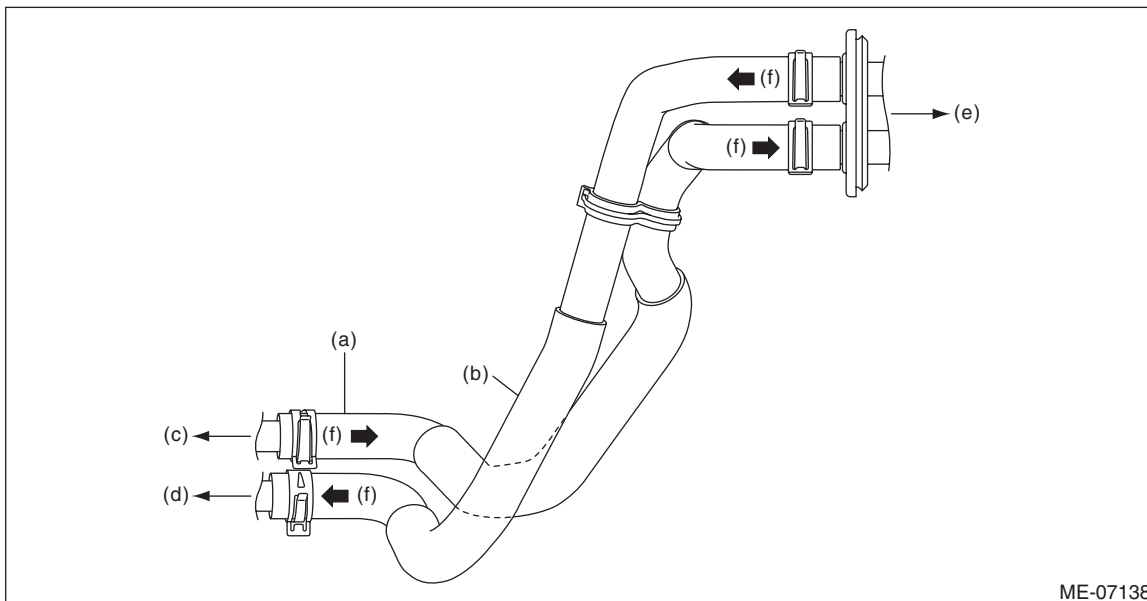
MECHANICAL

26) Connect the following hoses.

(1) Heater inlet hose and heater outlet hose

NOTE:

Be careful not to mix up the heater inlet hose and the heater outlet hose when connecting them.



(a) Heater inlet hose

(c) To water pipe ASSY

(e) To heater core ASSY

(b) Heater outlet hose

(d) To water pipe LH

(f) Engine coolant flow

(2) Brake booster vacuum hose

(3) A/C pressure hose <Ref. to AC-77, INSTALLATION, Hose and Pipe.>

27) Place the generator code and install the generator cord to the clip (D).

28) Install the bolt (E) which secures the generator cord stay B to the generator bracket.

29) Connect connector (A) and terminal (B) to the generator, and connect connector (C) to A/C compressor.

