WE APPRECIATE YOUR PATIENCE.
To assure their timely arrival during the holidays, the campaign tools and dealer letters have been shipped early. Please note that VINs will be searchable starting December 20 and warranty claims may be submitted starting December 22.

Original sent to Dealers 12/19/11

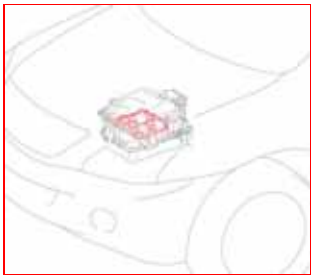
December 19, 2011

Subject: Safety Recall BLD (Interim B2D) – Remedy Available
Certain 2006 – 2007 Model Year RX 400h Vehicles
Intelligent Power Module (IPM) Replacement

Dear Dealer Principal:

As communicated on June 29, 2011, Lexus filed a Defect Information Report (DIR) with the National Highway Traffic Safety Administration (NHTSA) informing the agency of our intent to conduct a voluntary Safety Recall on certain 2006 and 2007 model year RX 400h vehicles.

The purpose of this communication is to inform you that a remedy is available and Lexus will soon begin notifying owners of affected vehicles.



Background

The Intelligent Power Module (IPM) is located inside of the Hybrid System Inverter (Inverter) and contains a control board with transistors. Certain transistors on the control boards of some of the subject vehicles were inadequately soldered and could be damaged from heat caused by a large current during high-load driving. If this occurs, various warning lamps will be illuminated on the instrument panel. The vehicle may enter a fail-safe/limp-home mode that limits the driving speed of the vehicle. Also, it is possible that the hybrid system will shut down while the vehicle is being driven, causing the vehicle to stall unexpectedly, increasing the risk of a crash.

The following information is provided to inform you and your staff of the remedy phase of this Safety Recall and your degree of involvement.

Remedy

Lexus dealers will inspect the part number and serial number of the inverter assembly to determine if the specific inverter is covered by this recall. Based upon the inspection results, the Intelligent Power Module will be replaced at NO CHARGE to the vehicle owner. For additional information on inspection and repair procedures, please refer to TIS.

Owner Notification

Lexus will begin mailing Safety Recall Notices by first class mail in phases beginning in early January, 2012. The owner letters will be spread over several weeks consistent with parts availability and service capacity. A sample owner letter is attached.

Pre-Owned Vehicles in Dealer Inventory

Lexus requests dealers to conduct the remedy on any pre-owned vehicles currently in dealer inventory that are covered by this Safety Recall prior to delivery to the customer.

Also, as a reminder, Lexus CPO policy prohibits the certification of any vehicle with an outstanding Special Service Campaign or Safety Recall, such as this Safety Recall BLD Thus, no affected units may be sold or delivered as a CPO vehicle until the Safety Recall has been completed on that vehicle.

Number and Identification of Covered Vehicles

There are approximately 36,700 RX 400h (certain 2006 and 2007 model year) vehicles covered by this Safety Recall in the United

States.

Model	WMI	Model Year	VDS	Start	Finish
RX 400h	JTJ	2006	GW31U	0001007	0004971
				2000101	2000974
			HW31U	0001035	0049416
				2000103	2007397
		2007	GW31U	2000975	2001481
			HW31U	2007400	2008129

Please note that only owners of the covered vehicles will be notified. If your dealership is contacted by an owner who has not yet received the notification, please ***verify coverage by confirming through Dealer Daily/TIS.*** Dealers should perform the procedure as outlined in the Technical Instructions located on TIS.

Remedy Procedures

Refer to TIS for the appropriate Technical Instructions (TI). Technical instructions will be posted on TIS on Tuesday, December 20, 2011.

Repair Quality Confirmation

The repair quality of covered vehicles is extremely important to Lexus. To help ensure that all vehicles have the repair performed correctly, please designate at least one associate (someone other than the individual who performed the repair) to verify the repair quality of every vehicle prior to customer delivery.

Parts Ordering

In order to assist dealers with the inspection procedure, use the following website to determine if intelligent power module (IPM) transistor replacement is necessary.

http://b0j-bld-lookup.imagespm.info

To assure sufficient availability of parts for scheduled appointments the Intelligent Power Module Transistor and grease have been placed on the Dealer Order Solution process. Please refer to the information sent by the facing PDC to each dealer's parts manager for specific information on daily order limits.

Part Number	Part Description	Quantity Per Vehicle Remedied
04001-29148	Intelligent Power Module Transistor	1
08887-02409	Grease G747	2

NOTE: Grease G747 is considered a hazardous material and must be handled appropriately during order processing and shipping. As a result, additional time beyond that normally experienced for dealer parts orders receipt may be incurred. Please plan accordingly when communicating with the service department and when scheduling appointments for your customers.

IMPORTANT PARTS ORDERING UPDATE

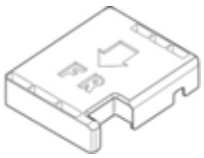
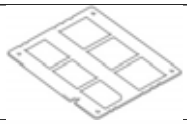
Effective January 1, 2012, all future Safety Recall, Service Campaign (SSC/LSC) and Customer Support Program (CSP) parts will be eligible for the Monthly Parts Return Program. Please refer to Service and Parts Operations Communication 2011-20 for campaign parts that are currently returnable under the Monthly Parts Return Program and additional details.

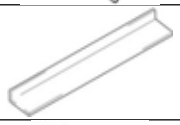
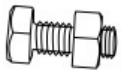
Tools, Supplies and Equipment

Refer to the technical instructions for the required tools, equipment, materials and special service tools (SSTs) required to perform the remedy repair.

Additionally, each dealer was shipped a quantity of campaign tools needed to complete the remedy. Please contact your Area office if your dealership did not receive the campaign tools or your dealership needs additional tools.

ATTN: Service Manager
SAFETY RECALL BLD
Campaign Tools

Part Name	Sample	Qty
Protective Cover A		1
Masking Plate		1
Stud Bolt		2

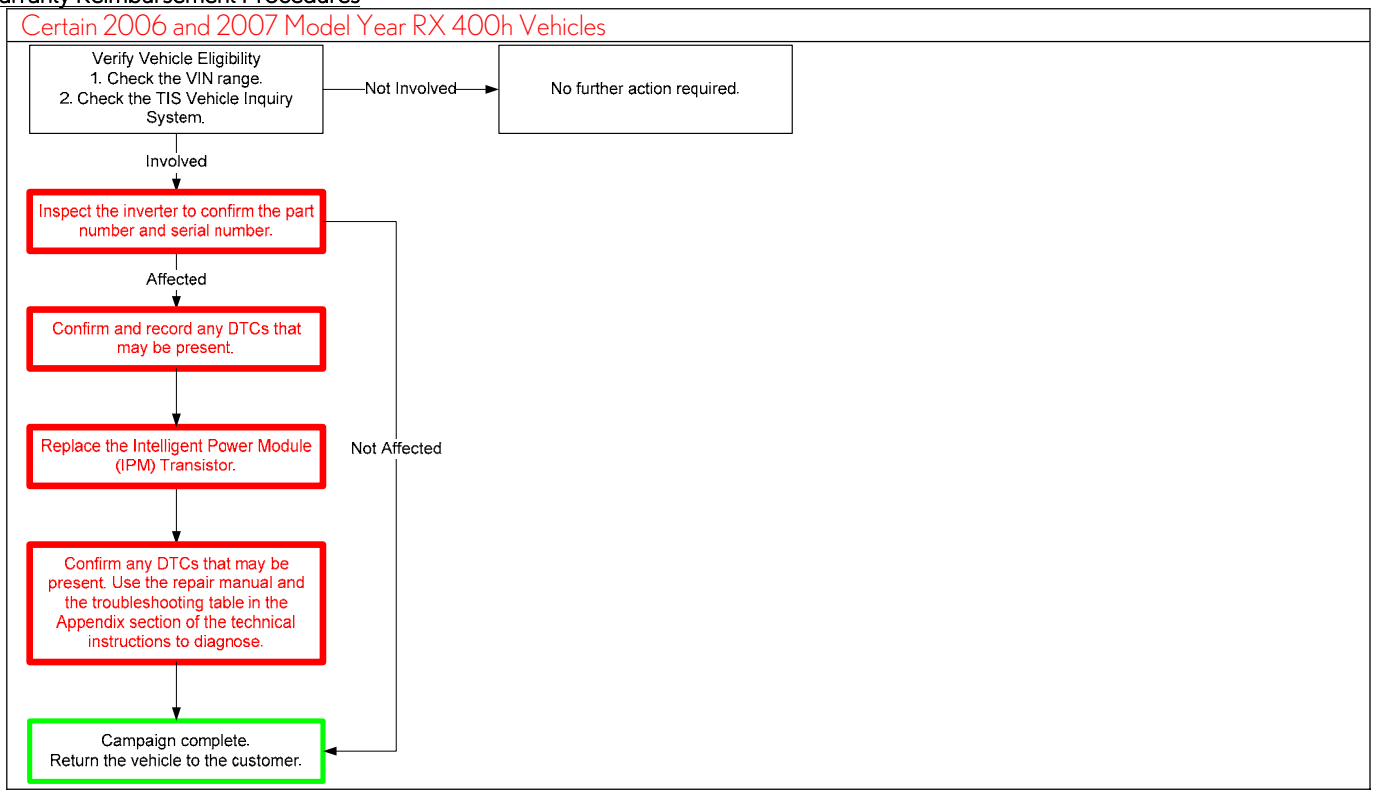
Part Name	Sample	Qty
Protective Cover B		1
Squeegee		1
Masking Plate Nut/Bolt		4

NOTE: If additional gloves are needed they can be ordered through SPX by calling 800-933-8335 (Gloves are not included in the Campaign Tool Kit)

Part Number	Part Name	Quantity
00002-03100-S	Electrical Insulating Gloves (Small)	1
00002-03200-M	Electrical Insulating Gloves (Medium)	
00002-03300-L	Electrical Insulating Gloves (Large)	

Warranty Reimbursement Procedures

Certain 2006 and 2007 Model Year RX 400h Vehicles



Safety Recall	Opcode	Description	Flat Rate Hour
BLD	1529F1	Check Inverter Part Number and Serial Number - Not Affected	*0.3 hr/vehicle*
	1529F2	Perform Inspection - Replace IPM transistor for AWD model HW31U	*4.0 hr/vehicle*
	1529F5	Perform Inspection - Replace IPM transistor for 2WD model GW31U	*3.9 hr/vehicle*

- The flat rate times include 0.1 hours for administrative cost per unit for the dealership.
- Toyota Genuine Brake Cleaner and Toyota Genuine Throttle Plate Cleaner or equivalent can be claimed as sublet type

"OF" under opcode 1529F2 or 1529F5 at a rate of $5.00 per vehicle(marking pens and electrical tape is also included in the sublet cost)

- Parts replaced under opcode 1529F2 and 1529F5 are subject to warranty parts return, any misuse of these operation codes will result in a warranty claim debit

Safety Recall	Opcode	Description	Flat Rate Hour
BLD	Contact Area Rep.	Perform Inspection, Replace the IPM, DTC present after IPM replacement, replace Inverter Assembly on AWD Models HW31U	*Contact Area Rep.*
		Perform Inspection, Replace the IPM, DTC present after IPM replacement, replace Inverter Assembly on 2WD Models GW31U	*Contact Area Rep.*

- Area representative will provide available sublets for this operation

Important Note: If you have DTCs present after performing the IPM replacement, please consult the Technical Instruction Appendix and repair manual for DTC diagnosis. In the event you need further assistance diagnosing the current DTCs please contact the Technical Assistance Hotline – QA Powertrain Department at 800-233-3178. Do not file a claim for Intelligent Power Module replacement; you will need to obtain an Opcode from your Area representative for Inverter Replacement.

The Interim Phase, B2D, is now superseded by Safety Recall BLD. All B2D Repair Order dates must be prior to 12/18/2011. All Repair Orders dated 12/19/2011 and after must be submitted under BLD.

Lexus' usual customer care amenities of car wash and fuel tank fill apply to this Safety Recall. Additionally, up to two days of rental vehicle expense (to a maximum of $45/day) or the cost of pick up and delivery of the customer's vehicle may be claimed if required and subject to the guidelines published in the Safety Recall/Special Service Campaign/Limited Service Campaign General Procedures document on TIS.

Media Contacts

It is imperative that all media contacts (local and national) receive a consistent message. In this regard, all media contacts must be directed to Brian Lyons (310) 468-2552 in Corporate Communications. (Please do not provide this number to customers).

Customer Contacts

This Safety Recall is a great opportunity to focus on assuring your customers that their safety remains Lexus' highest priority, which will go a long way toward preserving their faith in your dealership and the Lexus brand. Please welcome these customers and answer any questions they may have. The attached Q&A is provided to assure a consistent message is communicated.

Please review this interim notification with your entire service and parts staff to familiarize them with the proper step-by-step procedures required to implement this Safety Recall.

Thank you for your understanding and cooperation.

Lexus, a Division of Toyota Motor Sales, USA, Inc.

Attachments

Cc: Customer Satisfaction Manager
General Manager
Parts Manager
Pre-owned Manager
Service Manager
Warranty Administrator

Safety Recall BLD – Remedy Phase
Certain 2006 and 2007 Model Year RX Vehicles
Intelligent Power Module (IPM) Replacement - Q&A

Background

As previously announced, on June 29, 2011, Lexus filed a Defect Information Report (DIR) with the National Highway Traffic Safety Administration (NHTSA) informing the agency of our intent to conduct a voluntary Safety Recall on certain 2006 and 2007 model year RX 400h vehicles.

Lexus has completed parts preparations ans will now begin mailing owner remedy letters.

Q1: ***What is the condition?***

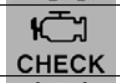
A1: The IPM is located inside of the Hybrid System Inverter and contains a control board with transistors. Certain transistors on the control boards of some of the subject vehicles were inadequately soldered and could be damaged from heat caused by a large current during high-load driving. If this occurs, various warning lamps will be illuminated on the instrument panel. The vehicle may enter a fail-safe/limp-home mode that limits the driving speed of the vehicle. Also, it is possible that the hybrid system will shut down while the vehicle is being driven, causing the vehicle to stall unexpectedly, increasing the risk of a crash.

Q1a: ***What is the Hybrid System Inverter?***

A1a: The hybrid system inverter converts high-voltage DC, stored in the HV battery, into AC for the motor generator. It also converts AC into DC during regenerative braking for storage in the HV battery.

Q2: ***Which Warning Lamps are illuminated on the instrument panel when the vehicle enters fail-safe driving mode?***

A2: All of the following warning lights and messages will be illuminated on the instrument panel when the vehicle enters the fail-safe driving mode. The fail-safe driving mode will result in reduced motive power in which the vehicle can still be driven at limited driving speed for short distances.

	Warning lights
	Master Warning Light
	Slip Indicator
	Check Engine Warning Light
 (yellow indicator)	Electronically Controlled Brake System Warning Light

	Warning messages
CHECK VSC SYSTEM	Malfunction of VSC function is detected.
CHECK HYBRID SYSTEM	Hybrid system malfunction is detected.
CHECK AWD SYSTEM	All Wheel Drive system malfunction is detected.

Q2a: ***How long and what distance can a vehicle be driven when the vehicle enters fail-safe driving mode?***

A2a: The distance a vehicle will continue to travel in fail-safe driving mode will vary based upon the hybrid battery state of charge and the road conditions. If a vehicle enters fail-safe driving mode, the driver should pull-over and stop the car in a safe area. The driver should immediately contact his/her local Lexus dealer for assistance.

Q3: ***What is Lexus going to do?***

A3: Any authorized Lexus dealer will inspect the Inverter Assembly and, if necessary, replace the Intelligent Power Module at NO CHARGE to the vehicle owner.

Q4: ***Which and how many vehicles are involved?***

A4: There are approximately 45,500 Toyota Highlander HV and approximately 36,700 Lexus RX 400h vehicles covered by this Safety Recall in the U.S.

Model Name	Model Year	Production Period	Number of Vehicles
Toyota Highlander HV	Certain 2006 and 2007	Mid February 2005 through late August 2006	Approximately 45,500 units
Lexus RX 400h	Certain 2006 and 2007	Mid February 2005 through late August 2006	Approximately 36,700 units

Q5a: ***Are there any other Toyota or Lexus models covered by this Safety Recall?***

A5a: No. There are no other Toyota or Lexus models covered by this Safety Recall.

Q5: How long will it take to conduct the remedy?

A5: The Inspection of the inverter assembly and, if necessary, replacement of the Intelligent Power Module will take approximately 4 hours. However, it may be necessary for the owner to make the vehicle available for a longer period of time depending upon the dealer's work schedule.

Q6: What if a customer has previously paid for repairs to their vehicle for the condition described above?

A6: Owners are requested to refer to the remedy owner letter for instructions to request reimbursement for previous repair costs.

Q7: What if a customer is not willing to drive the vehicle until the remedy has been completed?

A7: Owners with questions or concerns are asked to please contact the Lexus Customer Assistance Center at 1-800-25-LEXUS Monday through Friday, 5:00 am to 6:00 pm, or Saturday 7:00 am through 4:00 pm Pacific Standard Time.

Certain 2006 and 2007 Model Year RX 400h Vehicles
Hybrid System Inverter, Intelligent Power Module
SAFETY RECALL NOTICE (*Remedy Now Available*)

[VIN]

Dear Lexus Customer:

This notice is being sent to you in accordance with the requirements of the National Traffic and Motor Vehicle Safety Act. Lexus has decided that a defect, which relates to motor vehicle safety, exists in certain 2006 and 2007 Model Year RX 400h Vehicles.

What is the condition?

The Intelligent Power Module (IPM) is located inside of the Hybrid System Inverter (Inverter) and contains a control board with transistors. Certain transistors on the control boards of some of the subject vehicles were inadequately soldered and could be damaged from heat caused by a large current during high-load driving. If this occurs, various warning lamps will be illuminated on the instrument panel. The vehicle may enter a fail-safe/limp-home mode that limits the driving speed of the vehicle. Also, it is possible that the hybrid system will shut down while the vehicle is being driven, causing the vehicle to stall unexpectedly, increasing the risk of a crash.

What is Lexus going to do?

The remedy for your vehicle is now available. Any authorized Lexus dealer will inspect the Inverter and, if necessary, replace the IPM at **NO CHARGE** to you.

What should you do?

This is an important Safety Recall

Please contact any authorized Lexus dealer and make an appointment to have the Inverter inspected to determine if it is covered by the recall.

If the Inverter is covered by the recall, the IPM will be replaced. Replacement of the IPM will take approximately 4 hours. However, depending upon the dealer's work schedule, it may be necessary to make your vehicle available for a longer period of time.

You do not need an owner letter to have this recall completed; however, to assist the dealer in confirming vehicle eligibility, we request that you present this notice at the time of your service appointment.

If you would like to update your vehicle ownership or contact information, please go to www.lexus.com/ownersupdate. You will need your full 17-digit Vehicle Identification Number (VIN) to input the new information.

What if you have other questions?

Your local Lexus dealer will be more than happy to answer any of your questions. If you require further assistance, you may contact Lexus Customer Satisfaction at 1-800-255-3987 Monday through Friday, 5:00 am to 6:00 pm, Saturday 7:00 am through 4:00 pm Pacific Time.

If you believe that the dealer or Lexus has failed or is unable to remedy the defect within a reasonable time, you may submit a complaint to the Administrator, National Highway Traffic Safety Administration, 1200 New Jersey Avenue S.E., Washington, D.C. 20590, or call the toll free Vehicle Safety Hot Line at 1-888-327-4236 (TTY: 1-800-424-9153), or go to http://www.safercar.gov.

What if you have previously paid for repairs to your vehicle for this specific condition?

If you have previously paid for repair to your vehicle for this specific condition prior to receiving this letter, please mail a copy of your repair order and proof-of-payment to the following address for reimbursement consideration:

Lexus Customer Assistance
Mail Stop L201
19001 South Western Avenue
Torrance, CA 90509

Include your name, address, and telephone number(s) in your request. Please allow us 6-8 weeks to process your request.

If you are a vehicle lessor, Federal law requires that any vehicle lessor receiving this recall notice must forward a copy of this notice to the lessee within ten days.

We have sent this notice in the interest of your continued satisfaction with our products, and we sincerely regret any inconvenience this condition may have caused you.

Thank you for driving a Lexus.

Sincerely,

Lexus Division
TOYOTA MOTOR SALES, U.S.A., INC.

TECHNICAL INSTRUCTIONS

FOR

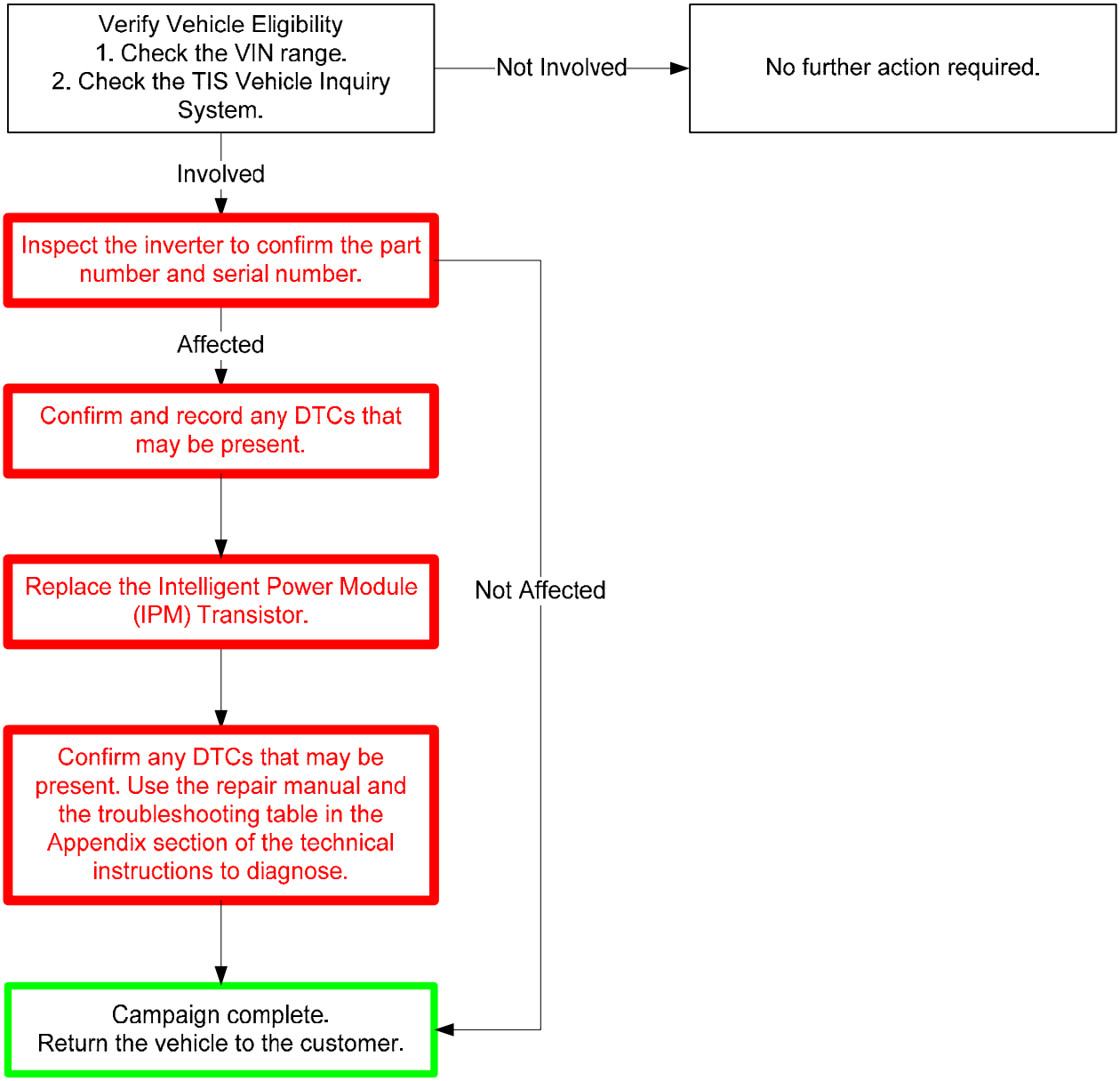
SAFETY RECALL BLD

INTELLIGENT POWER MODULE TRANSISTOR REPLACEMENT

CERTAIN 2006 – 2007 MODEL YEAR RX 400h

In order to perform this campaign, technician must be Hybrid Certified. If you have questions regarding certification, contact your area representative.

I. OPERATION FLOW CHART



II. IDENTIFICATION OF COVERED VEHICLES

A. COVERED VIN RANGE

Model	WMI	Year	VIN Range	
			VDS	Range
RX 400h	JTJ	2006	GW31U	0001007 - 0004971
				2000101 - 2000974
			HW31U	0001035 - 0049416
				2000103 - 2007397
		2007	GW31U	2000975 - 2001481
			HW31U	2007400 - 2008129

NOTE:

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

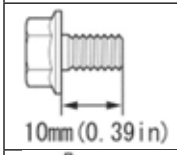
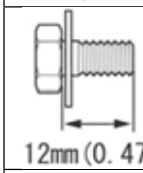
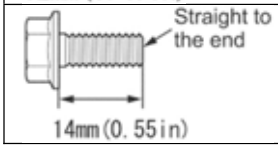
III. PREPARATION

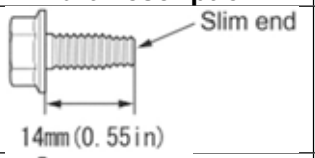
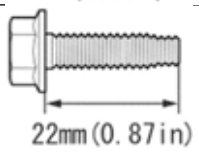
A. PARTS

Required Parts – Necessary to complete the repair

Part Number	Part Description	Quantity
04001-29148	Intelligent Power Module Transistor	1
08887-02409	Grease G747	2

Ancillary Parts – Only necessary if lost during the repair

Part Description	Part Number
	91551-80610
	90105-A0096
	91551-80614

Part Description	Part Number
	90105-A0263
	90080-11255

B. TOOLS, SUPPLIES & EQUIPMENT

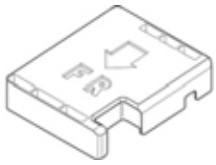
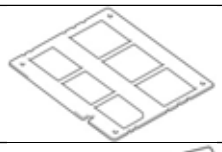
- Standard hand tools
- Torque wrench
- Techstream
- Brake cleaner
- Marking pen
- Air gun
- Throttle plate cleaner 00289-1TP00 (or equivalent)
- Insulating tape
- DVOM

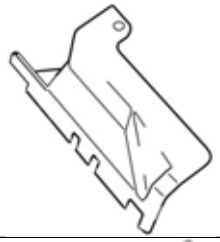
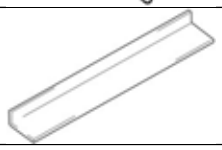
SST – These are essential special service tools that the dealership should have.

Part Number	Part Name	Quantity
00002-03100-S	Electrical Insulating Gloves (Small)	1
00002-03200-M	Electrical Insulating Gloves (Medium)	
00002-03300-L	Electrical Insulating Gloves (Large)	

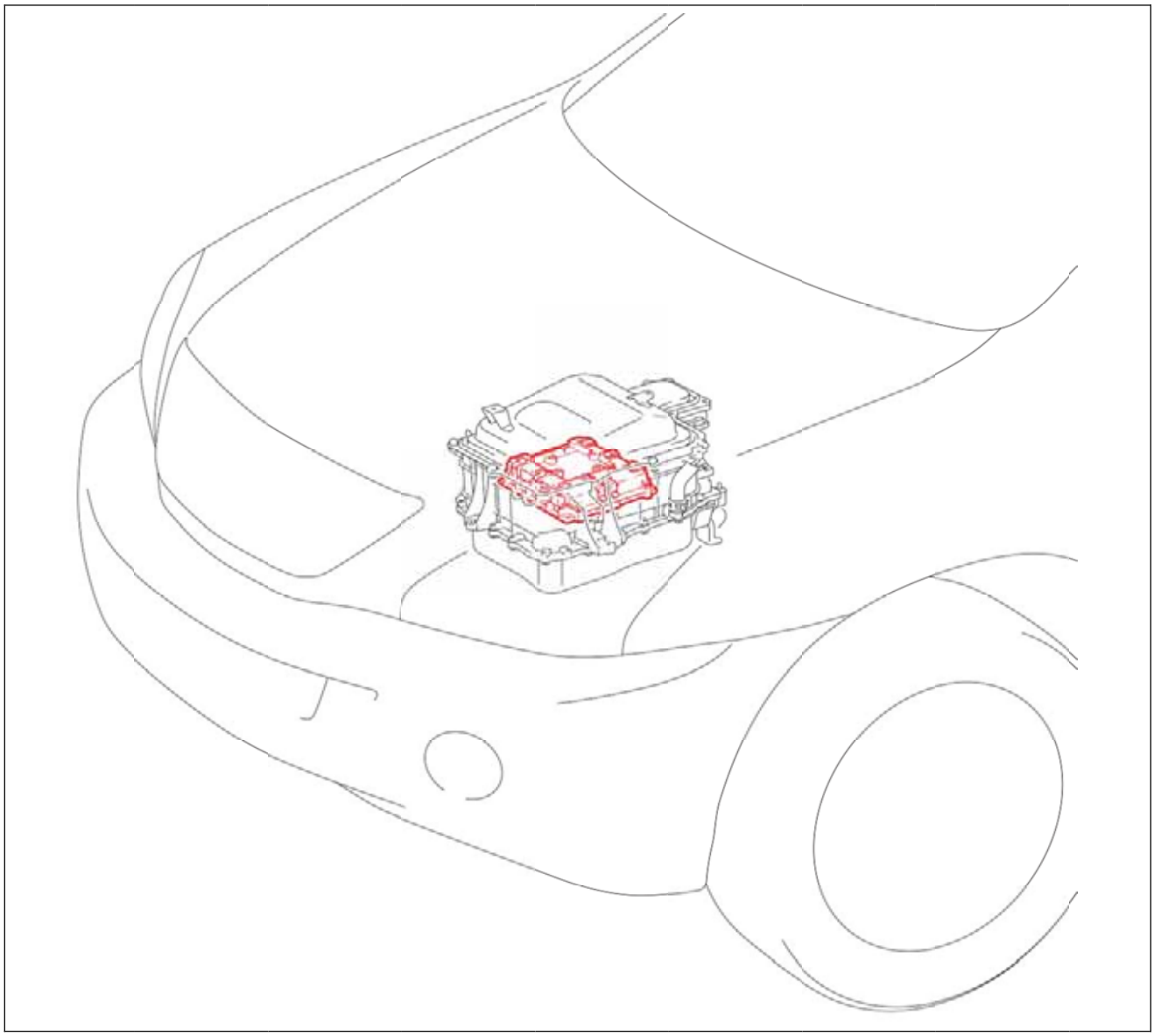
NOTE: If additional gloves are needed they can be ordered through SPX by calling 800-933-8335

Campaign Tools – These tools are provided to the dealership.

Part Name	Sample	Quantity
Protective Cover A		1
Masking Plate		1
Stud Bolt		2

Part Name	Sample	Quantity
Protective Cover B		1
Squeegee		1
Masking Plate Nut/Bolt		4

IV. BACKGROUND



The Intelligent Power Module (IPM) is located inside the Hybrid System Inverter and contains a control board with transistors. Certain transistors on the control boards of some of the subject vehicles were inadequately soldered and could be damaged from heat caused by a large current during high-load driving. If this occurs, various warning lamps will be illuminated on the instrument panel. The vehicle may enter a fail-safe/limp-home mode that limits the driving speed of the vehicle. It is possible that the hybrid system will shut down while the vehicle is being driven, causing the vehicle to stall unexpectedly, increasing the risk of a crash.

V. SAFETY PRECAUTIONS

A. SAFETY CHECKLIST & PRECAUTIONS WHEN WORKING ON THE HIGH VOLTAGE SYSTEM

- **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. AIR VENTILATION AND FOREIGN MATERIALS

- ☐ Perform work in an area that is free of dust and other airborne matter.
- ☐ Do not perform the work next to a stall where grinding or spraying of chemicals is performed.
- ☐ When not working in the inverter, temporarily install the inverter cover to prevent foreign material entering the inverter.

2. PREVENT STATIC ELECTRICITY

- ☐ Static electricity can have an adverse effect on inverter components, discharge static electricity by touching a ground location on the vehicle before starting work.

3. PREVENT ELECTRICAL SHOCKS & SHORTS

- ☐ Confirm the auxiliary battery and the service grip have been unplugged for at least 5 minutes before beginning work on the high voltage system.
- ☐ Store the service grip in a secure location (in your pocket) to prevent accidental installation.
- ☐ To prevent short-circuiting of components, wrap tools with insulating tape before use.
- ☐ Do not wear metal; watches, rings, mechanical pencils, etc…
- ☐ When working with or around a high voltage circuit (orange connectors and cables) wear the correct electrical insulating gloves.
- ☐ Confirm your electrical insulating gloves are not wet, or dirty.
- ☐ Confirm your electrical insulating gloves are not punctured or torn.

4. USE OF AIR & POWER TOOLS

- ☐ Do not use air tools or power tools on any component once the inverter cover has been removed to prevent damage and foreign materials from entering the inverter.

5. HANDLING OF PARTS

- ☐ Keep all removed parts organized and clean.
- ☐ Store all removed parts so they are not contaminated or damaged when removed from the inverter.

6. HANDLING OF THE INVERTER & CONNECTORS

- ☐ Cover all high voltage connectors with insulating tape immediately after disconnecting the connector.
- ☐ Use extreme care to prevent nuts/bolts from falling into the inverter when work is performed. If a part falls into the bottom section of the inverter the entire inverter assembly may need to be removed.
- ☐ Use extreme care to not drop any tools in the inverter assembly.

7. CONNECTING HIGH VOLTAGE TERMINALS

- ☐ Confirm all terminals are clean before connecting to the inverter.
- ☐ Torque specifications are critical, confirm all bolts are torque as described in these instructions.

8. INTERMEDIATE INSPECTIONS

- ☐ Perform all intermediate inspections to prevent errors.

9. ASSIGN A SAFETY SUPERVISOR

- ☐ Assign a safety supervisor to be in charge of all safety precautions in the work area.
- ☐ Put a "Working with high voltage" warning sign on the vehicle during work.

Person in charge: _____

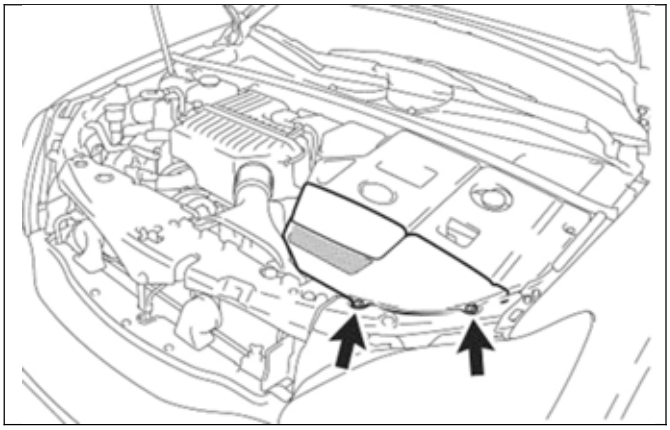
CAUTION:
Working on
high voltage system

CAUTION:
Working on
high voltage system

Person in charge: _____

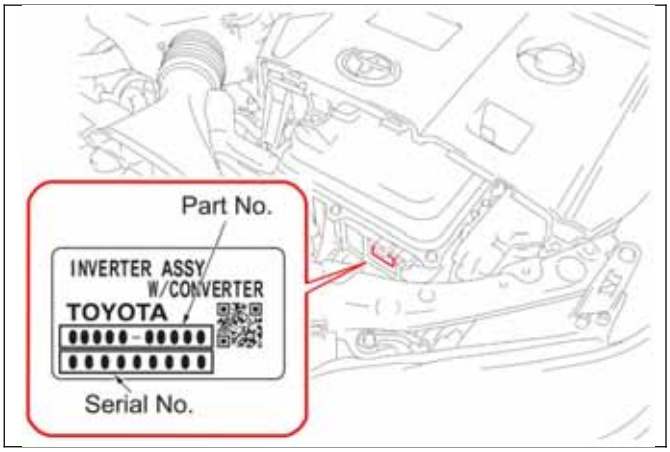
Fold this page and place on the roof of vehicle.

