

TECHNICAL INSTRUCTIONS
FOR
SAFETY RECALL 25TA15

LOOSE INVERTER BOLT

CERTAIN

2025 – 2026 MODEL YEAR COROLLA CROSS

UPDATE: 07/10/2026 – Update part ordering details.

UPDATE: 07/16/2026 – Correcting formatting errors.

UPDATE: 08/13/2026 – Updates: VIII. Health check inverter saddle connection p76-77, ECU config and resolver learning sections starting on page 84.

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 course levels:

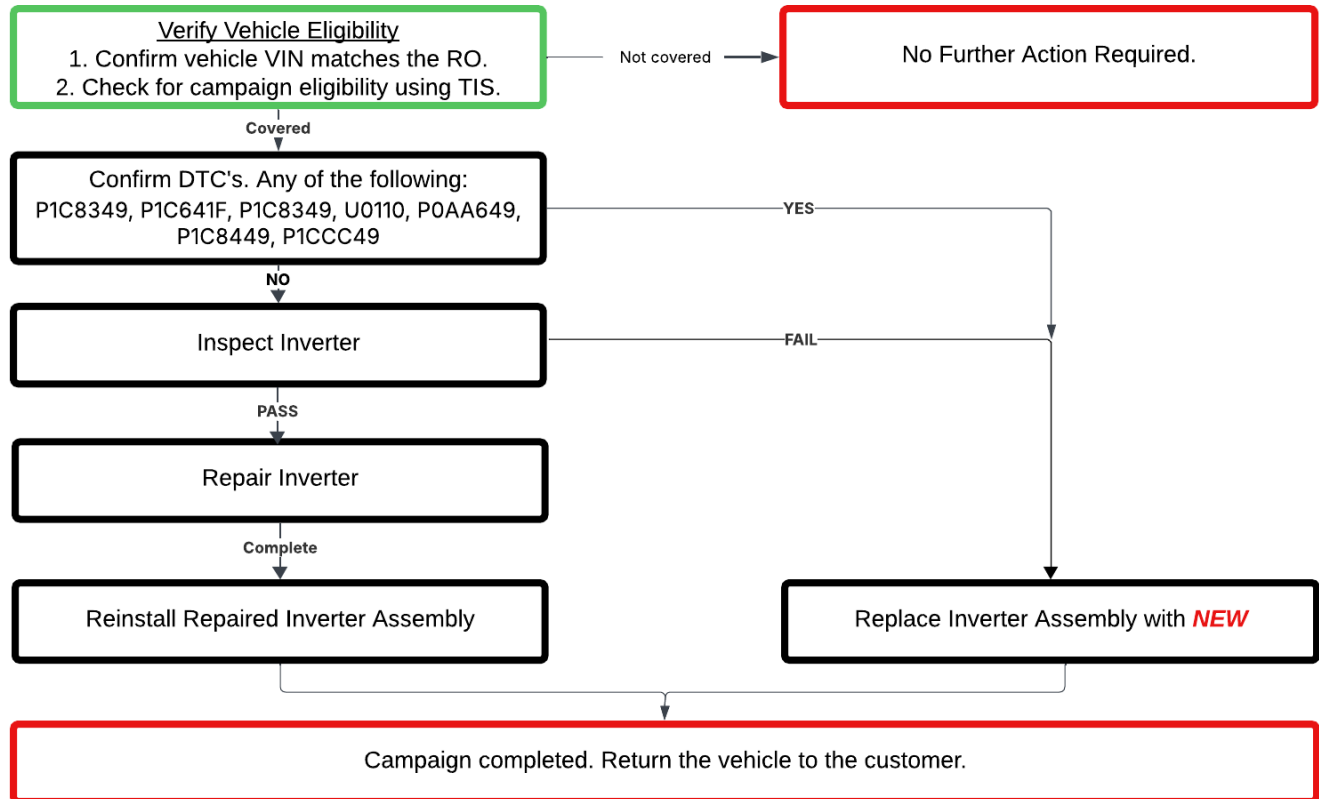
TIC209A - Electrified Powertrain Vehicle Repair

It is the dealership’s responsibility to select technicians with the above course 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

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Flow chart is for reference only. **DO NOT** use in place of full technical instruction. Follow ALL steps as outlined in full technical instruction to confirm campaign is completed correctly.



II. IDENTIFICATION OF AFFECTED VEHICLES

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1. CHECK VEHICLE FOR CAMPAIGN ELIGIBILITY

- Compare the vehicles VIN to the VIN listed on the Repair Order to ensure they match.
- Check the TIS Vehicle Inquiry System to confirm the VIN is involved in this Campaign, and that it has not already been completed.

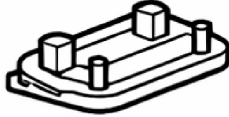
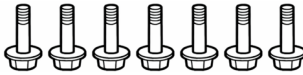
Note:

TMNA warranty will not reimburse dealers for repairs completed on vehicles that are not affected or were previously completed, even by another dealer.

III. PREPARATION

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1. PARTS

Parts below are required for repair of inverter assembly only. (Forecast 80% UIO)				
Repair Kit	Name	Quantity	Description	Image
04006-03128	Cover	1	Non-reusable part	
	Bolt, flange	7	Non-reusable part	
	Clamp	1	Non-reusable part	

Parts ordered through Toyota Complete Maintenance Care				
00295-1282C	FIPG Kit	½ tube	½ tube per repair	
00272-SLLC2	SUPER LONG LIFE COOLANT	½ gal	(1/2 gal. per repair)	

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California Emissions Only				
Part Number	Name	Qty	Description	Image
00410-92007	Vehicle emissions recall form booklet	1	Vehicle emissions recall form booklet	
00451-00001	Emissions label	1	Emissions label	

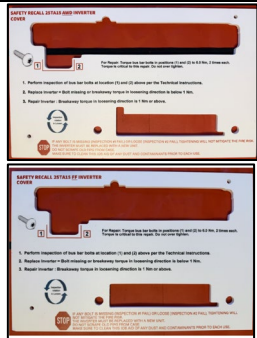
Use the Parts Support Case Request from Dealer Daily to request part release.

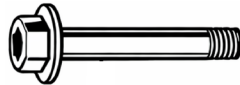
Inverter replacement parts, only for NG inspection or DTC on arrival (Forecast 20% UIO)			
Part Number	Part Name	MAC Release Method	Quantity
04005-6330A	Corolla Cross HV	Parts Support Case Request	As needed

All inverter part numbers above are on MAC D. See MAC report for additional release detail.

1. Dealer Code
2. Part number
3. Quantity
4. VIN
5. Contact Information
6. Reason for replacement (if contamination, attached photo)
7. If any of the following DTCs are present upon initial health check, P1C8349, P1C641F, P1C8349, U0110, P0AA649, P1C8449, P1CCC49. Please upload screen shot of the health check showing the VIN and the DTC.

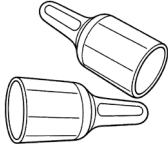
2. TOOLS, SUPPLIES, EQUIPMENT, SST, AND CST (Campaign Service Tool)

Campaign Service Tools (CST) These tools were distributed for 25TA15 and are not part of SST cabinets.					
Item No.	Part Number	Name	Qty	Description	Image
1	00002-02955	Torque wrench (CST)	1	Beam Style Torque wrench	
2	FF AWD	Inverter Cover (AWD and FF) CST	2	Cover used during inspection of inverter to prevent debris from entering.	

Supplies Locally Sourced by Dealer					
Item No.	Part Number	Name	Qty	Description	Image
1	91551-80650 (can be sourced from local hardware store)	Bolt	4	Stand jig Hex Bolt, flange, M6x1.0x50mm	
2	N/A (can be sourced from local hardware store)	Bolt	1	Socket head cap screw, M5x18mm, Used to separate inverter	
3	(can be sourced from local hardware store)	Chair rubber feet	2	Rubber stopped	
4	(can be sourced from local hardware store or shipping crate)	Clean wood block	1	Clean wood block	

**Standard hand tools, plus the following:

3.	Insulated Tool Set	Torque wrench
	Voltmeter Set	Crows foot
	GTS+ (Global Tech Stream+)	DCA-8000 Battery Diagnostic Station

Special Service Tools (SST Cabinets)					
1	09891-28010-01	SST	1	HEV inverter guide pins	
2	09890-47011	SST	1	Desktop Anti-Static Mat Set	
3	90339-16002	SST	1	Plug set, inverter core	
4	00002-03100-S	SST	1	Lineman gloves class 0 Size - small	
	00002-03200-M			Lineman gloves class 0 Size - medium	
	00002-03300-L			Lineman gloves class 0 Size - large	

3. MATERIALS

Vinyl tape	Protective Gloves	Protective Tape
Masking tape	Piece of wood	Antistatic gloves

IV. SAFETY CHECKLIST & PRECAUTIONS WHEN WORKING

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Always remember **“SAFETY FIRST”**

Be extremely careful when handling high voltage components

Before beginning and while working on the high voltage system, perform the following safety check list.

1. BASIC SAFETY

- ☐ Extreme care will be used when handling high-voltage components
- ☐ No excessive force will be applied to the inverter assembly

2. WORK AREA / FOREIGN MATERIAL CONTROL

- ☐ Work area is clean and free of dust and airborne contaminants
- ☐ No grinding, welding, or chemical spraying nearby
- ☐ Inverter cover installed at all times except when applying FIPG.

3. STATIC ELECTRICITY

- ☐ Static electricity discharged by touching grounded vehicle metal/using antistatic mat.
- ☐ Connector terminals / circuit boards will not be touched unless specified

4. ELECTRICAL SHOCK & SHORT-CIRCUIT PREVENTION

- ☐ Auxiliary battery and service grip disconnected ≥ 5 minutes
- ☐ Service grip stored securely to prevent reinstallation
- ☐ No metal items worn (rings, watches, etc.)
- ☐ Electrical insulating gloves worn near high-voltage components
- ☐ Gloves are clean, dry, and undamaged
- ☐ Tools insulated as required

5. TOOLS & HANDLING

- ☐ No air or power tools used after inverter removal
- ☐ High-voltage connectors covered immediately after disconnection
- ☐ Parts, bolts, and tools will not be dropped into inverter
- ☐ Dropped object inside inverter = inverter replacement (acknowledged)

6. PARTS & INSTALLATION

- ☐ Removed parts kept clean and organized
- ☐ Impacted or dropped parts will be replaced
- ☐ Terminals confirmed clean before installation
- ☐ All fasteners will be torqued to specification

7. WORK CONTROL

- ☐ Intermediate inspections will be performed
- ☐ Safety supervisor assigned
- ☐ “Working with High Voltage” warning sign installed
- ☐ If pausing work, cover parts with clean pieces of paper to prevent entry of dust and foreign matter.

8. INSTALLATION SUPPORT

- ☐ Parts arranged in removal order
- ☐ Reference photos taken before disassembly



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Person in charge: _____
high voltage system
Working on
CAUTION:

CAUTION:
Working on
high voltage system
Person in charge: _____

Fold this page and place on the roof of vehicle.

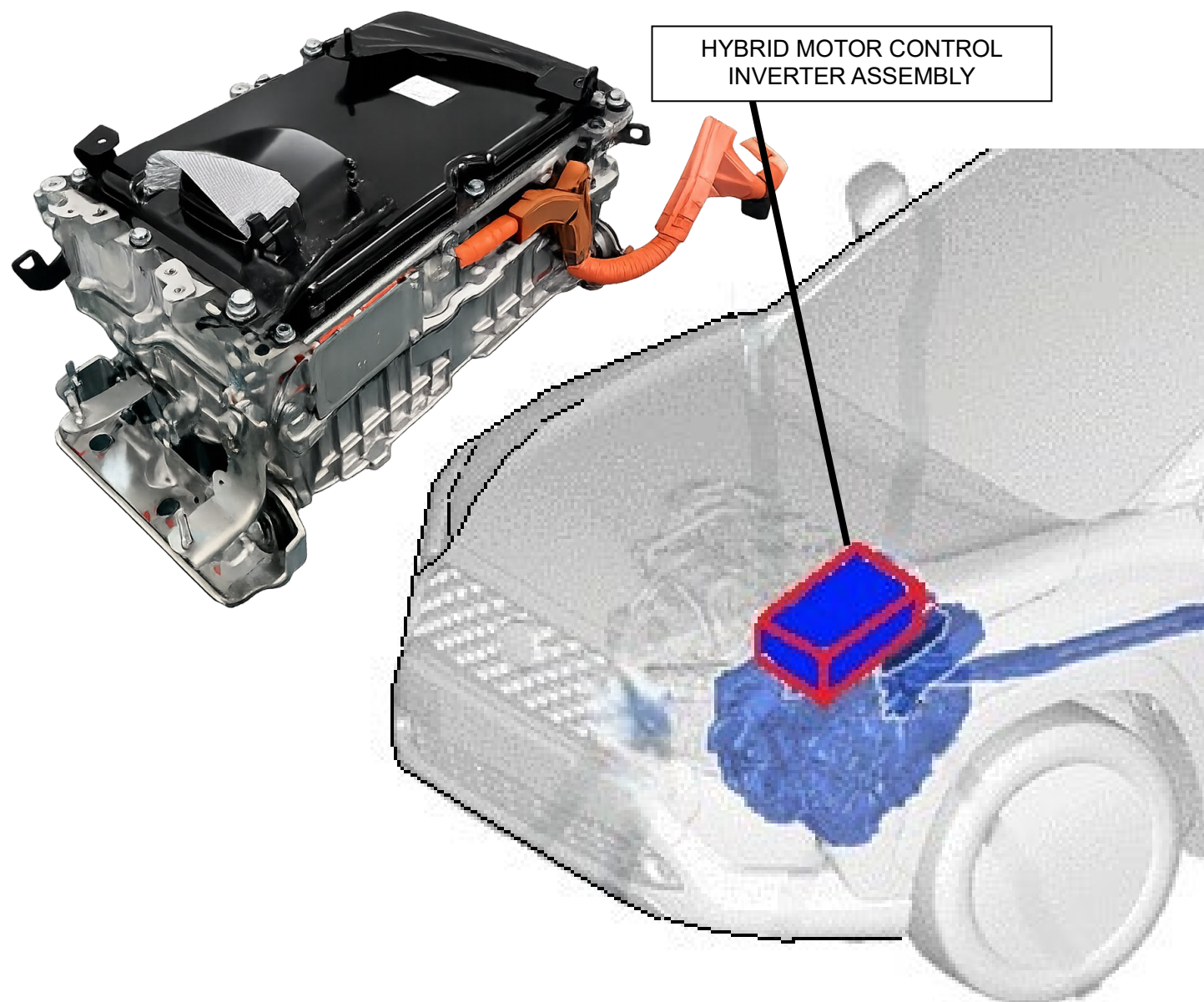
V. WORK PROCEDURE TABLE OF CONTENTS

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VI. BACKGROUND

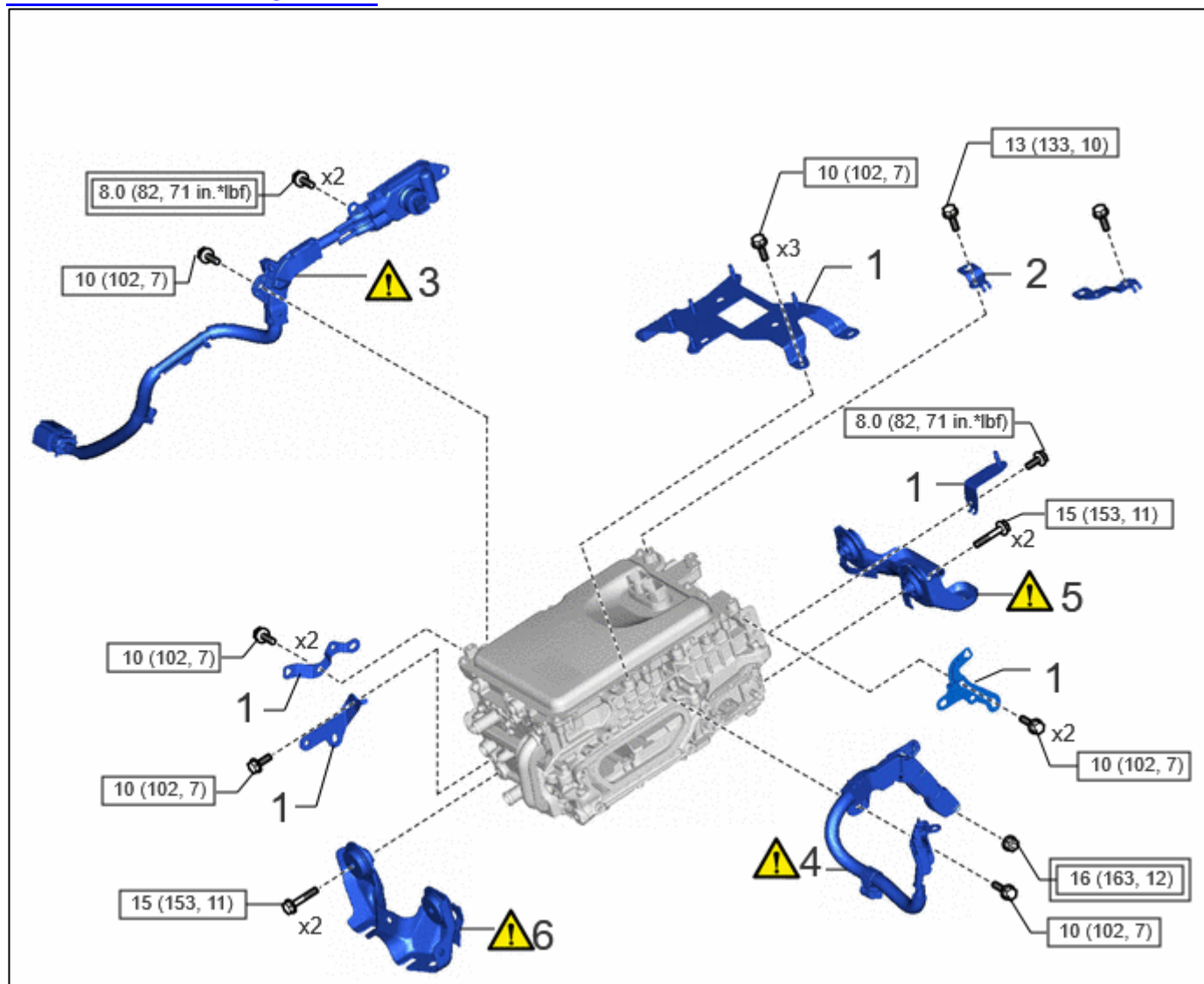
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A bolt inside the inverter in the hybrid powertrain can become loose and could lead to a loss of motive power or could lead to a fire when the vehicle is on. A loss of motive power while driving at higher speeds or a vehicle fire could increase the risk of a crash or an injury.



VII. COMPONENTS

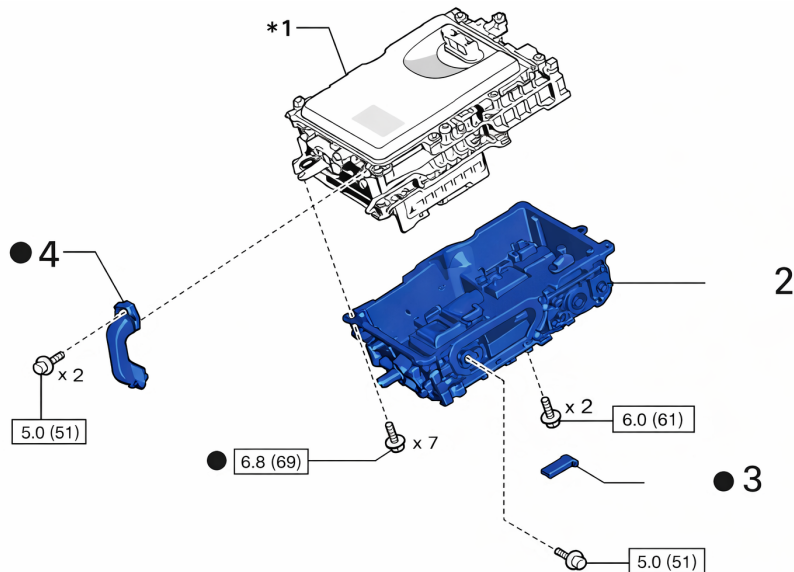
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	Description	Bolt/nut Count	Torque value (Nm)
1	WIRE HARNESS CLAMP BRACKET	9	10
2	FUEL HOSE BRACKET	2	9.5
3	HV AIR CONDITIONING WIRE	2	8.0
		1	10
4	NO. 3 ENGINE WIRE	3	8
		1	13.5
5	NO. 2 INVERTER BRACKET	2	15
6	NO. 1 INVERTER BRACKET	2	15

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

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	Description	Bolt/nut Count	Torque value (Nm)
1	Inverter Case Sub Assy	2	6.0
2	Converter Case Sub Assy (non-reusable)	7	6.8
3	Inverter drain plug,	2	6.0
	three phase bus bar	1	5.0
4	Inverter cooling pipe	2	5.0

VIII. COMPLETE A HEALTH CHECK AND CONFIRM NO DTCS.

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If any of the following DTCs are present during the initial Health Check, proceed directly to replacement of the inverter with a new unit: P1C8349, P1C641F, U0110, P0AA649, P1C8449, or P1CCC49. Inspection is not required when any of these DTCs are present.

IX. REMOVE THE INVERTER ASSEMBLY FROM THE CAR

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Orange wire harnesses and connectors indicate high-voltage circuits. To prevent electric shock, always follow the procedure described in the repair manual. To prevent electric shock, wear insulated gloves when working on wire harnesses and components of the high voltage system.

NOTICE:

- After the ignition switch is turned off, there may be a waiting time before disconnecting the negative (-) auxiliary battery terminal.
- After disconnecting the negative (-) auxiliary battery terminal or after a fully depleted battery is returned to normal, the first READY ON may not be possible. In this case, perform the READY ON operation again.
- After the ignition switch is turned off, the audio and visual system records various types of memory and settings. As a result, after turning the ignition switch off, make sure to wait at least 3 minutes before disconnecting the cable from the negative (-) auxiliary battery terminal.
- When the cable is disconnected from the negative (-) auxiliary battery terminal and the security lock setting has been enabled, multi-display operations will be disabled upon next startup unless the password is entered. Be sure to check the security lock setting before disconnecting the cable from the negative (-) auxiliary battery

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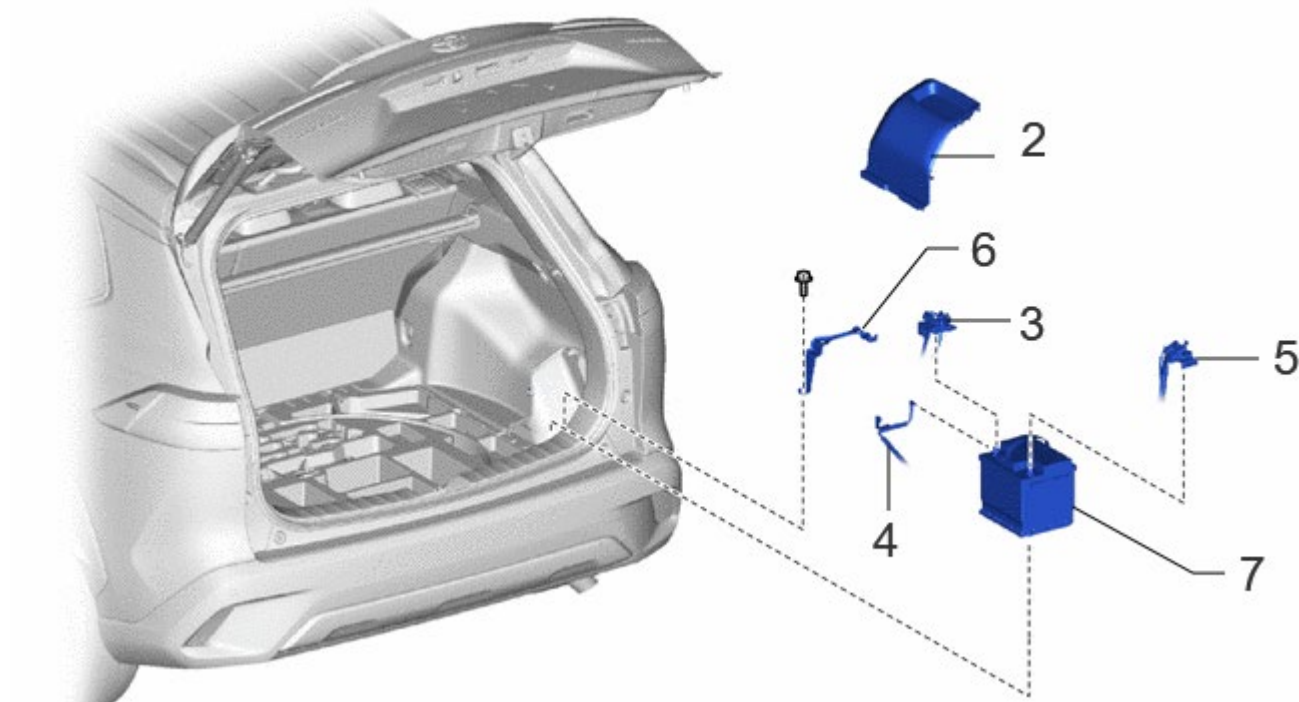
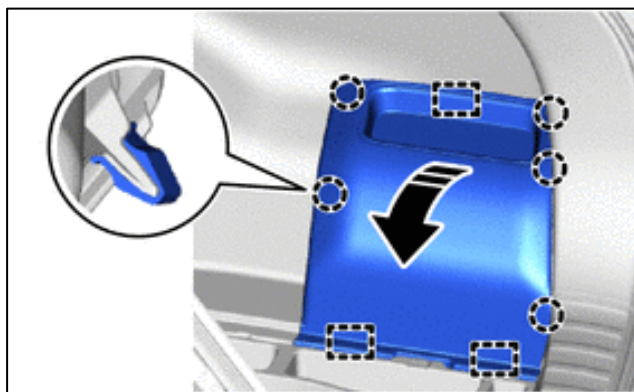
terminal.

HINT:

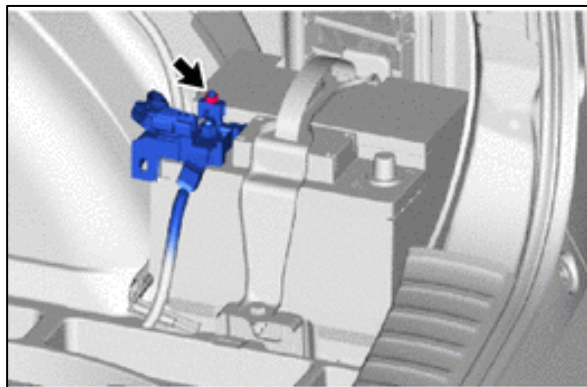
When the cable is disconnected/reconnected to the auxiliary battery terminal, systems temporarily stop operating. However, each system has a function that completes learning the first time the system is used.

