

TECHNICAL INSTRUCTIONS

FOR

SAFETY RECALL J0T

ENGINE WIRE HARNESS

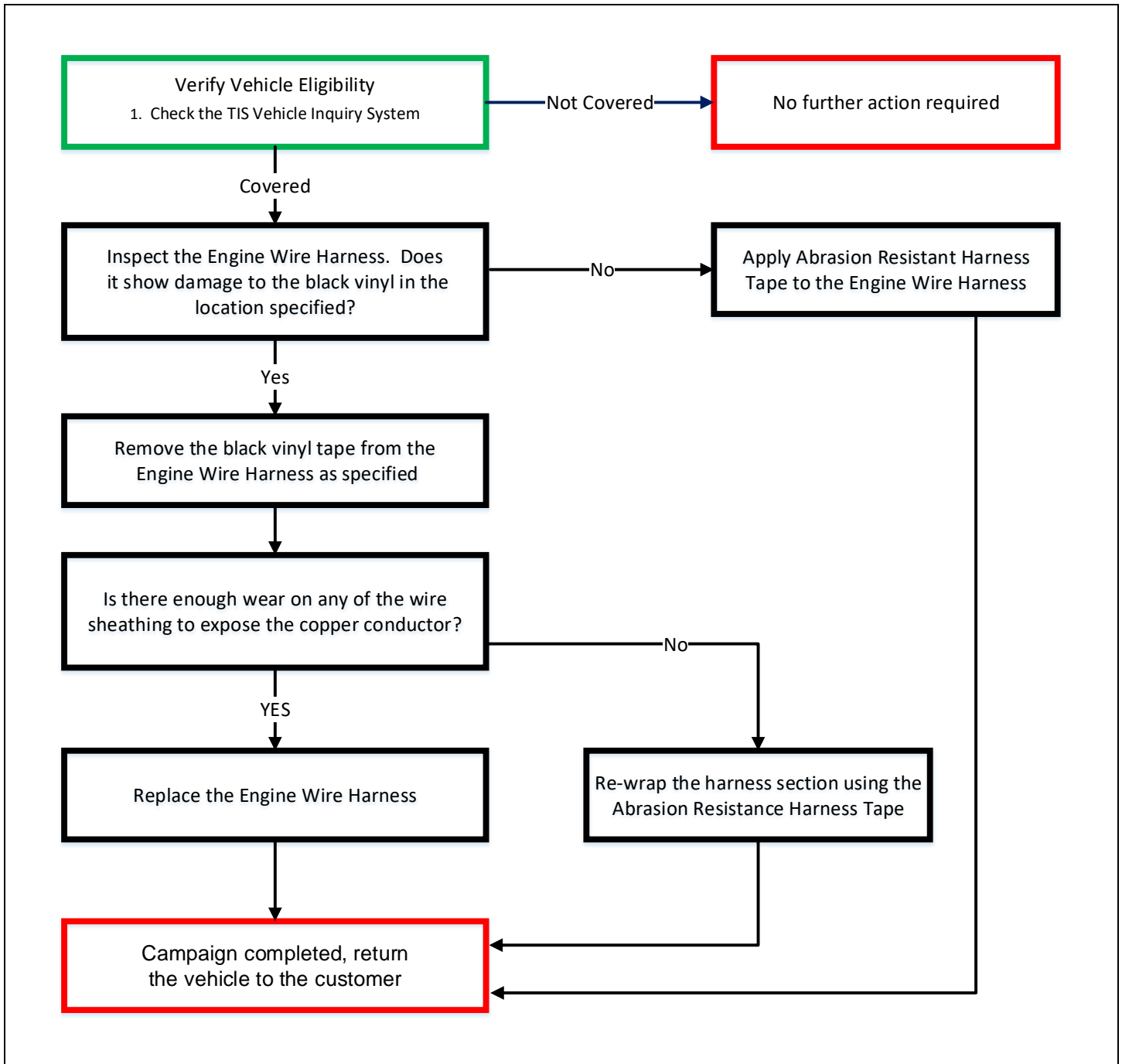
CERTAIN 2016-2018 PRIUS

The repair quality of covered vehicles is extremely important to Toyota. All dealership technicians performing this recall are required to successfully complete the most current version of the E-Learning course “Safety Recall and Service Campaign Essentials”. To ensure that all vehicles have the repair performed correctly; technicians performing this recall repair are required to currently hold at least one of the following certification levels:

- Expert Technician (Hybrid)
- Master Technician
- Master Diagnostic Technician

It is the dealership’s responsibility to select technicians with the above certification level or greater to perform this recall repair. Carefully review your resources, the technician skill level, and ability before assigning technicians to this repair. It is important to consider technician days off and vacation schedules to ensure there are properly trained technicians available to perform this repair at all times.

I. OPERATION FLOW CHART



II. IDENTIFICATION OF AFFECTED VEHICLES

- Check the TIS Vehicle Inquiry System to confirm the VIN is involved in this Safety Recall, and that it has not already been completed prior to dealer shipment or by another dealer.
- TMS warranty will not reimburse dealers for repairs completed on vehicles that are not affected or were completed by another dealer.

III. PREPARATION

A. PARTS

Part Number	Part Description	Quantity
82121-47173	Engine Wire Harness*	1
16492-21050	Ring, O Radiator*	2
22271-37020	Throttle Body Gasket*	1

*Note: These parts are only required if the inspection process determines that the Engine Wire Harness needs to be replaced. The inspection process will only require the application of the of the Abrasion Resistant Harness Wrap.

The engine wire harness and throttle body gasket have been placed on MAC (Manual Allocation Control). To get these parts released from MAC, the dealership is required to submit photographic documentation of the wire(s) inside of the engine wire harness that have exposed copper. The photograph(s) must provide perspective image(s) that clearly illustrate the exposed copper wire(s) that were discovered. Reference the JOT Dealer Letter for additional instructions.

B. TOOLS & EQUIPMENT

- Techstream
- Standard Hand Tools
- Torque Wrench

SST – These Special Service Tools required for this repair:

Part Number	Tool Name	Quantity
00002-06020-01	Plastic Pry Tool kit	1
*The set above includes the following required tools:		
00002-06200		

C. MATERIALS

- Abrasion Resistant Harness Wrap (Tessa 51036)**
- Toyota Super Long-Life Coolant***

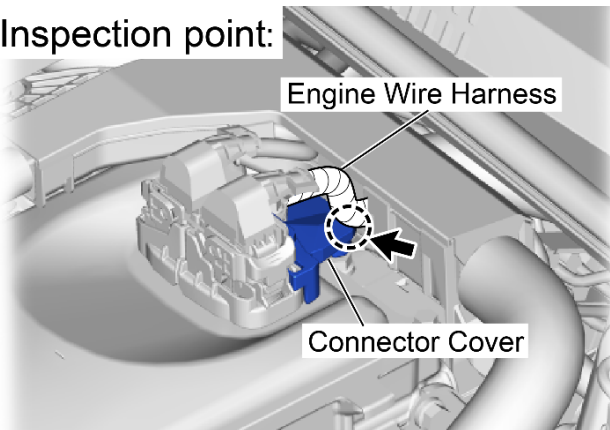
**This special abrasion resistant tape has been sent to each Toyota dealership. Contact the Service Manager for its location.

*** Toyota Super Long-Life Coolant is only required when the Engine Harness is replaced.

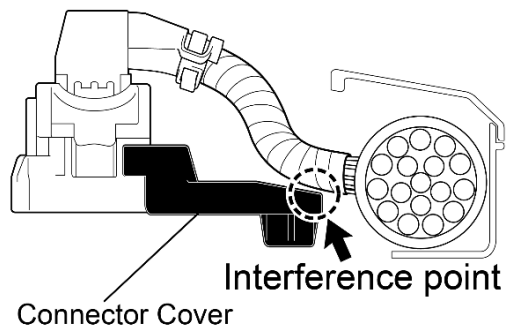
IV. BACKGROUND

The subject vehicles have an engine wire harness which is connected to the hybrid vehicle Power Control Unit. A portion of the wire harness could contact the cover at this connection and wear over time, causing an electrical short circuit, which can generate heat. If sufficient heat is generated, there is an increased risk of a vehicle fire.

Inspection point:



Side View:



S10267aS

V. SAFETY PRECAUTIONS

CAUTION:

This vehicle has a hybrid control system that operates at voltages of up to 650 V. Be sure to follow the instructions in this manual to handle the system correctly. Failure to do so may result in serious injury or electrocution.

- (a) Technicians must undergo special training to be able to service and inspect the high-voltage system.
- (b) All high-voltage wire harnesses and connectors are colored orange. The HV battery and other high-voltage components have "High Voltage" caution labels. Do not carelessly touch these wires or components.
- (c) When there is a problem with the wire harness or connector of a high-voltage circuit, repairs to the harness or connector should not be attempted. Replace damaged or malfunctioning high voltage cables or connectors.
- (d) Before inspecting or servicing the high-voltage system, be sure to follow all safety measures, such as wearing insulated gloves and removing the service plug to prevent electrocution. Carry the removed service plug in your pocket to prevent other technicians from accidentally reconnecting it while you are servicing the vehicle.

NOTICE:

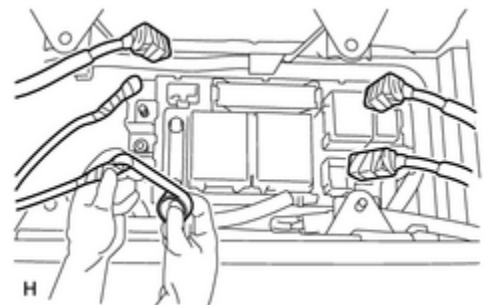
After removing the service plug grip, do not turn the power switch on (READY), unless instructed by the repair manual because this may cause a malfunction.

- (e) After removing the service plug grip, wait 10 minutes before touching any of the high-voltage connectors and terminals.

HINT:

Waiting for at least 10 minutes is required to discharge the high-voltage capacitor inside the inverter with converter assembly.

- (f) Before using insulated gloves, be sure to check them for cracks, tears and other types of damage.
- (g) When servicing the vehicle, do not carry metal objects like mechanical pencils or rulers that can be dropped accidentally and cause a short circuit.
- (h) Before touching a bare high-voltage terminal, wear insulated gloves and use a tester to make sure that the terminal voltage is 0 V.



- (i) After disconnecting or exposing a high-voltage connector or terminal, insulate it immediately using insulating tape.
- (j) Bolts and nuts for high-voltage terminals should be tightened firmly to the specified torque. Both insufficient and excessive torque can cause failure.
- (k) Use the "CAUTION: HIGH VOLTAGE DO NOT TOUCH" sign to notify other technicians that the high-voltage system is being inspected and/or repaired.
- (l) After servicing the high-voltage system and before reinstalling the service plug, check again that you have not left a part or tool inside, that the high-voltage terminals are firmly tightened, and that the connectors are correctly connected.
- (m) When performing work involving high-voltage wires, use either a tool wrapped with vinyl insulation tape or an insulated tool.

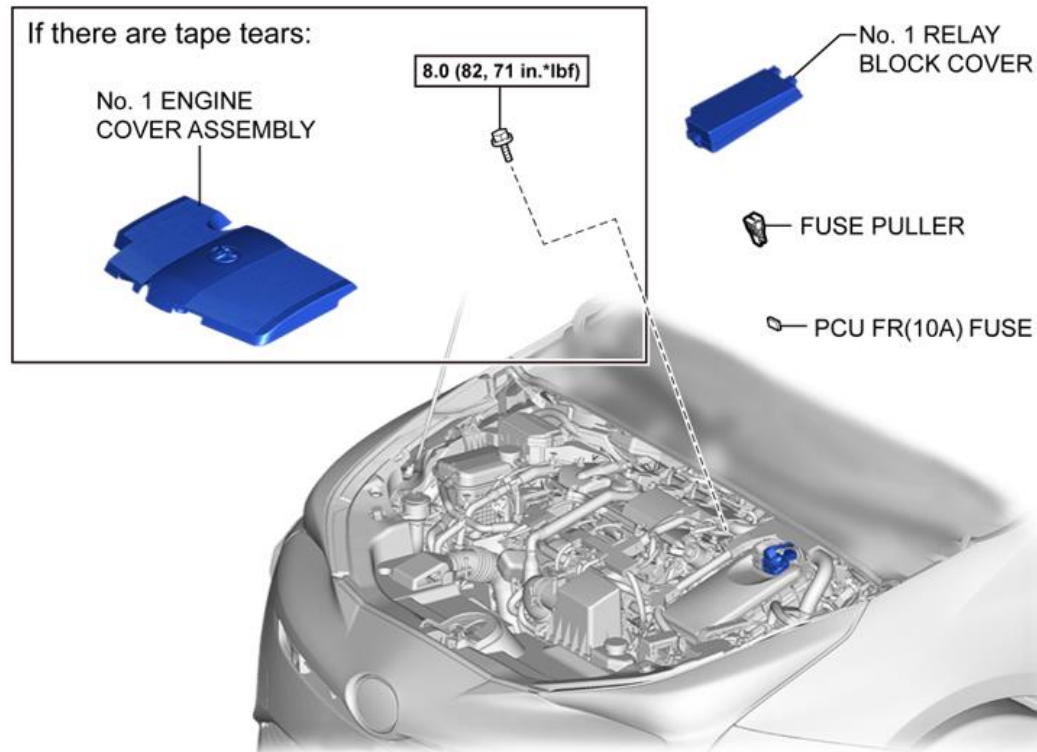
(n) When installing hybrid control system components such as the HV battery, make sure that the polarity of all connections is correct.

CAUTION:

- Do not touch any bare cables that may have high-voltage. If a cable must be touched or if accidental contact is possible, wear insulated gloves and insulate the cable using insulating tape.
- Visually check the HV battery and the immediate area for any electrolyte leakage. Do not touch any leaked liquid because it could be organic electrolyte that contains carbonic acid esters.
- The electrolyte is flammable. Keep all ignition sources such as open flame and hot objects away from the electrolyte.
- Electrolyte leaks may cause acute poisoning if a high concentration of the vapor from the organic solvent is inhaled. In case of inhalation, move the affected person to a place with ample fresh air and let them lie quietly. Seek medical care.
- In case of skin contact with the electrolyte, wash the area thoroughly with soap and plenty of water, and seek medical care. Immediately remove any contaminated clothing. Prolonged contact with the electrolyte may cause skin irritation.
- If the electrolyte comes in contact with your eyes, call out loudly for help. Do not rub your eyes. Immediately flush them with a large amount of water for at least 15 minutes and seek medical care.
- If electrolyte is swallowed, seek medical care immediately. Do not induce vomiting, unless instructed by the doctor.
- Wear insulated or rubber gloves, goggles, and safety shoes.
- Check the HV battery and immediate area for any electrolyte leakage.
- Do not touch any bare cables that could be high voltage cables. If a cable must be touched or if accidental contact is possible, follow the following instructions: 1) wear insulated gloves and goggles, 2) measure the voltage between the cable and body ground using an electrical tester, and 3) insulate the cable using insulating tape.
- Do not touch any bare cables that may have high-voltage. If a cable must be touched or if accidental contact is possible, wear insulated gloves and insulate the cable using insulating tape.
- Do not touch any leaked liquid because it could be the organic electrolyte that contains carbonic acid esters. If contact is unavoidable, wipe the fluid off using a cloth while wearing rubber gloves, goggles and an organic solvent mask. Do not leave electrolyte-contaminated cloths unattended. Place contaminated cloths in an appropriate airtight container and dispose of them according to local regulations.
- Accidents such as electric shock may result if the HV battery or a hybrid vehicle supply stack sub-assembly is disposed of improperly or abandoned. Therefore, make sure to return all HV batteries or hybrid vehicle supply stack assemblies through an authorized collection agent.
- To reduce the risk of fire, the HV battery or hybrid vehicle supply stack assembly must not be stored in an area where it will be exposed to fire or high temperatures.

VI. COMPONENTS

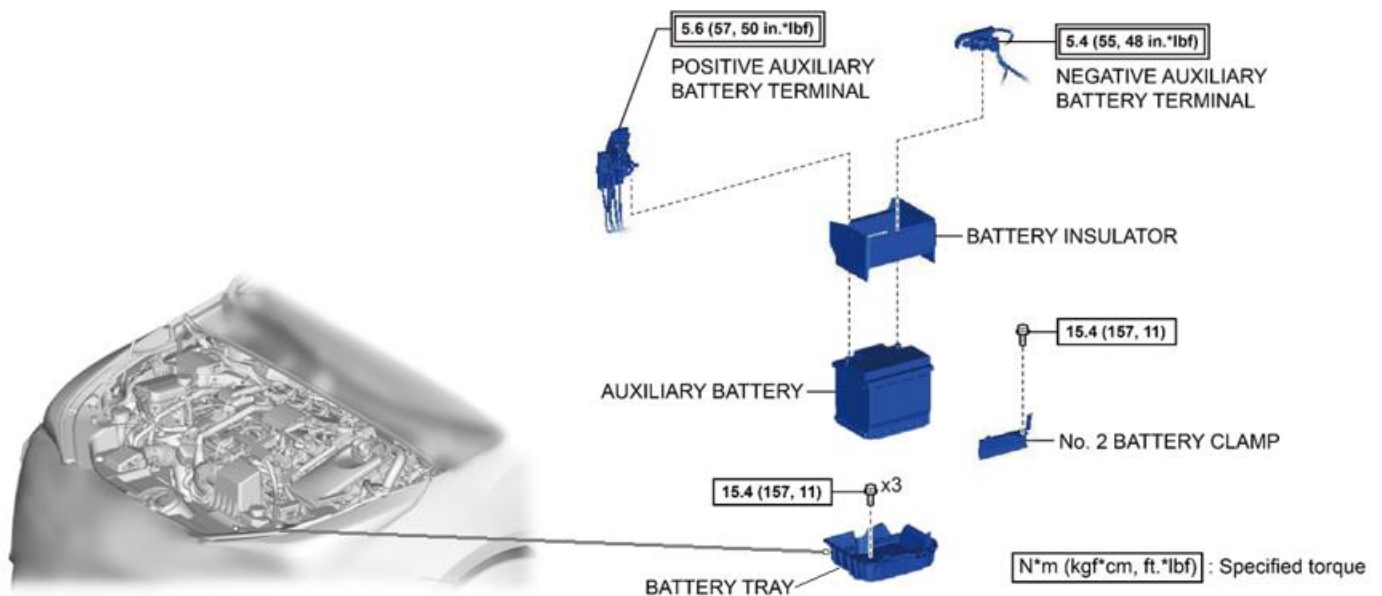
INSPECTION AND APPLICATION OF WIRE HARNESS WRAP ONLY



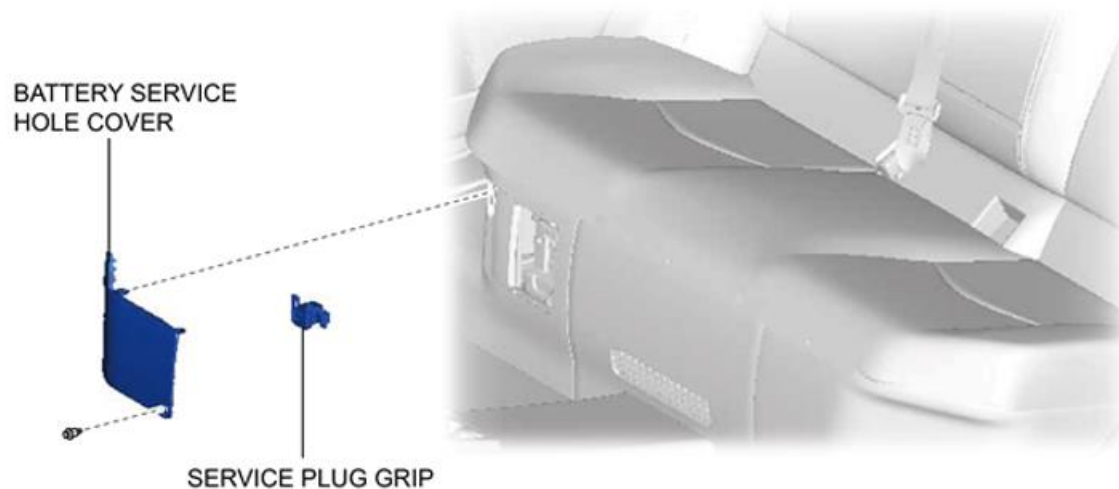
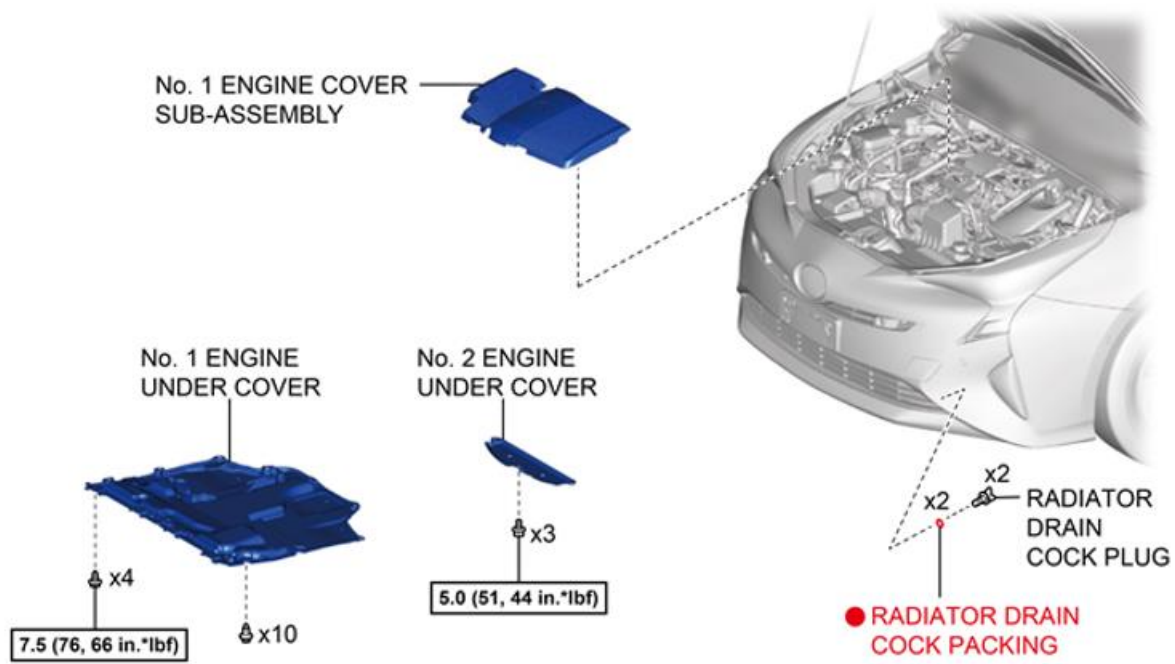
N*m (kgf*cm, ft.*lbf) : Specified torque

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ENGINE HARNESS REPLACEMENT ONLY