VI. INVERTER VERIFICATION



1. REMOVE THE ENGINE ROOM SIDE LH COVER

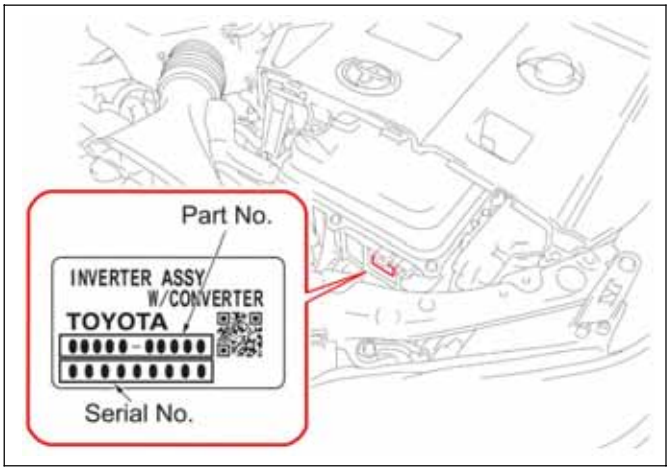
a) Remove the 2 clips and the engine room cover.



2. CONFIRM THE *PART NUMBER*

a) Record the part number on the repair order.

PART NUMBER	ACTION REQUIRED
G9200-48011, G9200-48021 OR part number cannot be determined	The IPM transistor should be replaced Proceed to **SECTION VIII. DISASSEMBLY**
Other than G9200-48011, G9200-48021	Proceed to **STEP 3. CONFIRM THE *SERIAL NUMBER***



3. CONFIRM THE *SERIAL NUMBER*

a) Record the serial number on the repair order.

b) Use the following website to determine if intelligent power module (IPM) transistor replacement is necessary.

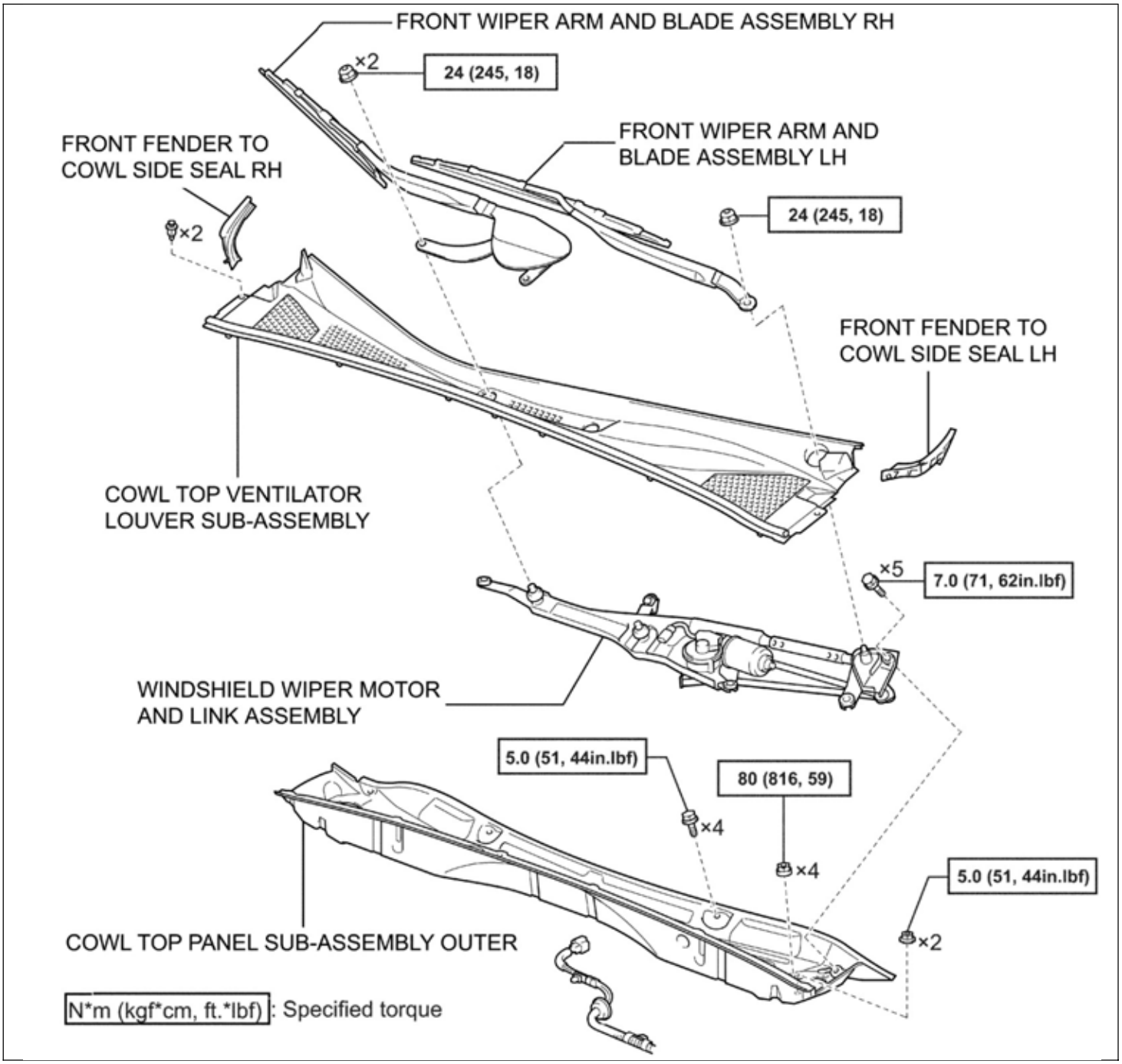
http://b0j-bld-lookup.imagespm.info

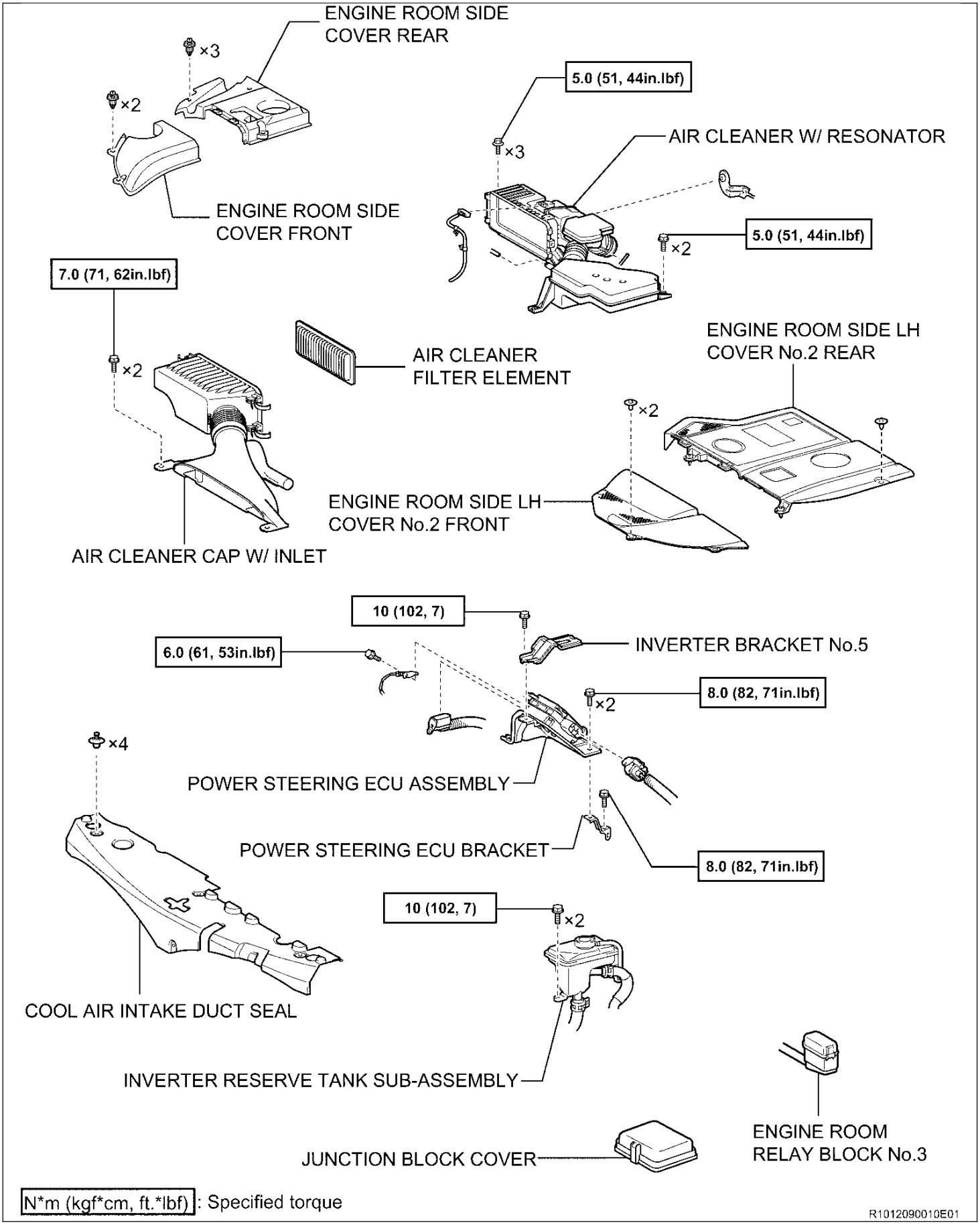
NOTE:

- **If the part number or serial number cannot be determined, the IPM transistor should be replaced.**
- **If there are any concerns regarding this inspection, email a picture of the label to quality_compliance@toyota.com for assistance.**

VII. DISASSEMBLY

A. COMPONENTS



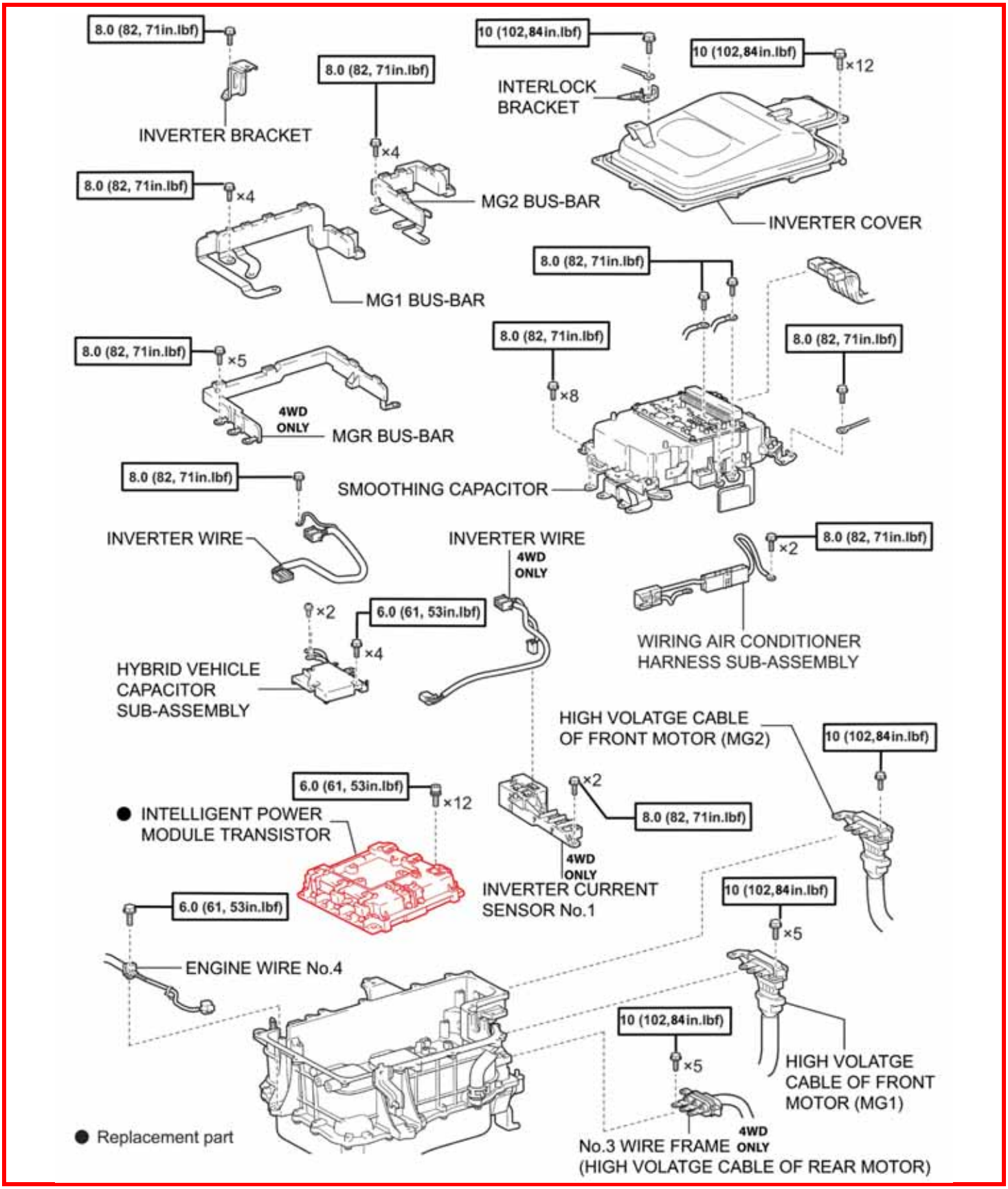


N*m (kgf*cm, ft.*lbf) : Specified torque

R1012090010E01

TORQUE SPECIFICATIONS INSIDE THE INVERTER ARE CRITICAL
CONFIRM ALL BOLTS ARE TORQUED AS OUTLINED IN THESE INSTRUCTIONS

INTERNAL COMPONENTS IN THE INVERTER ARE NOT AVAILABLE AS SERVICE PARTS
BE CAREFUL WHEN REMOVING, STORING, AND REINSTALLING THESE COMPONENTS



B. VEHICLE DISASSEMBLY

It is extremely important that all of the vehicle disassembly steps are followed prior to proceeding to the inverter disassembly steps. Failure to follow all steps could result in inverter damage.

1. DETERMINE THE WORK PLACE

a) Choose a spot that is free of dust and debris. ***DO NOT*** work next to a place where grinding or spraying of chemicals is performed.

It is extremely important to prevent contamination of the inverter assembly. Confirm the work area is clean and free from airborne matter.

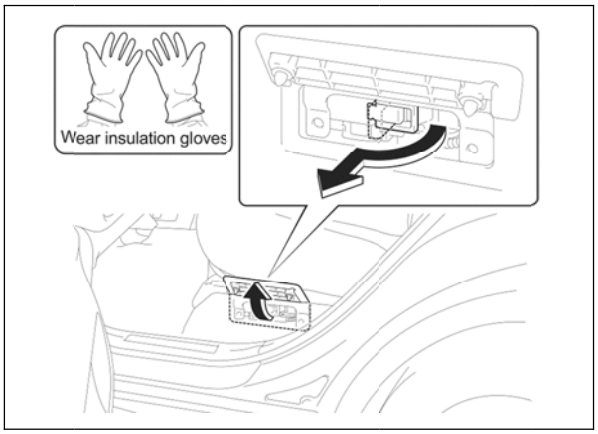
2. PLACE THE PROVIDED CAUTION SIGN ON THE ROOF OF THE VEHICLE

3. RECORD AUDIO AND AIR CONDITIONING SYSTEM SETTINGS

4. CHECK FOR DIAGNOSTIC TROUBLE CODES

a) If any DTCs are output record the data.

5. DISCONNECT THE NEGATIVE BATTERY CABLE

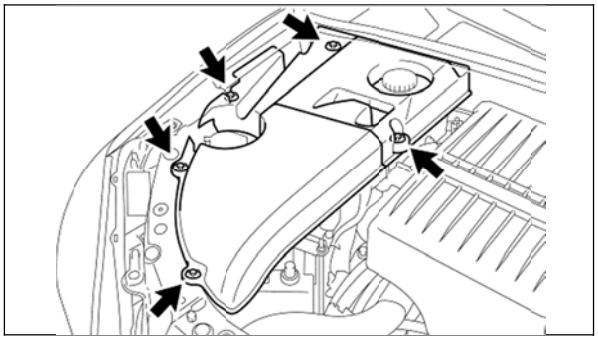


6. REMOVE THE SERVICE GRIP

a) Disengage the 2 clips and open the battery service hole cover.

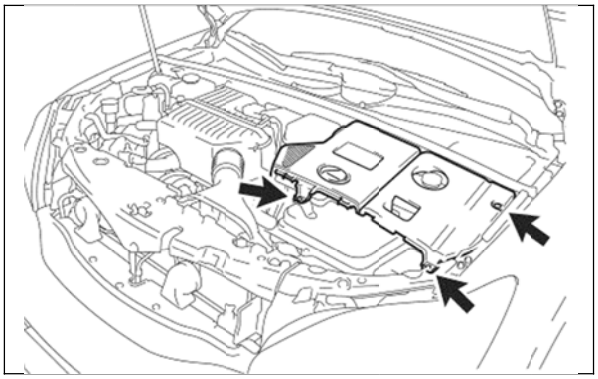
b) Wearing insulating gloves, remove the service grip.

- **Store the service grip in a secure location (in your pocket) to prevent accidental installation.**
- **After removing the service grip, wait at least 5 minutes before working on the high voltage system.**
- ***DO NOT* attempt to switch the vehicle to READY ON with the service grip removed.**



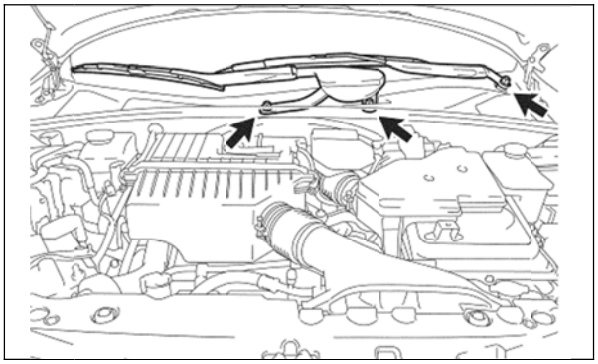
7. REMOVE THE ENGINE ROOM SIDE COVER

a) Remove the 5 clips and the cover.



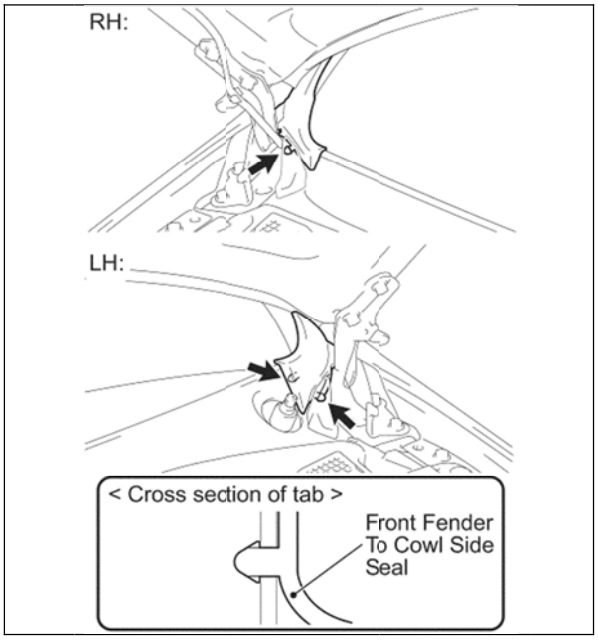
8. REMOVE THE ENGINE ROOM SIDE LH COVER No.2 REAR

a) Remove the 3 clips and the cover.



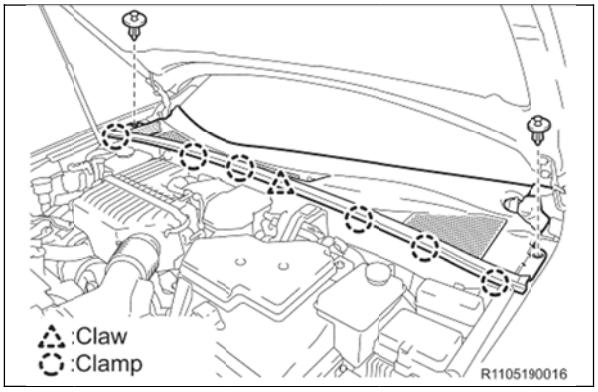
9. REMOVE THE FRONT WIPER ARMS

a) Remove the 3 nuts and the wiper arms.



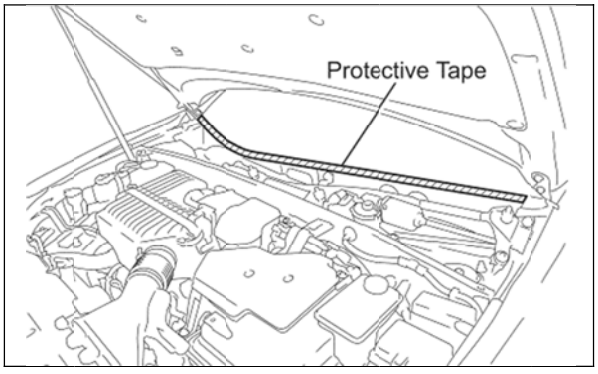
10. REMOVE THE FRONT FENDER TO COWL SIDE SEALS

a) Release the tab molded in the rubber seal from the body and remove the seals.



11. REMOVE THE COWL TOP VENTILATOR LOUVER SUB ASSEMBLY

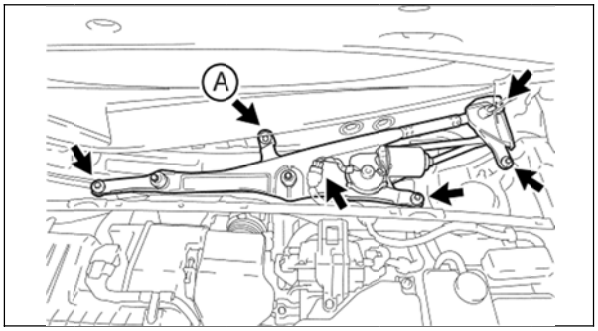
a) Remove the 2 clips, disengage the 6 tabs and remove the cowl.



12. PROTECT THE WINDSHIELD

a) Attach masking tape thickly to the bottom of the glass to prevent the windshield from being damaged.

NOTE: Be extremely careful as laminated glass is easy to break when the edge is impacted.

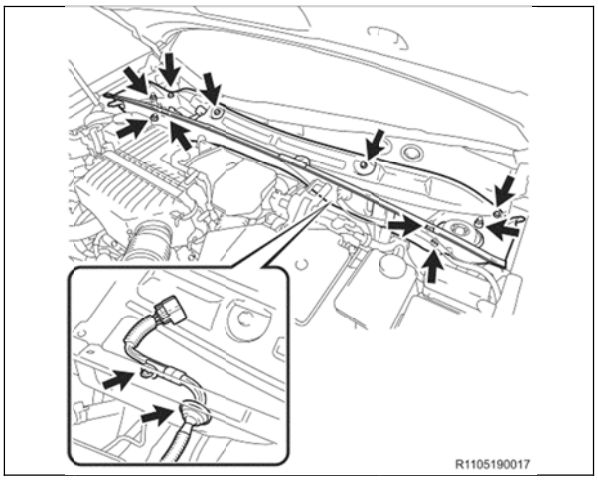


13. REMOVE THE WINDSHIELD WIPER MOTOR AND LINK ASSEMBLY

a) Disconnect the connector and harness clamps.

b) Remove the 5 bolts and the assembly.

NOTE: The bolt labeled 'A' in the illustration may have a temporary washer, there is no problem if the washer is lost or damaged.



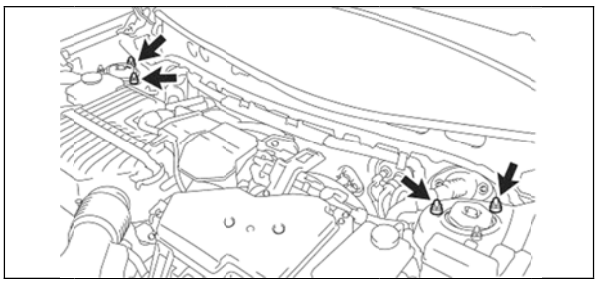
14. REMOVE THE COWL TOP PANEL SUB ASSEMBLY OUTER

a) Remove the clamps and grommet of the wiper harness.

b) Remove the 4 shock absorber nuts that also attach to the cowl.

c) Remove the 4 bolts and 2 nuts and the cowl.

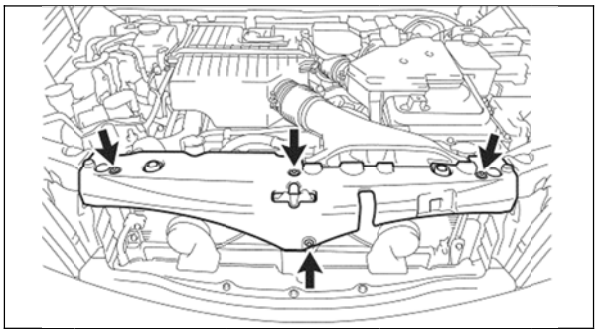
NOTE: *DO NOT* contact the windshield with the cowl during removal.



15. INSTALL THE SHOCK ABSORBER NUTS

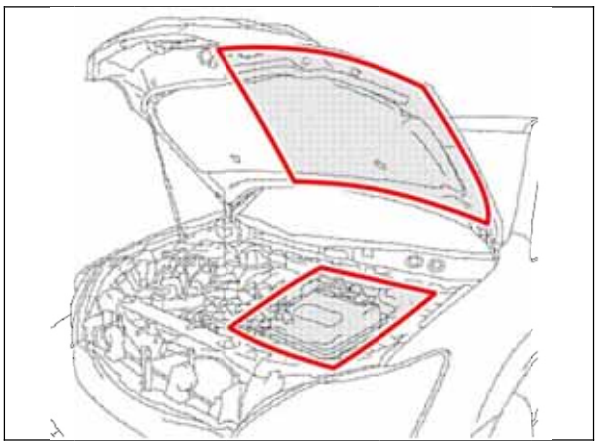
a) Install the 4 shock absorber nuts that were removed in the previous step.

Torque: 80N·m (816kgf·cm, 59ft.·lbf)



16. REMOVE THE COOL AIR INTAKE DUCT SEAL

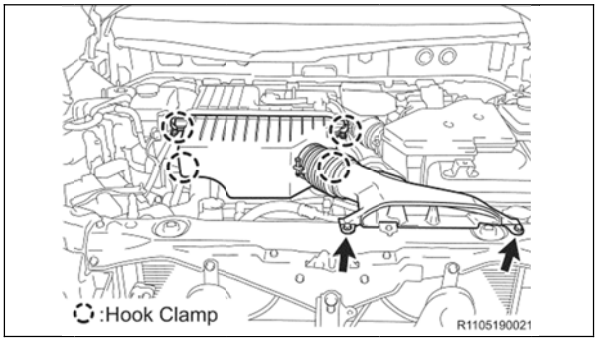
a) Remove the 4 clips and the seal.



17. CLEAN THE AREA AROUND THE INVERTER

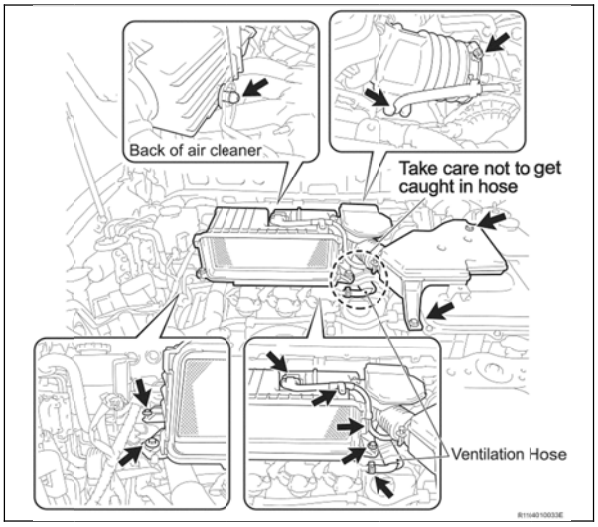
a) Thoroughly remove dust and water from the areas highlighted in the illustration using shop cloths and an air gun.

STOP The inverter is a precision component, contamination can cause a malfunction.



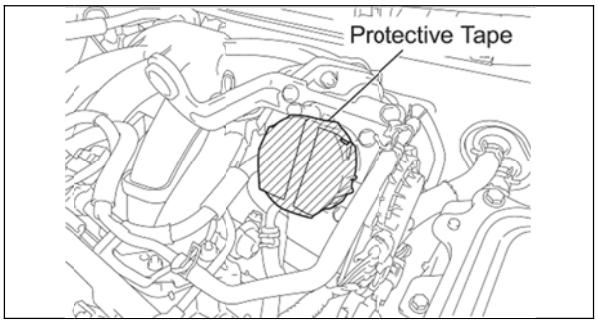
18. REMOVE THE AIR CLEANER CAP WITH INLET

a) Remove the 2 bolts and the 4 hook clamps and the air cleaner.



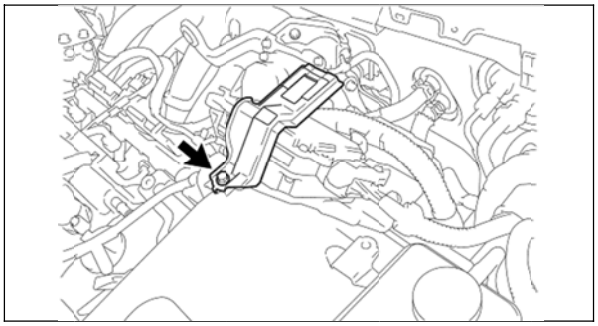
19. REMOVE THE AIR CLEANER CASE WITH RESONATOR

a) Disconnect all hoses and connectors, disconnect the 5 bolts and the air cleaner case.

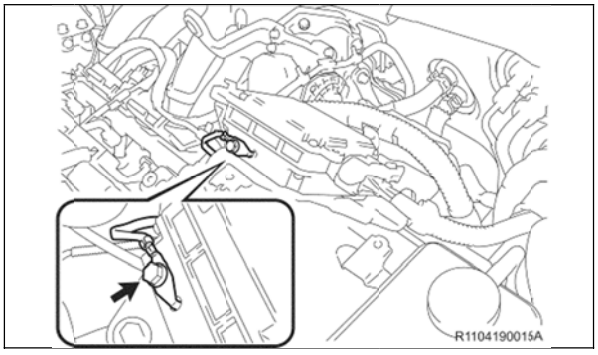


20. COVER THE THROTTLE BODY

a) To prevent foreign material from entering the throttle body, cover with tape.



21. REMOVE THE INVERTER BRACKET No.5

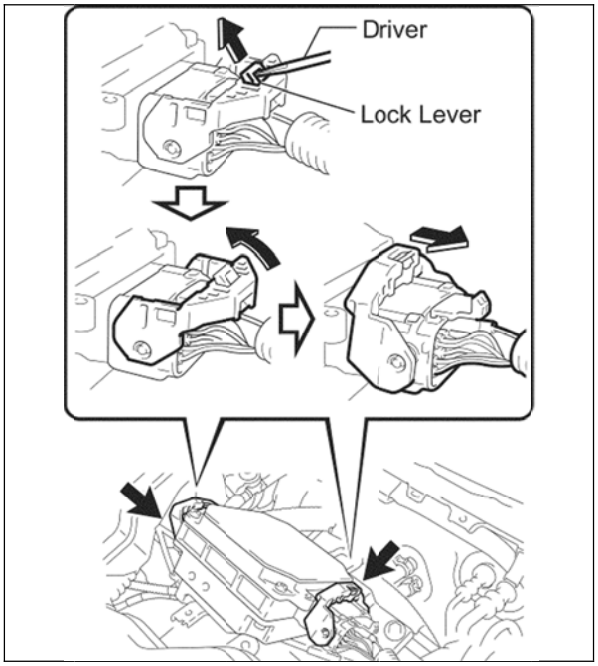


22. REMOVE THE POWER STEERING ECU ASSEMBLY

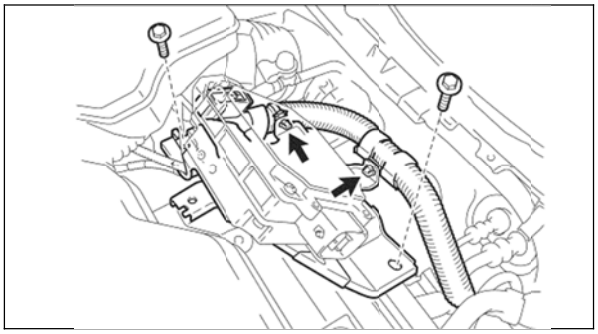
Wear insulating gloves when removing the power steering gear ECU, circuit voltage is approximately 42V.

a) Remove the ground wire bolt and ground wire.

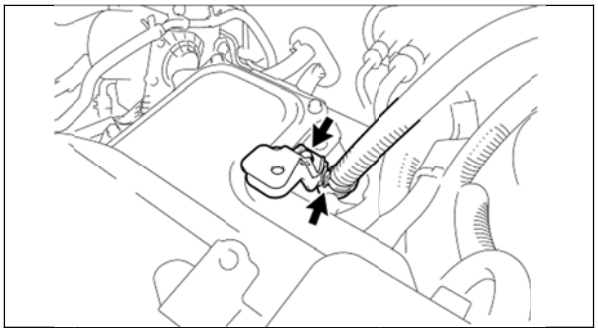
b) Wrap the ground terminal with insulating tape.



c) Remove the 2 connectors as described in the illustration.
d) Wrap the terminals of the connectors with insulating tape.

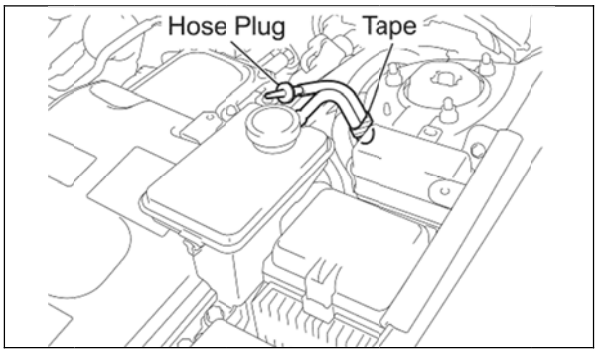


e) Disconnect the 2 wire harness clamps.
f) Remove the 2 bolts and the ECU.



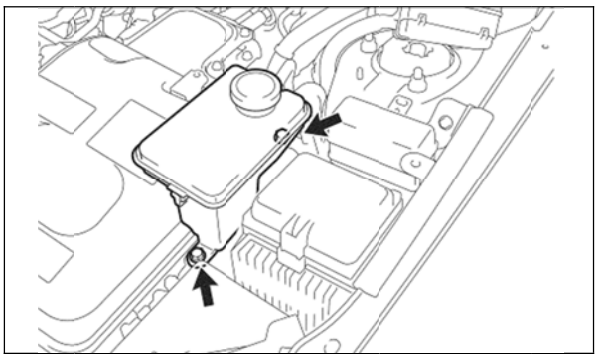
23. REMOVE THE POWER STEERING ECU BRACKET

a) Remove the bolt and bracket.