1. DISCONNECT THE POSITIVE AND NEGATIVE AUXILIARY BATTERY TERMINALS.

1 — 

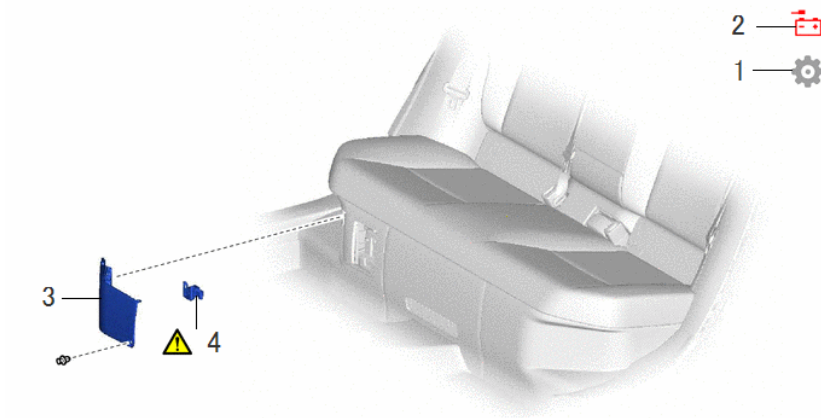
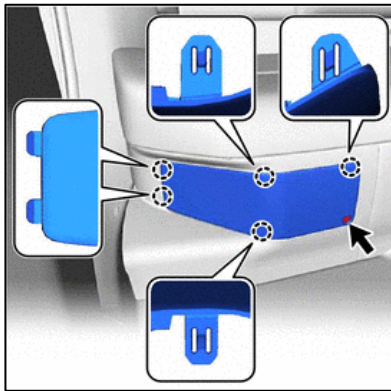


a) Remove luggage trim service hole cover



b) Disconnect cable from negative auxiliary battery terminal

2. DISCONNECT THE SERVICE PLUG GRIP



a) Remove battery service hole cover rh
-Small screwdriver needed.

NOTICE:

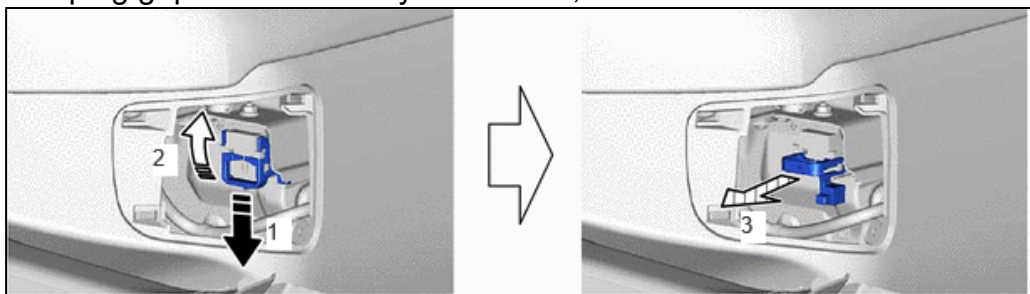
- After removing the service plug grip, turning the power switch on (READY) may cause a malfunction. Do not turn the power switch on (READY) unless instructed by the repair manual.
- Do not touch the terminals of the service plug grip.
- If the service plug grip has been struck or dropped, replace it.

CAUTION:

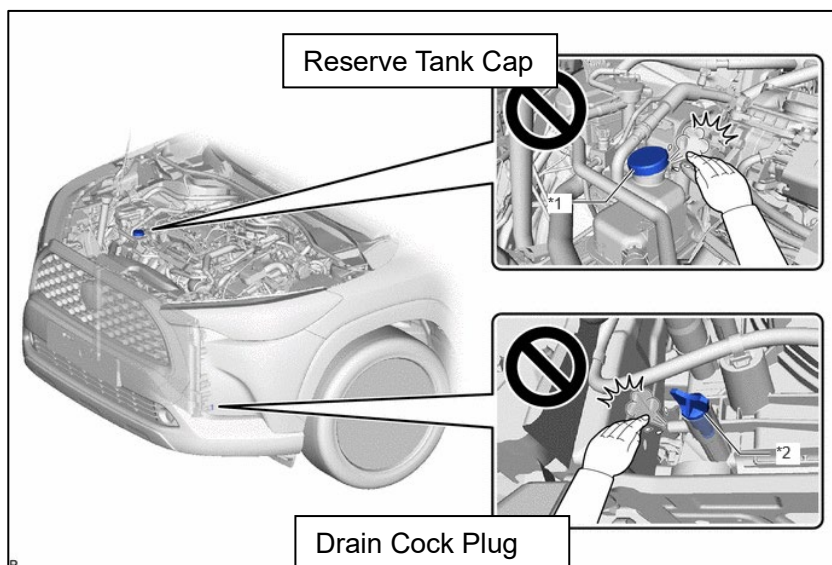
- Be sure to wear insulated gloves.
- Do not inspect or service the high voltage system with the service plug grip installed.
- To reduce the risk of electric shock, make sure to remove the service plug grip to cut off the high voltage circuit before servicing the vehicle.
- To reduce the risk of electric shock, make sure to wait at least 10 minutes after removing the service plug grip to fully discharge the high voltage capacitor inside the hybrid motor control inverter assembly.
- Keep the removed service plug grip in your pocket to prevent other technicians from accidentally installing it while you are servicing the vehicle



- b) While wearing insulated gloves, rotate the handle of the service plug grip and remove the service plug grip as indicated by the arrows, in the order shown in the illustration.



3. DRAIN COOLANT

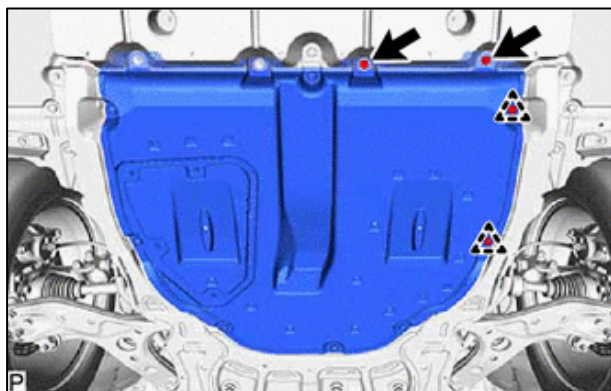


CAUTION:

To avoid the danger of being burned, do not remove the reserve tank cap while the coolant (for inverter) is still hot. Pressurized, hot coolant (for inverter) and steam may be released and cause serious burns.

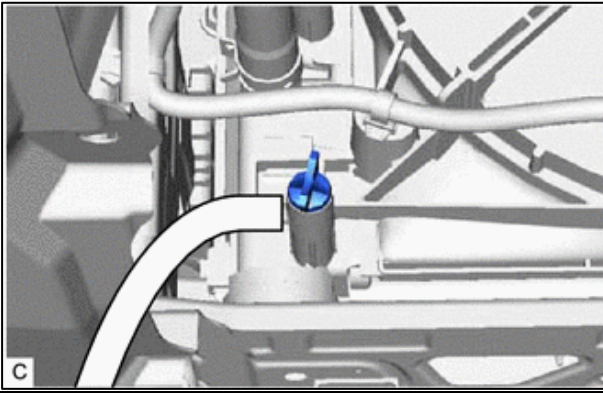
NOTICE:

- Do not reuse the drained coolant because it may contain foreign matter.
- Collect the drained coolant and measure its volume to establish a benchmark. When adding coolant, make sure to add more coolant than the measured amount.



- Remove the reserve tank cap from the inverter reserve tank assembly.
- Remove the 2 bolts and 2 clips.
- Pull down the No. 1 engine under cover assembly.

DRAIN COOLANT (continued)



- d) Connect a hose with an inside diameter of 9 mm (0.354 in.) to the drain cock as shown in the illustration.
- e) Loosen the drain cock plug indicated in the illustration and drain the coolant.

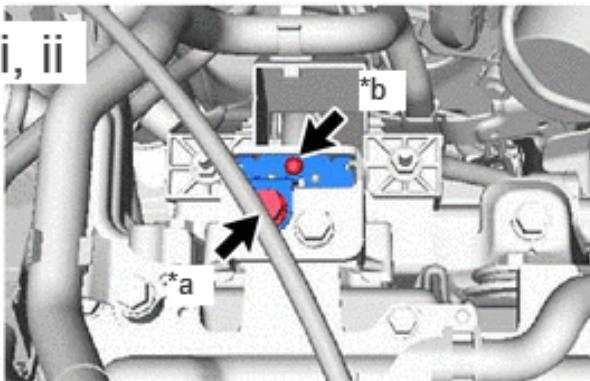
4. REMOVE CONNECTOR COVER ASSEMBLY

CAUTION: Wear insulated gloves.

NOTICE:

Do not touch the connector cover assembly waterproof seal.

Do not allow any foreign matter or water to enter the hybrid motor control inverter assembly.



- a) Remove bolt *a first and then using a T20 'TORX' socket wrench, remove bolt *b. Remove connector cover assembly from inverter.

5. CHECK TERMINAL VOLTAGE

CAUTION: Wear insulated gloves.

NOTICE:

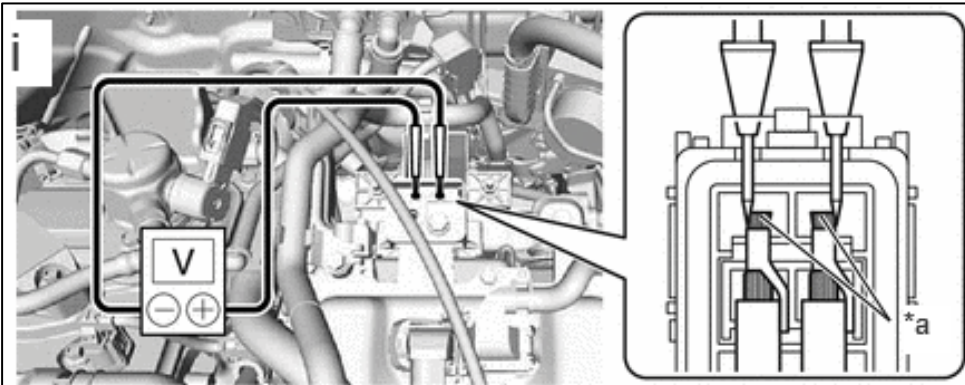
Do not touch the connector cover assembly waterproof seal.

Do not allow any foreign matter or water to enter the hybrid motor control inverter assembly.

HINT:

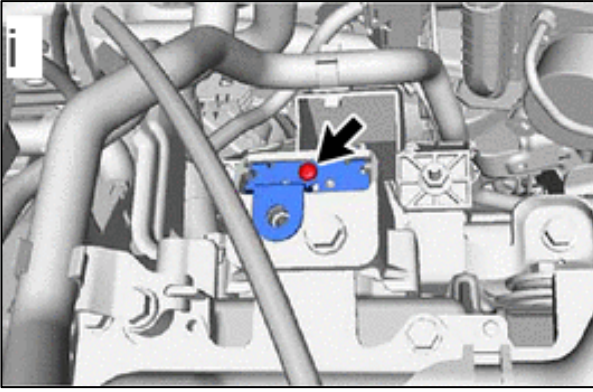
Set the tester to the DC 750 V range or higher to measure the voltage.

Perform the measurement while holding the tips of the tester probes against the terminals as shown in the illustration.



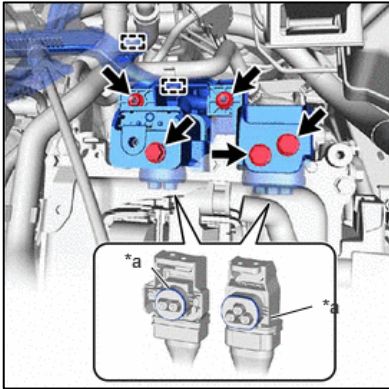
- a) Measure the voltage between the terminals of the high voltage DC line.
 - b) Voltage needs to read 0 V before proceeding to next steps.

6. TEMPORARILY INSTALL CONNECTOR COVER ASSEMBLY



- a) Unclip harness connection and wire harness (w/h) from mass air flow sensor

7. DISCONNECT FLOOR UNDER WIRE



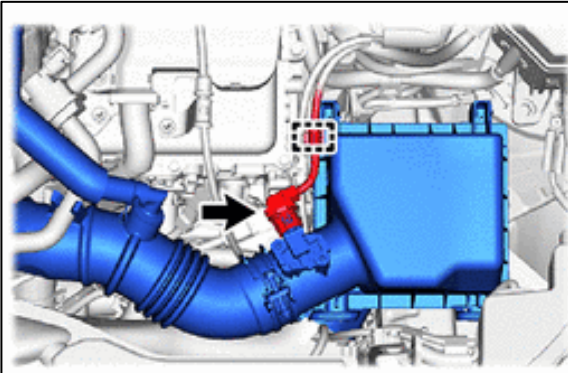
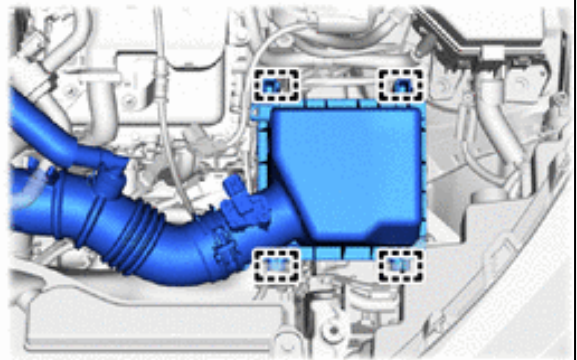
CAUTION: Wear insulated gloves.

NOTICE:

- Do not allow any foreign matter or water to enter the hybrid motor control inverter assembly.
- Do not touch the waterproof seal or terminals of the connector.
- Do not damage the terminals, connector housing or hybrid motor control inverter assembly during disconnection.
- Cover the hole where the cable was connected with tape (non-residue type) or equivalent to prevent entry of foreign matter.
- Insulate the disconnected terminals with insulating tape.

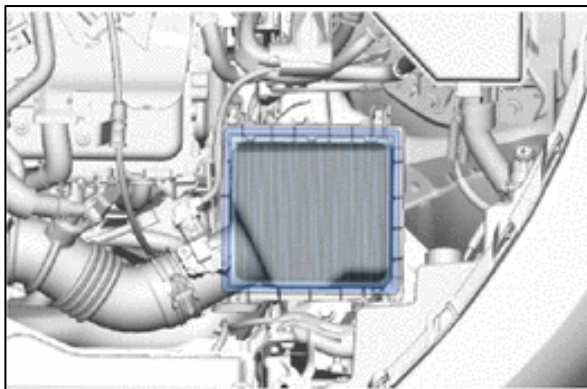
8. REMOVE AIR CLEANER CAP SUB-ASSEMBLY

- a) Disconnect wire to air cleaner and remove top of air cleaner cap sub-assembly.



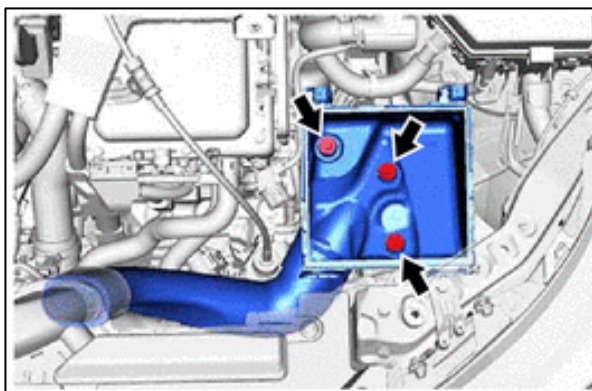
9. REMOVE AIR CLEANER FILTER ELEMENT SUB-ASSEMBLY

- a) Remove filter and inspect air cleaner filter for any debris. See note to the right for instructions on cleaning. If deemed okay, set aside for reuse.



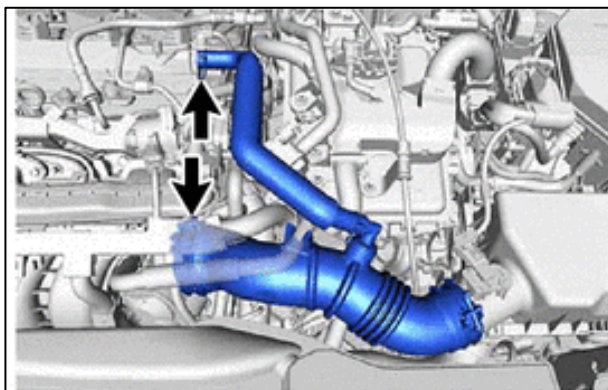
Note: If the air cleaner filter element sub-assembly is dirty or has foreign matter adhered to it, clean the air cleaner filter element sub-assembly with compressed air.

10. REMOVE AIR CLEANER CASE SUB-ASSEMBLY



- a) Remove the three grommets indicated as red in illustration.

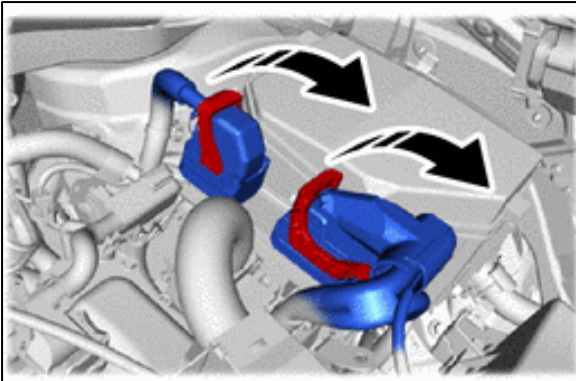
11. REMOVE NO. 1 AIR CLEANER HOSE



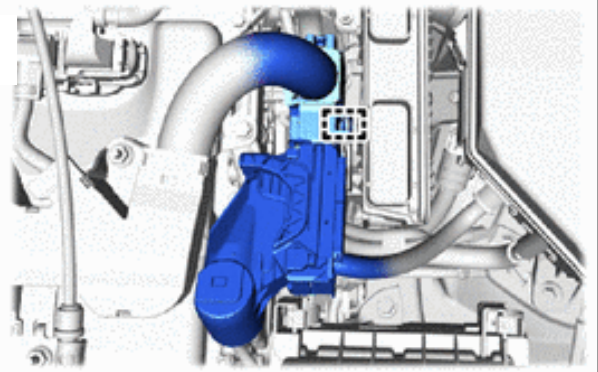
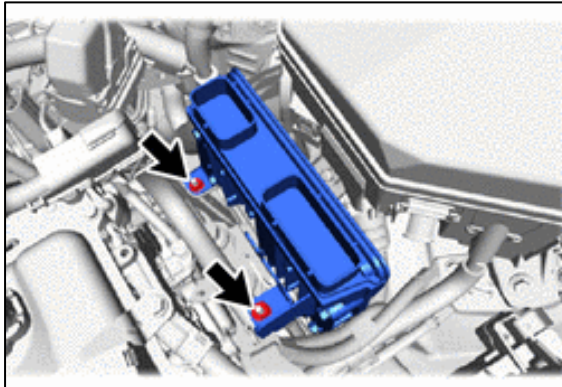
- a) Remove hoses indicated with arrows in the illustration.

12. REMOVE ECM

- a) Raise the 2 lock levers while pushing the locks on the levers, and disconnect the 2 ECM connectors. Disengage the clamp in second illustration.



ii



- b) Use care when handling the ECM. If the ECM has been struck or dropped during this procedure, it will need to be replaced. (Replacement of ECM is not covered under this recall.)

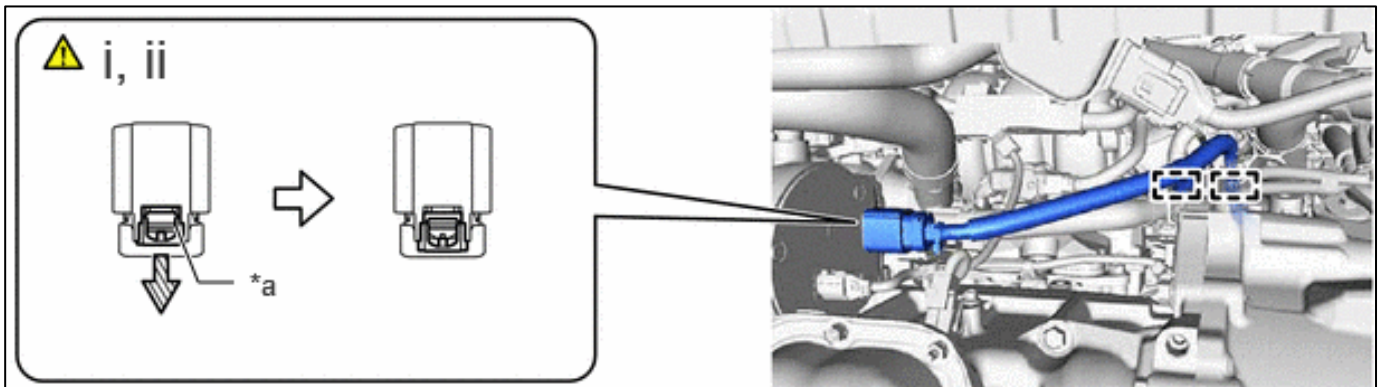
13. DISCONNECT HV AIR CONDITIONING WIRE

NOTICE:

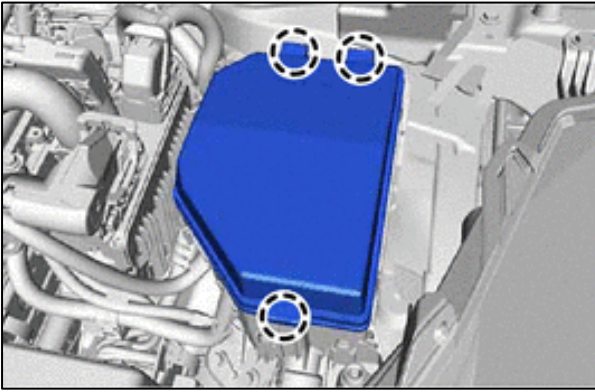
- Do not damage the terminals, connector housing or hybrid motor control inverter assembly during disconnection.
- Insulate the disconnected terminals with insulating tape.

- a) DISCONNECT HV AIR CONDITIONING WIRE (continued)

- b) Disengage the 2 clamps. Slide the green-colored lock of the connector as shown in the illustration to release it and disconnect the HV air conditioning wire.

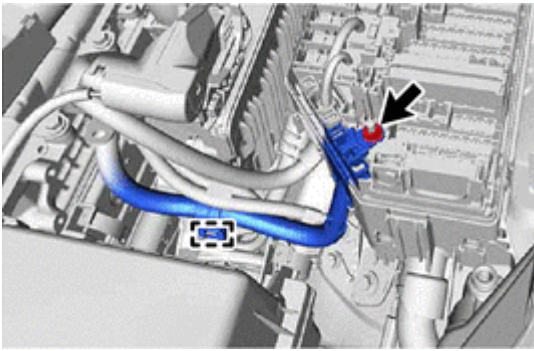


14. REMOVE NO.2 RELAY BLOCK COVER



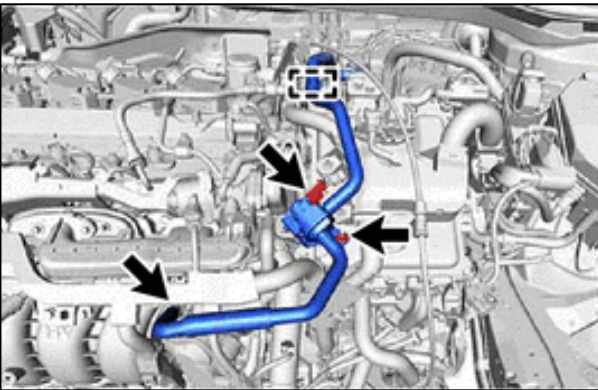
- a) Press inward on clamp 1 and hinge cover backwards to remove.

15. DISCONNECT NO.3 ENGINE WIRE



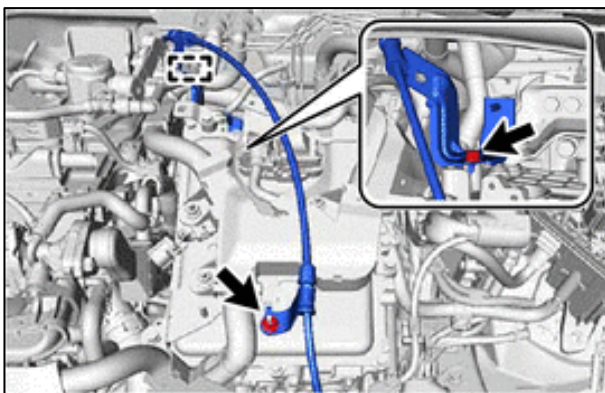
- a) Remove screw nut highlighted red in illustration and disengage the clamp highlighted in a dotted line in illustration.

16. REMOVE VACUUM SWITCHING VALVE ASSEMBLY



- a) Disconnection points shown at the arrows.

17. DISCONNECT TRANSMISSION CONTROL CABLE ASSEMBLY



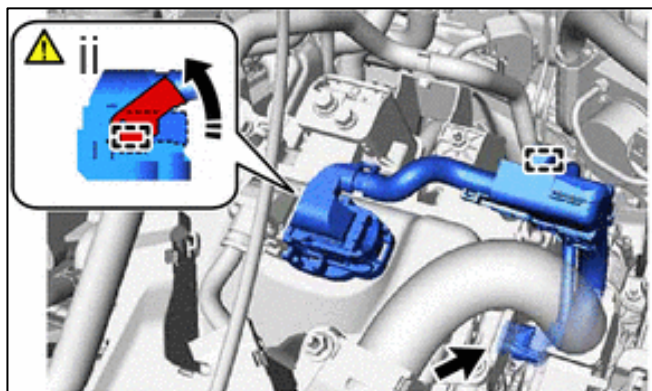
a) Disconnection points shown at the arrows.

18. DISCONNECT ENGINE ROOM MAIN WIRE

CAUTION: Wear insulated gloves.

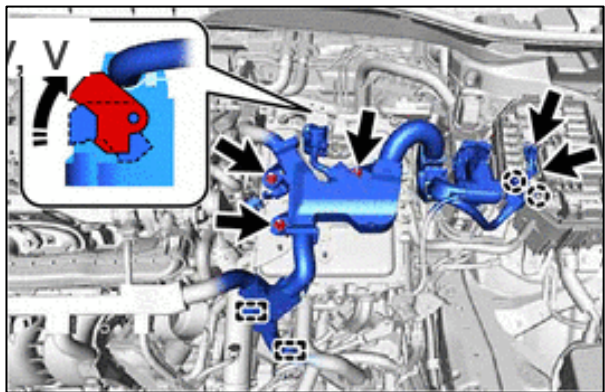
NOTICE:

- Do not allow any foreign matter or water to enter the hybrid motor control inverter assembly.
- Do not damage the terminals, connector housing or hybrid motor control inverter assembly during disconnection.
- Cover the hole where the cable was connected with tape (non-residue type) or equivalent to prevent entry of foreign matter.
- Insulate the disconnected terminals with insulating tape.
- Do not touch the waterproof seal or terminals of the connector.



a) Disengage the clamp and disconnect the connector.

b) Move the lock lever while pushing the lock on the connector, and disconnect the hybrid motor control inverter assembly connector.



c) Move the lock lever while pushing the lock on the connector, and disconnect the hybrid motor control inverter assembly connector.

d) Disconnect the 2 connectors.

e) Disengage the 2 claws.