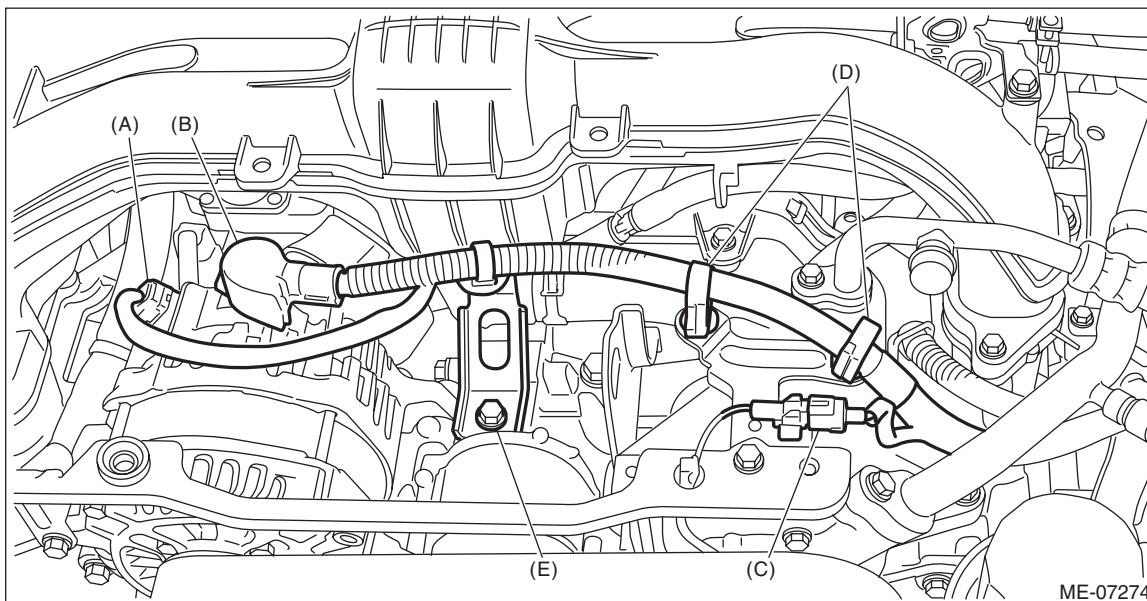
Tightening torque:

Generator cord stay B (E)

6.4 N·m (0.7 kgf-m, 4.7 ft-lb)

Terminal (B)

15 N·m (1.5 kgf-m, 11.1 ft-lb)



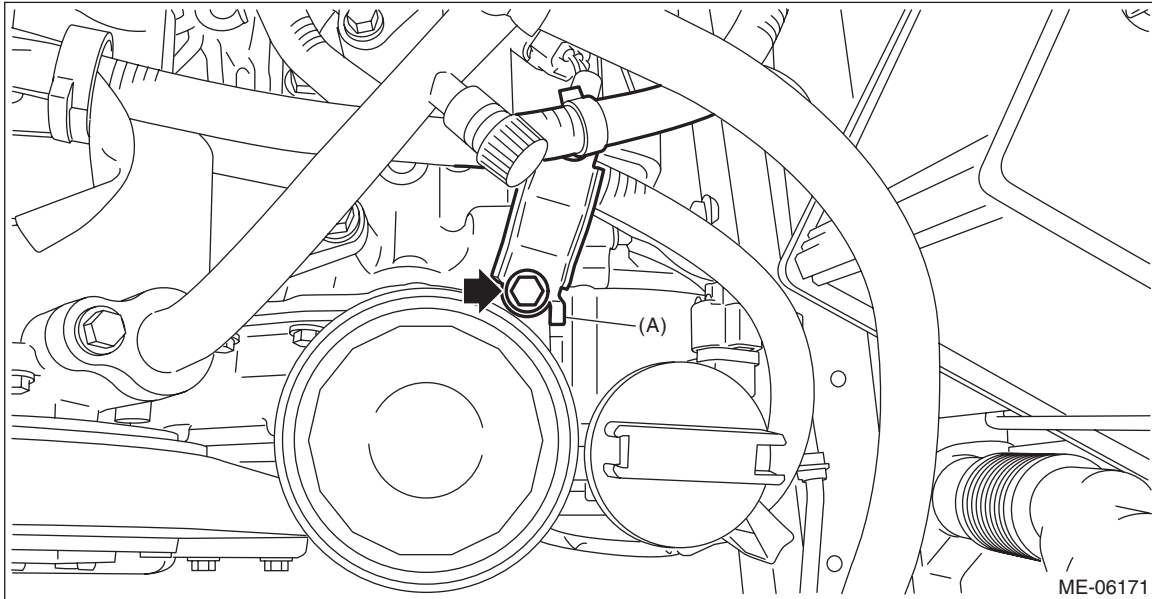
30) Install the generator cord stay A to the chain cover.