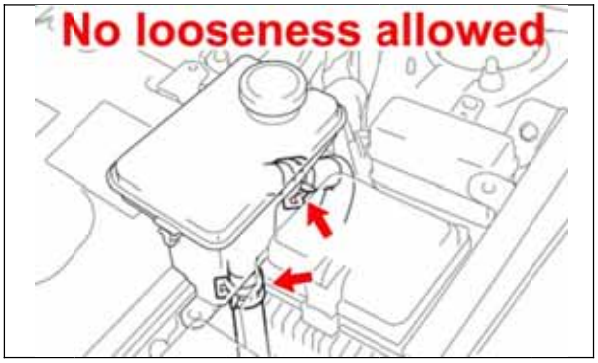


24. DISPLACE THE INVERTER RESERVE TANK SUB ASSEMBLY

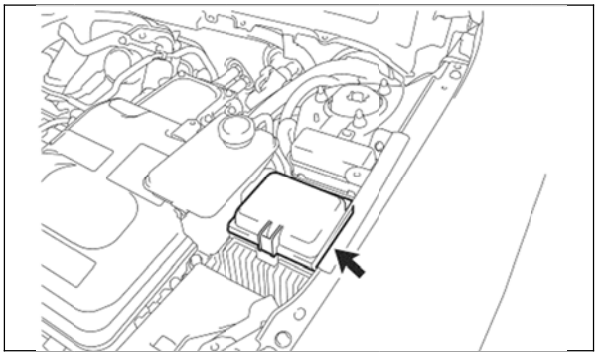
a) Confirm the tank cap is securely tightened.
b) Plug the overflow hose, then fix the hose with tape as illustrated to prevent coolant leakage.



c) Remove the 2 bolts for the reserve tank.

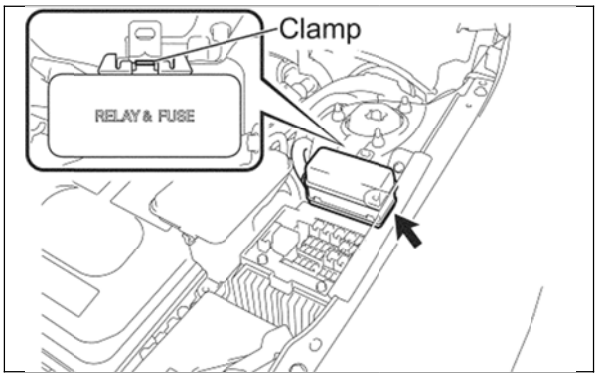


d) Confirm the 2 hoses connected to the reserve tank are secure.

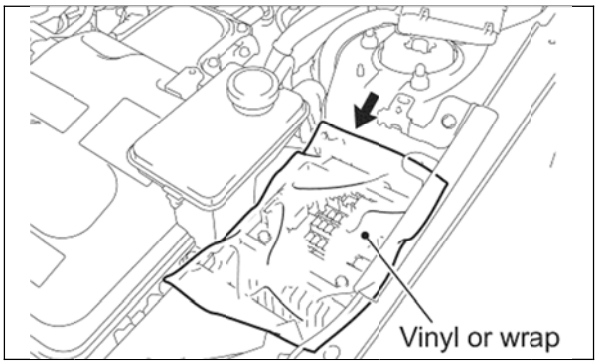


25. REMOVE THE JUNCTION BLOCK COVER

NOTE: The reserve tank cannot be displaced unless the cover is removed.



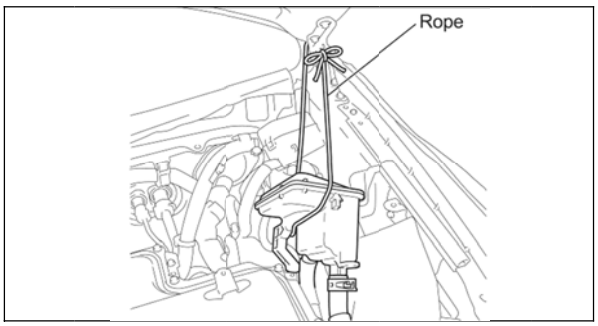
26. DISCONNECT THE ENGINE ROOM RELAY BLOCK No.3



27. PROTECT THE JUNCTION BLOCK

a) Cover the exposed fuses and relays with a waterproof material.

NOTE: *DO NOT* use tape to cover the junction block as relays and fuses may be pulled out when the tape is removed.

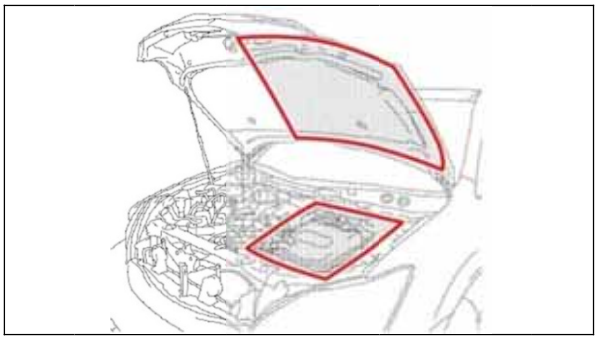


28. DISPLACE THE INVERTER RESERVE TANK SUB ASSEMBLY

a) Displace the reserve tank and secure it to the hood hinge to gain access to the inverter cover.

b) Confirm the reserve tank does not leak coolant when in the displaced position.

NOTE: *DO NOT* put excessive strain on the reserve tank hoses.



29. CLEAN THE AREA AROUND THE INVERTER

a) Confirm all dust and water has been removed from the areas highlighted in the illustration. Clean using shop cloths and an air gun.

The inverter is a precision component and any contamination may cause a malfunction.

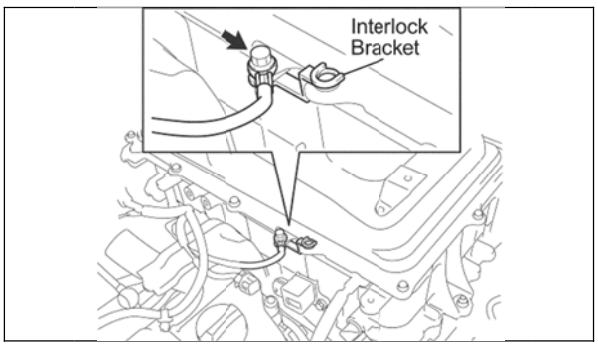
THE FOLLOWING CONFIRMATION STEPS ARE VITAL
CONFIRM THESE STEPS ARE FOLLOWED CLOSELY

PERFORM THIS INTERMEDIATE INSPECTION BEFORE BEGINNING WORK ON THE INVERTER.

1. Is the work space clear of dust and water?
2. Is the “Working with high voltage” warning sign posted?
3. Is the auxiliary battery disconnected and the service grip in a secure location (in your pocket)?
4. Is the inverter reserve tank displaced securely and free of leaks?
5. Are the areas around the inverter and the underside of the hood properly cleaned?
6. Are you wearing electrical insulating gloves that are in good condition?
7. Is the protective cover A clean and available for use?
8. Have you discharged all potential static electricity from your person?

C. INVERTER DISASSEMBLY

- **It is extremely important to prevent contamination of the inverter assembly.**
- **Confirm the work area is clean and free from airborne matter.**
- **Be sure to wear electrical insulating gloves during the entire inverter disassembly procedure.**
- ***DO NOT* use any air tools or power tools during the inverter disassembly procedure.**
- **Confirm all tools used on HV components are insulated or wrapped with insulating tape.**
- **Internal components in the inverter are not available as service parts, be careful when removing, storing, and reinstalling these components.**

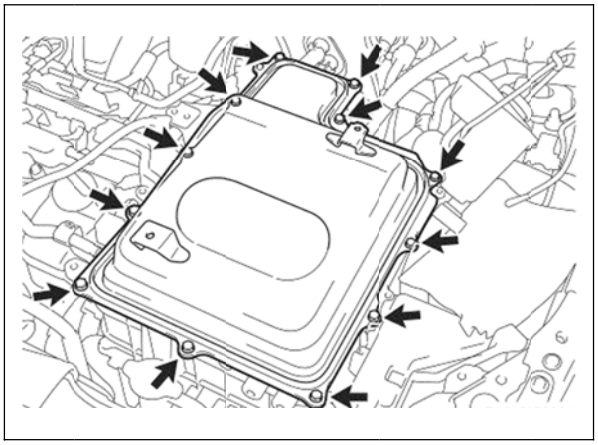


1. REMOVE THE INVERTER COVER

a) Remove the bolt and the interlock bracket.

b) Wrap the terminal with insulating tape.

Confirm the entire cowl assembly has been removed prior to removing the inverter cover. Failure to do so could result in damage in the inverter.



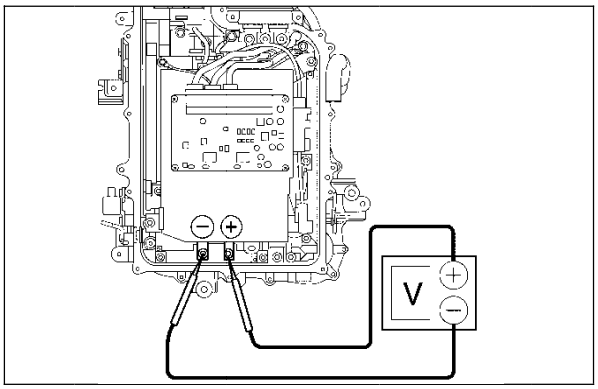
c) Loosen the 12 bolts evenly in 2 increments to remove the cover.

NOTE:

- ***DO NOT* deform the cover during removal.**
- **To prevent damage to the insulating gloves, wear work gloves over the insulating gloves.**

- **Take extra precautions to prevent foreign material from entering the inverter.**
- ***DO NOT* touch the circuit board inside the inverter.**

d) Store the inverter cover in a safe location to prevent damage to the inverter cover gasket.

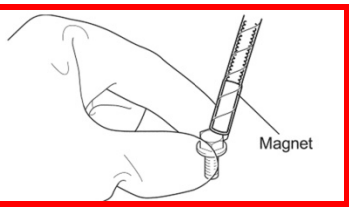


2. PERFORM A FINAL VOLTAGE CHECK

a) Measure the voltage at the points indicated in the illustration.

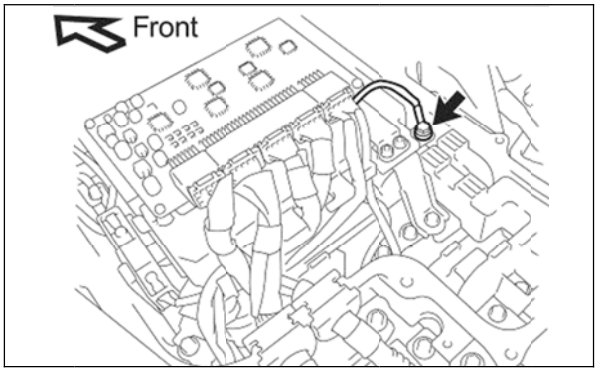
Standard Voltage: 0V

NOTE: If voltage is present, confirm all previous steps to disable the high voltage system have been followed.



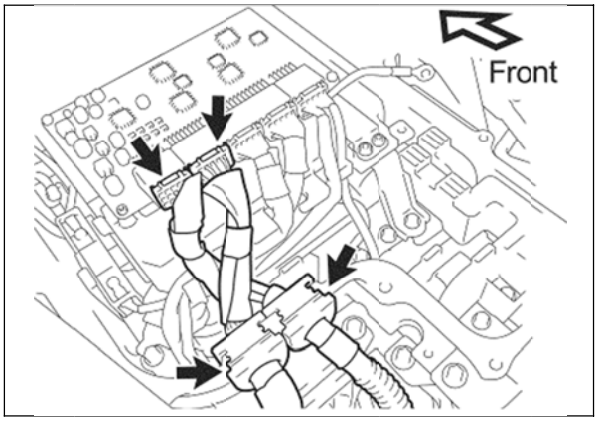
NOTE:

- **To prevent dropping any bolts into the inverter it may be necessary to use a magnet to pick up bolts as they are loosened.**
- **If bolts are dropped into the bottom section of the inverter it may be necessary to completely remove the inverter for retrieval.**

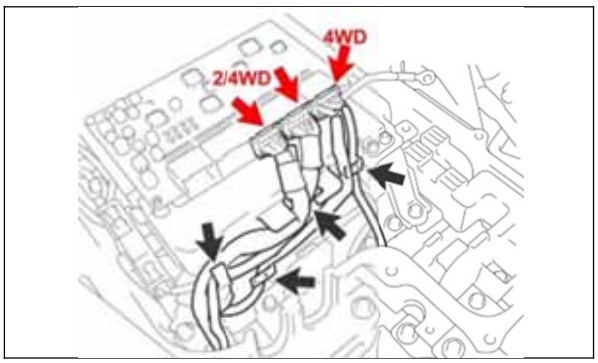


3. DISCONNECT THE MG ECU CONNECTORS

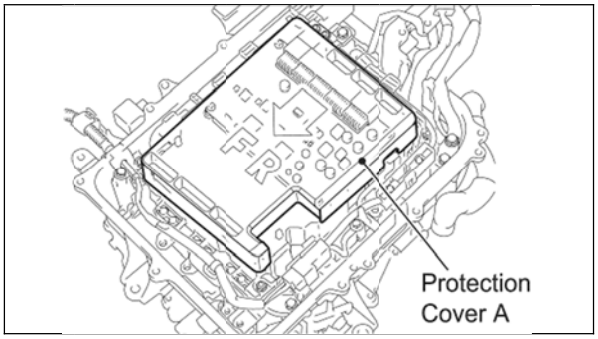
a) Remove the ground bolt.



b) Disconnect the 2 connectors and the 2 grommets.

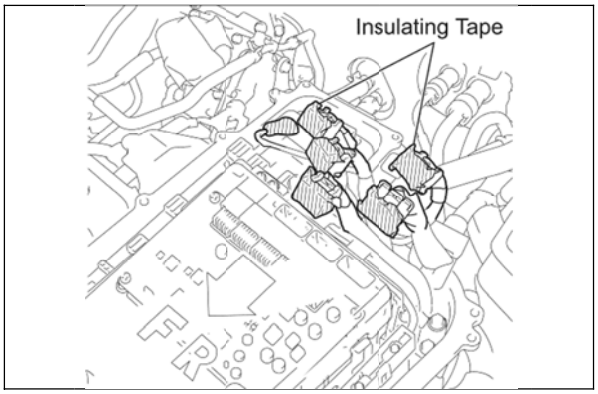


c) **4WD** − Disconnect the 3 connectors and remove the wires from the clamps.
2WD – Disconnect the 2 connectors and remove the wires from the clamps.



4. INSTALL PROTECTIVE COVER A

a) Immediately install the cover to protect the circuit board from damage and contamination.

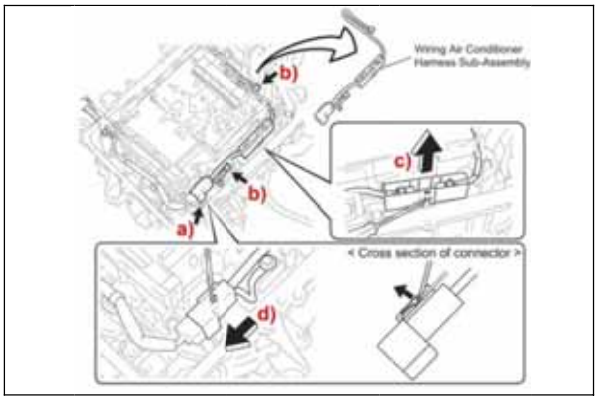


5. PROTECT THE CONNECTORS AND HARNESS

a) Cover the disconnected connectors and terminal with insulating tape.

b) Bundle the harness and secure it away from the inverter.

NOTE: Confirm the harness is positioned so the sharp edge of the inverter case does not cut the wires.



6. REMOVE THE AIR CONDITIONER HARNESS SUB ASSEMBLY

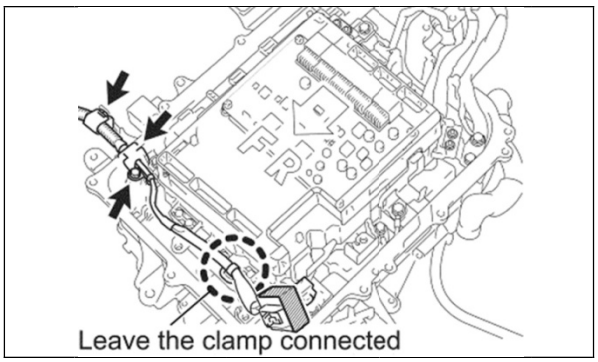
a) Disconnect the connector.

b) Remove the 2 ground bolts.

c) Raise the tab of the fuse box to remove it from the bracket.

d) Raise the tab of the connector to remove it from the bracket.

***DO NOT* remove the harness until all connectors have been disconnected to prevent damaging components.**



7. DISCONNECT THE ENGINE WIRE No.4

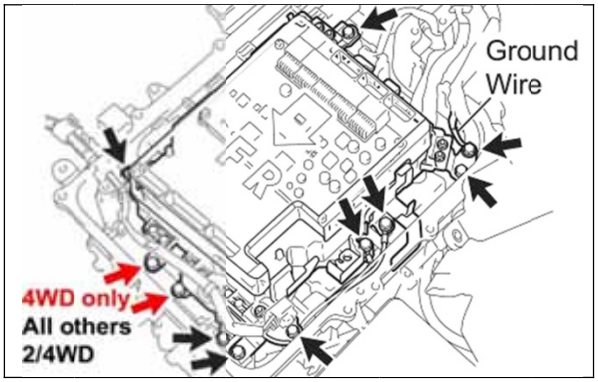
a) Cover the connector with insulating tape.

b) Remove the bolt.

c) Disconnect the grommet.

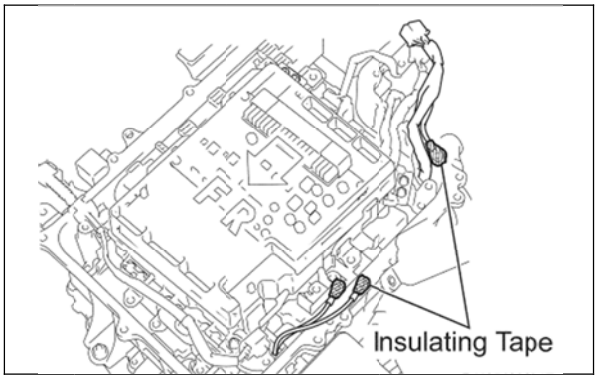
d) Disconnect the harness clamp located **outside** the inverter.

NOTE: *DO NOT* disconnect the harness clamp located inside the inverter at this time to avoid damaging the clamp or the smoothing capacitor.



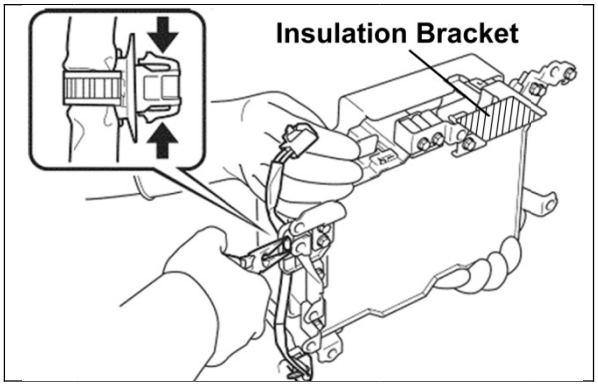
8. REMOVE THE SMOOTHING CAPACITOR

a) **4WD** – Remove the 11 bolts.
2WD – Remove the 9 bolts.



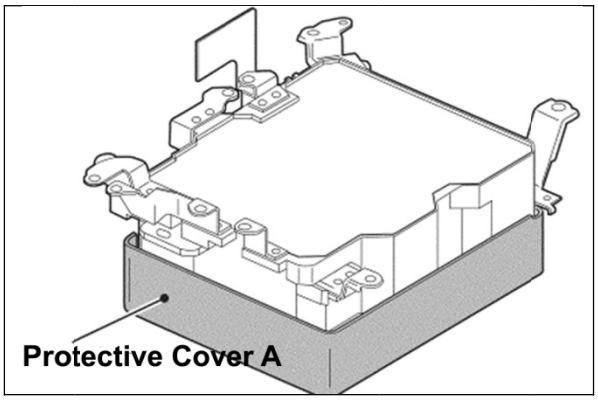
b) Cover the terminals with insulating tape.

NOTE: Confirm protective cover A is fully installed.



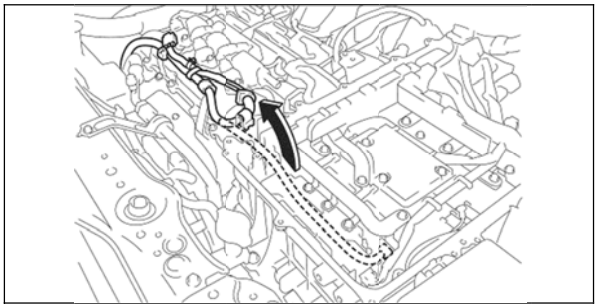
c) Lift the smoothing capacitor.
d) Disconnect the wire harness clamp.
e) Remove the smoothing capacitor.

NOTE:
- ***DO NOT* bend the insulation bracket.**
- **Handle the smoothing capacitor carefully.**



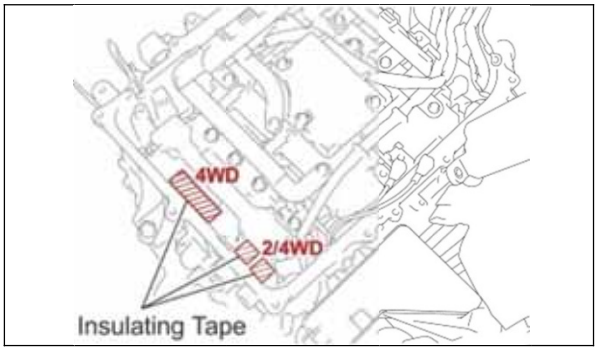
f) Store the smoothing capacitor with protective cover A down.

NOTE:
- ***DO NOT* store the smoothing capacitor with protective cover A facing up.**
- ***DO NOT* cover the smoothing capacitor with a shop cloth to avoid damaging the insulation bracket.**
- **Store the smoothing capacitor in a location that is free of dust and other airborne matter.**

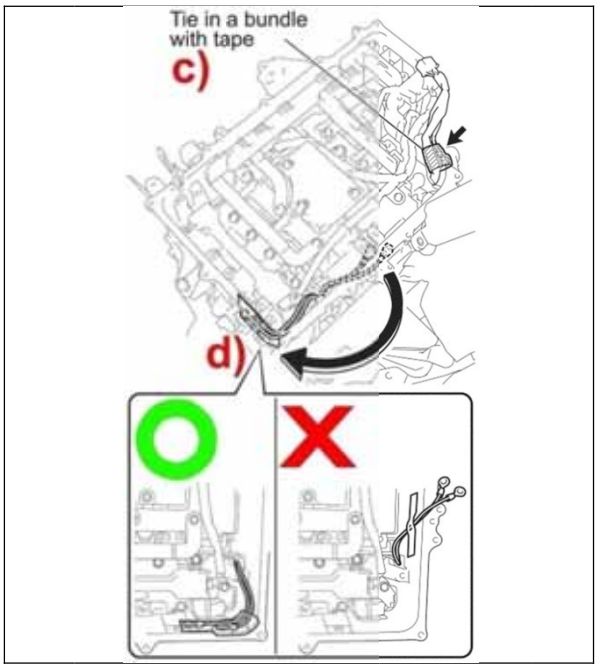


9. PROTECT THE HARNESSES AND TERMINALS

a) Position the disconnected harness outside the inverter so it does not obstruct the work.



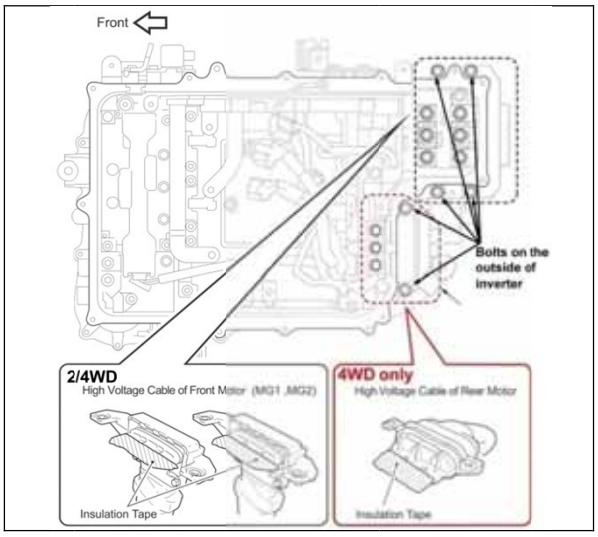
b) Cover the terminals indicated in the illustration with insulating tape.



c) Secure the terminal to the other harnesses at the rear of the inverter so it does not obstruct the work.

d) Secure the 2 forward terminals to the inner wall of the inverter as indicated in the illustration so they do not obstruct the work.

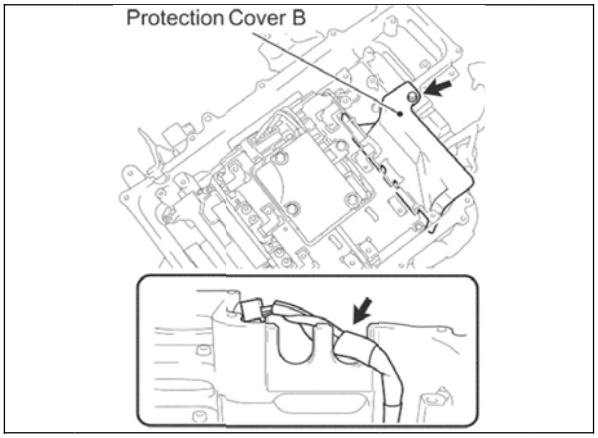
NOTE: *DO NOT* position the terminals in a way that will allow the inverter cover to pinch them when the cover is temporarily installed.



10. DISCONNECT THE HIGH VOLTAGE CABLES

a) **4WD** – Remove the 15 bolts and disconnect the high voltage MG1, MG2, and MGR cables. Cover the terminals with insulating tape.
2WD – Remove the 10 bolts and disconnect the high voltage MG1 and MG2 cables. Cover the terminals with insulating tape.

To prevent contamination, *DO NOT* use the bolts that were removed from the outside of the inverter on the inside.



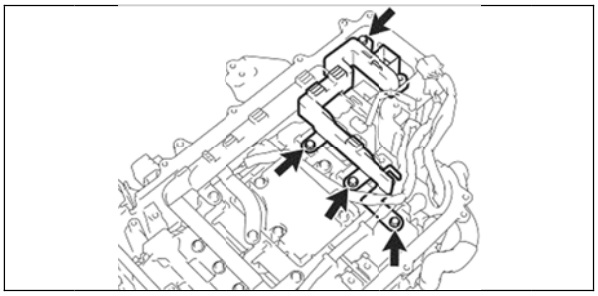
11. *2WD ONLY* – INSTALL PROTECTIVE COVER B

a) Position the wire harness in the groove of the inverter case.

b) Install protective cover B using an inverter cover bolt.

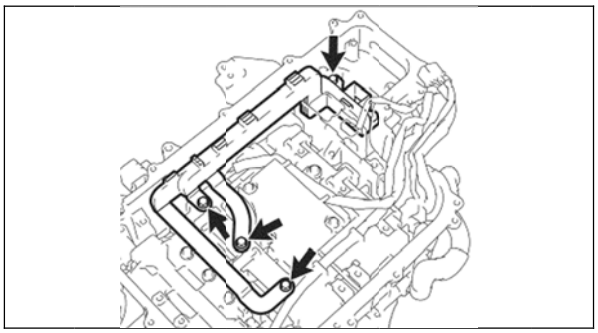
NOTE:

- **Tighten the bolt by hand *ONLY*.**
- **Protective Cover B will be installed on 4WD vehicles at step 18.**



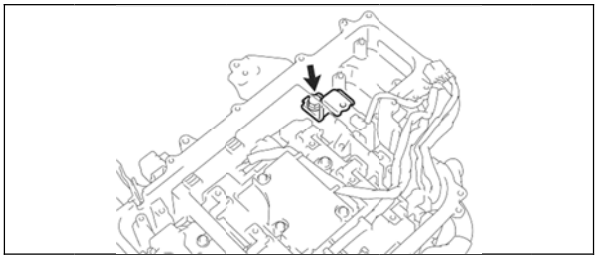
12. REMOVE THE MG2 BUS BAR

a) Remove the 4 bolts and the bus bar.



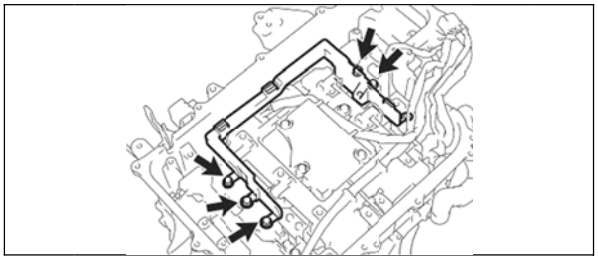
13. REMOVE THE MG1 BUS BAR

a) Remove the 4 bolts and the bus bar.



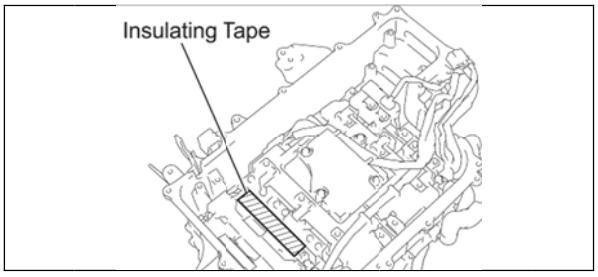
14. *4WD ONLY* – REMOVE THE INVERTER BRACKET

a) Remove the bolt and the bracket.

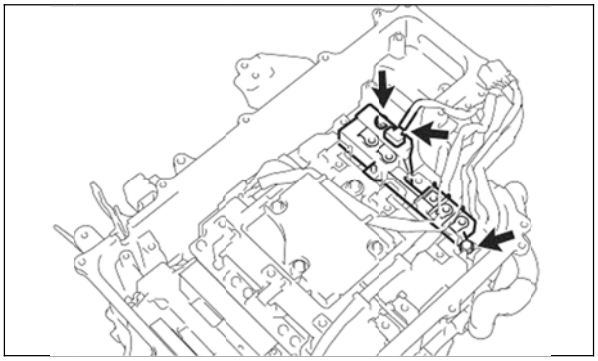


15. *4WD ONLY* – REMOVE THE MGR BUS BAR

a) Remove the 5 bolts and the bus bar.



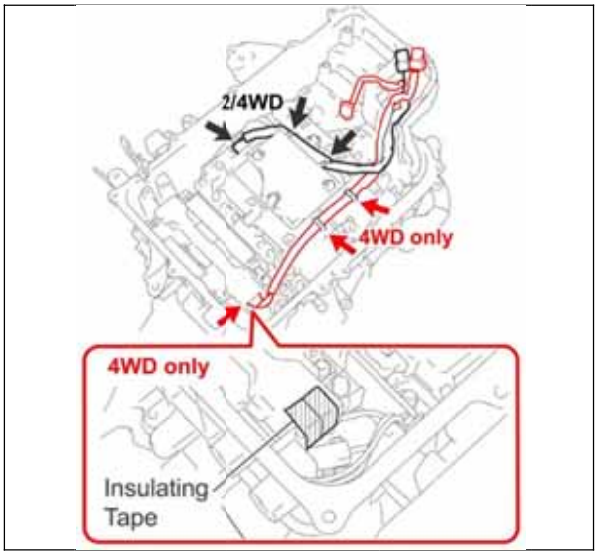
b) Cover the terminals indicated in the illustration with insulating tape.



16. *4WD ONLY* – REMOVE THE INVERTER CURRENT SENSOR No.1

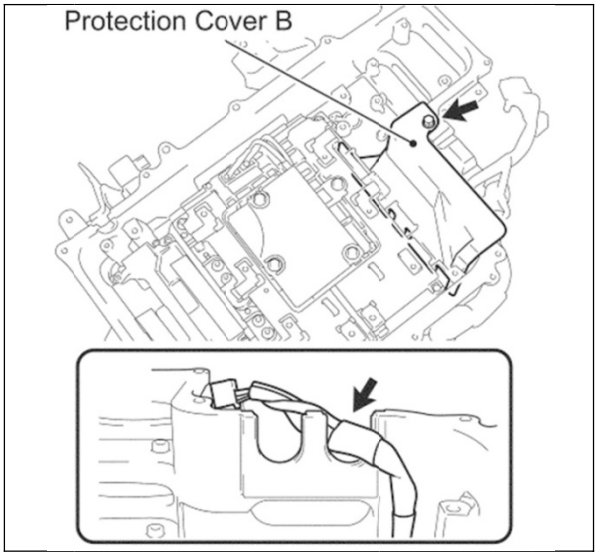
a) Disconnect the connector.

b) Remove the 2 bolts and the sensor.



17. REMOVE THE INVERTER WIRE HARNESSES

a) **4WD ONLY** – Disconnect the 2 clamps and the connector and remove the harness. Attach insulating tape to the connector indicated in the illustration.
2/4WD – Disconnect the 2 clamps and the connector and remove the harness.

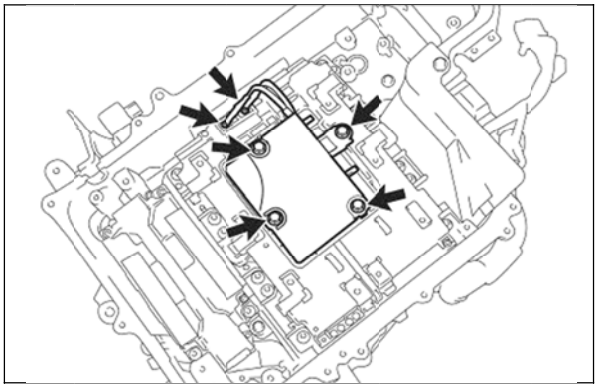


18. INSTALL PROTECTIVE COVER B

a) Position the wire harness in the groove of the inverter case.

b) Install protective cover B using an inverter cover bolt.

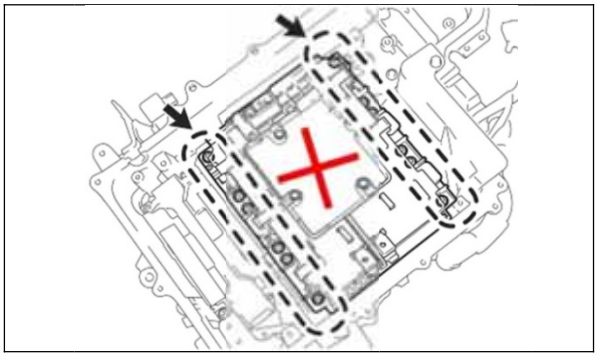
NOTE: Tighten the bolt by hand *ONLY*.



19. REMOVE THE HYBRID VEHICLE CAPACITOR SUB ASSEMBLY

a) Remove the 2 terminal screws.

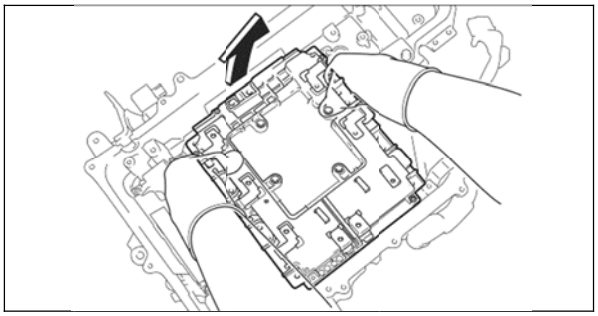
b) Remove the 4 bolts and the capacitor.



20. REMOVE THE INTELLIGENT POWER MODULE (IPM) TRANSISTOR

a) Mark the IPM transistor so that it is not reused.

b) Remove the 12 bolts.

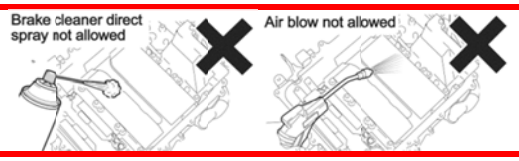


c) Lift one side of the IPM transistor to release the connection caused by the heat conductive grease.

d) Remove the IPM transistor.