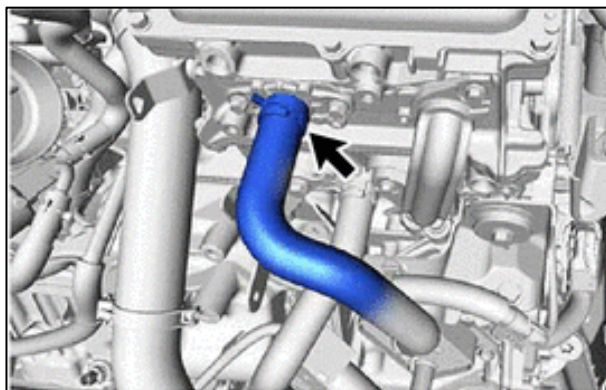
f) Remove the 3 nuts.

g) Disengage the 2 clamps.

19. DISCONNECT OUTLET NO. 1 INVERTER COOLING HOSE

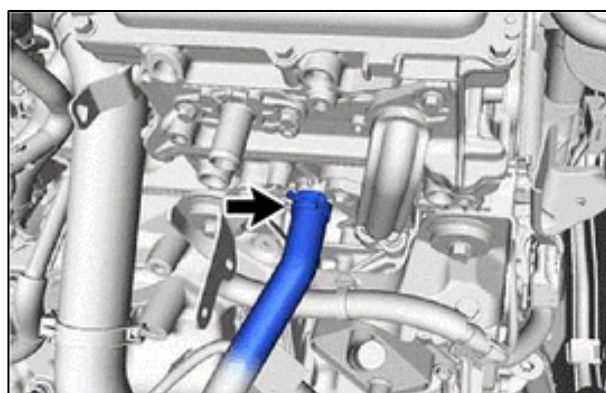
CAUTION:

- PIPE ON INVERTER IS EASILY DAMAGED FROM TOOL. USE GREAT CARE WHEN REMOVING THE HOSE TO PREVENT DAMAGE TO THE PIPE.
- DO NOT USE ANY SHARP TOOLS TO REMOVE THE HOSES.
- IF DAMAGED DURING REMOVAL, WARRANTY WILL NOT COVER A REPLACEMENT PART



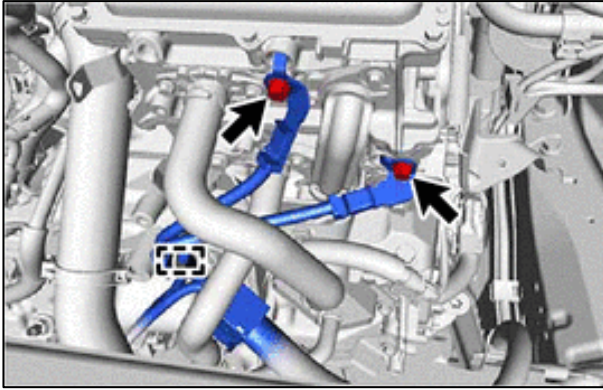
- Disconnection point shown at the arrows.
- Use rags to collect excess coolant.
- Cover the open pipe with (90339-16002) or similar cover .

20. DISCONNECT INLET NO. 1 INVERTER COOLING HOSE



- Disconnection point shown at the arrows.
- Cover the open pipe with (90339-16002) or similar cover.

21. DISCONNECT NO. 7 ENGINE, WIRE

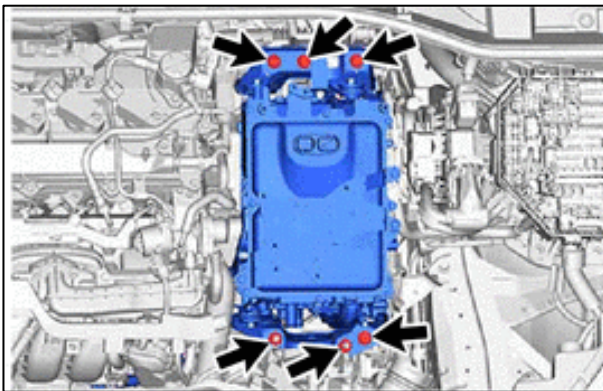


a) Disconnection point shown at the arrows.

22. MG WIRE COVER REMOVAL

NOTICE:

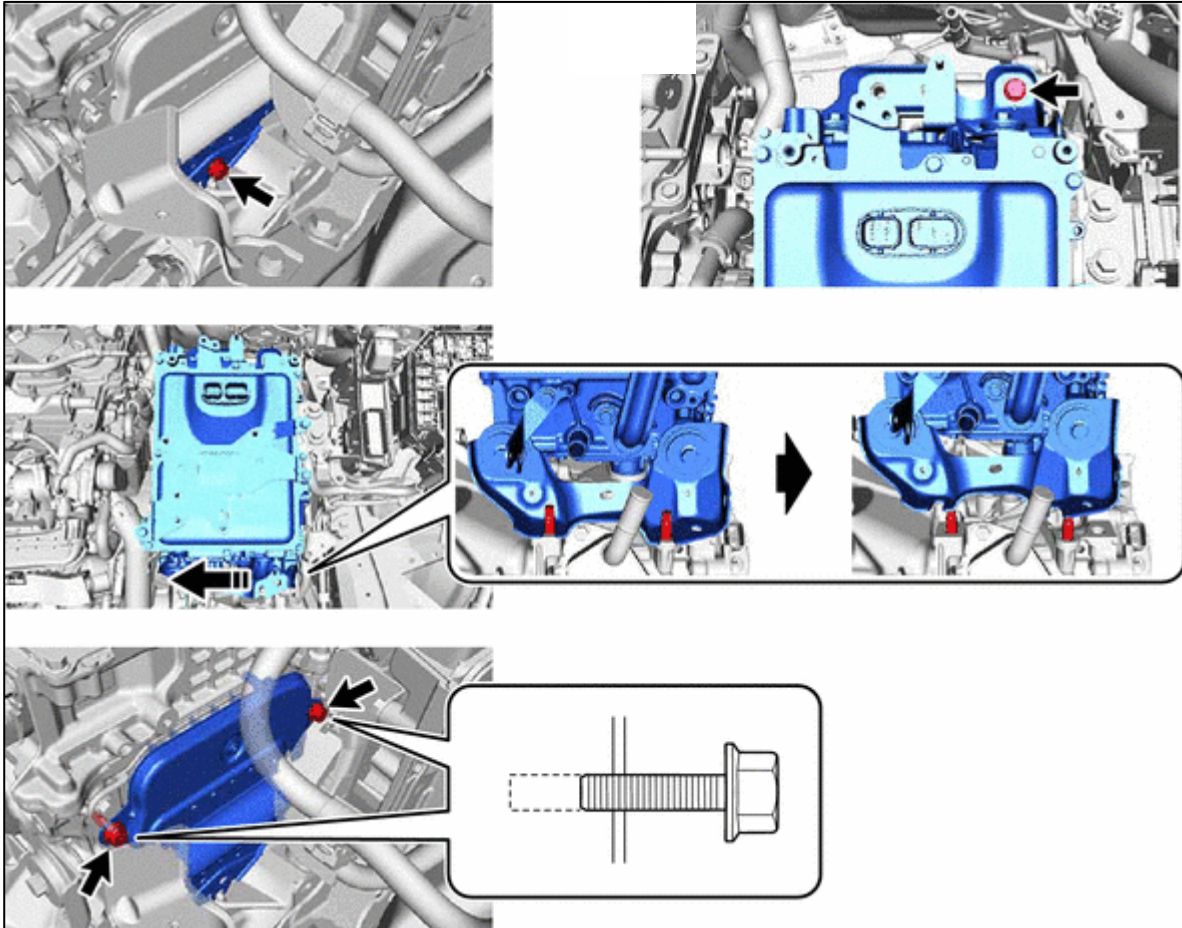
To prevent damage due to static electricity, do not touch the terminals of the disconnected connectors.



a) Disconnection point shown at the arrows.
b) (6) bolts

23. REMOVE UPPER INVERTER COVER

NOTICE: When lifting, make sure not to apply force to the motor cable.



- a) Remove the bolt and inverter cover from the hybrid vehicle transaxle assembly.
- b) To prevent the inverter with converter assembly from falling, temporarily install the bolt in the location shown in the illustration.
- c) Shift the position of the inverter with converter assembly and temporarily set it on top of the stud bolts as shown in the illustration.
- d) Loosen the 2 bolts, leaving 2 to 3 threads at the tip of the bolt still engaged.

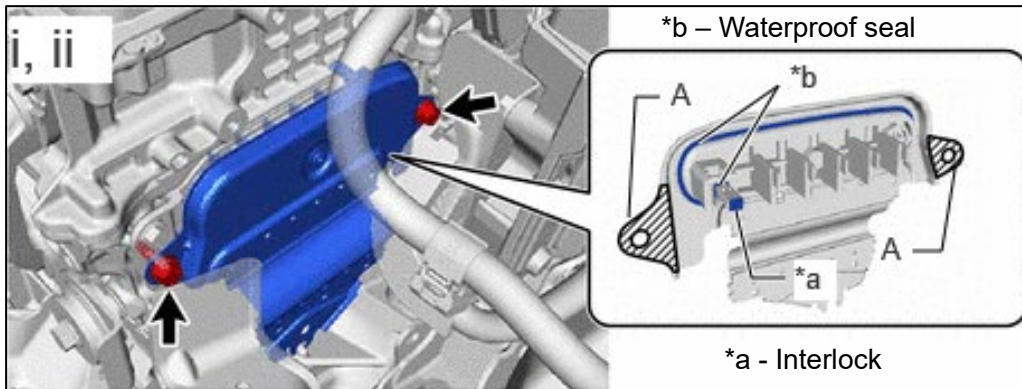


- e) Remove ground wires to fender well to make room to remove the inverter (see photo at left).

24. MG WIRE COVER REMOVAL

NOTICE:

To prevent damage due to static electricity, do not touch the terminals of the disconnected connectors.

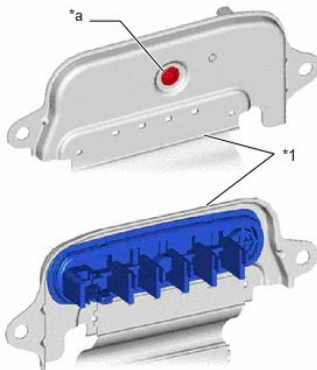


a) Loosen the 2 bolts, leaving 2 to 3 threads at the tip of the bolt still engaged.

b) Using the 2 bolts as guides, remove the upper inverter cover from the inverter with converter assembly.

NOTICE:

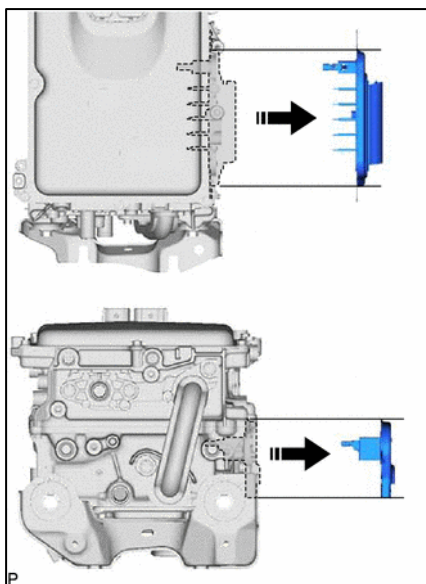
- Make sure to pull the upper inverter cover straight out, as a connector is connected to the inside of the upper inverter cover.
- Do not touch the waterproof seal of the upper inverter cover.
- Do not allow any foreign matter or water to enter the hybrid motor control inverter assembly.
- When removing the upper inverter cover, do not pull the areas (A) as they may deform.
- Make sure that the interlock is installed to the upper inverter cover.



*1 – Inverter Cover

*a - Screw

- a) Do not remove or excessively tighten the screw of the upper inverter cover..
- b) Although the inverter cover may feel loose, this is not due to a malfunction

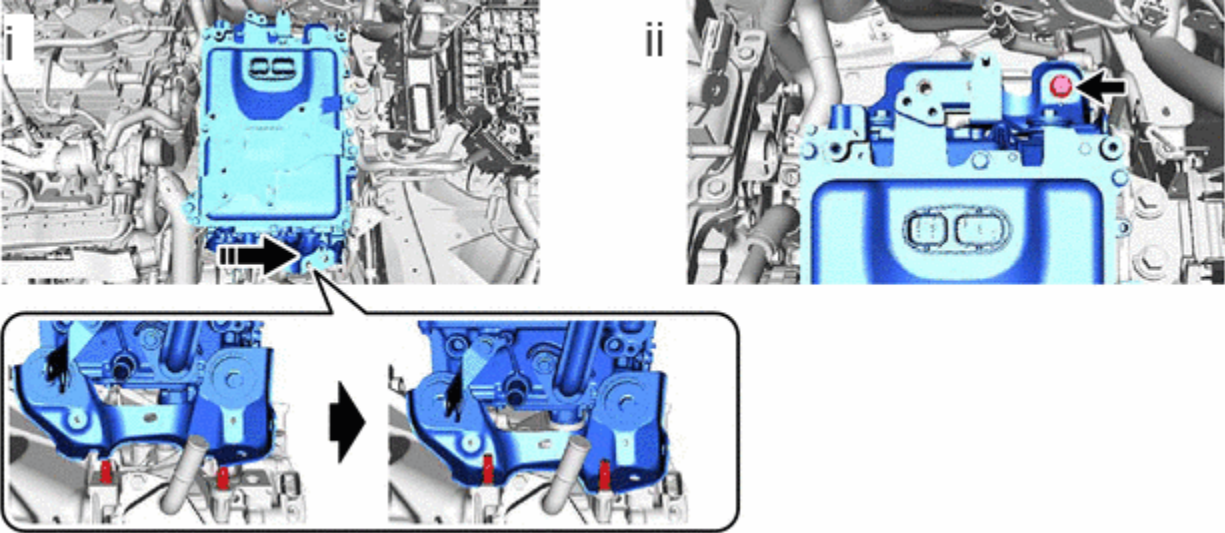


- c) Hold the upper inverter cover horizontal while removing it

25. TEMP SET INVERTER ASSY

NOTICE:

When lifting, make sure not to apply force to the motor cable

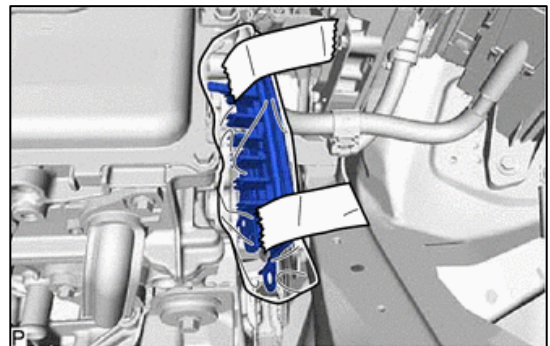


- a) Shift the position of the inverter with converter assembly and temporarily set it on the hybrid vehicle transaxle assembly as shown in the illustration.
- b) Remove the bolt.

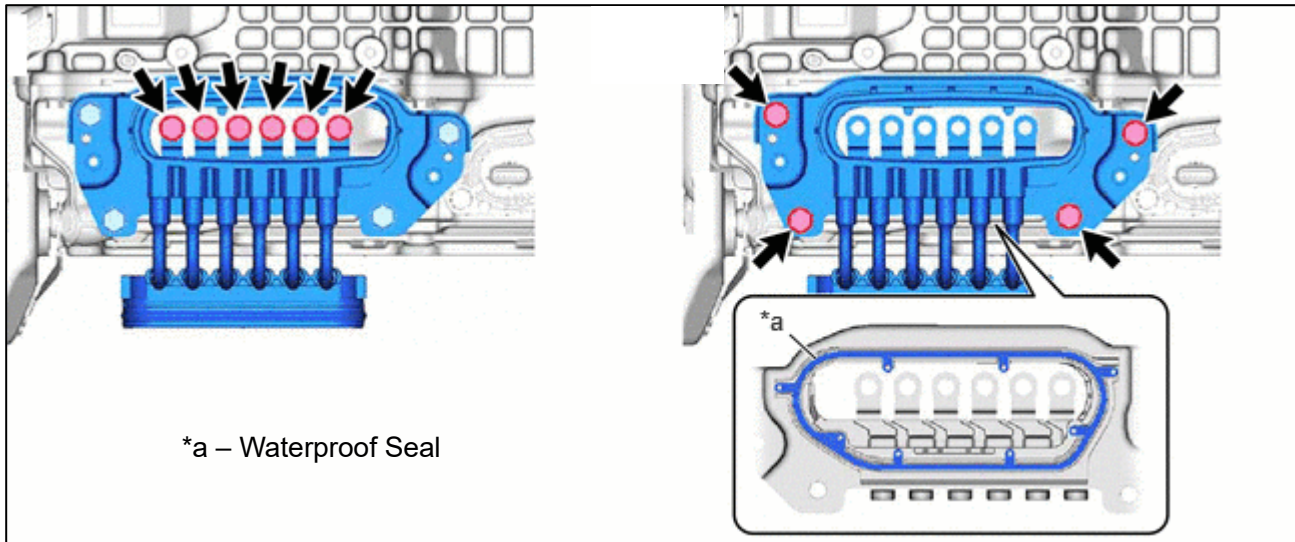
26. DISCONNECT MOTOR CABLE

NOTICE:

- Do not allow any foreign matter or water to enter the hybrid motor control inverter assembly.
- Do not touch the waterproof seal or terminals of the connector.
- Do not damage the terminals, connector housing or hybrid motor control inverter assembly during disconnection.
- Insulate the disconnected terminals with insulating tape.
- Cover the hole where the cable was connected with tape (non-residue type) or equivalent to prevent entry of foreign matter.
- To prevent the wire harness from being caught, make sure to bundle the wire harness using insulating tape or equivalent.



DISCONNECT MOTOR CABLE (continued) **USE HAND TOOLS ONLY**

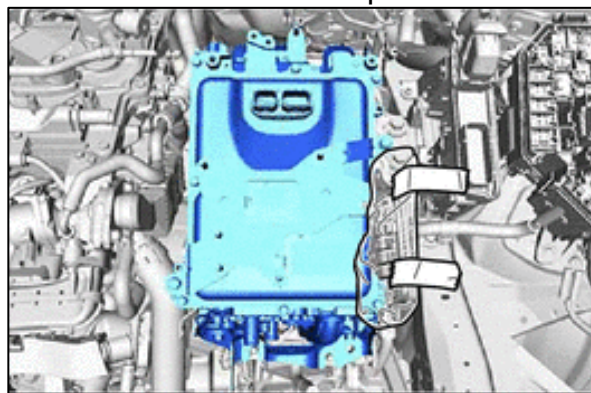


- a) Using an insulated tool, remove the 6 bolts.
- b) Remove the 4 bolts and disconnect the motor cable from the hybrid motor control inverter assembly.

27. REMOVE INVERTER FROM ENGINE BAY

NOTICE:

- When removing the hybrid motor control inverter assembly, be careful not to damage the parts around it.
 - To prevent damage, do not hold the hybrid motor control inverter assembly by the connectors, brackets or cooling pipes.
 - To prevent damage due to static electricity, do not touch the terminals of the disconnected connectors.
- a) Even after the coolant is drained, coolant remains in the inverter due to its internal structure. Therefore, seal or cover the pipes when removing the hybrid motor control inverter assembly so that coolant does not spill out.



- b) Lift inverter and remove from the vehicle

X. INVERTER SUB-ASSEMBLY PREP FOR DISASSEMBLY

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1. PREPARATION BEFORE DISASSEMBLY

NOTICE:

- Electrostatic discharge required. Damage to or destruction of electrical components.
- Only touch the housings of electrical components. Do not touch pins or multi-pin connectors directly.

CAUTION:

Wear insulating gloves until zero voltage confirmation is complete.

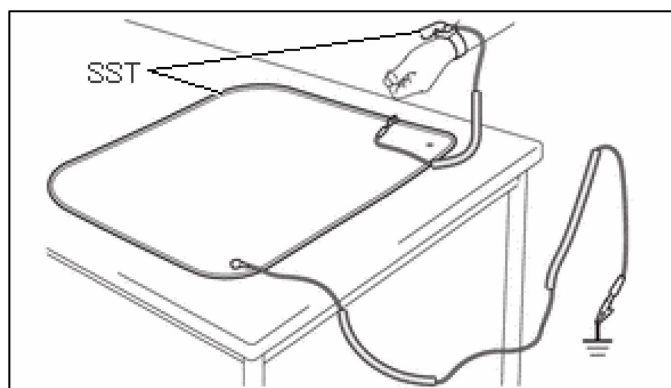
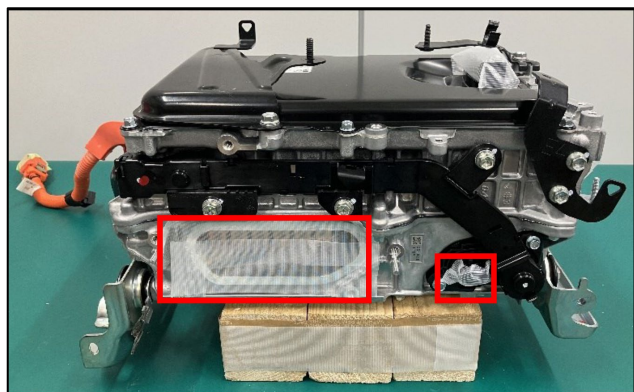
When disassembling and assembling the inverter ASSY, care must be taken to prevent static electricity.

Do not touch internal components during work.

Do not let clothes touch electronic components during work. Do not let clothes touch electronic components.

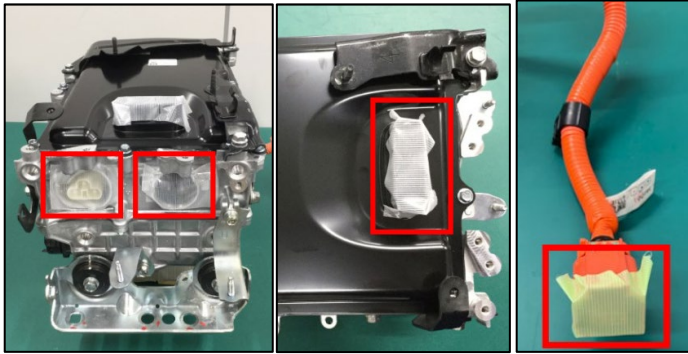
Converter and Inverter Case SUB-ASSY must be placed on SST. (anti-static mat).

USE HAND TOOLS ONLY



- Attach the SST (wrist band) to the wrist.
- Secure the ground clip of the SST (antistatic mat) to the ground point of the workplace or workbench (anchor bolt).
- If the ground clip is not accessible, extend the wiring.
- Secure the SST (wrist band) ground clip to the specified location on the SST (anti-static mat).
- In order to prevent static electricity and to prevent dust and foreign matter from entering the inverter ASSY, when working inside the inverter ASSY, wear antistatic gloves.
- Mask every opening on inverter, including wire harness connections with masking tape.

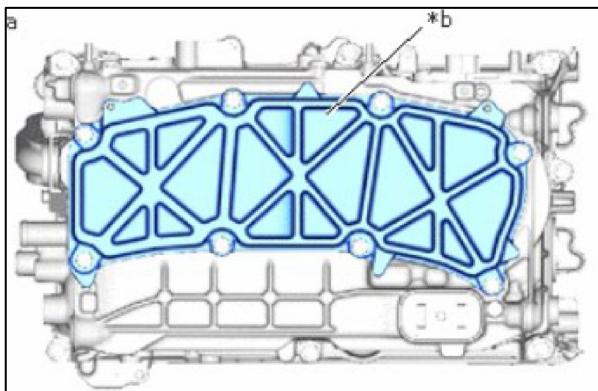
PREPARATION BEFORE DISASSEMBLY (continued)



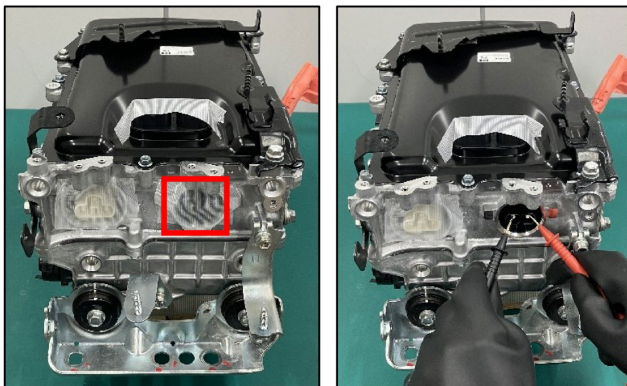
- a) If an opening appears during subsequent work, cover with masking tape, etc., to prevent foreign matter and water droplets from entering.
- b) Each time, cover with masking tape, etc.



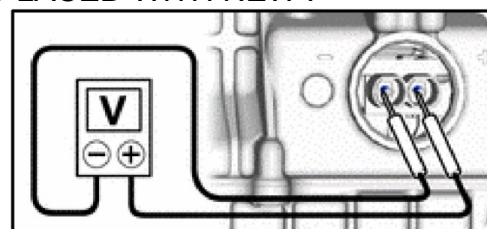
- c) Set the inverter ASSY on a piece of clean wood to support it during the next few steps. Once the inverter brackets are removed, the inverter must be placed on the anti-static mat SST.



- d) Place the inverter ASSY so that it is supported on the *b surface in blue. Setting the inverter on other surfaces can damage it.



- e) Setting the multimeter range to 750VDC or more, Verify zero voltage.
- f) If voltage is greater than 1 VOLT, the inverter ASSY can not be used and must be REPLACED WITH NEW .

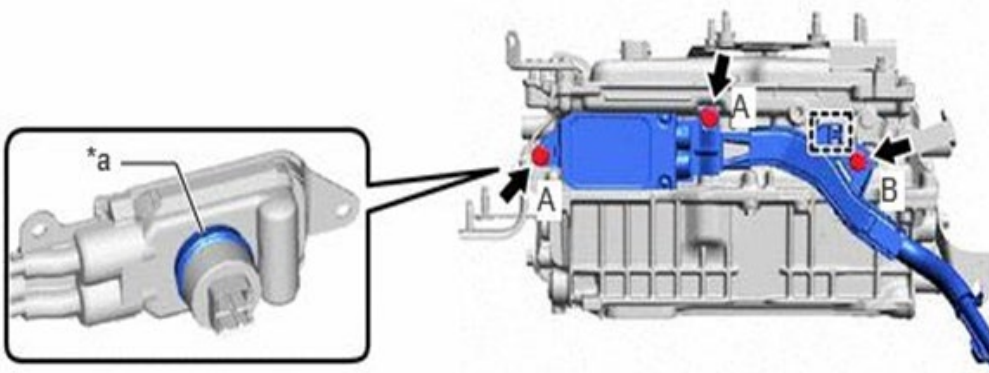


- g) This operation confirms there is no high voltage, and insulating gloves can then be removed.

