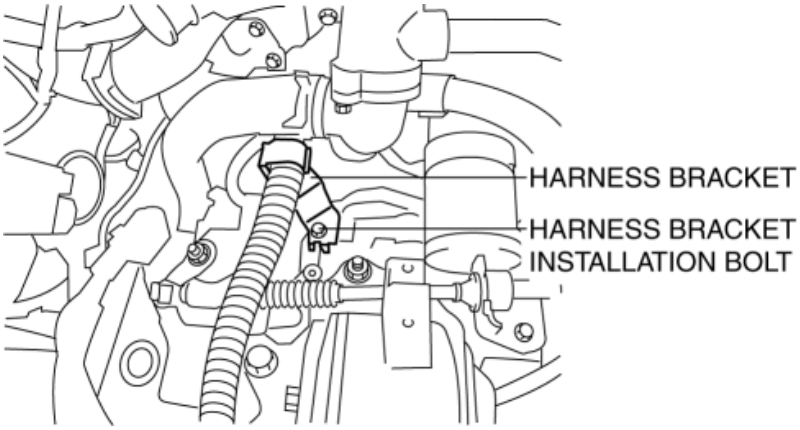
2012 - Mazda6 - Engine

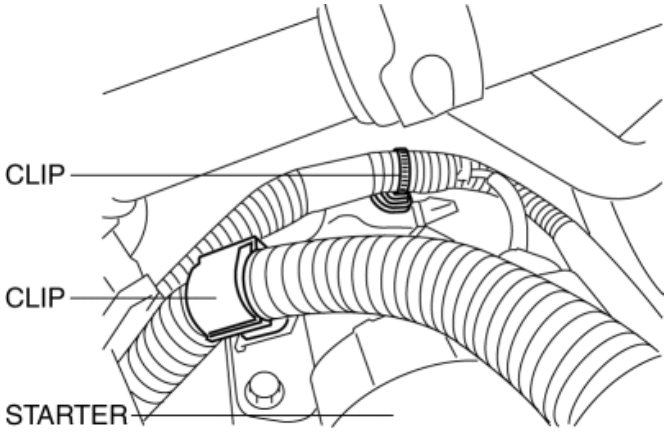
OIL PAN REMOVAL/ INSTALLATION [MZI 3.7 V6]

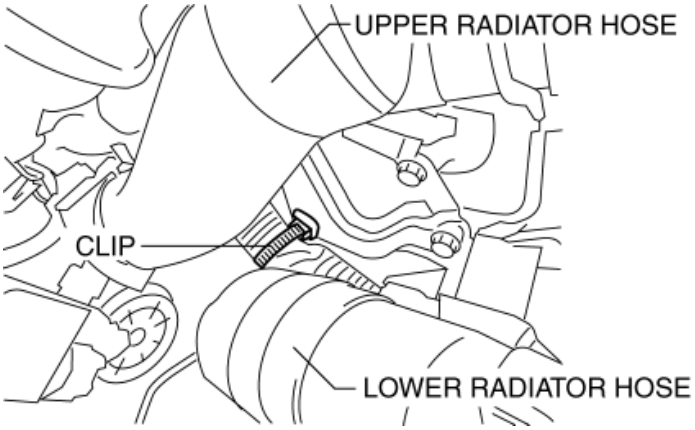
Removal

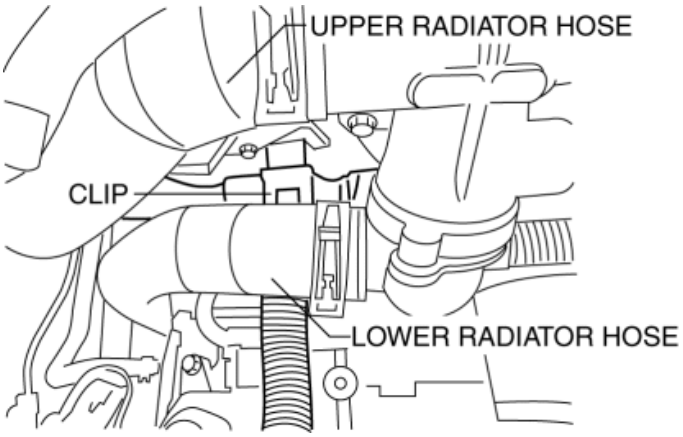
1. Remove the battery and battery tray. (See **BATTERY REMOVAL/ INSTALLATION [MZI 3.7 V6]**.)
2. Remove the engine cover. (See **ENGINE COVER REMOVAL/ INSTALLATION [MZI 3.7 V6]**.)
3. Remove the dipstick.
4. Remove the fresh-air duct and air cleaner component as a single unit. (See **INTAKE-AIR SYSTEM REMOVAL/ INSTALLATION [MZI 3.7 V6]**.)
5. Remove the air hose. (See **INTAKE-AIR SYSTEM REMOVAL/ INSTALLATION [MZI 3.7 V6]**.)
6. Remove the harness bracket.



7. Remove the clips.







8. Remove the starter (See **STARTER REMOVAL/ INSTALLATION [MZI 3.7 V6]**.)

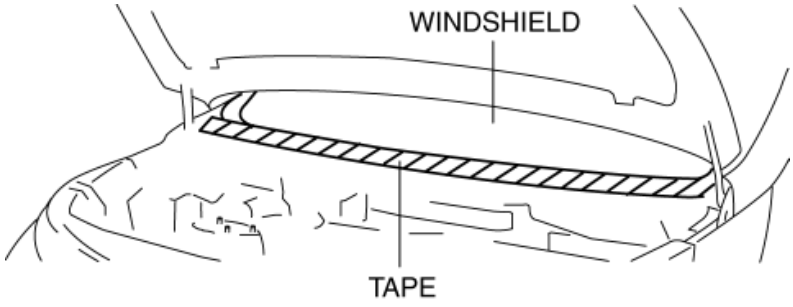
9. Remove the following parts to install the **SST**.

   a. The windshield wiper arm and blade. (See **WINDSHIELD WIPER ARM AND BLADE REMOVAL/ INSTALLATION**.)

   b. The cowl grille. (See **COWL GRILLE REMOVAL/ INSTALLATION**.)

   c. The cowl panel. (See **COWL PANEL REMOVAL/ INSTALLATION**.)

10. Protect the windshield using tape.



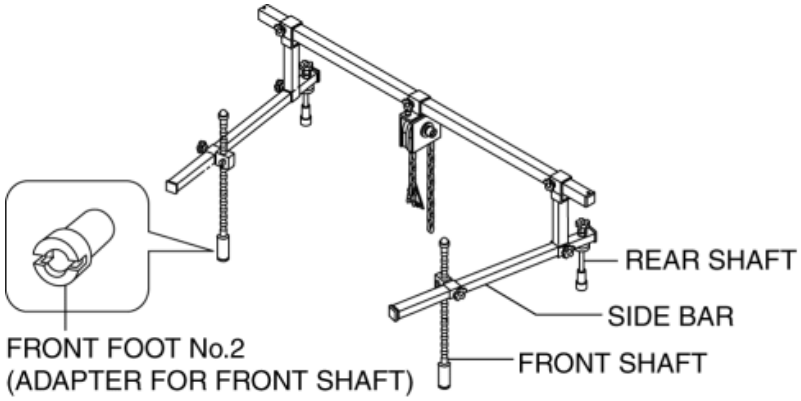
11. Install the **SST** using the following procedure.

CAUTION:

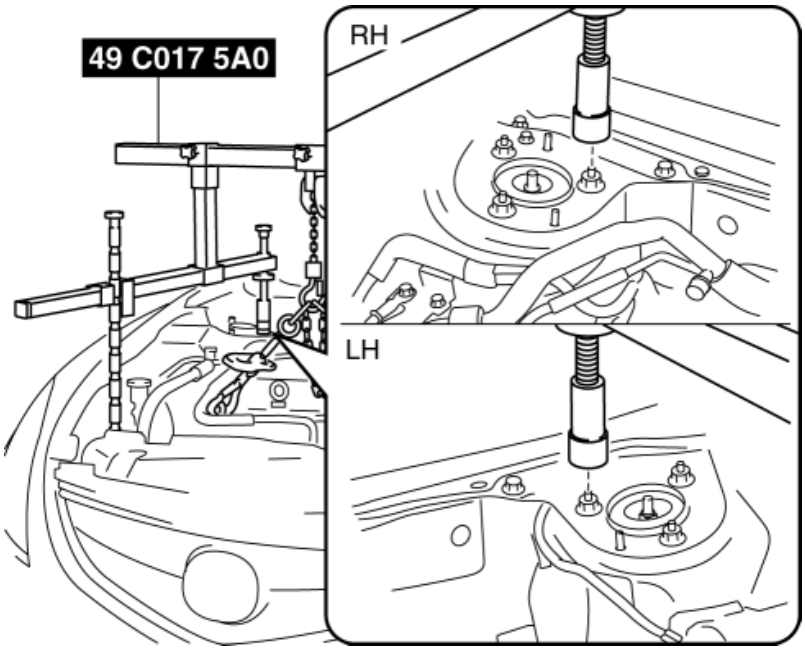
- Refer to the SST instruction manual for the basic handing procedure.

NOTE:

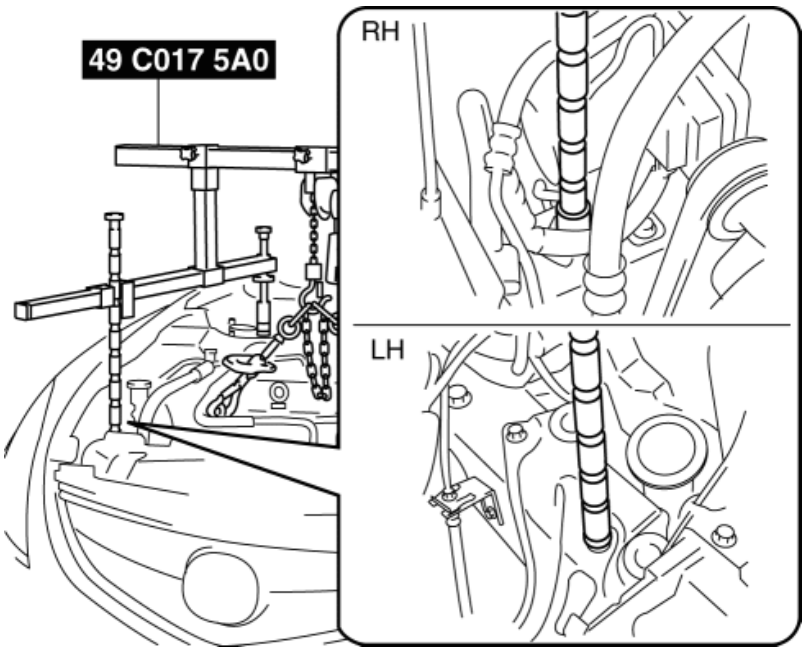
- When installing the **SST**, adjust the position of each shaft so that they do not interfere with the vehicle body.



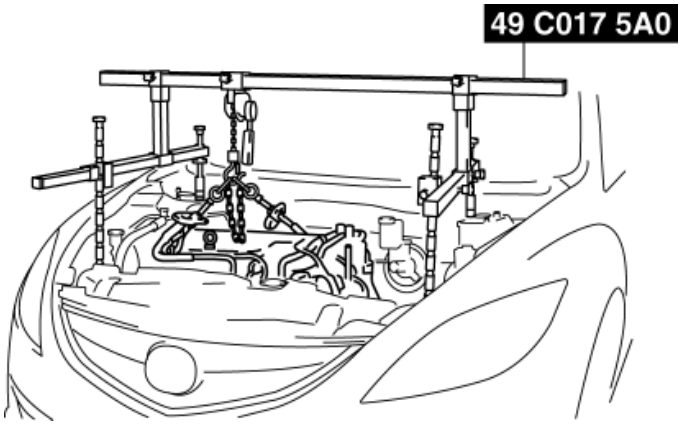
a. As shown in the figure, set the rear shafts of the **SST** to the left and right shock absorber nuts.



b. Install front foot No.2 to the left/right front shaft of the **SST**, then align the groove of the front shaft of the **SST** with the folded up part of the vehicle as shown in the figure.



c. Adjust the positions of the **SST** side bars so that they are the same height (left and right) and horizontal. Make sure each joint is securely tightened.