STOP ***DO NOT*** **use any pry tools when removing the IPM transistor, this may damage the inverter case.**

D. INVERTER CLEANING



NOTE:

- ***DO NOT*** **spray brake cleaner directly in the inverter.**
- ***DO NOT*** **use an air gun in the inverter.**

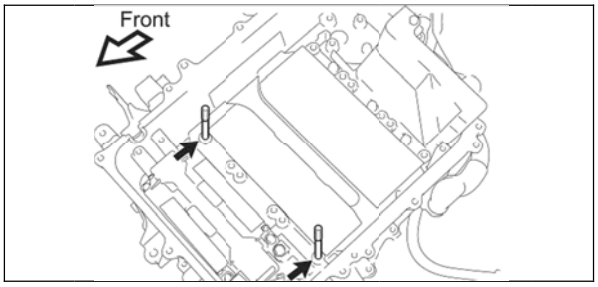
1. CLEAN THE INVERTER CASE

a) Use a shop cloth soaked with brake cleaner to remove the grease.

b) Wipe the grease toward the center groove in the case to avoid getting the grease in the bolt holes.

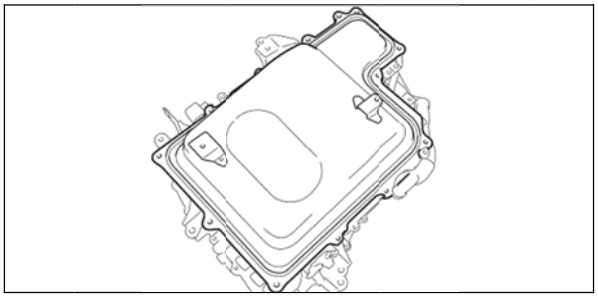
STOP

- **If grease is in the bolt holes clean carefully with a shop cloth soaked in brake cleaner.**
- **Confirm no pieces of the shop cloth remain in the inverter.**
- **Confirm all electrical terminals are free from grease.**



c) Confirm **ALL** grease is removed from the inverter case.

d) Install the 2 installation studs.



2. TEMPORARILY INSTALL THE INVERTER COVER

a) Install the inverter cover while applying grease to the new IPM transistor to prevent contamination in the inverter assembly.

NOTE:

- ***DO NOT*** **remove protective cover B**
- ***DO NOT*** **pinch any harnesses between the cover and inverter.**

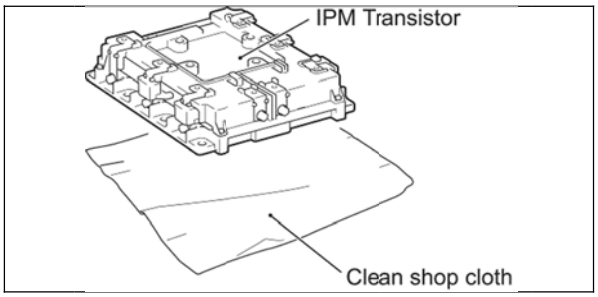
VIII. GREASE APPLICATION

THE FOLLOWING CONFIRMATION STEPS ARE VITAL
CONFIRM THESE STEPS ARE FOLLOWED CLOSELY

PERFORM THIS INTERMEDIATE INSPECTION BEFORE APPLYING GREASE TO THE IPM TRANSISTOR.

1. Is the smoothing capacitor stored properly with protective cover A installed?
2. Are the disconnected high voltage terminals covered with insulating tape?
3. Has the inverter case been thoroughly cleaned?
4. Is the inverter cover temporarily installed?
5. Is the grease application work space clear of dust, water and other forms of contamination?
6. Is the masking plate and squeegee clean and in good condition?
7. Have you discharged all potential static electricity from your person?

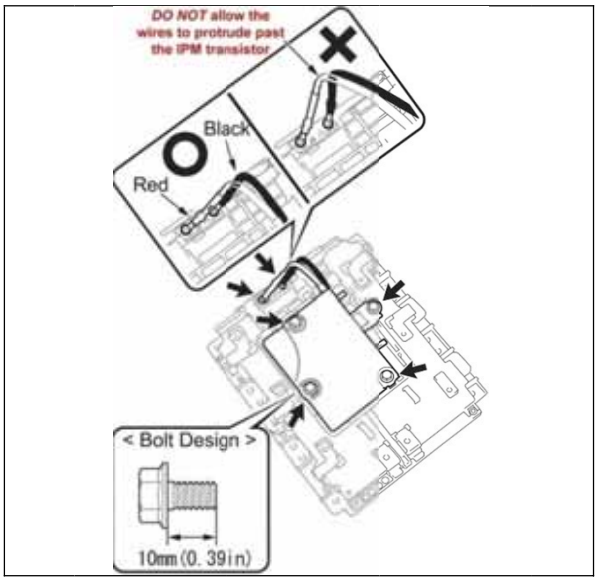
A. IPM TRANSISTOR ASSEMBLY



1. ASSEMBLE THE NEW IPM TRANSISTOR

a) Place the new IPM transistor on a clean shop cloth.

***DO NOT* touch the circuit board that is between the upper and lower sections of the IPM transistor.**



b) Install the sub capacitor with the 4 bolts.

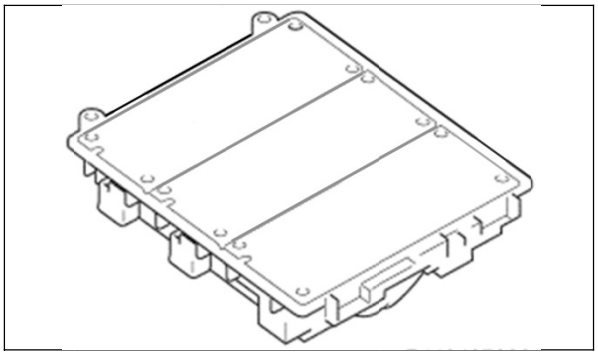
Torque: 6.0N·m (61kgf·cm, 53in. lbf)

c) Install the 2 wires with the 2 screws.

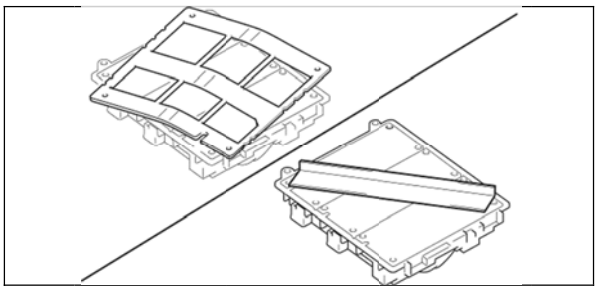
NOTE:

- ***DO NOT* attach the wires to the incorrect terminals.**
- **Position the wires so they do not protrude past the IPM transistor.**

B. IPM TRANSISTOR GREASE APPLICATION



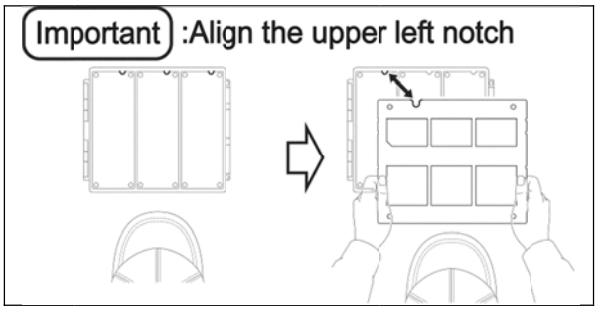
1. PLACE THE IPM TRANSISTOR UPSIDE DOWN ON A CLEAN SURFACE



2. INSPECT THE MASKING PLATE AND SQUEEGEE

a) Confirm the masking plate and squeegee are clean.

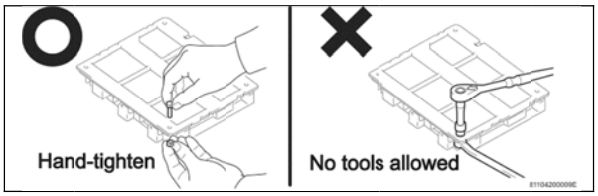
b) Confirm the masking plate and squeegee are not bent or damaged.



3. INSTALL THE MASKING PLATE

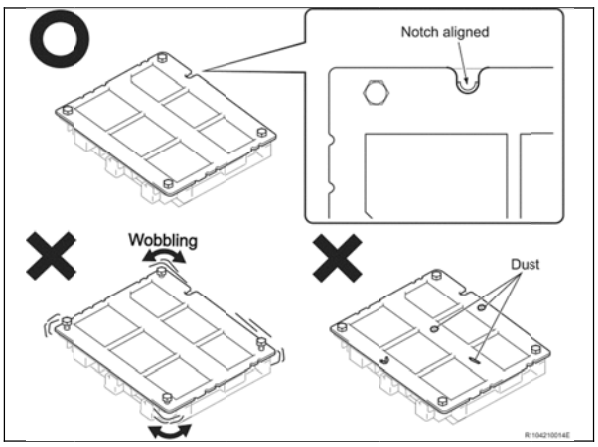
a) Place the IPM transistor so the 3 notches are at the top.

b) Align the upper left notch in the masking plate with the alignment notch in the IPM transistor.



c) Tighten the masking plate by hand using the 4 nuts/bolts provided.

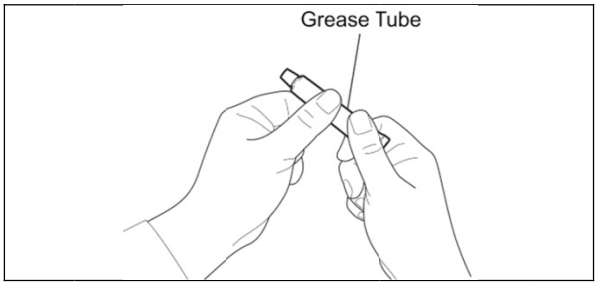
NOTE: *DO NOT* use tools when tightening the masking plate to prevent damage.



d) Confirm the masking plate is installed in the correct position.

e) Confirm the masking plate is securely attached.

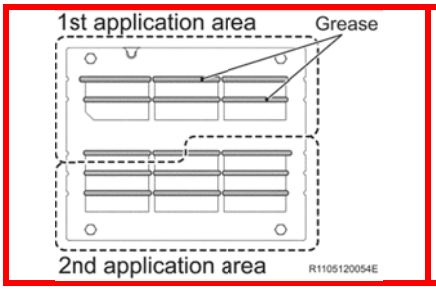
f) Confirm the masking plate is clean.



4. PREPARE 2 TUBES OF THERMAL CONDUCTIVE GREASE

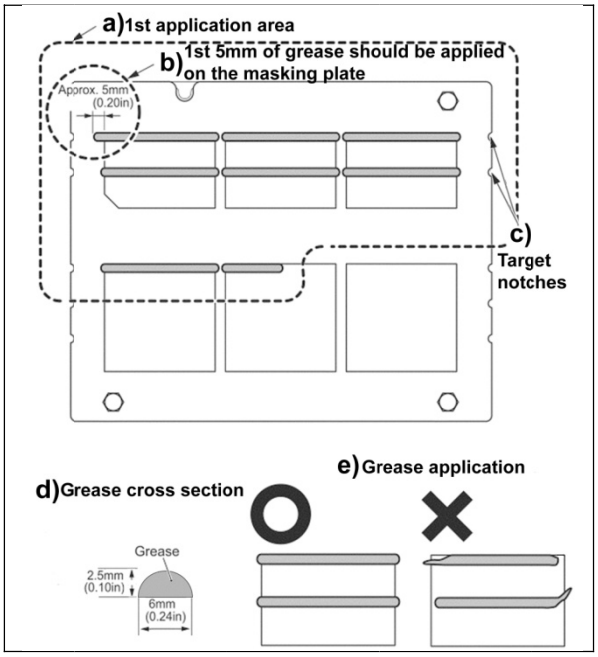
a) Knead the tubes to confirm the grease is properly mixed.
b) Clean the tubes with brake cleaner.

NOTE: The tubes may be used to apply the grease, it is critical that they are clean.



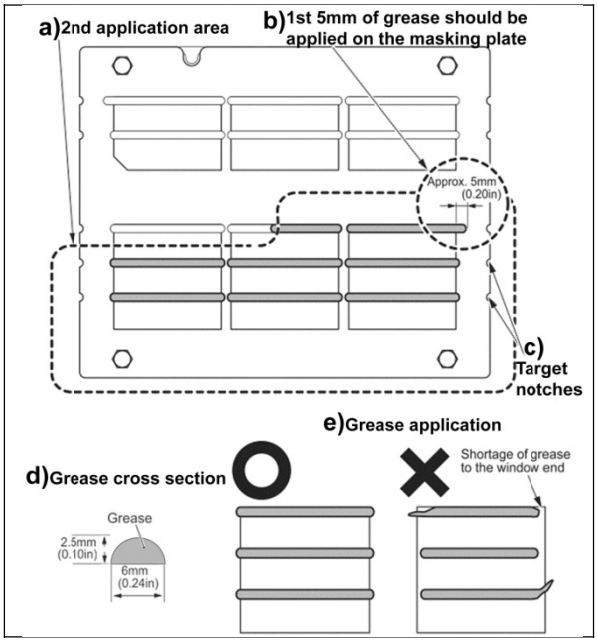
NOTE:

- **Two tubes of grease are necessary for each IPM transistor.**
- **The first tube of grease will cover the upper half of the IPM transistor and the second tube will cover the lower half as indicated in the illustration.**



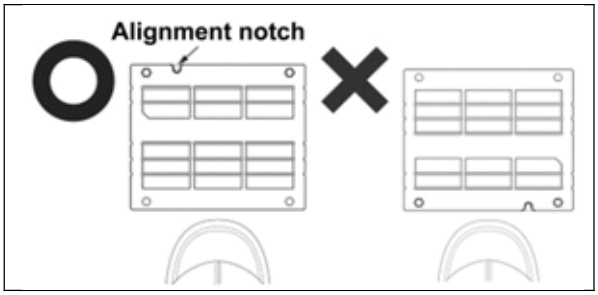
5. APPLY THE FIRST TUBE OF GREASE

a) Confirm the area the first tube of grease will cover.
b) Confirm the first 5mm of grease is applied on the masking plate as the initial portion of grease may not be completely mixed.
c) Apply the grease by following the target notches on the masking plate.
d) The grease should be applied in strips that are approximately 6mm wide and 2.5mm in height. (This is the size of the target notches on the masking plate)
e) Confirm grease is applied fully from start to finish in the masking plate windows.



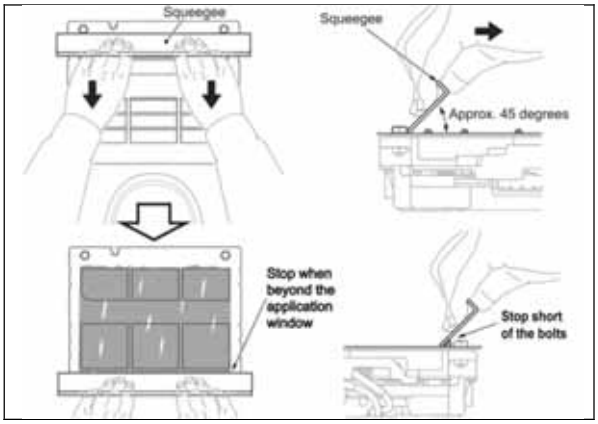
6. APPLY THE SECOND TUBE OF GREASE

a) Confirm the area the second tube of grease will cover.
b) Confirm the first 5mm of grease is applied on the masking plate as the initial portion of grease may not be completely mixed.
c) Apply the grease by following the target notches on the masking plate.
d) The grease should be applied in strips that are approximately 6mm wide and 2.5mm in height. (This is the size of the target notches on the masking plate)
e) Confirm grease is applied fully from start to finish in the masking plate windows.



7. SPREAD THE GREASE

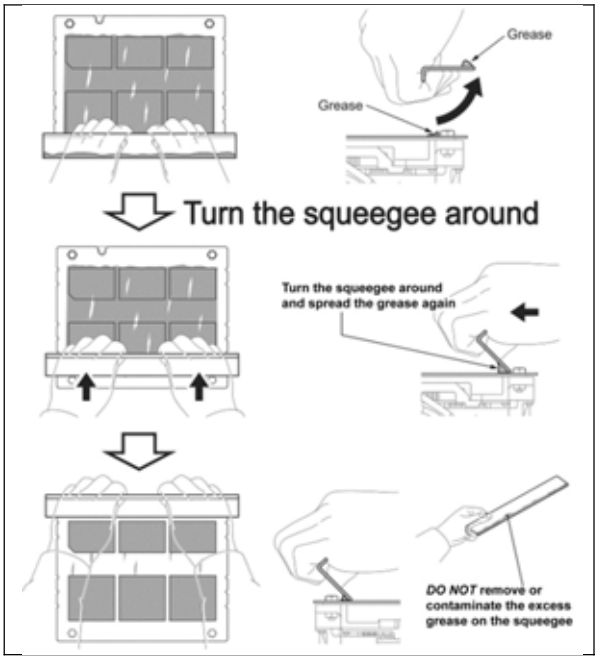
a) Position the IPM transistor so the alignment notch on the masking plate is in the upper left position.



b) Hold the squeegee at a 45 degree angle.

c) Beginning on the upper side of the IPM transistor, slide the squeegee down past the bottom of the application windows.

NOTE: To ensure all grease is used effectively, *DO NOT* slide the squeegee into the bolts.



d) Lift the squeegee with the grease.

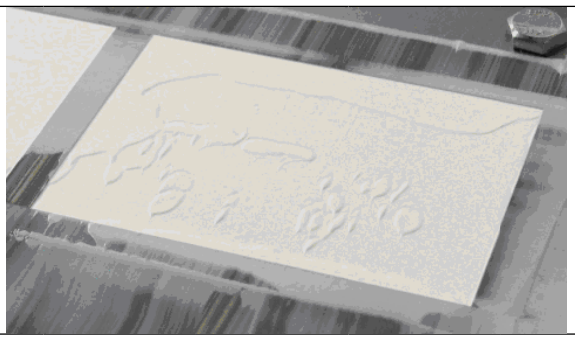
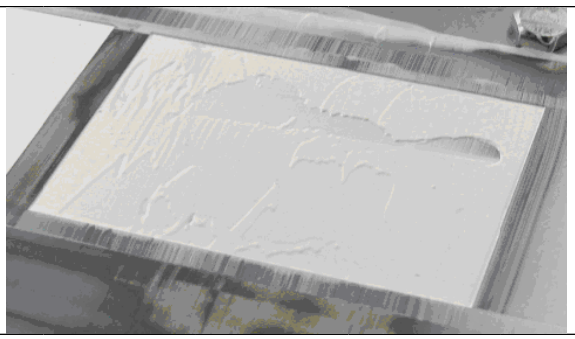
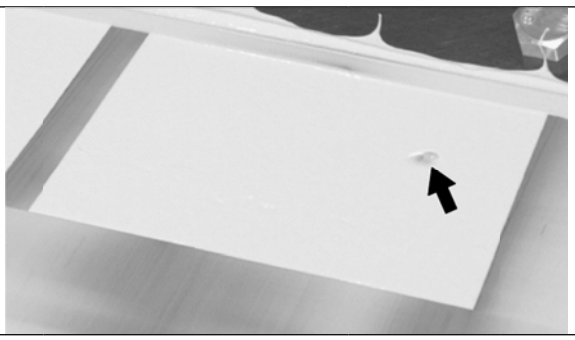
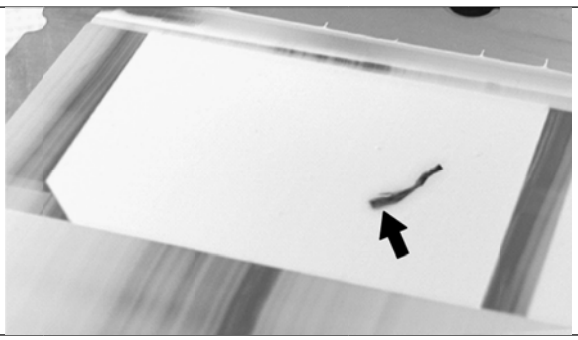
e) Turn the squeegee around and slide it from the bottom of the IPM transistor up past the top of the application windows.

STOP

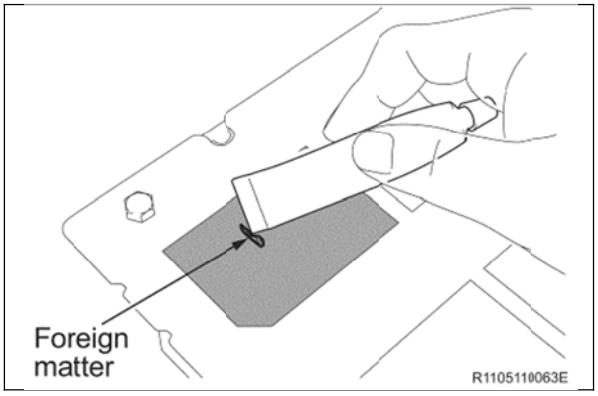
***DO NOT* remove the excess grease from the squeegee until it has been confirmed that the grease has been spread correctly.**

THE FOLLOWING STEPS ARE VITAL
CONFIRM THESE STEPS ARE FOLLOWED CLOSELY

CONFIRM THE CONDITION OF THE THERMAL CONDUCTIVE GREASE

SAMPLE	CONDITION & ACTION REQUIRED
	**CONDITION:** Smooth surface and complete coverage. **ACTION:** Proceed to: **SECTION X. REASSEMBLY**
	**CONDITION:** Grease unsmooth. Metal surface of the IPM transistor ***NOT*** visible through the grease. **ACTION:** Proceed to: **SECTION X. REASSEMBLY**
	**CONDITION:** Grease unsmooth. Metal surface of the IPM transistor visible through the grease. **ACTION:** Proceed to: **STEP C #2. REAPPLY GREASE TO THE NEEDED AREAS**
	**CONDITION:** Hole or imperfection in the grease exposing the metal surface of the IPM transistor. **ACTION:** Proceed to: **STEP C #2. REAPPLY GREASE TO THE NEEDED AREAS**
	**CONDITION:** Foreign material in the grease. **ACTION:** Proceed to: **STEP C #1. REMOVE FOREIGN MATERIAL FROM THE GREASE**

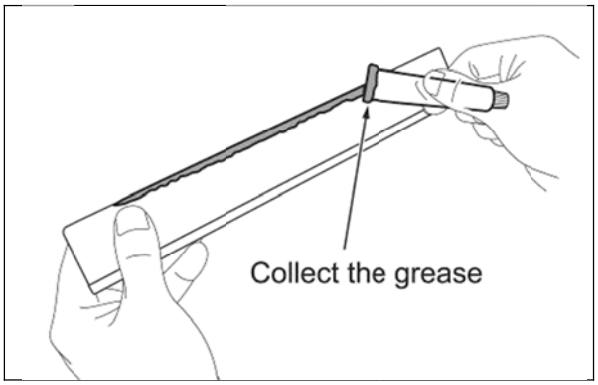
C. GREASE APPLICATION CORRECTION
(Only perform these steps if the above inspection determines it is necessary)



1. REMOVE FOREIGN MATERIAL FROM THE GREASE

a) Use one of the tubes of grease to remove the foreign material from the grease.

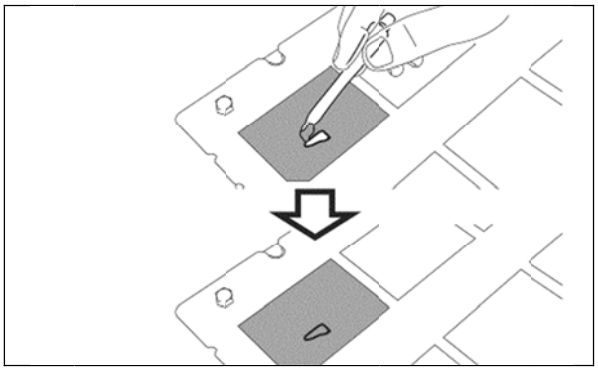
NOTE: Confirm the tube is clean before use.



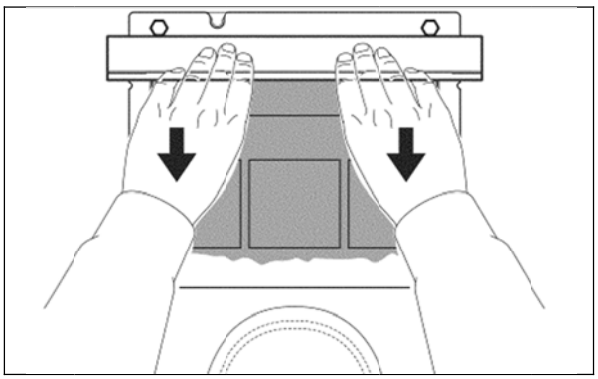
2. REAPPLY GREASE TO THE NEEDED AREAS

a) Collect the grease remaining on the squeegee using one of the tubes of grease.

NOTE: Confirm the tube is clean before use.



b) Apply the grease the areas with a shortage.



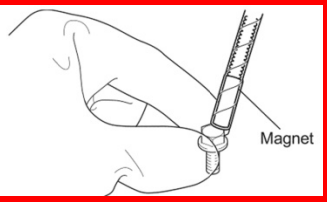
c) Use the squeegee as before to smooth the grease.

d) Reconfirm the condition of the grease using the confirmation steps on the previous page.

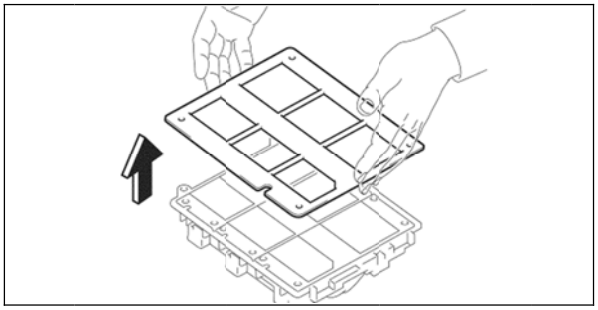
IX. REASSEMBLY

A. INVERTER REASSEMBLY

TORQUE SPECIFICATIONS INSIDE THE INVERTER ARE CRITICAL
CONFIRM ALL BOLTS ARE TORQUED AS OUTLINED IN THESE INSTRUCTIONS



NOTE:
- **To prevent dropping any bolts into the inverter it may be necessary to use a magnet to set the bolts as they are installed.**
- **If bolts are dropped into the bottom section of the inverter it may be necessary to completely remove the inverter for retrieval.**



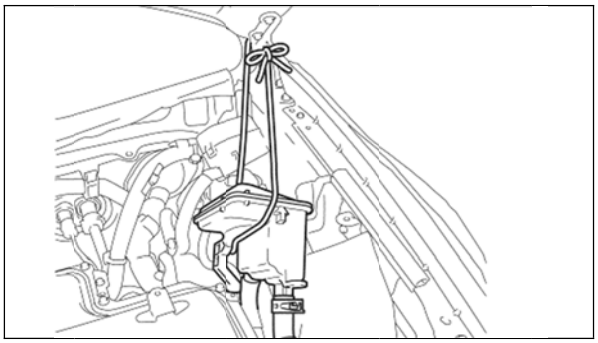
1. REMOVE THE MASKING PLATE

a) Remove the 4 nuts and bolts.

b) Slowly remove the masking plate.

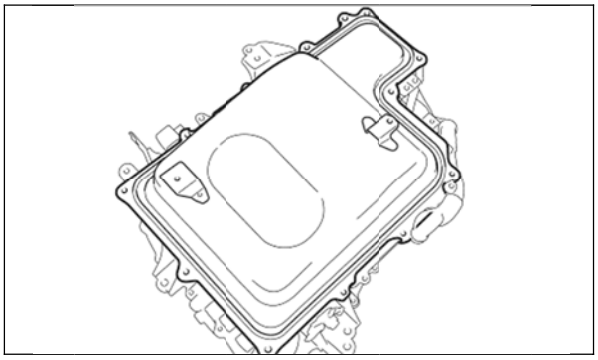
STOP

- ***DO NOT* displace the grease when removing the masking plate. If the grease is scraped off when removing the plate, return to STEP B. IPM TRANSISTOR GREASE APPLICATION**



2. CONFIRM THE INVERTER RESERVE TANK SUB ASSEMBLY IS NOT LEAKING

a) Before installing the IPM transistor, confirm there is no coolant leaking.

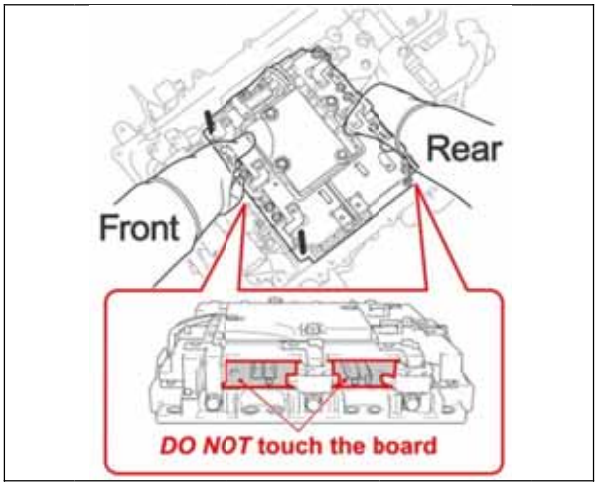


3. INSTALL THE NEW IPM TRANSISTOR

STOP

Be sure to wear electrical insulating gloves during the inverter reassembly procedure.

a) Remove the inverter cover.

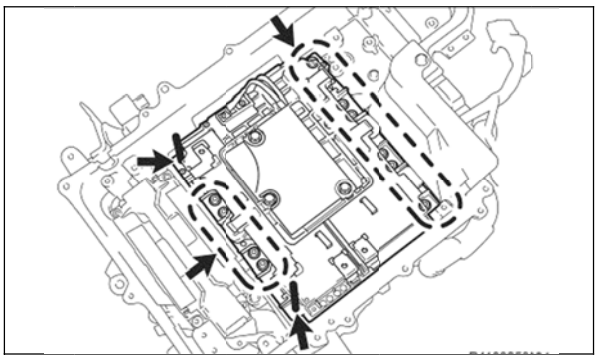


STOP

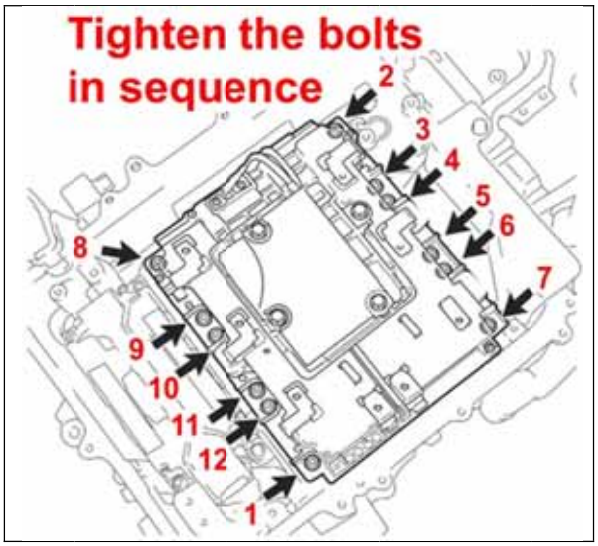
- **Confirm the inside of the inverter is clean.**
- ***DO NOT* touch the circuit board in the IPM transistor.**
- **Confirm the 2 installation studs are installed.**

b) Hold the front and back of the IPM transistor and place it in the inverter.

NOTE: Confirm the IPM transistor is positioned correctly before installation as it can be installed in two different positions.



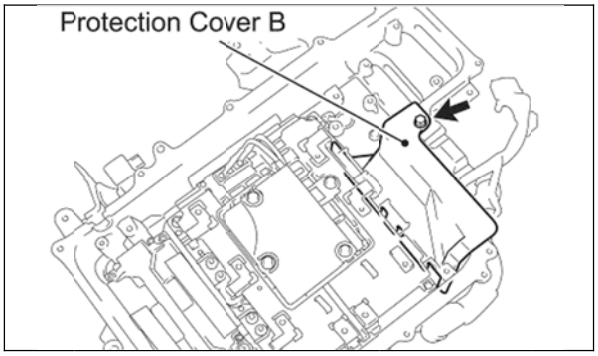
c) Loosely install 10 bolts.
d) Remove the 2 installation studs.
e) Loosely install the 2 remaining bolts.



f) Tighten the 12 bolts in the sequence shown in the illustration.

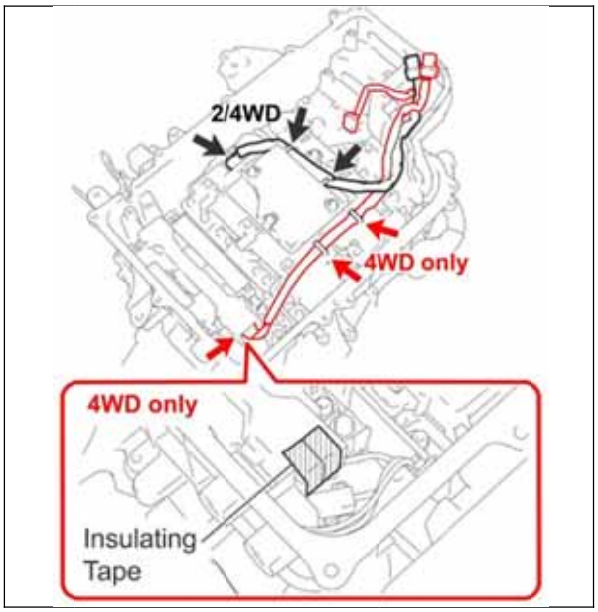
Torque: 6N·m (61kgf·cm, 53 in.lbf)

NOTE: Confirm the 12 bolts are tightened in the correct sequence to ensure the grease contacts correctly.



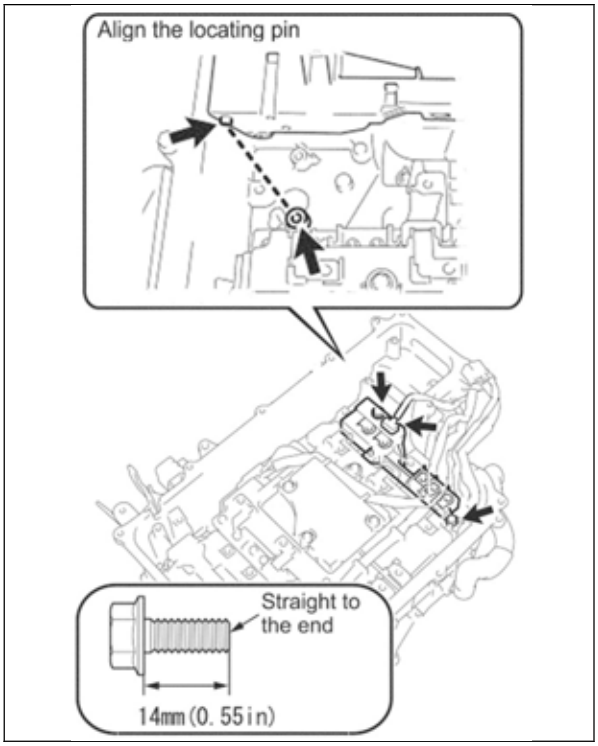
4. *4WD ONLY* −REMOVE PROTECTIVE COVER B

NOTE: Protective Cover B will be removed on STEP 11 on 2WD vehicles.



5. INSTALL THE INVERTER WIRE HARNESSES

a) **4WD ONLY** – Connect the 2 clamps and 1 connectors.
2/4WD – Connect the 2 clamps and the connector.