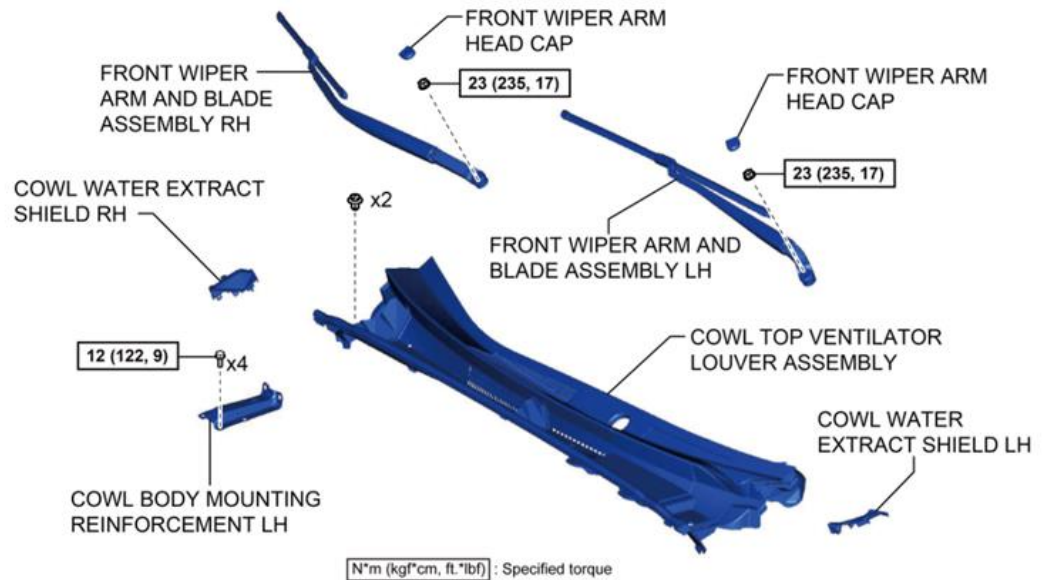
ENGINE HARNESS REPLACEMENT ONLY



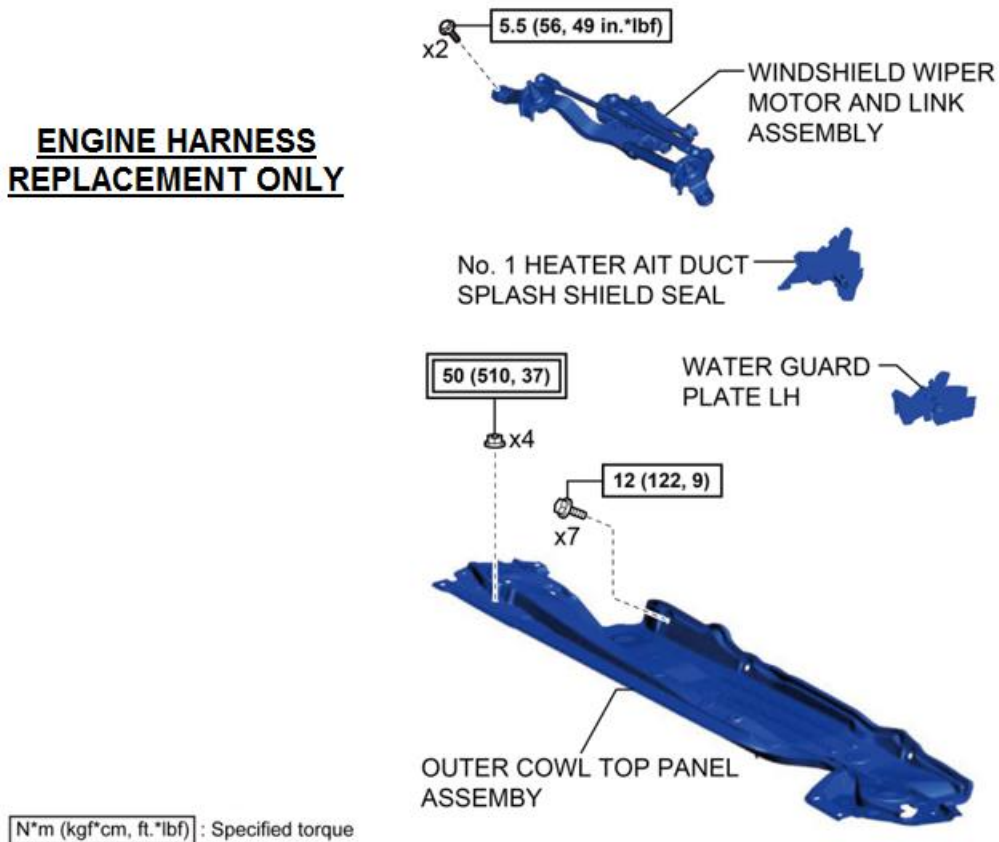
● : Component to be replaced

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

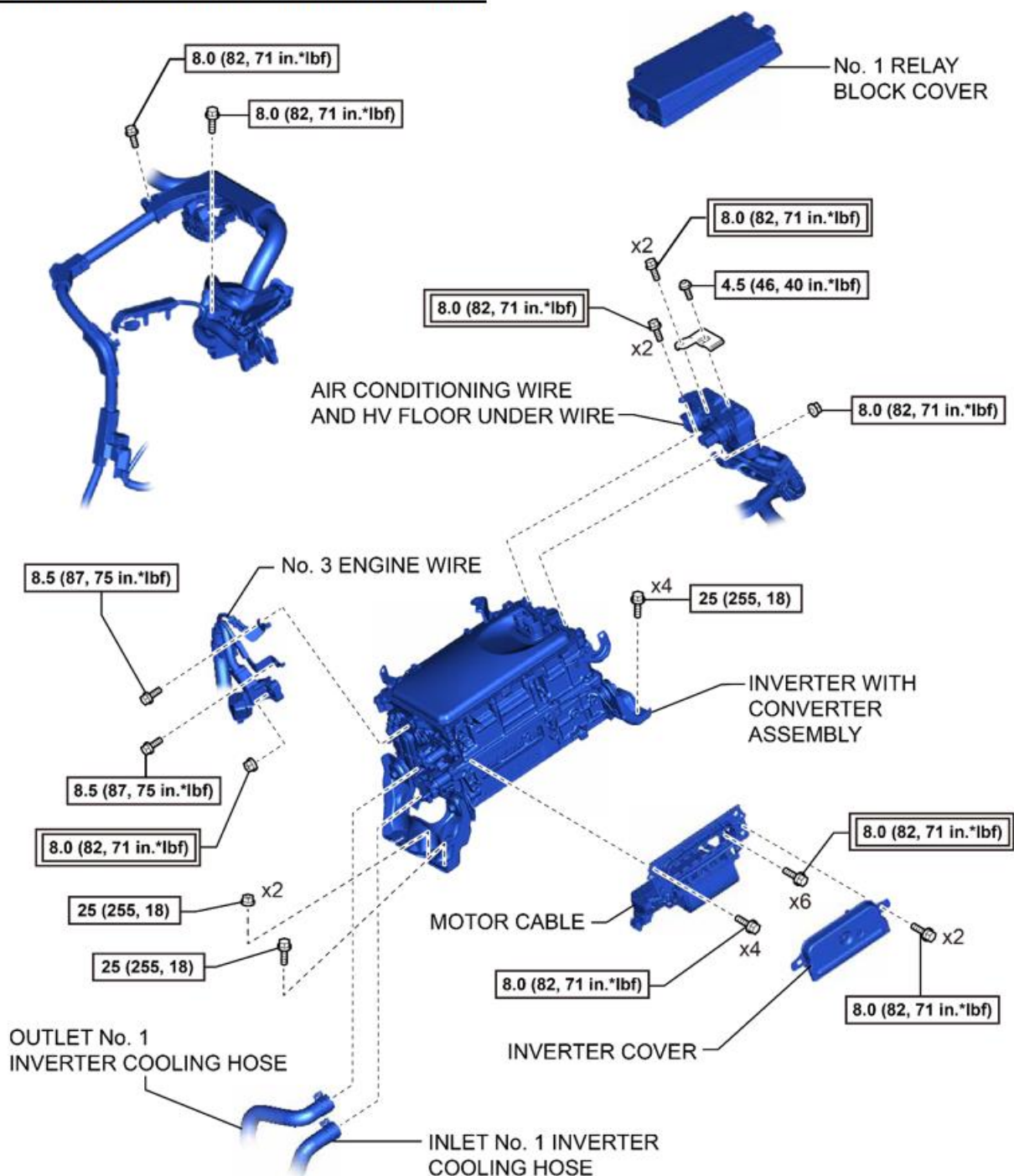
ENGINE HARNESS REPLACEMENT ONLY



ENGINE HARNESS REPLACEMENT ONLY



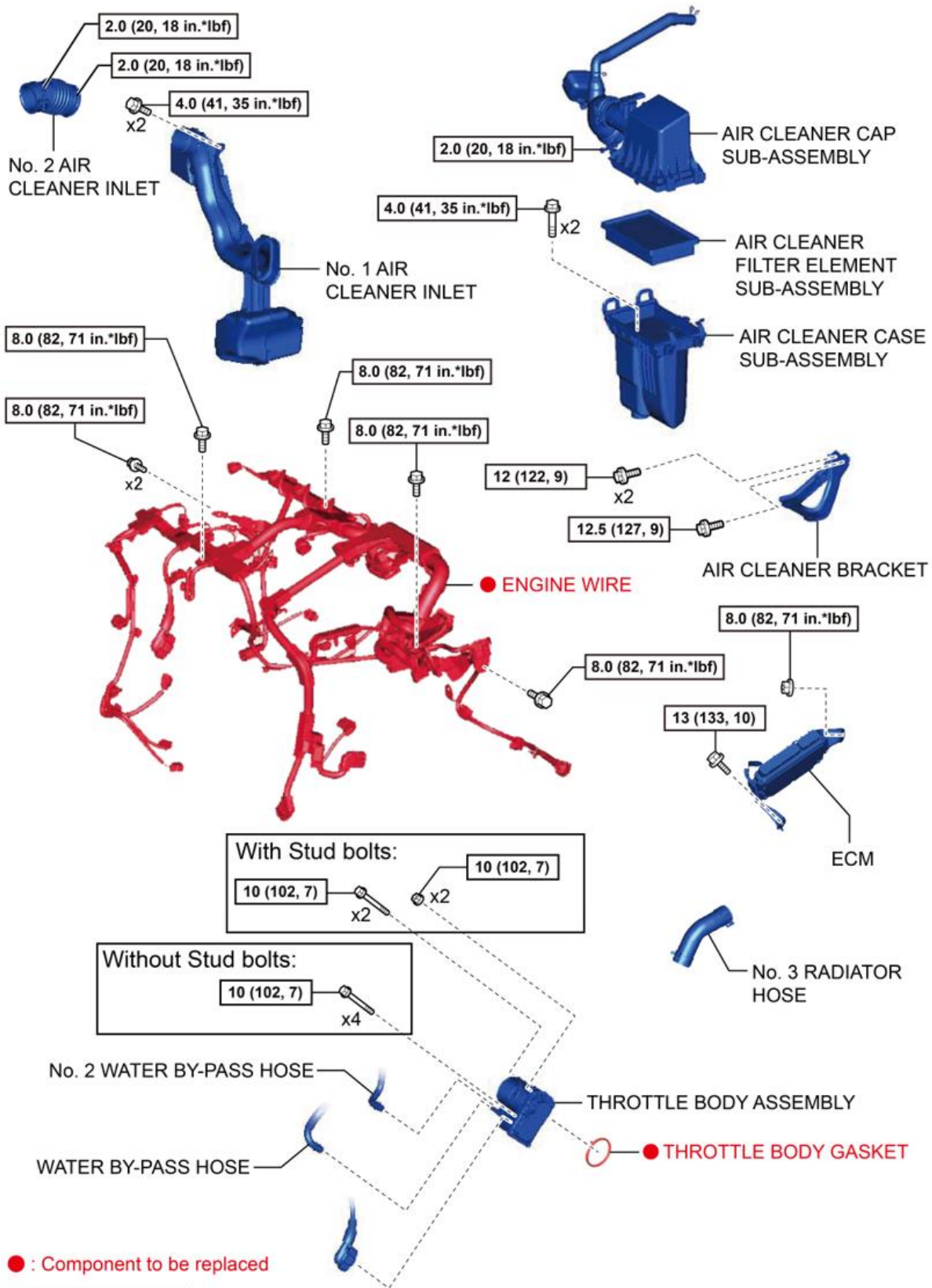
ENGINE HARNESS REPLACEMENT ONLY



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

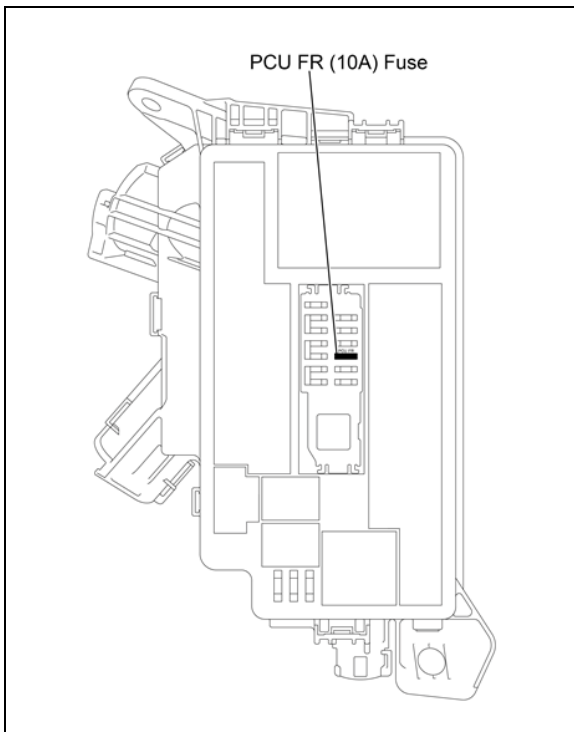
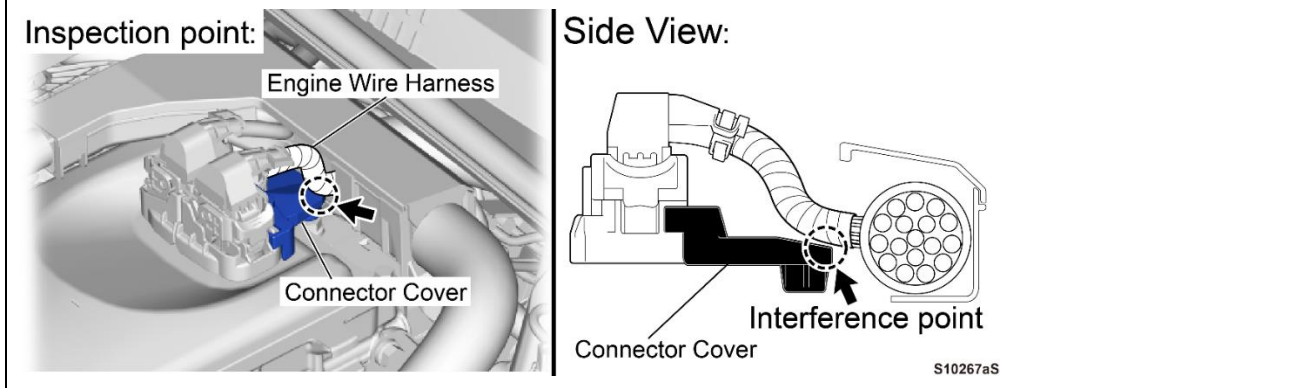
 : Tightening torque for "Major areas involving basic vehicle performance such as moving/turning/stopping" : N*m (kgf*cm, ft.*lbf)

ENGINE HARNESS REPLACEMENT ONLY



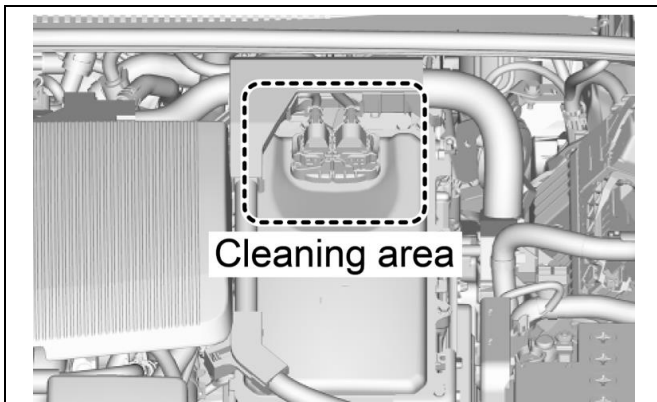
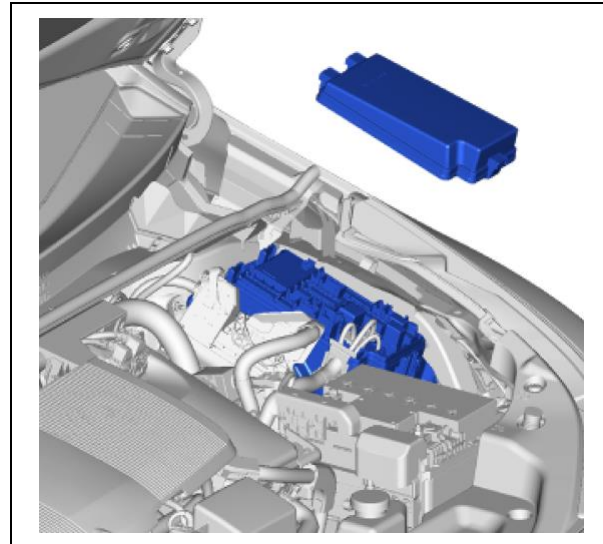
VII. INSPECTION OF WIRE HARNESS

The Engine Wire Harness, at the High Voltage Inverter, will be inspected for damage caused by interference with the Connector Cover.



1. REMOVE PCU FR FUSE

- Remove the No. 1 upper relay block cover.
- Remove the PCU FR (10A) fuse.

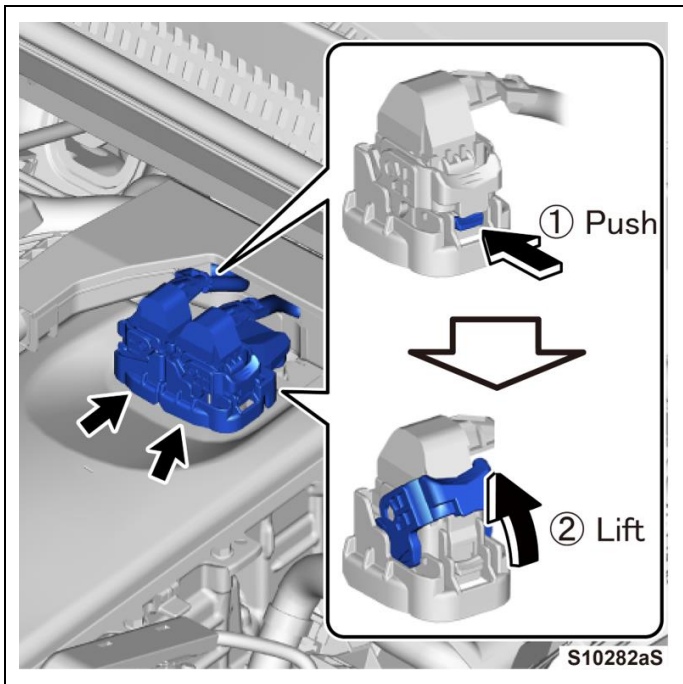
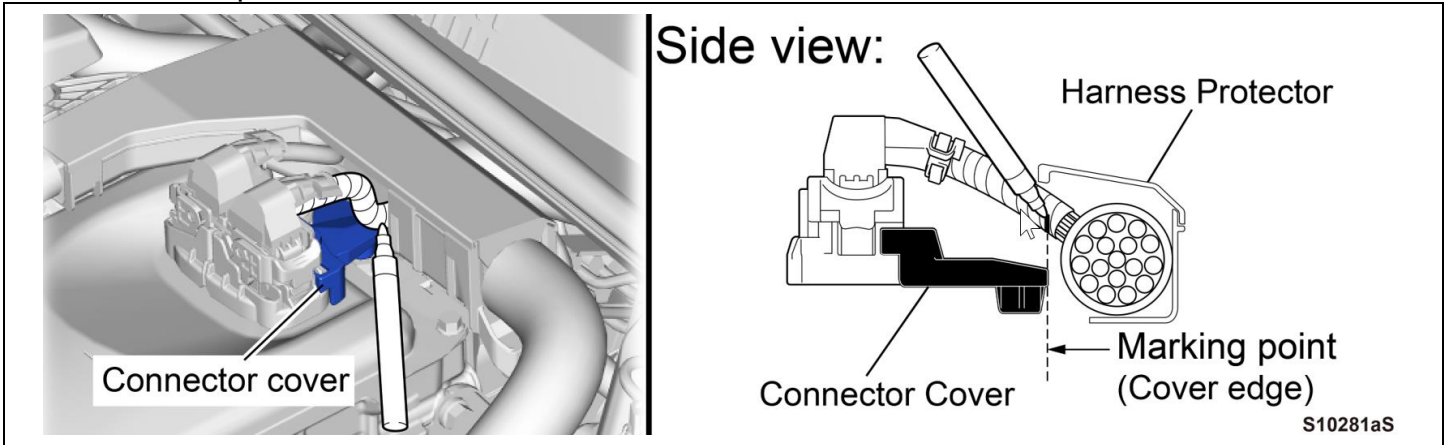


2. CLEAN THE INVERTER AREA

- Clean any dirt and/or liquids around the connectors on the top of the High Voltage Inverter with a clean cloth.

3. MARK THE HARNESS

- Apply a mark to the wire harness in a straight line between the connector cover and the harness protector.



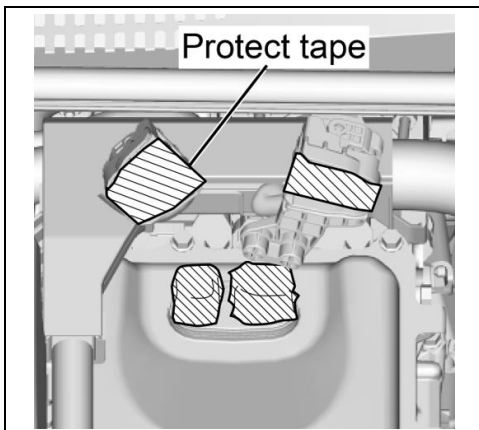
4. DISCONNECT INVERTER CONNECTORS

- Confirm that the following conditions:
 - No safety related hybrid system DTC's are present.
 - Ignition is OFF.
 - Safety precautions for high voltage service will be followed.
- Remove the 2 electrical connectors from the top of the High Voltage Inverter.

Note: These two connectors on the top of the High Voltage Inverter do not contain any high voltage circuits. These connectors only contain 12 volt and other low voltage circuits. The Service Plug does not need to be removed before disconnecting these low voltage connectors.

5. COVER THE EXPOSED CONNECTIONS

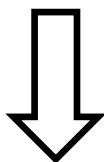
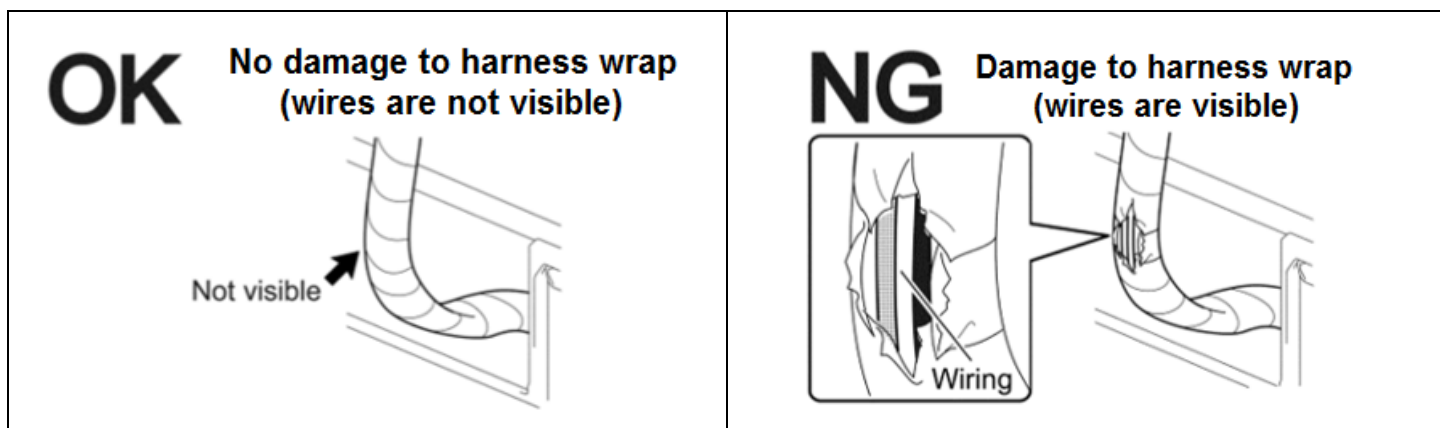
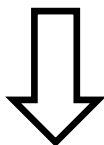
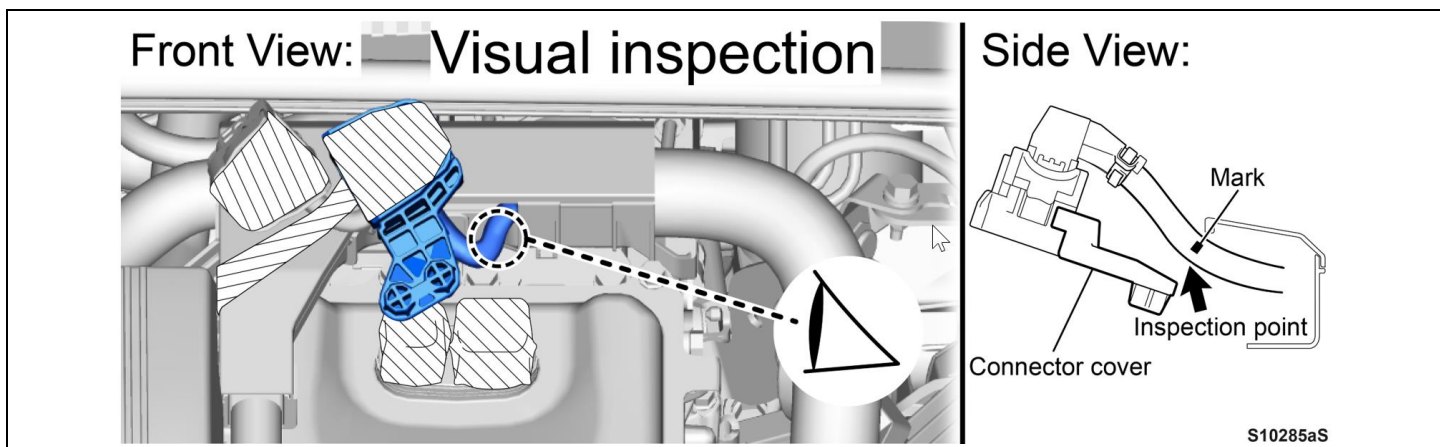
- Cover the exposed electrical connections with protective tape to prevent the dirt from entering.