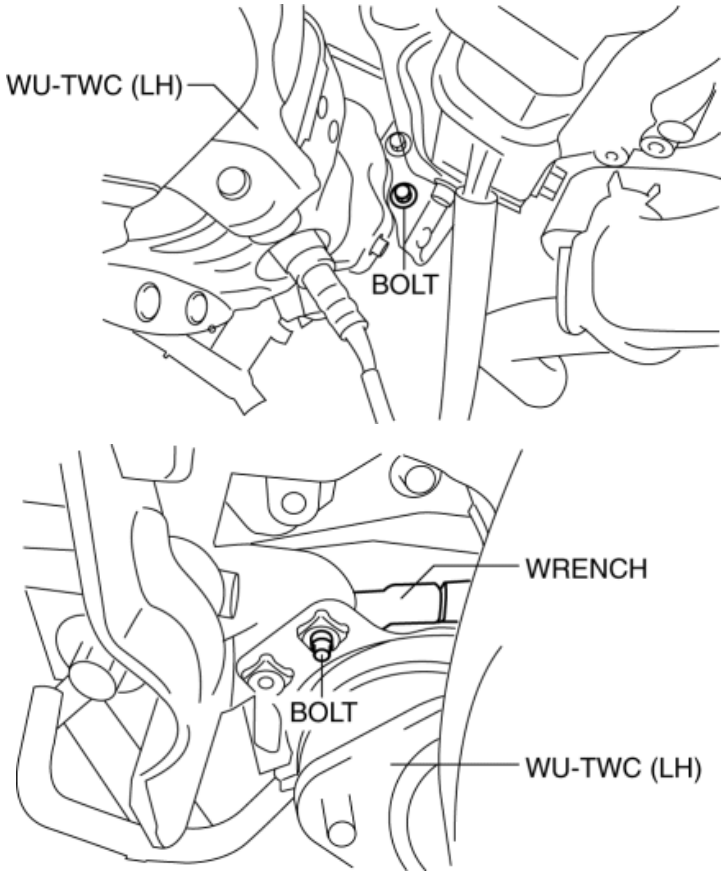


12. Drain the engine oil into a container. (See **ENGINE OIL REPLACEMENT [MZI 3.7 V6]**.)
13. Remove the oil filter. (See **OIL FILTER REPLACEMENT [MZI 3.7 V6]**.)

NOTE:

- Suspend the presilencer using a cable.

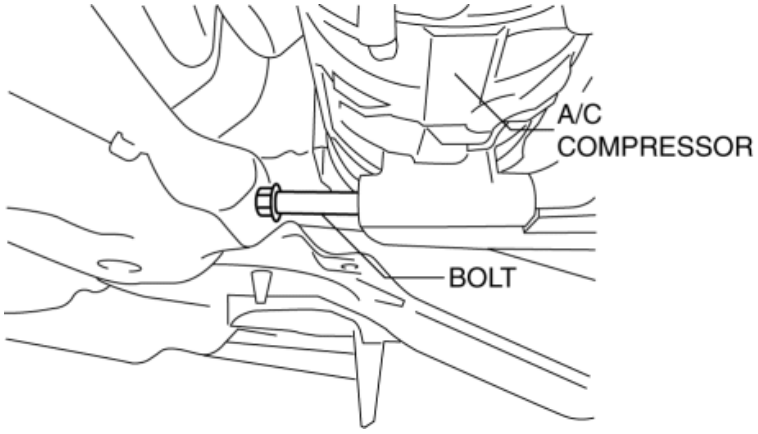
14. Remove the Front pipe (See **EXHAUST SYSTEM REMOVAL/ INSTALLATION [MZI 3.7 V6]**.)
15. Remove the No.1 engine mount rubber and No.1 engine mount bracket. (See **ENGINE REMOVAL/ INSTALLATION [MZI 3.7 V6]**.)
16. Remove the WU-TWC bracket (LH) installation bolt. (See **EXHAUST SYSTEM REMOVAL/ INSTALLATION [MZI 3.7 V6]**.)



17. Loosen the A/C compressor installation bolt shown in the figure.

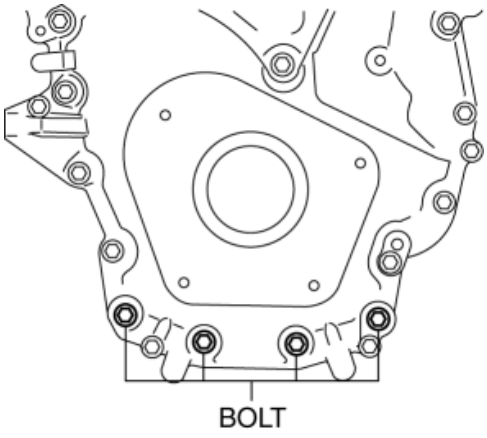
NOTE:

- The A/C compressor installation bolt cannot be removed because it contacts the front crossmember.



18. Remove the splash shield (RH).

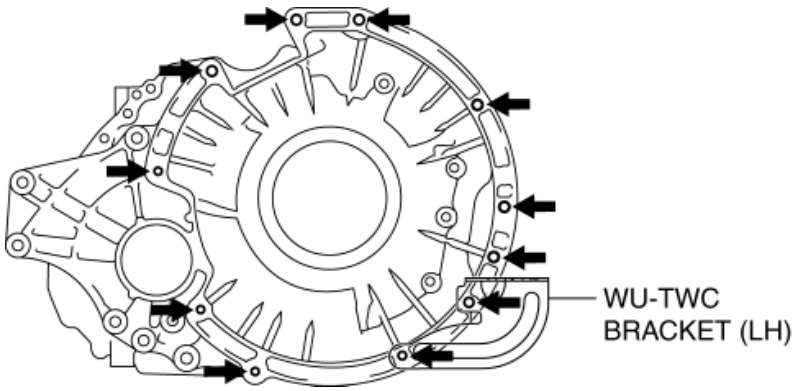
19. Remove the engine front cover installation bolts shown in the figure.

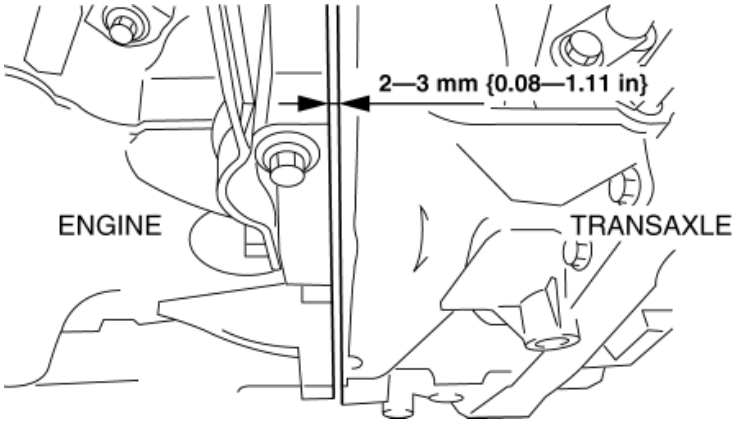


20. Loose the transaxle installation bolt **2—3 mm {0.08—0.11 in}** and disconnect the transaxle from the engine **2—3 mm {0.08—0.11 in}**.

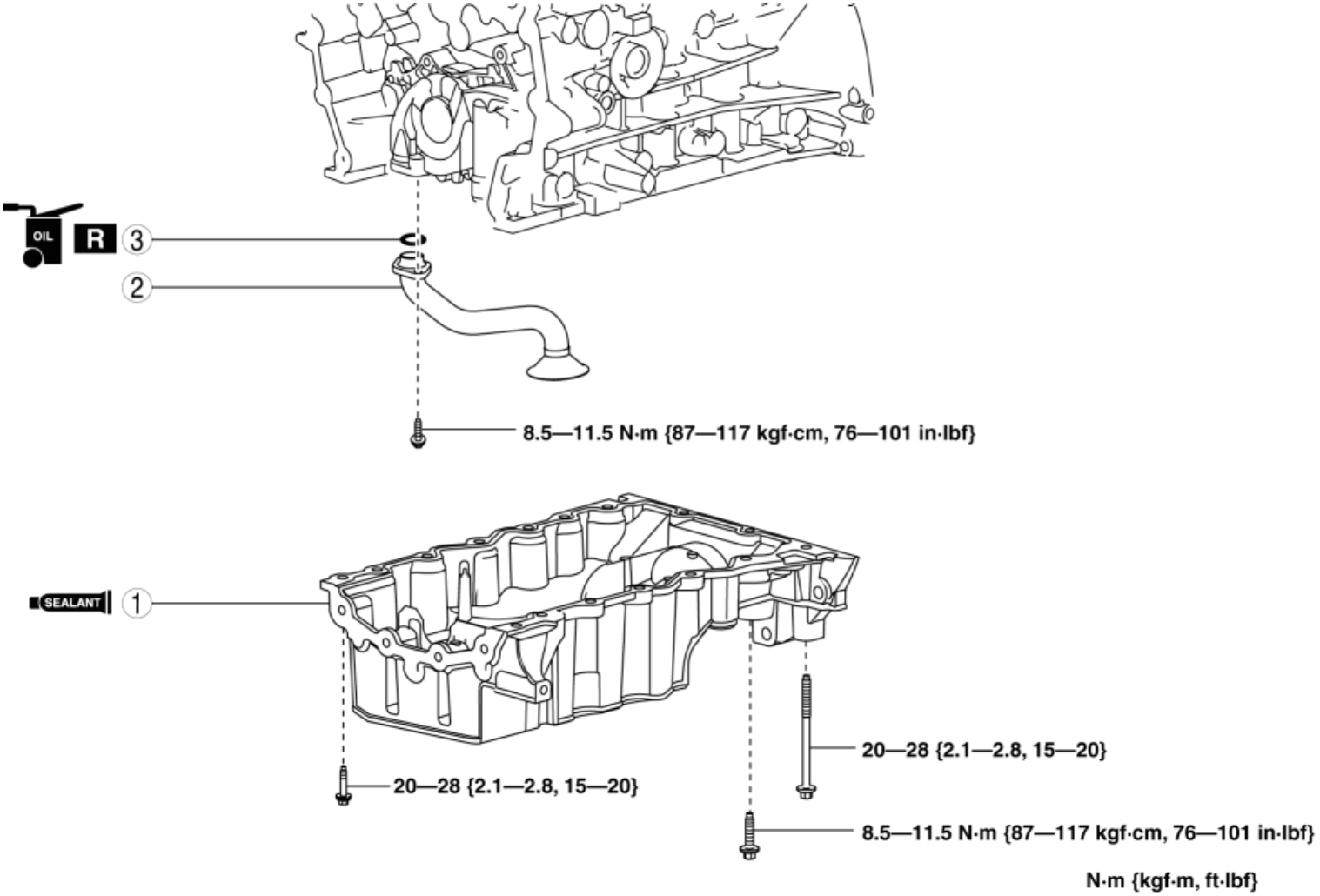
CAUTION:

- If the clearance between the engine and transaxle exceeds 3 mm {0.1 in}, the oil pump may pull out of the torque converter and the engine may not engage with the transaxle. Therefore, be careful not to exceed the 3 mm {0.1 in} clearance when disconnecting the engine from the transaxle.
- If the clearance between the engine and transaxle exceeds 3 mm {0.1 in}, the dowel pin may pull out causing damage to the oil pump bushing. Therefore, be careful not to exceed the 3 mm {0.1 in} clearance when disconnecting the engine from the transaxle.
- If the crankshaft is rotated with the engine disconnected from the transaxle, the oil pump may pull out of the torque converter and the engine may not engage with the transaxle.Therefore, do not rotate the crankshaft with the engine disconnected from the transaxle.
- If the transaxle is tilted when disconnecting/tightening the engine and transaxle, the oil pump bushing may be damaged. Therefore, maintain the transaxle in a horizontal position when disconnecting/tightening the engine and transaxle.





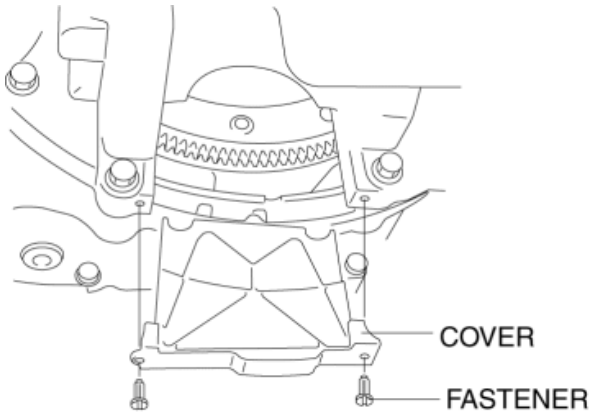
21. Remove in the order indicated in the table.