2. HV AIR CONDITION WIRE REMOVAL

CAUTION:

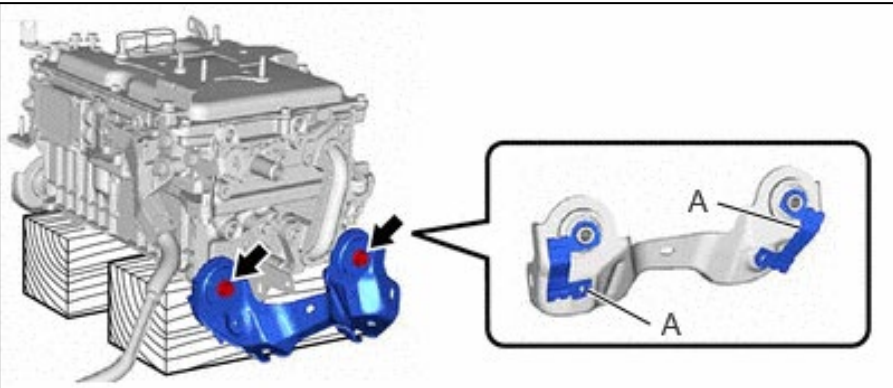
- Do not touch the sealing surface of the inverter ASSY.
- Do not touch the waterproof seal or terminals of the HV air conditioner wire.
- Be careful not to damage the terminal parts. Wrap masking tape around the terminals to protect them.
- Converter and Inverter Case SUB-ASSY must be placed on SST. (anti-static mat).



a) Remove the HV air conditioner wire from the inverter ASSY

b) Mask the ends of the cable to prevent contamination or damage.

3. REMOVE NO. 1 INVERTER BRACKET

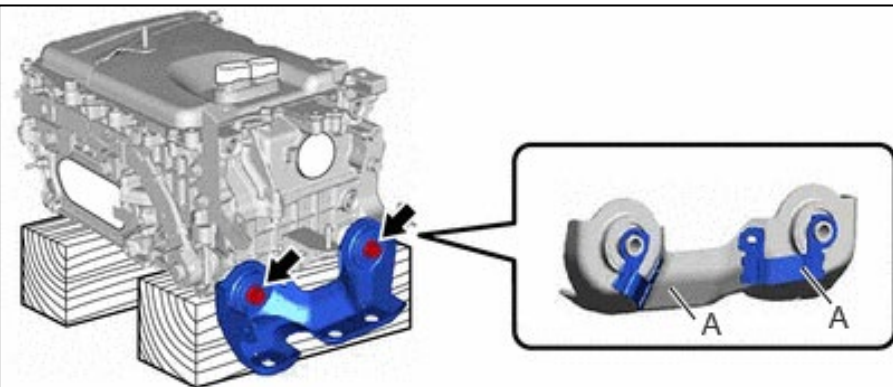


a) Remove the (2) – 12mm bolts and No. 1 inverter bracket from the hybrid motor control inverter assembly

NOTICE:

Do not touch portion (A) of the No. 1 inverter bracket

4. REMOVE NO. 2 INVERTER BRACKET

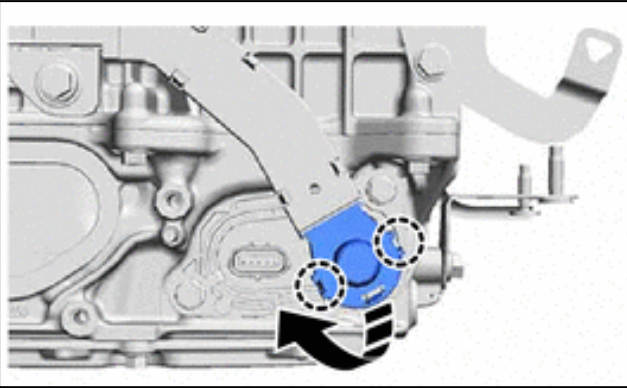


a) Remove the (2) – 12mm bolts and No. 2 inverter bracket from the hybrid motor control inverter assembly

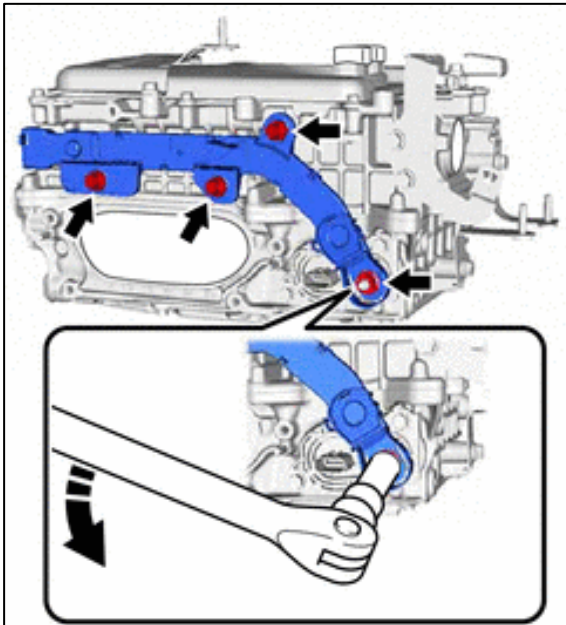
NOTICE:

Do not touch portion (A) of the No. 2 inverter bracket

5. INVERTER BUS BAR PLATE SUB-ASSY REMOVAL



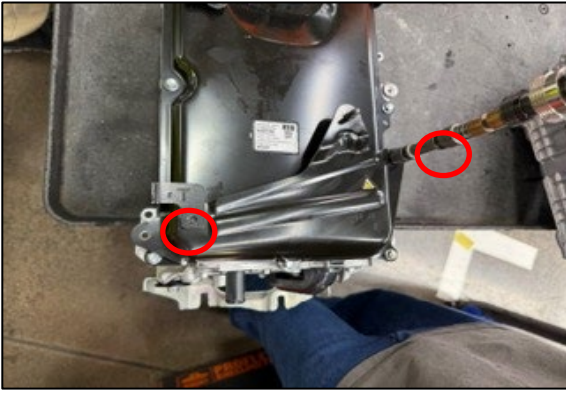
a) Unhook the claws and turn the cover.



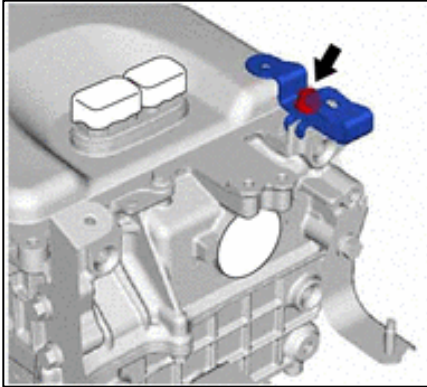
a) Remove the (3) – 10mm bolts, (1) – 10mm nut, and clamps.

b) Remove the bus bar plate SUB-ASSY from the inverter ASSY

6. PREPARATION BEFORE DISASSEMBLY

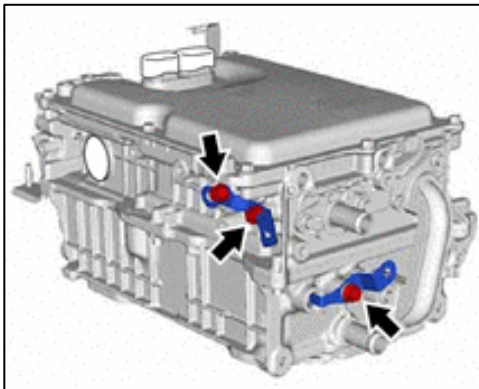


- a)** Remove top front Wire Harness (W/H) Bracket/Protector, (2) – 10mm bolts

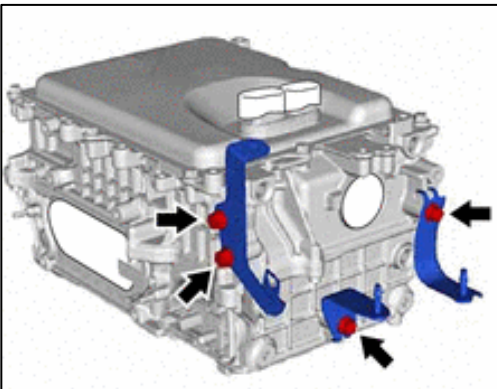


- b)** Top Pass Side remove Wire Harness (W/H) Bracket

- c)** (1) – 10mm bolt



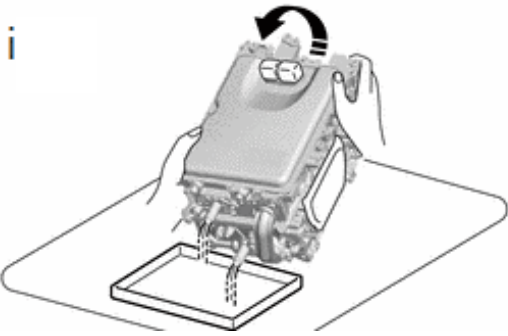
- d)** Remove (3) - 10mm bolts



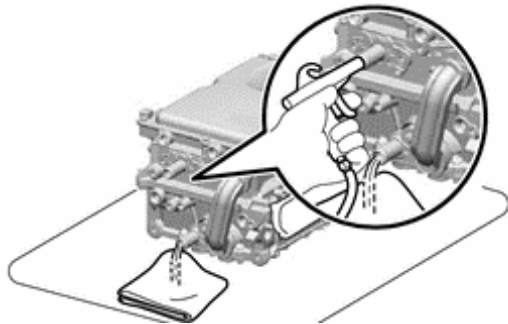
- e)** Dr. Side rear Inverter - remove Wire Harness (W/H) Bracket

- f)** Remove (4) – 10mm bolts

7. DRAIN THE COOLANT FROM THE INVERTER



- a) Remove two rubber plugs from the cooling pipe.
- b) Tilt the inverter ASSY and drain the remaining coolant.
- c) Drain the coolant.

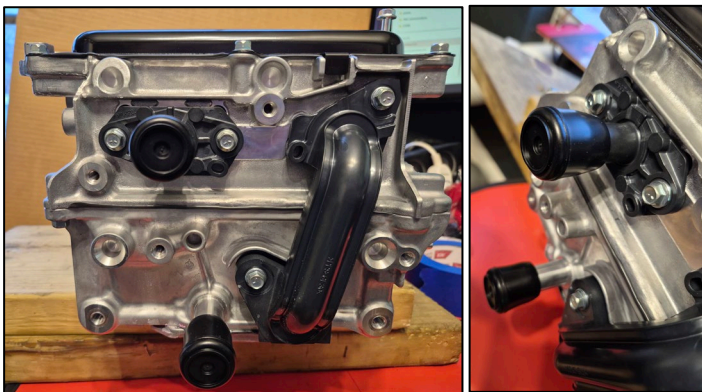


- d) Tilt the inverter ASSY (converter switch).
- e) Using low air pressure use a air blow gun to blow out excess coolant until no water drops come out.
- f) Attach two rubber stoppers to the cooling pipe (black).
- g) Secure the ground clip of the SST (wrist band) to the inverter ASSY.

CAUTION:

- Air is blown from the resin cooling pipe
- **USE LOW AIR PRESSURE TO PREVENT COOLANT SPRAY**
- **BE SURE TO WEAR EYE PROTECTION**

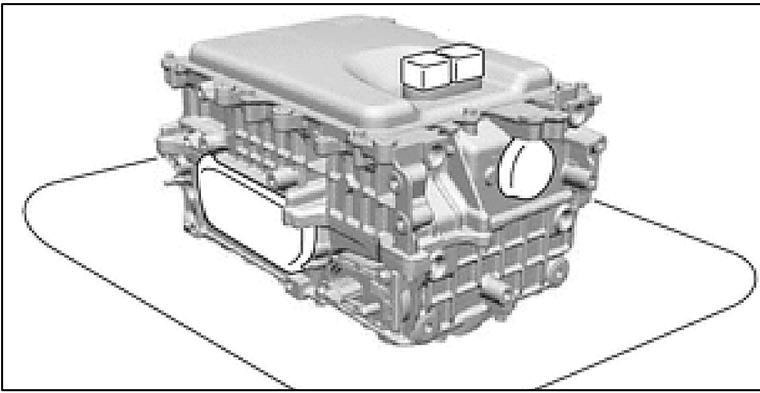
8. INSTALL RUBBER CAPS



- a) Ensure the rubber caps are installed securely.

SST - 90339-16002 – If SST is not available, a rubber stopper can be purchased from a local hardware store.

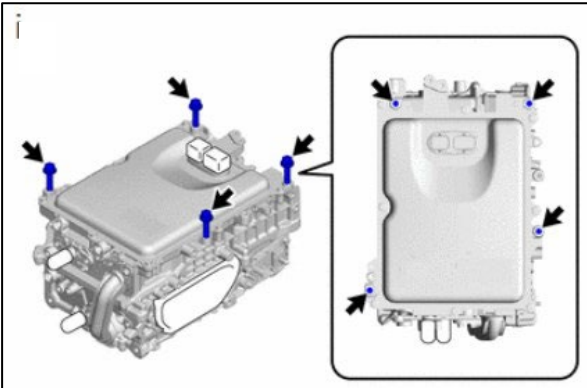
9. CLEANING



Use the Desktop Anti-Static Mat Set

- a) Use a clean cloth to remove dirt and dust on the inverter ASSY surfaces and around the bolts.

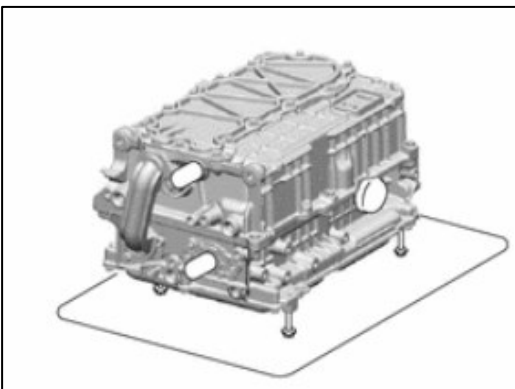
10. INSTALL JIG BOLTS



- a) Place the inverter ASSY in the position shown in the figure.
- b) HAND install four bolts an equal amount such that the inverter sits level.
- c) (Stang jig Hex Bolt, flange, M6x1.0x50mm
- d)

Bolt - 91551-80650

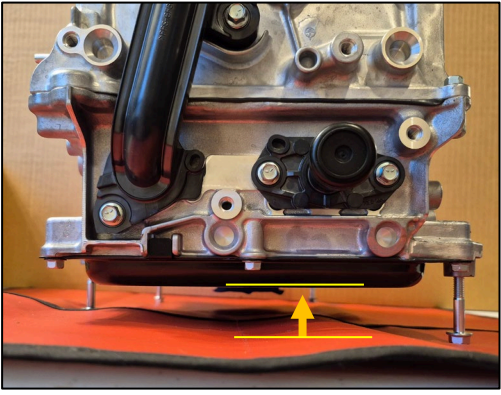
*If not available, similar bolt can be purchased at local hardware store.



- e) Turn the inverter ASSY upside down.
- f) Adjust so that the inverter ASSY is horizontal.

CAUTION:
DO NOT SHOCK/IMPACT THE INVERTER ASSY

INSTALL JIG BOLTS — CONTINUED

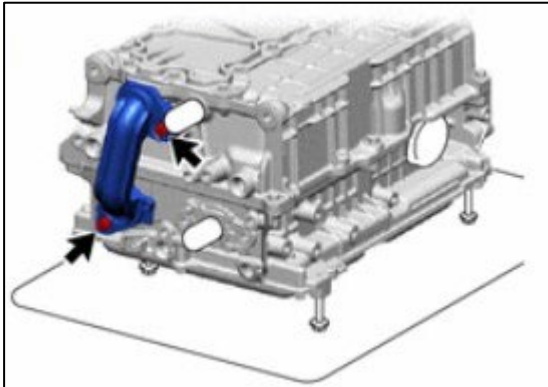


- h) The purpose of the bolts is to prevent damage/contamination of the connector
- i) Ensure there is a gap of approximately 15mm between the table surface and the inverter connector.

XI. INVERTER SUB-ASSEMBLY DISASSEMBLY

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1. REMOVING THE INVERTER COOLING PIPE



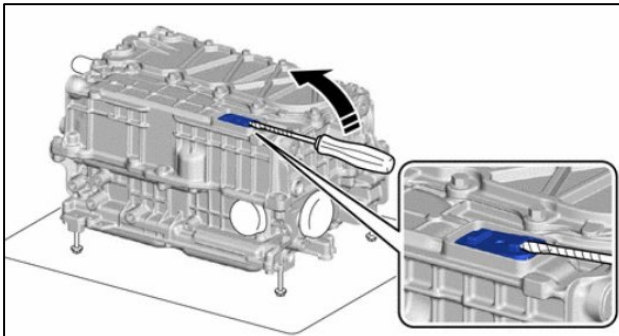
- a) Remove the two bolts securing the inverter cooling pipe clamp.
- b) Remove the inverter cooling pipe clamp.
- c) Thoroughly wipe off any cooling liquid adhering to the removed components.

NOTE: Dry any remaining coolant that leaks from the cooling pipe.



- d) Mask the two openings with tape

2. REMOVE THE INVERTER DRAIN PLUG



- a) Using a flat-blade screwdriver with protective tape wrapped around the tip, remove the inverter drain plug from the inverter ASSY.
- b) After removing the inverter drain plug, sealant remaining inside the inverter ASSY must not be removed at this time.

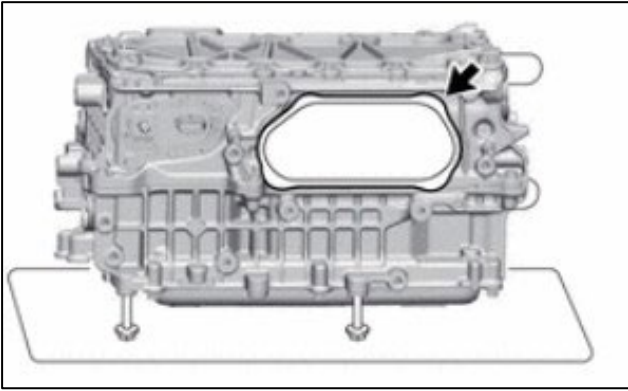


CAUTION:

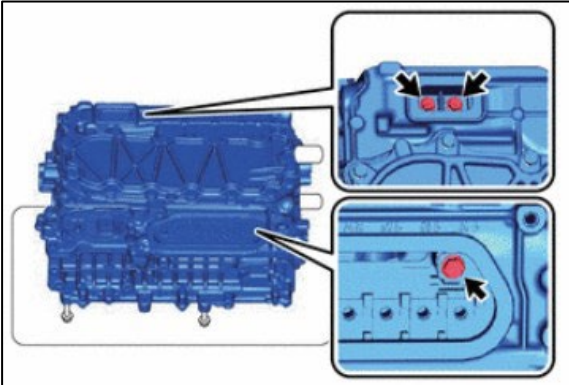
- Do not damage the inverter ASSY mounting surface or internal components.
- After removal, residual sealant inside the inverter ASSY will be visible.
- Residual sealant will be removed in a later step.
- USE HAND TOOLS ONLY

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3. CONVERTER CASE SUB-ASSY REMOVAL (1/3)

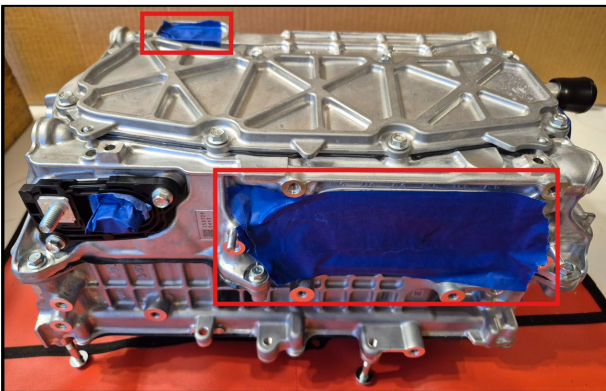


a) Remove the tape from the opening.



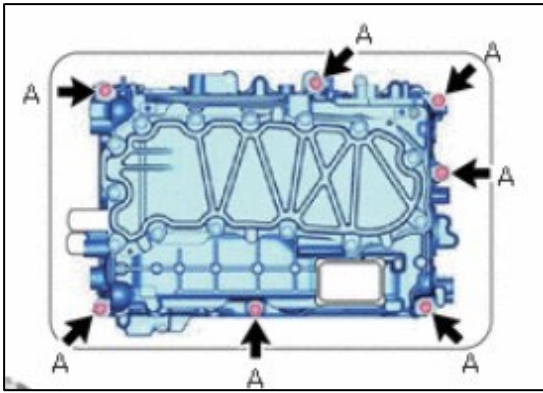
b) Remove the three bolts by hand

Notice: All electrical connection fasteners should be removed by hand.

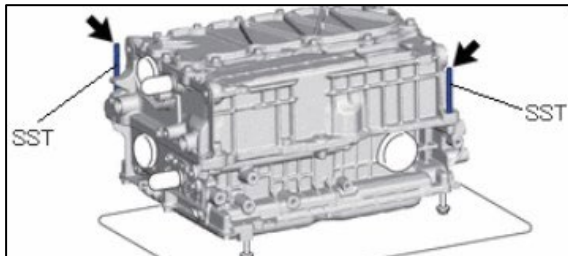


c) Use tape or the like to mask the two openings after removing bolts.

4. REMOVE CONVERTER CASE SUB-ASSY (2/3)

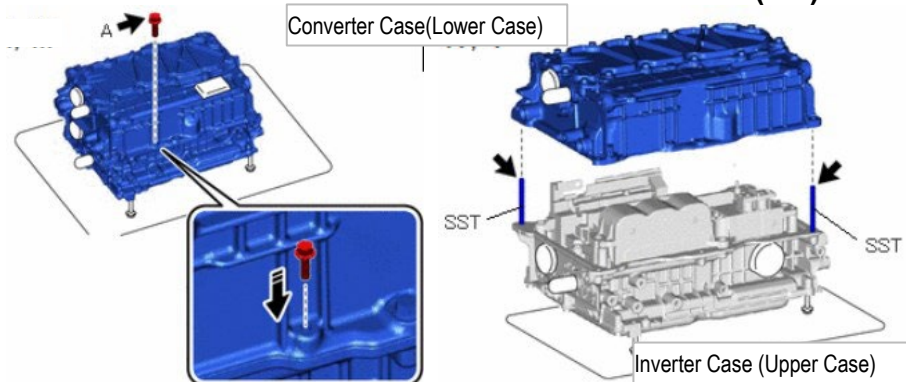


- a) Position the inverter ASSY as shown in the figure.
- b) Remove and DISCARD the seven bolts (A).



- c) Install the SST (09891-28010) HEV INVERTER GUIDE PINS.
- d) Tighten the SST by hand only.

5. REMOVE CONVERTER CASE SUB-ASSY (3/3)



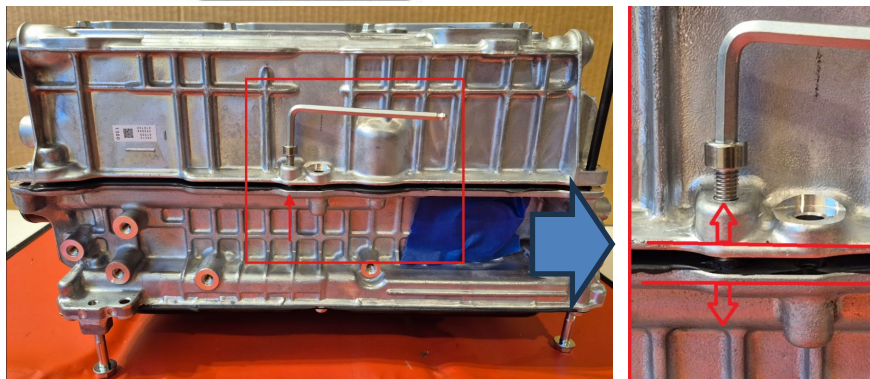
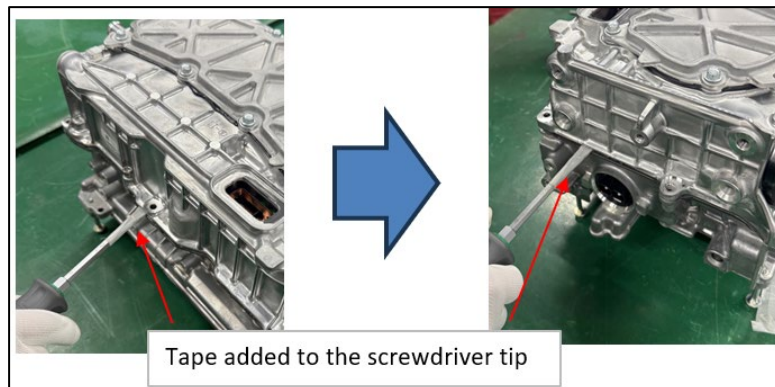
a) Temporarily install the socket head cap screw (A) at the position shown, and slowly tighten it against the base in order to separate the two halves.

b) Wrap protective tape around the end of flat blade screwdriver.

c) Alternate tightening and loosening the socket head cap screw gently to separate the two halves.

d) Insert a screwdriver (with tape over the end to protect the mating surfaces) into the gap near the bolt, and remove the case by raising it little by little.

e) While guiding along the SST pins, remove the converter case vertically from the inverter case.



CAUTION:

- Overtightening bolt (A) may damage the inverter ASSY.
- Do not insert the flat-blade (slotted) screwdriver excessively. Doing so may damage internal components.
- Do not contact or interfere with internal components when removing the converter case SUB-ASSY.
- When removing the converter case SUB-ASSY, do not allow coolant to drip into the inverter case SUB-ASSY.
- Do not allow foreign matter to enter the converter case SUB-ASSY.
- Do not allow foreign matter to adhere to the seal surface.
- Temporarily store the converter case SUB-ASSY in a clean location, face down, on a clean sheet of paper.

6. PROTECT CONVERTER CASE FROM CONTAMINATION



- a) Place the converter cover (lower case) aside sealing surface down in a clean area, on a clean piece of paper to prevent contamination.

7. INSTALL PROVIDED COVER



- a) AWD Inverter Cover

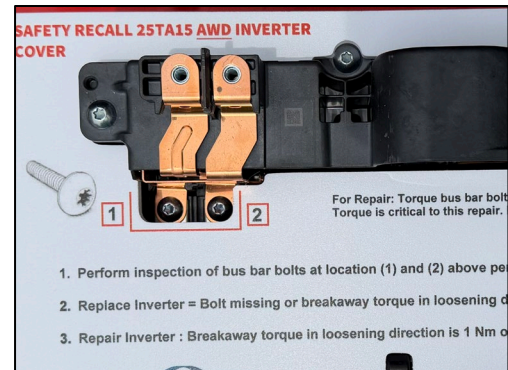
XII. INSPECTION OF SUSPECT LOOSE BUS BAR BOLTS

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Inverter Bolt



Location of inverter bolts (1), (2)



IMPORTANT:

The torque test is performed to verify breakaway torque the as-found torque (current tightness) when the vehicle arrives. It is not intended to set or adjust torque values.

If the bolt is tightened instead of measured, the inverter must be replaced as it is no longer possible to measure the as-found torque when the vehicle arrived.

CAUTION:

- KEEP COVER INSTALLED, DO NOT TOUCH INSIDE THE INVERTER
- TO PREVENT CONTAMINATION, MINIMIZE WORK ABOVE THE INVERTER CASE
- INSPECTIONS BELOW ARE CRITICAL FOR CUSTOMER SAFETY
- LOOSE BUS BAR BOLT CANNOT BE CORRECTED BY TIGHTENING AND MAY STILL PRESENT A FIRE RISK
- IF ANY BOLT IS MISSING OR FAILS INSPECTION, DO NOT TIGHTEN → REPLACE THE INVERTER

**1. INSPECTION #1:
VERIFY BUS BAR BOLTS EXIST AT LOCATIONS shown (1 and 2).**



- a) Inspect the threaded locations shown and verify that bolts (1) and (2) are installed.
- b) If either bolt is not installed as shown (missing or loose in the case), replace the inverter assembly.