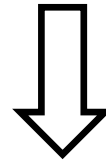
6. INSPECT WIRE HARNESS WRAP

- Lift the Drivers Side (LH) connector and wire harness.
- Inspect the underside of the Drivers Side (LH) harness for signs of damage to the black vinyl tape wrapped around the wiring, in the area you earlier applied the mark. The point of concern is on the bottom side of the harness where it could contact the Connector cover.

Note: The only inspection point for this campaign is the harness wrap on the bottom of the Drivers Side (LH) Inverter connector, where it can contact the Connector cover. Damage or deformation on other areas should not lead to exposure of the core wire. Therefore, there is no need to apply the Tessa abrasion resistant tape to any other wiring harness section.



Proceed to Section VIII. Apply
Tape to Engine Harness on
page #14

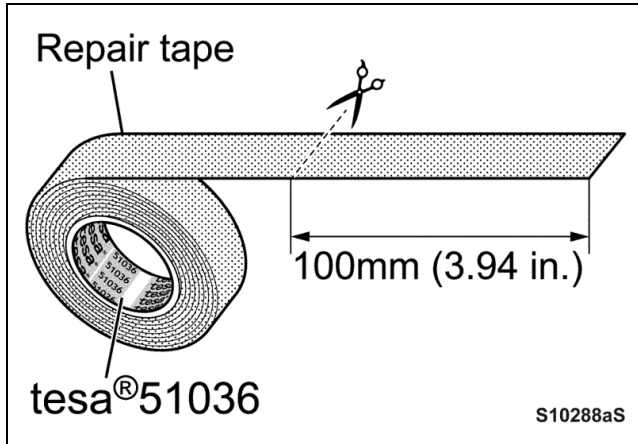


Proceed to Section IX.
Inspection of Wire Condition
on page #16

VIII. APPLY TAPE TO ENGINE HARNESS



Only proceed with this section if no damage was found to the wiring harness wrap during the inspection.



1. APPLY TAPE TO ENGINE HARNESS

- Locate the provided roll of Tessa 51036* tape.
- Cut a 100mm (3.94") of the Tessa 51036* tape.

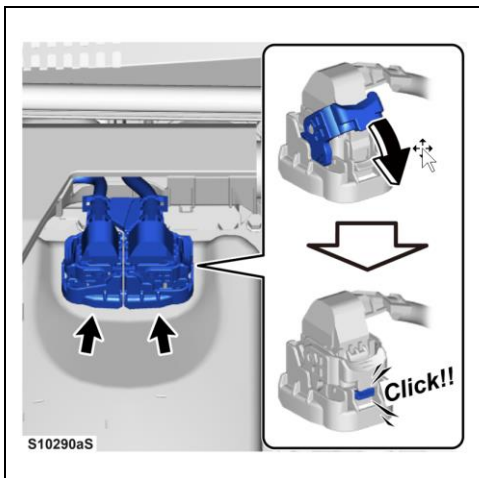
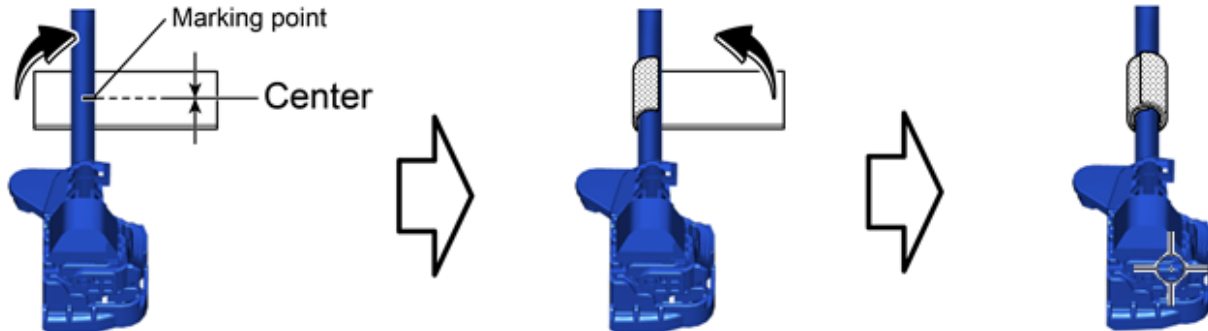


DO NOT substitute any other tape for the specified Tessa 51036 tape. This is a specially designed, abrasion resistance wire harness wrap. Standard electrical tape or other substitutions are not acceptable.

*The Tessa 51036 tape has been sent to each dealership. See the Service Manager for it's location.

- Wrap the tape around the harness using the mark that you applied earlier as a centerline.

Note: When properly applied, the tape will provide abrasion resistance against the connector cover.

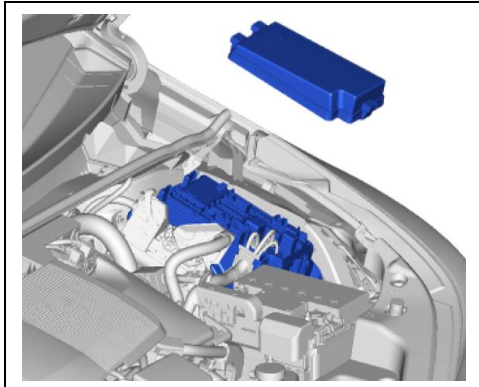
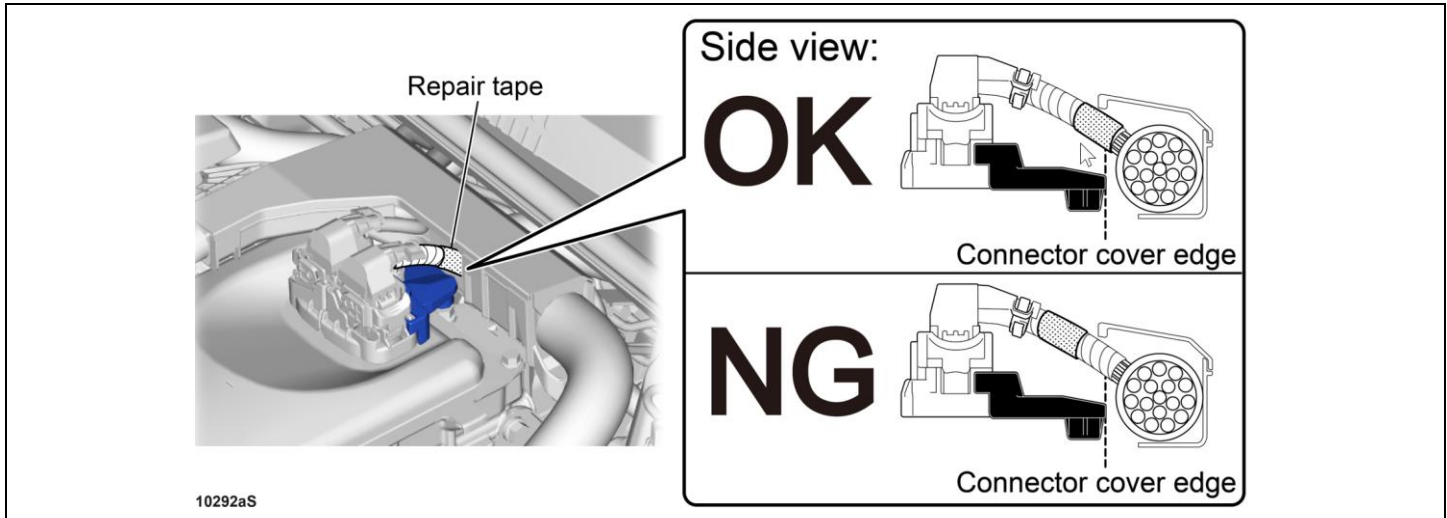


2. RECONNECT THE ELECTRICAL CONNECTORS

- Remove the protective tape from the connector.
- Connect the 2 connectors.

3. CONFIRM TAPE APPLICATION

- a. Check that the recently applied abrasion resistant tape is in the correct location. If not, re-apply the tape to correct the positioning.



4. COMPLETE REPAIR

- a. Reinstall the PCU (10A) fuse.
- b. Install the relay block cover.
- c. Check and clear any DTC's.

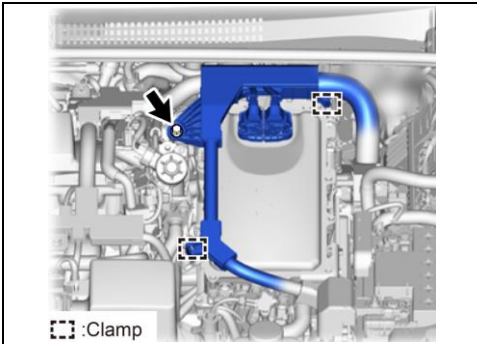
This campaign is now complete. Return the vehicle to the customer.

IX. INSPECTION OF WIRE CONDITION



Proceed with this section only if damage was found to the wiring harness wrap during the inspection.

1. REMOVE ENGINE COVER

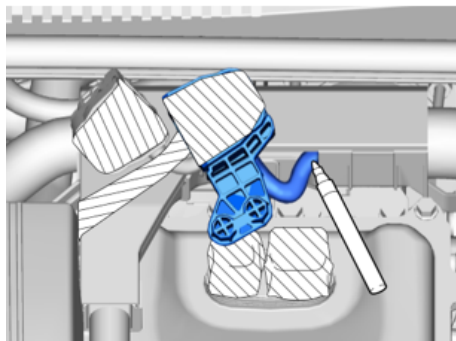


2. RELEASE WIRE HARNESS

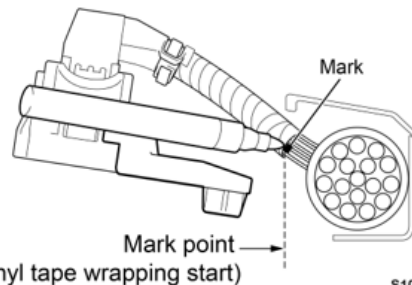
- Remove the bolt.
- Release the 2 clamps.
- Pull the wire harness forward to gain access for the next inspection.

3. MARK THE WIRE HARNESS

- Apply a mark to the vinyl tape starting wrap point, so that the repair tape attachment point is made clear.



Side View:

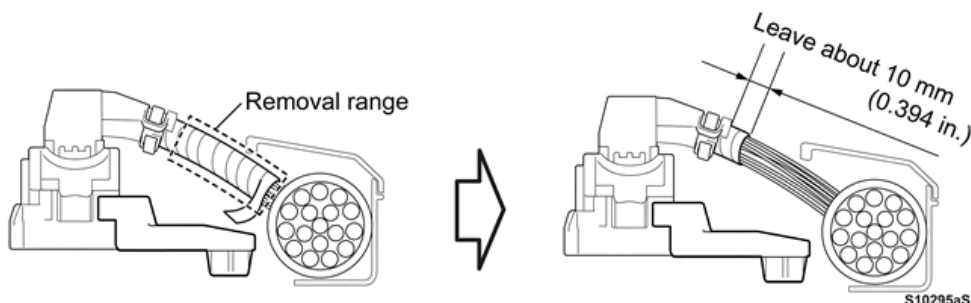


4. REMOVE BLACK VINYL WIRE HARNESS WRAP

- Carefully remove the black vinyl wire harness wrap from the area shown in the diagrams below.



Be extremely careful when removing the vinyl tape so that no damage occurs to the wire insulation. If the dealership technician accidentally damages any wire during this process, the engine harness needs to be replaced. This expense will not be covered by the campaign.



5. INSPECT WIRES FOR DAMAGE

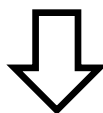
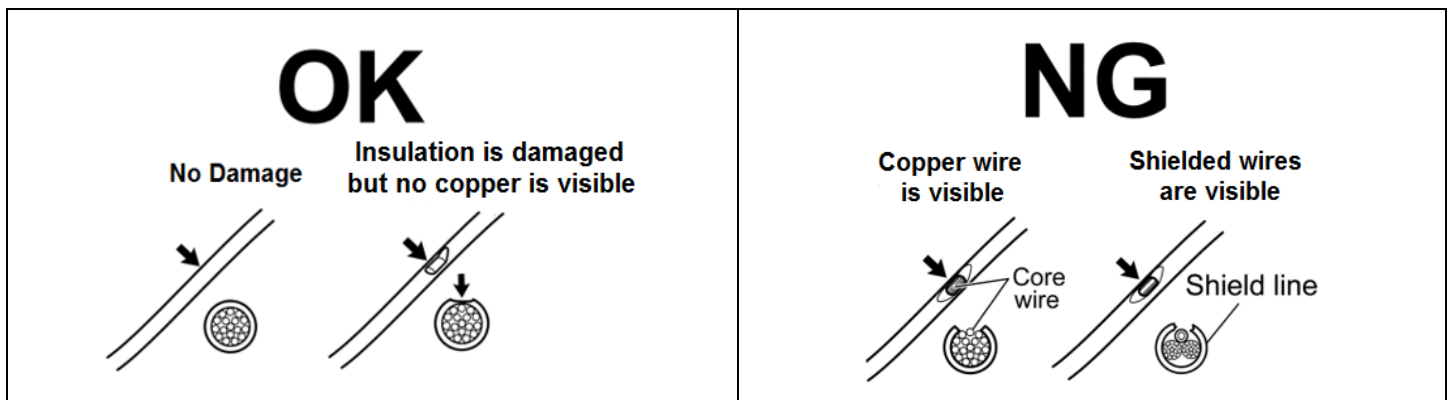
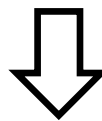
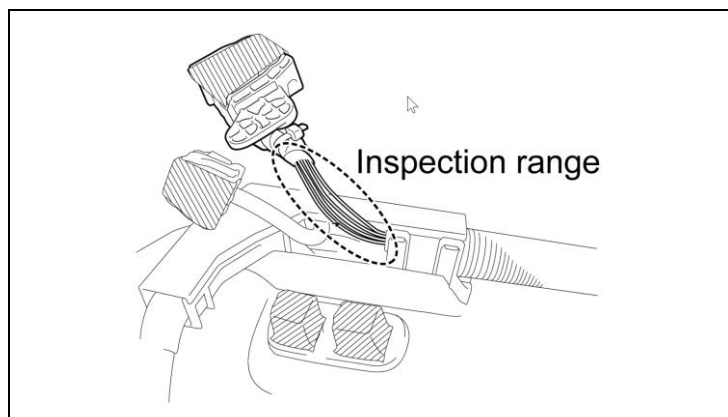
a. Carefully inspect the individual wires for damage.

OK:

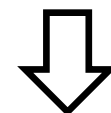
- No damage on the insulation
- OR
- Insulation is damaged, but no copper is visible

NG:

- Copper is visible through the insulation
- OR
- Shielded wires are visible



Proceed to Section X.
Re-Wrap Harness on page #18



Proceed to Section XI.
Replace Engine Harness on
page #20

X. RE-WRAP HARNESS



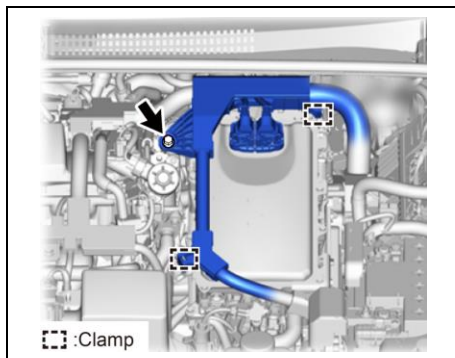
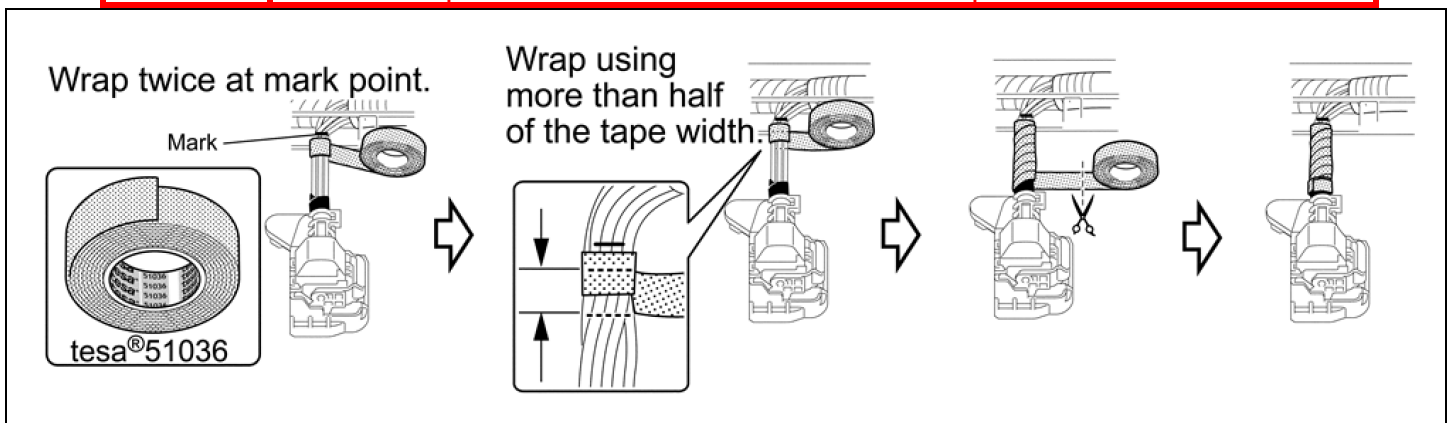
Only proceed with the following steps if copper is NOT visible through the wire insulation.

1. APPLY TAPE TO ENGINE WIRE HARNESS

- Locate the provided roll of Tessa 51036 tape.
- Starting at the inside, wrap the tape around the wires 2 times.
- Continue wrapping the tape around the wires, overlapping by $\frac{1}{2}$ the width of the tape until reaching the connector end.
- To finish, make two complete loops around the wires.

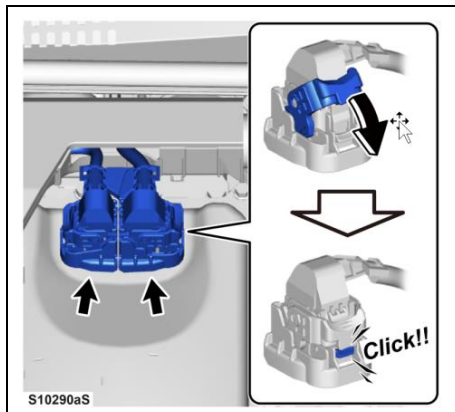


DO NOT substitute any other tape for the specified Tessa 51036 tape. This is a specially designed, abrasion resistance wire harness wrap. Standard electrical tape or other substitutions are not acceptable.



2. ATTACH WIRE HARNESS

- Install the bolt.
Torque: 71 in.lbs {8.0 N·m, 82 kgf·cm}
- Engage the 2 clamps.



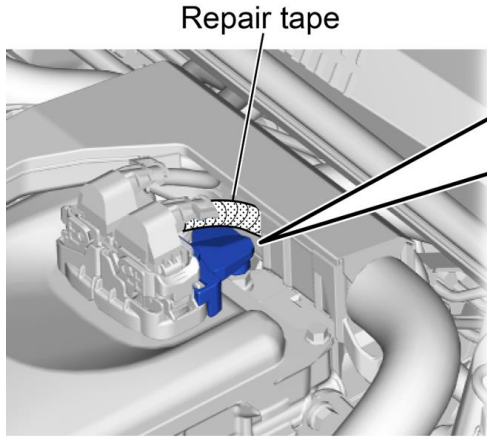
3. RECONNECT THE ELECTRICAL CONNECTORS

- Remove the protective tape from the connector.
- Connect the 2 connectors.

4. INSTALL ENGINE COVER

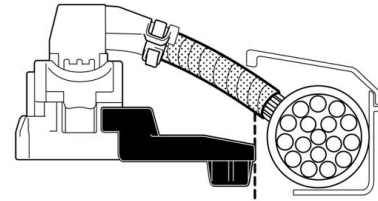
6. CONFIRM TAPE APPLICATION

- Check that the recently applied abrasion resistant tape is in the correct location. If not, re-apply the tape to correct the positioning.



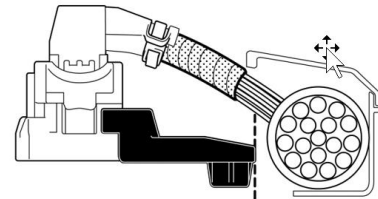
Side View:

OK

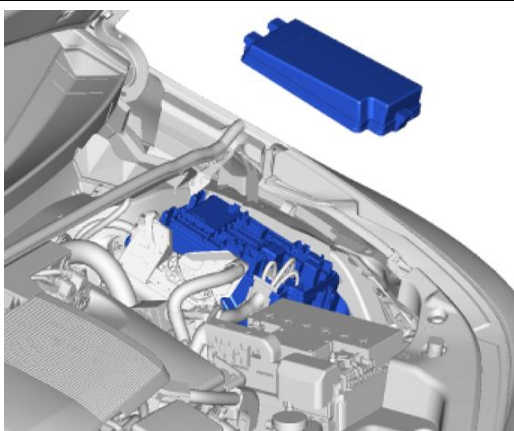


Connector cover edge

NG



Connector cover edge



7. COMPLETE REPAIR

- Reinstall the PCU (10A) fuse.
- Install the relay block cover.
- Check and clear any DTC's.
- Reinstall the engine cover.

This campaign is now complete. Return the vehicle to the customer.

XI. REPLACE ENGINE HARNESS

CAUTION:

- Before inspecting the high-voltage system or disconnecting the low voltage connector of the inverter with converter assembly or electric vehicle charger assembly, take safety precautions such as wearing insulated gloves and removing the service plug grip to prevent electrical shocks. After removing the service plug grip, put it in your pocket to prevent other technicians from accidentally reconnecting it while you are working on the high-voltage system.
- After removing the service plug grip, wait for at least 10 minutes before touching any of the high voltage connectors or terminals. After waiting for 10 minutes, check the voltage at the terminals in the inspection point in the inverter with converter assembly. The voltage should be 0 V before beginning work.
- Wait for at least 10 minutes is required to discharge the high-voltage capacitor inside the inverter with converter assembly and electric vehicle charger assembly.