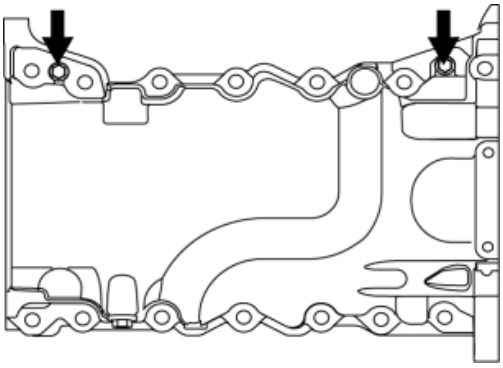
1	Oil pan (See **Mounting**.)
2	Oil strainer
3	O-ring

Oil pan removal note

1. Remove the cover as shown in the figure.



2. Remove the oil pan installation bolts.
3. Install two of the oil pan bolts temporarily into the two threaded holes in the oil pan.

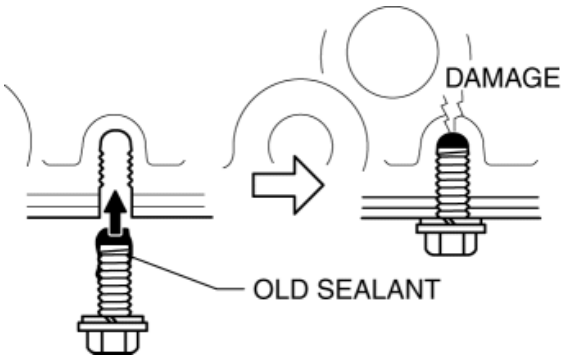


4. Alternately tighten the two bolts one turn at a time until the oil pan-to-cylinder block seal is released.
5. Remove the oil pan.

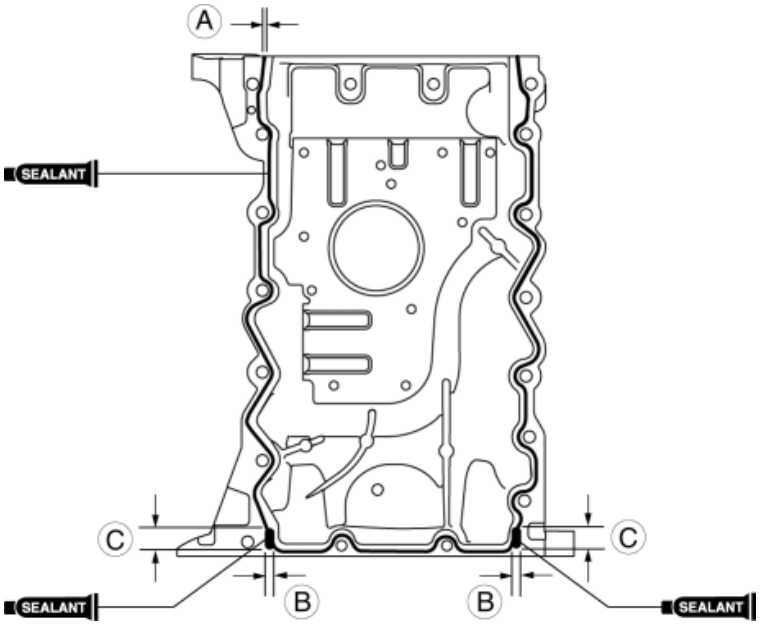
Installation

CAUTION:

1. Apply silicon sealant in a single, unbroken line.
2. Install the oil pan before the applied sealant starts to harden.
3. Using bolts with the old seal adhering could cause cracks in the cylinder block.



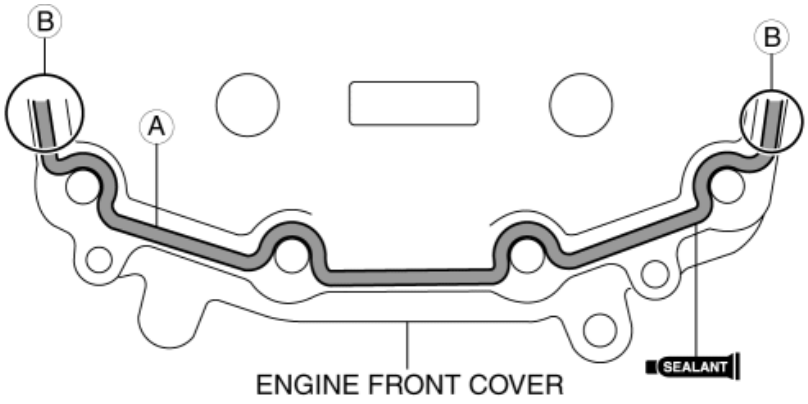
1. Completely clean and remove any oil, dirt, sealant or other foreign material that may be adhering to the cylinder block and oil pan.
2. When reusing the oil pan bolts, clean any old sealant from the bolts.
3. Apply silicone sealant (Loctite 5900) to the oil pan along the inside of the bolt holes as shown in the figure.



Silicon sealant thickness

1. A: Approx. 3.0 mm {0.1 in}
2. B: 5.0—6.0 mm {0.20—0.23 in}
3. C: 10.0 mm {0.39 in}

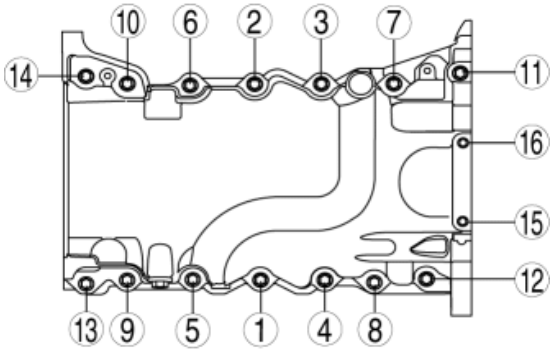
4. Apply the silicon sealant (Loctite 5900) to the engine front cover shown in the figure.



Silicon sealant thickness

- A: 2.5—3.5 mm {0.10—0.13 in}
- B: 5.0—6.0 mm {0.20—0.23 in}

5. Install the oil pan to the cylinder block.
   a. Temporarily tighten the oil pan installation bolts.
   b. Temporarily tighten the engine front cover installation bolts.
   c. Tighten the oil pan installation bolts in the order shown in the figure.

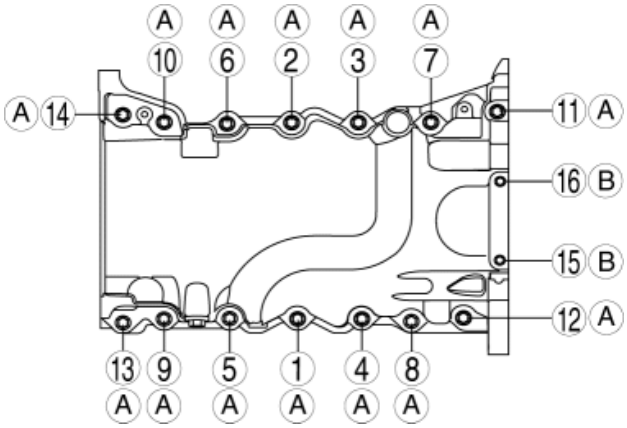


Tightening torque

1. 3.0 N·m {31 kgf·cm, 27 in·lbf}

d. Loosen the oil pan installation bolts **180** °.

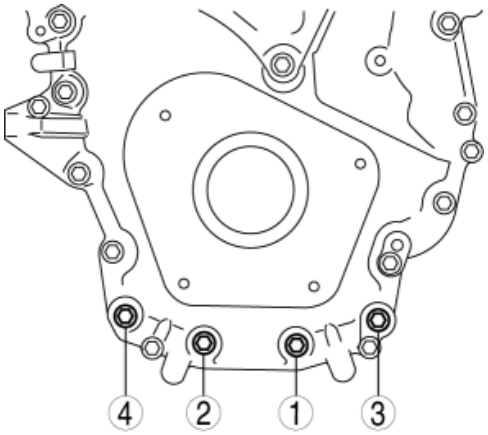
e. Tighten the oil pan installation bolts in the order shown in the figure.



Tightening torque

1. Bolt A: 20—28 N·m {2.1—2.8 kgf·m, 15—20 ft·lbf}
2. Bolt B: 8.5—11.5 N·m {87—117 kgf·cm, 76—101 in·lbf}

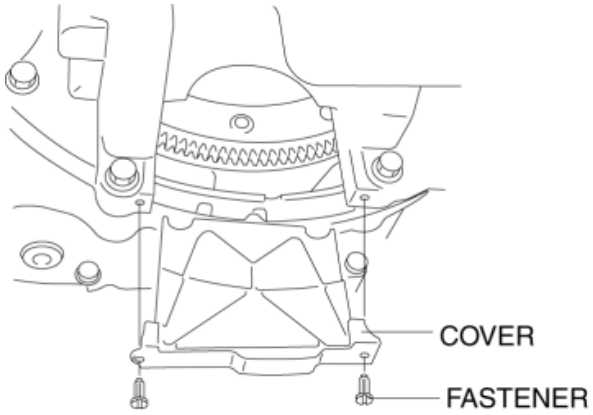
f. Tighten the engine front cover installation bolts in the order in 2 steps in the order shown in the figure.



Tightening torque

- 10 N·m {102 kgf·cm, 89 in·lbf}
- 20—28 N·m {2.1—2.8 kgf·m, 15—20 ft·lbf}

6. Install the cover as shown in the figure.

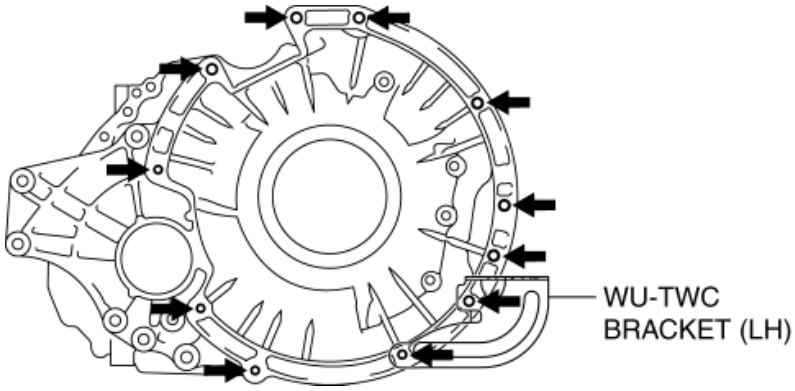


7. Install the splash shield (RH).

8. Tighten the transaxle installation bolts.

CAUTION:

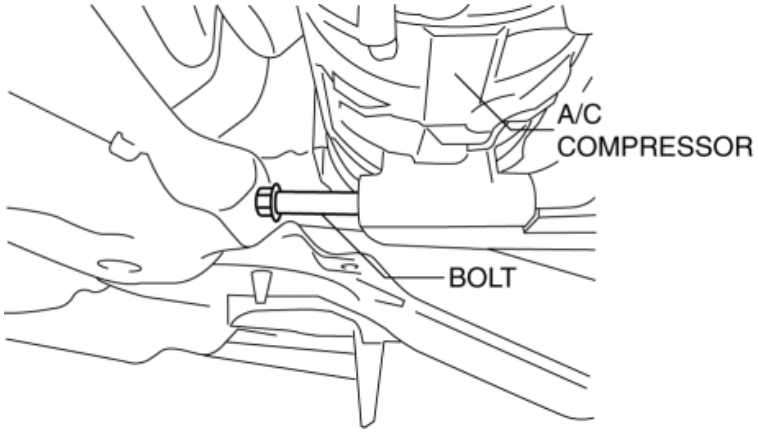
- If the clearance between the engine and transaxle exceeds 3 mm {0.1 in}, the oil pump may pull out of the torque converter and the engine may not engage with the transaxle. Therefore, be careful not to exceed the 3 mm {0.1 in} clearance when disconnecting the engine from the transaxle.
- If the clearance between the engine and transaxle exceeds 3 mm {0.1 in}, the dowel pin may pull out causing damage to the oil pump bushing. Therefore, be careful not to exceed the 3 mm {0.1 in} clearance when disconnecting the engine from the transaxle.
- If the crankshaft is rotated with the engine disconnected from the transaxle, the oil pump may pull out of the torque converter and the engine may not engage with the transaxle.Therefore, do not rotate the crankshaft with the engine disconnected from the transaxle.
- If the transaxle is tilted when disconnecting/tightening the engine and transaxle, the oil pump bushing may be damaged. Therefore, maintain the transaxle in a horizontal position when disconnecting/tightening the engine and transaxle.