6. *4WD ONLY* – INSTALL THE INVERTER CURRENT SENSOR No.1

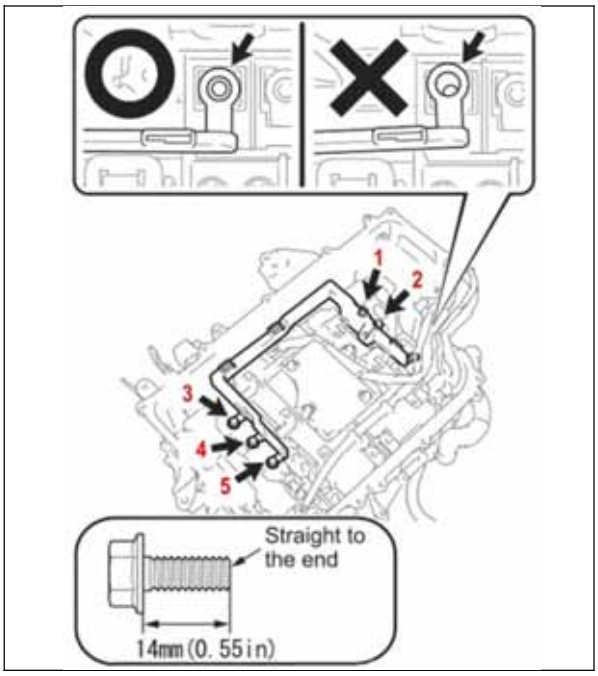
a) Install the current sensor. Confirm the sensor is installed in the locating pin.

b) Install the 2 bolts.

Torque: 8N·m (82kgf·cm, 71 in.lbf)

The bolts can be installed even if the locating pin is not aligned. Confirm the sensor is installed in the locating pin.

c) Connect the electrical connector.



7. *4WD ONLY* – INSTALL THE MGR BUS BAR

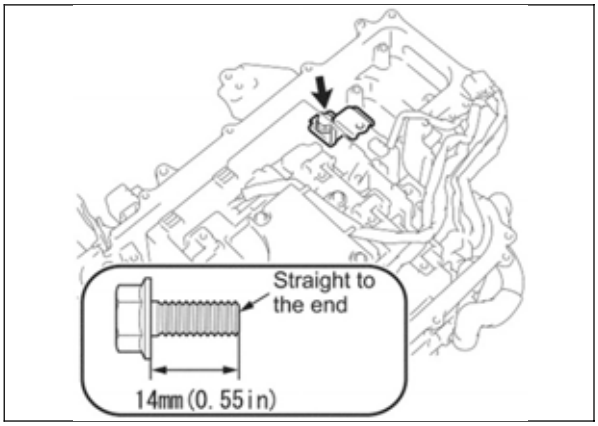
a) Remove the insulating tape attached to the terminals and confirm they are clean.

b) Install the bus bar.

c) Install the 5 bolts in the sequence shown in the illustration.

Torque: 8N·m (82kgf·cm, 71in. lbf)

NOTE: *DO NOT* install a bolt in the sixth hole at this time, only confirm the terminal is aligned correctly.

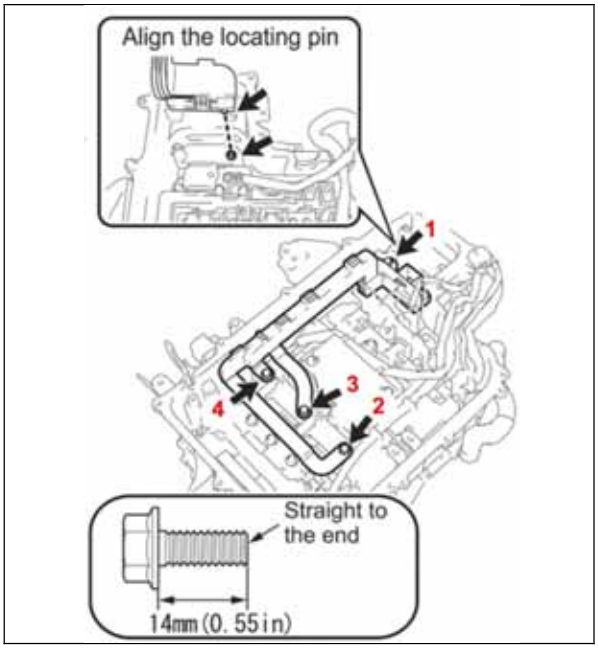


8. *4WD ONLY* – INSTALL THE INVERTER BRACKET

a) Install the bracket with 1 bolt.

Torque: 8N·m (82kgf·cm, 71in. lbf)

NOTE: The inverter bracket should be present on 2WD vehicles, the bracket should not have been reomved.



9. INSTALL THE MG1 BUS BAR

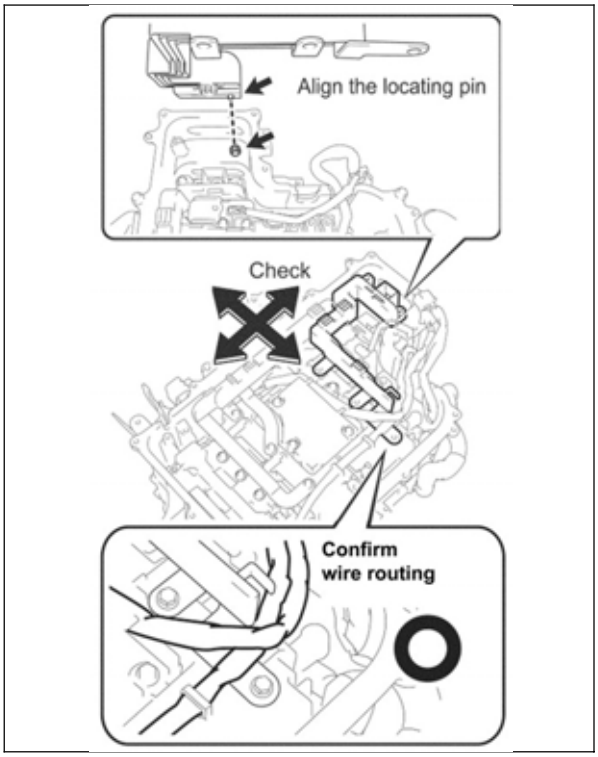
a) Confirm the terminals are clean.

b) Install the bus bar. Confirm the bus bar is installed in the locating pin.

c) Install the 4 bolts in the sequence shown in the illustration.

Torque: 8N·m (82kgf·cm, 71in. lbf)

The bolts can be installed even if the locating pin is not aligned. Confirm the sensor is installed in the locating pin.



10. INSTALL THE MG2 BUS BAR

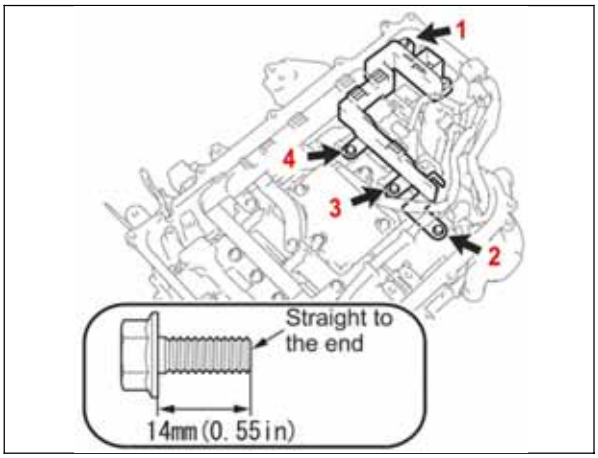
a) Confirm the terminals are clean.

b) Install the bus bar. Confirm the bus bar is installed in the locating pin.

NOTE:

- **Confirm the harnesses are routed correctly.**

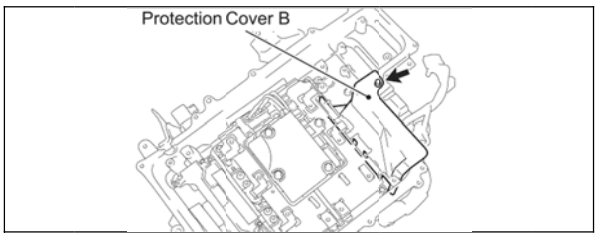
The bolts can be installed even if the locating pin is not aligned. Confirm the sensor is installed in the locating pin.



c) Install the 4 bolts in the sequence shown in the illustration.

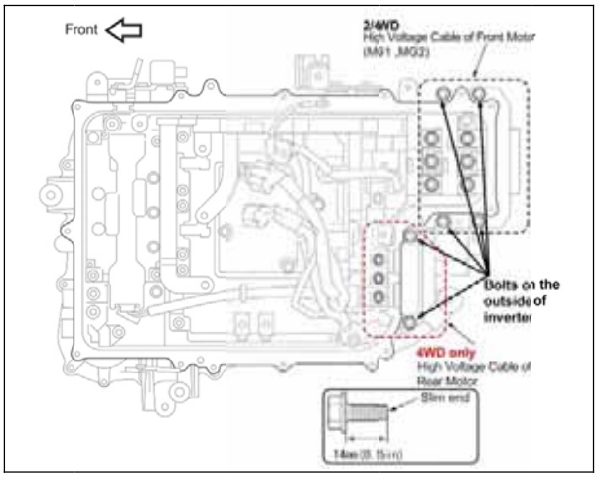
Torque: 8N·m (82kgf·cm, 71in. lbf)

The bolts can be installed even if the locating pin is not aligned. Confirm the sensor is installed in the locating pin.



11. *2WD ONLY* – REMOVE PROTECTIVE COVER B

NOTE: Protective Cover B was removed on STEP 4 on 4WD vehicles.



12. INSTALL THE HIGH VOLTAGE CABLES

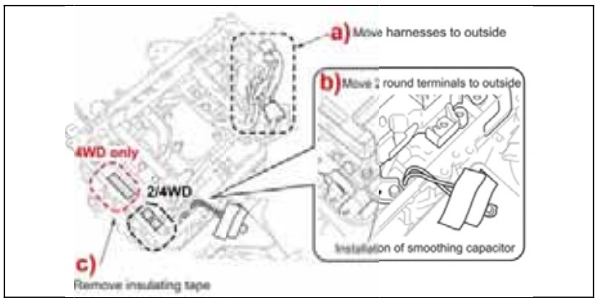
a) Remove the insulating tape attached to the terminals and confirm they are clean.

b) **4WD** – Install the 15 bolts.
2WD – Install the 10 bolts.

Torque: 10N·m (102kgf·cm, 84in. lbf)

NOTE: If there is difficulty installing the high voltage cables, reconfirm the bus bars are installed in their locating pins.

To prevent contamination, *DO NOT* use the bolts that were removed from the outside of the inverter on the inside.

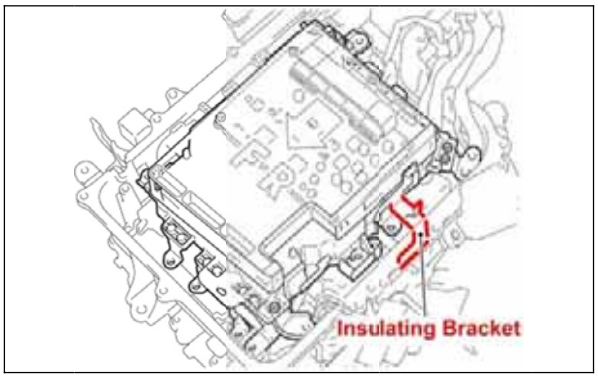


13. PREPARE THE INVERTER FOR SMOOTHING CAPACITOR INSTALLATION

a) Secure the inverter harnesses so they do not interfere when installing the smoothing capacitor.

b) Move the 2 terminals that were fixed inside the inverter during the disassembly process to the outside of the inverter.

c) Remove the insulating tape attached to the terminals.

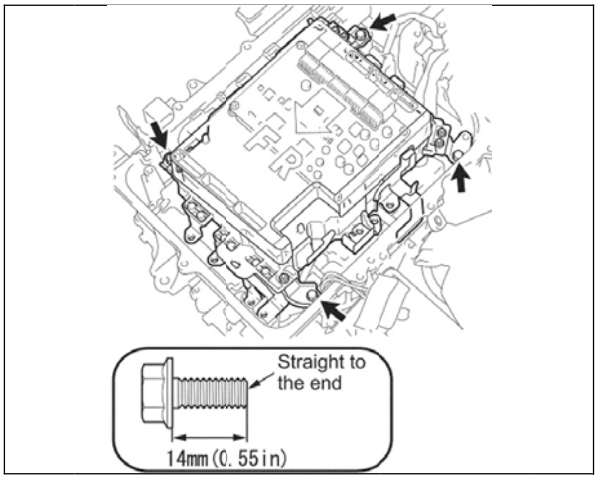


14. INSTALL THE SMOOTHING CAPACITOR

a) Hold the smoothing capacitor with protective cover A installed.

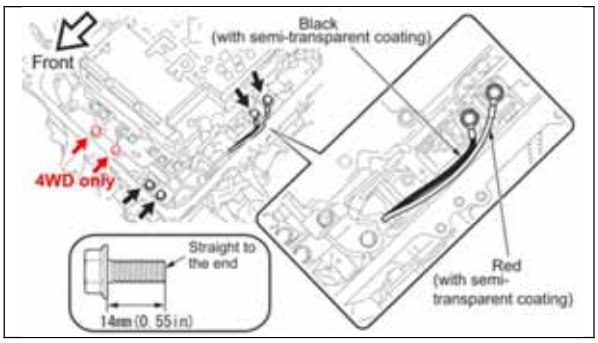
b) Carefully place the smoothing capacitor in the inverter.

- ***DO NOT* catch any wires when installing the smoothing capacitor.**
- **Pay close attention to the insulating bracket, this bracket must not be bent and must be positioned between the inverter case and the IPM transistor.**



c) Install the 4 bolts.

Torque: 8N·m (82kgf·cm, 71in. lbf)



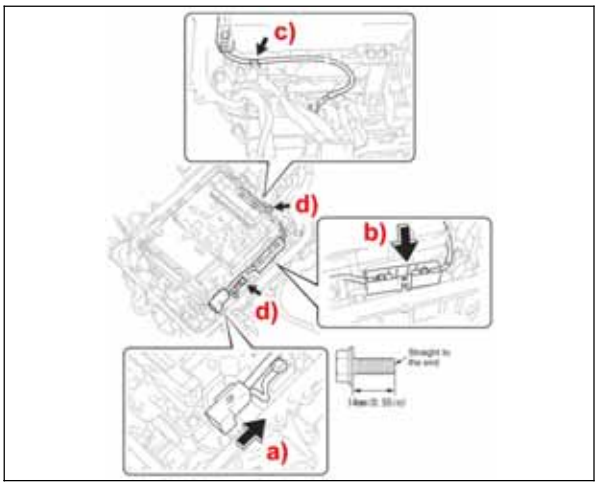
d) Remove the insulating tape on the 2 wires.

e) Install the bolts.

4WD – Install the 6 bolts.
2WD – Install the 4 bolts.

Torque: 8N·m (82kgf·cm, 71in. lbf)

NOTE: *DO NOT* mistake the connection points of the terminals.



15. INSTALL THE AIR CONDITIONING HARNESS SUB ASSEMBLY

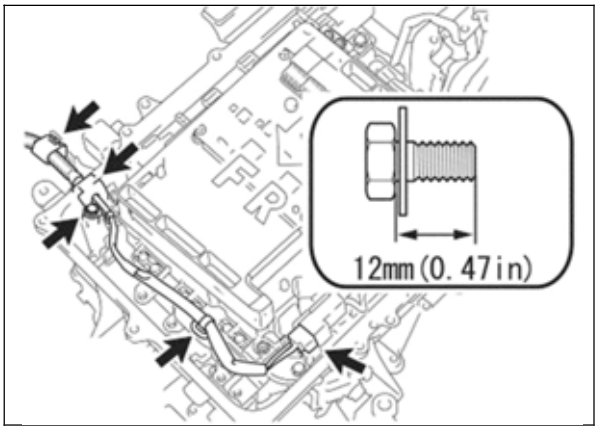
a) Install the connector.

b) Install the fuse box.

c) Confirm the harness is routed correctly.

d) Confirm the terminals are clean and install the 2 ground bolts.

Torque: 8N·m (82kgf·cm, 71in. lbf)



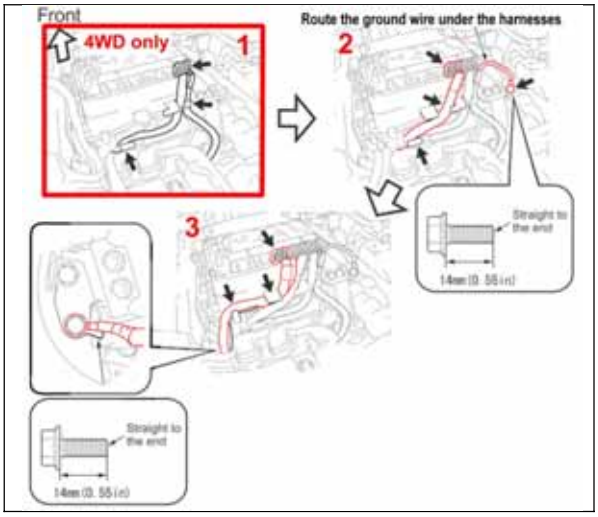
16. CONNECT THE ENGINE WIRE No.4

a) Remove the insulating tape from the terminal.

b) Connect the connector, the harness clamps, and the grommet.

c) Install the bolt.

Torque: 6N·m (61kgf·cm, 53in. lbf)



17. CONNECT THE MG ECU CONNECTORS

a) Remove the insulating tape from the connectors.

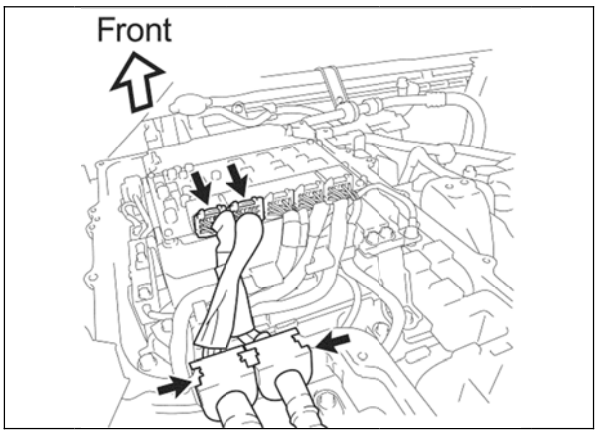
b) Remove protective cover A.

c) Connect the connectors following the sequence in the illustration.
4WD – 3 connectors
2WD – 2 connectors

d) Connect the 2 ground bolts.

Torque: 8N·m (82kgf·cm, 71in. lbf)

- **Confirm that all harnesses are routed correctly and all connectors and ground bolts are secure.**
- ***DO NOT* touch the MG ECU.**



e) Connect the 2 connectors and fit the 2 grommets.

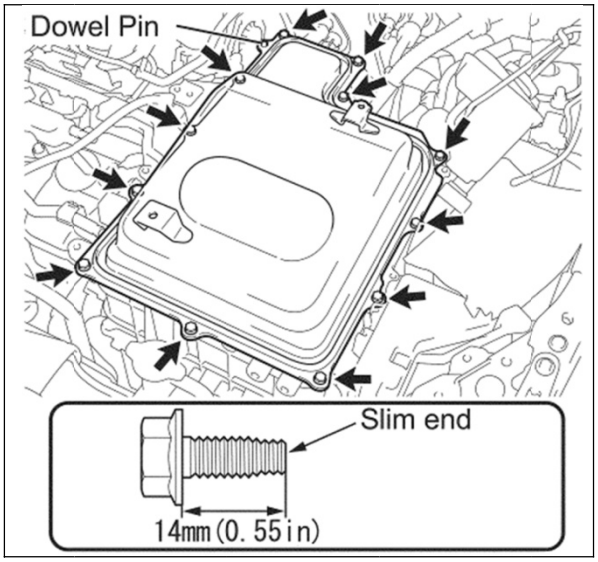
STOP

- **Cross the 2 harnesses inside the inverter.**
- **Confirm the grommets are clean before installing to prevent leaks.**

THE FOLLOWING CONFIRMATION STEPS ARE VITAL
CONFIRM THESE STEPS ARE FOLLOWED CLOSELY

PERFORM THIS INTERMEDIATE INSPECTION BEFORE INSTALLING THE INVERTER CASE COVER.

1. Are the high voltage cables (MG1, MG2 and MGR for 4WD) connected correctly?
2. Are all of the MG ECU connectors secured and the ground bolts connected?
3. Have all components been installed correctly in the inverter assembly?



18. INSTALL THE INVERTER COVER

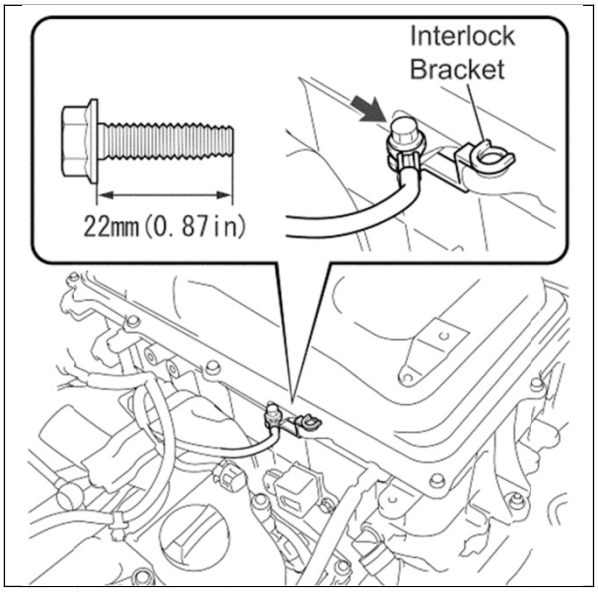
a) Confirm the cover gasket is set in the cover groove.

b) Confirm the cover gasket and inverter mating surface are clean.

c) Install the cover using the 12 bolts.

Torque: 10N·m (102kgf·cm, 84in. lbf)

NOTE: The cover gasket can be reused even if it has come out of the groove.

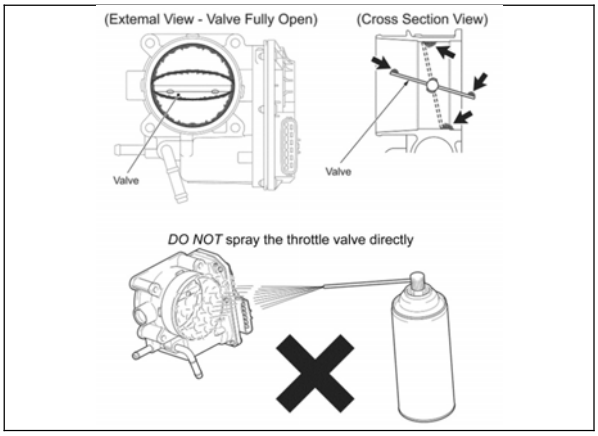


d) Remove the insulating tape from the interlock bracket.

e) Install the bracket with the 1 bolt.

Torque: 10N·m (102kgf·cm, 84in. lbf)

B. VEHICLE REASSEMBLY



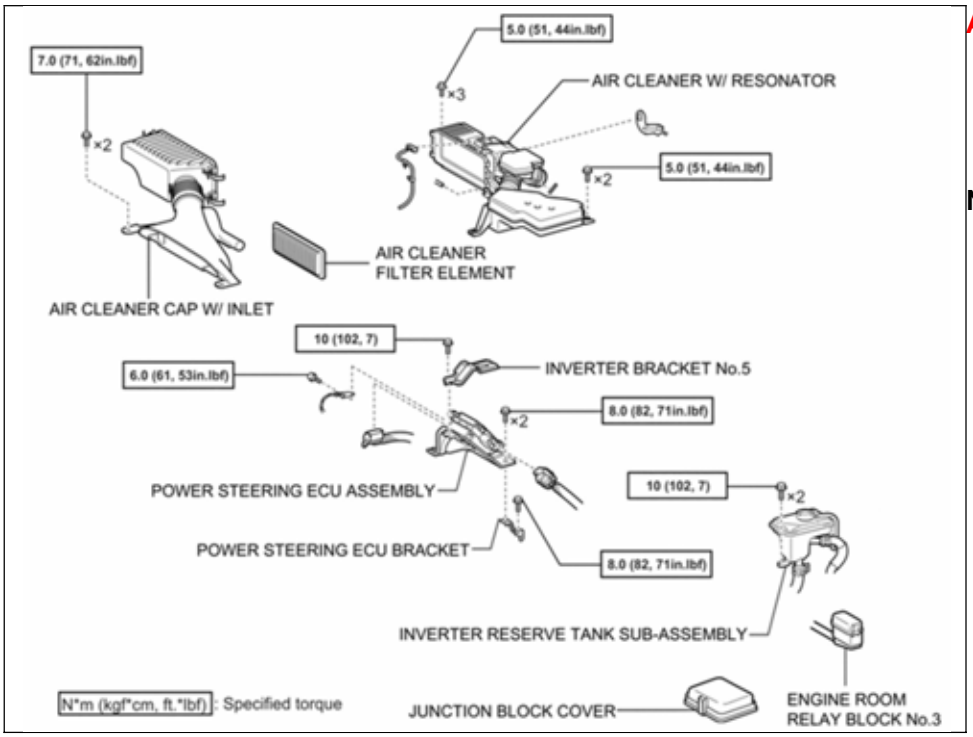
1. CLEAN THE THROTTLE BODY

a) Use a shop cloth soaked in throttle plate cleaner to clean the throttle body.

NOTE:

- ***DO NOT* spray the throttle valve directly.**
- **This procedure should be performed to ensure the engine learn values are set correctly.**

2. INSTALL THE COMPONENTS ILLUSTRATED BELOW



At this time, *DO NOT* install:

- **Cool air intake duct seal**
- **Engine room covers**
- **Cowl assembly**
- **Windshield wiper assembly**

NOTE:

- **Wear insulating gloves when installing the power steering ECU components.**
- **For detailed installation information, refer to the repair manual.**

3. INSTALL THE SERVICE GRIP

4. INSTALL THE NEGATIVE BATTERY CABLE

5. CONFIRM VEHICLE OPERATION

a) Turn the vehicle to READY ON.

b) Confirm the vehicle is in park.

c) Turn the air conditioner on high and allow vehicle to run for 3 minutes.

d) Confirm auxiliary battery voltage.

Specification: 13 to 15 V

e) Check for DTCs. If DTCs are output use the repair manual and the trouble shooting table in the Appendix of these instructions to diagnose.

NOTE:

- **If DTCs are present after IPM replacement, first confirm IPM replacement was performed correctly, if it is determined that inverter replacement is required you *MUST* contact TAS (800-233-3178) to confirm your diagnosis, then contact your area representative to obtain operation codes for dealership reimbursement.**
- **If DTCs that were not present prior to IPM replacement are present after IPM replacement, confirm IPM replacement was performed correctly.**

6. **INSTALL ALL REMAINING COMPONENTS**
7. **CHECK FOR DIAGNOSTIC TROUBLE CODES**
8. **TEST DRIVE THE VEHICLE**
9. **PERFORM SYSTEM INITIALIZATIONS**

◄ VERIFY REPAIR QUALITY ►

- **Confirm the part number *AND* serial number before replacing the IPM transistor**
- **Confirm the work area is very clean before disassembling the inverter**
- **Confirm *ALL* removal steps are followed, to prevent damage *DO NOT* skip any steps**
- **Confirm the inverter is cleaned thoroughly and the grease is applied correctly to the IPM transistor**
- **Confirm *ALL* installation steps are followed**

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

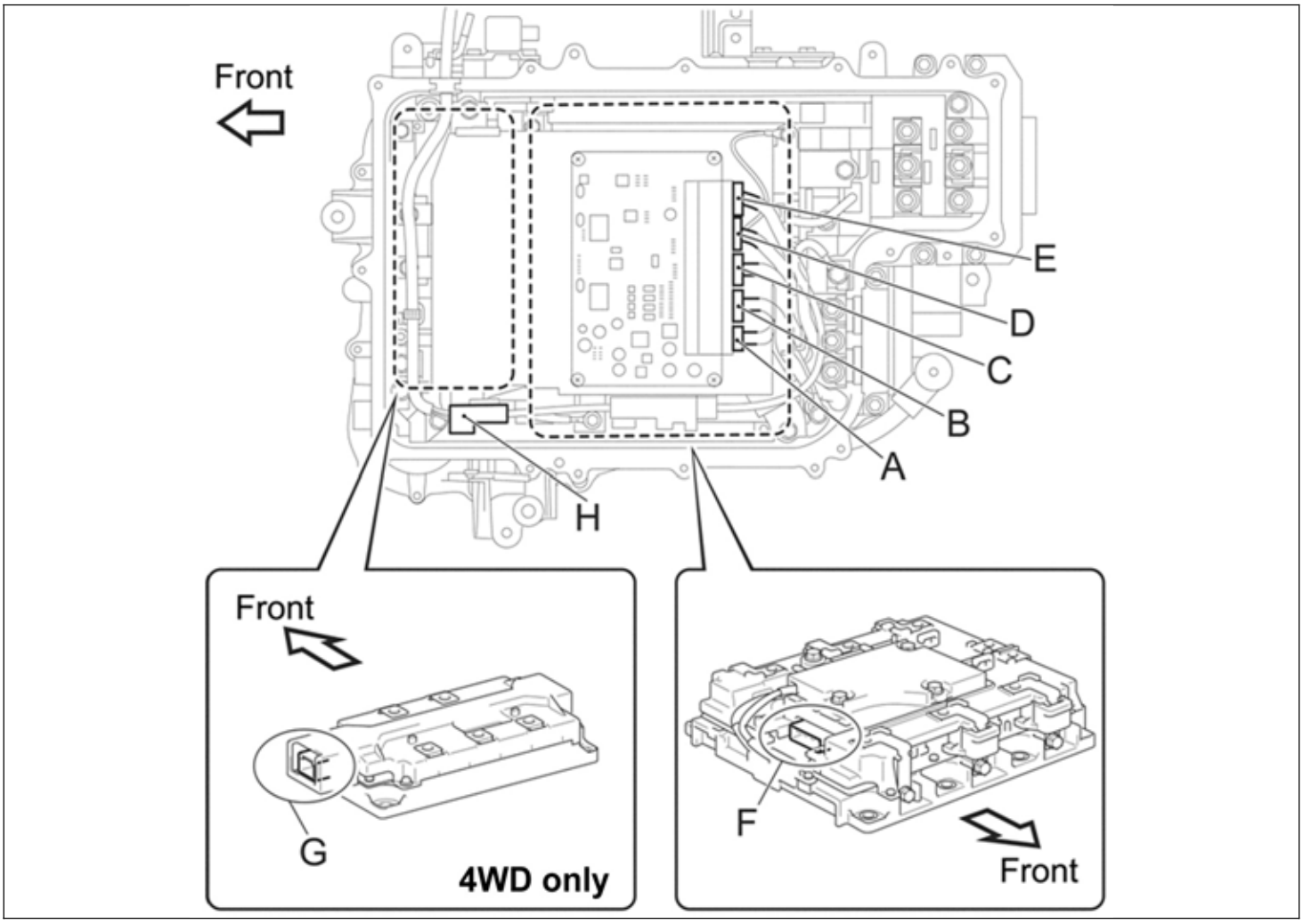
X. APPENDIX

A. RECALL 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. TROUBLESHOOTING TABLE

Use this table if any DTCs are output after performing the campaign. If the DTC output is not listed in this table, or checking the connectors does not remedy the condition, refer to the repair manual for additional diagnostic information.



DTC	Connector to inspect							
	A	B	C	D	E	F	G	H
B1477/71								O
B1477/77								O
P0A02-719			O					
P0A03-720			O					
P0A08-264		O						
P0A09-265		O						
P0A10-263		O						
P0A1A-151	O	O	O	O	O			
P0A1A-155	O	O	O	O	O			
P0A1A-156	O	O	O	O	O			
P0A1A-158	O	O	O	O	O			
P0A1A-166	O	O	O	O	O			
P0A1A-200	O	O	O	O	O			
P0A1A-658	O	O	O	O	O			
P0A1A-659	O	O	O	O	O			
P0A1A-791	O	O	O	O	O			
P0A1A-792	O	O	O	O	O			
P0A1A-793	O	O	O	O	O			
P0A1B-163	O	O	O	O	O			
P0A1B-164	O	O	O	O	O			
P0A1B-168	O	O	O	O	O			
P0A1B-192	O	O	O	O	O			
P0A1B-193	O	O	O	O	O			
P0A1B-195	O	O	O	O	O			
P0A1B-196	O	O	O	O	O			
P0A1B-198	O	O	O	O	O			
P0A1B-511	O	O	O	O	O			
P0A1B-512	O	O	O	O	O			
P0A1B-661	O	O	O	O	O			
P0A1B-662	O	O	O	O	O			
P0A1B-781	O	O	O	O	O			
P0A1B-786	O	O	O	O	O			
P0A1B-788	O	O	O	O	O			
P0A1B-794	O	O	O	O	O			
P0A1B-795	O	O	O	O	O			
P0A1B-796	O	O	O	O	O			
P0A1C-706	O	O	O	O	O			
P0A1C-707	O	O	O	O	O			
P0A1C-708	O	O	O	O	O			
P0A1C-709	O	O	O	O	O			
P0A1C-710	O	O	O	O	O			
P0A1C-711	O	O	O	O	O			
P0A1C-713	O	O	O	O	O			
P0A1C-715	O	O	O	O	O			
P0A1C-797	O	O	O	O	O			
P0A1C-798	O	O	O	O	O			
P0A1C-799	O	O	O	O	O			
P0A3F-243	O							
P0A40-500	O							

DTC	Connector to inspect							
	A	B	C	D	E	F	G	H
P0A41-245	O							
P0A45-669		O						
P0A46-671		O						
P0A47-670		O						
P0A4B-253	O							
P0A4C-513	O							
P0A4D-255	O							
P0A55-687					O		O	
P0A60-288				O		O		
P0A60-289				O		O		
P0A60-290				O		O		
P0A60-292				O		O		
P0A60-294				O		O		
P0A60-501				O		O		
P0A63-296				O		O		
P0A63-297				O		O		
P0A63-298				O		O		
P0A63-300				O		O		
P0A63-302				O		O		
P0A63-502				O		O		
P0A69-677					O		O	
P0A69-679					O		O	
P0A69-680					O		O	
P0A69-683					O		O	
P0A69-684					O		O	
P0A69-688					O		O	
P0A6C-678					O		O	
P0A6C-681					O		O	
P0A6C-682					O		O	
P0A6C-685					O		O	
P0A6C-686					O		O	
P0A6C-689					O		O	
P0A72-326				O		O		
P0A72-327				O		O		
P0A72-328				O		O		
P0A72-330				O		O		
P0A72-333				O		O		
P0A72-515				O		O		
P0A75-334				O		O		
P0A75-335				O		O		
P0A75-336				O		O		
P0A75-338				O		O		
P0A75-341				O		O		
P0A75-516				O		O		
P0A78-278				O		O		
P0A78-280				O		O		
P0A78-283				O		O		
P0A78-285				O		O		
P0A79-690					O		O	

DTC	Connector to inspect							
	A	B	C	D	E	F	G	H
P0A79-691					O		O	
P0A7A-321				O		O		
P0A7A-323				O		O		
P0A94-545			O					
P0A94-546			O					
P0A94-551			O					
P0A94-552			O					
P0A94-587			O					
P0AA6-526								
P0AA6-613								
P0AA6-614								
P0AA6-655								
P0AEF-275				O				
P0AF0-274				O				
P0AF4-673					O			
P0AF4-674					O			
P3222-313				O				
P3223-312				O				
P3227-583		O						
P3228-584		O						
U0110-159	O	O	O	O	O			
U0110-160	O	O	O	O	O			
U0110-656	O	O	O	O	O			
U0110-657	O	O	O	O	O			
Auxiliary battery voltage error		O						

Kathy [redacted]/Lexus/Toyota

12/16/2011 04:04 PM

To Lexus Recall

cc

Subject Safety Recall BLD – Remedy Available
Certain 2006 – 2007 Model Year RX 400h Vehicles Intelligent Power Module (IPM) Replacement

This message has been approved by Don Fordiani, National Service and Parts Field Operations Manager, Lexus Customer Services.

As communicated on June 29, 2011, Lexus filed a Defect Information Report (DIR) with the National Highway Traffic Safety Administration (NHTSA) informing the agency of our intent to conduct a voluntary Safety Recall on certain 2006 and 2007 model year RX 400h vehicles.