Parts ordering:

The engine wire harness and throttle body gasket have been placed on MAC (Manual Allocation Control). To get these parts released from MAC, the dealership is required to submit photographic documentation of the wire(s) inside of the engine wire harness that have exposed copper. The photograph(s) must provide perspective image(s) that clearly illustrate the exposed copper wire(s) that were discovered. Please provide the Parts Department with these pictures when ordering parts.



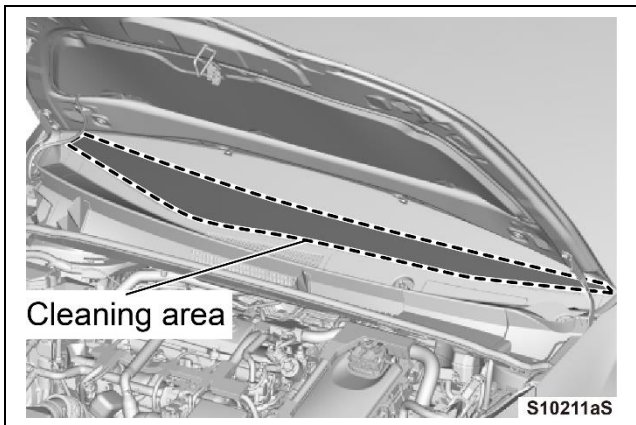
1. CHECK FOR DTC'S

- a. Using a Techstream, check for Diagnostic Trouble Codes.



If any hybrid DTC's are found that indicate a safety risk at performing this repair, do not proceed until they have been resolved.

Note: *This Safety Recall covers only the inspection or replacement of the engine wiring harness, as detailed in these instructions. It does not cover the diagnosis or replacement of any other parts on the vehicle, including the hybrid system.*

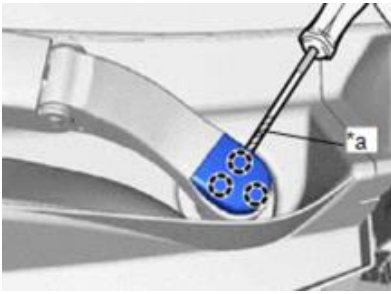


2. CLEAN THE WINDSHIELD

- a. Remove all dirt and dust from the base of the windshield to prevent damage to the glass when removing the Cowl Top Ventilator.



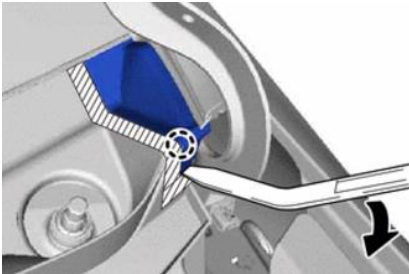
Failure to remove any dirt, dust, etc., on the glass surface could cause damage to the windshield.



3. REMOVE WIPER ARMS LH & RH

- Use a piece of tape to mark the position of the wiper arms on the windshield.
- Disengage the 3 claws to remove the wiper arm cap.
- Remove the nut and front wiper arm.

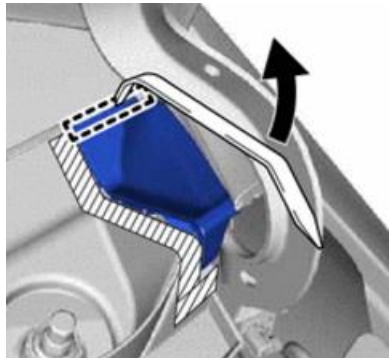
*a	Protective Tape
----	-----------------



4. REMOVE WATER EXTRACT SHIELD LH & RH

- Apply protective tape as shown.
- Using a trim tool, disengage the claw.

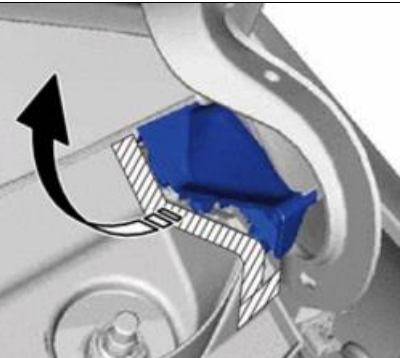
*a	Protective Tape
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- Using a trim tool, disengage the shield from the windshield glass.



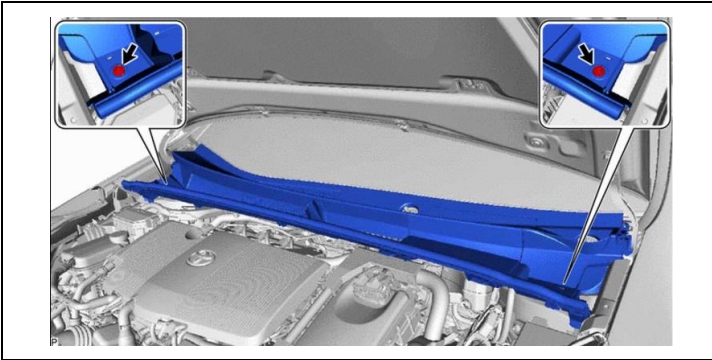
- Disengage the claw and guide



- Remove the shield in the direction shown.

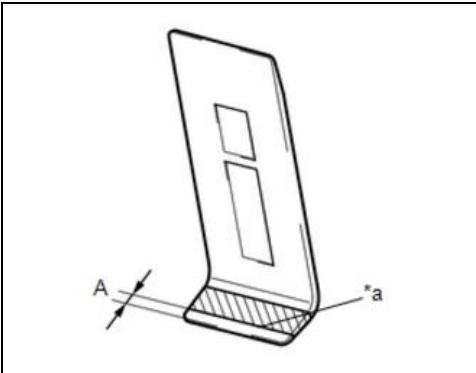
5. REMOVE COWL TOP VENTILATOR

a. Remove the 2 outer clips.



b. Apply protective tape to a wide, curved trim tool as shown. Leave about 4mm of the outer edge uncovered.

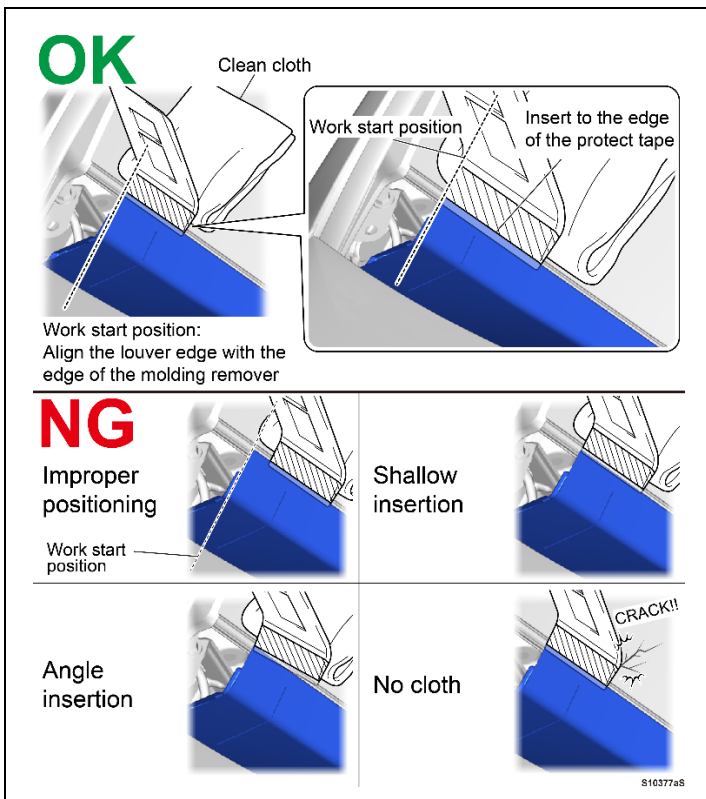
SST: 00002-06200 (included in the Plastic Pry Tool Kit #00002-06020-01)



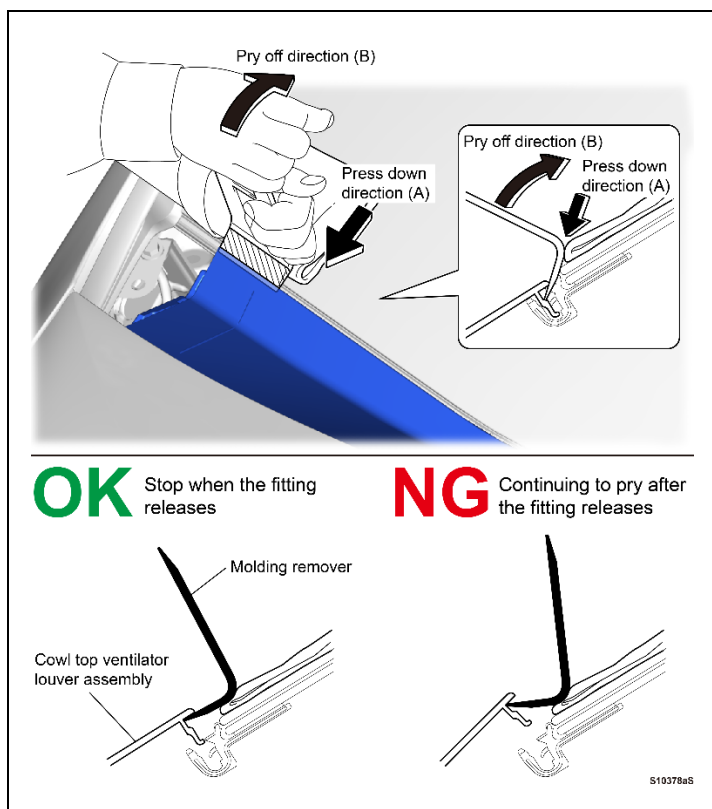
Be sure to attach the protective tape as it will be regarded as the reference for the remover insertion depth.

- c. Clean any foreign substances from the windshield using a clean cloth.
- d. Insert a cloth between the trim tool and glass to prevent damage.
- e. Insert the trim tool under the leading edge of the of the panel. Be sure to insert the tool fully to prevent damage to the ventilator.
- f. Rotate the trim tool rearward to disengage the cowl top ventilator from the windshield channel.

- g. Insert a cloth between the Molding remover and glass as the glass may be damaged
- h. Be sure to insert the Molding remover up to the protective tape depth as the Cowl top ventilator louver may be deformed or damaged.

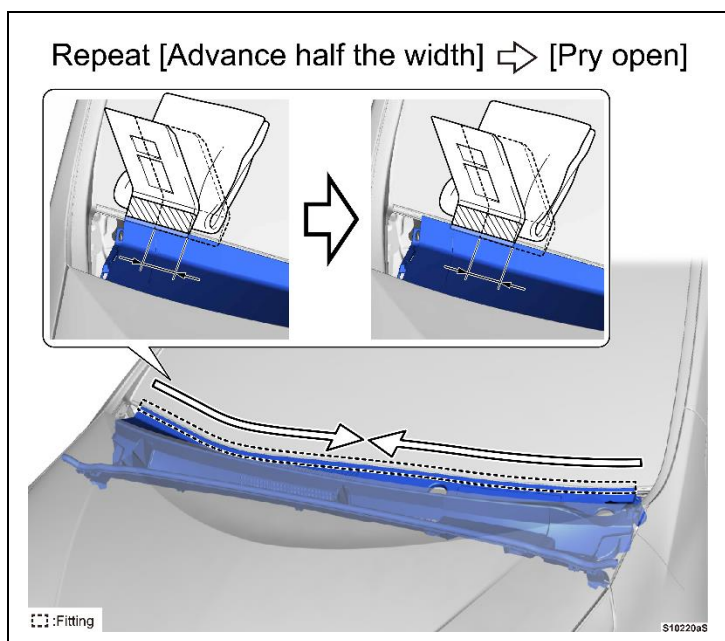


- i. While pressing the trim tool in the direction of arrow (A), pry off in arrow direction (B) and remove the louver edge fitting.

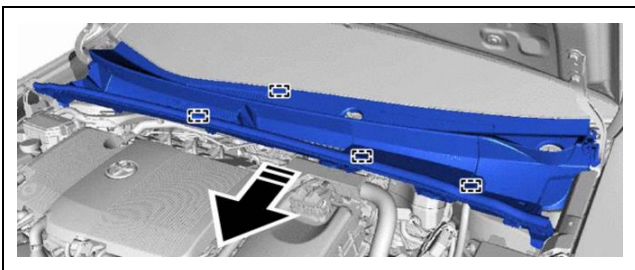


- j. Perform the work while pressing in the (A) arrow direction as the louver may be deformed or damaged.
- k. *DO NOT* put any further prying load if the Molding remover slips from the fitting as the louver may become deformed or damaged.

- I. Slide the trim tool half the width of the tool each time, then pry and release and gradually remove the louver edge.

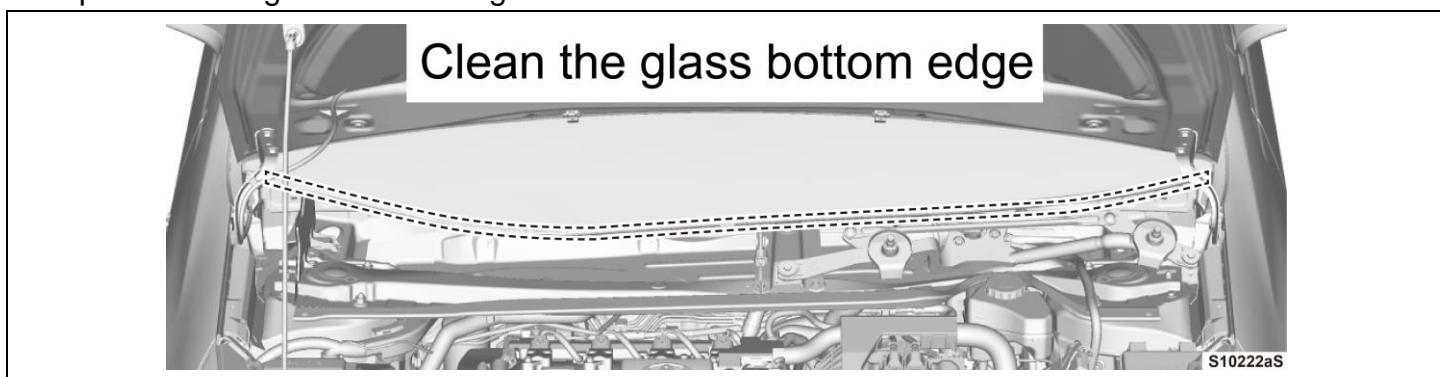


- m. Be sure to slide the remover half the width at a time and remove the fittings as the louver may be deformed or damaged. *DO NOT* remove in one go and allow it to go flying.
- n. Until all of the fittings are removed, be sure to remove the fittings with the Molding remover as the louver may be deformed or damaged. *DO NOT* hold the louver by hand.

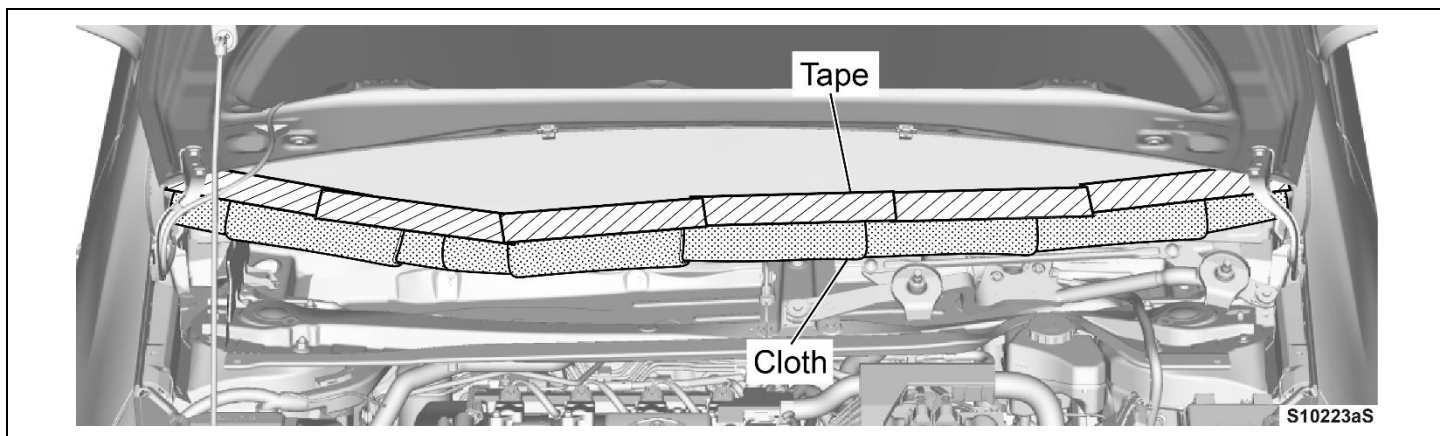


o. Disengage the 4 guides and slide the cowl top ventilator panel forward.

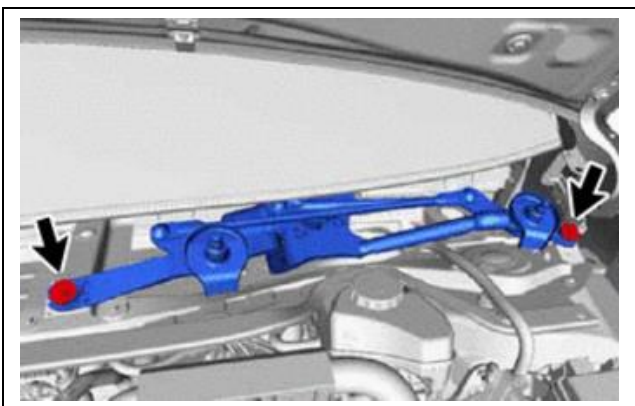
p. Clean the glass bottom edge with a clean cloth.



q. Attach a few folded clean cloths to the glass bottom edge with tape.

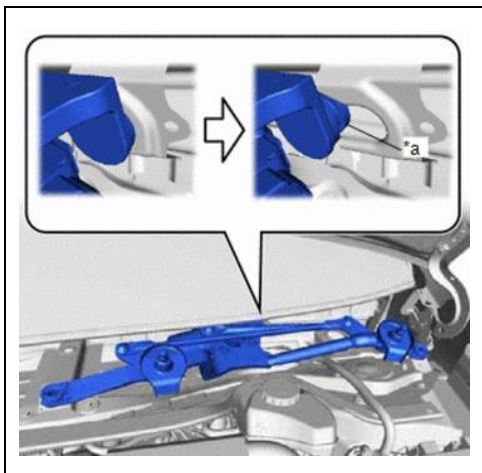


Take care not to hit the glass with the tools or parts while working.



6. REMOVE WIPER ASSEMBLY

a. Remove the 2 bolts.



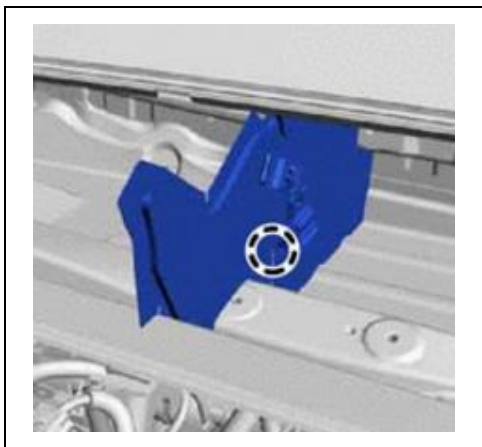
- b. Disengage the motor grommet by pulling forward on the wiper assembly.
- c. Disconnect the electrical connector.

*a	Motor Grommet
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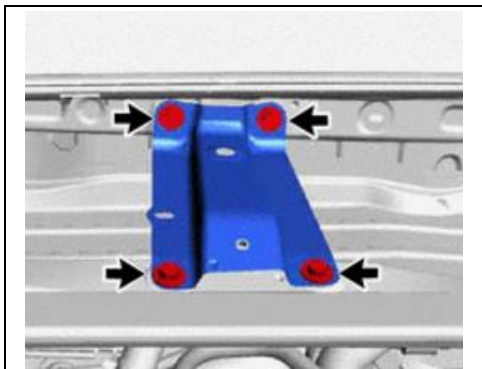
7. REMOVE HEATER AIR DUCT SPLASH SHIELD

- a. Disengage the 2 claws.



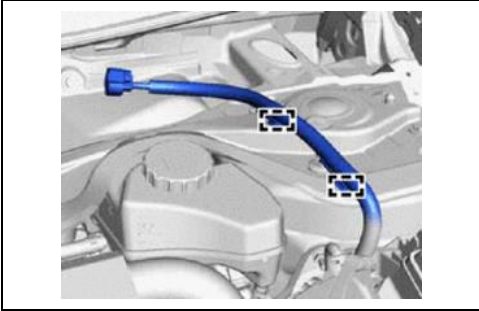
8. REMOVE WATER GUARD PLATE LH

- a. Disengage the claw.



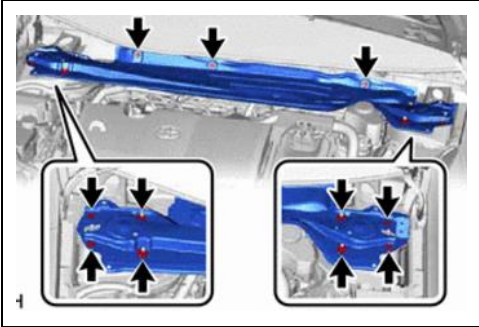
9. REMOVE COWL BODY MOUNTING REINFORCEMENT LH

- a. Remove 4 bolts.

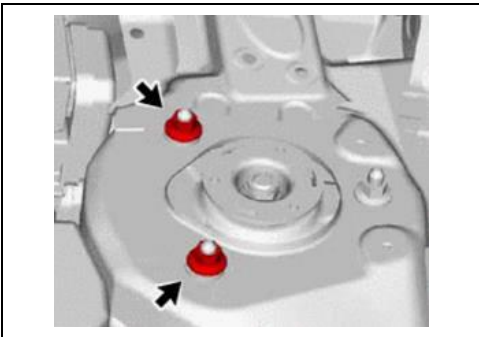


10. REMOVE OUTER COWL TOP PANEL

a. Disengage the 2 wire harness clamps.



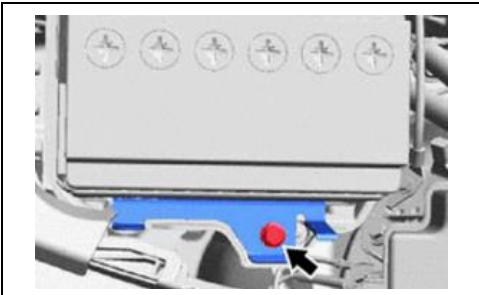
b. Remove 7 bolts, 4 nuts and slide the outer cowl top panel forward.



c. Be sure to temporarily re-install at least 2 nuts onto both of the strut assembly's.

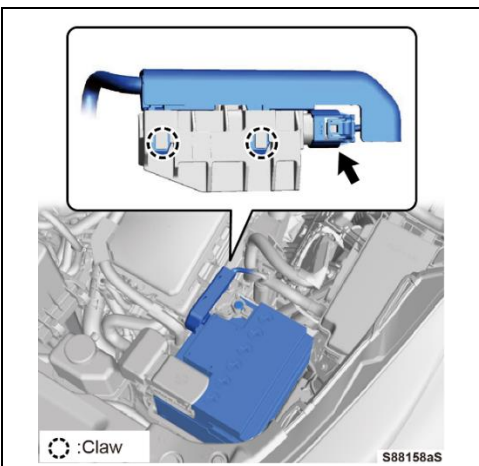


The following procedure will require lifting the vehicle. Failing to properly secure the struts to the strut tower during lifting of the vehicle may cause damage.



11. REMOVE AUXILIARY (12v) BATTERY & TRAY

- Remove the positive and negative cables.
- Remove the bolt from the hold down clamp.
- Remove the battery.
- Remove the 3 bolts from the battery tray to remove.



12. DISCONNECT BATTERY CURRENT SENSOR

- Disengage the 2 claws.
- Remove the connector.



Failure to comply with the following glove inspection procedures could result in serious bodily injury or death as a result from high voltage electrocution.