Tightening torque

1. 37—52 N·m {3.8—5.3 kgf·m, 28—38 ft·lbf}

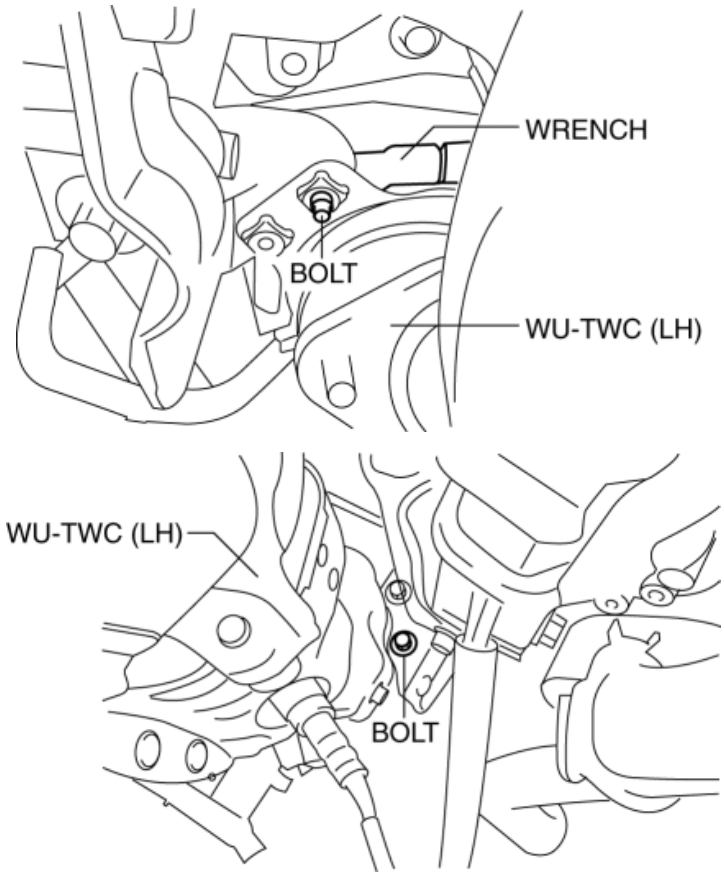
9. Tighten the A/C compressor installation bolt shown in the figure.



Tightening torque

1. 24—36 N·m {2.5—3.6 kgf·m, 18—26 ft·lbf}

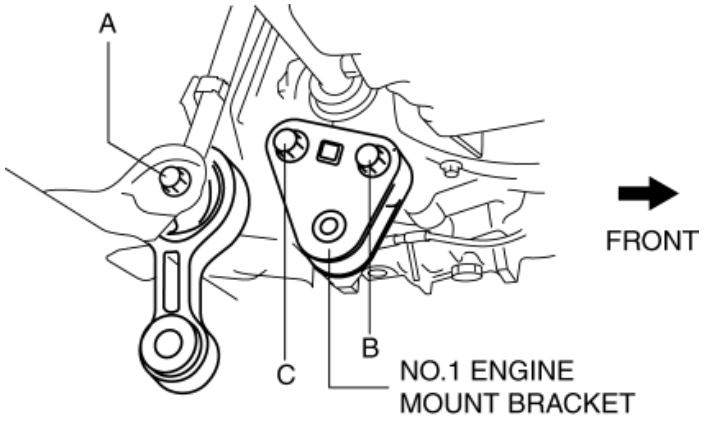
10. Tighten the WU-TWC bracket (LH) installation bolt.



Tightening torque

1. 17—23 N·m {1.8—2.3 kgf·m, 13—16 ft·lbf}

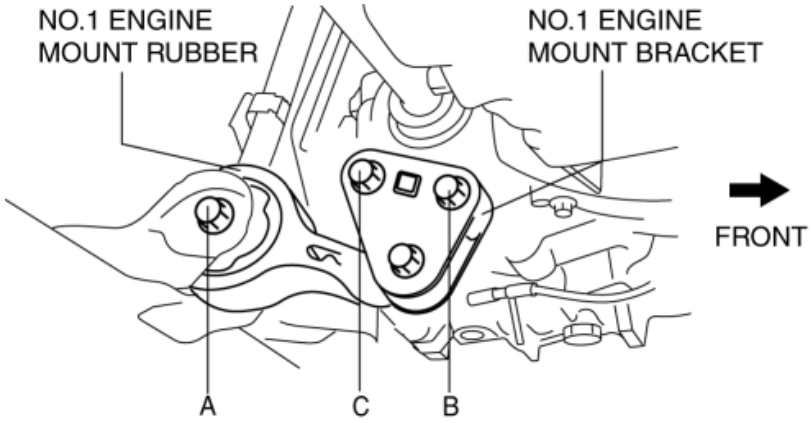
11. Install the No.1 engine mount rubber and No.1 engine mount bracket according to the following steps.



a. Install the through bolt A on the front crossmember side until approximately three pitches are showing.

b. Temporarily tighten the No.1 engine mount bracket bolts in the order of B and C.

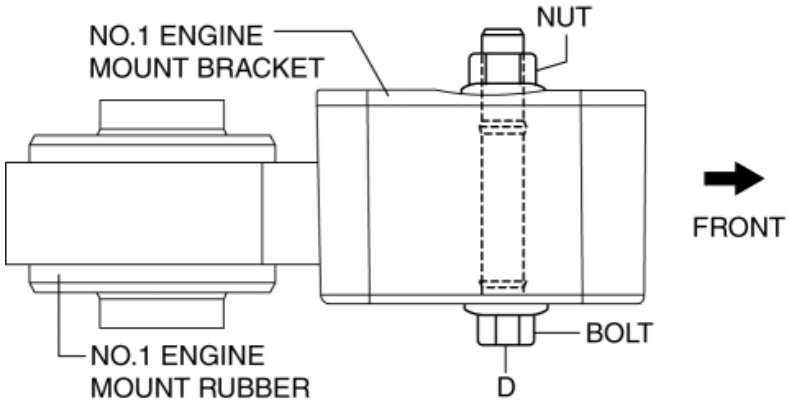
c. Tighten the No.1 engine mount bracket bolts in the order of B and C.



Tightening torque

1. 77—103 N·m {7.9—10 kgf·m, 57—75 ft·lbf}

d. Tighten the No.1 engine mount bolt D.



Tightening torque

1. 77—103 N·m {7.9—10 kgf·m, 57—75 ft·lbf}

e. Tighten the bolt A.

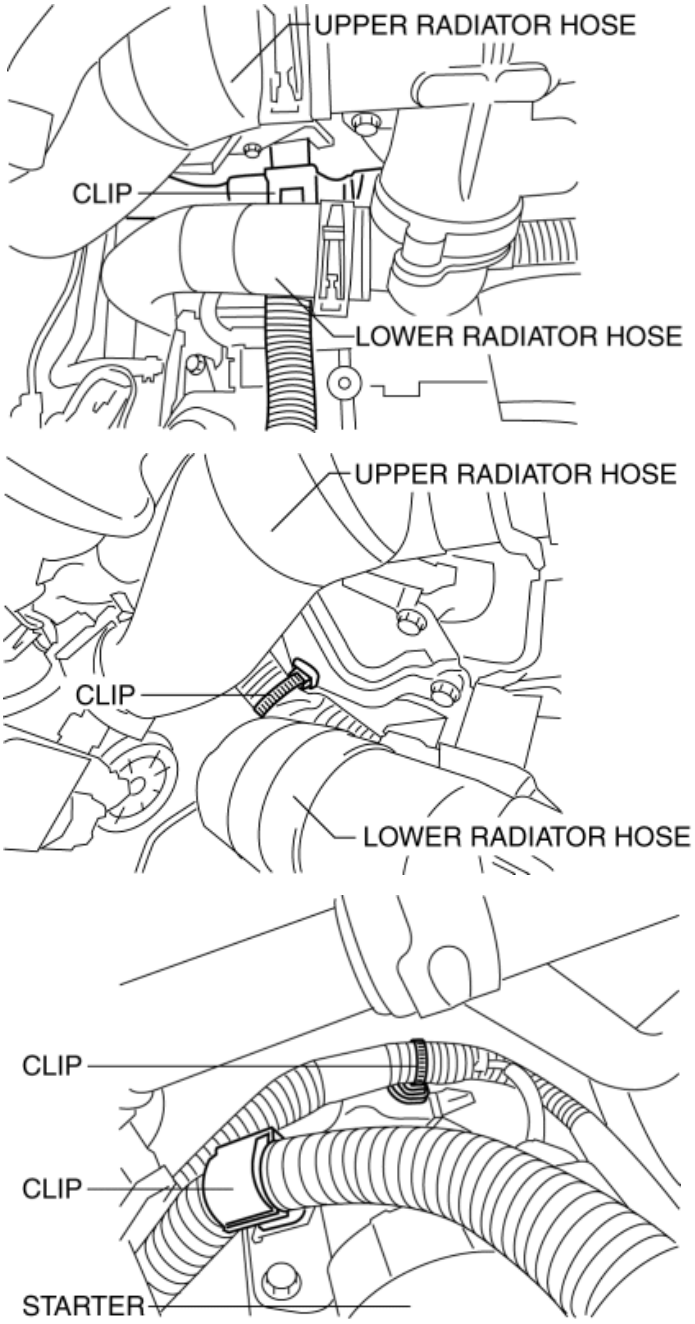
Tightening torque

1. 94—116 N·m {9.6—11 kgf·m, 70—85 ft·lbf}

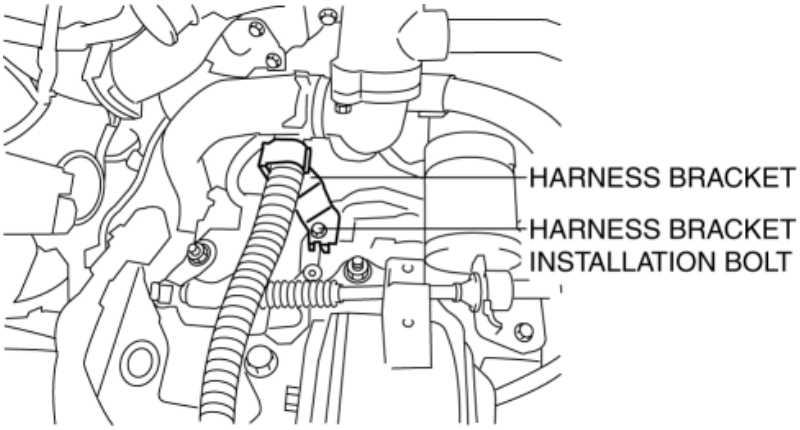
12. Install the Front pipe (See **EXHAUST SYSTEM REMOVAL/ INSTALLATION [MZI 3.7 V6]**.)

13. Install the oil filter. (See **OIL FILTER REPLACEMENT [MZI 3.7 V6]**.)

14. Remove the **SST**.
15. Install the cowl panel. (See **COWL PANEL REMOVAL/ INSTALLATION**.)
16. Install the cowl grille. (See **COWL GRILLE REMOVAL/ INSTALLATION**.)
17. Install the windshield wiper arm and blade. (See **WINDSHIELD WIPER ARM AND BLADE REMOVAL/ INSTALLATION**.)
18. Install the starter (See **STARTER REMOVAL/ INSTALLATION [MZI 3.7 V6]**.)
19. Install the clips.



20. Install the harness bracket.



Tightening torque

1. 8—10 N·m {82—101 kgf·cm, 71—88 in·lbf}

21. Install the air hose. (See **INTAKE-AIR SYSTEM REMOVAL/ INSTALLATION [MZI 3.7 V6]**.)

22. Install the fresh-air duct and air cleaner component as a single unit. (See **INTAKE-AIR SYSTEM REMOVAL/ INSTALLATION [MZI 3.7 V6]**.)

23. Install the dipstick.

24. Install the engine cover. (See **ENGINE COVER REMOVAL/ INSTALLATION [MZI 3.7 V6]**.)

25. Remove the battery and battery tray. (See **BATTERY REMOVAL/ INSTALLATION [MZI 3.7 V6]**.)

26. Refill with the specified type and amount of the engine oil. (See **ENGINE OIL REPLACEMENT [MZI 3.7 V6]**.)

27. Start the engine and confirm that there is no oil leakage.
    - If there is oil leakage, repair or replace the applicable part.