The purpose of this communication is to inform you that a remedy is available and Lexus will soon begin notifying owners of affected vehicles.

Background

The Intelligent Power Module (IPM) is located inside of the Hybrid System Inverter (Inverter) and contains a control board with transistors. Certain transistors on the control boards of some of the subject vehicles were inadequately soldered and could be damaged from heat caused by a large current during high-load driving. If this occurs, various warning lamps will be illuminated on the instrument panel. The vehicle may enter a fail-safe/limp-home mode that limits the driving speed of the vehicle. Also, it is possible that the hybrid system will shut down while the vehicle is being driven, causing the vehicle to stall unexpectedly, increasing the risk of a crash.

Remedy

Lexus dealers will inspect the part number and serial number of the inverter assembly to determine if the specific inverter is covered by this recall. Based upon the inspection results, the Intelligent Power Module will be replaced at **NO CHARGE** to the vehicle owner. For additional information on inspection and repair procedures, please refer to TIS.

Number of Covered Vehicles

There are approximately 36,700 RX 400h (certain 2006 and 2007 model year) vehicles covered by this Safety Recall in the United States.

Dealer and Owner Notification

The attached dealer letter will be sent via electronic mail on Monday, December 19, 2011.

Lexus will begin mailing Safety Recall Notices by first class mail in phases beginning in early January, 2012. The owner letters will be spread over several weeks consistent with parts availability and service capacity. A sample owner letter is attached.

Thank you for your on-going support.

Remedy Available Safety Recall BLD Dealer Letter Final.pdf

Original sent to Dealers 12/19/11

TOYOTA

WE APPRECIATE YOUR PATIENCE
To assure their timely arrival during the holidays, the campaign tools have been shipped early. Please note that VINs will be searchable starting December 20 and campaign claim submissions will be accepted starting December 22.

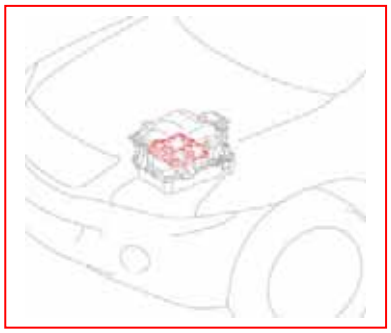
Toyota Motor Sales, U.S.A., Inc.
19001 South Western Avenue
Torrance, CA 90501
(310) 468-4000

To: All Toyota Dealer Principals, Service Managers, and Parts Managers

Subject: Safety Recall B0J – ***Remedy Phase***
Certain 2006 and 2007 Model Year Highlander Hybrid Vehicles (HV)
Intelligent Power Module (IPM) Replacement

As previously announced, in June, 2011, Toyota filed a Defect Information Report (DIR) with the National Highway Traffic Safety Administration (NHTSA) informing the agency of our intent to conduct a voluntary Safety Recall on Certain 2006 and 2007 Model Year Highlander Hybrid Vehicles (HV).

Toyota has completed parts preparation and will begin notifying owners that remedy preparations have been completed.



Background
The Intelligent Power Module (IPM) is located inside of the Hybrid System Inverter (Inverter) and contains a control board with transistors. Certain transistors on the control boards of some of the subject vehicles were inadequately soldered and could be damaged from heat caused by a large current during high-load driving. If this occurs, various warning lamps will be illuminated on the instrument panel. The vehicle may enter a fail-safe/limp-home mode that limits the driving speed of the vehicle. Also, It is possible that the hybrid system will shut down while the vehicle is being driven, causing the vehicle to stall unexpectedly, increasing the risk of a crash.

Remedy
Toyota dealers will inspect the part number and serial number of the inverter assembly to determine if the specific inverter is covered by this recall. Based upon the inspection results, the Intelligent Power Module will be replaced at **NO CHARGE** to the vehicle owner. For additional information on inspection and repair procedures, please refer to TIS.

The following vital information is provided to inform you and your staff of the ***Remedy*** owner notification phase of the campaign and your degree of involvement.

1. **Owner Letter Mailing Date**

   Toyota has completed parts preparation and will begin to notify owners of the Remedy Phase in early January, 2012 approximately 2 weeks after the dealer communication. The owner notification will be mailed in quantities consistent with parts availability and repair capacity.

   Toyota tries very hard to obtain current customer name and address information when mailing owner letters. In the event your dealership receives a notice for a vehicle that was sold prior to the Safety Recall announcement, it is the dealership's responsibility to forward the owner letter to the customer who purchased the vehicle.

2. **Pre-Owned Vehicles in Dealer Inventory**

   Toyota requests dealers to conduct the remedy on any pre-owned vehicles currently in dealer inventory that are covered by this Safety Recall prior to delivery to the customer.

3. Dealer/Owner Lists

Summary Reports, containing the number of covered vehicles in your dealership's primary marketing area, have been enclosed in the dealer package. (Please verify eligibility by confirming through Dealer Daily or TIS prior to performing repairs.)

4. Number and Identification of Covered Vehicles

There are approximately 45,500 Highlander HV (certain 2006 and 2007 model year) vehicles covered by this Safety Recall in the U.S.

MODEL	WMI	MY	VDS	START	FINISH
HIGHLANDER HV	JTE	2006	DW21A	0001003	0016484
			EW21A	0001009	0033953
			GW21A	0001541	0013007
			HW21A	0001275	0020710

MODEL	WMI	MY	VDS	START	FINISH
HIGHLANDER HV	JTE	2007	DW21A	0016485	0017412
			EW21A	0033956	0034655
			GW21A	0016486	0017411
			HW21A	0033954	0034654

Please note that only owners of the covered vehicles will be notified. If a dealer is contacted by an owner who has not yet received the notification, please instruct the dealer to ***verify coverage by confirming through Dealer Daily/TIS.*** Dealers should perform the procedure as outlined in the Technical Instructions located on TIS.

A UIO matrix by state is provided to inform your dealership of the number of covered vehicles in your state.

STATE	UIO
AK	96
AL	346
AR	218
AZ	943
CA	9,334
CO	1,501
CT	741
DC	135
DE	128
FL	2,271
GA	1,036

STATE	UIO
HI	289
IA	351
ID	201
IL	1,695
IN	536
KS	303
KY	398
LA	253
MA	1,852
MD	1,274
ME	225

STATE	UIO
MI	565
MN	827
MO	513
MS	121
MT	157
NC	1,282
ND	45
NE	168
NH	330
NJ	1,297
NM	372

STATE	UIO
NV	404
NY	1,965
OH	931
OK	229
OR	955
PA	1,722
RI	190
SC	435
SD	85
TN	621
TX	2,331

STATE	UIO
UT	390
VA	2,125
VT	216
WA	1,654
WI	757
WV	161
WY	80

5. Parts Ordering Process (Dealer Ordering Solutions)

In order to assist dealers with the inspection procedure, use the following website to determine if intelligent power module (IPM) transistor replacement is necessary.

http://b0j-bld-lookup.imagespm.info

Orders can be placed through the dealership's facing PDC. The kits have been placed on Dealer Ordering Solutions and will be systematically released daily based on dealer ordering criteria.

Please refer to the table below and the Technical Instructions for part ordering information.

Model Application	Part No.	Part Name	Qty/Unit
Highlander HV	04001-29148	TRANSISTER, PWR MODULE INTELLIGENT, NO.2	1
	08887-02409	GREASE G747	2

IMPORTANT PARTS ORDERING UPDATE

Effective January 1, 2012, All Future Safety Recall, Service Campaign (SSC/LSC) and Customer Support Program (CSP) parts will be eligible for the Monthly Parts Return Program. Please refer to PANT Bulletin 2011-087 for campaign parts that are currently returnable under the Monthly Parts Return Program and additional details.

(Parts Ordering Process (Dealer Ordering Solutions) Continued . . .)

Each dealership will receive specific dealer ordering criteria in an email from their facing PDC Manager based on Repair Order Volume * PDC Affected UIO. Therefore, it is vital that each dealership work with both Parts and Service to immediately file Safety Recall claims and coordinate appropriate kit orders. A sample of the Parts Allocation Report has been attached below for your reference.


TOYOTA

Parts Allocation Report

99999

SAMPLE TOYOTA of NOWHERE

The below matrix provides information for parts managed by NAPD Dealer Ordering Solution (DOS) and illustrates updates to your current daily allocation quantities. Parts shipments, arrivals and inventory quantities at your local PDC will change daily as parts are received and shipped from NAPD Suppliers. Therefore, your daily allocation quantity is subject to change based on the parts in-stock availability as well as in-transit inventory to your facing PDC. This report is provided as needed when daily allocation changes for DOS parts.

Parts with recent changes will be illustrated from top to bottom with the most recent effective date.

If you have any questions or concerns, please contact your facing PDC Customer Support Leader, John Q Sample at (999) 999-9999.

6. Remedy Procedures

Please refer to TIS for Technical Instructions on inspection and repair. You must be hybrid certified to perform this repair, for additional information on hybrid certification please contact your regional representative.

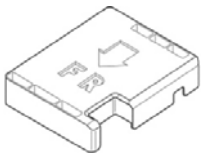
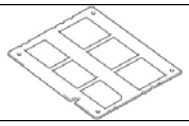
7. Repair Quality Confirmation

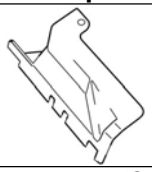
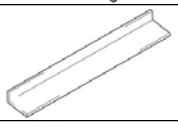
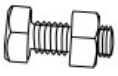
The repair quality of covered vehicles is extremely important to Toyota. To help ensure that all vehicles have the repair performed correctly, please designate at least one associate (someone other than the individual who performed the repair) to verify the repair quality of every vehicle prior to customer delivery.

8. Campaign Special Service Tools

In a separate shipment scheduled to arrive December 20th 2011, your dealership was sent a package containing special service tools for this campaign. When received, the package will have a fluorescent (green, orange, yellow, or pink) label like the sample shown below for easy identification.

ATTN: Service Manager
SAFETY RECALL B0J
Campaign Tools

Part Name	Sample	Qty
Protective Cover A		1
Masking Plate		1
Stud Bolt		2

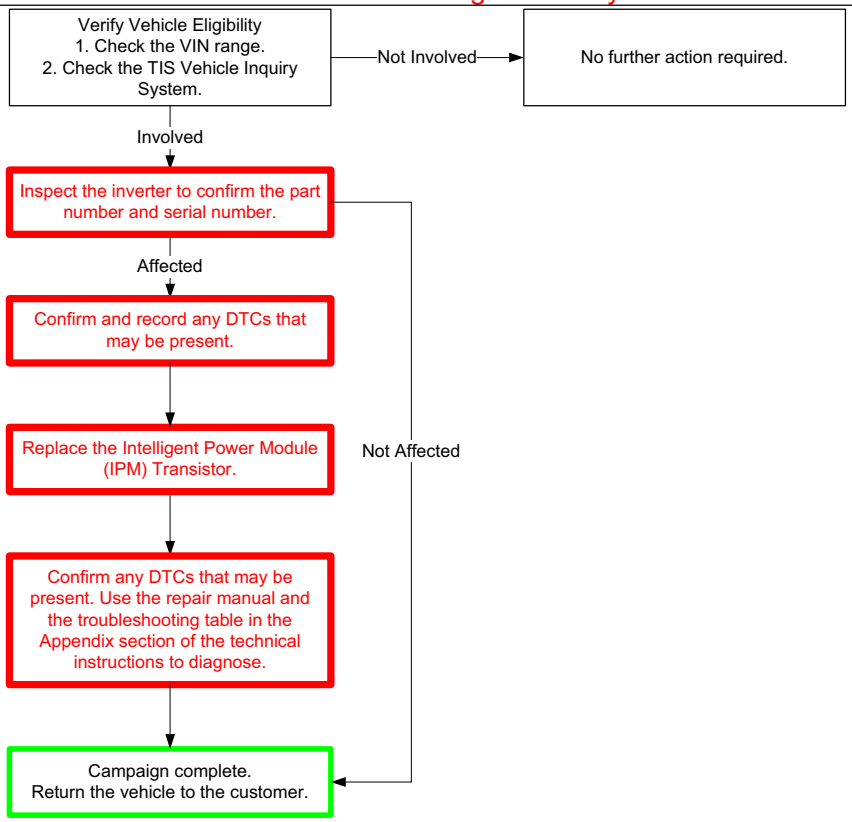
Part Name	Sample	Qty
Protective Cover B		1
Squeegee		1
Masking Plate Nut/Bolt		4

NOTE: If additional gloves are needed they can be ordered through SPX by calling 800-933-8335 (Gloves are not included in the Campaign Tool Kit)

Part Number	Part Name	Quantity
00002-03100-S	Electrical Insulating Gloves (Small)	1
00002-03200-M	Electrical Insulating Gloves (Medium)	
00002-03300-L	Electrical Insulating Gloves (Large)	

9. Warranty Reimbursement Procedure

Certain 2006 and 2007 Model Year Highlander Hybrid Vehicles



Safety Recall	Op. Code	Description	Flat Rate Hour
B0J	1529FA	Check Inverter Part Number and Serial Number – Not Affected	*0.3 hr/vehicle*
	1529FB	Perform Inspection – Replace IPM transistor for AWD model HW21A & EW21A	*3.5 hr/vehicle*
	1529FE	Perform Inspection – Replace IPM transistor for 2WD model GW21A & DW21A	*3.4 hr/vehicle*

- The flat rate times include 0.1 hours for administrative cost per unit for the dealership.
- Toyota Genuine Brake Cleaner and Toyota Genuine Throttle Plate Cleaner or equivalent can be claimed as sublet type “OF” Under OP Code 1529FB or 1529FE at a rate of $5.00 per vehicle(marking pens and electrical tape is also included in the sublet cost)
- Parts replaced under OP code 1529FB and 1529FE are subject to warranty parts return, any misuse of these operation codes will result in a warranty claim debit

Safety Recall	Op. Code	Description	Flat Rate Hour
B0J	Contact Region Rep.	Perform Inspection, Replace the IPM, DTC present after IPM replacement, replace Inverter Assembly on AWD Models HW21A & EW21A	*Contact Region Rep.*
		Perform Inspection, Replace the IPM, DTC present after IPM replacement, replace Inverter Assembly on 2WD Models GW21A & DW21A	*Contact Region Rep.*

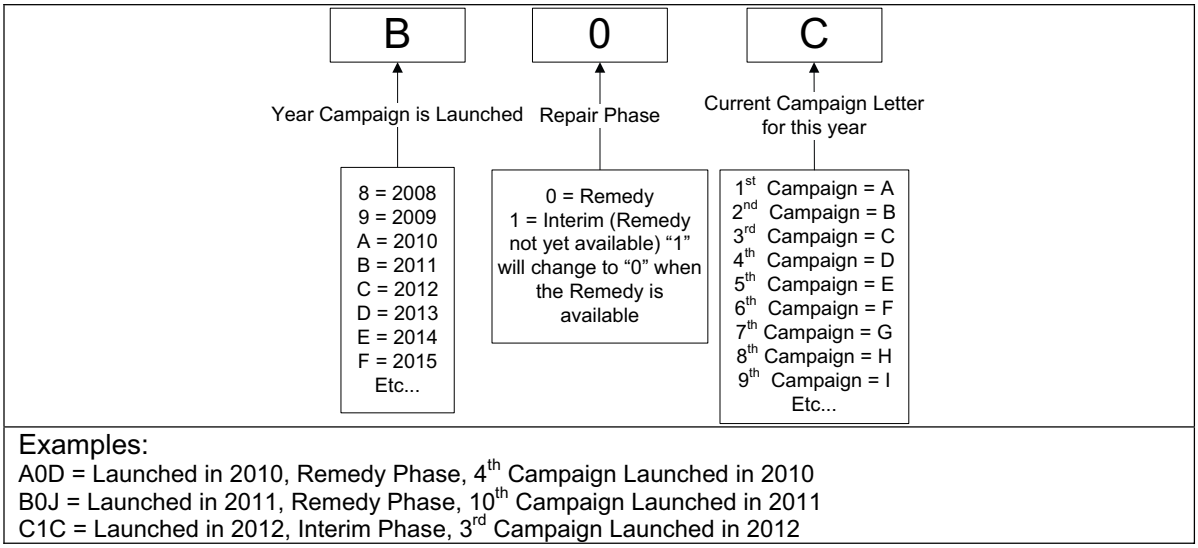
- Regional representative will provide available sublets for this operation

Important Note: *If you have DTCs Present after performing the IPM replacement, please consult the Technical Instruction Appendix and repair manual for DTC diagnosis. In the event you need further assistance diagnosing the current DTCs please contact the Technical Assistance Hotline – QA Powertrain Department at 800-233-3178.* ***Do not file a claim for Intelligent Power Module replacement****; you will need to obtain an Op. Code from your regional representative for Inverter Replacement.*

The Interim Phase, B1J, is now superseded by Safety Recall B0J. All B1J Repair Order dates must be prior to 12/18/2011. All Repair Orders dated 12/19/2011 and after must be submitted under B0J.

(Warranty Reimbursement Procedure Continued . . .)

Campaign Designation Decoder



Examples:
A0D = Launched in 2010, Remedy Phase, 4th Campaign Launched in 2010
B0J = Launched in 2011, Remedy Phase, 10th Campaign Launched in 2011
C1C = Launched in 2012, Interim Phase, 3rd Campaign Launched in 2012

10. Media Contacts

It is imperative that all media contacts (local and national) receive a consistent message. In this regard, all media contacts must be directed to Brian Lyons (310) 468-2552 in Toyota Corporate Communications. (Please do not provide this number to customers. Please provide this contact to only media associates.)

11. Customer Contacts

A Q&A has been attached for your use in the event you receive a customer contact. If a customer has further questions, please direct the inquiry to the Toyota Customer Experience Center at 1-800-331-4331.

Please review this entire package with your Service and Parts staff to familiarize them with the proper step-by-step procedures required to implement this Safety Recall.

Thank you for your cooperation.
TOYOTA MOTOR SALES, U.S.A., INC.

Safety Recall B0J - Remedy Phase
Certain 2006 and 2007 Model Year Highlander HV Vehicles
Intelligent Power Module (IPM) Replacement - Q&A

Background

As previously announced, on June 29, 2011, Toyota filed a Defect Information Report (DIR) with the National Highway Traffic Safety Administration (NHTSA) informing the agency of our intent to conduct a voluntary Safety Recall on Certain 2006 and 2007 Model Year Highlander Hybrid Vehicles (HV).

Toyota has completed parts preparations and will now begin mailing remedy owner letters

Q1: What is the condition?

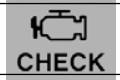
A1: The IPM is located inside of the Hybrid System Inverter and contains a control board with transistors. Certain transistors on the control boards of some of the subject vehicles were inadequately soldered and could be damaged from heat caused by a large current during high-load driving. If this occurs, various warning lamps will be illuminated on the instrument panel. The vehicle may enter a fail-safe/limp-home mode that limits the driving speed of the vehicle. Also, it is possible that the hybrid system will shut down while the vehicle is being driven, causing the vehicle to stall unexpectedly, increasing the risk of a crash.

Q1a: What is the Hybrid System Inverter?

A1a: The hybrid system inverter converts high-voltage DC, stored in the HV battery, into AC for the motor generator. It also converts AC into DC during regenerative braking for storage in the HV battery.

Q2: Which Warning Lamps are illuminated on the instrument panel when the vehicle enters fail-safe driving mode?

A2: All of the following warning lights and messages will be illuminated on the instrument panel when the vehicle enters the fail-safe driving mode. The fail-safe driving mode will result in reduced motive power in which the vehicle can still be driven at limited driving speed for short distances.

	Warning lights
	Master Warning Light
	Slip Indicator
	Check Engine Warning Light
 (yellow indicator)	Electronically Controlled Brake System Warning Light

	Warning messages
CHECK VSC SYSTEM	Malfunction of VSC function is detected.
CHECK HYBRID SYSTEM	Hybrid system malfunction is detected.
CHECK AWD SYSTEM	All Wheel Drive system malfunction is detected.

Q2a: How long and what distance can a vehicle be driven when the vehicle enters fail-safe driving mode?

A2a: The distance a vehicle will continue to travel in fail-safe driving mode will vary based upon the hybrid battery state of charge and the road conditions. If a vehicle enters fail-safe driving mode, the driver should pull-over and stop the car in a safe area. The driver should immediately contact his/her local Toyota dealer for assistance.

Q3: What is Toyota going to do?

A3: Any authorized Toyota dealer will inspect the Inverter Assembly and, if necessary, replace the Intelligent Power Module at **NO CHARGE** to the vehicle owner.

Q4: Which and how many vehicles are covered?

A4: There are approximately 45,500 Toyota Highlander HV and approximately 36,700 Lexus RX 400h vehicles covered by this Safety Recall in the U.S.

Model Name	Model Year	Production Period	Number of Vehicles
Toyota Highlander HV	Certain 2006 and 2007	Mid February 2005 through late August 2006	Approximately 45,500 units
Lexus RX 400h	Certain 2006 and 2007	Mid February 2005 through late August 2006	Approximately 36,700 units

Q4a: Are there any other Toyota or Lexus models covered by this Safety Recall?

A4a: No. There are no other Toyota or Lexus models covered by this Safety Recall.

Q5: How long will it take to conduct the remedy?

A5: The Inspection of the inverter assembly and, if necessary, replacement of the Intelligent Power Module will take approximately 4 hours. However, it may be necessary for the owner to make the vehicle available for a longer period of time depending upon the dealer's work schedule.

Q6: What if a customer has previously paid for repairs to their vehicle for the condition described above?

A6: Owners are requested to refer to the remedy owner letter for instructions to request reimbursement for previous repair costs.

Q7: What if an owner has additional questions or concerns?

A7: Owners with questions or concerns are asked to please contact the Toyota Customer Experience Center at 1-888-270-9371 Monday through Friday, 5:00 am to 6:00 pm, or Saturday 7:00 am through 4:00 pm Pacific Standard Time.

Certain 2006 and 2007 Model Year Highlander Hybrid (HV) Vehicles
Hybrid System Inverter, Intelligent Power Module
SAFETY RECALL NOTICE (*Remedy Now Available*)

[VIN]

Dear Toyota Customer:

This notice is being sent to you in accordance with the requirements of the National Traffic and Motor Vehicle Safety Act. Toyota has decided that a defect, which relates to motor vehicle safety, exists in certain 2006 and 2007 Model Year Highlander Hybrid (HV) Vehicles.

What is the condition?

The Intelligent Power Module (IPM) is located inside of the Hybrid System Inverter (Inverter) and contains a control board with transistors. Certain transistors on the control boards of some of the subject vehicles were inadequately soldered and could be damaged from heat caused by a large current during high-load driving. If this occurs, various warning lamps will be illuminated on the instrument panel. The vehicle may enter a fail-safe/limp-home mode that limits the driving speed of the vehicle. Also, it is possible that the hybrid system will shut down while the vehicle is being driven, causing the vehicle to stall unexpectedly, increasing the risk of a crash.

What is Toyota going to do?

The remedy for your vehicle is now available. Any authorized Toyota dealer will inspect the Inverter and, if necessary, replace the IPM at **NO CHARGE** to you.

What should you do?

This is an important Safety Recall

Please contact any authorized Toyota dealer and make an appointment to have the Inverter inspected to determine if it is covered by the recall.

If the Inverter is covered by the recall, the IPM will be replaced. Replacement of the IPM will take approximately 4 hours. However, depending upon the dealer's work schedule, it may be necessary to make your vehicle available for a longer period of time.

You do not need an owner letter to have this recall completed; however, to assist the dealer in confirming vehicle eligibility, we request that you present this notice at the time of your service appointment.

If you would like to update your vehicle ownership or contact information, please go to www.toyota.com/ownersupdate. You will need your full 17-digit Vehicle Identification Number (VIN) to input the new information.

What if you have other questions?

Your local Toyota dealer will be more than happy to answer any of your questions. If you require further assistance, you may contact Toyota Customer Experience Center at 1-888-270-9371 Monday through Friday, 5:00 am to 6:00 pm, Saturday 7:00 am through 4:00 pm Pacific Standard Time.

If you believe that the dealer or Toyota has failed or is unable to remedy the defect within a reasonable time, you may submit a complaint to the Administrator, National Highway Traffic Safety Administration, 1200 New Jersey Avenue S.E., Washington, D.C. 20590, or call the toll free Vehicle Safety Hot Line at 1-888-327-4236 (TTY: 1-800-424-9153), or go to http://www.safercar.gov.

What if you have previously paid for repairs to your vehicle for this specific condition?

If you have previously paid for repair to your vehicle for this specific condition prior to receiving this letter, please mail a copy of your repair order and proof-of-payment to the following address for reimbursement consideration:

Toyota Motor Sales, U.S.A., Inc
Toyota Customer Experience, WC 10
19001 South Western Avenue
Torrance, CA 90509

Include your name, address, and telephone number(s) in your request. Please allow us 6-8 weeks to process your request.

If you are a vehicle lessor, Federal law requires that any vehicle lessor receiving this recall notice must forward a copy of this notice to the lessee within ten days.

We have sent this notice in the interest of your continued satisfaction with our products, and we sincerely regret any inconvenience this condition may have caused you.

Thank you for driving a Toyota.

Sincerely,

TOYOTA MOTOR SALES, U.S.A., INC.

TECHNICAL INSTRUCTIONS

FOR

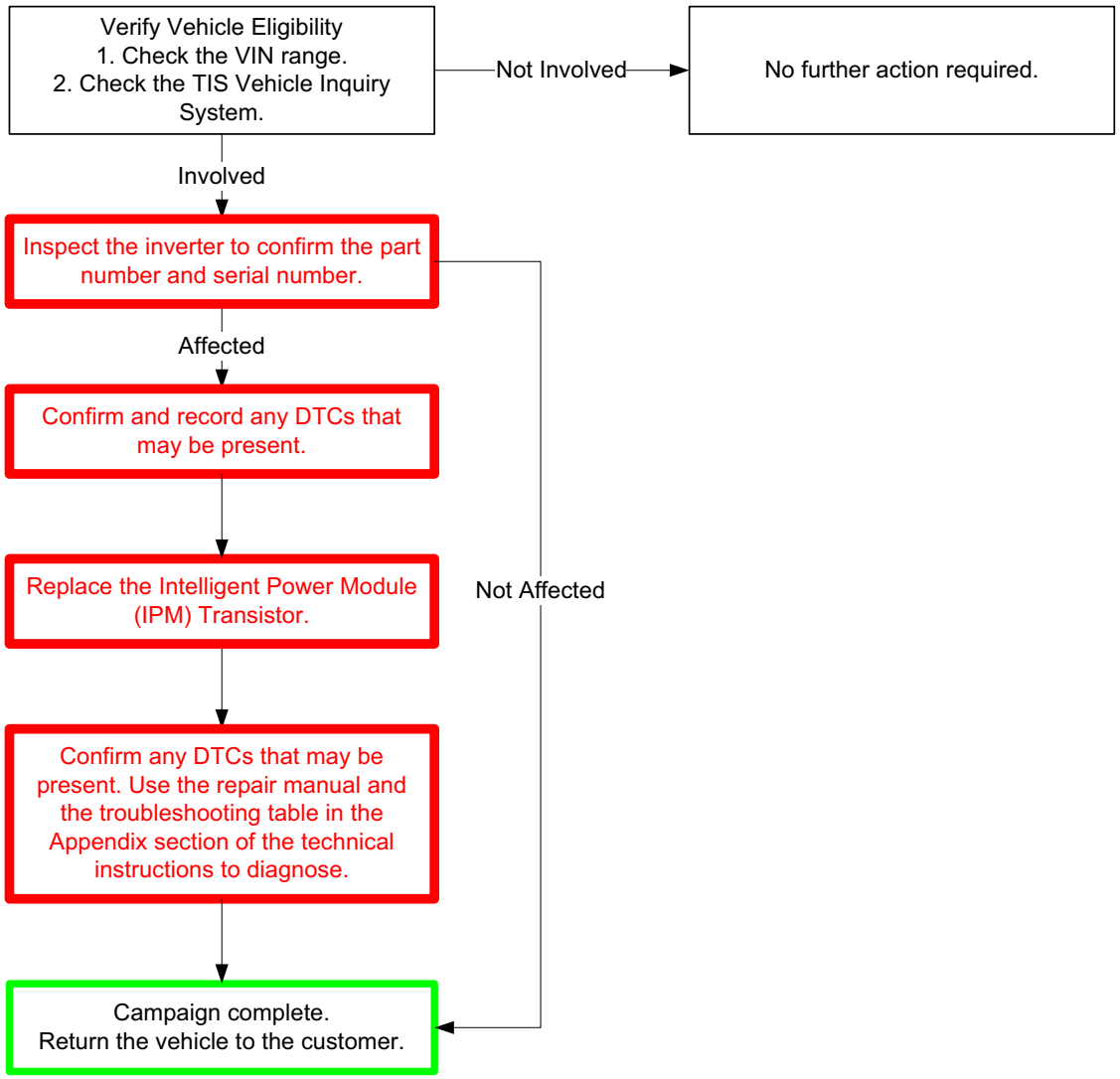
SAFETY RECALL B0J

INTELLIGENT POWER MODULE TRANSISTOR REPLACEMENT

CERTAIN 2006 – 2007 MODEL YEAR HIGHLANDER HYBRID

In order to perform this campaign, technician must be Hybrid Certified. If you have questions regarding certification, contact your area representative.

I. OPERATION FLOW CHART



II. IDENTIFICATION OF COVERED VEHICLES

A. COVERED VIN RANGE

Model	WMI	Year	VIN Range	
			VDS	Range
HIGHLANDER HV	JTE	2006	DW21A	0001003 - 0016484
			EW21A	0001009 - 0033953
			GW21A	0001541 - 0013007
			HW21A	0001275 - 0020710
		2007	DW21A	0016485 - 0017412
			EW21A	0033956 - 0034655
			GW21A	0016486 - 0017411
			HW21A	0033954 - 0034654

NOTE:

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

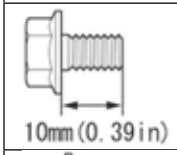
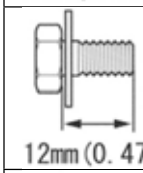
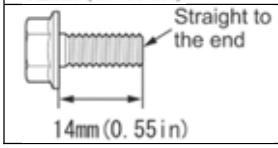
III. PREPARATION

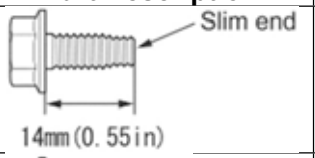
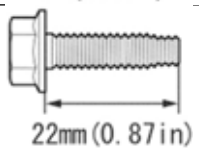
A. PARTS

Required Parts – Necessary to complete the repair

Part Number	Part Description	Quantity
04001-29148	Intelligent Power Module Transistor	1
08887-02409	Grease G747	2

Ancillary Parts – Only necessary if lost during the repair

Part Description	Part Number
	91551-80610
	90105-A0096
	91551-80614

Part Description	Part Number
	90105-A0263
	90080-11255

B. TOOLS, SUPPLIES & EQUIPMENT

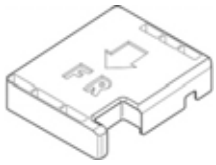
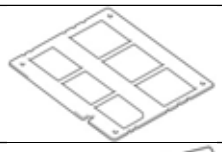
- Standard hand tools
- Torque wrench
- Techstream
- Brake cleaner
- Marking pen
- Air gun
- Throttle plate cleaner 00289-1TP00 (or equivalent)
- Insulating tape
- DVOM

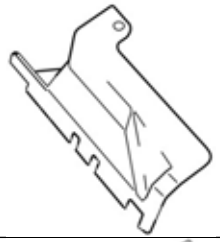
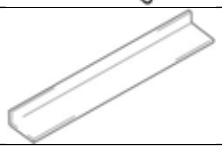
SST – These are essential special service tools that the dealership should have.

Part Number	Part Name	Quantity
00002-03100-S	Electrical Insulating Gloves (Small)	1
00002-03200-M	Electrical Insulating Gloves (Medium)	
00002-03300-L	Electrical Insulating Gloves (Large)	

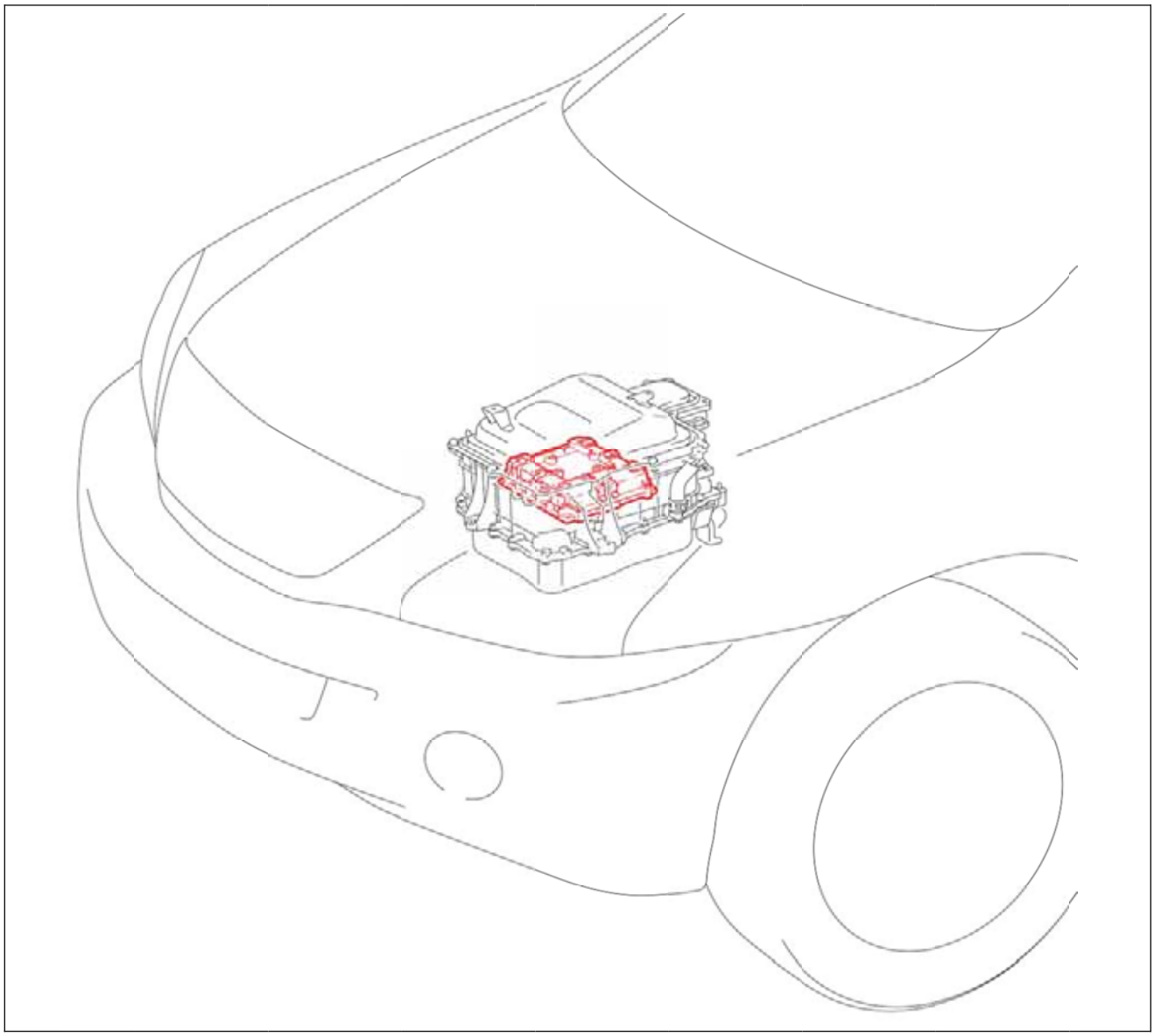
NOTE: If additional gloves are needed they can be ordered through SPX by calling 800-933-8335

Campaign Tools – These tools are provided to the dealership.