13. CHECK HIGH VOLTAGE SERVICE GLOVES

- a. Obtain the proper size (M, L, XL) High Voltage Service Gloves with from drawer #6 of the TOYOTA HEV WORKSTATION. Slide the drawer (release in the lower right) out to access the gloves located behind the HV Battery Charger.



Electrical protective equipment shall be maintained in a safe, reliable condition. These gloves should be stored to protect them from light, temperature extremes, excessive humidity, ozone, and other damaging substances and conditions. If needed, the gloves can be cleaned as needed to remove foreign substances.

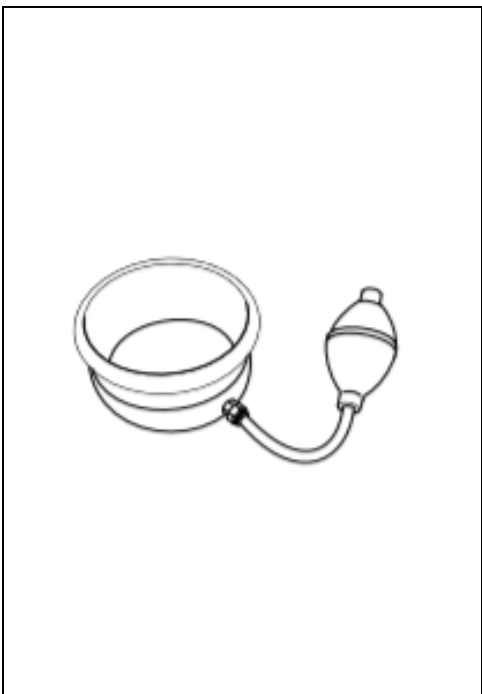


- b. Remove the leather outer protective glove (left and right) to expose the rubber High Voltage Service Gloves.
- c. Check the Date of Test stamped on the gloves. This indicates the date of the gloves most recent **Certified electrical inspection**. If the date on the gloves is more than 6 months ago, do not use these gloves. They will either need to be replaced or sent to a Certified Testing Facility for recertification to comply with [OSHA standard 1910.137](#). An internet search for [High Voltage Glove Testing](#) should assist in finding a company to recertify your gloves. For replacement gloves, contact Bosch/OTC at 1-800-933-8335:

Insulated Glove Set, Size M	01413-00072
Insulated Glove Set, Size L	01413-00073
Insulated Glove Set, Size XL	01413-00074



Rubber insulating gloves should always be used with the outer leather protector gloves in place. If the rubber insulator gloves are used without the protective leather gloves, the rubber insulative gloves need to be retested.

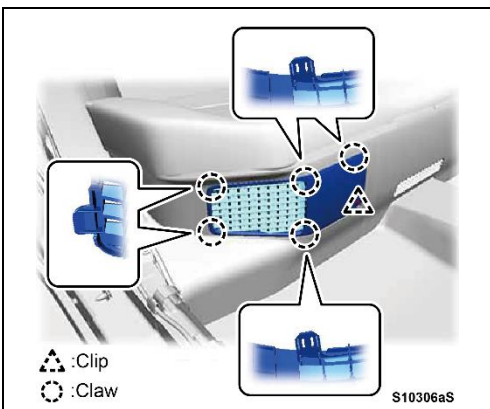


d. Before each daily use and immediately after any incident that may have caused damage, the gloves must be physically inspected. Using the Glove Inflator found in drawer #2 of the TOYOTA HEV WORKSTATION, inflate each glove and inspect for:

- Air leaks
- Holes, tears, punctures or cuts
- Ozone cutting or ozone checking
- Embedded foreign objects, texture changes, including swelling, softening, hardening, or becoming sticky or inelastic
- Any other defect that damages the insulating properties.

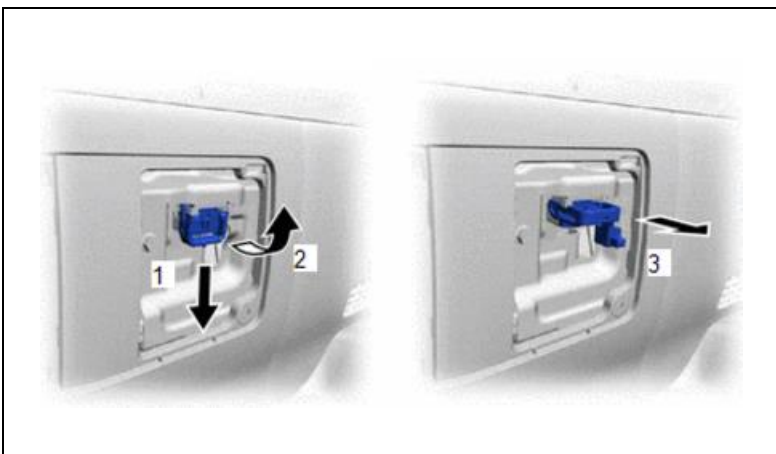
Gloves with any of the above defects shall be removed from service or returned for testing.

e. Reinstall the outer protective leather covers (gloves) over the rubber High Voltage glove to prevent damage.




14. REMOVE SERVICE PLUG COVER

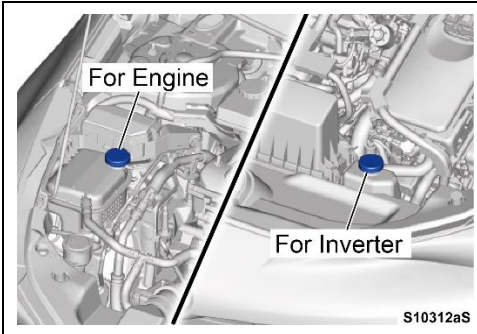
- a. Remove the clip.
- b. Disengage the 5 claws and remove the Service Plug Cover.



15. REMOVE SERVICE PLUG

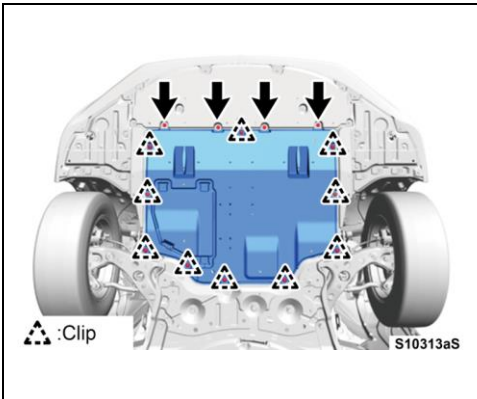
- a. **Wearing safety glasses and the previously tested High Voltage Service Gloves**, unlock the handle by inserting your finger into the opening and sliding it down (1).
- b. Rotate the handle upward(2).
- c. Pull out (3) on the handle to remove.
- d. **After the Service Plug is removed, it is necessary to wait 10 minutes before disassembling any high voltage components.**

	<p>To properly discharge the high-voltage capacitors inside the inverter assembly, it is critical that you wait 10 minutes before servicing any high voltage components.</p>
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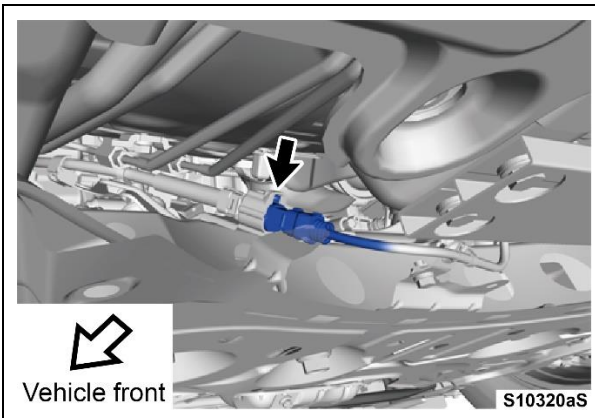
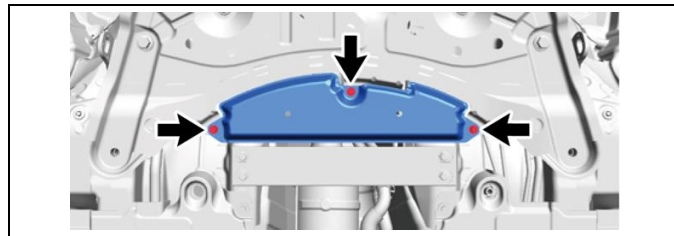
16. REMOVE RESERVOIR CAPS

- Remove the reservoir tank caps for the engine and inverter.



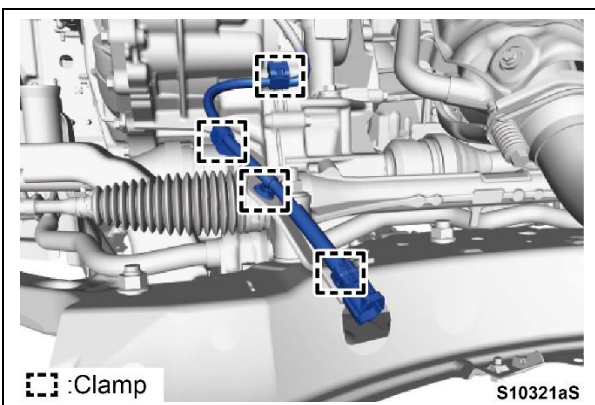
17. REMOVE ENGINE UNDERCOVERS

- Raise vehicle on a lift to gain access to the bottom side.
- Remove the #1 Engine Under Cover (plastic).
- Remove the #2 Engine Under Cover (aluminum).



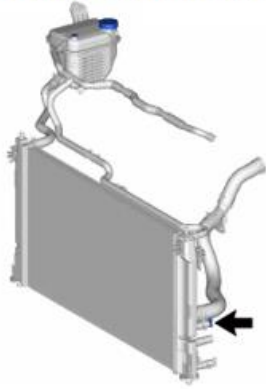
18. DISCONNECT OXYGEN SENSOR

- Disconnect the oxygen sensor connector.



- Remove the 4 clamps.

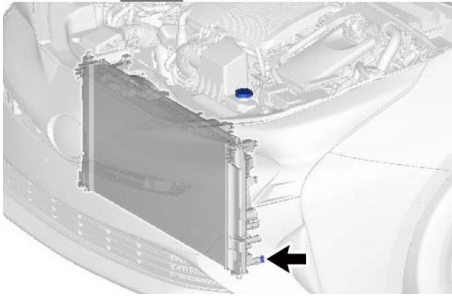
REUSE the engine coolant



19. DRAIN ENGINE COOLANT

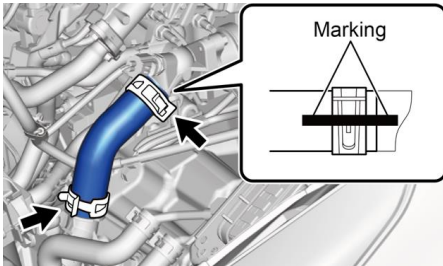
- The Engine coolant will be reused, so prepare a clean bucket to drain the coolant into.
- Connect a hose to the drain plug indicated by the arrow. It is the upper of the two drain plugs.
- Open the drain plug and drain the engine coolant into a clean bucket so that it can be reused during assembly.
- Install a **NEW** gasket on the drain plug.
- Tighten the drain plug.

REPLACE the inverter coolant with NEW coolant.



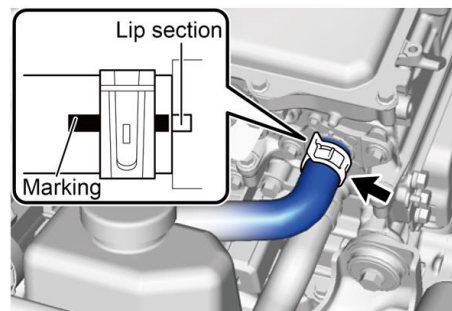
20. DRAIN INVERTER COOLANT

- Connect a hose to the drain plug indicated by the arrow. It is the lower of the two drain plugs.
- Open the drain plug and drain the inverter coolant.
- Install a **NEW** gasket on the drain plug.
- Tighten the drain plug.
- Reinstall the reservoir caps for both cooling systems.
- Properly dispose of the original coolant because it will not be reused.



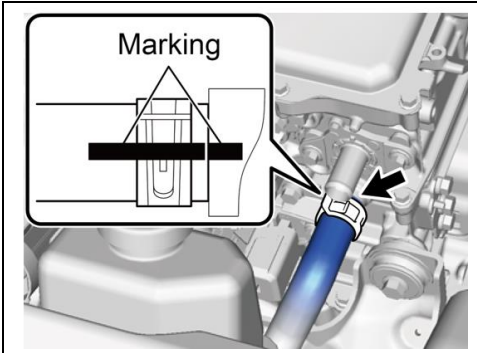
21. REMOVE No. 3 RADIATOR HOSE

- Apply an alignment mark on the upper side of the hose.
- Slide the clips and then remove the hose.



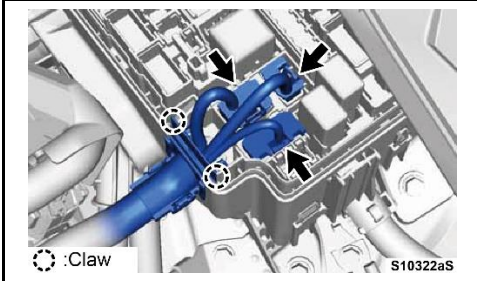
22. DISCONNECT INVERTER OUTLET HOSE #1

- Loosen the clamp and remove the hose.



23. DISCONNECT INVERTER INLET HOSE #1

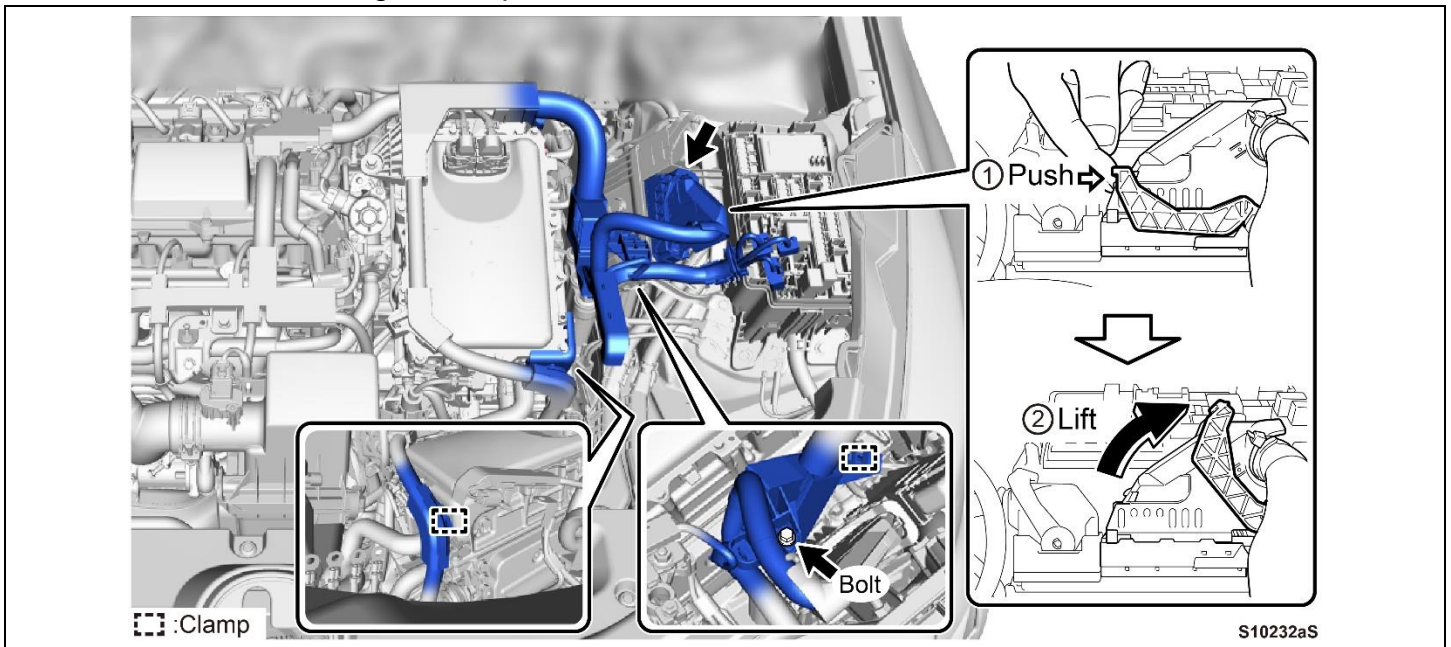
- Loosen the clamp and remove the hose.



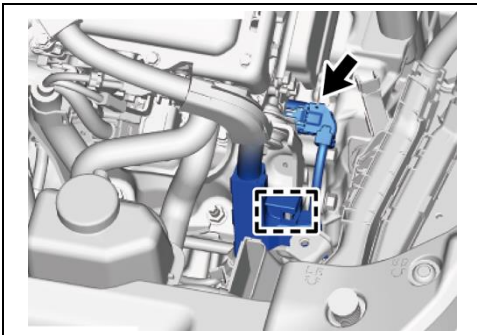
24. DISCONNECT THE ENGINE WIRE (Inverter side)

- Remove the 3 connectors within the relay block.
- Release the 2 claw fittings.

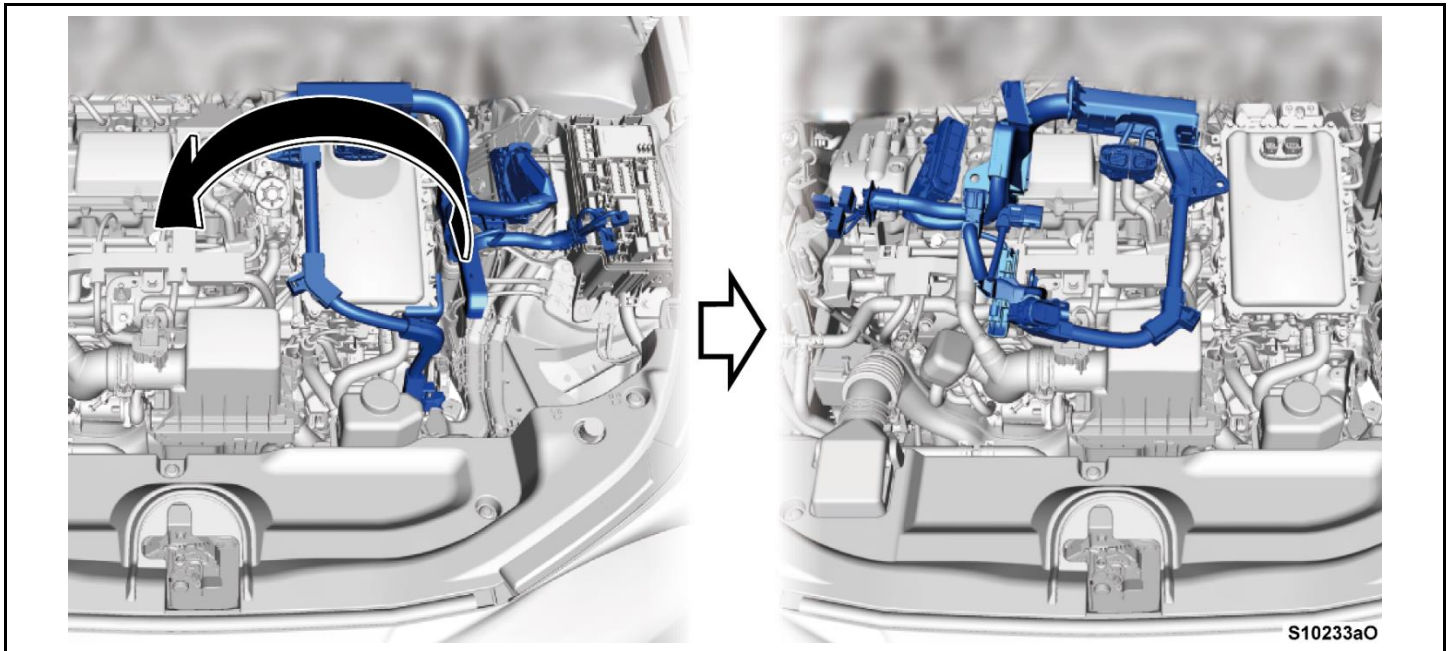
- Remove the bolt.
- Remove the 2 clamps.
- Disconnect the engine computer connector as shown in the illustration



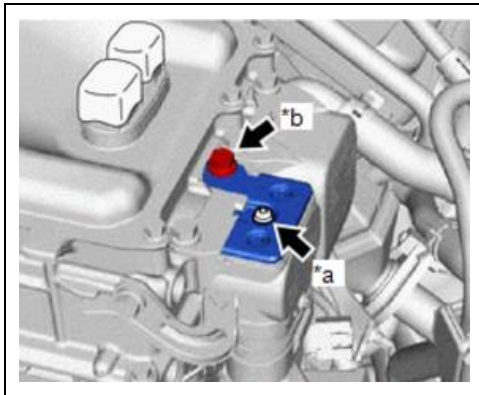
- Disconnect the clamp and connector.



g. Move the wire harness to the engine side.

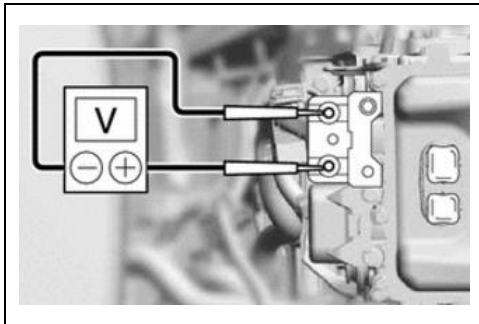


Before proceeding, be sure that 10 minutes has elapsed since removal of the Service Plug.



25. REMOVE CONNECTOR COVER ASSEMBLY

- Remove the bolt (*b).
- Remove the bolt (*a) using a T25 TORX socket.
- Wearing safety glasses and the previously tested High Voltage Service Gloves**, pull straight up on the cover to separate it from the connector.



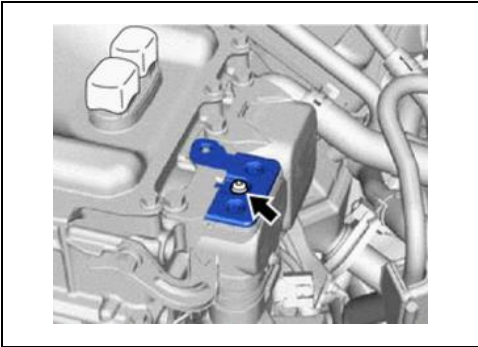
26. VERIFY TERMINAL VOLTAGE

- Using a DVOM, measure the voltage between the 2 terminals.

Standard Voltage: 0 volts

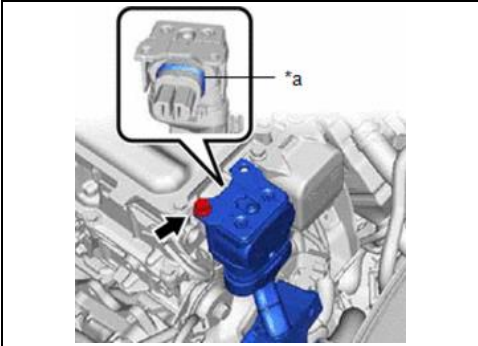


IF voltage other than 0v (zero) is found, do not proceed!! The vehicle is not properly shut down or the high voltage capacitor in the inverter has not bled down. Determine and correct the source of the voltage before continuing.



b. Reinstall the connector cover and screw.

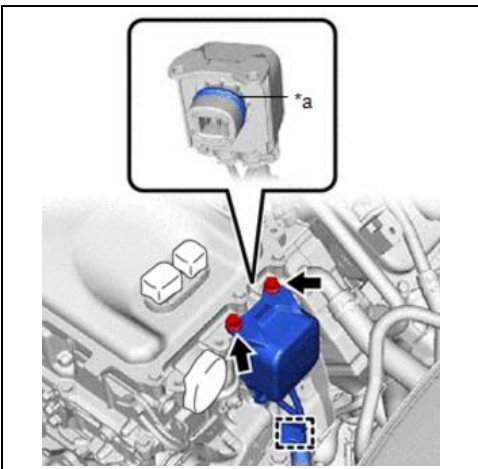
Torque: 40 in.lbs {4.5 N·m, 46 kgf·cm}



27. REMOVE HV FLOOR UNDER WIRE

- Remove the remaining bolt.
- Pull outward on the connector to separate it from the inverter.