28. Inspect the oil level. (See **ENGINE OIL LEVEL INSPECTION [MZI 3.7 V6]**.)

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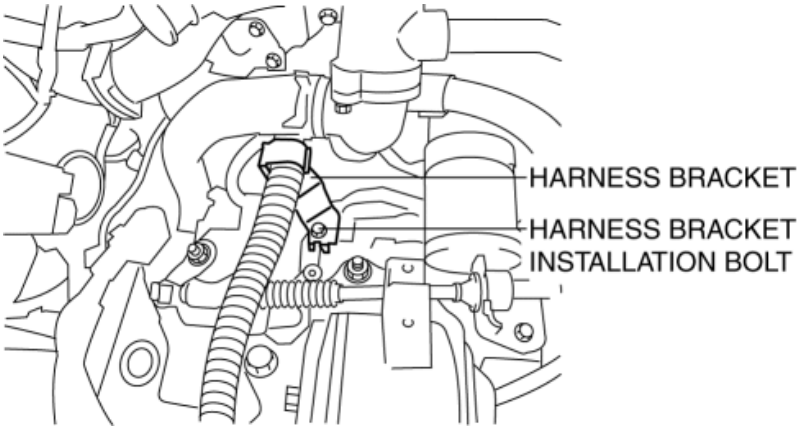
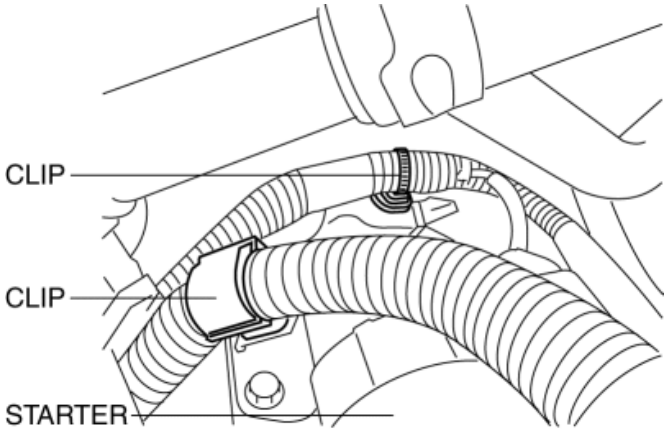
OIL PAN REMOVAL/ INSTALLATION [MZI 3.7 V6]

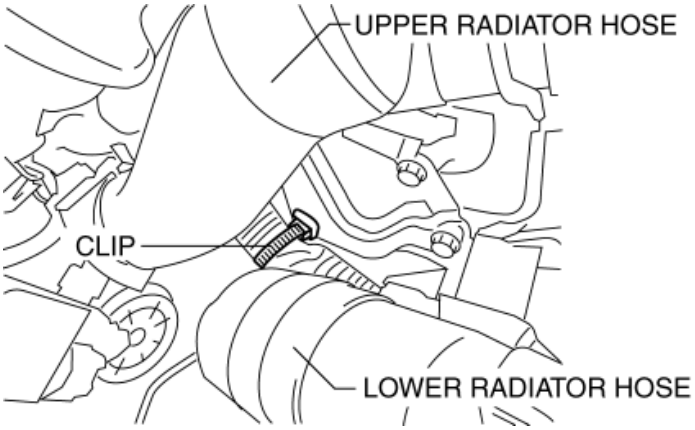
Removal

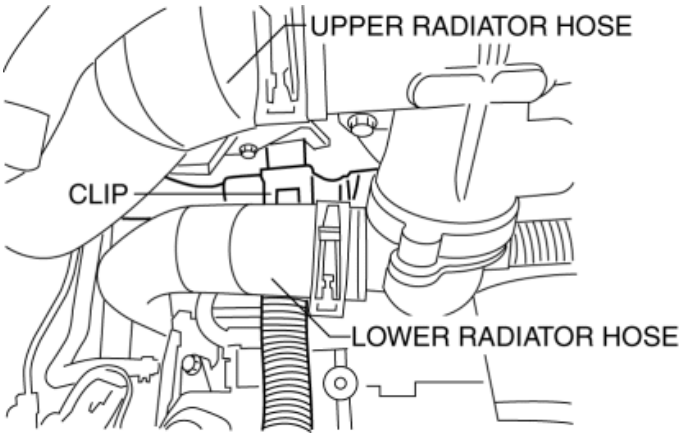
1. Remove the battery and battery tray. (See **BATTERY REMOVAL/ INSTALLATION [MZI 3.7 V6]**.)
2. Remove the engine cover. (See **ENGINE COVER REMOVAL/ INSTALLATION [MZI 3.7 V6]**.)
3. Remove the dipstick.
4. Remove the fresh-air duct and air cleaner component as a single unit. (See **INTAKE-AIR SYSTEM REMOVAL/ INSTALLATION [MZI 3.7 V6]**.)
5. Remove the air hose. (See **INTAKE-AIR SYSTEM REMOVAL/ INSTALLATION [MZI 3.7 V6]**.)
6. Remove the harness bracket.



7. Remove the clips.







8. Remove the starter (See **STARTER REMOVAL/ INSTALLATION [MZI 3.7 V6]**.)

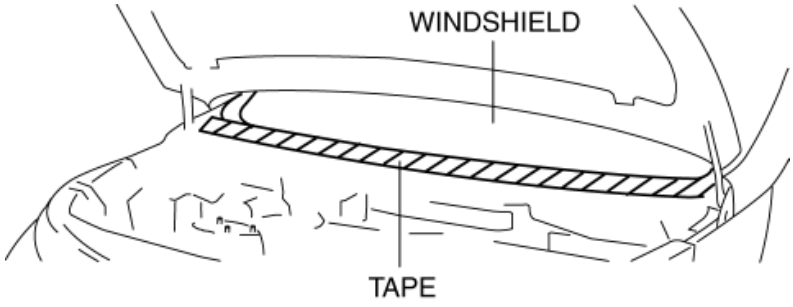
9. Remove the following parts to install the **SST**.

   a. The windshield wiper arm and blade. (See **WINDSHIELD WIPER ARM AND BLADE REMOVAL/ INSTALLATION**.)

   b. The cowl grille. (See **COWL GRILLE REMOVAL/ INSTALLATION**.)

   c. The cowl panel. (See **COWL PANEL REMOVAL/ INSTALLATION**.)

10. Protect the windshield using tape.



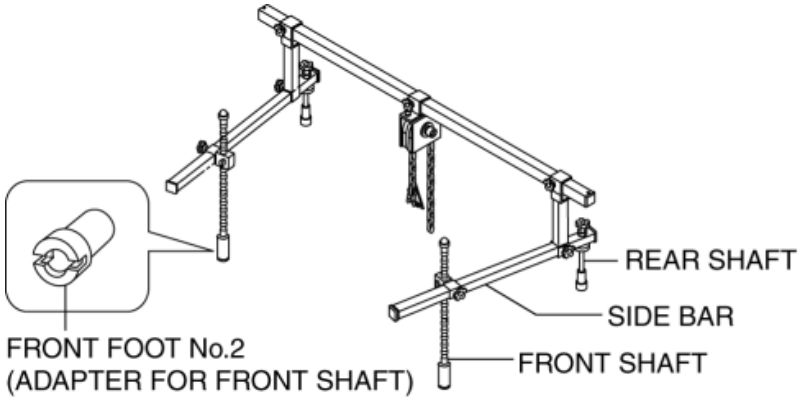
11. Install the **SST** using the following procedure.

CAUTION:

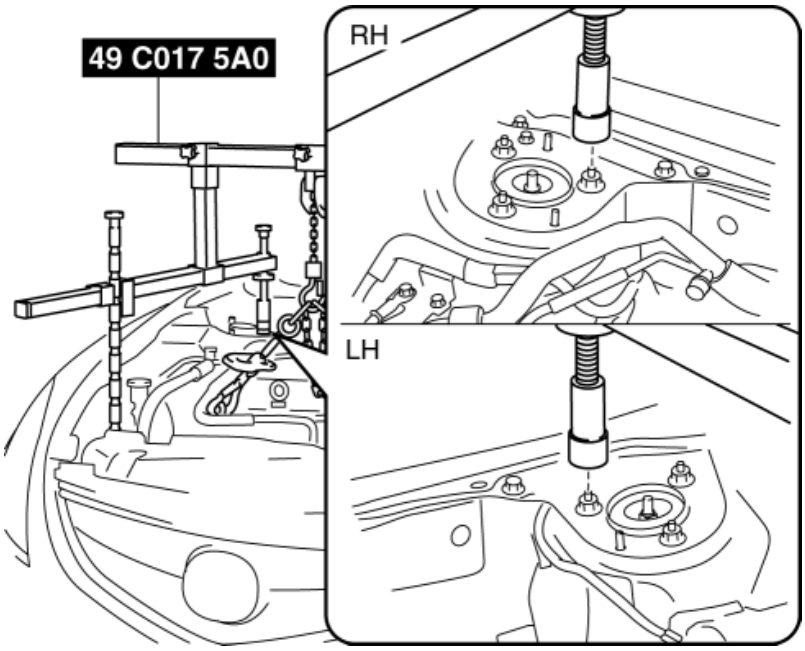
- Refer to the SST instruction manual for the basic handing procedure.

NOTE:

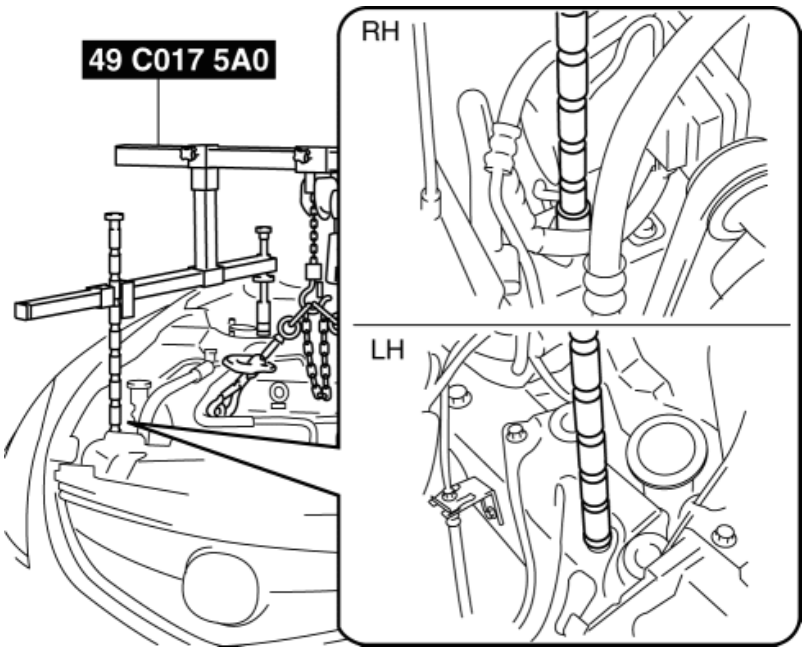
- When installing the **SST**, adjust the position of each shaft so that they do not interfere with the vehicle body.



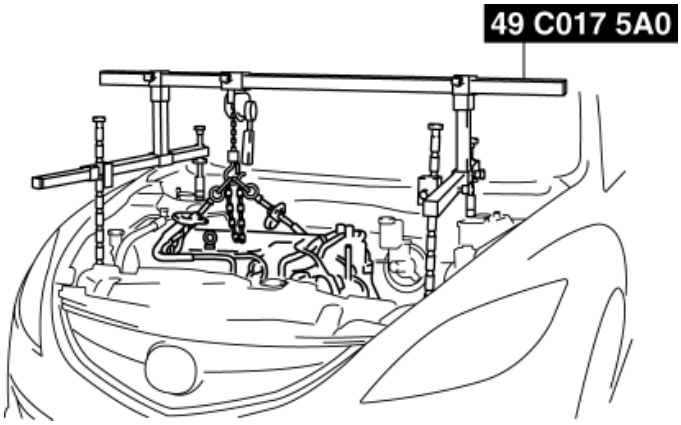
a. As shown in the figure, set the rear shafts of the **SST** to the left and right shock absorber nuts.



b. Install front foot No.2 to the left/right front shaft of the **SST**, then align the groove of the front shaft of the **SST** with the folded up part of the vehicle as shown in the figure.



c. Adjust the positions of the **SST** side bars so that they are the same height (left and right) and horizontal. Make sure each joint is securely tightened.