Part Name	Sample	Quantity
Protective Cover A		1
Masking Plate		1
Stud Bolt		2

Part Name	Sample	Quantity
Protective Cover B		1
Squeegee		1
Masking Plate Nut/Bolt		4

IV. BACKGROUND



The Intelligent Power Module (IPM) is located inside the Hybrid System Inverter and contains a control board with transistors. Certain transistors on the control boards of some of the subject vehicles were inadequately soldered and could be damaged from heat caused by a large current during high-load driving. If this occurs, various warning lamps will be illuminated on the instrument panel. The vehicle may enter a fail-safe/limp-home mode that limits the driving speed of the vehicle. It is possible that the hybrid system will shut down while the vehicle is being driven, causing the vehicle to stall unexpectedly, increasing the risk of a crash.

V. SAFETY PRECAUTIONS

A. SAFETY CHECKLIST & PRECAUTIONS WHEN WORKING ON THE HIGH VOLTAGE SYSTEM

- **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. AIR VENTILATION AND FOREIGN MATERIALS

- ☐ Perform work in an area that is free of dust and other airborne matter.
- ☐ Do not perform the work next to a stall where grinding or spraying of chemicals is performed.
- ☐ When not working in the inverter, temporarily install the inverter cover to prevent foreign material entering the inverter.

2. PREVENT STATIC ELECTRICITY

- ☐ Static electricity can have an adverse effect on inverter components, discharge static electricity by touching a ground location on the vehicle before starting work.

3. PREVENT ELECTRICAL SHOCKS & SHORTS

- ☐ Confirm the auxiliary battery and the service grip have been unplugged for at least 5 minutes before beginning work on the high voltage system.
- ☐ Store the service grip in a secure location (in your pocket) to prevent accidental installation.
- ☐ To prevent short-circuiting of components, wrap tools with insulating tape before use.
- ☐ Do not wear metal; watches, rings, mechanical pencils, etc…
- ☐ When working with or around a high voltage circuit (orange connectors and cables) wear the correct electrical insulating gloves.
- ☐ Confirm your electrical insulating gloves are not wet, or dirty.
- ☐ Confirm your electrical insulating gloves are not punctured or torn.

4. USE OF AIR & POWER TOOLS

- ☐ Do not use air tools or power tools on any component once the inverter cover has been removed to prevent damage and foreign materials from entering the inverter.

5. HANDLING OF PARTS

- ☐ Keep all removed parts organized and clean.
- ☐ Store all removed parts so they are not contaminated or damaged when removed from the inverter.

6. HANDLING OF THE INVERTER & CONNECTORS

- ☐ Cover all high voltage connectors with insulating tape immediately after disconnecting the connector.
- ☐ Use extreme care to prevent nuts/bolts from falling into the inverter when work is performed. If a part falls into the bottom section of the inverter the entire inverter assembly may need to be removed.
- ☐ Use extreme care to not drop any tools in the inverter assembly.

7. CONNECTING HIGH VOLTAGE TERMINALS

- ☐ Confirm all terminals are clean before connecting to the inverter.
- ☐ Torque specifications are critical, confirm all bolts are torque as described in these instructions.

8. INTERMEDIATE INSPECTIONS

- ☐ Perform all intermediate inspections to prevent errors.

9. ASSIGN A SAFETY SUPERVISOR

- ☐ Assign a safety supervisor to be in charge of all safety precautions in the work area.
- ☐ Put a "Working with high voltage" warning sign on the vehicle during work.

Person in charge: _____

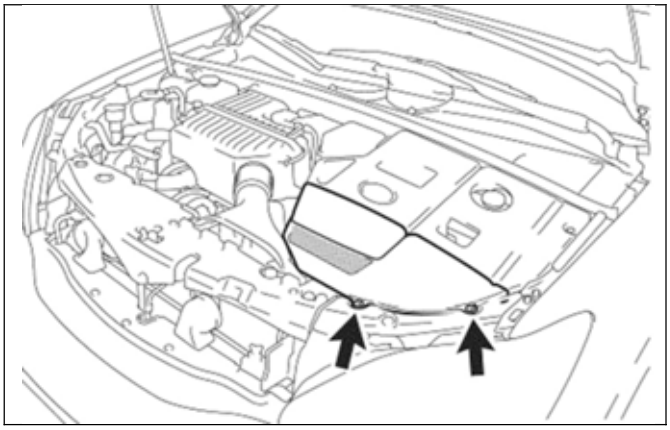
CAUTION:
Working on
high voltage system

CAUTION:
Working on
high voltage system

Person in charge: _____

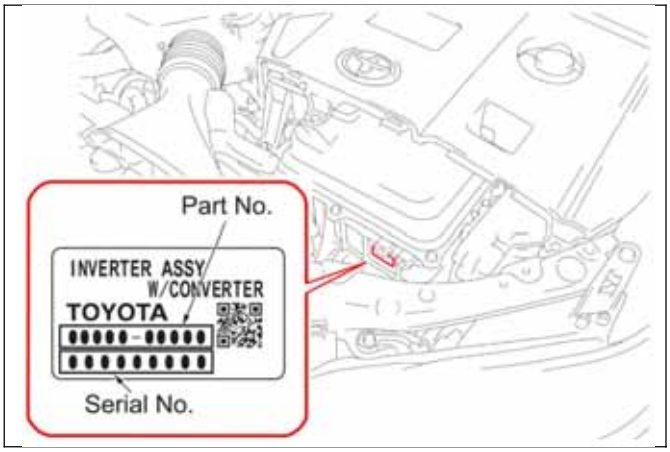
Fold this page and place on the roof of vehicle.

VI. INVERTER VERIFICATION



1. REMOVE THE ENGINE ROOM SIDE LH COVER

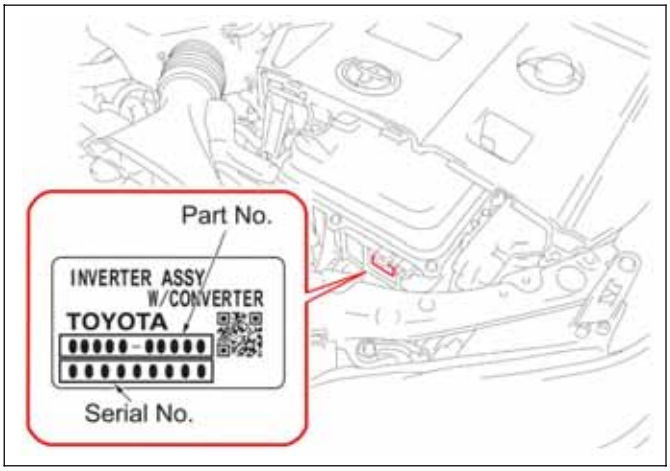
a) Remove the 2 clips and the engine room cover.



2. CONFIRM THE *PART NUMBER*

a) Record the part number on the repair order.

PART NUMBER	ACTION REQUIRED
G9200-48011, G9200-48021 OR part number cannot be determined	The IPM transistor should be replaced Proceed to **SECTION VIII. DISASSEMBLY**
Other than G9200-48011, G9200-48021	Proceed to **STEP 3. CONFIRM THE *SERIAL NUMBER***



3. CONFIRM THE *SERIAL NUMBER*

a) Record the serial number on the repair order.

b) Use the following website to determine if intelligent power module (IPM) transistor replacement is necessary.

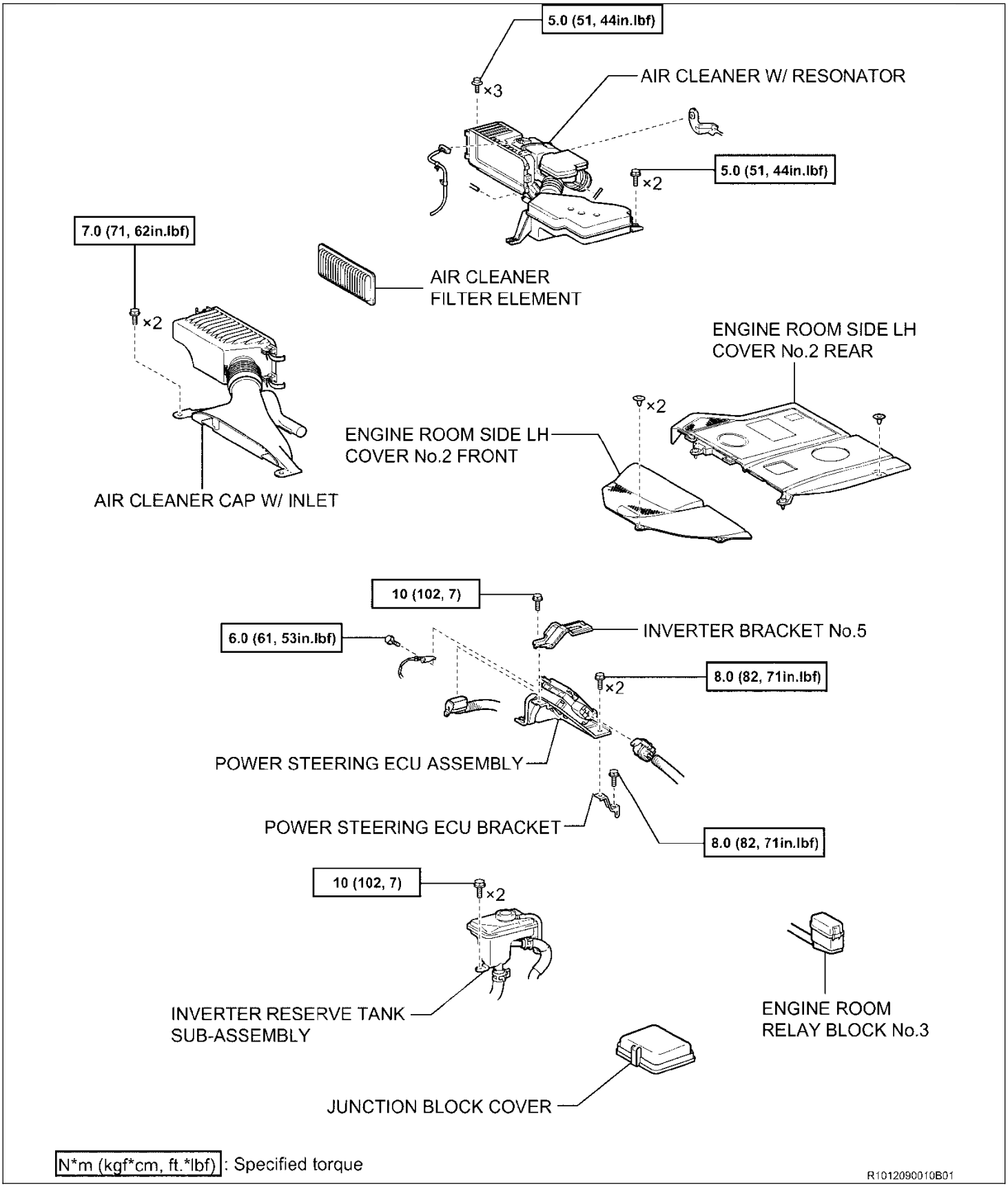
http://b0j-bld-lookup.imagespm.info

NOTE:

- **If the part number or serial number cannot be determined, the IPM transistor should be replaced.**
- **If there are any concerns regarding this inspection, email a picture of the label to quality_compliance@toyota.com for assistance.**

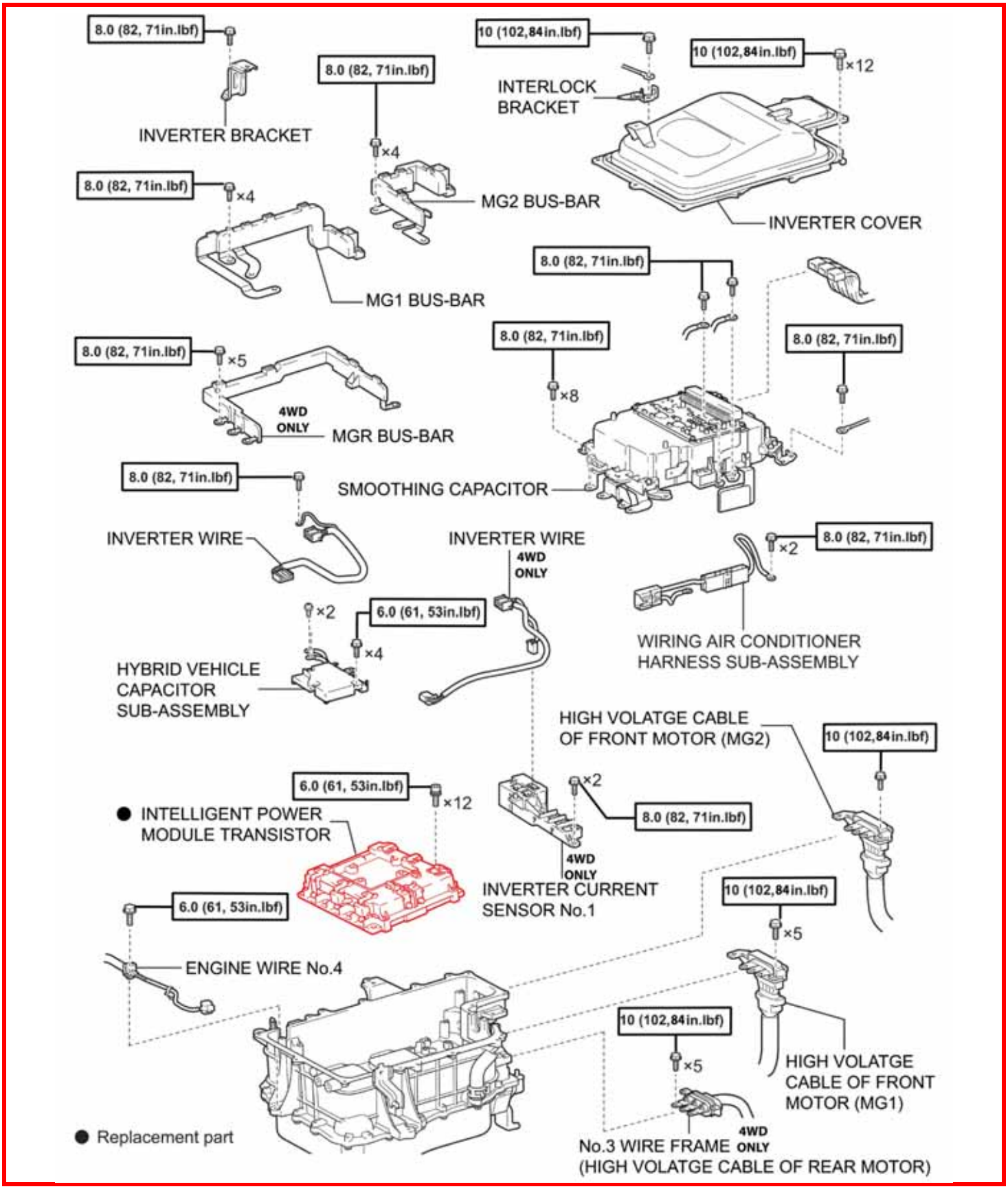
VII. DISASSEMBLY

A. COMPONENTS



TORQUE SPECIFICATIONS INSIDE THE INVERTER ARE CRITICAL
CONFIRM ALL BOLTS ARE TORQUED AS OUTLINED IN THESE INSTRUCTIONS

INTERNAL COMPONENTS IN THE INVERTER ARE NOT AVAILABLE AS SERVICE PARTS
BE CAREFUL WHEN REMOVING, STORING, AND REINSTALLING THESE COMPONENTS



B. VEHICLE DISASSEMBLY

It is extremely important that all of the vehicle disassembly steps are followed prior to proceeding to the inverter disassembly steps. Failure to follow all steps could result in inverter damage.

1. DETERMINE THE WORK PLACE

a) Choose a spot that is free of dust and debris. ***DO NOT*** work next to a place where grinding or spraying of chemicals is performed.

It is extremely important to prevent contamination of the inverter assembly. Confirm the work area is clean and free from airborne matter.

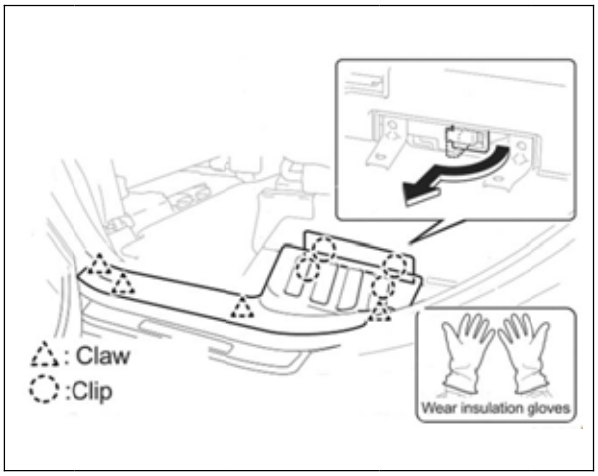
2. PLACE THE PROVIDED CAUTION SIGN ON THE ROOF OF THE VEHICLE

3. RECORD AUDIO AND AIR CONDITIONING SYSTEM SETTINGS

4. CHECK FOR DIAGNOSTIC TROUBLE CODES

a) If any DTCs are output record the data.

5. DISCONNECT THE NEGATIVE BATTERY CABLE



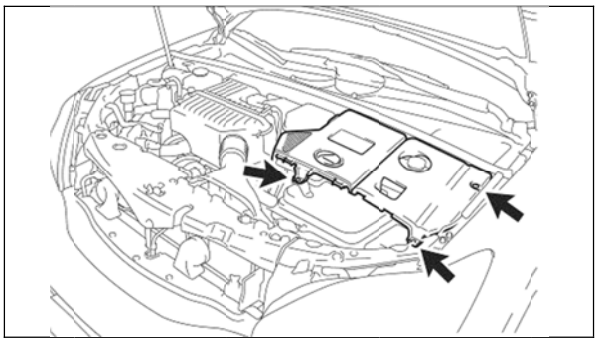
6. REMOVE THE SERVICE GRIP

a) Disengage the 4 claws and 2 clips and remove the rear door scuff plate.

b) Disengage the 2 clips and the service grip access cover.

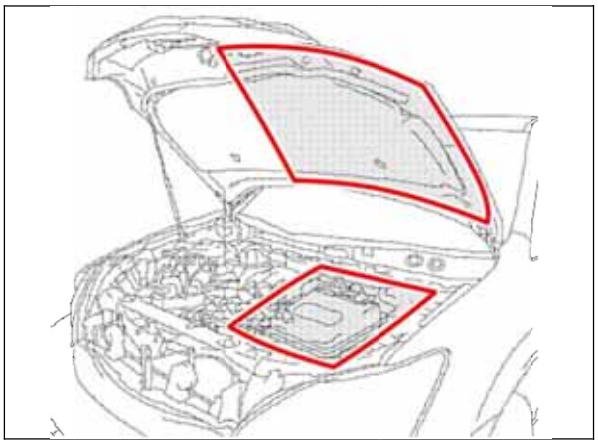
c) Wearing insulating gloves, remove the service grip.

- **Store the service grip in a secure location (in your pocket) to prevent accidental installation.**
- **After removing the service grip, wait at least 5 minutes before working on the high voltage system.**
- ***DO NOT* attempt to switch the vehicle to READY ON with the service grip removed.**



7. REMOVE THE ENGINE ROOM SIDE LH COVER No.2 REAR

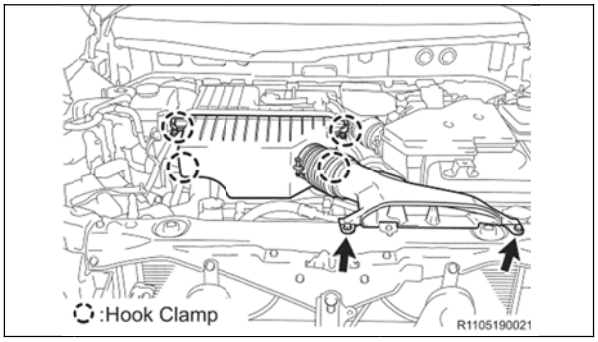
a) Remove the 3 clips and the cover.



8. CLEAN THE AREA AROUND THE INVERTER

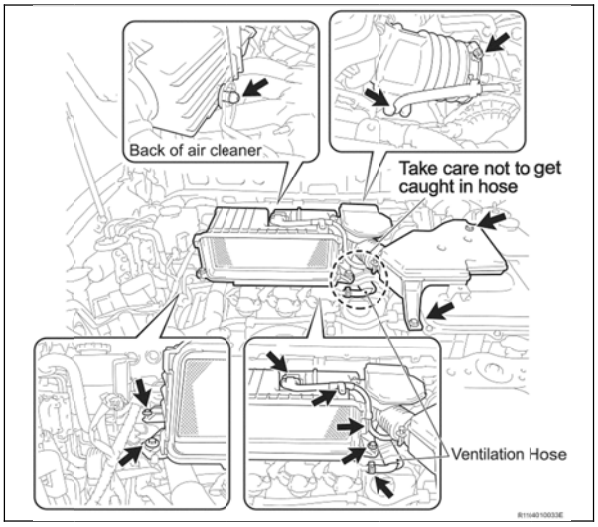
a) Thoroughly remove dust and water from the areas highlighted in the illustration using shop cloths and an air gun.

The inverter is a precision component, contamination can cause a malfunction.



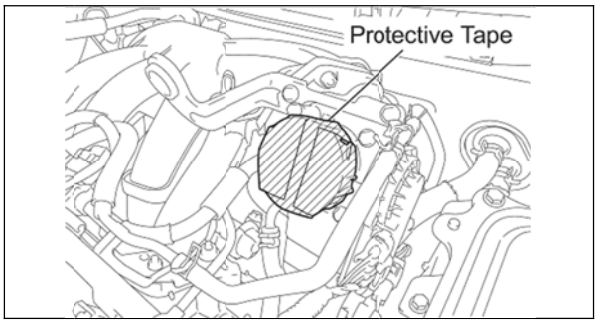
9. REMOVE THE AIR CLEANER CAP WITH INLET

a) Remove the 2 bolts and the 4 hook clamps and the air cleaner.



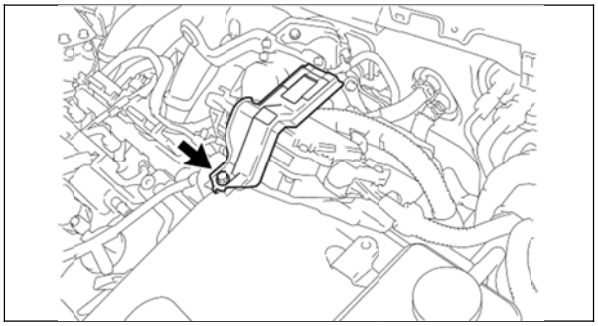
10. REMOVE THE AIR CLEANER CASE WITH RESONATOR

a) Disconnect all hoses and connectors, disconnect the 5 bolts and the air cleaner case.

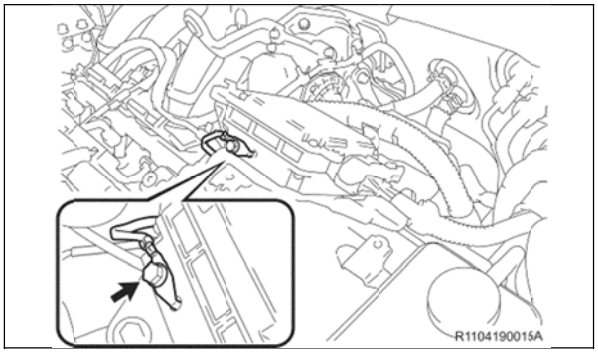


11. COVER THE THROTTLE BODY

a) To prevent foreign material from entering the throttle body, cover with tape.



12. REMOVE THE INVERTER BRACKET No.5

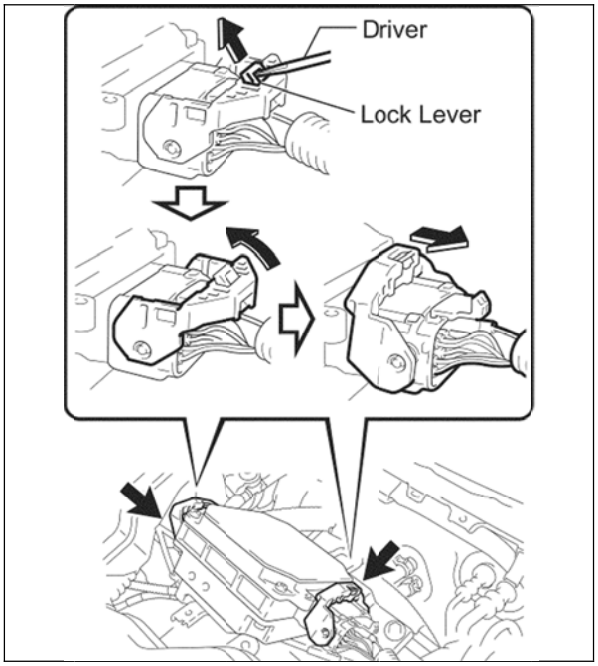


13. REMOVE THE POWER STEERING ECU ASSEMBLY

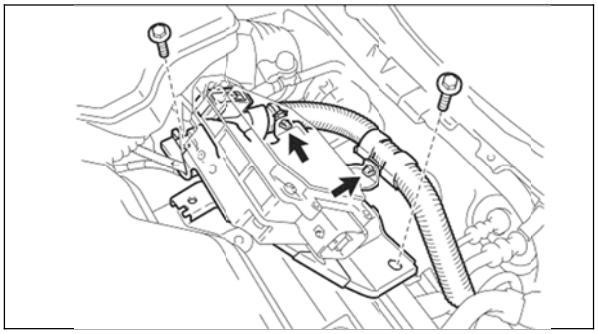
Wear insulating gloves when removing the power steering gear ECU, circuit voltage is approximately 42V.

a) Remove the ground wire bolt and ground wire.

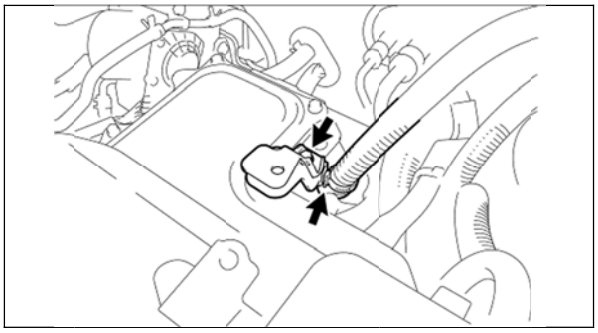
b) Wrap the ground terminal with insulating tape.



c) Remove the 2 connectors as described in the illustration.
d) Wrap the terminals of the connectors with insulating tape.

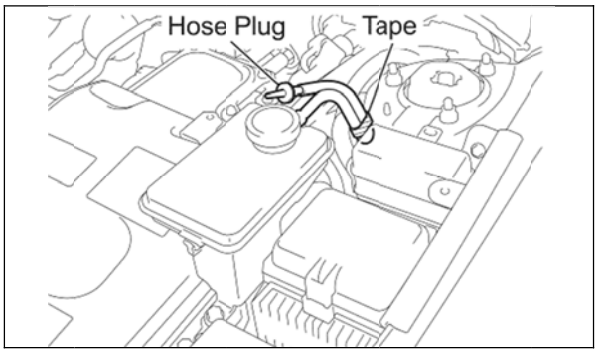


e) Disconnect the 2 wire harness clamps.
f) Remove the 2 bolts and the ECU.



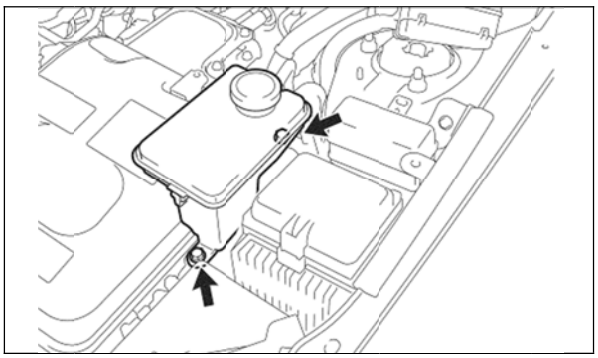
14. REMOVE THE POWER STEERING ECU BRACKET

a) Remove the bolt and bracket.

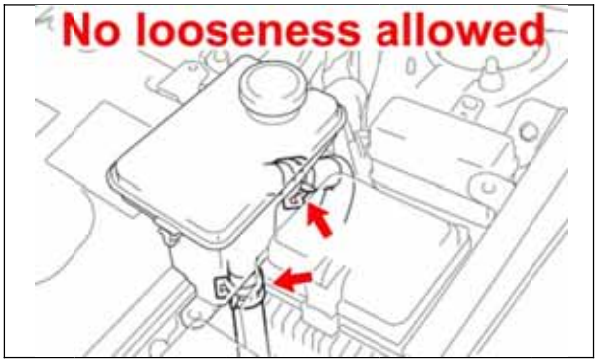


15. DISPLACE THE INVERTER RESERVE TANK SUB ASSEMBLY

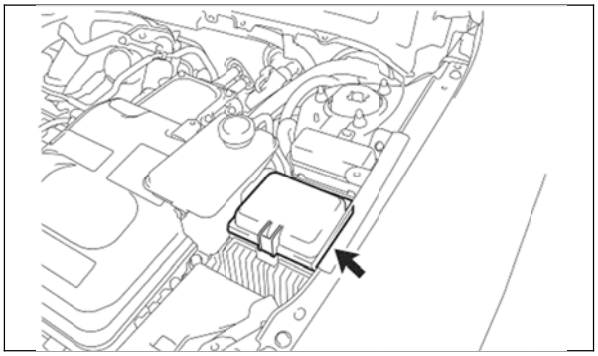
a) Confirm the tank cap is securely tightened.
b) Plug the overflow hose, then fix the hose with tape as illustrated to prevent coolant leakage.



c) Remove the 2 bolts for the reserve tank.

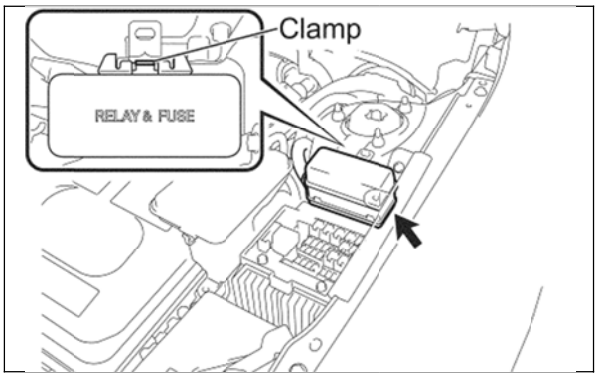


d) Confirm the 2 hoses connected to the reserve tank are secure.

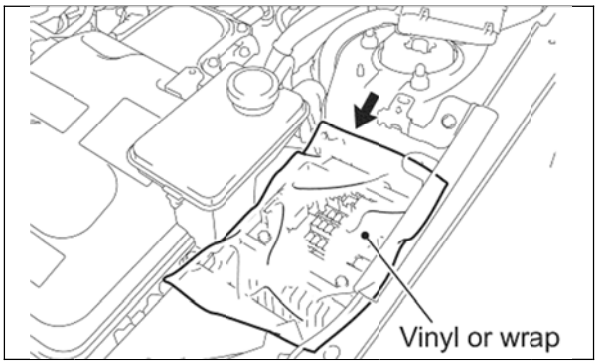


16. REMOVE THE JUNCTION BLOCK COVER

NOTE: The reserve tank cannot be displaced unless the cover is removed.



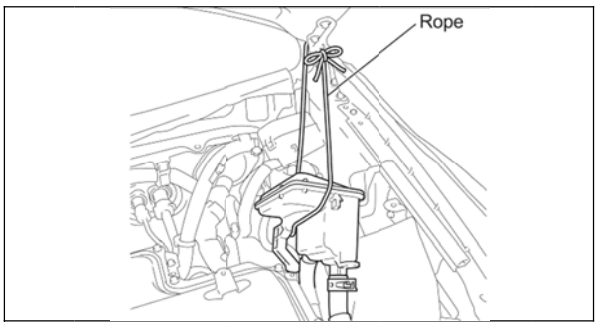
17. DISCONNECT THE ENGINE ROOM RELAY BLOCK No.3



18. PROTECT THE JUNCTION BLOCK

a) Cover the exposed fuses and relays with a waterproof material.

NOTE: *DO NOT* use tape to cover the junction block as relays and fuses may be pulled out when the tape is removed.

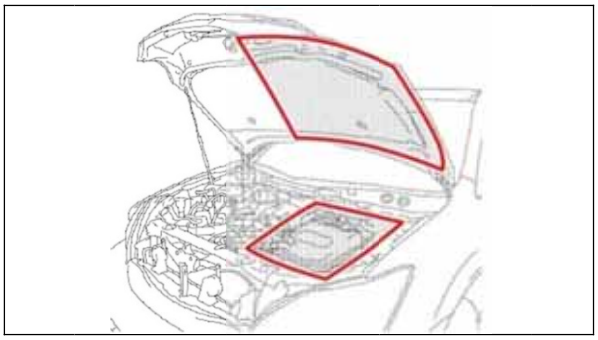


19. DISPLACE THE INVERTER RESERVE TANK SUB ASSEMBLY

a) Displace the reserve tank and secure it to the hood hinge to gain access to the inverter cover.

b) Confirm the reserve tank does not leak coolant when in the displaced position.

NOTE: *DO NOT* put excessive strain on the reserve tank hoses.



20. CLEAN THE AREA AROUND THE INVERTER

a) Confirm all dust and water has been removed from the areas highlighted in the illustration. Clean using shop cloths and an air gun.

The inverter is a precision component and any contamination may cause a malfunction.

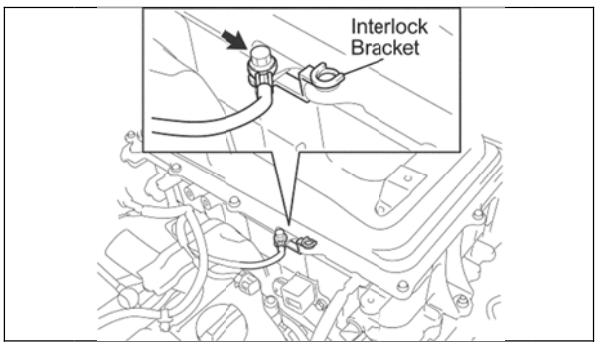
THE FOLLOWING CONFIRMATION STEPS ARE VITAL
CONFIRM THESE STEPS ARE FOLLOWED CLOSELY

PERFORM THIS INTERMEDIATE INSPECTION BEFORE BEGINNING WORK ON THE INVERTER.

1. Is the work space clear of dust and water?
2. Is the "Working with high voltage" warning sign posted?
3. Is the auxiliary battery disconnected and the service grip in a secure location (in your pocket)?
4. Is the inverter reserve tank displaced securely and free of leaks?
5. Are the areas around the inverter and the underside of the hood properly cleaned?
6. Are you wearing electrical insulating gloves that are in good condition?
7. Is the protective cover A clean and available for use?
8. Have you discharged all potential static electricity from your person?

C. INVERTER DISASSEMBLY

- **It is extremely important to prevent contamination of the inverter assembly.**
- **Confirm the work area is clean and free from airborne matter.**
- **Be sure to wear electrical insulating gloves during the entire inverter disassembly procedure.**
- ***DO NOT* use any air tools or power tools during the inverter disassembly procedure.**
- **Confirm all tools used on HV components are insulated or wrapped with insulating tape.**
- **Internal components in the inverter are not available as service parts, be careful when removing, storing, and reinstalling these components.**

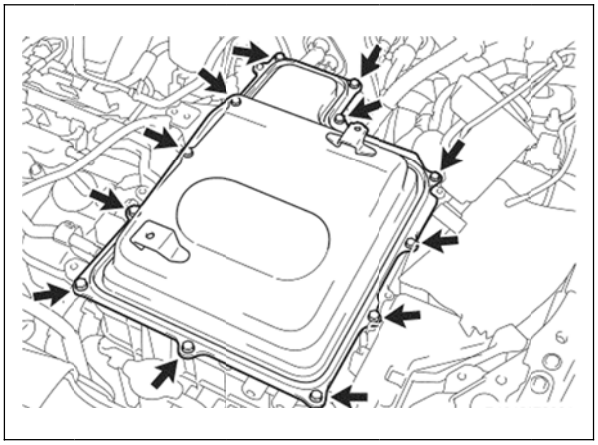


1. REMOVE THE INVERTER COVER

a) Remove the bolt and the interlock bracket.

b) Wrap the terminal with insulating tape.