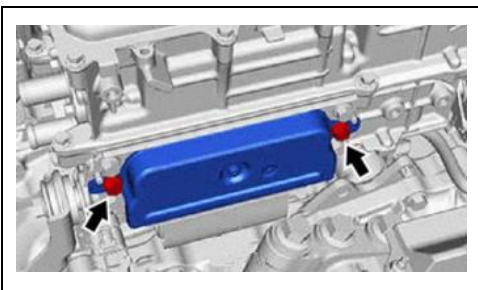
Note: Do not allow any damage to the waterproof seal (*a)



28. REMOVE AIR CONDITIONING WIRE

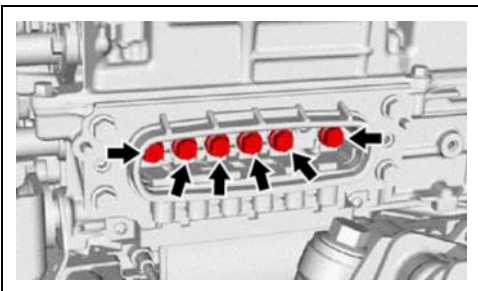
- Remove the 2 bolts.
- Remove the wire harness clamp.
- Disconnect the connector from the inverter.

Note: Do not allow any damage to the waterproof seal (*a)



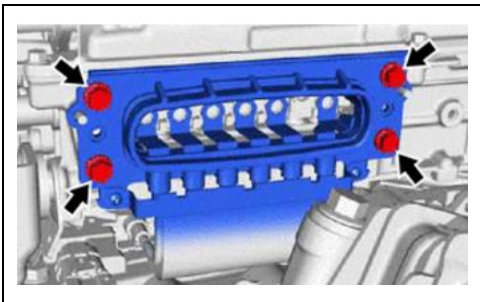
29. REMOVE INVERTER COVER

- Remove the 2 outer bolts.
- Pull outward on the cover to remove.

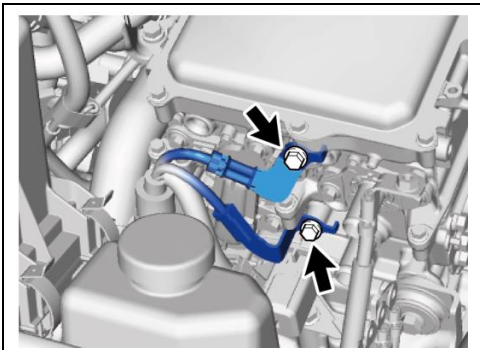


30. DISCONNECT MOTOR CABLE

- Using insulated tools, remove the 6 bolts.

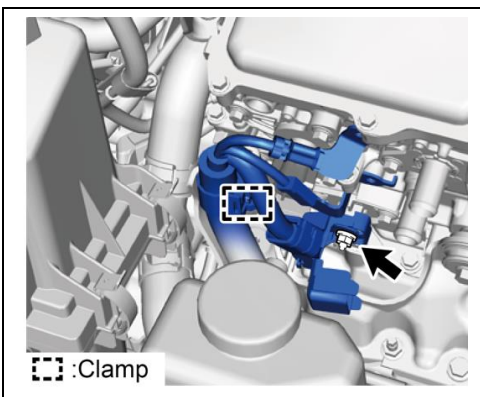


- b. Remove the 4 bolts and disconnect the motor cable from the inverter.



31. DISCONNECT THE #3 ENGINE WIRE

- a. Remove the 2 bolts and disconnect the wires.

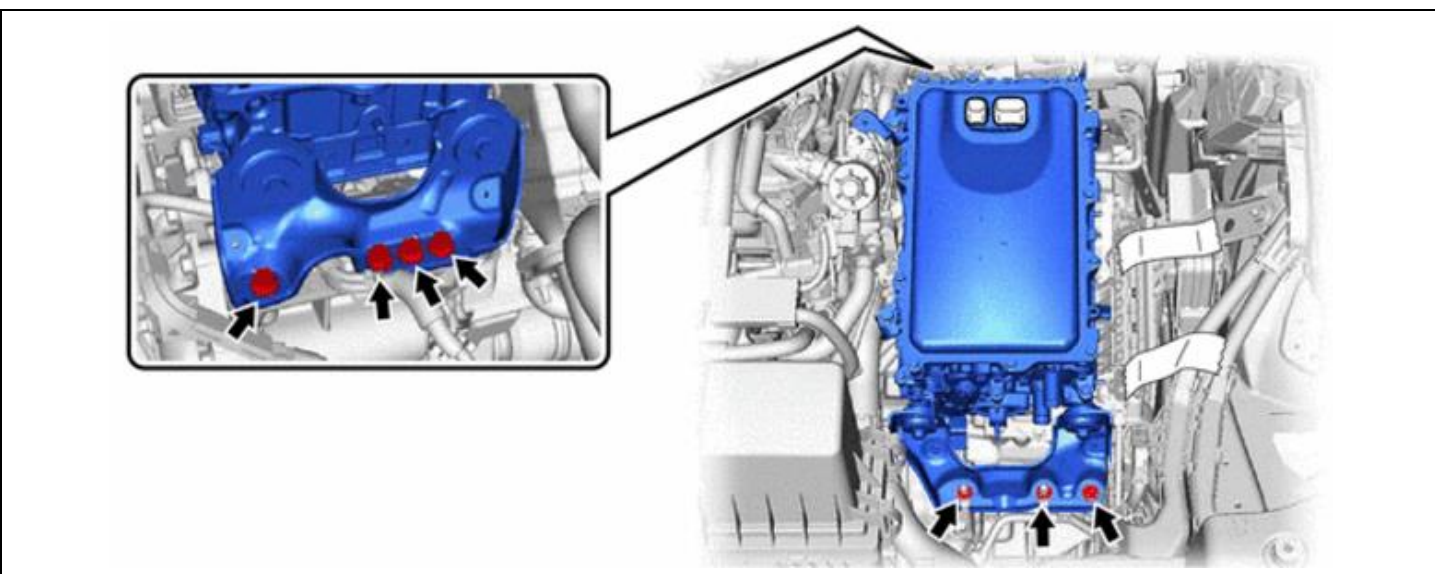


32. DISCONNECT ENGINE WIRE

- a. Release the 2 claw fittings and open the terminal cap.
- b. Remove the nut and clamp.

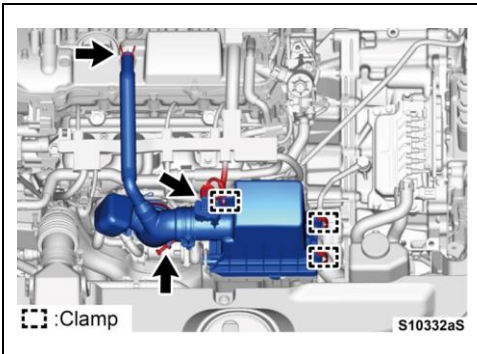
33. REMOVE INVERTER MOUNTING BRACKETS

- a. Remove the 5 bolts and 2 nuts.



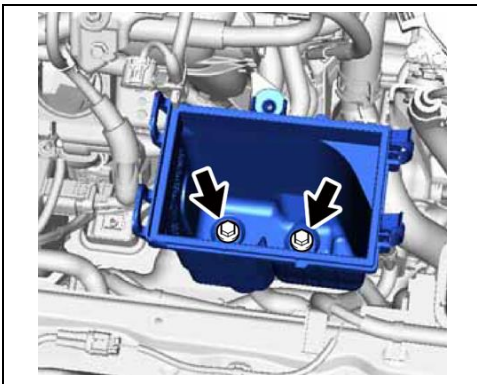
34. REMOVE INVERTER ASSEMBLY

- a. Remove the inverter assembly from the vehicle noting the following:
 - To prevent damage, **DO NOT** hold by the coolant pipes.

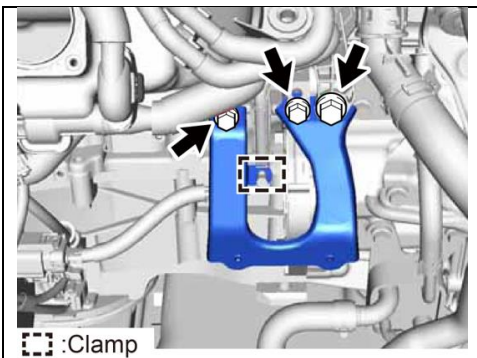


35. REMOVE THE AIR CLEANER ASSEMBLY

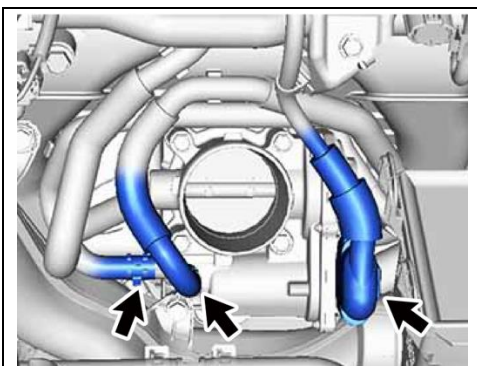
- a. Disconnect the MAF connector.
- b. Disconnect the air cleaner clamps and guide fittings.
- c. Remove the ventilation hose.
- d. Loosen the hose clamp and remove the air cleaner cap.
- e. Remove the air filter element.



- f. Remove the air cleaner case sub-assembly by removing the 2 bolts.

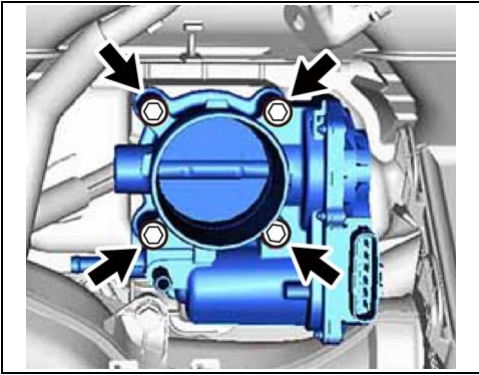


- g. Disconnect the clamp.
- h. Remove the 3 bolts and then remove the air cleaner bracket.

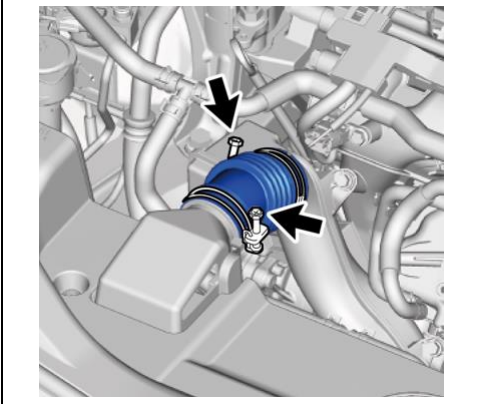


36. REMOVE THROTTLE BODY

- a. Disconnect the electrical connector.
- b. Disconnect the 2 hoses.



- c. Without Stud Bolts:
Remove the 4 bolts and then remove the throttle body.
- d. With Stud Bolts:
Remove the 2 bolts and 2 nuts, then remove the throttle body.

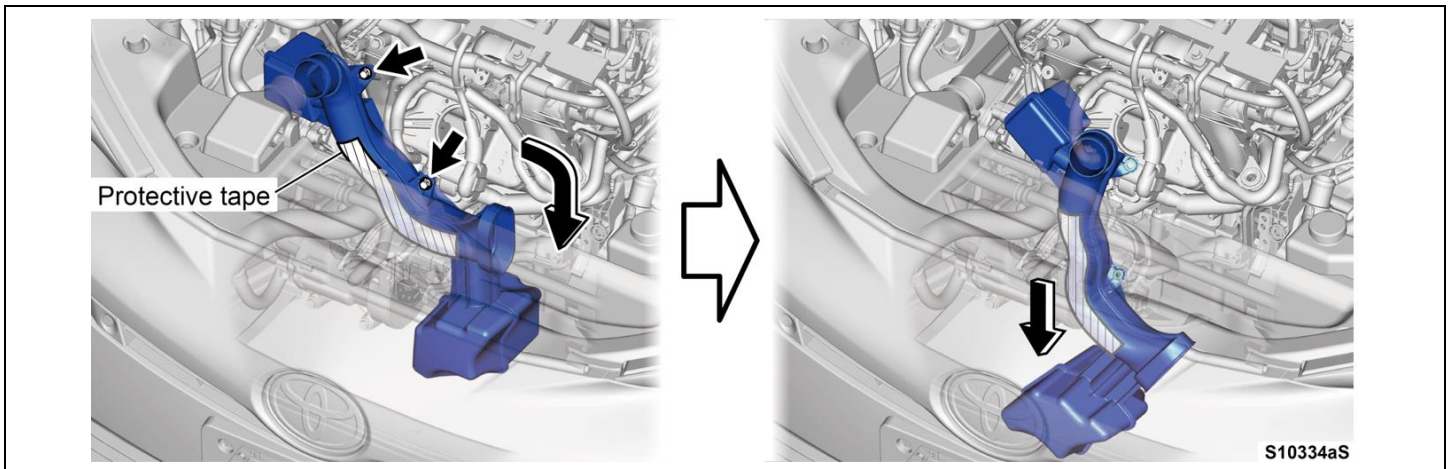


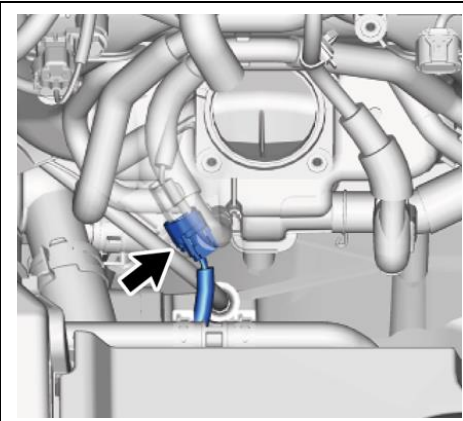
37. REMOVE THE No. 2 AIR CLEANER INLET

- a. Loosen the 2 clamps.

38. REMOVE THE No. 1 AIR CLEANER INLET

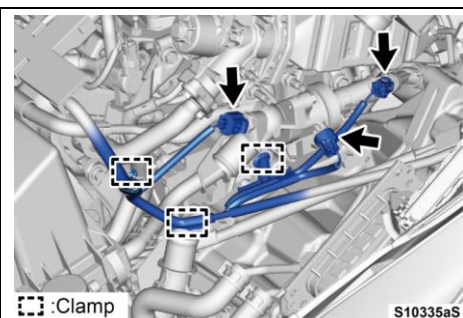
- a. Attach protective tape as shown in the diagram.
- b. Remove the 2 bolts and then lower the No. 1 air cleaner inlet from the vehicle underside.





39. DISCONNECT KNOCK SENSOR

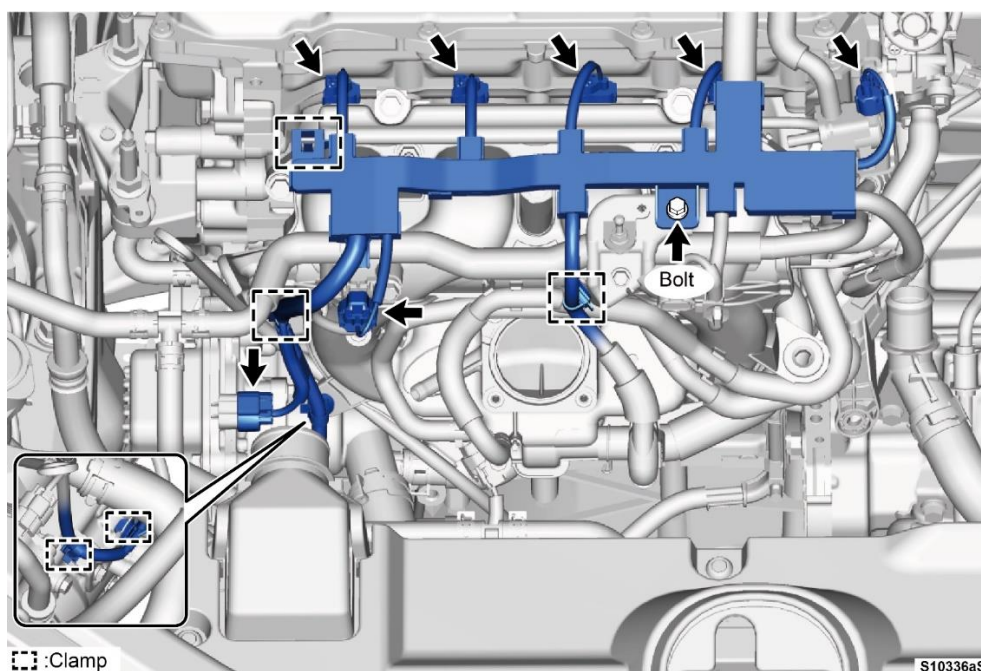
- a. Unplug the knock sensor connector.



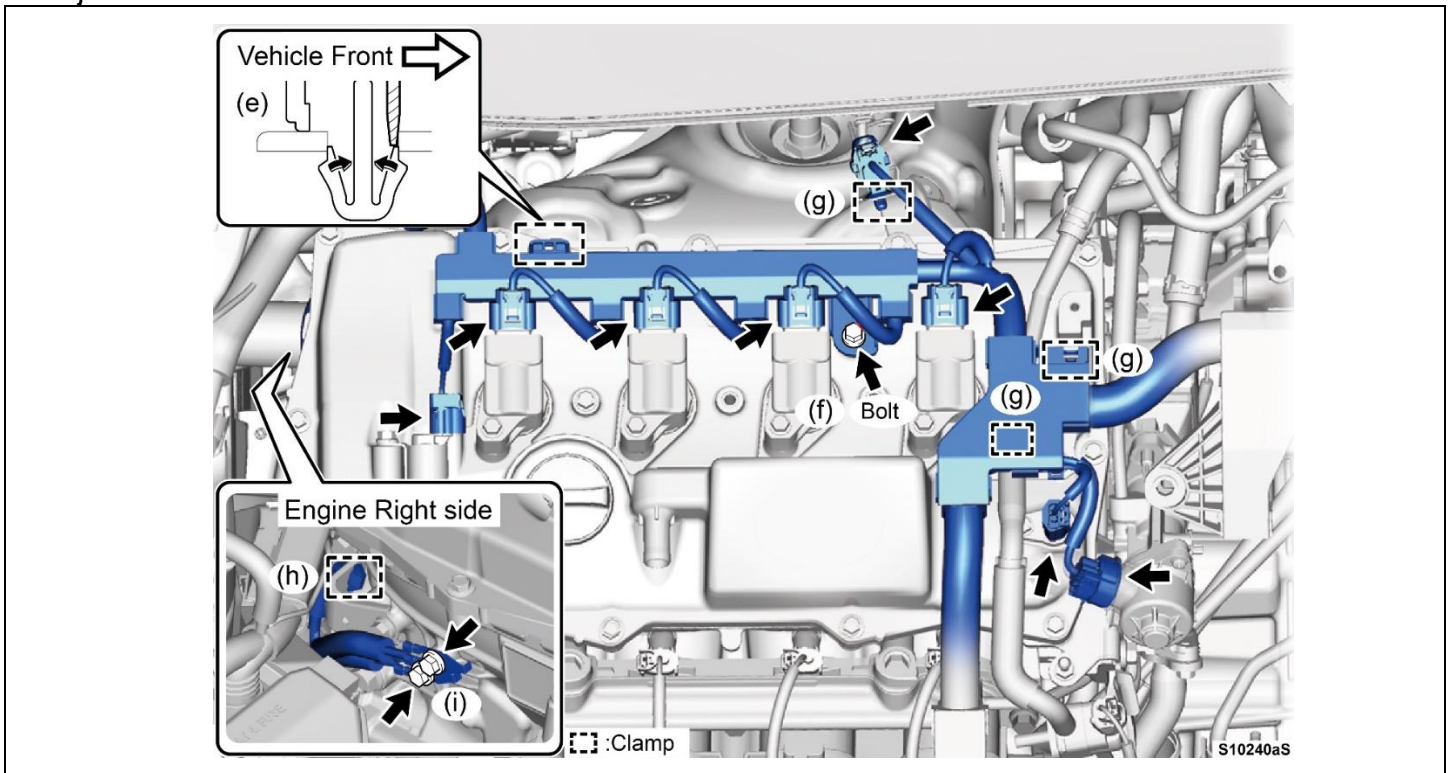
40. REMOVE ENGINE HARNESS

- a. Disconnect the 3 connectors.
- b. Release the 3 clamp fittings.

- c. Disconnect the 8 connectors
- d. Release the clamps.
- e. Remove the bolts.
- f. Disconnect the ground wire.



- g. Disconnect the 7 connectors.
- h. Release the 5 clamps.
- i. Remove the bolt.
- j. Remove the harness from the vehicle.



XII. INSTALL **NEW** ENGINE WIRE HARNESS

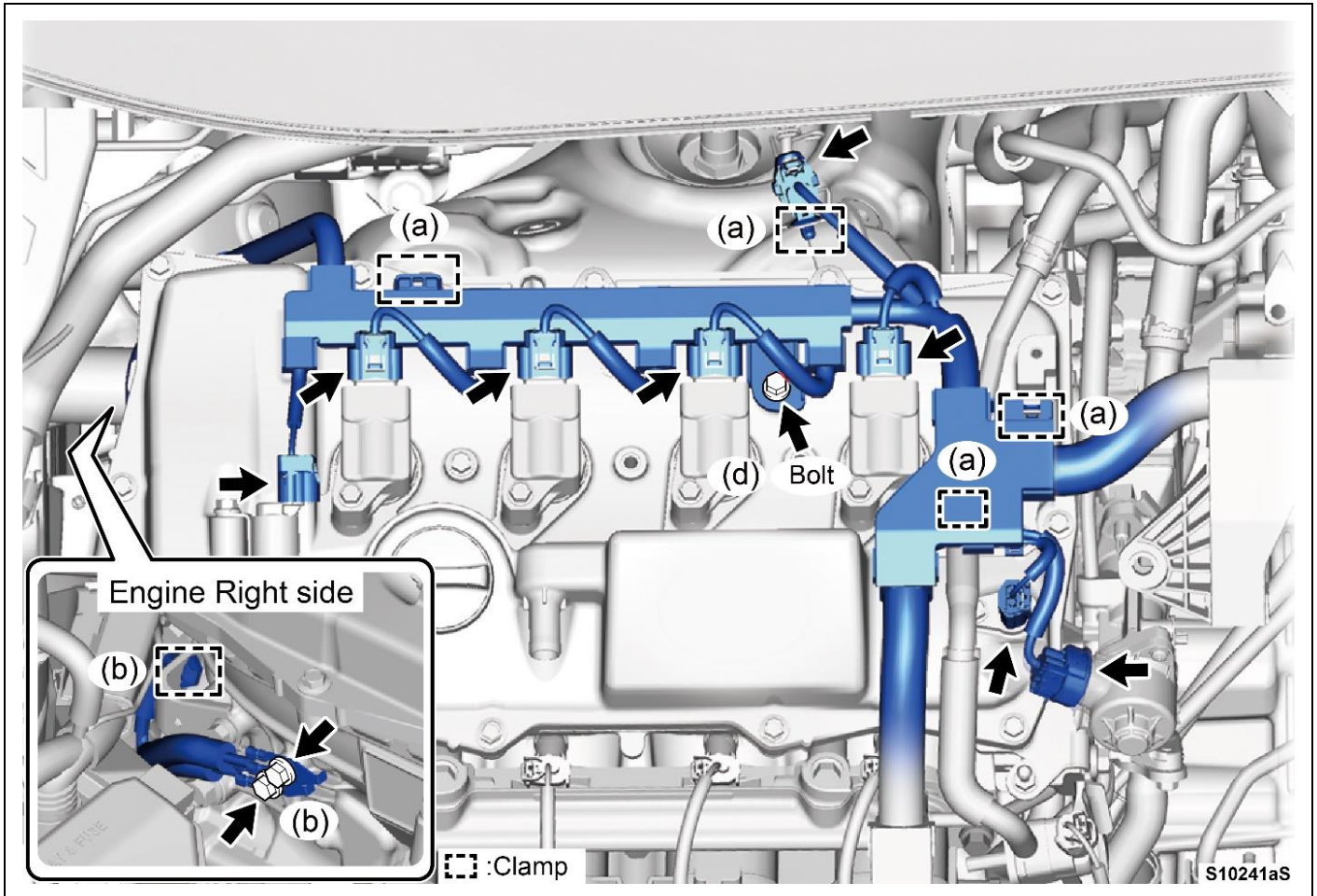
1. INSTALL THE **NEW** ENGINE WIRE HARNESS

- Connect the 4 clamps.
- Attach the 2 earth (ground) wires with the 2 bolts and connect the clamps.