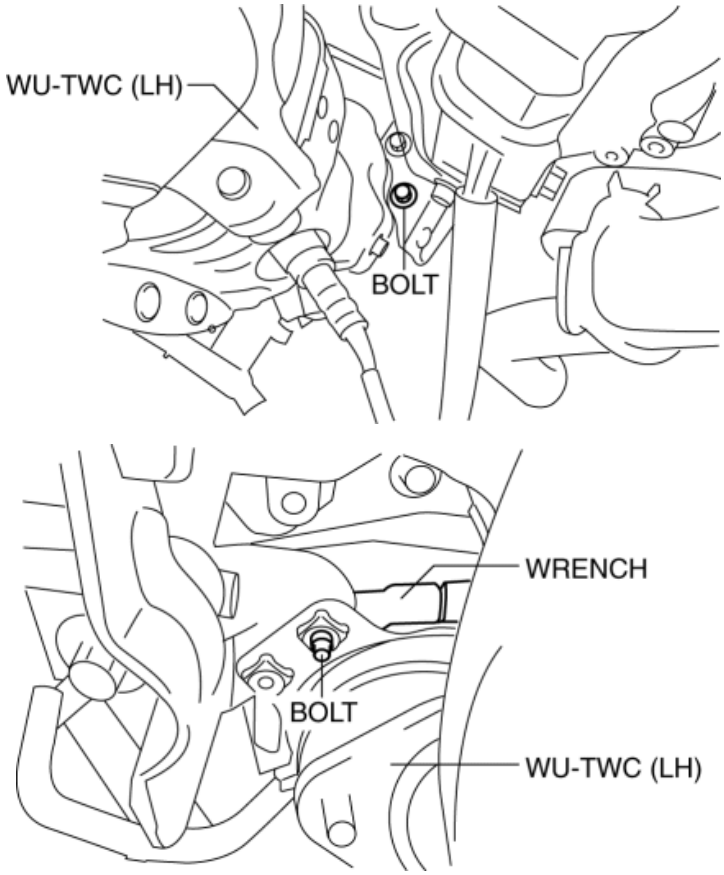


12. Drain the engine oil into a container. (See **ENGINE OIL REPLACEMENT [MZI 3.7 V6]**.)
13. Remove the oil filter. (See **OIL FILTER REPLACEMENT [MZI 3.7 V6]**.)

NOTE:

- Suspend the presilencer using a cable.

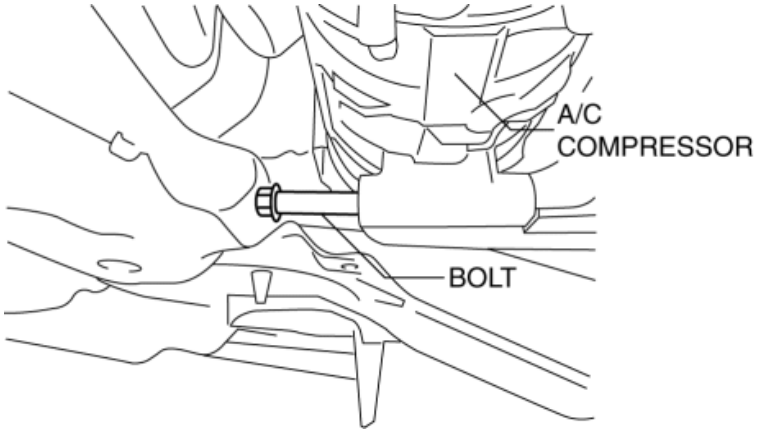
14. Remove the Front pipe (See **EXHAUST SYSTEM REMOVAL/ INSTALLATION [MZI 3.7 V6]**.)
15. Remove the No.1 engine mount rubber and No.1 engine mount bracket. (See **ENGINE REMOVAL/ INSTALLATION [MZI 3.7 V6]**.)
16. Remove the WU-TWC bracket (LH) installation bolt. (See **EXHAUST SYSTEM REMOVAL/ INSTALLATION [MZI 3.7 V6]**.)



17. Loosen the A/C compressor installation bolt shown in the figure.

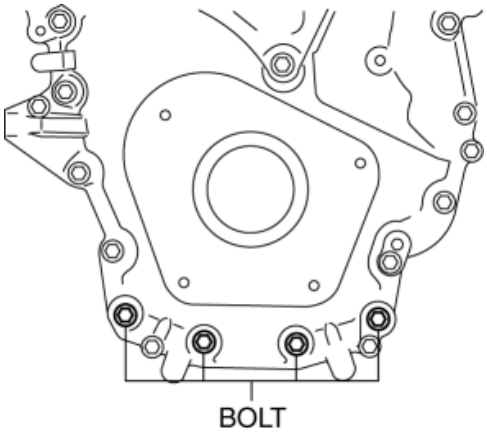
NOTE:

- The A/C compressor installation bolt cannot be removed because it contacts the front crossmember.



18. Remove the splash shield (RH).

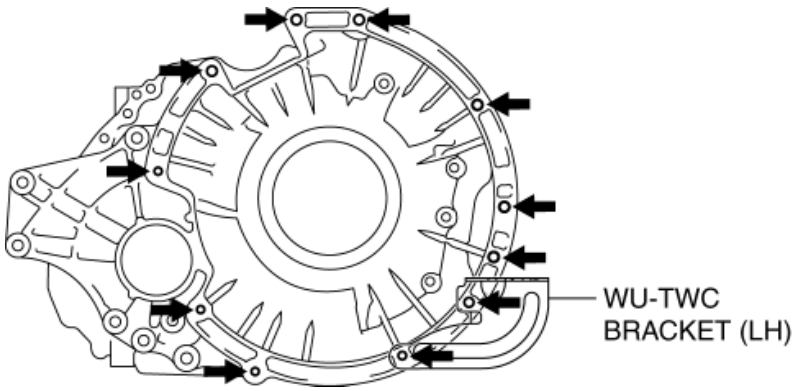
19. Remove the engine front cover installation bolts shown in the figure.

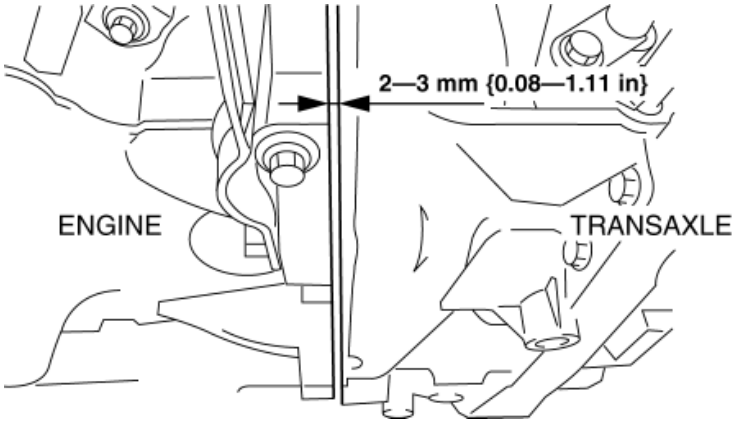


20. Loose the transaxle installation bolt **2—3 mm {0.08—0.11 in}** and disconnect the transaxle from the engine **2—3 mm {0.08—0.11 in}**.

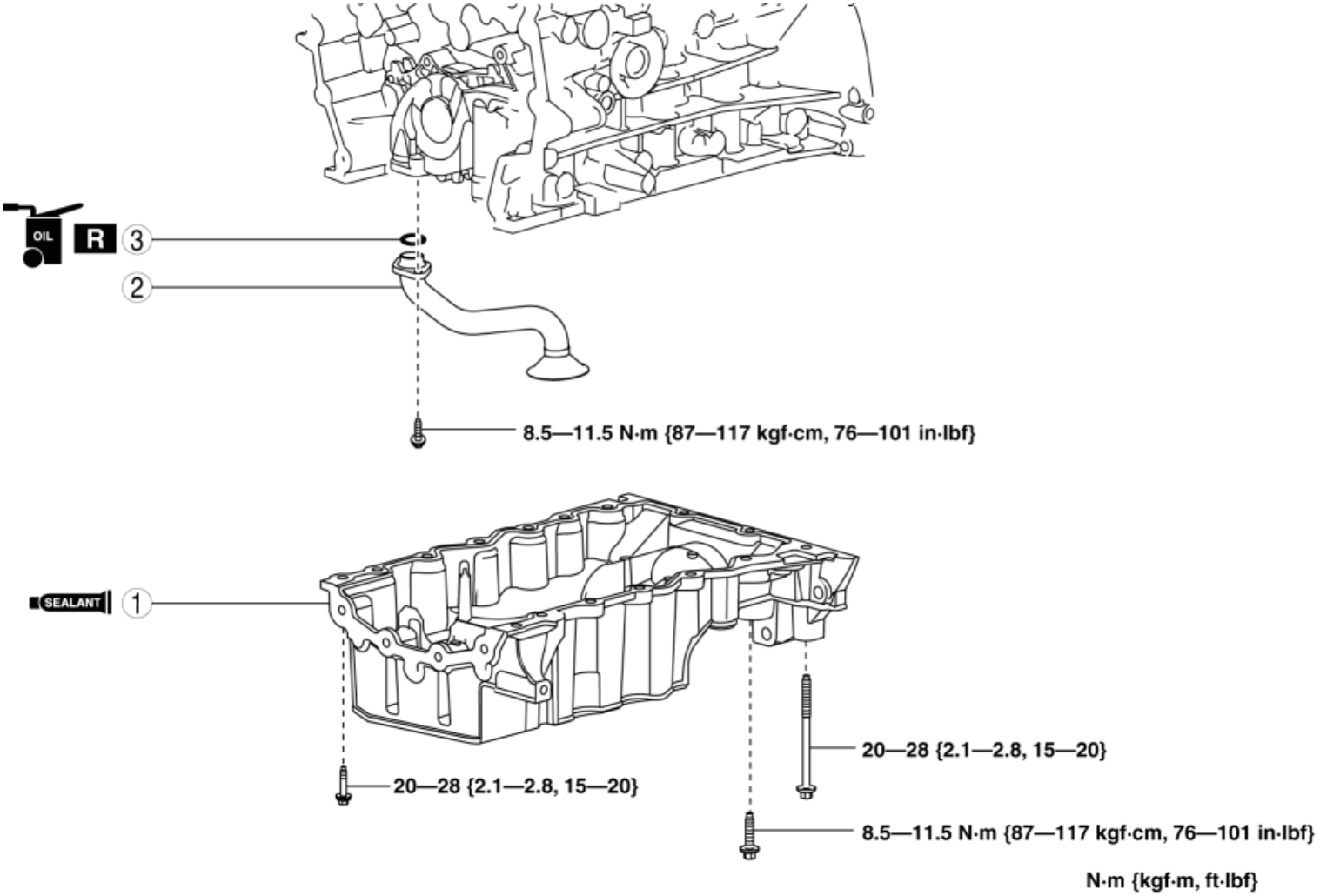
CAUTION:

- If the clearance between the engine and transaxle exceeds 3 mm {0.1 in}, the oil pump may pull out of the torque converter and the engine may not engage with the transaxle. Therefore, be careful not to exceed the 3 mm {0.1 in} clearance when disconnecting the engine from the transaxle.
- If the clearance between the engine and transaxle exceeds 3 mm {0.1 in}, the dowel pin may pull out causing damage to the oil pump bushing. Therefore, be careful not to exceed the 3 mm {0.1 in} clearance when disconnecting the engine from the transaxle.
- If the crankshaft is rotated with the engine disconnected from the transaxle, the oil pump may pull out of the torque converter and the engine may not engage with the transaxle.Therefore, do not rotate the crankshaft with the engine disconnected from the transaxle.
- If the transaxle is tilted when disconnecting/tightening the engine and transaxle, the oil pump bushing may be damaged. Therefore, maintain the transaxle in a horizontal position when disconnecting/tightening the engine and transaxle.





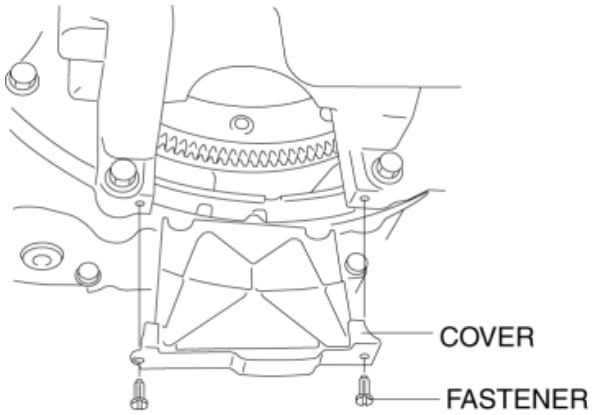
21. Remove in the order indicated in the table.