NOTE:

Install the generator cord stay so that the folded end (A) touches at the chain cover boss.

Tightening torque:

6.4 N·m (0.7 kgf-m, 4.7 ft-lb)

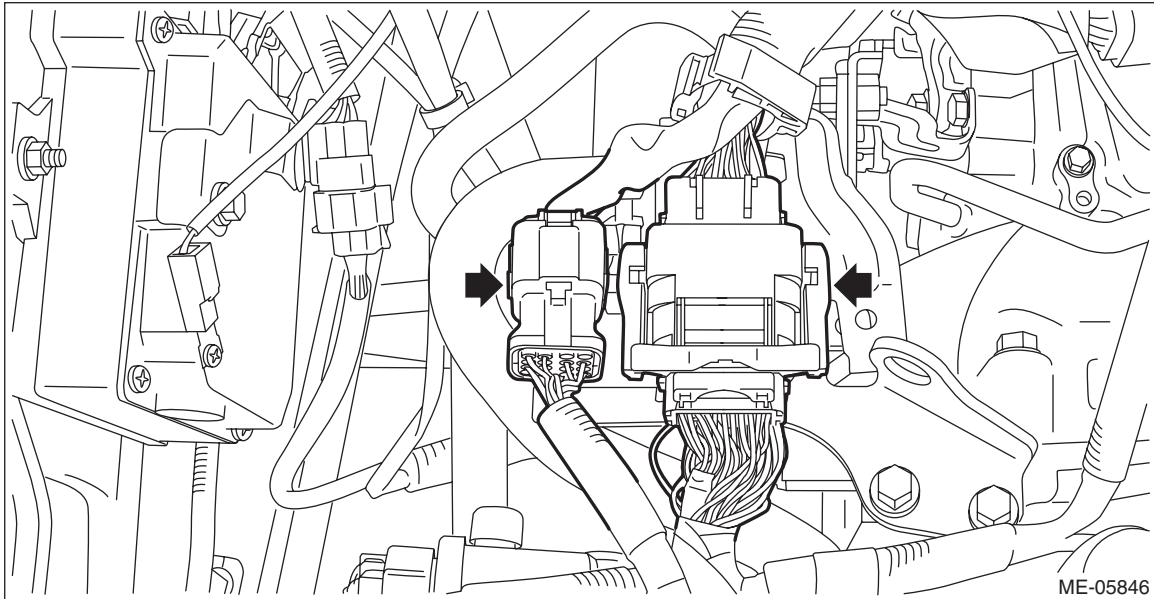


Engine Assembly

MECHANICAL

31) Connect the engine harness connector.

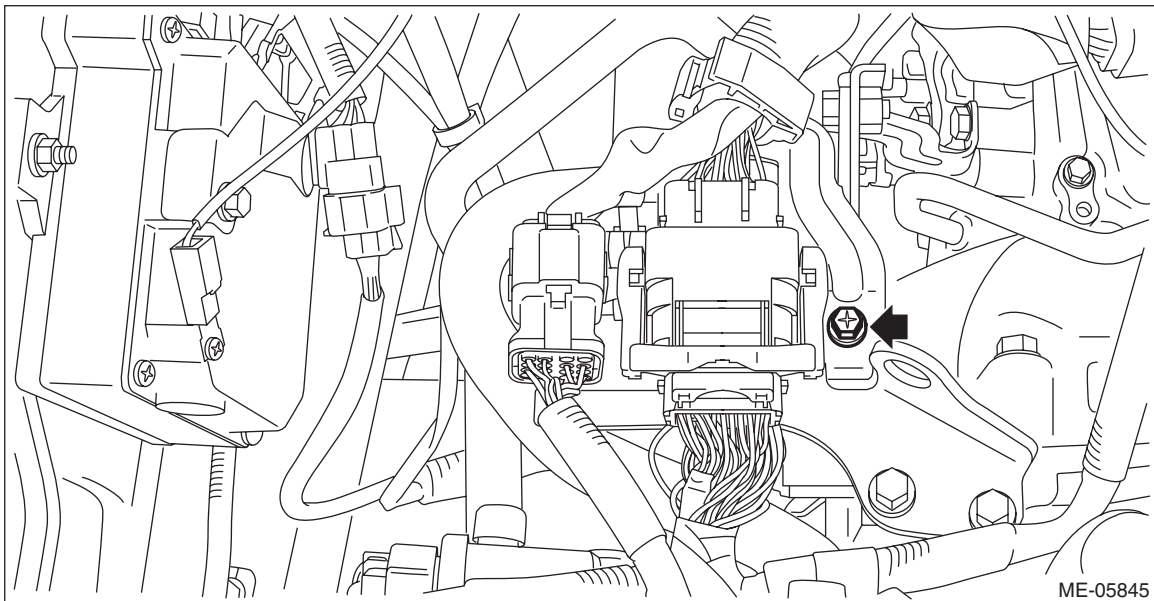
(1) Connect the bulkhead harness connector to the engine harness connector (black) and engine harness connector (brown).