**2. INSPECTION #2:
NO COUNTERCLOCKWISE ROTATION WITH 1.0 NM APPLIED**

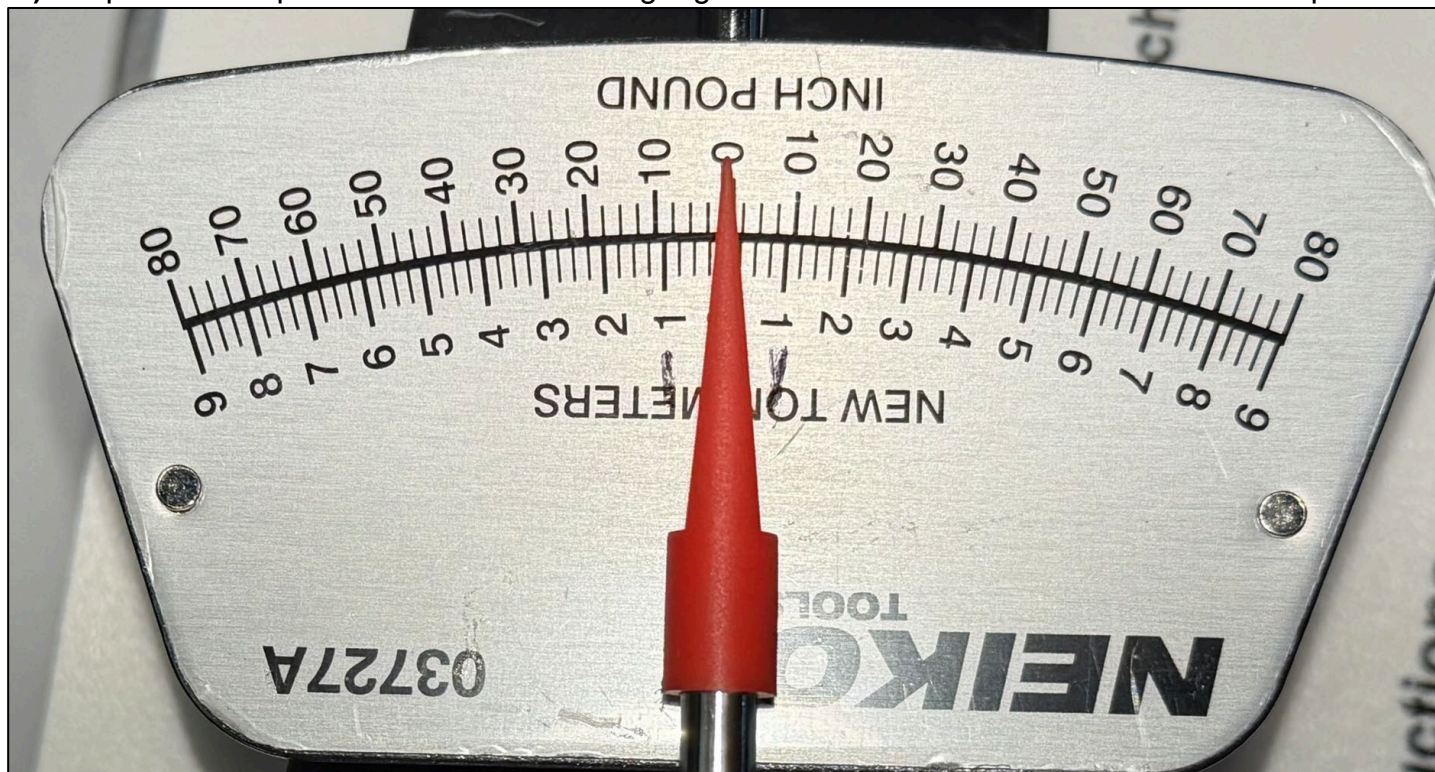


**DO NOT SKIP INSPECTION OF THE BUS BAR BOLTS.
IF ANY BOLT IS MISSING (INSPECTION #1 FAIL) OR LOOSE (INSPECTION #2 FAIL),
TIGHTENING WILL NOT MITIGATE THE FIRE RISK.
THE INVERTER MUST BE REPLACED WITH A NEW UNIT.
USE PROVIDED BEAM STYLE TORQUE WRENCH CST and COVER**



- Use a 1.5 inch extension to reach the two bolts without contacting the vertical bus bar.

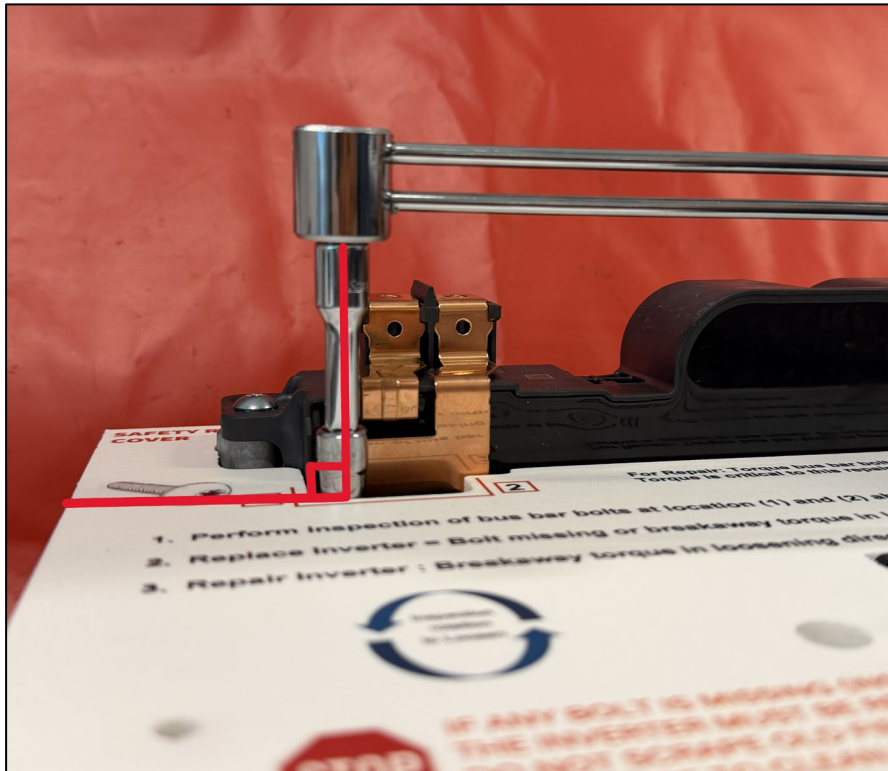
a) Inspect the torque wrench condition: the gauge must read zero when not in contact with part.



b) Set up the $\frac{1}{4}$ beam style torque wrench on the 1st bus bar bolt.



INSPECTION #2 (continued)



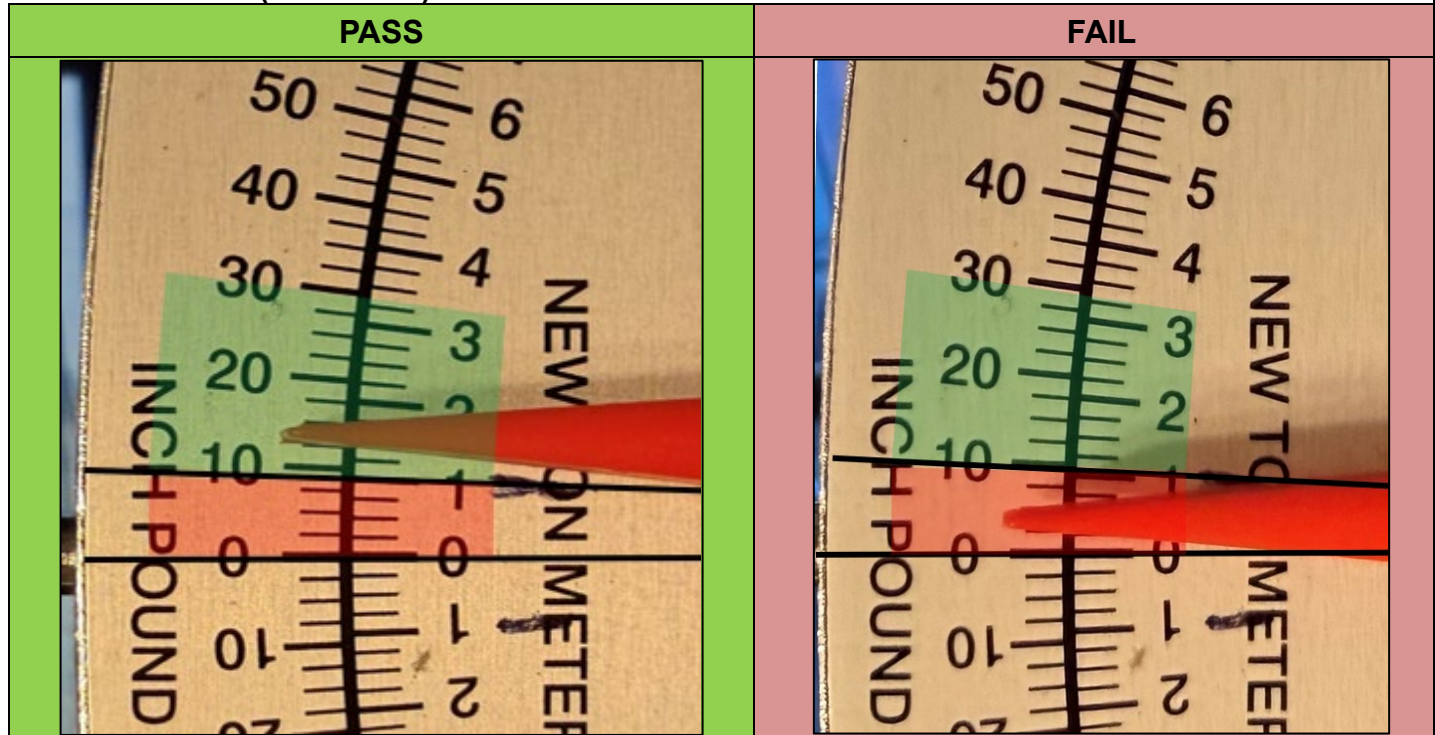
- Be very careful to keep the extension perpendicular to the sealing surface of the case. If the torque is applied at an angle, the inspection will not be accurate.
- DO NOT PAINT MARK BOLTS because this will introduce contamination into the inverter.

INSPECTION #2 (continued)



- c) While keeping a very close eye on the dial of the torque wrench, slowly, rotate the handle of the torque wrench counterclockwise, to loosen **until it breaks away.**
- d) As you rotate the torque wrench the arrow at the end of the beam will move to the right on the gauge.

INSPECTION #2 (continued)



- e) If the arrow moves past the 1 Nm mark, as show in the image at left, the inspection is a PASS, and the inverter is good. Proceed to Repair.
- f) If the arrow does not exceed the 1 Nm mark before the bolt rotates, the inverter is NO GOOD and must be replaced with a NEW one. Proceed to order a replacement inverter assembly.
- g) Repeat the inspection steps for the bolt at location 2.



-Watch this video for a detailed explanation. [Video.](#)

SAFETY RECALL 25TA15

Inverter inspection procedure

Inspection is critical.

If a bus bar bolt is loose when the vehicle arrives, tightening bolts does NOT eliminate the fire risk.

It is essential to inspect and confirm that no bolts are missing or loose per the specific inspection procedure.

If any bolt is found missing or fails, the inspection procedure:

- DO NOT install or tighten
- Replace the inverter

****This inspection video does not replace the written procedures included in the Technical Instructions.**

XIII. INVERTER REPAIR FOR PASS INSPECTION JUDGEMENT INVERTER: (ONLY FOR INVERTERS that PASS INSPECTION #1 and #2.)

[↪ Return to Table of Contents](#)

1. TIGHTEN BUS BAR BOLTS (1) AND (2) TO 6.0 Nm.



a) Use the same beam style torque wrench from the previous step and torque bolts (1) and (2)

b) Re-apply torque a second time at same 2 locations.

Torque: 6.0 Nm. (Torque is critical. Do not over torque these bolts)



DO NOT PAINT MARK BOLTS

2. FIPG REMOVAL (*Hand Peel only*)

FIPG removal must be done with caution and by hand, no debris from removal can enter the inverter. Take extreme caution when performing this step as directed.

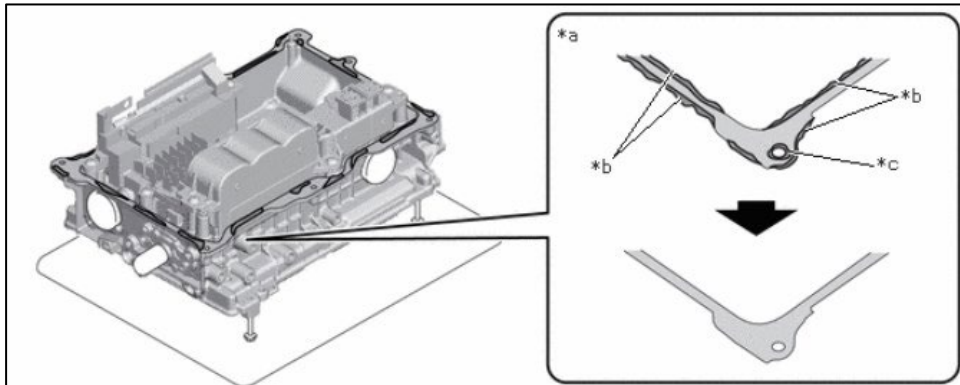
a) *b-→ Protruding FIPG

b) *c→ Raised FIPG

c) Only remove FIPG that is protruding or raised from the surface that is loose and can be grasped by your finger.

d) DO NOT scrape the surface with any tool.

e) Confirm that there is no foreign matter in the inverter and converter cases SUB-ASSY.

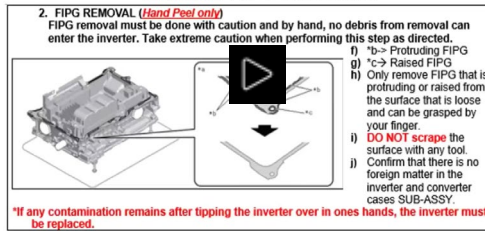


***If any contamination remains after tipping the inverter over in ones hands, the inverter must be replaced. Please watch this video for detail on FIPG removal and acceptable level of remaining FIPG.**

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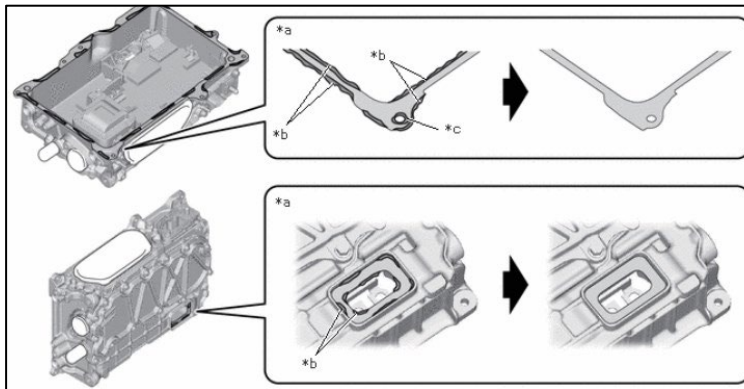
SAFETY RECALL 25TA15

Inverter FIPG Removal



**This video does not replace the written procedures included in the Technical Instructions.

3. FIPG REMOVAL (Converter case sub-assy)



a) *b-> Protruding FIPG

b) *c-> Raised FIPG

c) Only remove FIPG that is protruding or raised from the surface that is loose and can be grasped by your finger. (Some remaining FIPG that cannot be removed is ok.)

d) DO NOT scrape the surface with any tool.

e) Confirm that there is no foreign matter in the inverter and converter cases SUB-ASSY.

***If any contamination remains after tipping the inverter over in ones hands, the inverter must be replaced.**

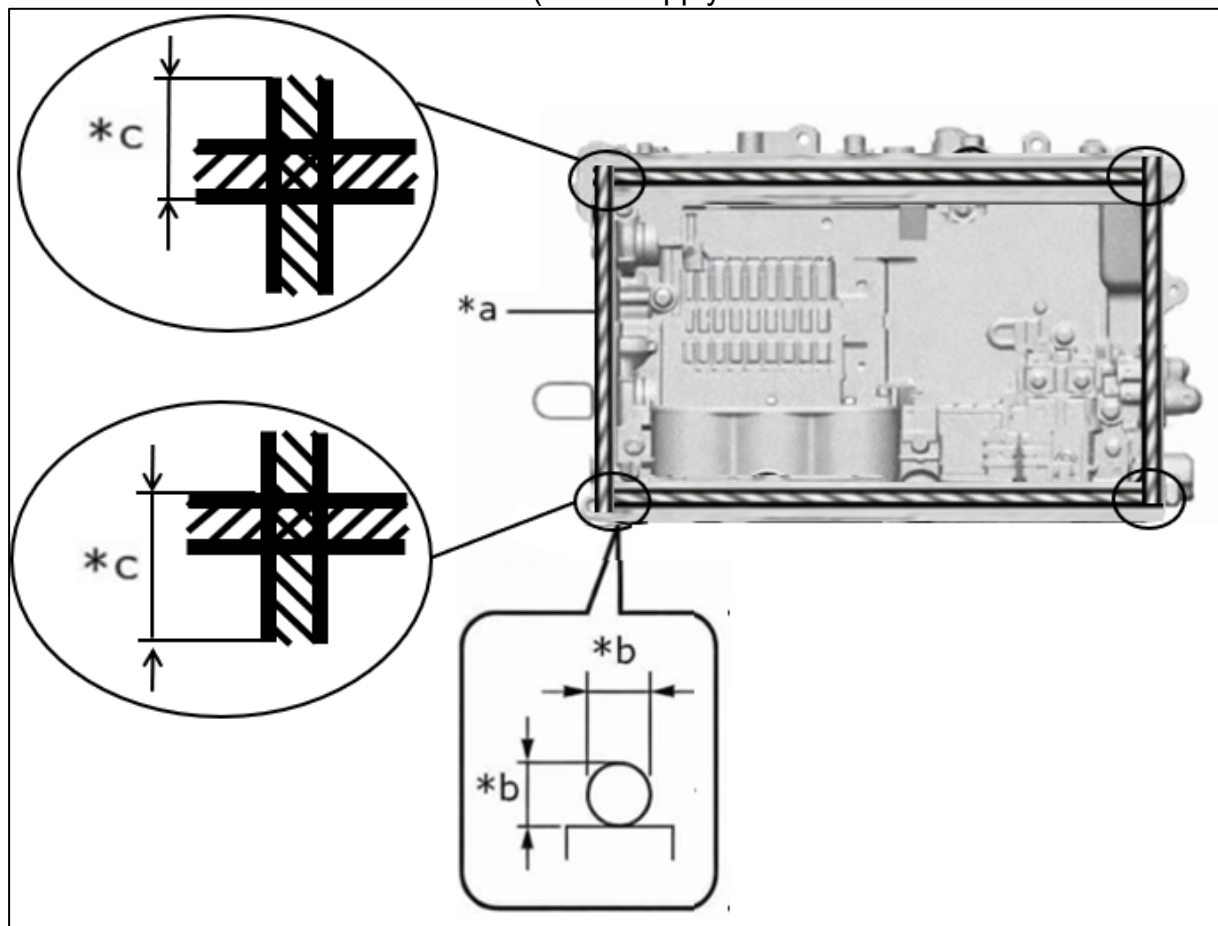
4. FIPG APPLICATION

CAUTION:

- DO NOT TOUCH INTERNAL PARTS
- MINIMIZE CONTACT WITH INVERTER SUB-ASSY SEALING SURFACE
- PREVENT OIL OR GREASE FROM CONTACTING SEALING SURFACE
- AVOID WORKING OVER THE TOP OF THE OPEN INVERTER SUB-ASSY AS MUCH AS POSSIBLE
- TO REDUCE THE RISK OF CONTAMINATION, THE FIPG MUST BE APPLIED AND BOLTS ATTACHING THE TWO CASES TIGHTENED TO TORQUE SPECIFICATION WITHINT **15 MINUTES**.
- ONCE THE APPLICATION OF THE FIPG HAS BEGUN, THE MATING CASE MUST BE INSTALLED WITHIN **THREE MINUTES** FROM STARTING.
- By the time the inverter has been installed in the vehicle, the FIPG is cured enough for the customer to drive the vehicle.
- Wipe off the excess after use. Wrap the product in saran wrap and store in a temperature-controlled environment. Like how one would keep a paint brush they are using and don't want the paint to dry while they do something else.

FIPG APPLICATION (continued)

- a) Prepare to apply a 3.0mm diameter bead of sealant to the inverter case sub-assy using the instructions that follow. (Do not apply the FIPG to the converter case sub-assy)



*a	FIPG 1282C Application area
*b	3.0mm
*c	Approx. 3-6 mm

IMPORTANT:

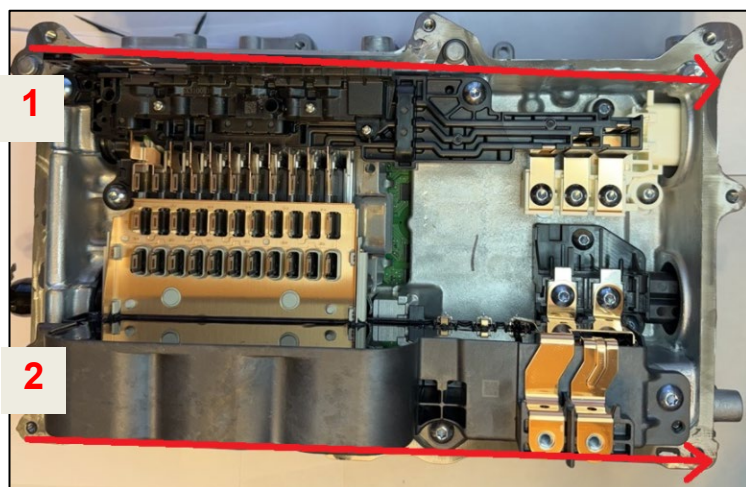
The 1282C FIPG ***may not*** be applied on the circumference of the inverter case sub-assy in one operation. The 1282C FIPG should be applied in four straight and smooth steps. This technique provides clear visibility and easy movement around the inverter's protruding sections when targeting the application area.



HINT: Use the small metal handle as shown to tightly roll the FIPG tube. Each tube will repair two inverters.

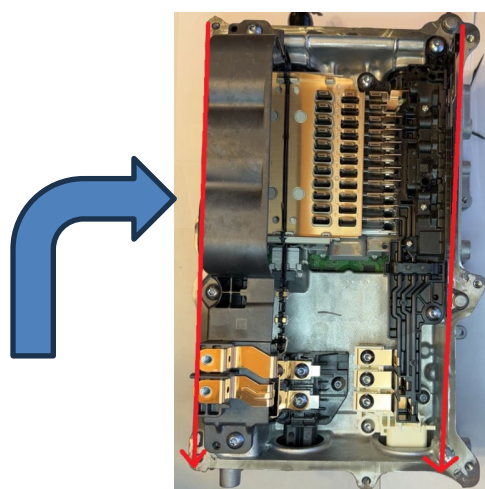
Be sure to clean the nozzle and return the cap to the FIPG tube when complete and keep it with the inverter covers and beam style torque wrench for the next 25TA15 Safety recall vehicle.

FIPG APPLICATION (continued)



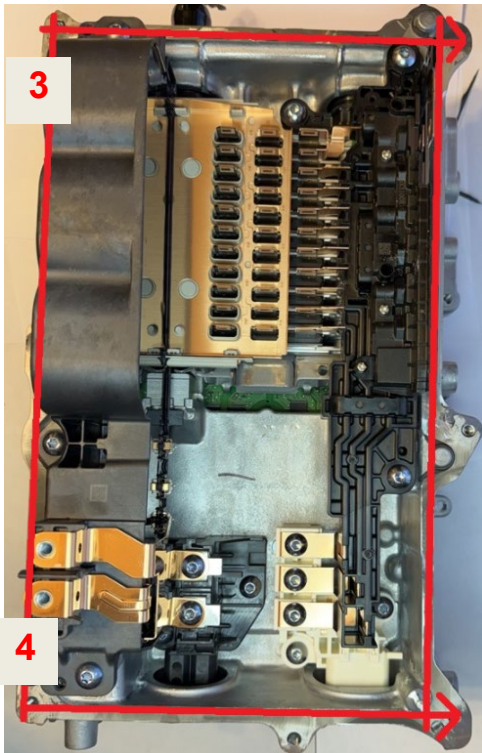
b) For FIPG bead (1), start at the left side near the number (1), and apply from left to right, as shown.

c) Next apply in the same manner starting from location two (2).

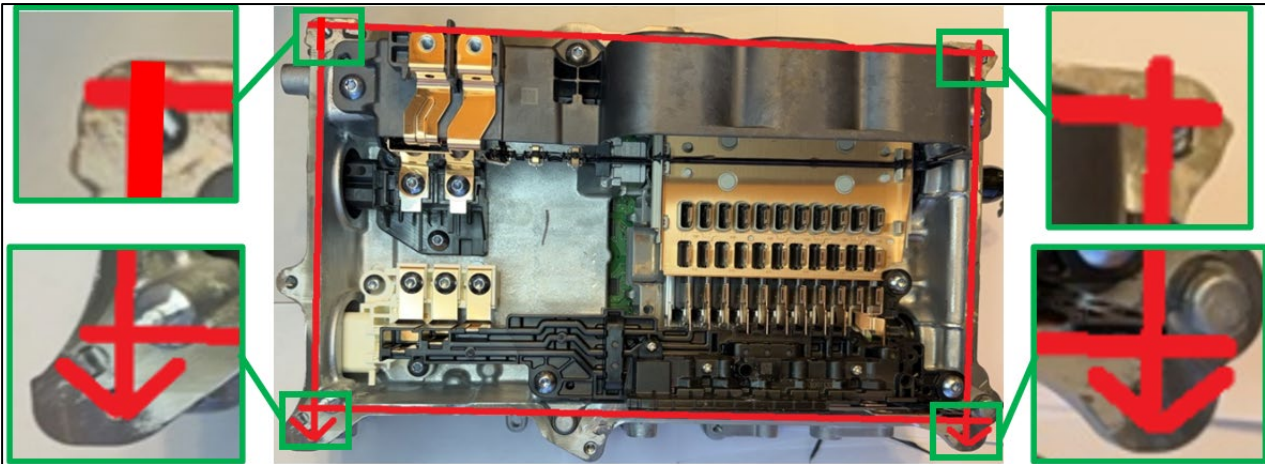


d) Rotate the assembly 90 degrees.

FIPG APPLICATION (continued)

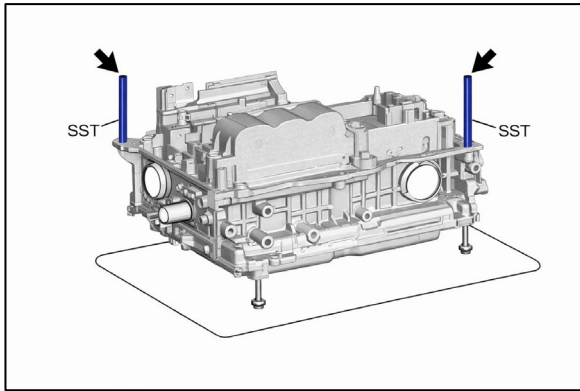


- e) Next apply in the same manner starting from location three (3), and then proceed to do the same starting from location four (4).