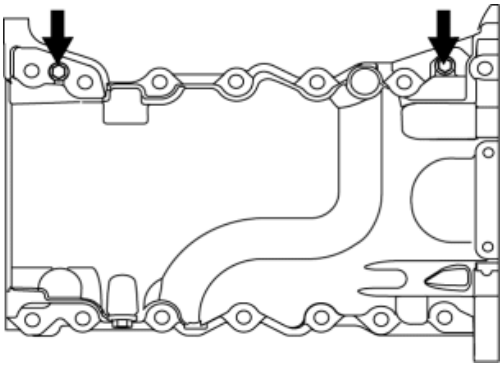
1	Oil pan (See **Mounting**.)
2	Oil strainer
3	O-ring

Oil pan removal note

1. Remove the cover as shown in the figure.



2. Remove the oil pan installation bolts.
3. Install two of the oil pan bolts temporarily into the two threaded holes in the oil pan.

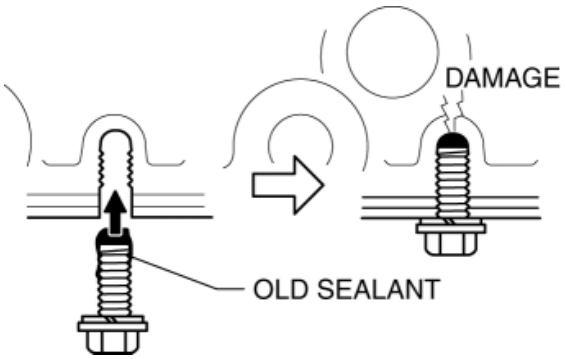


4. Alternately tighten the two bolts one turn at a time until the oil pan-to-cylinder block seal is released.
5. Remove the oil pan.

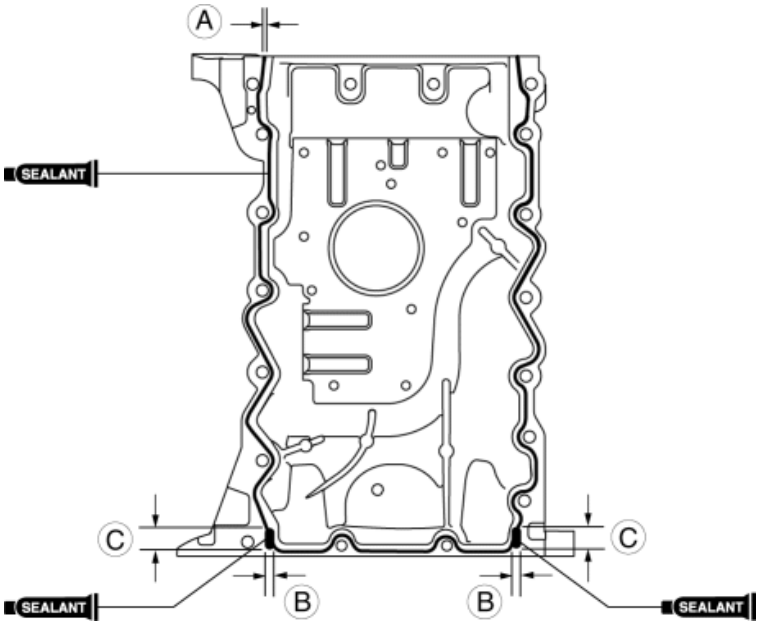
Installation

CAUTION:

1. Apply silicon sealant in a single, unbroken line.
2. Install the oil pan before the applied sealant starts to harden.
3. Using bolts with the old seal adhering could cause cracks in the cylinder block.



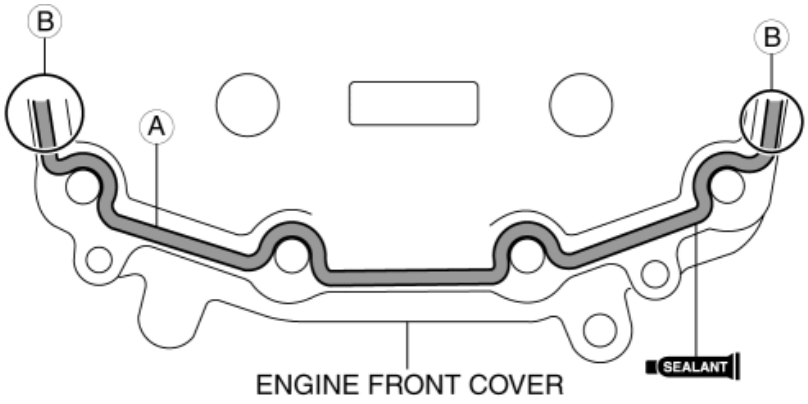
1. Completely clean and remove any oil, dirt, sealant or other foreign material that may be adhering to the cylinder block and oil pan.
2. When reusing the oil pan bolts, clean any old sealant from the bolts.
3. Apply silicone sealant (Loctite 5900) to the oil pan along the inside of the bolt holes as shown in the figure.



Silicon sealant thickness

1. A: Approx. 3.0 mm {0.1 in}
2. B: 5.0—6.0 mm {0.20—0.23 in}
3. C: 10.0 mm {0.39 in}

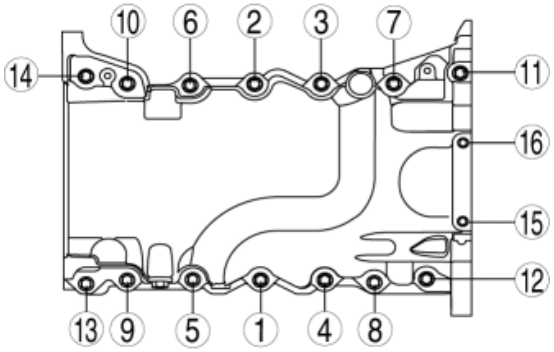
4. Apply the silicon sealant (Loctite 5900) to the engine front cover shown in the figure.



Silicon sealant thickness

- A: 2.5—3.5 mm {0.10—0.13 in}
- B: 5.0—6.0 mm {0.20—0.23 in}

5. Install the oil pan to the cylinder block.
   a. Temporarily tighten the oil pan installation bolts.
   b. Temporarily tighten the engine front cover installation bolts.
   c. Tighten the oil pan installation bolts in the order shown in the figure.

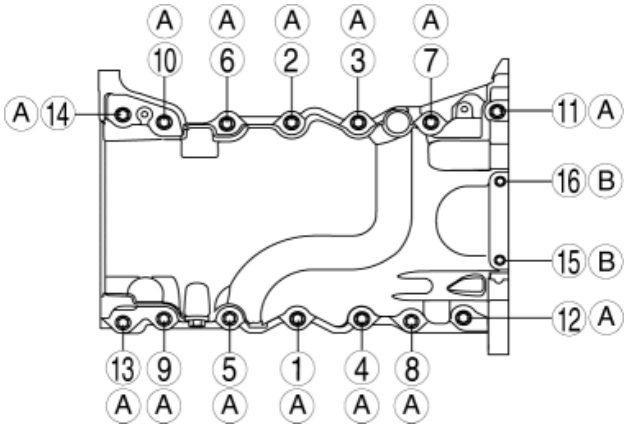


Tightening torque

1. 3.0 N·m {31 kgf·cm, 27 in·lbf}

d. Loosen the oil pan installation bolts **180** °.

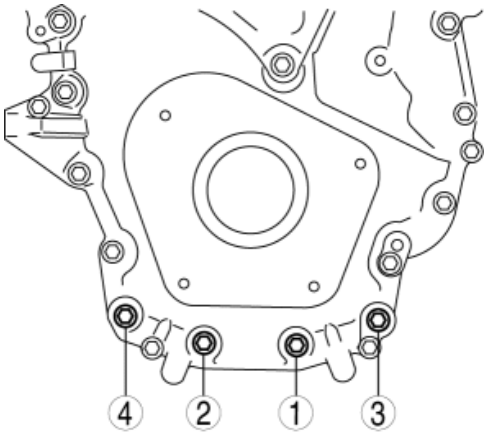
e. Tighten the oil pan installation bolts in the order shown in the figure.



Tightening torque

1. Bolt A: 20—28 N·m {2.1—2.8 kgf·m, 15—20 ft·lbf}
2. Bolt B: 8.5—11.5 N·m {87—117 kgf·cm, 76—101 in·lbf}

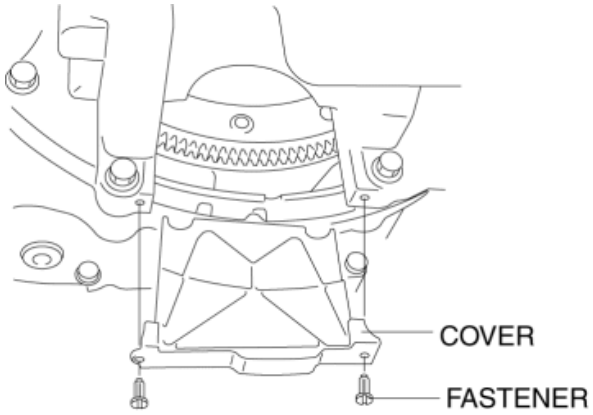
f. Tighten the engine front cover installation bolts in the order in 2 steps in the order shown in the figure.



Tightening torque

- 10 N·m {102 kgf·cm, 89 in·lbf}
- 20—28 N·m {2.1—2.8 kgf·m, 15—20 ft·lbf}

6. Install the cover as shown in the figure.

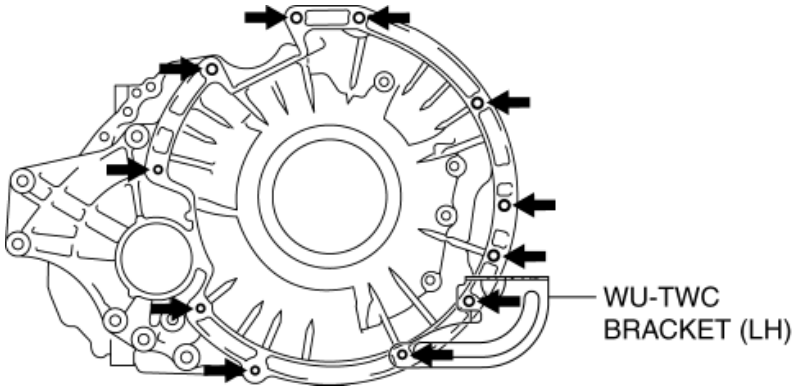


7. Install the splash shield (RH).

8. Tighten the transaxle installation bolts.

CAUTION:

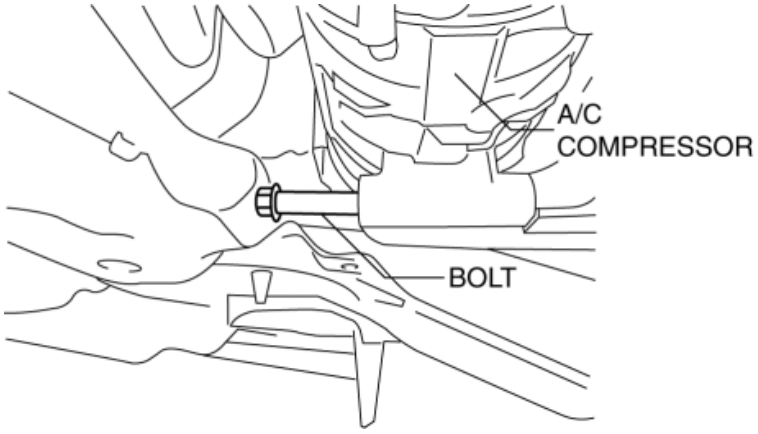
- If the clearance between the engine and transaxle exceeds 3 mm {0.1 in}, the oil pump may pull out of the torque converter and the engine may not engage with the transaxle. Therefore, be careful not to exceed the 3 mm {0.1 in} clearance when disconnecting the engine from the transaxle.
- If the clearance between the engine and transaxle exceeds 3 mm {0.1 in}, the dowel pin may pull out causing damage to the oil pump bushing. Therefore, be careful not to exceed the 3 mm {0.1 in} clearance when disconnecting the engine from the transaxle.
- If the crankshaft is rotated with the engine disconnected from the transaxle, the oil pump may pull out of the torque converter and the engine may not engage with the transaxle.Therefore, do not rotate the crankshaft with the engine disconnected from the transaxle.
- If the transaxle is tilted when disconnecting/tightening the engine and transaxle, the oil pump bushing may be damaged. Therefore, maintain the transaxle in a horizontal position when disconnecting/tightening the engine and transaxle.