Torque: 71 in.lbs {8.0 N·m, 82 kgf·cm}

- Connect the 8 connectors.
- Install the bolt.

Torque: 71 in.lbs {8.0 N·m, 82 kgf·cm}

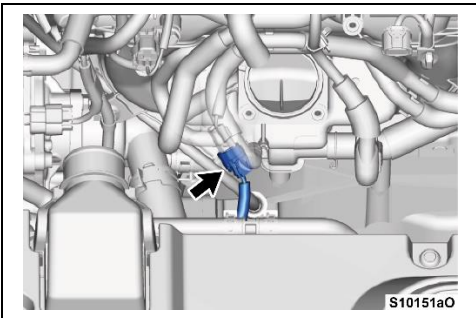
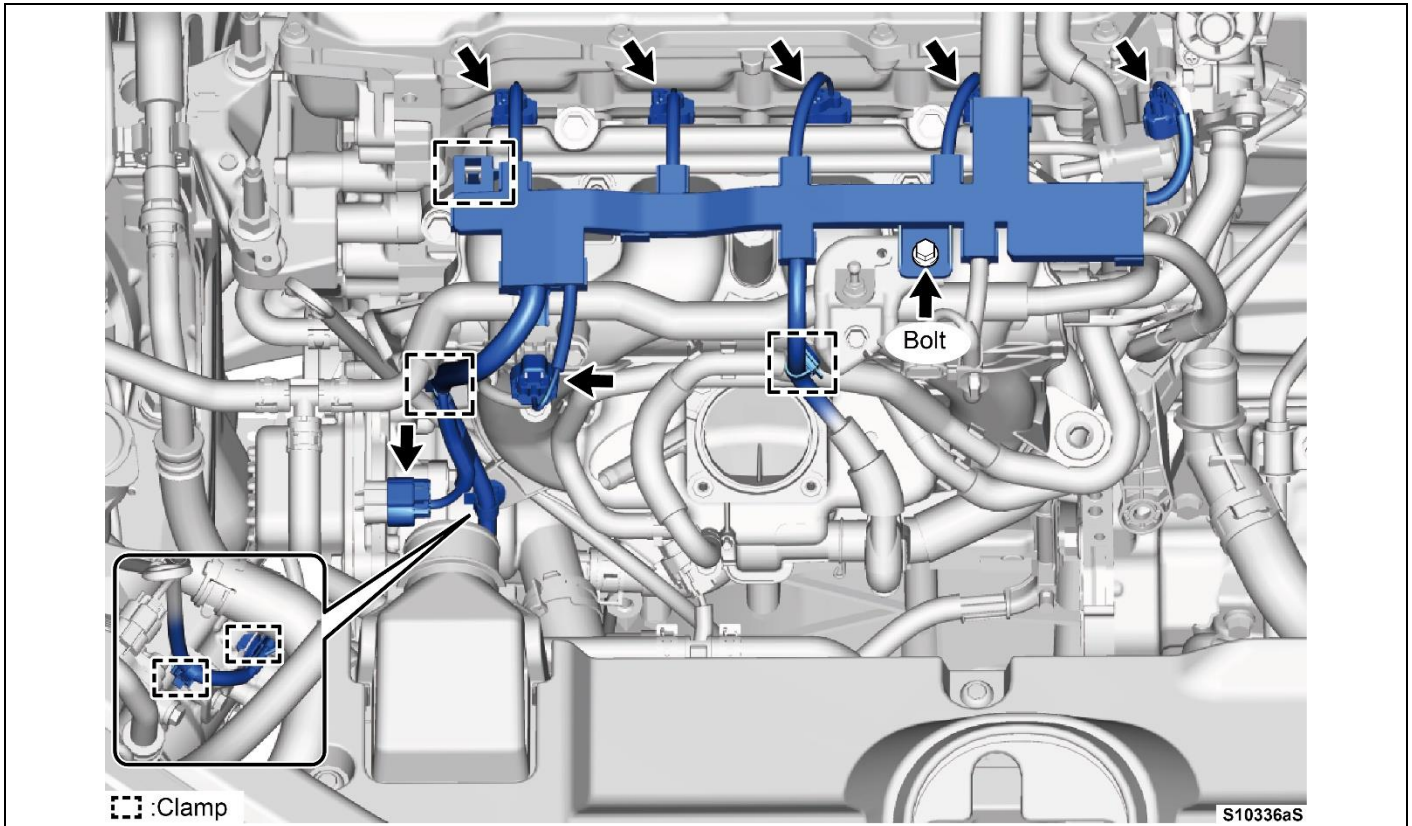


e. Install the bolt.

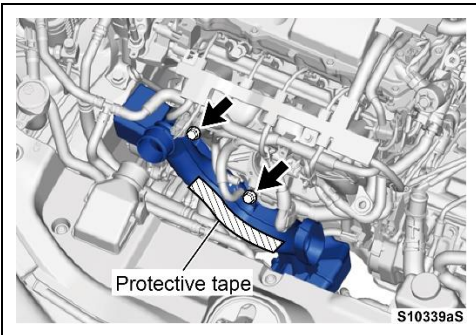
Torque: 71 in.lbs {8.0 N·m, 82 kgf·cm}

f. Connect the 5 clamps.

g. Connect the 7 connectors.



2. CONNECT KNOCK SENSOR

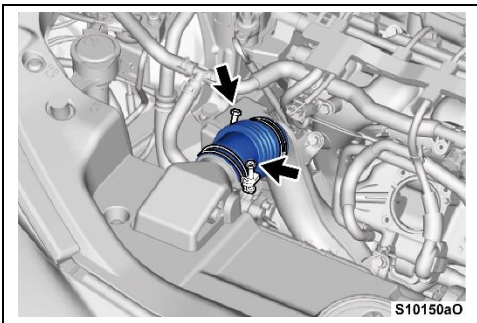


3. INSTALL AIR CLEANER INLET

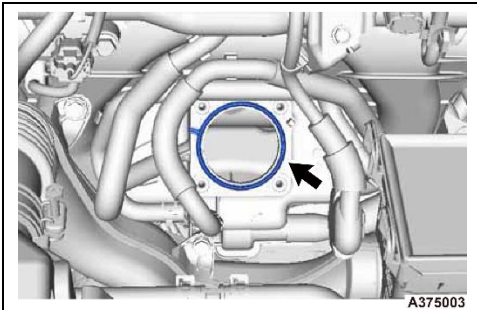
a. Insert the air cleaner inlet from the vehicle underside and install the 2 bolts.

Torque: 35 in.lbs {4.0 N·m, 41 kgf·cm}

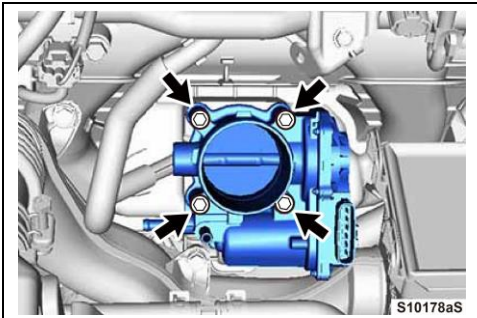
b. Remove the protective tape.



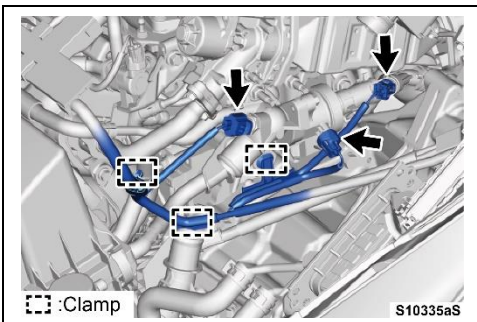
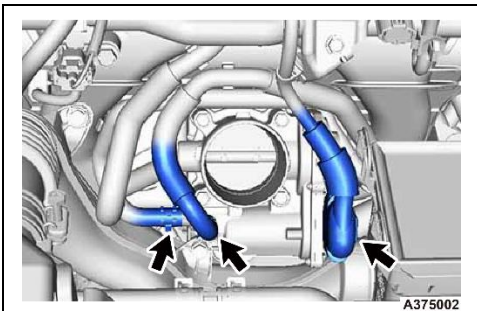
- 4. REINSTALL THE No. 2 AIR CLEANER INLET**
 a. Install the No. 2 air cleaner inlet with the 2 clamps.
Torque: 18 in.lbs {2.0 N·m, 20 kgf·cm}



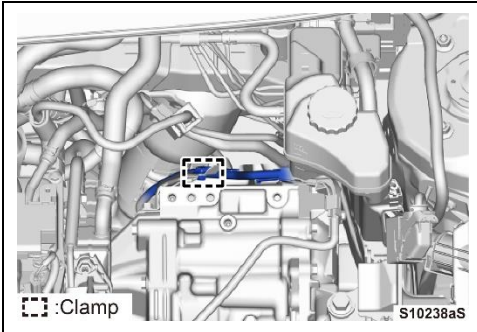
- 5. INSTALL THE THROTTLE BODY GASKET**
 a. Install the **NEW** gasket to the intake manifold.



- 6. REINSTALL THE THROTTLE BODY ASSY**
 a. With Out Stud Bolts:
 Install the throttle body with the 4 bolts.
Torque: 84 in.lbs {10 N·m, 102 kgf·cm}
 b. With Stud Bolts:
 Install the throttle body with the 2 bolts and 2 nuts.
Torque: (Bolts and nuts) 84 in.lbs {10 N·m, 102 kgf·cm}
 c. Connect the 2 hoses.
 d. Connect the connector.

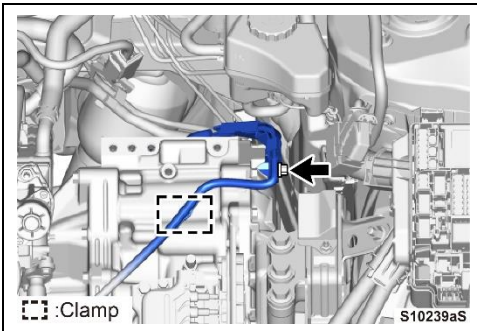


- 7. CONNECT ENGINE WIRE HARNESS**
 a. Connect the 3 connectors.
 b. Connect the 3 clamps.



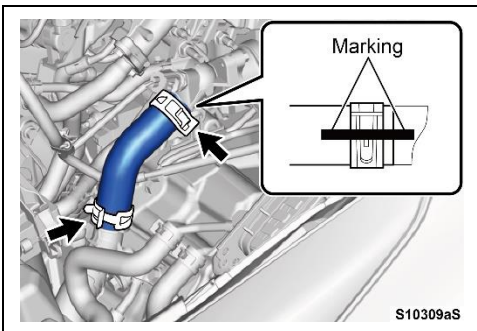
8. CONNECT TRANSAXLE HARNESS

- Connect the clamp on the transaxle rear side.



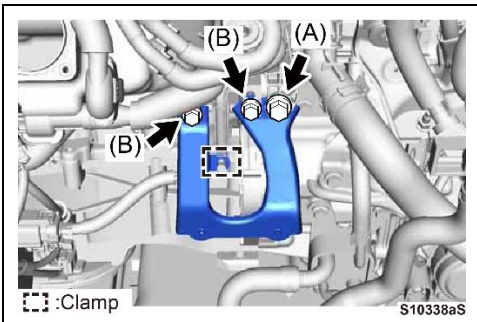
- Connect the clamp.
- Install the bolt.

Torque: 71 in.lbs {8.0 N·m, 82 kgf·cm}



9. REINSTALL THE No. 3 RADIATOR HOSE

- Align the alignment mark on the hose upper side and install the No. 3 radiator hose.



10. REINSTALL THE AIR CLEANER BRACKET

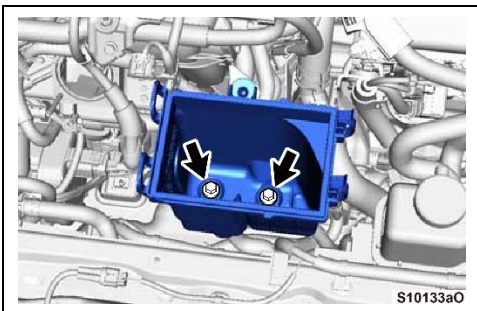
- Install the bracket with the 3 bolts.

Torque:

Bolt(A): 108 in.lbs {12.5 N·m, 127 kgf·cm}

Bolt(B): 108 in.lbs {12 N·m, 122 kgf·cm}

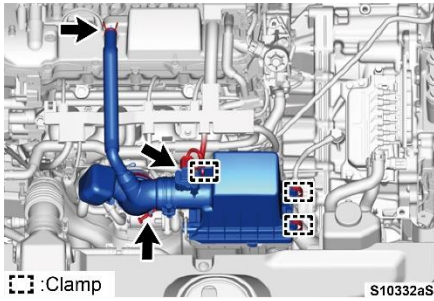
- Connect the clamp.



11. REINSTALL THE AIR CLEANER CASE SUB-ASSY

- Install the case with the 2 bolts.

Torque: 35 in.lbs {4.0 N·m, 41 kgf·cm}



12. REINSTALL THE AIR CLEANER CAP SUB-ASSY

- Install the air filter.
- Connect the air cleaner cap to the throttle body and tighten the hose clamp.

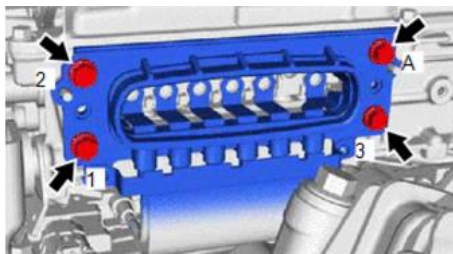
Torque: 18 in.lbs {2.0 N·m, 20 kgf·cm}

- Connect the No. 2 ventilator hose to the cylinder head cover.
- Align the 2 guides and install the air cleaner cap to the air cleaner case.
- Connect the 2 clamp hooks.
- Connect the clamps, and the connect the air flow meter connector.

13. INSTALL INVERTER

- Install the 5 bolts and 2 nuts.

Torque: 18 ft.lbs {25 N·m, 255 kgf·cm}

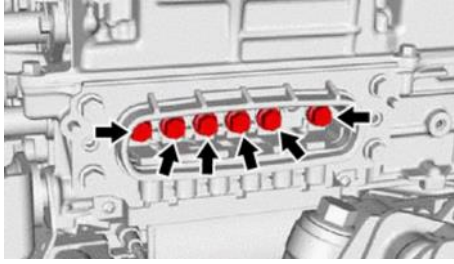


- Inspect the waterproof seal on the motor cable housing for damage.
- Align the motor cable housing with the inverter and loosely install the 4 bolts.
- Fully tighten bolt (A).

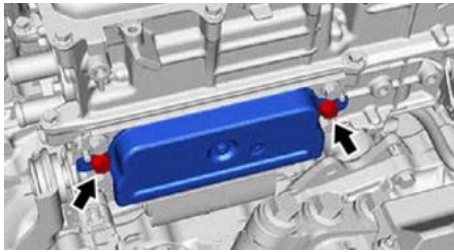
Torque: 71 in.lbs {8.0 N·m, 82 kgf·cm}

- Tighten the other 3 bolts in the order shown.

Torque: 71 in.lbs {8.0 N·m, 82 kgf·cm}

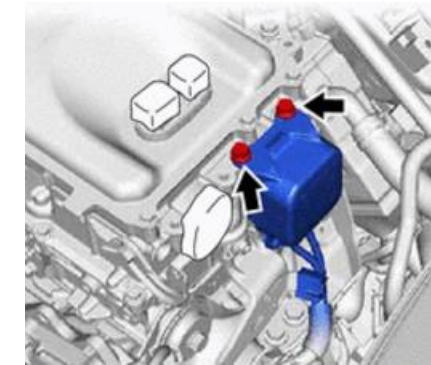


- f. Using insulated tools, install the 6 bolts.
Torque: 71 in.lbs {8.0 N·m, 82 kgf·cm}



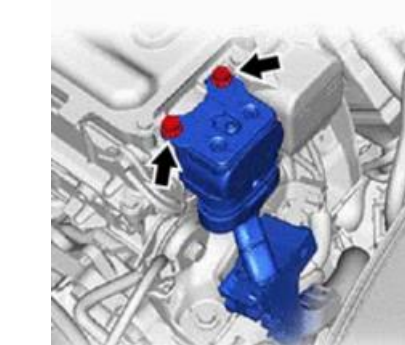
14. INSTALL INVERTER COVER

- a. Guide the inverter cover into place and install the 2 bolts.
Torque: 71 in.lbf {8.0 N·m, 82 kgf·cm}



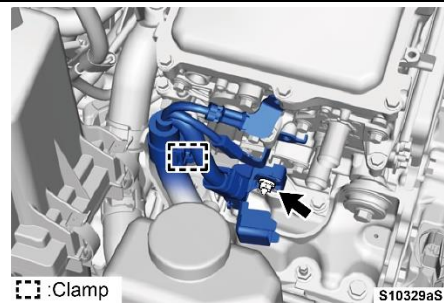
15. INSTALL AIR CONDITIONING WIRE

- a. Install the air conditioning wire into the inverter with 2 bolts.
Torque: 71 in.lbf {8.0 N·m, 82 kgf·cm}



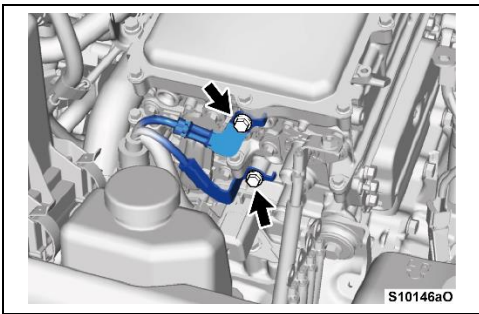
16. INSTALL HV FLOOR UNDER WIRE

- a. Install the HV Floor Under Wire connector into the inverter assembly with 3 bolts.
Torque: 71 in.lbf {8.0 N·m, 82 kgf·cm}



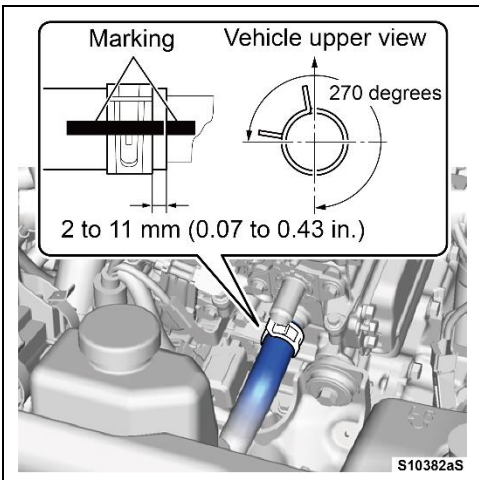
17. REINSTALL THE No. 3 ENGINE WIRE

- a. Connect the clamp.
 b. Temporarily install the nut by hand.
 c. Tighten the nut.
Torque: 71 in.lbs {8.0 N·m, 82 kgf·cm}
 d. Fit the 2 claws and close the terminal cap.



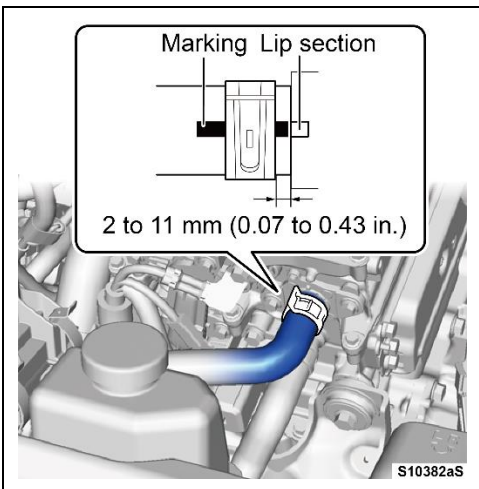
e. Install the wire with the 2 bolts.

Torque: 75 in.lbs {8.5 N·m, 87 kgf·cm}



18. REINSTALL INVERTER COOLANT HOSES

- Align the hose alignment mark with the inverter Inlet pipe section and connect the hose.
- Fix the hose with the clip and check the clip with position shown in the diagram.



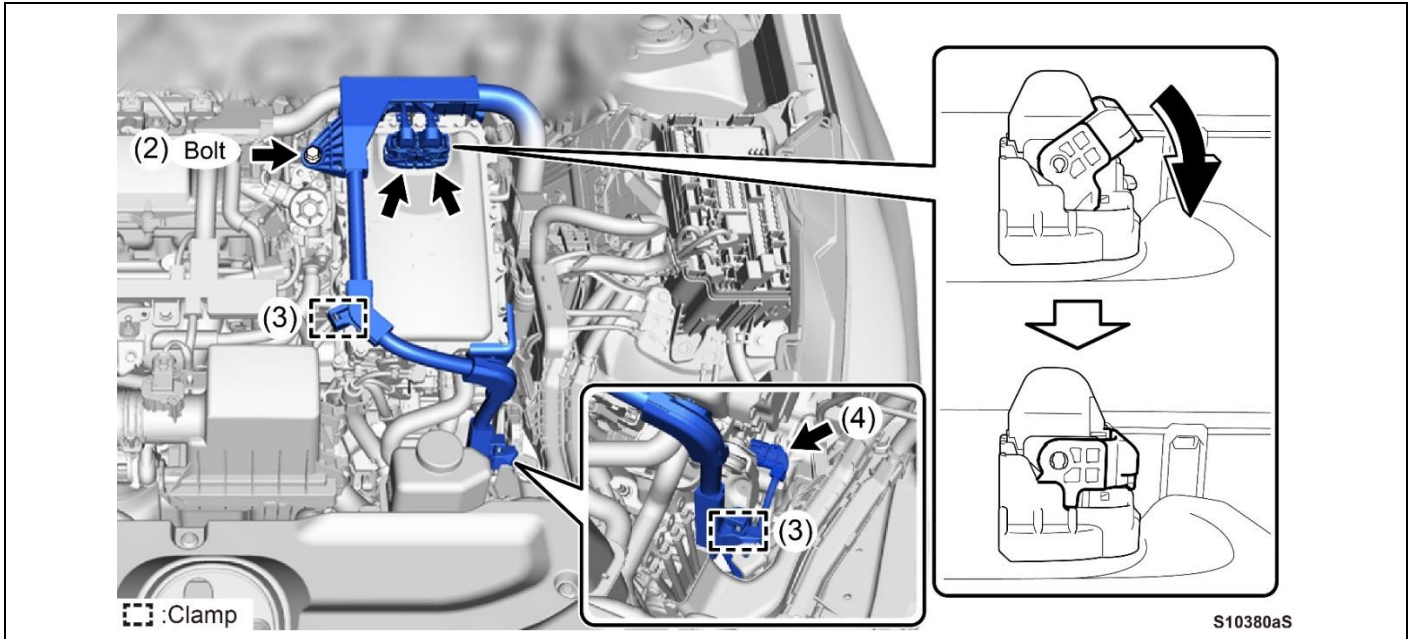
- Align the hose alignment mark with the inverter Outlet pipe section and connect the hose.
- Fix the hose with the clip and check the clip with position shown in the diagram.

19. CONNECT THE ENGINE WIRE (Inverter upper side)

- Remove the insulation tape.
- Connect the 2 connectors on the inverter upper side.
- Install the bolt.