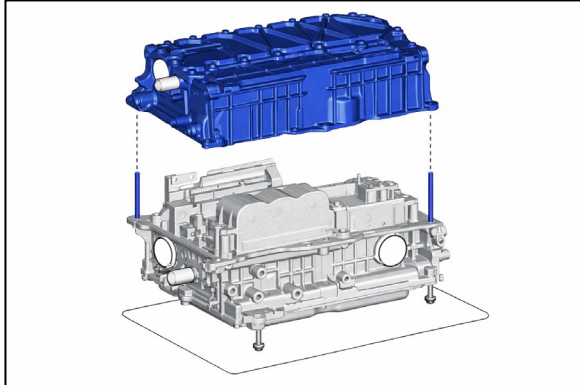


Note the overlap of the FIPG in each of the four corners.

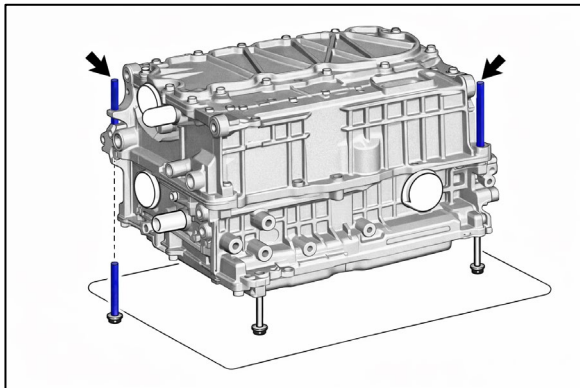
5. INVERTER and CONVERTER CASE ASSEMBLY (1/2)



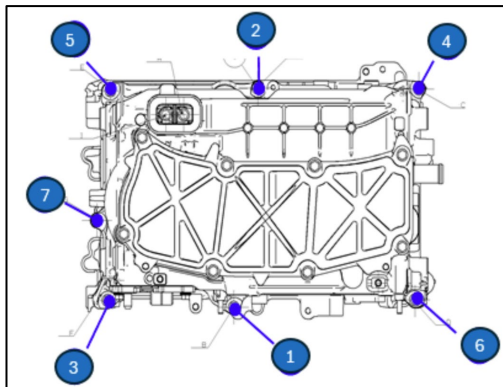
- a) If removed from FIPG application, install the two SST Guide pins by hand in the inverter case.



- b) Insert converter case sub-assy vertically along the SST guide pins



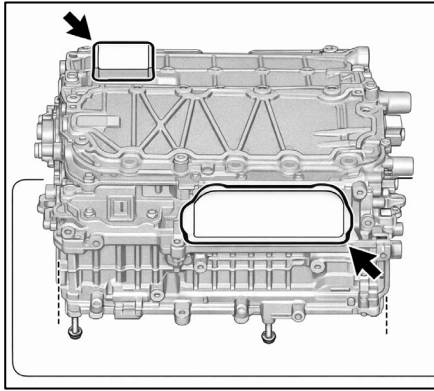
- c) Remove the guide pin SSTs



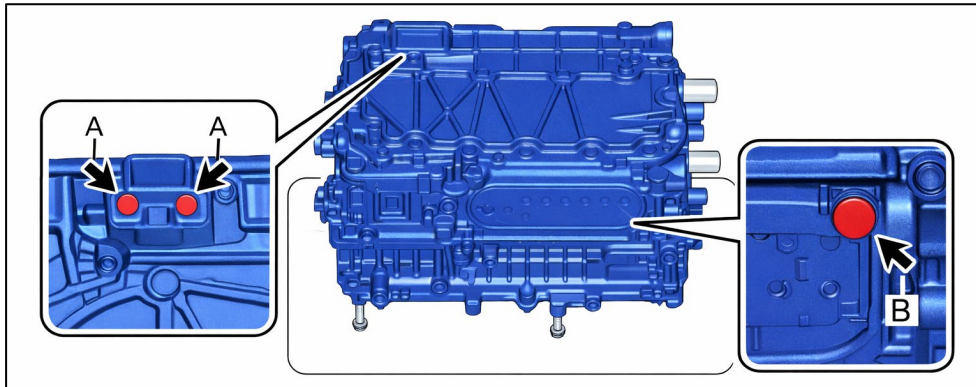
- d) Install 7 NEW bolts from the repair kit in the order shown. This will help to equally seat the cases with the FIPG material present.
- e) Apply torque in pattern shown 2X to ensure all bolt positions maintain final torque

Torque: 6.8 Nm.

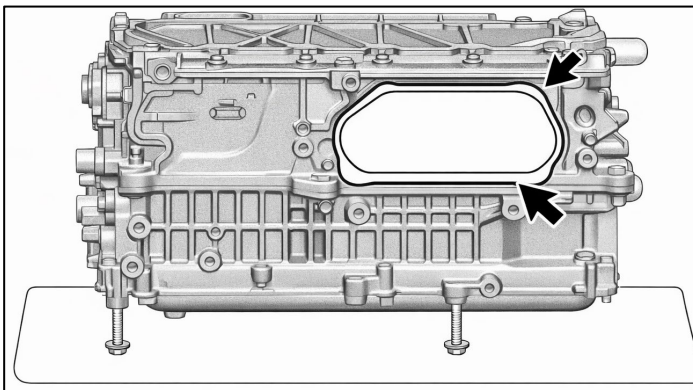
6. CONVERTER CASE SUB-ASSY ASSEMBLY (2/2)



- a) Remove the masking tape from the two openings



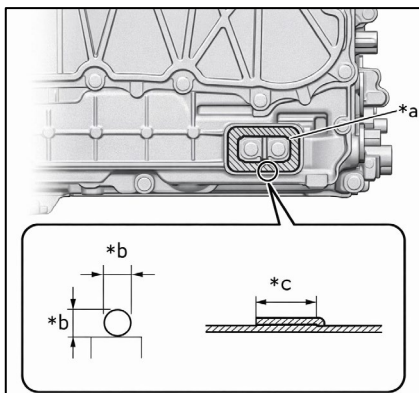
- b) Install (2) bolts in position "A"
c) Torque: 6.0 Nm.
d)
e) Install (1) bolts in position "B"
f) Torque: 5.0 Nm.



- g) Mask the large opening over "A" bolts with masking tape.

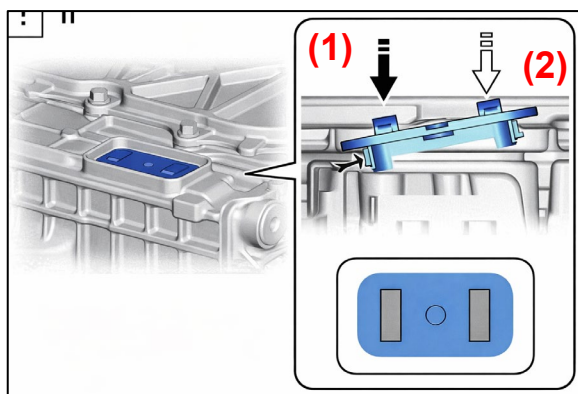
Note: Inverter drain plug will be assembled in the next step, so no masking is needed.

7. INSTALLING THE NEW INVERTER DRAIN PLUG



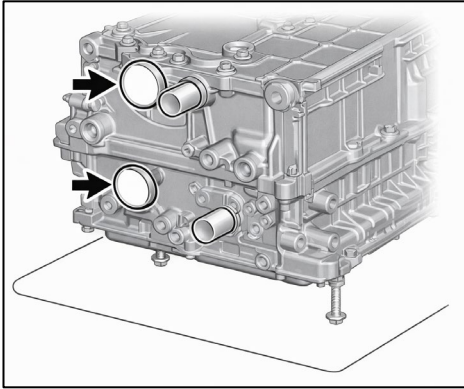
- a) By the time the inverter has been installed in the vehicle, the FIPG is cured enough for the customer to drive the vehicle.
- b) On the converter case SUB-ASSY, apply a 3.0 mm diameter bead of sealant 1282 C is to the position shown in the figure.
- c) After applying the FIPG sealant 1282 C, install the NEW inverter drain plug from the repair kit within 3 minutes.

*a	FIPG 1282C Application area
*b	3.0mm
*c	Approximately 20mm

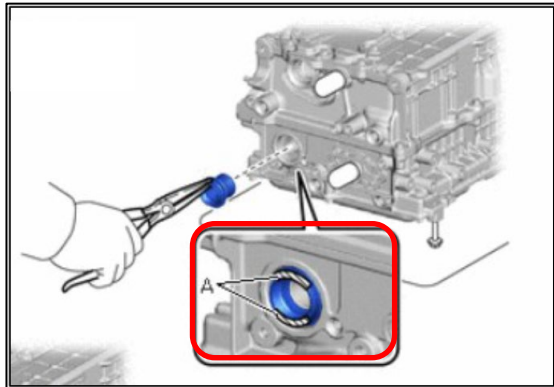


- d) Start by pressing at position (1) followed by position (2).
- e) Press the position shown by the two arrows in the figure and insert the inverter drain plug into the assembly.

8. INSTALLING THE NEW INVERTER COOLING PIPE CLAMP (1/2)



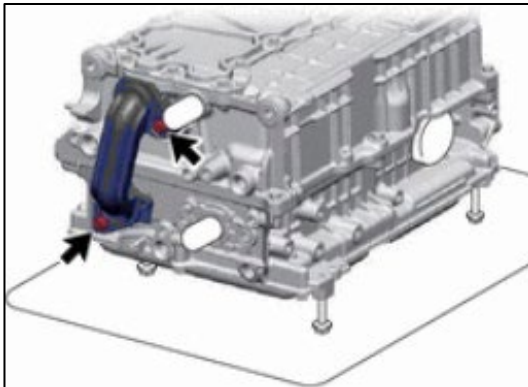
a) Peel off the tape from the two openings.



b) Using needle nose pliers, pull the “A” part of the gasket. Be careful not to scratch the cap.

c) Remove it from the inverter ASSY.

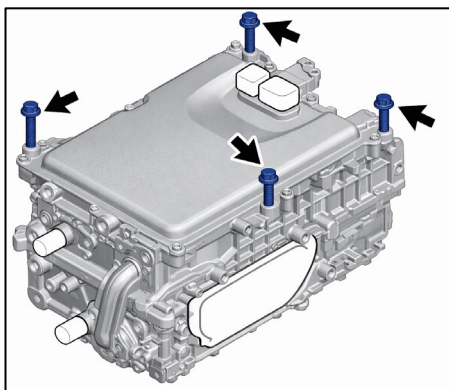
9. INSTALLING THE NEW INVERTER COOLING PIPE CLAMP (2/2)



HINT: Inverter cooling pipe clamp gasket is integrated with the inverter cooling pipe clamp and does not need to be assembled separately

a) Install the NEW inverter cooling pipe from the repair kit.

Torque: 5.0 Nm.

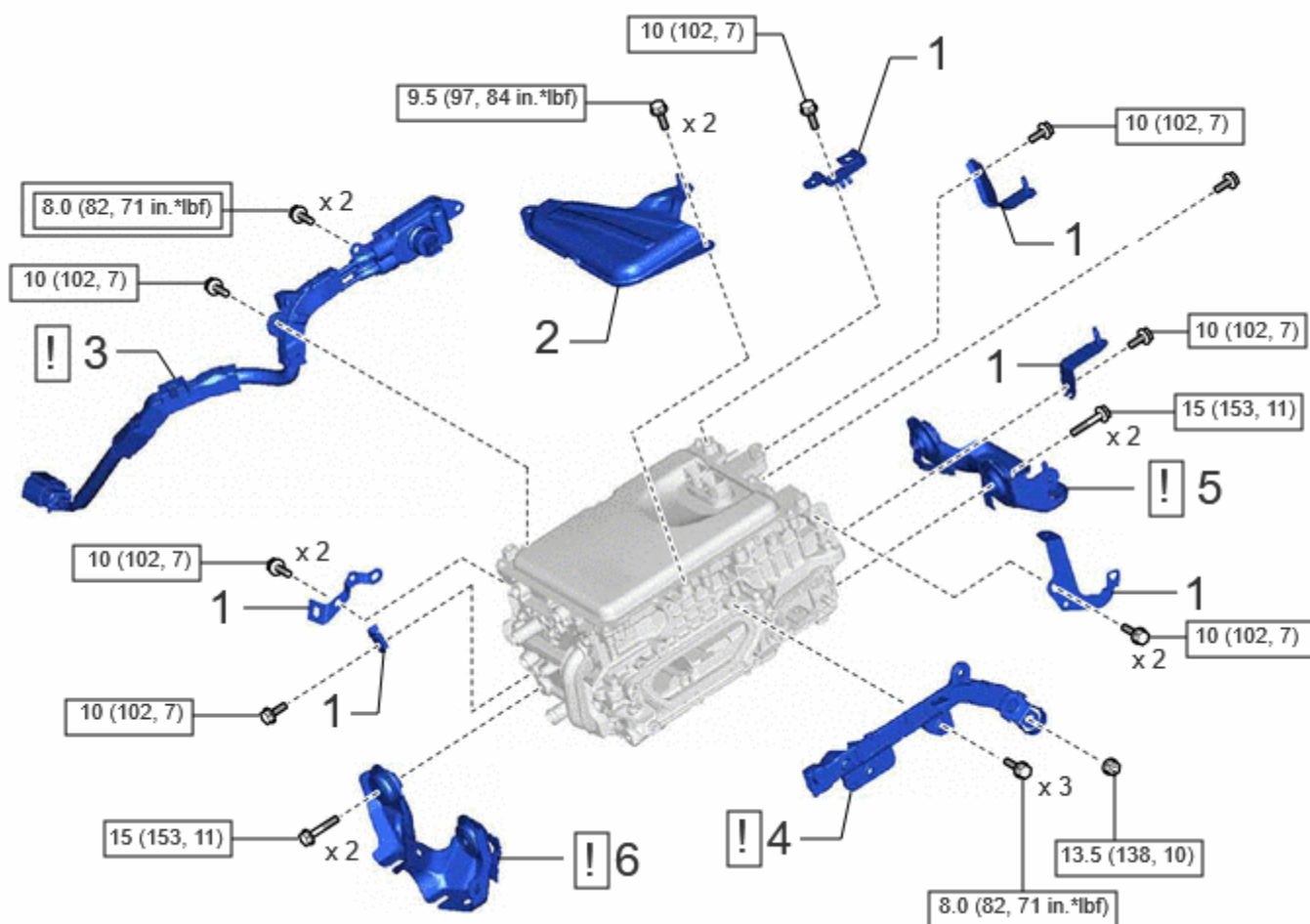


b) Turn inverter ASSY upside down.

c) Remove four jig stand bolts.

XIV. REASSEMBLY OF THE INVERTER

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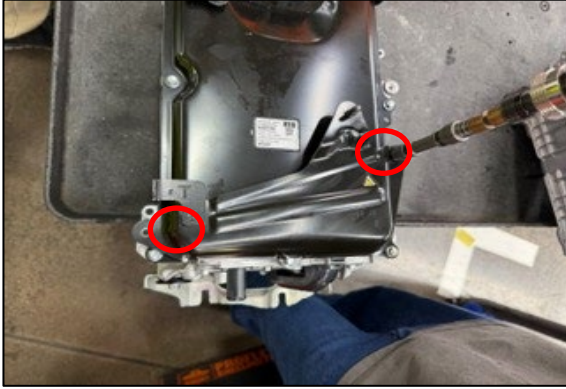
CAUTION:

HAND START ALL FASTENERS

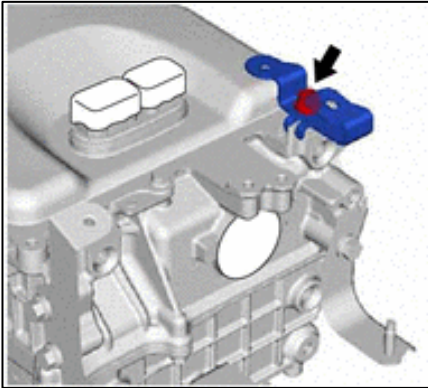
	Description	Bolt/nut Count	Torque value (Nm)
1	WIRE HARNESS CLAMP BRACKET	9	10
2	INVERTER PROTECTOR	2	9.5
3	HV AIR CONDITIONING WIRE	2	8.0
		1	10
4	INVERTER BUS-BAR PLATE SUB-ASSEMBLY	3	8
		1	13.5
5	NO. 2 INVERTER BRACKET	2	15
6	NO. 1 INVERTER BRACKET	2	15

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1. BRACKET AND WIRE INSTALLATION



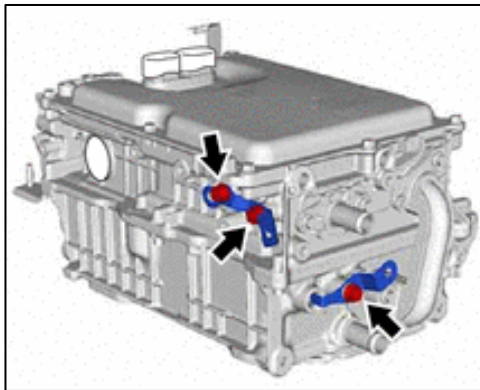
- a) Install top front Wire Harness (W/H) Bracket/Protector, (2) – 10mm bolts
Torque: 9.5 Nm



- b) Top Pass Side remove Wire Harness (W/H) Bracket

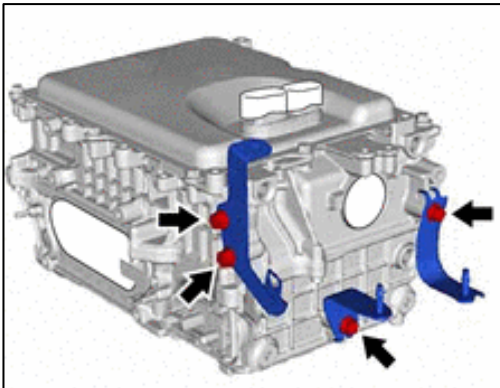
- c) (1) – 10mm bolt

Torque: 10 Nm



- d) Install (3) - 10mm bolts

Torque: 10 Nm



- e) Driver side rear inverter - install Wire Harness (W/H) Bracket

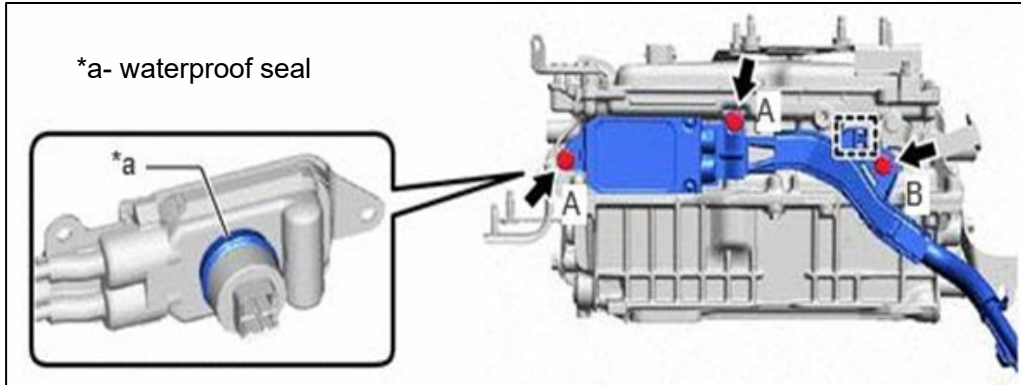
- f) Install (4) – 10mm bolts

Torque: 10 Nm

2. HV AIR CONDITION WIRE INSTALL

CAUTION:

- Do not touch the sealing surface of the inverter ASSY.
- Do not touch the waterproof seal or terminals of the HV air conditioner wire.
- Be careful not to damage the terminal parts. Wrap masking tape around the terminals to protect them.
- Converter and Inverter Case SUB-ASSY must be placed on SST. (anti-static mat).



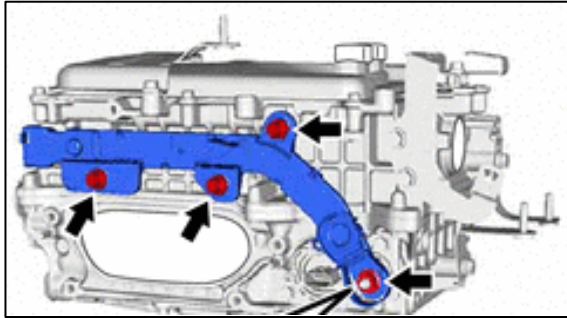
- Install the HV air conditioner wire to the inverter ASSY
- Mask the ends of the cable to prevent contamination or damage.

Torque:

Bolt A: 8.0 Nm

Bolt B: 10 Nm

3. INVERTER BUS BAR PLATE SUB-ASSY INSTALL



- a) Engage the clamp and connect the inverter bus-bar plate sub-assembly to the hybrid motor control inverter assembly with the 3 bolts and nut.

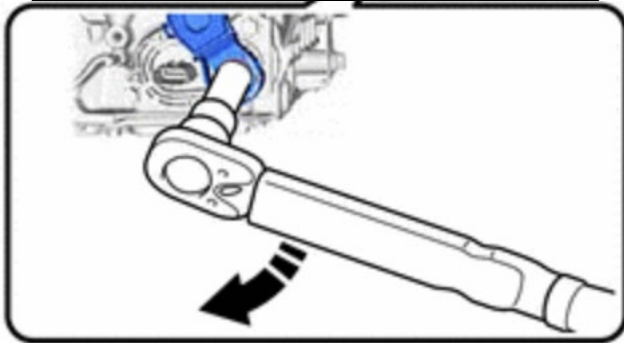
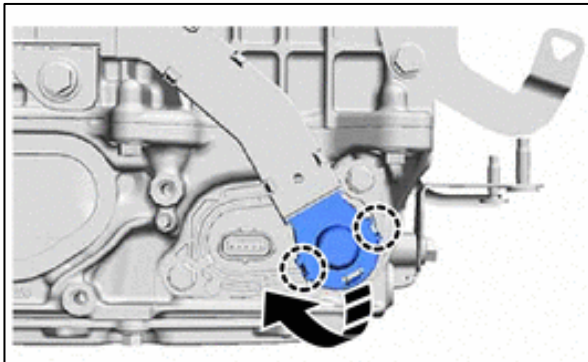
Torque:

Bolt - 8.0 Nm

Nut - 13.5 Nm

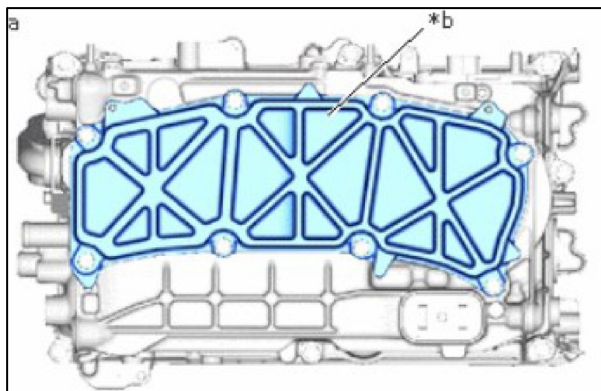
NOTICE:

- Move the tool in the downward direction to tighten the nut as shown in the illustration.
- To avoid damaging the threads, be sure to perform the procedure by hand.

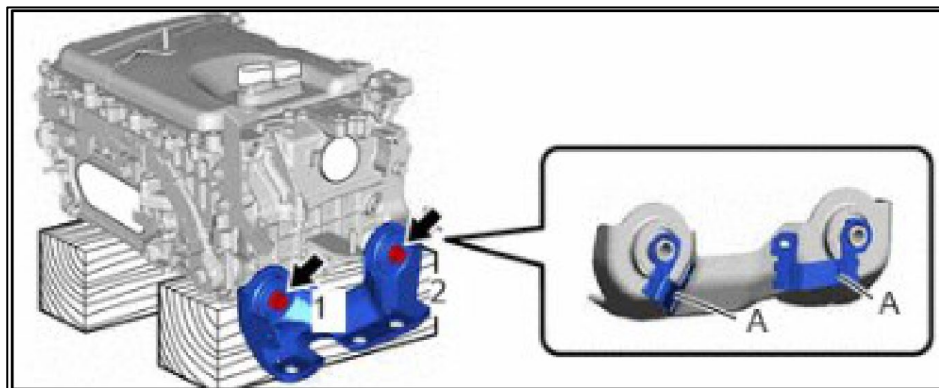


- b) Engage the 2 claws

4. INSTALL NO. 2 INVERTER BRACKET



- a) Place the inverter ASSY so that it is supported on the *b surface in blue. Setting the inverter on other surfaces can damage it.



- b) Set the hybrid motor control inverter assembly on wooden blocks.
c) Temporarily install the No. 2 inverter bracket to the hybrid motor control inverter assembly with the 2 bolts.

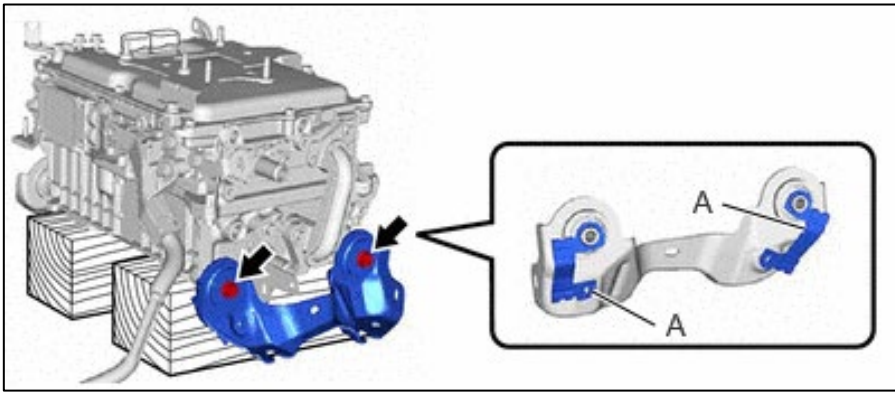
NOTICE:

Do not touch portion (A) of the No. 2 inverter bracket.

- d) Fully tighten the 2 bolts in the order shown in the illustration.

Torque: 15 Nm

5. INSTALL NO. 1 INVERTER BRACKET



- a) Temporarily install the No. 1 inverter bracket to the hybrid motor control inverter assembly with the 2 bolts

NOTICE:

Do not touch portion (A) of the No. 1 inverter bracket.

- b) Fully tighten the 2 bolts in the order shown in the illustration.