Tightening torque

1. 37—52 N·m {3.8—5.3 kgf·m, 28—38 ft·lbf}

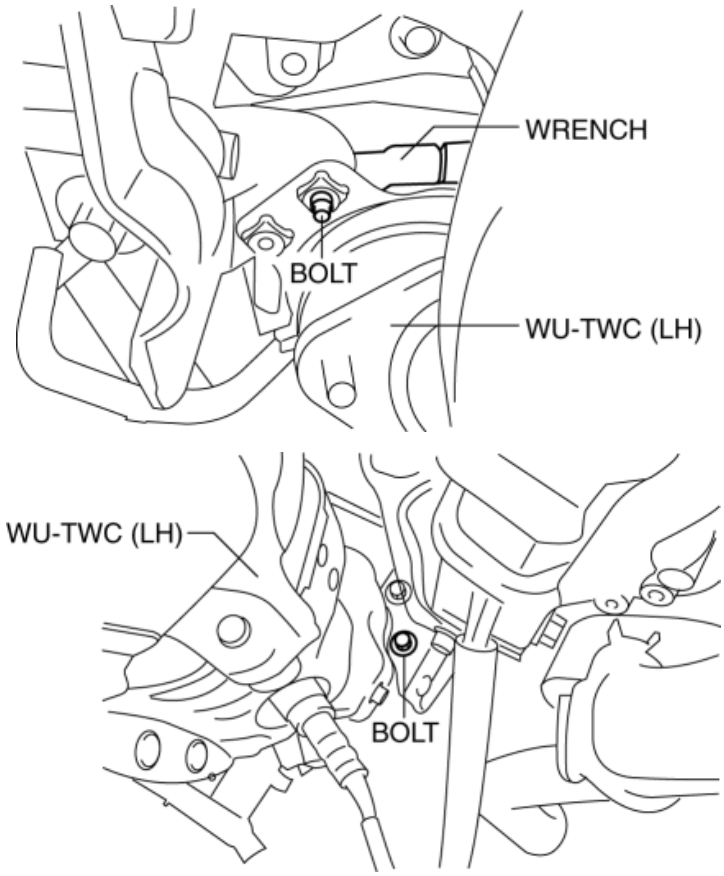
9. Tighten the A/C compressor installation bolt shown in the figure.



Tightening torque

1. 24—36 N·m {2.5—3.6 kgf·m, 18—26 ft·lbf}

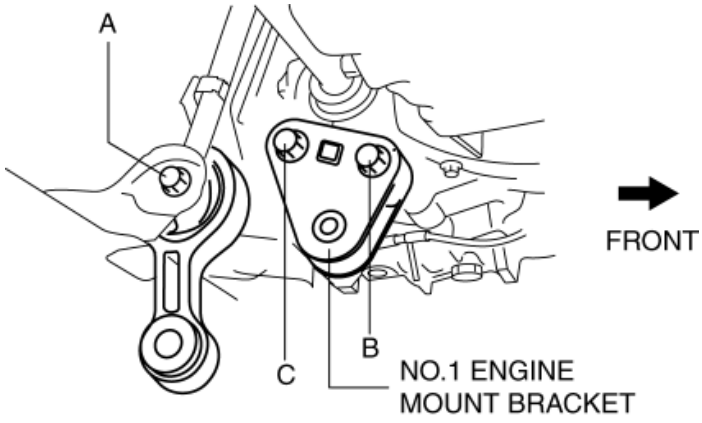
10. Tighten the WU-TWC bracket (LH) installation bolt.



Tightening torque

1. 17—23 N·m {1.8—2.3 kgf·m, 13—16 ft·lbf}

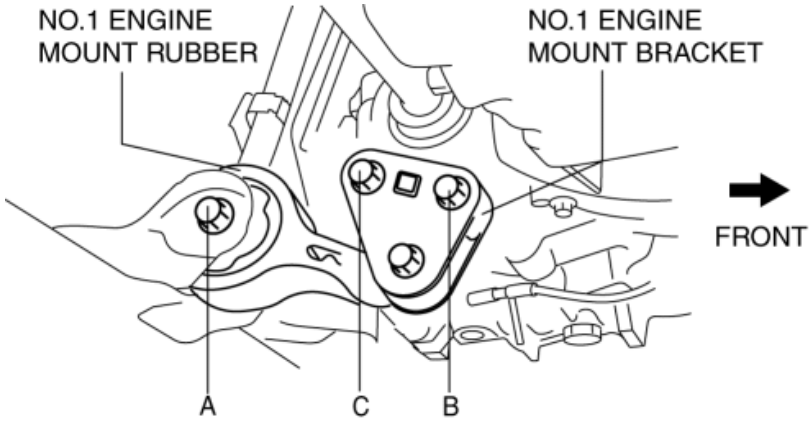
11. Install the No.1 engine mount rubber and No.1 engine mount bracket according to the following steps.



a. Install the through bolt A on the front crossmember side until approximately three pitches are showing.

b. Temporarily tighten the No.1 engine mount bracket bolts in the order of B and C.

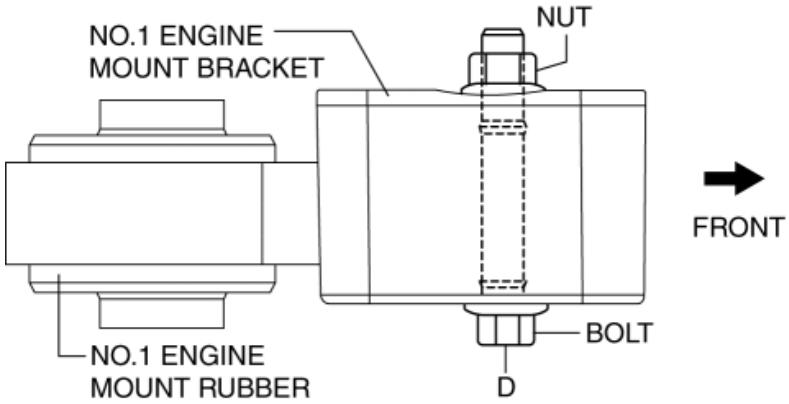
c. Tighten the No.1 engine mount bracket bolts in the order of B and C.



Tightening torque

1. 77—103 N·m {7.9—10 kgf·m, 57—75 ft·lbf}

d. Tighten the No.1 engine mount bolt D.



Tightening torque

1. 77—103 N·m {7.9—10 kgf·m, 57—75 ft·lbf}

e. Tighten the bolt A.

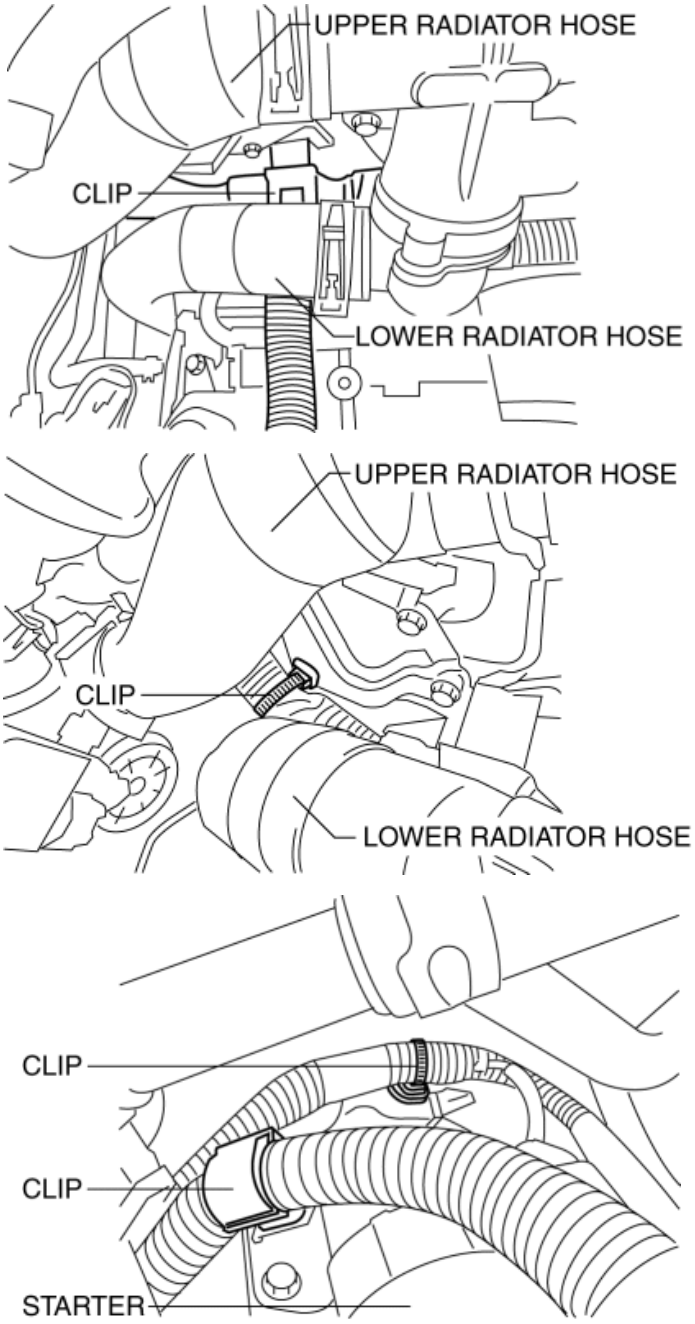
Tightening torque

1. 94—116 N·m {9.6—11 kgf·m, 70—85 ft·lbf}

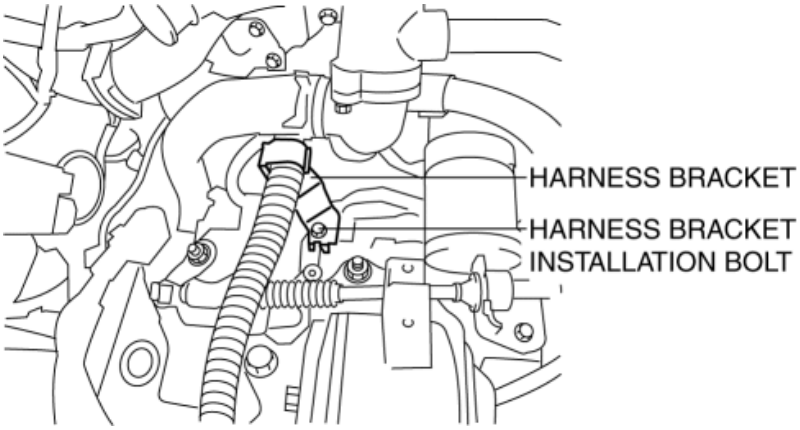
12. Install the Front pipe (See **EXHAUST SYSTEM REMOVAL/ INSTALLATION [MZI 3.7 V6]**.)

13. Install the oil filter. (See **OIL FILTER REPLACEMENT [MZI 3.7 V6]**.)

14. Remove the **SST**.
15. Install the cowl panel. (See **COWL PANEL REMOVAL/ INSTALLATION**.)
16. Install the cowl grille. (See **COWL GRILLE REMOVAL/ INSTALLATION**.)
17. Install the windshield wiper arm and blade. (See **WINDSHIELD WIPER ARM AND BLADE REMOVAL/ INSTALLATION**.)
18. Install the starter (See **STARTER REMOVAL/ INSTALLATION [MZI 3.7 V6]**.)
19. Install the clips.



20. Install the harness bracket.



Tightening torque

1. 8—10 N·m {82—101 kgf·cm, 71—88 in·lbf}

21. Install the air hose. (See **INTAKE-AIR SYSTEM REMOVAL/ INSTALLATION [MZI 3.7 V6]**.)

22. Install the fresh-air duct and air cleaner component as a single unit. (See **INTAKE-AIR SYSTEM REMOVAL/ INSTALLATION [MZI 3.7 V6]**.)

23. Install the dipstick.

24. Install the engine cover. (See **ENGINE COVER REMOVAL/ INSTALLATION [MZI 3.7 V6]**.)

25. Remove the battery and battery tray. (See **BATTERY REMOVAL/ INSTALLATION [MZI 3.7 V6]**.)

26. Refill with the specified type and amount of the engine oil. (See **ENGINE OIL REPLACEMENT [MZI 3.7 V6]**.)

27. Start the engine and confirm that there is no oil leakage.
    - If there is oil leakage, repair or replace the applicable part.

28. Inspect the oil level. (See **ENGINE OIL LEVEL INSPECTION [MZI 3.7 V6]**.)

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