Torque: 71 in.lbs {8.0 N·m, 82 kgf·cm}

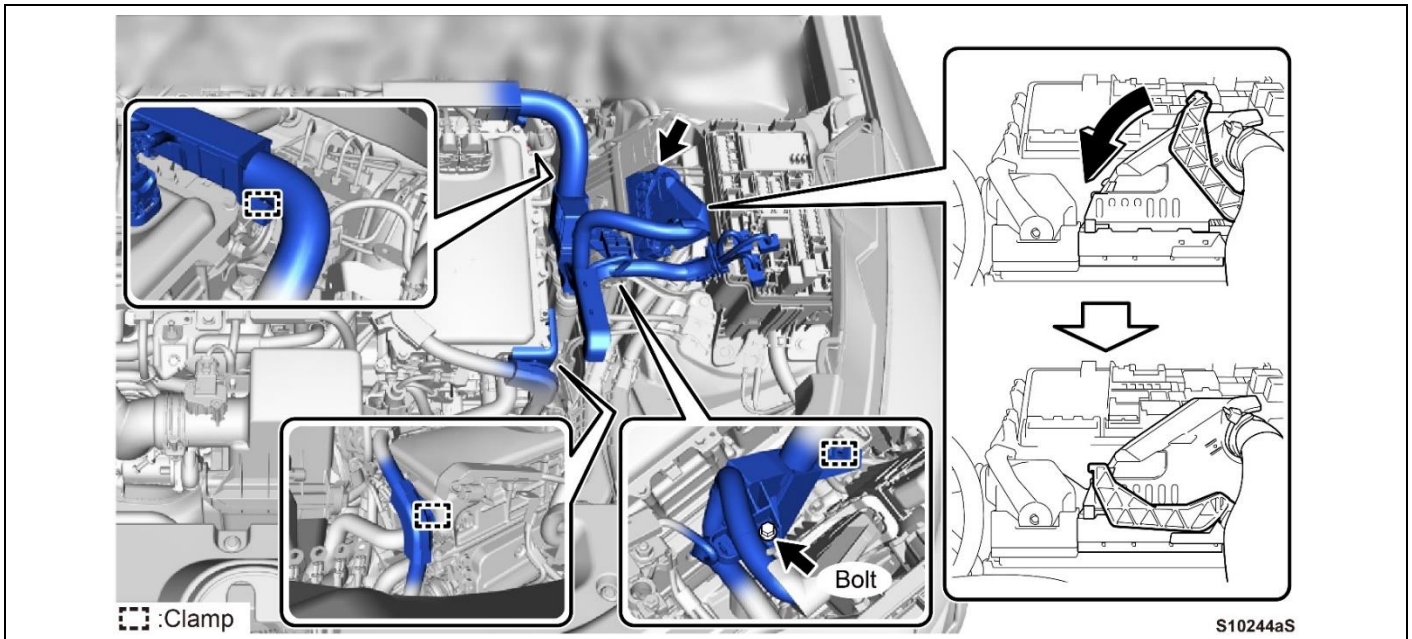
- Connect the 2 clamps.
- Connect the 1 connector.

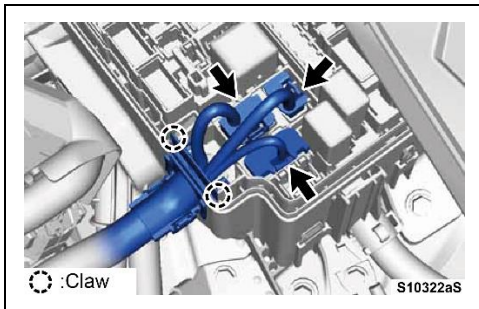


- Install the bolt.

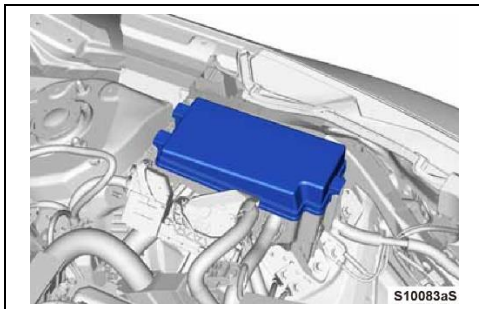
Torque: 71 in.lbs {8.0 N·m, 82 kgf·cm}

- Connect the 3 clamps.
- Connect the connector for the engine computer.

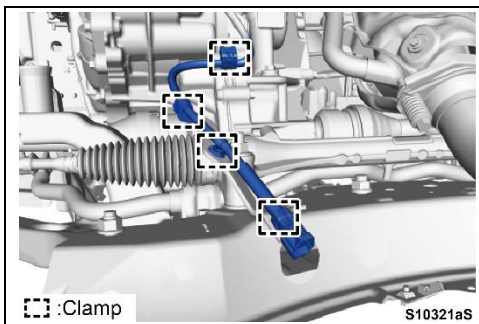




- i. Fit the 2 claws.
- j. Connect the 3 connectors.

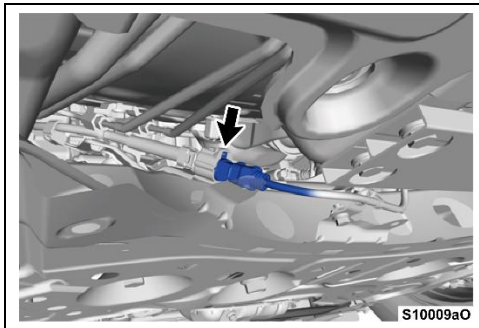


- k. Install the No. 1 upper relay block cover.

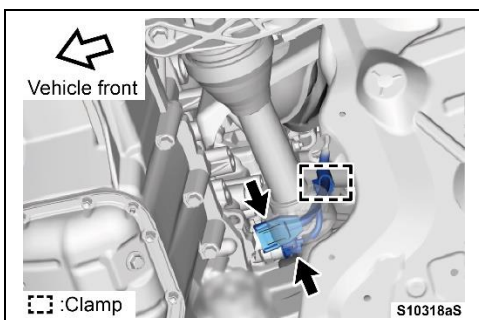


20. RECONNECT THE OXYGEN SENSOR CONNECTOR

- a. Connect the 4 clamps.

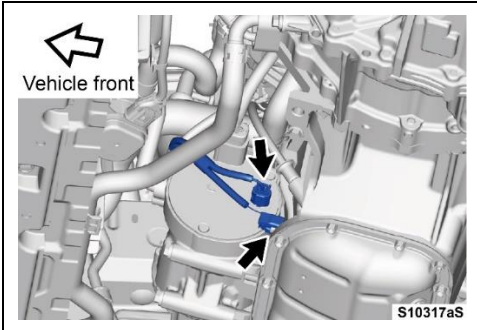


- b. Connect the oxygen sensor connector.

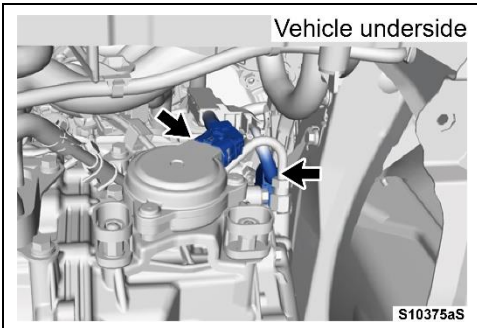


21. CONNECT THE ENGINE WIRE (Engine underside rear)

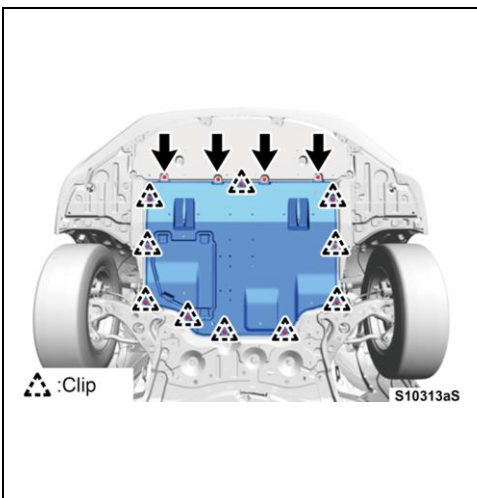
- a. Connect the oil pressure switch connector and crank position sensor connector.
- b. Connect the clamp.



- 22. CONNECT THE ENGINE WIRE (Engine underside front)**
- Connect the oil level sensor connector and compressor (with motor) connector.



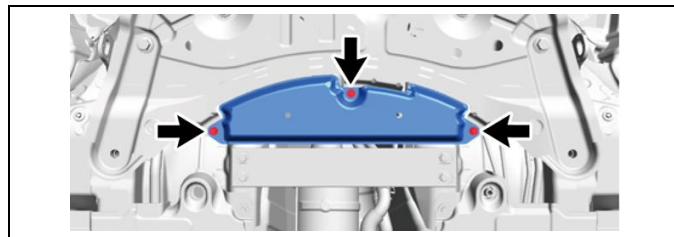
- 23. CONNECT THE ENGINE WIRE (transaxle side)**
- Connect the shift control actuator and transaxle connector.



24. INSTALL ENGINE UNDERCOVERS

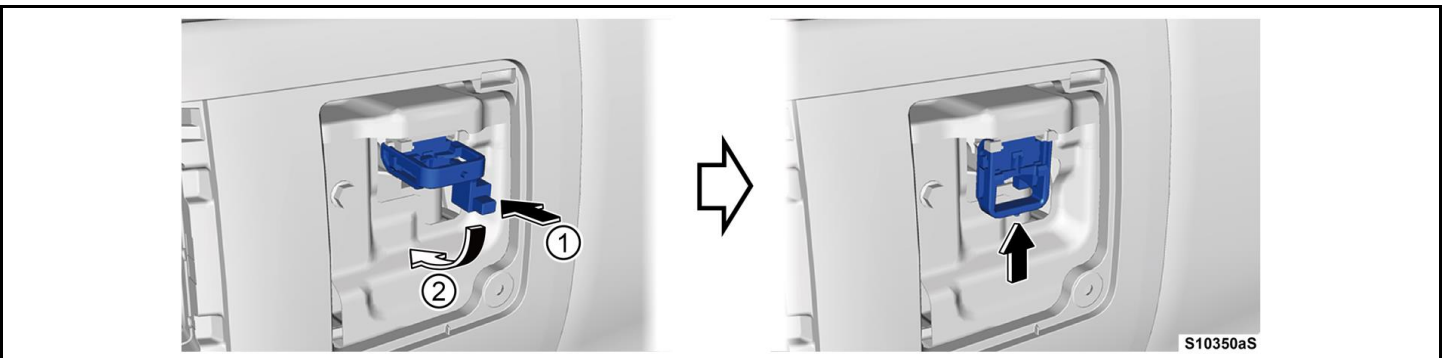
- Install the No. 1 engine under cover with the 10 clips and 4 bolts.

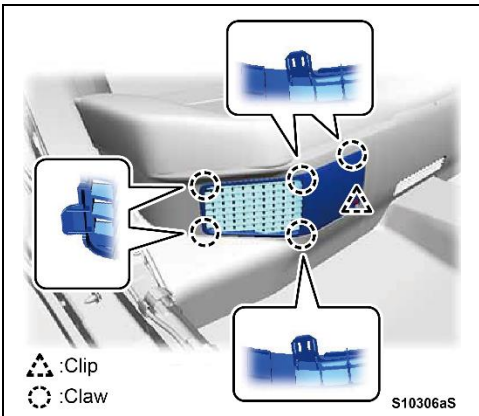
Torque: 66 in.lbs {7.5 N·m, 76 kgf·cm}



25. REINSTALL SERVICE PLUG GRIP

- Wear insulated gloves.
- Reinstall the service plug grip
- Reinstall the service hole cover

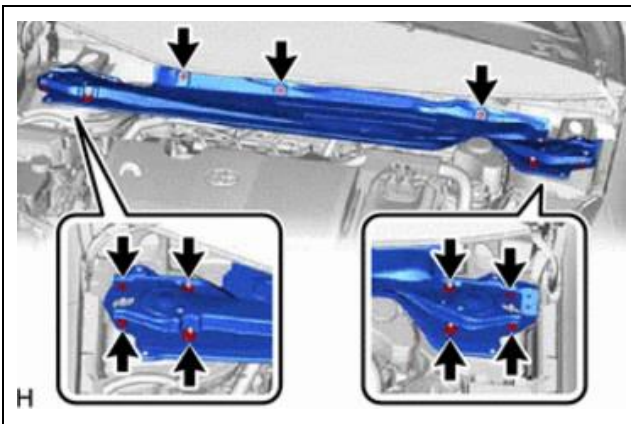




26. INSTALL SERVICE PLUG COVER

- a. Engage the 5 claws.
- b. Install the clip.

XIII. REASSEMBLY



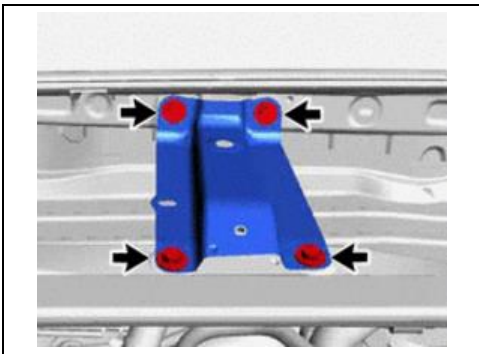
1. INSTALL OUTER COWL TOP PANEL

- a. Install the outer cowl top panel with 7 bolts and 4 nuts.

Torque:

Bolts: 108 in.lbs {12 N·m, 122 kgf·cm}

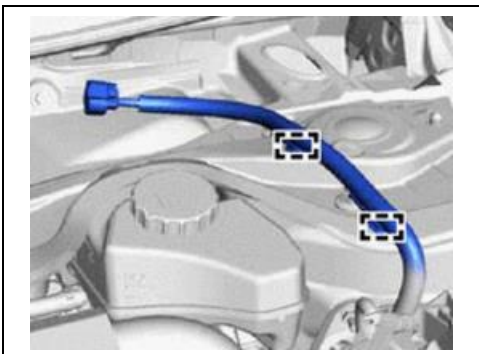
Nuts: 37 ft.lbs {50 N·m, 510 kgf·cm}



2. INSTALL COWL BODY REINFORCEMENT LH

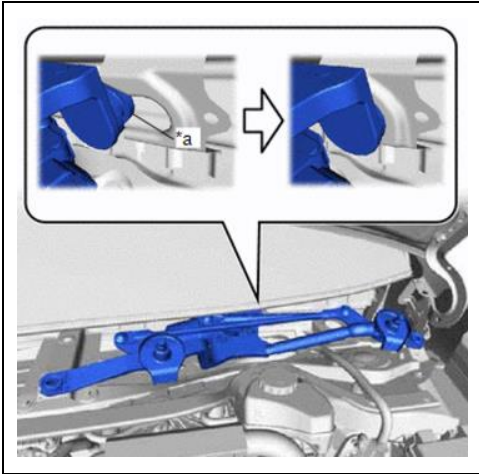
- a. Install the reinforcement to the outer cowl top panel and vehicle body with 4 bolts.

Torque: 108 in.lbs {12 N·m, 122 kgf·cm}



3. INSTALL WIPER HARNESS

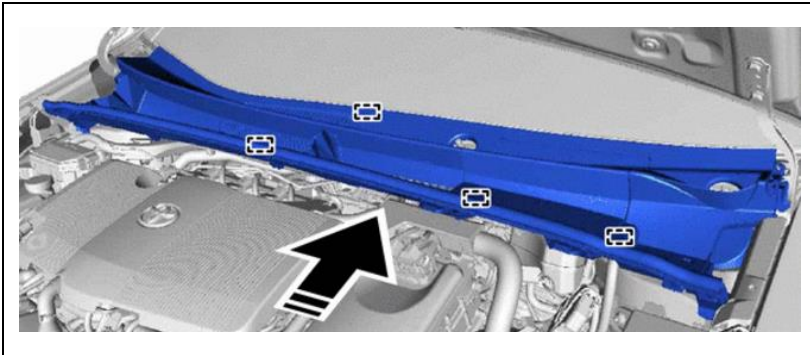
- a. Engage the wiper harness clips into the outer cowl top panel.



4. INSTALL WIPER MOTOR

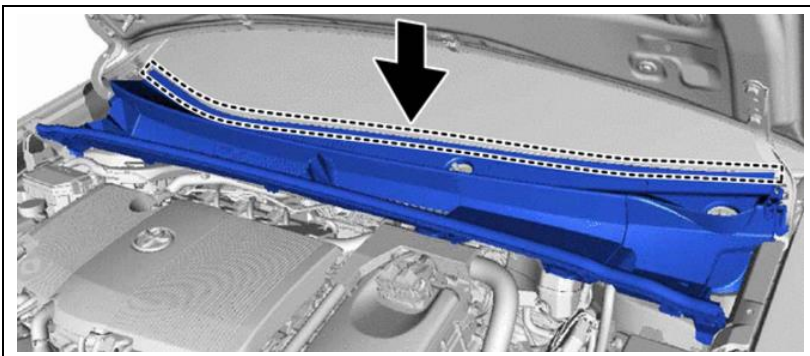
- Connect the electrical connector.
- Engage the wiper motor grommet as shown.
- Install the 2 bolts.

Torque: 49 in.lbs {5.5 N·m, 56 kgf·cm}

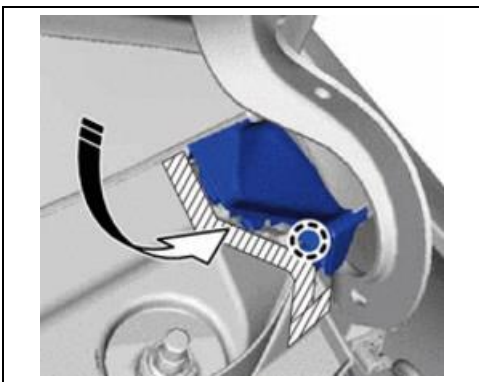


5. INSTALL COWL TOP VENTILATOR

- Engage the 4 guides as shown.

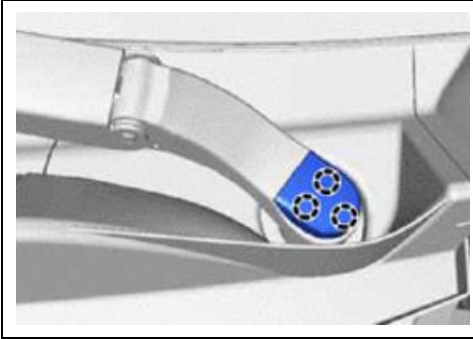


- Engage the cowl top ventilator to the windshield glass
- Install the 2 outer clips.



6. INSTALL COWL WATER EXTRACT SHIELD LH & RH

- Slide the shield into place as shown.
- Engage the shield into the windshield channel.
- Engage the guide and 2 claws.

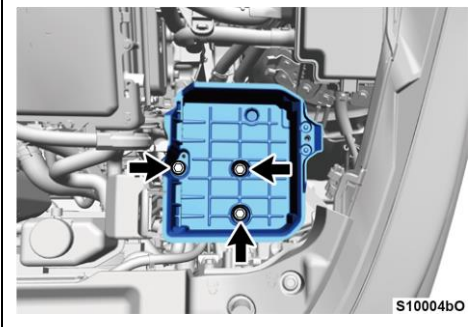


7. INSTALL WIPER ARM LH & RH

- Install the front wiper arm and blade assembly with the nut to the position previously marked with tape.

Torque: 17 ft.lbf {23 N·m, 235 kgf·cm}

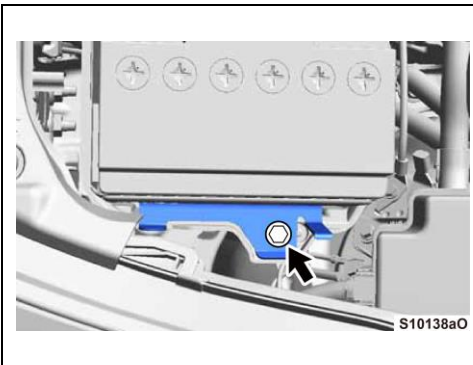
- Engage the 3 claws to install the front wiper arm head cap.



8. REINSTALL THE AUXILIARY BATTERY

- Install the battery tray.

Torque: 11 ft.lbs {15.4 N·m, 157 kgf·cm}



- Install the auxiliary battery and attach the battery clamp.
- Install the bolt.

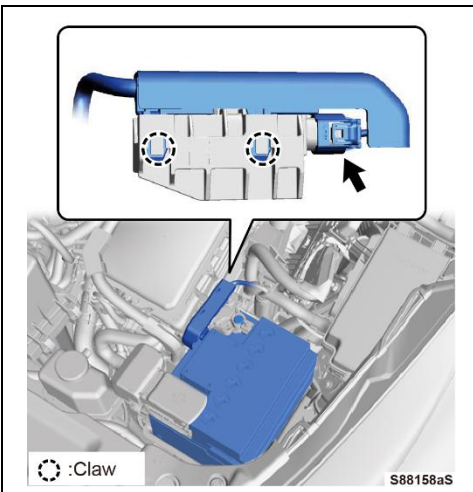
Torque: 11 ft.lbs {15.4 N·m, 157 kgf·cm}

- Connect the positive battery terminal.

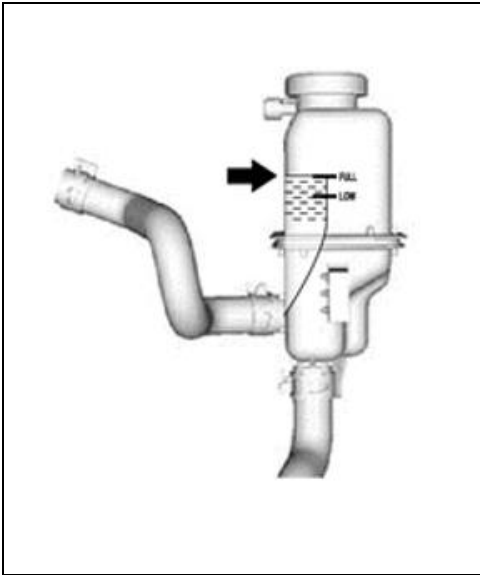
Torque: 50 in.lbs {5.6 N·m, 57 kgf·cm}

- Connect the minus terminal.

Torque: 48 in.lbs {5.4 N·m, 55 kgf·cm}



- Connect the connector and engage the 2 claws.



9. REFILL COOLANT FOR INVERTER

- a. Add **NEW** coolant to the inverter reservoir tank until it is full.

Amount: Approx. 1.4L (PRIUS)

- b. Connect Techstream to DLC3.
- c. Turn the power switch on (IG).
- d. Select Power Train/HV/Active Test/
Inverter Water Pump and pump operates.
- e. Operate the water pump for about 1 min while adding coolant. After 1 min turn it off and refill the reservoir tank water level until full.
- f. Add coolant until full.
- g. Repeat the [(e) and (f)] steps 3 times and purge the air out the coolant system.
- h. Turn the power switch off.

10. REFILL COOLANT FOR ENGINE

- a. Reusing the original coolant removed from the vehicle, refill the engine coolant system using the Repair Manual procedure.

[Refer to Repair Manual for instructions on ENGINE / HYBRID SYSTEM / 2ZR-FXE COOLING / COOLANT \(for Engine\) / REPLACEMENT](#)

11. INSPECT FOR COOLANT LEAK (for Engine)

[Refer to Repair Manual for instructions on ENGINE / HYBRID SYSTEM / 2ZR-FXE COOLING / COOLING SYSTEM / ON-VEHICLE INSPECTION](#)

12. PERFORM INITIALIZATION

[Refer to Repair Manual for instructions on GENERAL / INTRODUCTION / REPAIR INSTRUCTION / INITIALIZATION](#)

13. RESTORE CUSTOMER SETTINGS

14. CHECK AND CLEAR DTC(S)

◀ VERIFY REPAIR QUALITY ▶

- Verify there are no coolant leaks (if coolant was drained).
- Verify there are no DTC's.
- Verify that the abrasion resistance tape is applied correctly.

If you have any questions regarding this update, please contact your regional representative.

10. APPENDIX

A. PARTS DISPOSAL

As required by Federal Regulations, please make sure all recalled parts (original parts) removed from the vehicle are disposed of in a manner in which they will not be reused, ***unless requested for parts recovery return.***

B. CAMPAIGN DESIGNATION DECORDER