(2) Install the bolt which secures the bulkhead harness connector bracket.

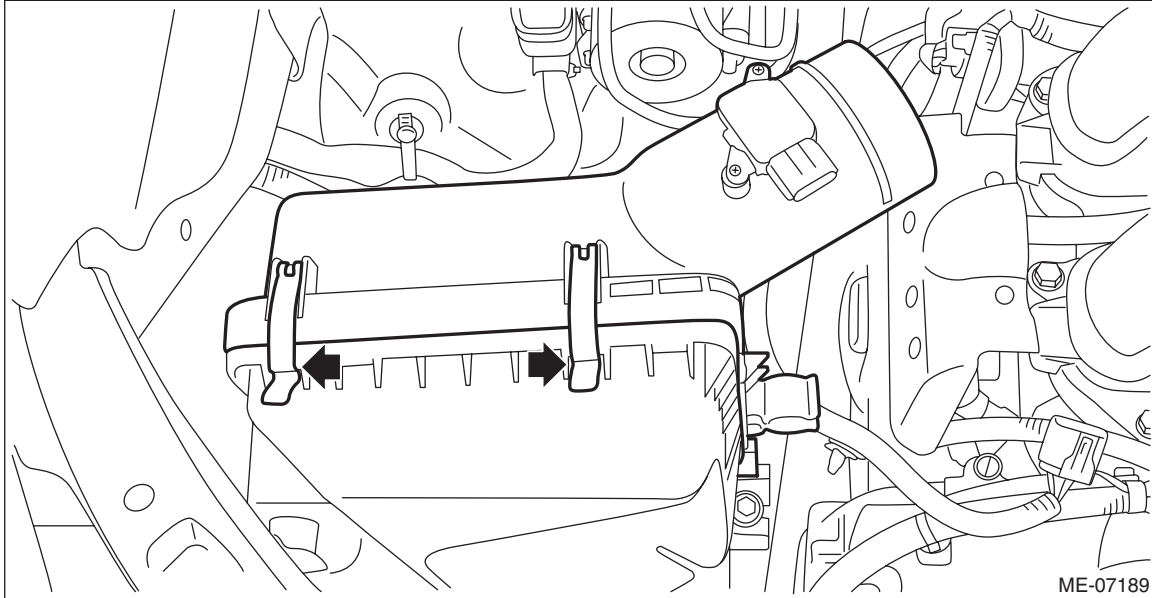
Tightening torque:

7.5 N·m (0.8 kgf-m, 5.5 ft-lb)

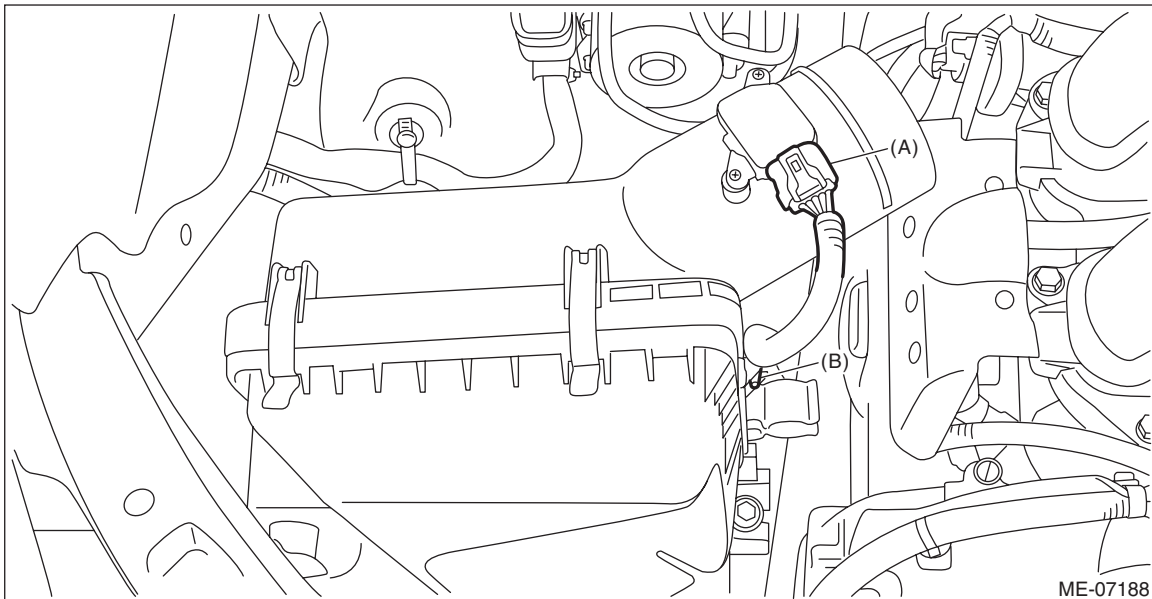


32) Install the radiator. <Ref. to CO(H4DO)-55, INSTALLATION, Radiator.>

33) Install the air intake case (rear).



34) Install the clip (B) which secures the air flow and intake air temperature sensor harness, and connect the connector (A) to the air flow and intake air temperature sensor.



35) Install the air intake boot. <Ref. to IN(H4DO)-11, INSTALLATION, Air Intake Boot.>

36) Install the air intake duct. <Ref. to IN(H4DO)-12, INSTALLATION, Air Intake Duct.>

37) Connect the battery ground terminal.

38) Fill engine coolant. <Ref. to CO(H4DO)-15, FILLING OF ENGINE COOLANT, REPLACEMENT, Engine Coolant.>

39) Check the CVTF level and replenish it if necessary. (CVT model) <Ref. to CVT(TR580)-35, ADJUSTMENT, CVTF.>

40) Charge the A/C system with refrigerant. <Ref. to AC-29, PROCEDURE, Refrigerant Charging Procedure.>