Torque: 15 Nm

XV. INSTALL THE REPAIRED INVERTER BACK IN THE CAR

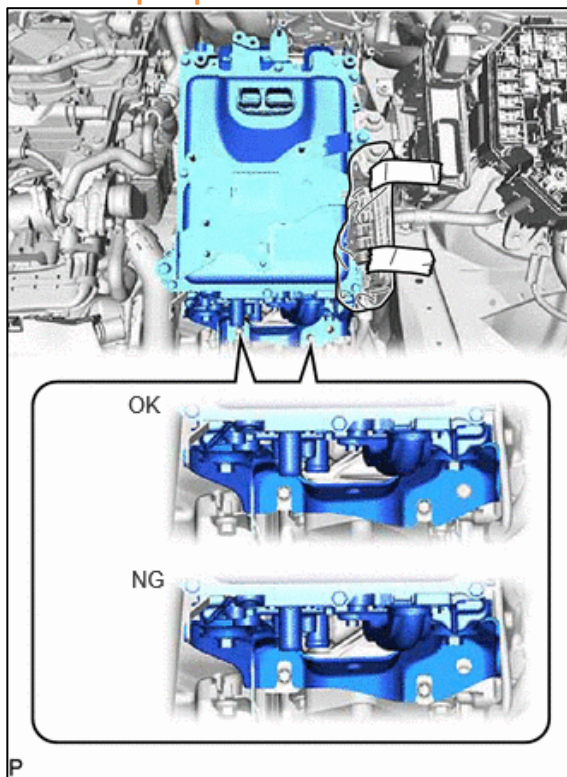
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1. SET INVERTER WITH CONVERTER ASSEMBLY

CAUTION: Be sure to wear insulated gloves.

NOTICE:

- When installing the inverter with converter assembly, be careful not to damage the parts around it.
- To prevent damage, do not hold the inverter with converter assembly by the connectors, brackets or cooling pipes.
- To prevent damage due to static electricity, do not touch the terminals of the disconnected connectors.
- Make sure that the inverter with converter assembly is positioned so that the stud bolts are in contact with the base of the U-shaped portions of the No. 1 inverter bracket.

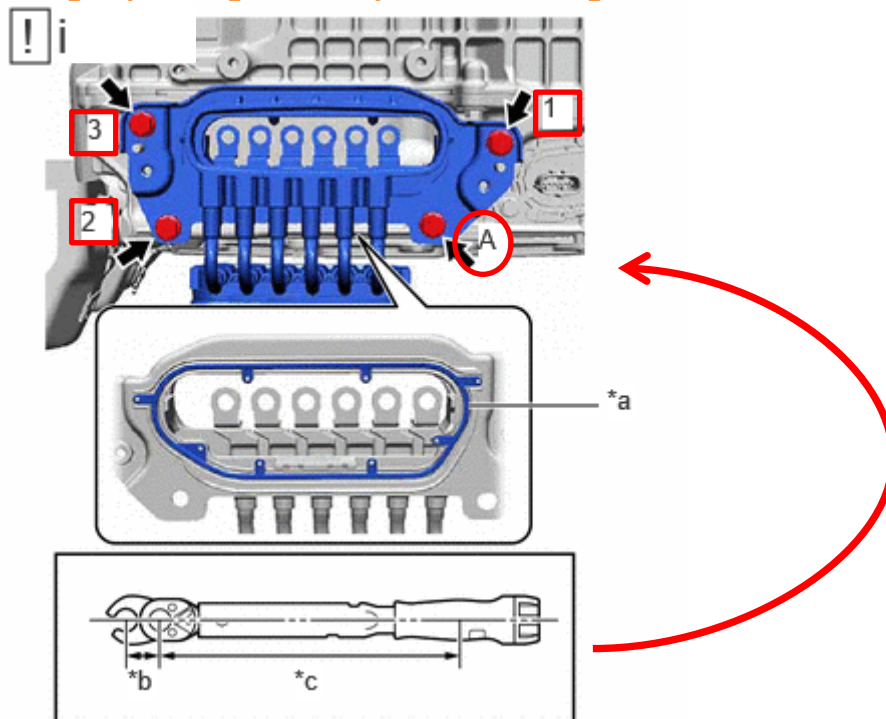


2. CONNECT MOTOR CABLE

CAUTION: Wear insulated gloves.

NOTICE:

- Do not allow any foreign matter or water to enter the hybrid motor control inverter assembly.
- Do not touch the waterproof seal or terminals of the motor cable.
- Do not damage the terminals, connector housing, or inverter with converter assembly during connection.
- Be careful to avoid cutting or pinching the waterproof seal during installation.



- Temporarily install the motor cable to the inverter with converter assembly with the 4 bolts
- Fully tighten the 3 bolts in the order shown in the illustration.
- Torque: 8.0 Nm
- Using a 10 mm union nut wrench, fully tighten the bolt(A).

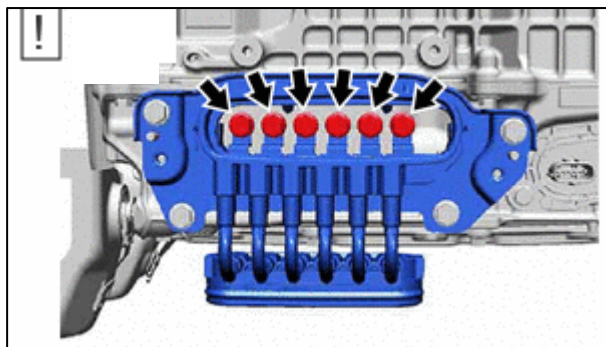
Specified Tightening Torque : 8.0 Nm

HINT:

Calculate the torque wrench reading when changing the fulcrum length of the torque wrench.

Click here [INFO](#)

When using a union nut wrench (fulcrum length of 22 mm (0.866 in.)) + torque wrench (fulcrum length of 162 mm (6.38 in.)): 7.0 N*m (71 kgf*cm, 62 in.*lbf)



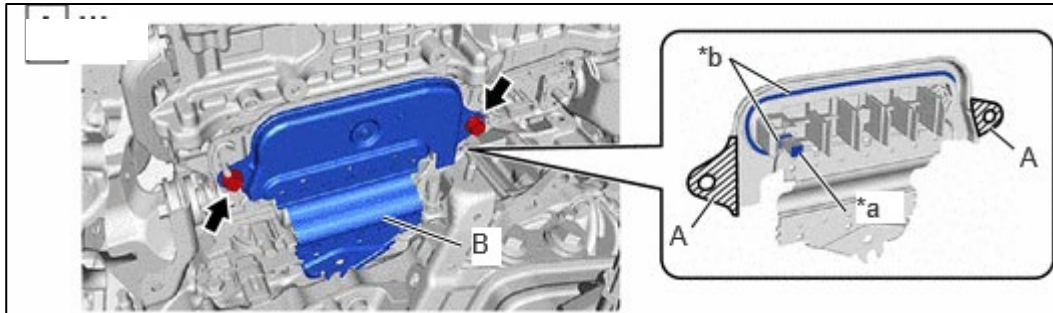
- Temporarily install the terminals of the motor cable with the bolts, and using an insulated tool, fully tighten the bolts.
- Torque: 8.0 Nm (torque is critical, do not over torque)

NOTICE:

- To prevent the threads from being damaged, temporarily tighten the 6 bolts by hand.
- Be sure to use a torque wrench to tighten the bolts.

3. INSTALL THE UPPER INVERTER COVER SUB-ASSEMBLY

With **EVEN** pressure, gently push cover straight onto Inverter (until flush)



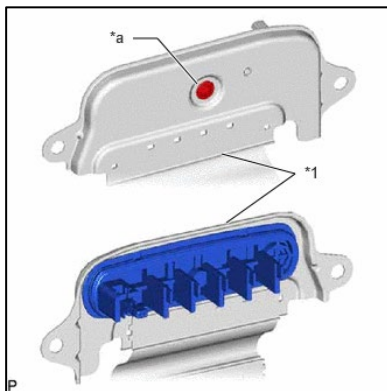
*a	Interlock	*b	Waterproof Seal
----	-----------	----	-----------------

a) Hand start the (2) – 10mm bolts.

Torque: 8.0 Nm

NOTICE:

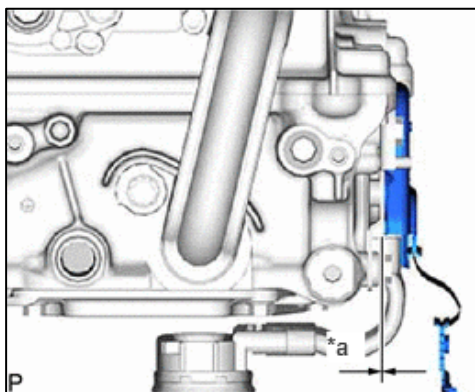
- To avoid deforming portion (A) of the inverter cover, do not hold portion (A) when installing.
- Be careful not to scratch or damage portion (B) of the inverter cover.
- Visually confirm that the inverter cover waterproof seal is securely installed before installing the upper inverter cover sub-assembly.
- Do not touch the waterproof seal of the upper inverter cover sub-assembly.
- Make sure that the interlock is fully engaged.
- Do not damage the terminals, interlock connector or hybrid motor control inverter assembly during installation.
- Do not allow any foreign matter or water to enter the hybrid motor control inverter assembly.
- Do not remove or excessively tighten the screw of the upper inverter cover sub-assembly.



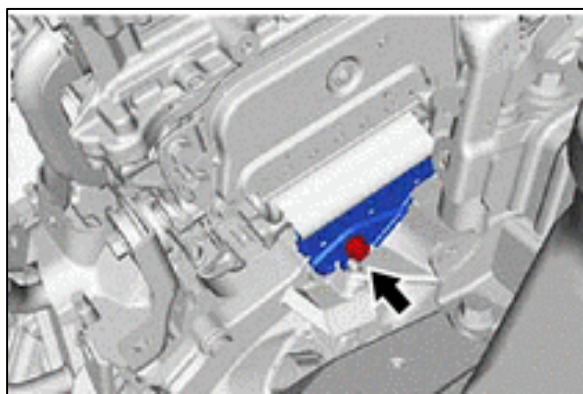
*1	Inverter Cover
*a	Screw

- Although the upper inverter cover sub-assembly may feel loose, this is not due to a malfunction.
- Push in the upper inverter cover sub-assembly until it contacts the hybrid motor control inverter assembly.

INSTALL THE UPPER INVERTER COVER SUB-ASSEMBLY (continued)



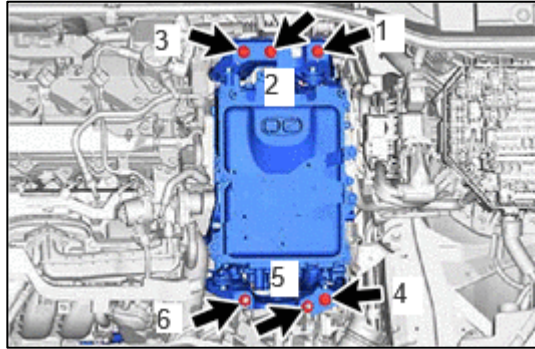
*a	No Gap
----	--------



- a) Hand start the inverter cover (1) – 10mm bolt to the hybrid vehicle transaxle assembly.
Torque: 8.0 Nm

4. INSTALL HYBRID MOTOR CONTROL INVERTER ASSEMBLY

CAUTION: Be sure to wear insulated gloves.

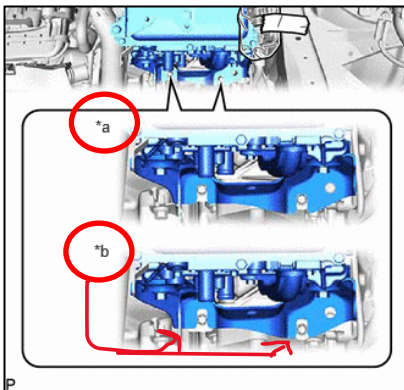


- a) Temporarily install the inverter with converter assembly with the bolts and the nuts, and then fully tighten the bolts and nuts in the order shown in the illustration.

Torque: 55.0 Nm

NOTICE:

- When installing the inverter with converter assembly, be careful not to damage the parts around it.
- To prevent damage due to static electricity, do not touch the terminals of the disconnected connectors.
- Make sure that the inverter with converter assembly is positioned so that the stud bolts are in contact with the base of the U-shaped portion of the No. 1 inverter bracket

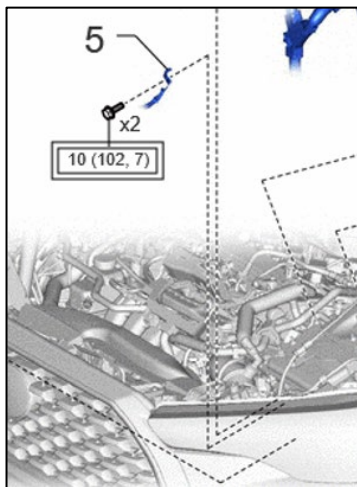


*a	Correct
*b	Incorrect

HINT:

If the bolts and nuts are not tightened appropriately, the inverter with converter assembly may make an abnormal noise.

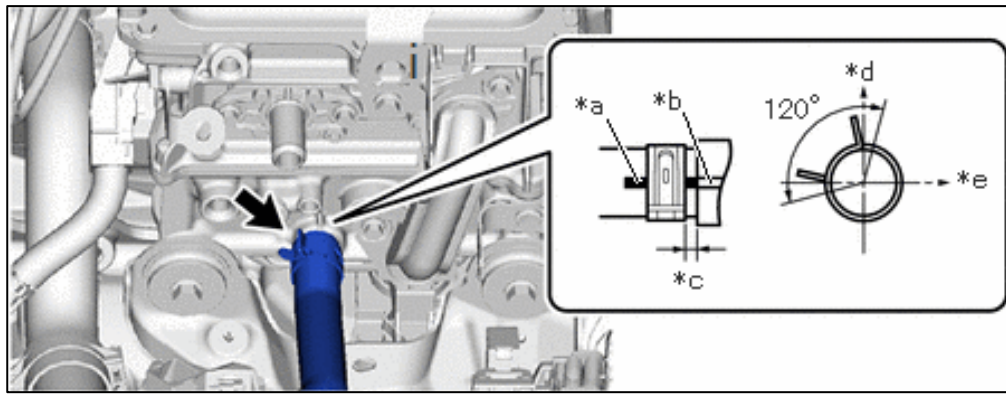
5. INSTALL NO. 7 ENGINE WIRE



- a) Hand start No. & Engine Wire

Torque: 10Nm

6. CONNECT INLET NO. 1 INVERTER COOLING HOSE



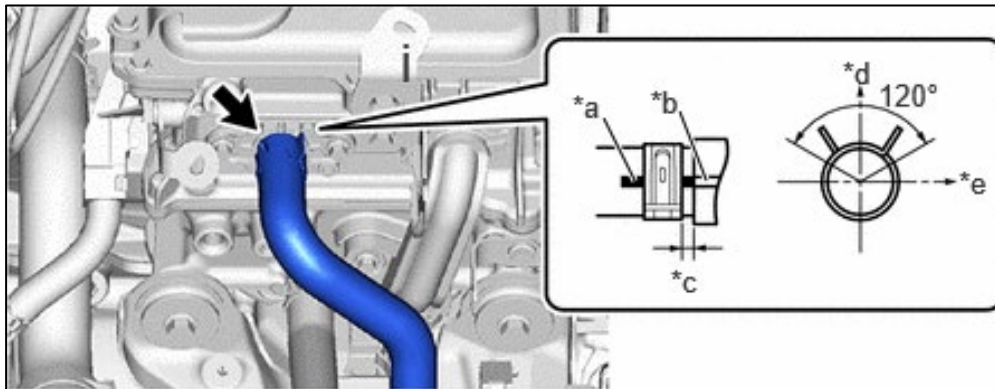
*a	Alignment Mark	*b	Rib
*c	2 to 7 mm (0.0787 to 0.2756 in.)	*d	Up
*e	LH side	-	-

- a) Connect the inlet No. 1 inverter cooling hose to the hybrid motor control inverter assembly and slide the clip to secure it.

NOTICE:

- To prevent foreign matter from entering the hybrid motor control inverter assembly and inverter cooling system, do not remove the pieces of cloth from the pipe and disconnected hose until installation.
- Make sure to align the alignment mark of the hose with the rib of the hybrid motor control inverter assembly.
- Make sure that the clip is positioned as shown in the illustration.

7. CONNECT OUTLET NO. 1 INVERTER COOLING HOSE



*a	Alignment Mark	*b	Rib
*c	2 to 7 mm (0.0787 to 0.2756 in.)	*d	Up
*e	LH side	-	-

- a) Connect the outlet No. 1 inverter cooling hose to the hybrid motor control inverter assembly and slide the clip to secure it.

NOTICE:

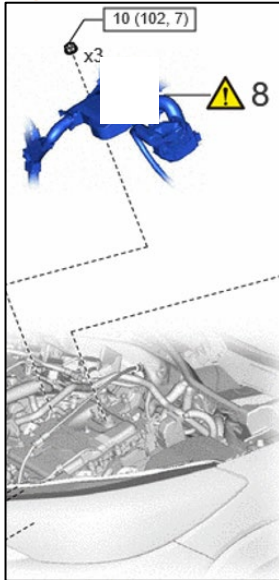
- To prevent foreign matter from entering the hybrid motor control inverter assembly and inverter cooling system, do not remove the pieces of cloth from the pipe and disconnected hose until installation.
- Make sure to align the alignment mark of the hose with the rib of the hybrid motor control inverter assembly.
- Make sure that the clip is positioned as shown in the illustration.

8. INSTALL ENGINE WIRE

CAUTION: Wear insulated gloves.

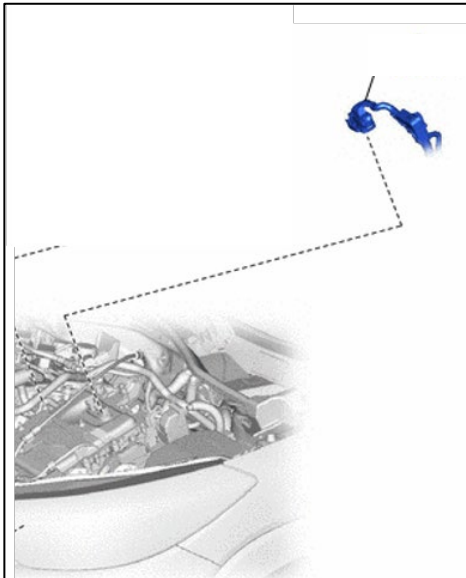
NOTICE:

- To prevent the threads from being damaged, temporarily tighten the nut by hand.
- Do not touch the waterproof seal or terminals of the connectors.
- To prevent damage due to static electricity, do not touch the terminals of the disconnected connectors.
- Do not damage the terminals, connector housing or hybrid motor control inverter assembly when connecting the connectors.

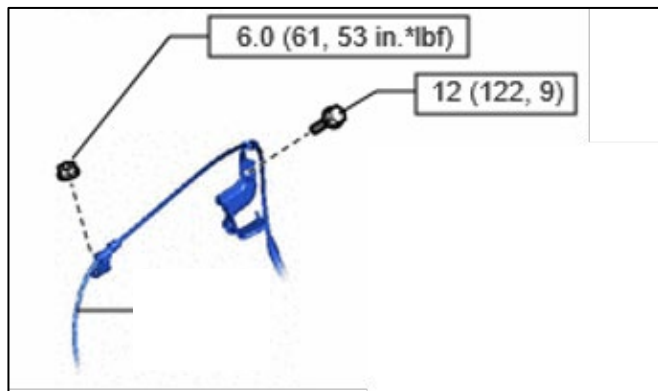


a) Hand start Engine Wire nut
Torque: 10 Nm

9. INSTALL ENGINE ROOM MAIN WIRE



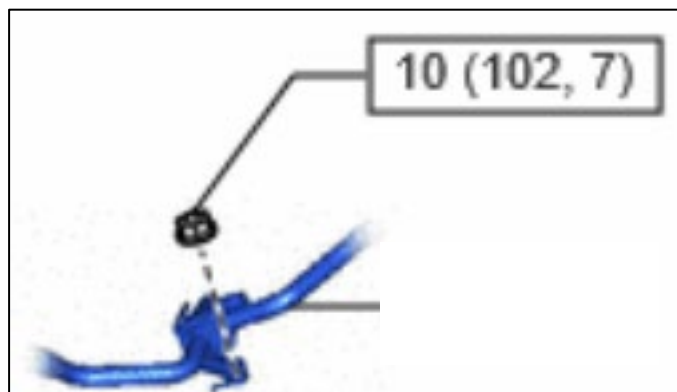
10. INSTALL TRANSMISSION CONTROL CABLE ASSEMBLY



Torque:
Nut: 6.0 Nm

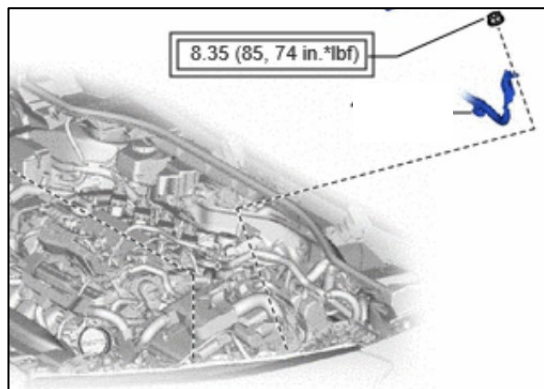
Bolt: 12 Nm

11. INSTALL PURGE VALVE (PURGE VSV)



Torque:
Nut: 10 Nm

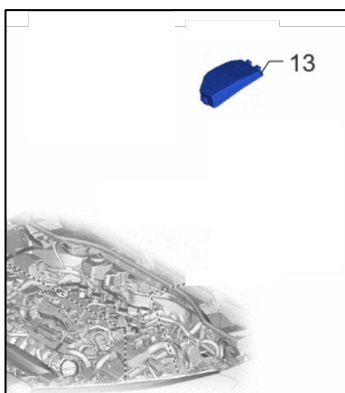
12. INSTALL NO. 3 ENGINE WIRE



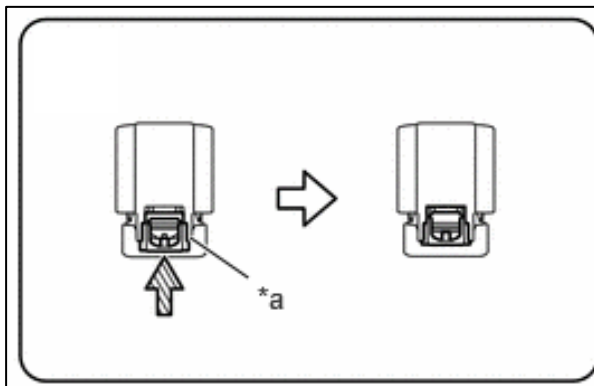
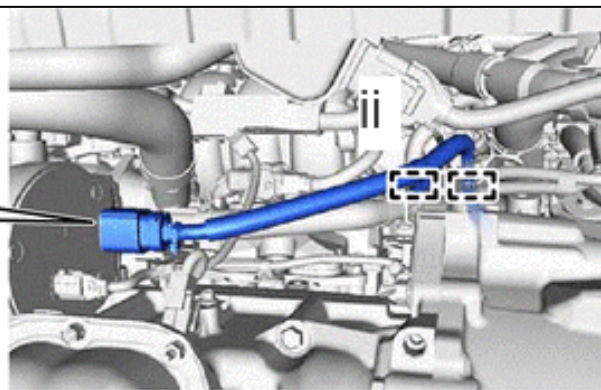
Tightening torque for "Major areas involving basic vehicle performance such as moving/turning/stopping" : Nm

Torque:
Nut : 8.35 N·m {85 kgf·cm, 74 in·lbf}

13. INSTALL NO. 2 RELAY BLOCK COVER



14. CONNECT HV AIR CONDITIONING WIRE

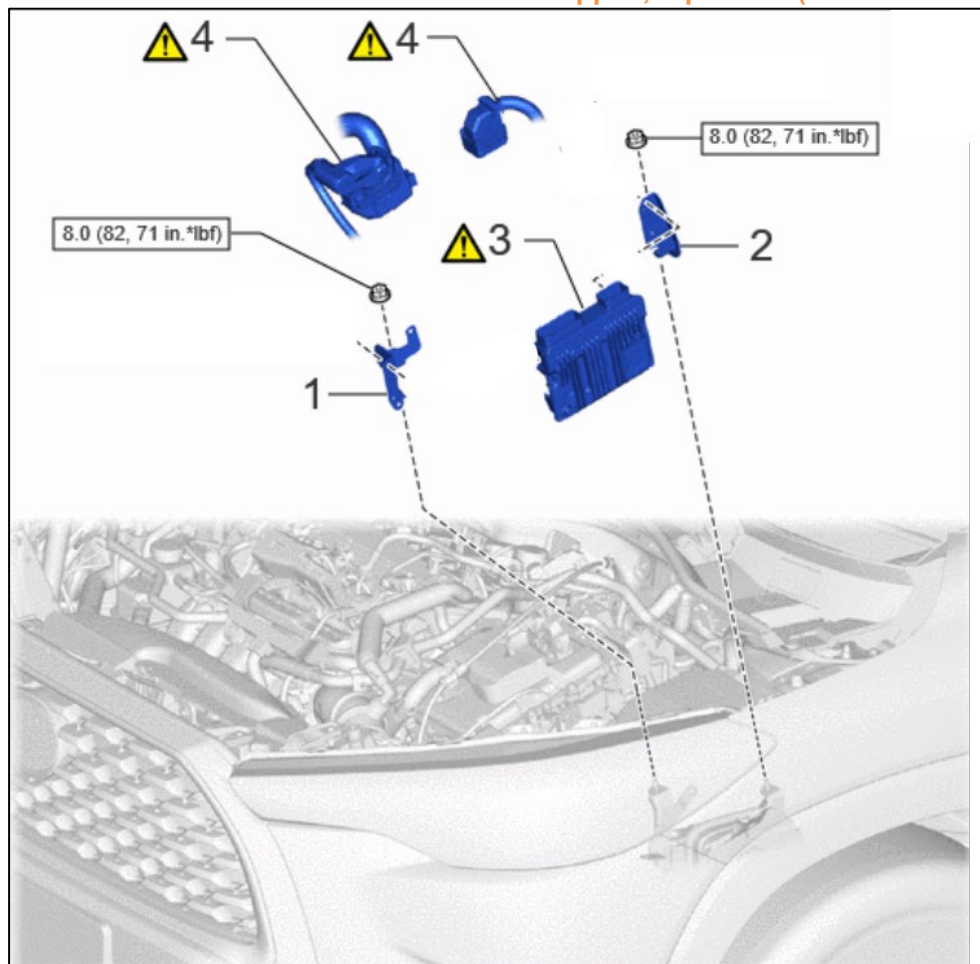


*a	Green-Colored Lock
	Slide

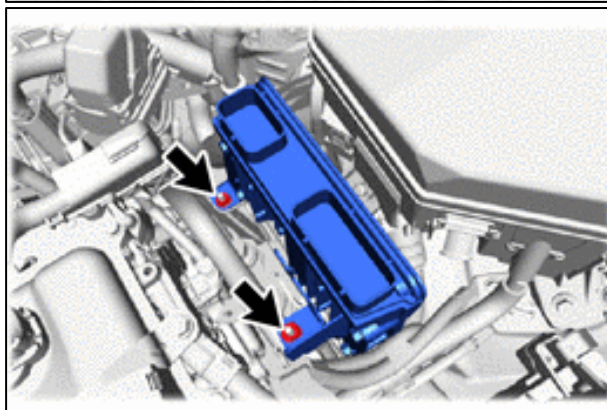
- a) Connect the connector and slide the green-colored lock as shown in the illustration to securely lock it.
- b) Engage the (2) clamps.