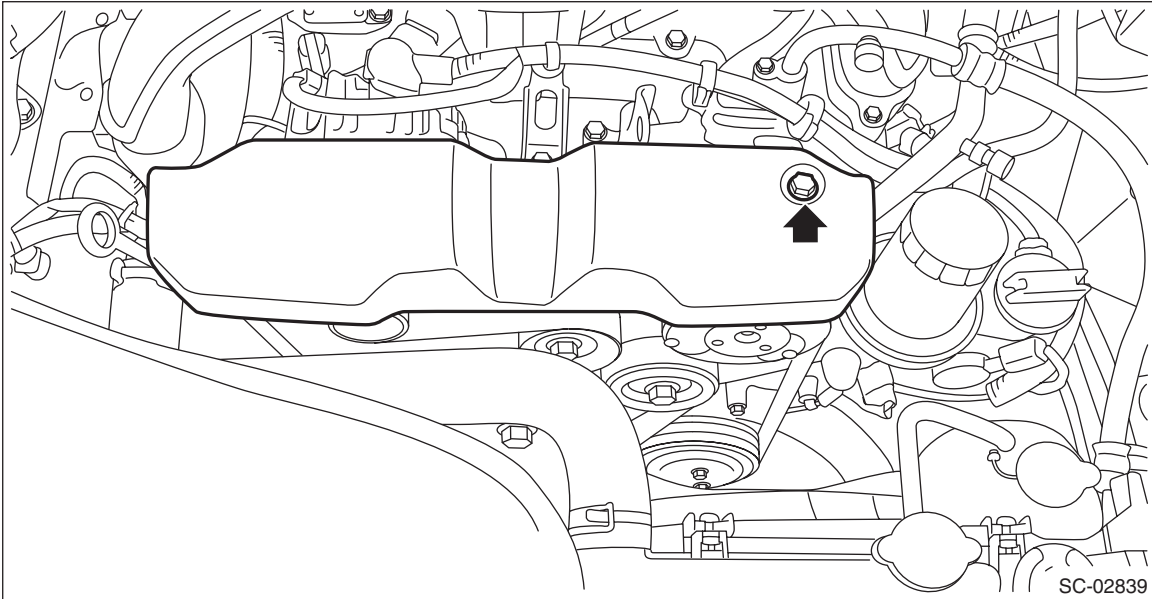
Engine Assembly

MECHANICAL

41) Install the V-belt cover.

Tightening torque:

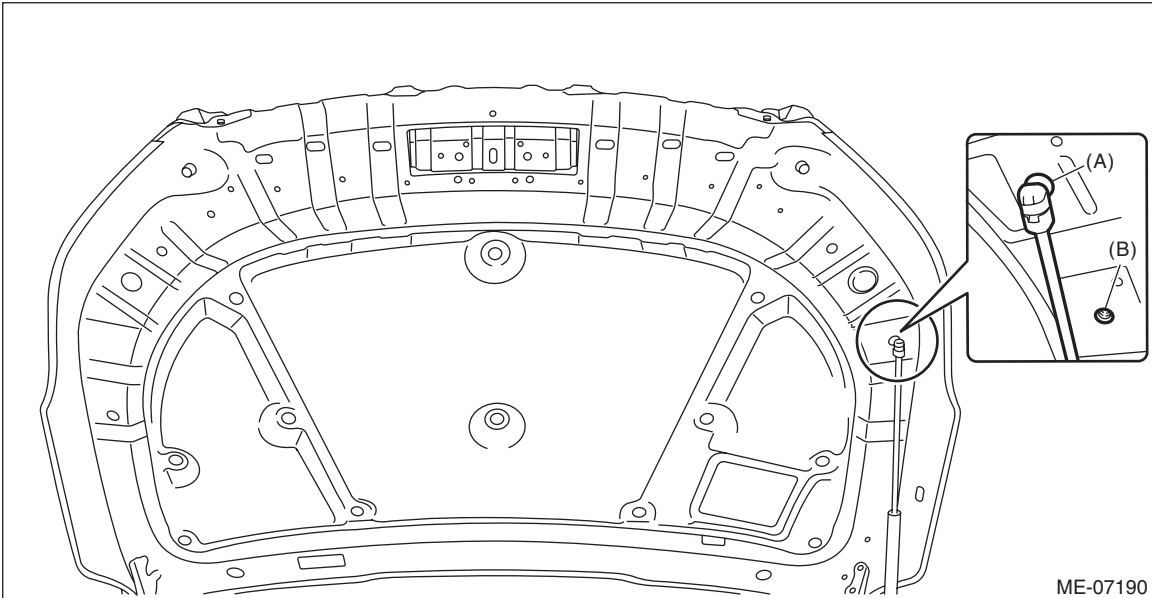
6.4 N·m (0.7 kgf-m, 4.7 ft-lb)



42) Change the installation position of the front hood damper from (B) to (A).

Tightening torque:

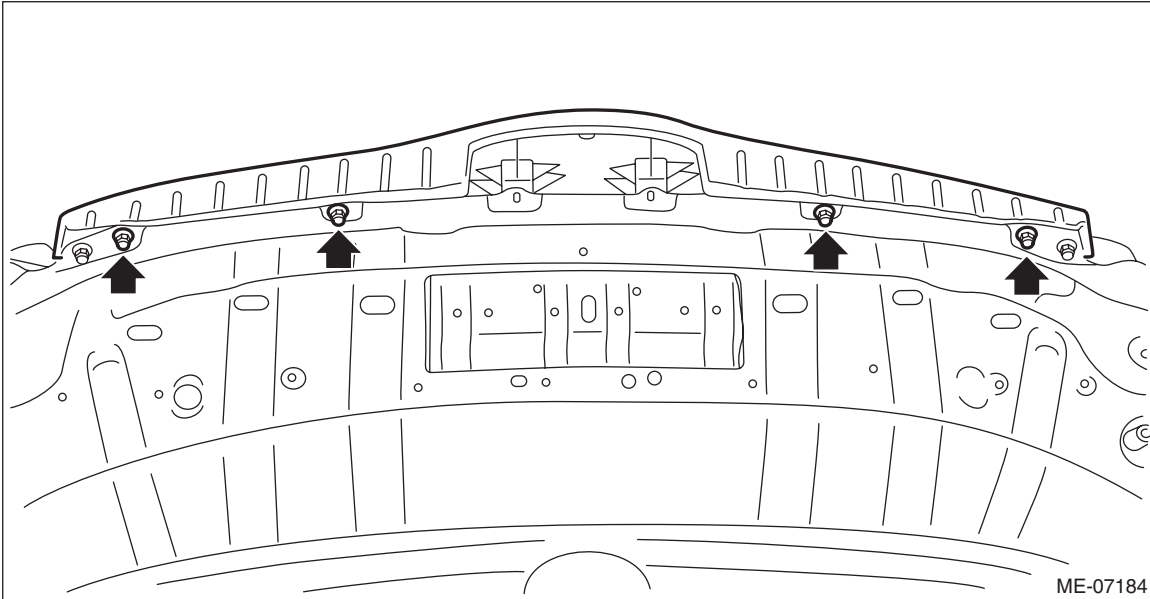
20 N·m (2.0 kgf-m, 14.8 ft-lb)



43) Install the front center grille assembly to the front hood.

Tightening torque:

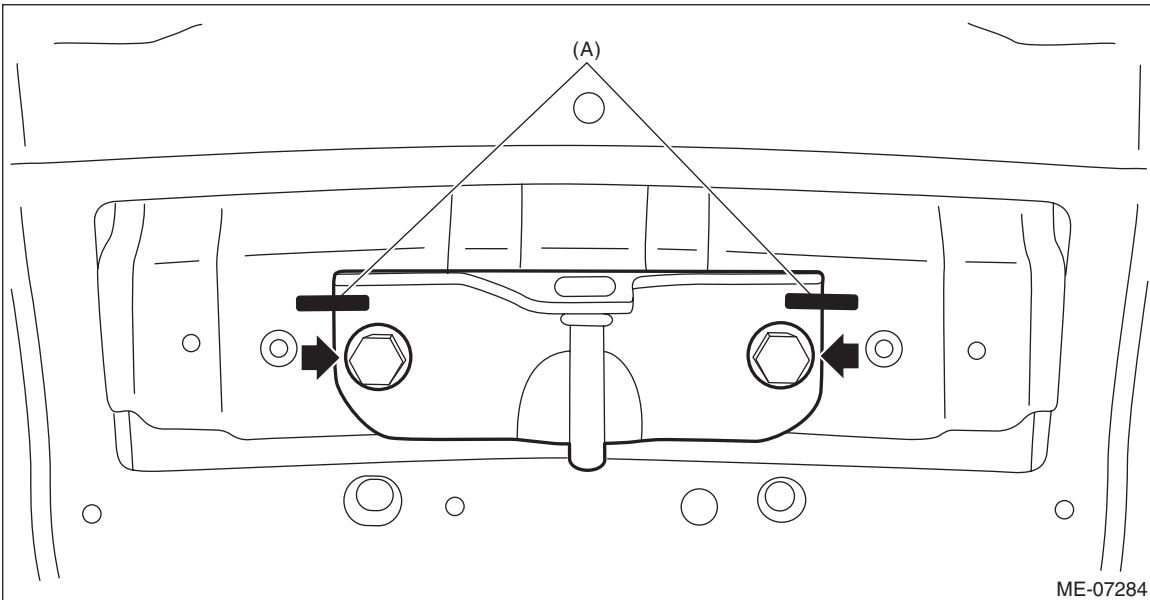
4.5 N·m (0.5 kgf-m, 3.3 ft-lb)