15. INSTALL ECM

NOTICE: If the ECM has been struck or dropped, replace it. (This is not covered by recall)

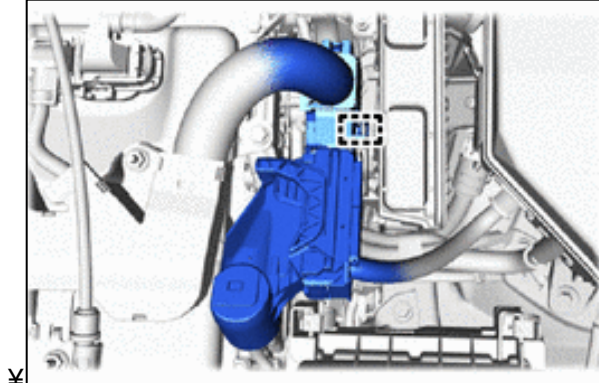
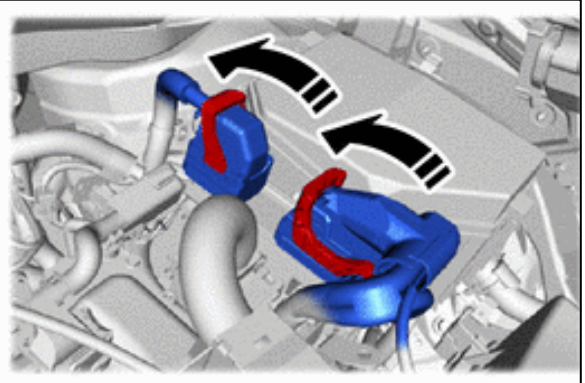


1	NO. 1 ECM BRACKET
2	NO. 2 ECM BRACKET
3	ECM
4	ENGINE WIRE



a) Hand start two nuts
Torque: 8.0 Nm

INSTALL ECM - Continued

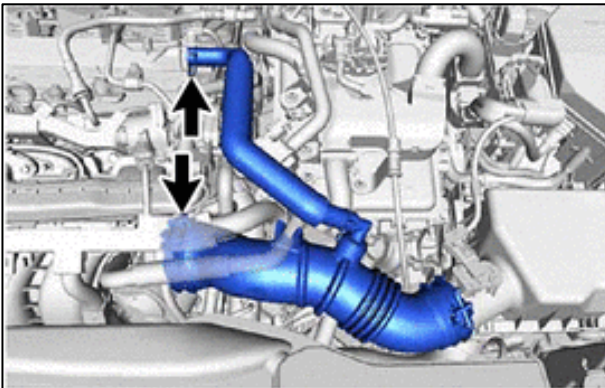


- ¥
- b) Install engine wire
 - c) Engage the clamp.
 - d) Connect the 2 ECM connectors and lower the 2 lock levers.

NOTICE:

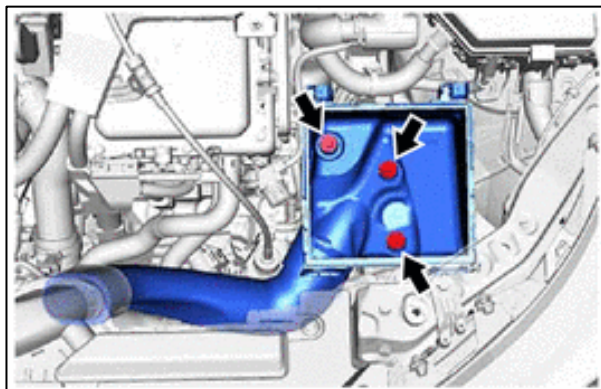
- When connecting the ECM connectors, make sure that dirt, water or other foreign matter does not contact the connecting parts of the ECM connectors.
- Be sure to securely connect the ECM connectors.

16. INSTALL NO. 1 AIR CLEANER HOSE



Torque: 2.0 Nm {20 kgf·cm, 18 in·lbf}

17. INSTALL AIR CLEANER CASE SUB-ASSEMBLY



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

18. INSTALL AIR CLEANER FILTER ELEMENT SUB-ASSEMBLY

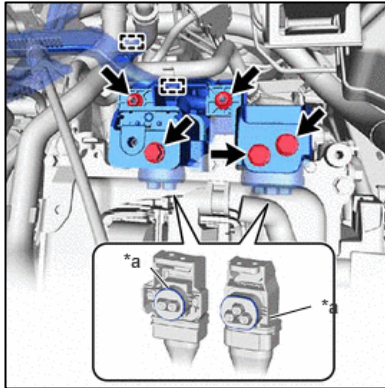
19. INSTALL AIR CLEANER CAP SUB-ASSEMBLY

20. CONNECT FLOOR UNDER WIRE

CAUTION: Wear insulated gloves.

NOTICE:

- Do not allow any foreign matter or water to enter the hybrid motor control inverter assembly.
- Do not touch the waterproof seal or terminals of the connector.
- Do not damage the terminals, connector housing or hybrid motor control inverter assembly when connecting the connector.



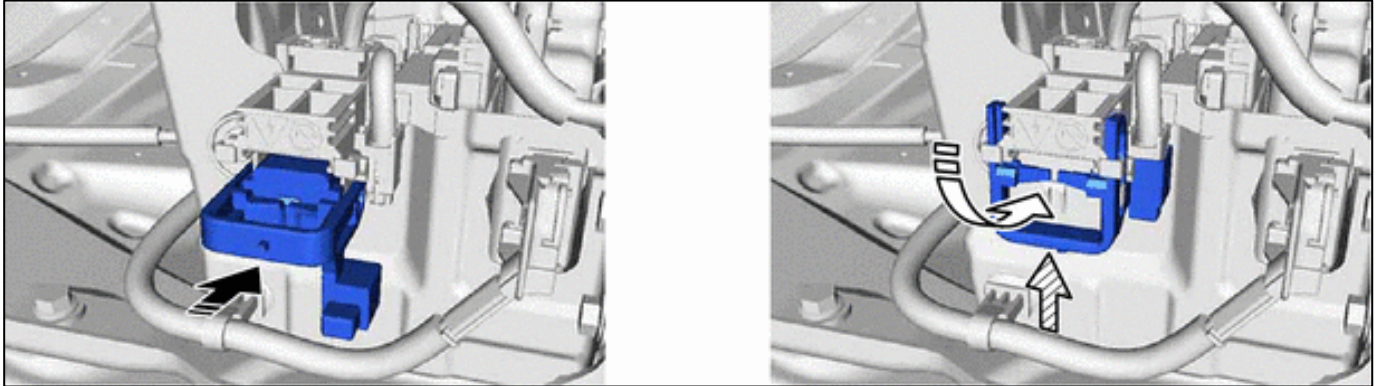
Torque:
8.0 Nm {82 kgf·cm, 71 in·lbf}

21. INSTALL SERVICE PLUG GRIP

CAUTION: Wear insulated gloves.

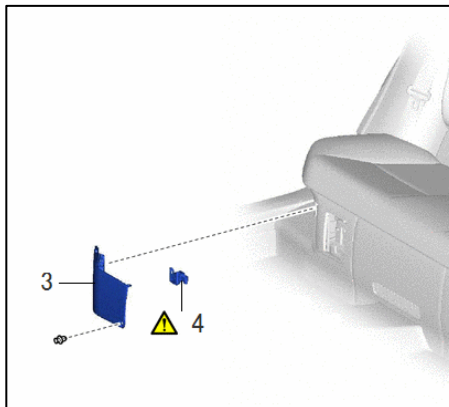
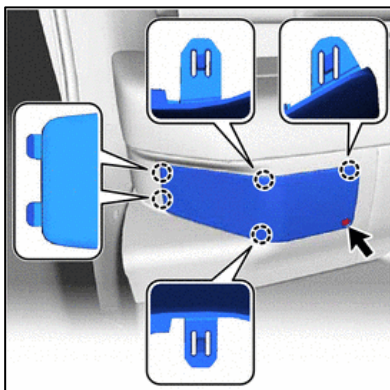
NOTICE:

Before installing the service plug grip, check that no parts or tools remain and that the high voltage terminals and connectors are connected securely.



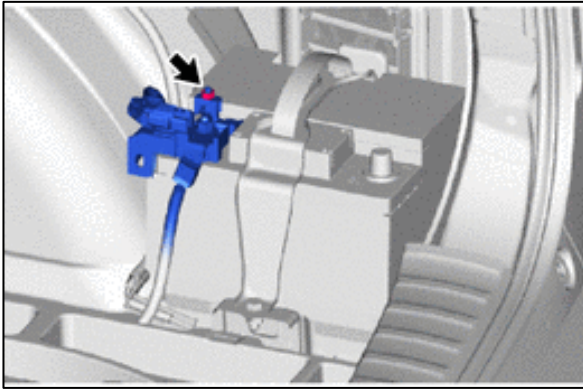
	Install in this Direction (1)		Install in this Direction (2)
	Install in this Direction (3)	-	-

- a) While wearing insulated gloves, and temporarily install the service plug grip as indicated by the arrow (1) shown in the illustration.



- b) Replace battery service hole cover rh
c) Small screwdriver needed.

22. RECONNECT NEGATIVE TERMINAL FROM 12V BATTERY



Torque:

5.4 Nm {55 kgf·cm, 48 in·lbf}

- a) Install side deck trim service hole cover

23. ADD NEW COOLANT (for Inverter)

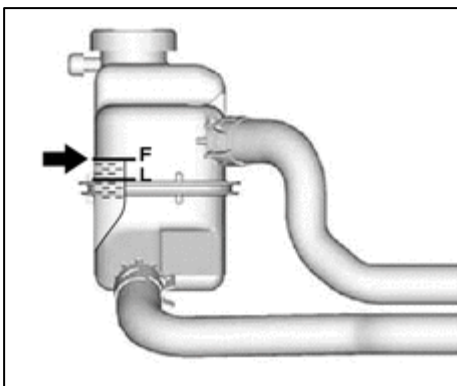
NOTICE:

- Do not reuse the drained coolant because it may contain foreign matter.
- If the vehicle is driven with air in the inverter cooling system, damage may occur and DTCs may be stored.

Powertrain > Hybrid Control > Active Test

TESTER DISPLAY

Activate the Inverter Water Pump



- a) Slowly pour coolant into the inverter reserve tank assembly until it reaches the F line.
- b) Standard Capacity: 1.7 liters (1.8 US qts, 1.5 Imp. qts)
- c) Using GTS+ Enter the following menus:
Powertrain / Hybrid Control / Active Test / Activate the Inverter Water Pump.
- d) Activate the Inverter Pump
- e) While adding coolant to the inverter reserve tank assembly to keep the coolant at the FULL line and compensate for the drop in the coolant level as the air bleeds, operate and stop the inverter water pump with motor assembly at 1 minute intervals.
- f) After the air is completely bled from the cooling system, add coolant to the FULL line of inverter reserve tank assembly and install the reserve tank cap.
- g) Complete inverter coolant air purge procedure from the repair manual.
- h) [M20A-FXS COOLANT \(for Inverter\): REPLACEMENT; 2023 - 2026 MY Corolla Cross HV \[11/2022 - \]](#)
- i) Inspect for coolant leak (for Inverter)
- j) [HYBRID / BATTERY CONTROL: COOLANT \(for Inverter\): ON-VEHICLE INSPECTION; 2023 - 2026 MY Corolla Cross HV \[11/2022 - \]](#)

24. ECU CONFIGURATION

HINT:

When disconnecting and reconnecting the auxiliary battery, there is an automatic learning function that completes learning when the respective system is used.

CAUTION:

If vehicle systems affect a voltage to reduce during reprogramming, it may disable the ECU in reprogramming, which concludes an ECU replacement.

- a) Stabilize a power source on the vehicle side by shutting off as many following systems and parts as possible since they would generate an electrical load. Turn off all systems that add electrical load.

HINT:

Exterior lighting systems

Interior lighting systems (Make them unlit even when a door is open)

Air conditioning system

Audio/Navigation systems

Seat belt warning system (Lock belt buckles by inserting tongue plates)

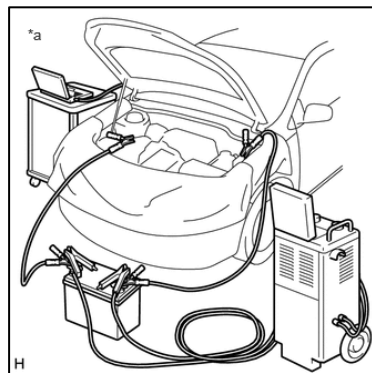
Accessory parts of aftermarket installation

Other, generic electrical parts (such as remote engine starter, security system)

- b) Remove the fuse or relay for the electric fan.
- c) Inspect the battery of the vehicle. (check if it has 11.8 v min. Of voltage.)
- d) Conduct the inspection on the vehicle battery keeping the IG-ON condition after one minute of leaving with the IG on. Check if it has 11.8 V or more of voltage.
- e) In case of a battery weak, charge it before reprogramming.
- f) Note: (The inspection can be performed with no wait as one minute has already passed in the IG-ON condition if keeping the IG on from the previous step.)

CAUTION:

If the brake booster with accumulator pump assembly of a hybrid vehicle operates, a large current will flow and the battery charger alone will not be able to maintain a sufficient voltage. If a sufficient voltage cannot be maintained, ECU configuration will not be possible. Therefore, when performing ECU configuration for a hybrid vehicle, a battery for auxiliary charging must be connected in parallel with the battery charger. Check a deterioration level on the battery for auxiliary charge. (Do the check once a day.)



Note: For vehicles needing inverter replacement only.
**CONNECT BATTERY CHARGER AND BATTERY FOR
AUXILIARY CHARGING TO AUXILIARY BATTERY
(BOOSTER TERMINAL)**

ECU CONFIGURATION CONTINUED

CAUTION:

Make sure that the ignition switch remains ON when performing ECU configuration, and that the engine is not started (for Gasoline Model) or the ignition switch is not turned to ON (READY) (for HEV Model).

To prevent incidents related to unauthorized persons operating the GTS or vehicle, do not leave the vehicle unattended.

- g) Turn on the battery charger.
- h) In accordance with the display on the GTS, select and perform Health Check on the menu screen.
- i) Confirm that "Yes" is not displayed in the "Configure" column of the GTS for any system.
- j) If "Yes" is displayed in the "Configure" column of the GTS for any system, click "Yes" and perform ECU configuration in accordance with the display on the GTS.

HINT:

Perform ECU Configuration for each system.

- k) After ECU configuration is complete, select and perform Health Check on the menu screen in accordance with the display on the GTS.
- l) Confirm that "Yes" is not displayed in the "Configure" column of the GTS for any system, and clear the DTCs and vehicle control history (RoB).

CAUTION:

If "Yes" is displayed in the "Configure" column of the GTS for any system, perform ECU configuration again.

System	Monitor Status	Calibration	Update	Configure	RoB	DTC
	-	8989F4204400	?	No	-	0
		8989G4203000	?			
		892634238100	?	No	●	0
	-	G911F4213001	?			
		G911G4203001	?			
		892DF4201200	?			
	-	-	-	-	-	-
	-	-	-	-	-	-
	-	-	-	-	-	-



25. PERFORM RESOLVER LEARNING

Learning completes when vehicle is driven

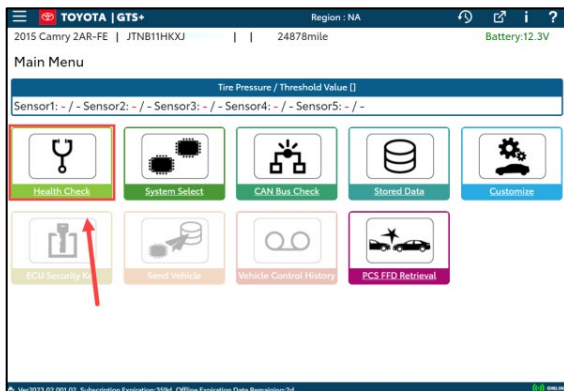
HINT: APPLIES TO ALL SECTIONS OF RESOLVER LEARNING

If either of the following conditions is met, resolver learning may not be possible:

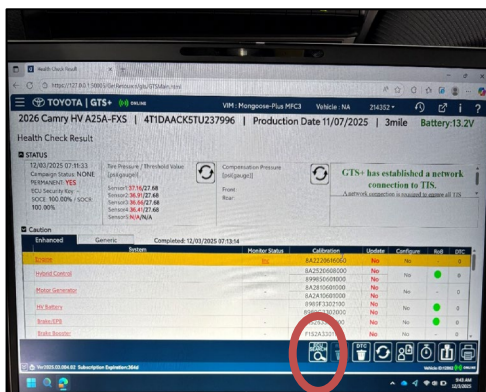
- The inverter coolant temperature is -40°C (-40°F) or less.
- The atmospheric pressure is low and the generator (MG1) temperature, motor (MG2) temperature and/or rear motor (MGR) temperature are high. (Wait for the generator (MG1), motor (MG2) and/or rear motor (MGR) to cool sufficiently before performing learning.)
- After beginning resolver learning, make sure to perform the procedure until resolver learning for the front (MG1, MG2) and/or rear (MGR) are completed. (Resolver learning is complete when the resolver learning incomplete message on the multi-information display is cleared.)



- Turn the ignition switch off and **wait for 2 minutes or more.**
- Turn the ignition switch to ON.
- Check that the air conditioning system and power outlet socket are turned off.
- Check that the generator resolver learning incomplete message is displayed on the multi-information display.

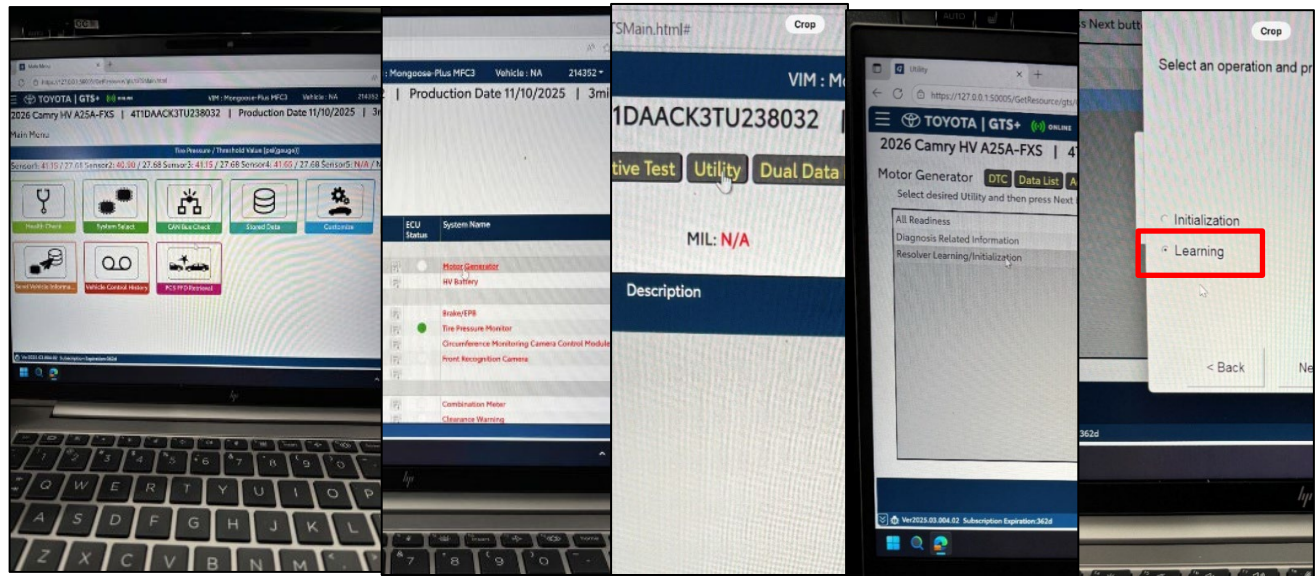


- Using GTS+, click the "Health Check" button on the Main Menu. **(If any DTCs which may affect learning are output, resolver learning cannot be performed.)**



- Select "ECU Search" follow prompts

- g) Powertrain->Motor Generator ->Utility
- h) Click Resolver Learning/ Initialization
- i) Click "Learning"



Generator (MG1), Motor (MG2) and Rear (MGR) learning must be completed.

- j) Turn ignition switch to ON (READY) and wait until the READY indicator changes from blinking to illuminated.

NOTICE: Do not operate the accelerator pedal, shift lever or any switches until the READY indicator is illuminated.

HINT:

When the ignition switch is turned to ON (READY) during resolver learning, the engine will start.

It takes approximately 10 seconds for the READY indicator to illuminate after the ignition switch is turned to ON (READY).

- m) Check that the motor resolver learning incomplete message is displayed on the multi-information display.

**RESOLVER-2
NOT ADJUSTED**

- n) Move the shift lever to D.
o) Move to a large open space in which you can drive to 25mph and coast to a stop without the use of the brake pedal.
p) Accelerate the vehicle to between 30km/h (19 mph) and 40 km/h (25 mph), fully release the accelerator pedal and allow the vehicle to coast for *3 seconds.

NOTICE: Do not operate the accelerator pedal, brake pedal, shift lever or any switches while the vehicle is coasting

* Coast until RES 2 not adjusted light goes off

HINT:

If any of the following conditions are met, resolver learning may not be possible:

- A shift state other than D position.
- The vehicle speed is excessively low or high.
- The vehicle is being driven on a rough road or steep hill causing the vehicle speed to fluctuate while the vehicle is coasting.
- The hybrid vehicle transaxle assembly temperature is excessively low. (If the hybrid vehicle transaxle assembly temperature is excessively low, such as (0°C (32°F) or less), the vehicle speed will decrease excessively while the vehicle is coasting.)
- The SPORT drive mode is selected.
- The driving support system is turned on.

- q) Check that the motor resolver learning incomplete message or rear motor resolver learning incompleted message is not displayed on the multi-information display.

HINT:

If the motor/rear motor resolver learning incomplete message continues to be displayed on the multi-information display, perform step (a) again.

- r) Stop the vehicle, turn the ignition switch off and wait for 1 minute or more.
s) Turn the ignition switch to ON (READY).
t) Check that the generator resolver learning incomplete and motor resolver learning incomplete messages are not displayed on the multi-information display.

HINT:

If the ignition switch is turned to ON after less than 1 minute has elapsed since the ignition switch was turned off, the learned value may not be stored correctly and the generator resolver learning incomplete or motor resolver learning incomplete message may be displayed on the multi-information display.

UTILITY; 2023 - 2026 MY Corolla Cross HV [11/2022 -] Reference repair manual if needed.

- 26. RESTORE CUSTOMER SETTINGS
- 27. CLEAR DTCs
- 28. (CALIFORNIA ONLY) EMISSIONS RELATED CAMPAIGN

The vehicle owner may require the Proof of Correction form for vehicle registration renewal. ***It is important to note that the forms are an official state document and blank forms must be secured to prevent misuse.***

Please complete the form and provide it to the owner. The first non-completed VINs will be submitted to the California state DMV by early September, 2026. If the vehicle owner’s warranty claim will not be processed and paid prior to this date, please be sure to complete a form and provide it to a California owner.

Install the Authorized Modifications Label after the repairs have been completed. Using a permanent marker, fill out the label and affix it to the location under the hood as indicated.

Form booklets and Authorization Labels can be ordered from the MDC (Booklet material number 00410-92007, Label material number 00451-00001-LBL).

1-4	"Remedy for (Campaign Designation) "	6	Date Completed
5	Dealer Code	7	Campaign Designation

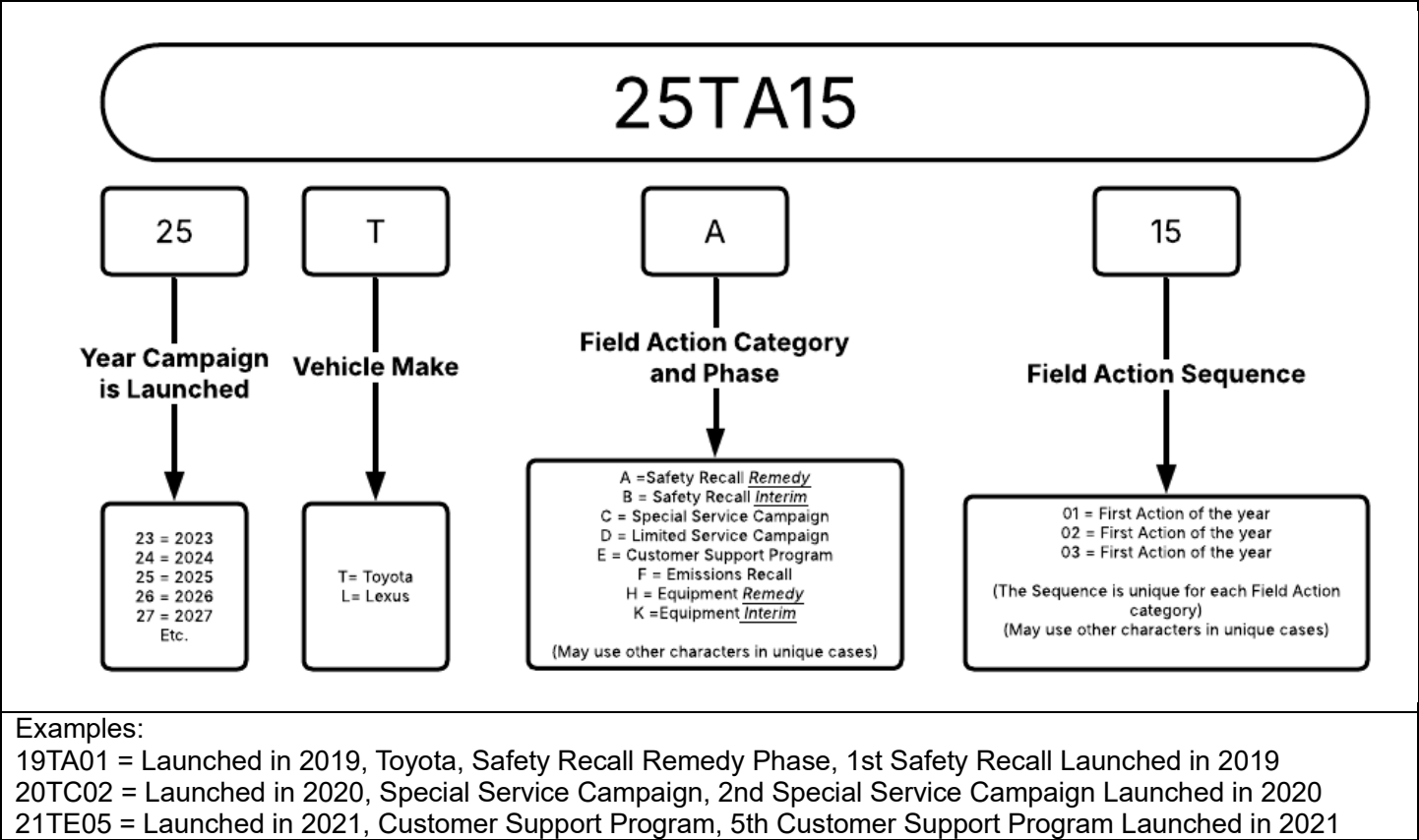
◀ VERIFY REPAIR QUALITY ▶

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

XVI. APPENDIX

[↩ Return to Table of Contents](#)

1. CAMPAIGN DESIGNATION DECODER



2. CAMPAIGN PARTS DISPOSAL

As required by Federal Regulations, please make sure all campaign 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.**