44) Align the alignment marks (A), and install the front hood striker to the front hood.

Tightening torque:

33 N·m (3.4 kgf-m, 24.3 ft-lb)



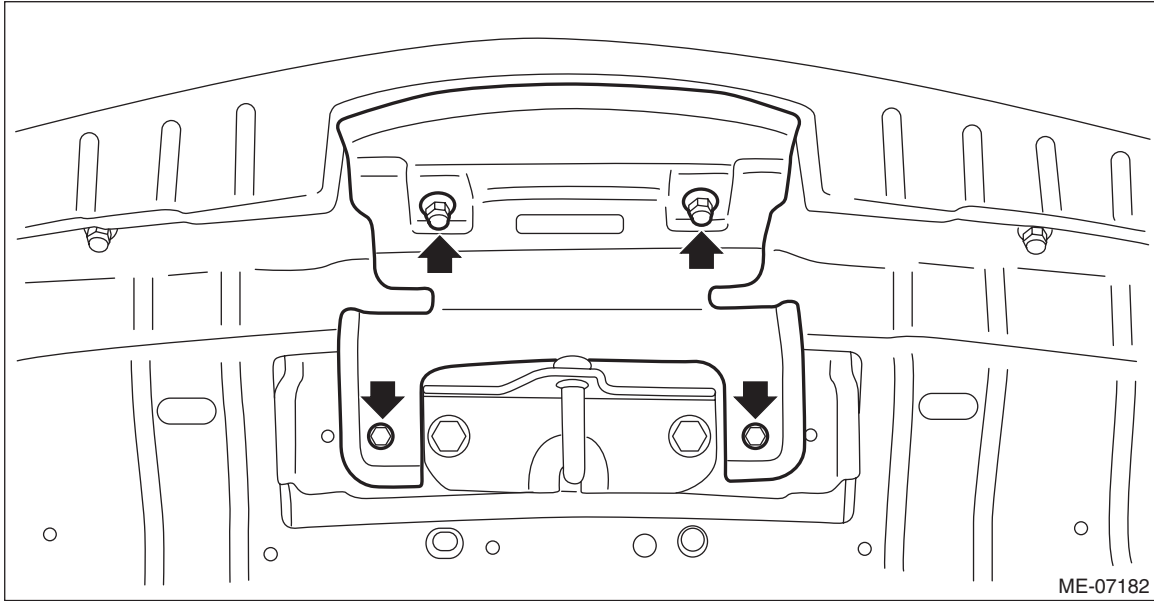
Engine Assembly

MECHANICAL

45) Install the upper grille bracket to the front hood, and close the front hood.

Tightening torque:

4.5 N·m (0.5 kgf-m, 3.3 ft-lb)



C: INSPECTION

- 1) Check that pipes, hoses, connectors and clamps are installed firmly.
- 2) Check the engine coolant is at specified level.
- 3) Check CVTF is at the specified level. (CVT model)
- 4) Start the engine and check for exhaust gas, engine coolant, leaks of fuel, etc. Also check for noise and vibrations.