Confirm the entire cowl assembly has been removed prior to removing the inverter cover. Failure to do so could result in damage in the inverter.



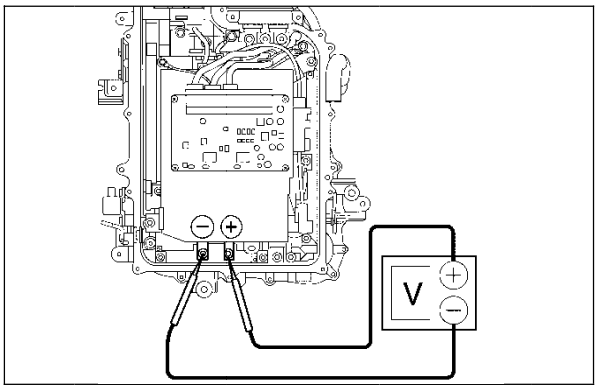
c) Loosen the 12 bolts evenly in 2 increments to remove the cover.

NOTE:

- ***DO NOT* deform the cover during removal.**
- **To prevent damage to the insulating gloves, wear work gloves over the insulating gloves.**

- **Take extra precautions to prevent foreign material from entering the inverter.**
- ***DO NOT* touch the circuit board inside the inverter.**

d) Store the inverter cover in a safe location to prevent damage to the inverter cover gasket.

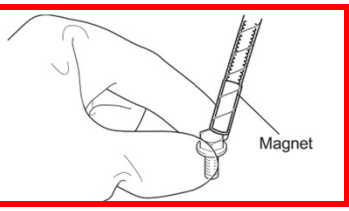


2. PERFORM A FINAL VOLTAGE CHECK

a) Measure the voltage at the points indicated in the illustration.

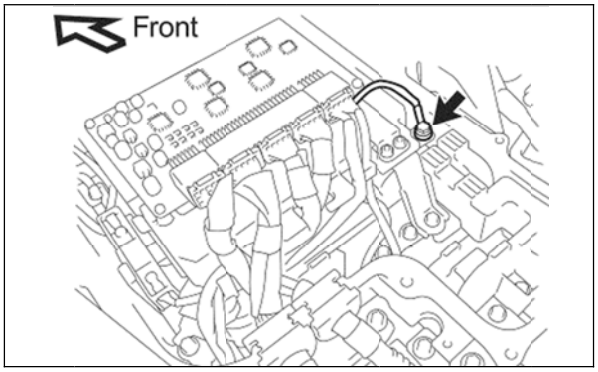
Standard Voltage: 0V

NOTE: If voltage is present, confirm all previous steps to disable the high voltage system have been followed.



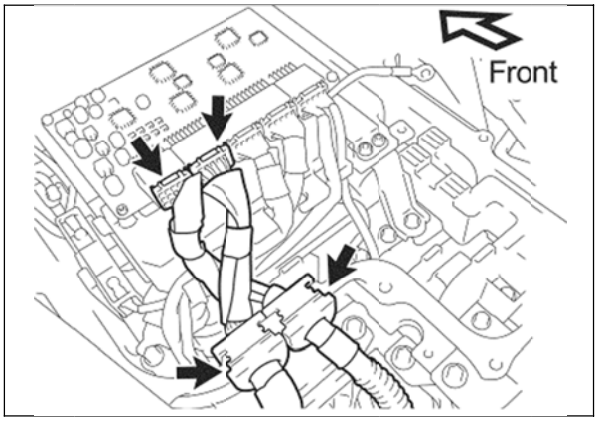
NOTE:

- **To prevent dropping any bolts into the inverter it may be necessary to use a magnet to pick up bolts as they are loosened.**
- **If bolts are dropped into the bottom section of the inverter it may be necessary to completely remove the inverter for retrieval.**

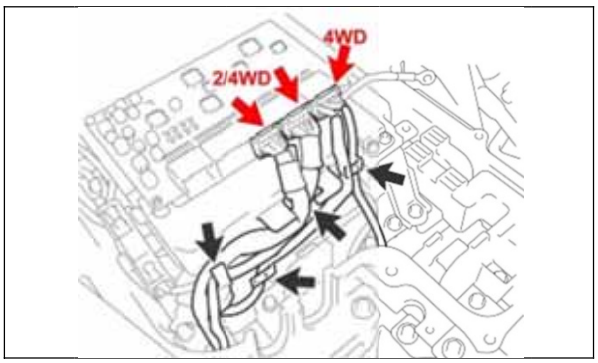


3. DISCONNECT THE MG ECU CONNECTORS

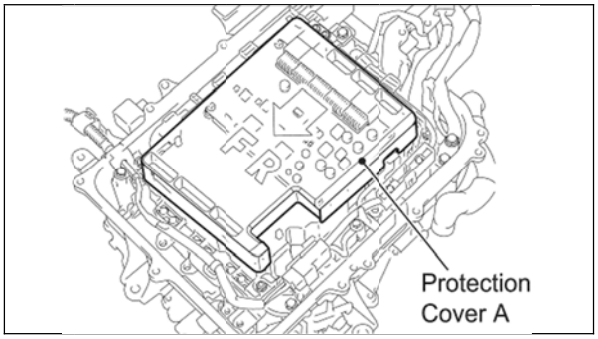
a) Remove the ground bolt.



b) Disconnect the 2 connectors and the 2 grommets.

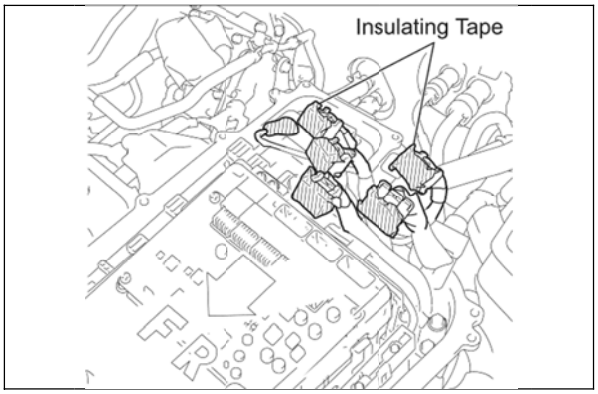


c) **4WD** − Disconnect the 3 connectors and remove the wires from the clamps.
2WD – Disconnect the 2 connectors and remove the wires from the clamps.



4. INSTALL PROTECTIVE COVER A

a) Immediately install the cover to protect the circuit board from damage and contamination.

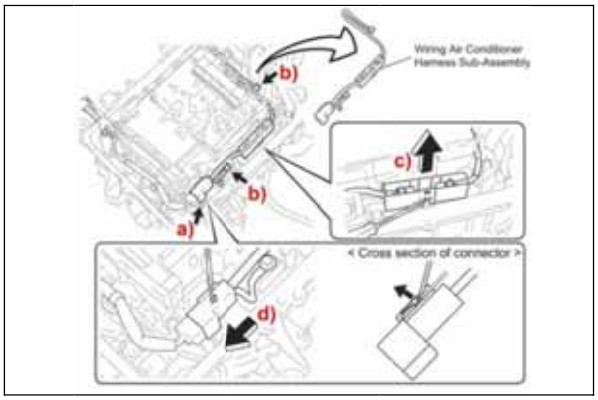


5. PROTECT THE CONNECTORS AND HARNESS

a) Cover the disconnected connectors and terminal with insulating tape.

b) Bundle the harness and secure it away from the inverter.

NOTE: Confirm the harness is positioned so the sharp edge of the inverter case does not cut the wires.



6. REMOVE THE AIR CONDITIONER HARNESS SUB ASSEMBLY

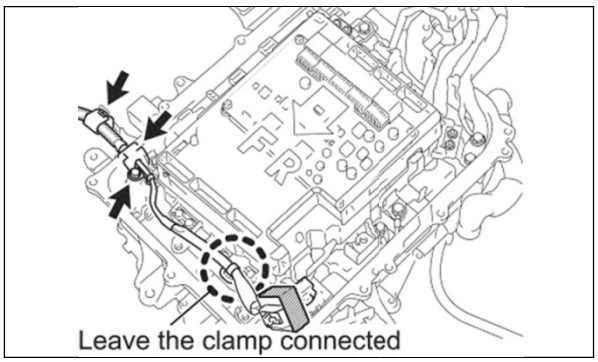
a) Disconnect the connector.

b) Remove the 2 ground bolts.

c) Raise the tab of the fuse box to remove it from the bracket.

d) Raise the tab of the connector to remove it from the bracket.

***DO NOT* remove the harness until all connectors have been disconnected to prevent damaging components.**



7. DISCONNECT THE ENGINE WIRE No.4

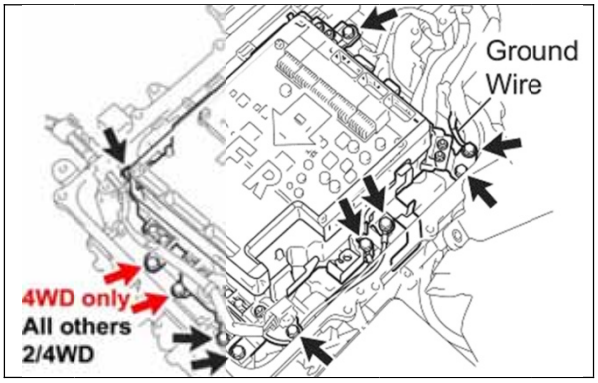
a) Cover the connector with insulating tape.

b) Remove the bolt.

c) Disconnect the grommet.

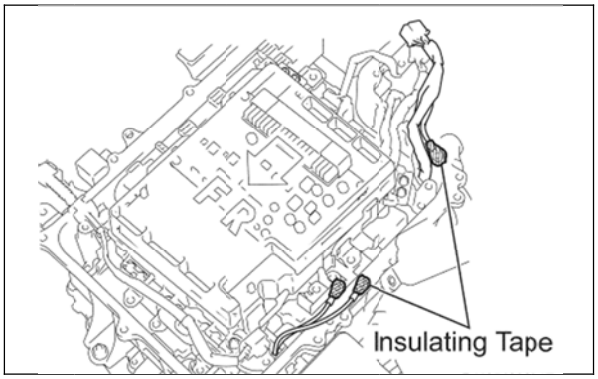
d) Disconnect the harness clamp located **outside** the inverter.

NOTE: *DO NOT* disconnect the harness clamp located inside the inverter at this time to avoid damaging the clamp or the smoothing capacitor.



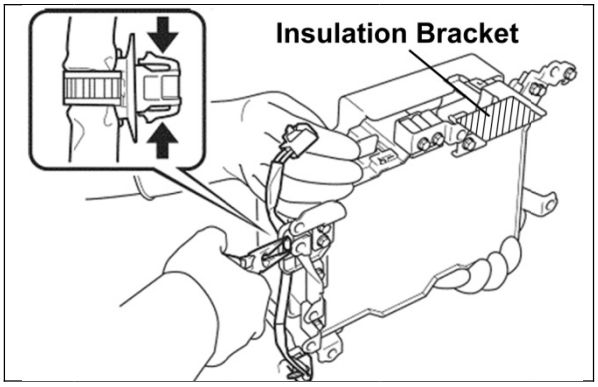
8. REMOVE THE SMOOTHING CAPACITOR

a) **4WD** – Remove the 11 bolts.
2WD – Remove the 9 bolts.



b) Cover the terminals with insulating tape.

NOTE: Confirm protective cover A is fully installed.



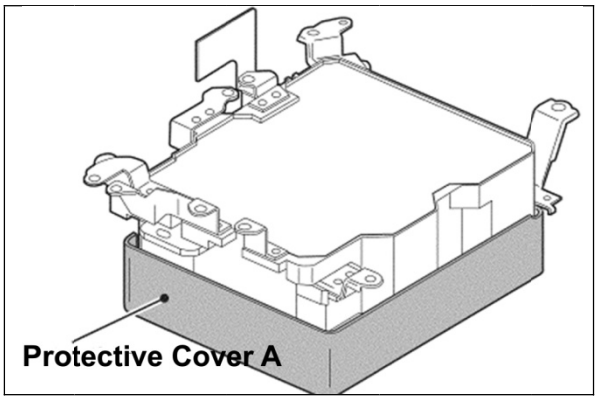
c) Lift the smoothing capacitor.

d) Disconnect the wire harness clamp.

e) Remove the smoothing capacitor.

NOTE:

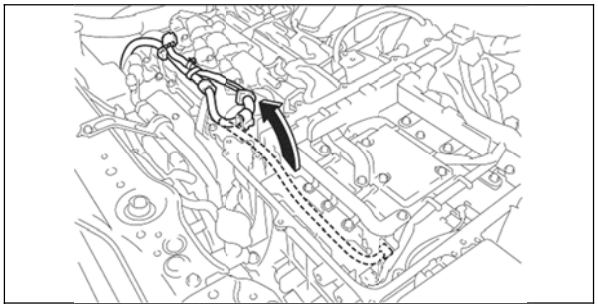
- ***DO NOT* bend the insulation bracket.**
- **Handle the smoothing capacitor carefully.**



f) Store the smoothing capacitor with protective cover A down.

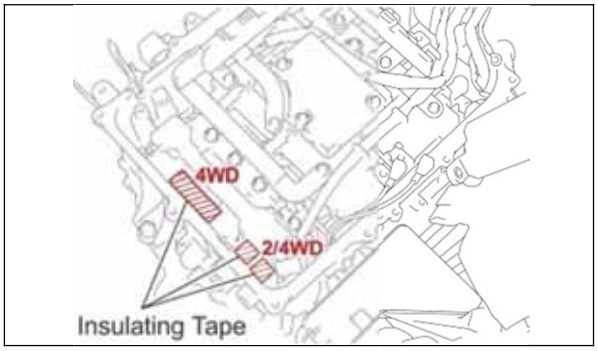
NOTE:

- ***DO NOT* store the smoothing capacitor with protective cover A facing up.**
- ***DO NOT* cover the smoothing capacitor with a shop cloth to avoid damaging the insulation bracket.**
- **Store the smoothing capacitor in a location that is free of dust and other airborne matter.**

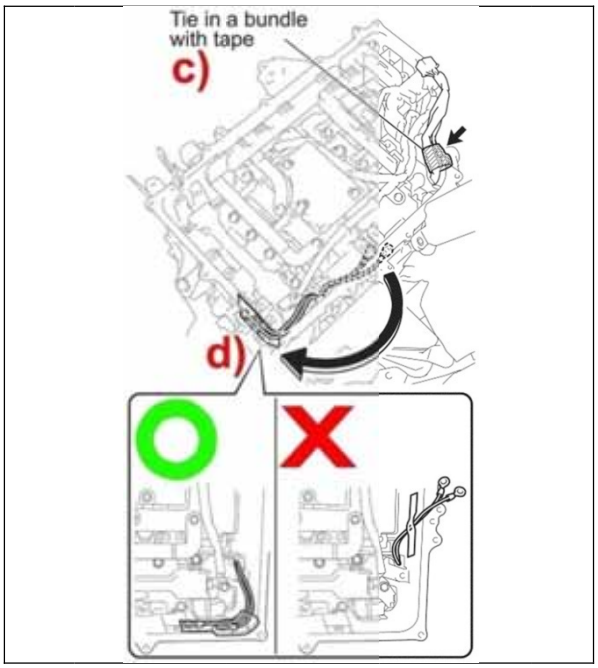


9. PROTECT THE HARNESSES AND TERMINALS

a) Position the disconnected harness outside the inverter so it does not obstruct the work.



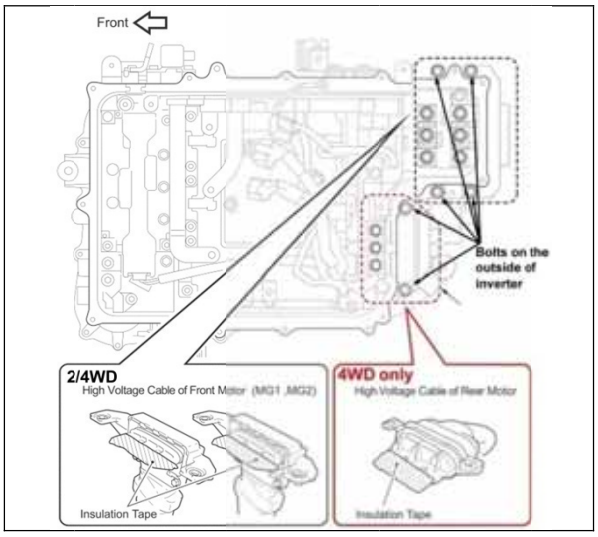
b) Cover the terminals indicated in the illustration with insulating tape.



c) Secure the terminal to the other harnesses at the rear of the inverter so it does not obstruct the work.

d) Secure the 2 forward terminals to the inner wall of the inverter as indicated in the illustration so they do not obstruct the work.

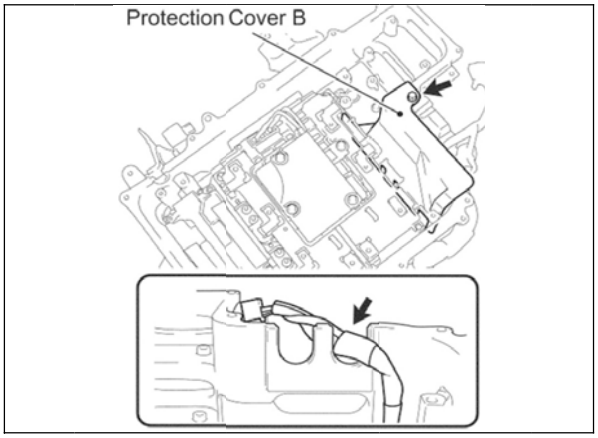
NOTE: *DO NOT* position the terminals in a way that will allow the inverter cover to pinch them when the cover is temporarily installed.



10. DISCONNECT THE HIGH VOLTAGE CABLES

a) **4WD** – Remove the 15 bolts and disconnect the high voltage MG1, MG2, and MGR cables. Cover the terminals with insulating tape.
2WD – Remove the 10 bolts and disconnect the high voltage MG1 and MG2 cables. Cover the terminals with insulating tape.

To prevent contamination, *DO NOT* use the bolts that were removed from the outside of the inverter on the inside.



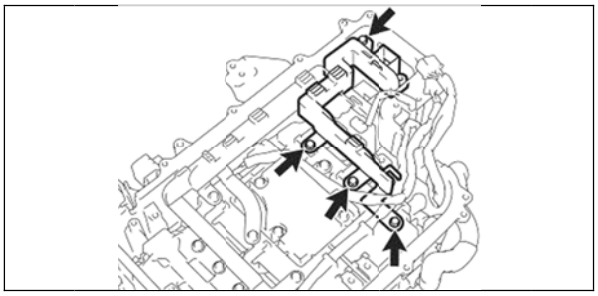
11. *2WD ONLY* – INSTALL PROTECTIVE COVER B

a) Position the wire harness in the groove of the inverter case.

b) Install protective cover B using an inverter cover bolt.

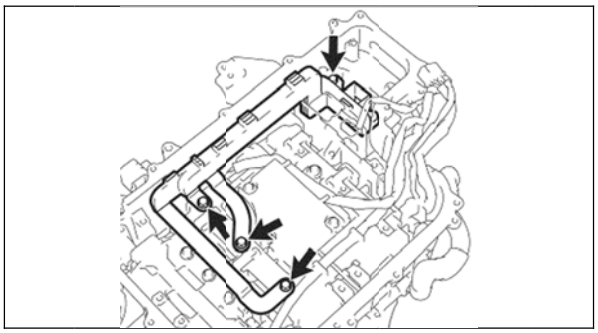
NOTE:

- **Tighten the bolt by hand *ONLY*.**
- **Protective Cover B will be installed on 4WD vehicles at step 18.**



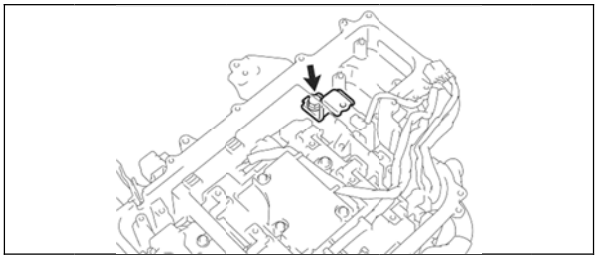
12. REMOVE THE MG2 BUS BAR

a) Remove the 4 bolts and the bus bar.



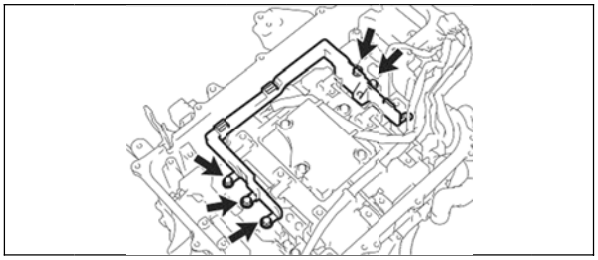
13. REMOVE THE MG1 BUS BAR

a) Remove the 4 bolts and the bus bar.



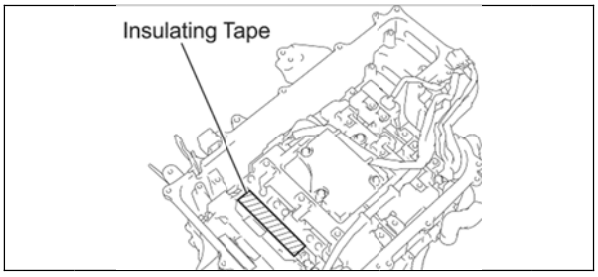
14. *4WD ONLY* – REMOVE THE INVERTER BRACKET

a) Remove the bolt and the bracket.

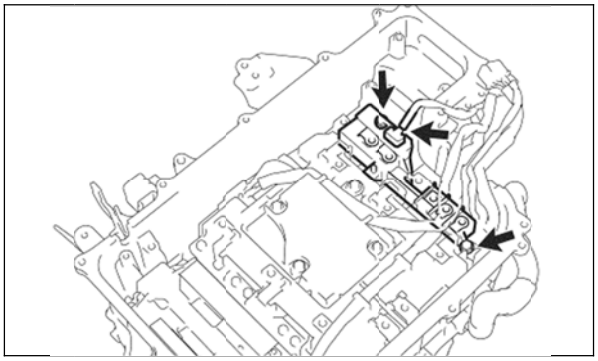


15. *4WD ONLY* – REMOVE THE MGR BUS BAR

a) Remove the 5 bolts and the bus bar.



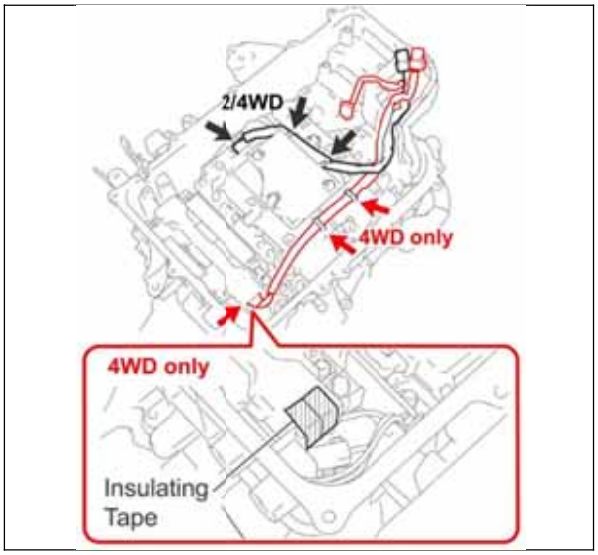
b) Cover the terminals indicated in the illustration with insulating tape.



16. *4WD ONLY* – REMOVE THE INVERTER CURRENT SENSOR No.1

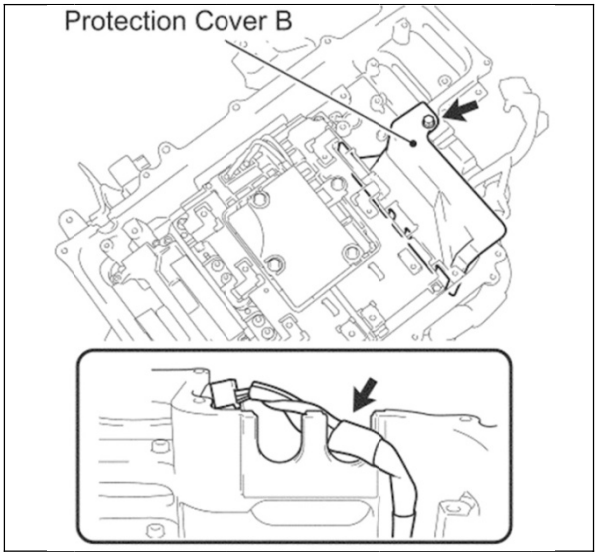
a) Disconnect the connector.

b) Remove the 2 bolts and the sensor.



17. REMOVE THE INVERTER WIRE HARNESSES

a) **4WD ONLY** – Disconnect the 2 clamps and the connector and remove the harness. Attach insulating tape to the connector indicated in the illustration.
2/4WD – Disconnect the 2 clamps and the connector and remove the harness.

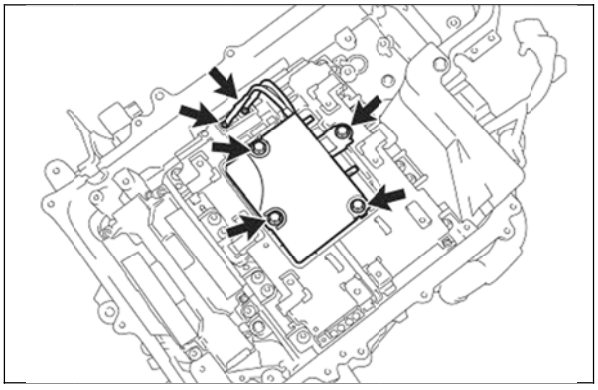


18. INSTALL PROTECTIVE COVER B

a) Position the wire harness in the groove of the inverter case.

b) Install protective cover B using an inverter cover bolt.

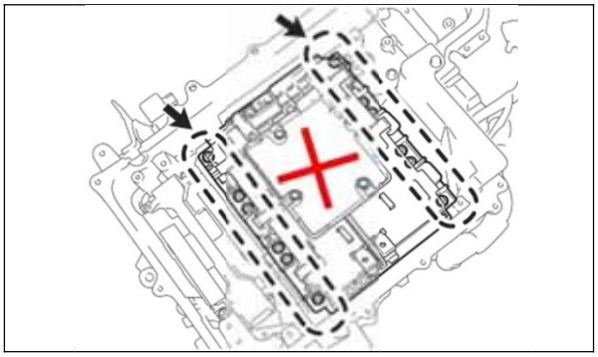
NOTE: Tighten the bolt by hand *ONLY*.



19. REMOVE THE HYBRID VEHICLE CAPACITOR SUB ASSEMBLY

a) Remove the 2 terminal screws.

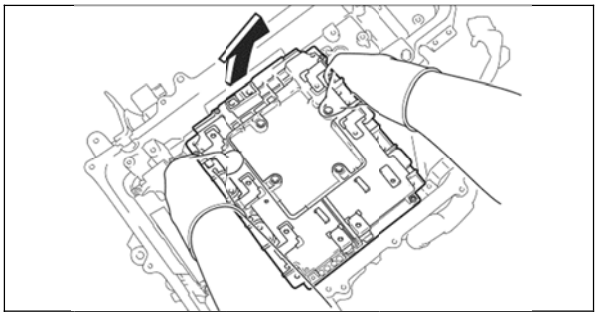
b) Remove the 4 bolts and the capacitor.



20. REMOVE THE INTELLIGENT POWER MODULE (IPM) TRANSISTOR

a) Mark the IPM transistor so that it is not reused.

b) Remove the 12 bolts.



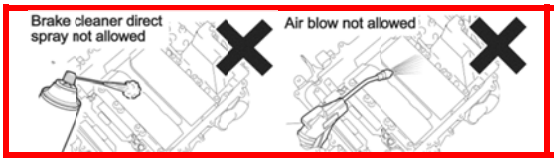
c) Lift one side of the IPM transistor to release the connection caused by the heat conductive grease.

d) Remove the IPM transistor.

STOP

***DO NOT* use any pry tools when removing the IPM transistor, this may damage the inverter case.**

D. INVERTER CLEANING



NOTE:

- ***DO NOT* spray brake cleaner directly in the inverter.**
- ***DO NOT* use an air gun in the inverter.**

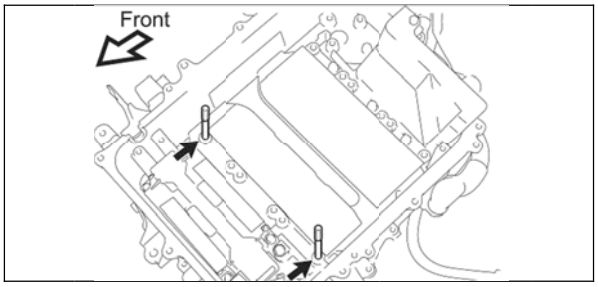
1. CLEAN THE INVERTER CASE

a) Use a shop cloth soaked with brake cleaner to remove the grease.

b) Wipe the grease toward the center groove in the case to avoid getting the grease in the bolt holes.

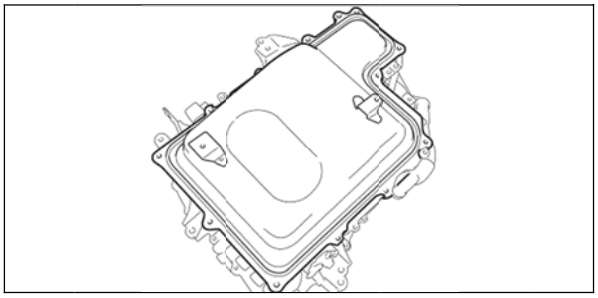
STOP

- **If grease is in the bolt holes clean carefully with a shop cloth soaked in brake cleaner.**
- **Confirm no pieces of the shop cloth remain in the inverter.**
- **Confirm all electrical terminals are free from grease.**



c) Confirm **ALL** grease is removed from the inverter case.

d) Install the 2 installation studs.



2. TEMPORARILY INSTALL THE INVERTER COVER

a) Install the inverter cover while applying grease to the new IPM transistor to prevent contamination in the inverter assembly.

NOTE:

- ***DO NOT* remove protective cover B**
- ***DO NOT* pinch any harnesses between the cover and inverter.**

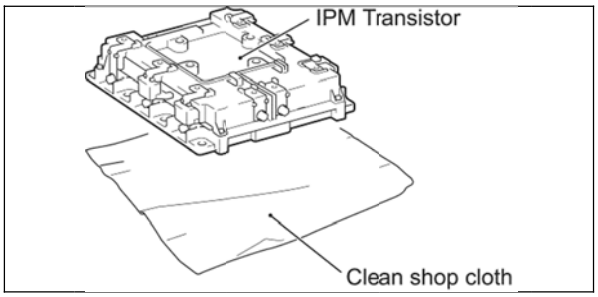
VIII. GREASE APPLICATION

THE FOLLOWING CONFIRMATION STEPS ARE VITAL
CONFIRM THESE STEPS ARE FOLLOWED CLOSELY

PERFORM THIS INTERMEDIATE INSPECTION BEFORE APPLYING GREASE TO THE IPM TRANSISTOR.

1. Is the smoothing capacitor stored properly with protective cover A installed?
2. Are the disconnected high voltage terminals covered with insulating tape?
3. Has the inverter case been thoroughly cleaned?
4. Is the inverter cover temporarily installed?
5. Is the grease application work space clear of dust, water and other forms of contamination?
6. Is the masking plate and squeegee clean and in good condition?
7. Have you discharged all potential static electricity from your person?

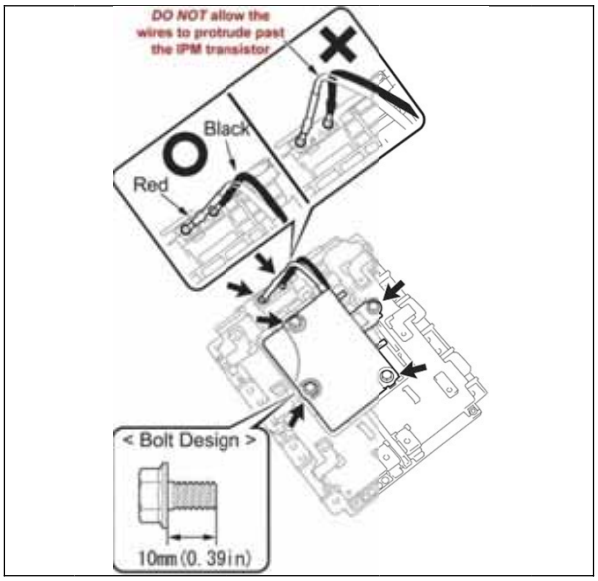
A. IPM TRANSISTOR ASSEMBLY



1. ASSEMBLE THE NEW IPM TRANSISTOR

a) Place the new IPM transistor on a clean shop cloth.

***DO NOT* touch the circuit board that is between the upper and lower sections of the IPM transistor.**



b) Install the sub capacitor with the 4 bolts.

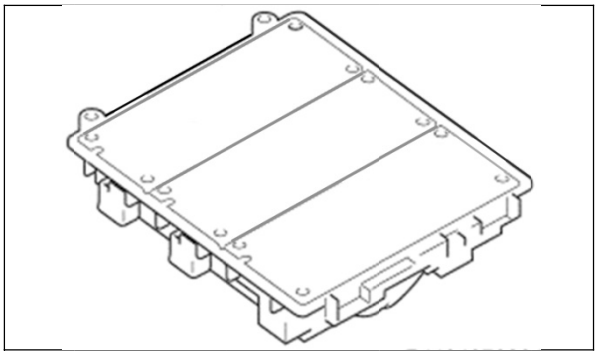
Torque: 6.0N·m (61kgf·cm, 53in. lbf)

c) Install the 2 wires with the 2 screws.

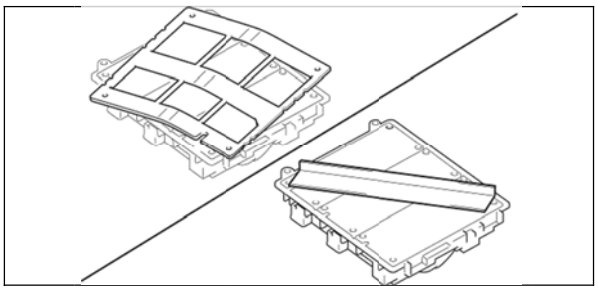
NOTE:

- ***DO NOT* attach the wires to the incorrect terminals.**
- **Position the wires so they do not protrude past the IPM transistor.**

B. IPM TRANSISTOR GREASE APPLICATION



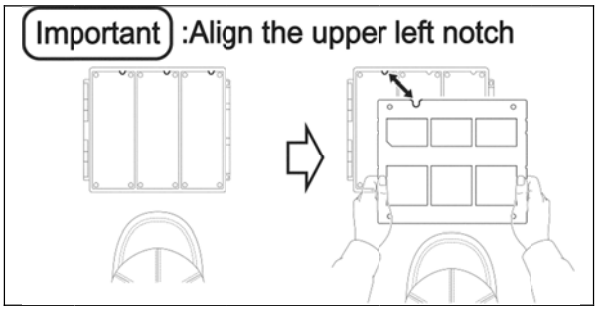
1. PLACE THE IPM TRANSISTOR UPSIDE DOWN ON A CLEAN SURFACE



2. INSPECT THE MASKING PLATE AND SQUEEGEE

a) Confirm the masking plate and squeegee are clean.

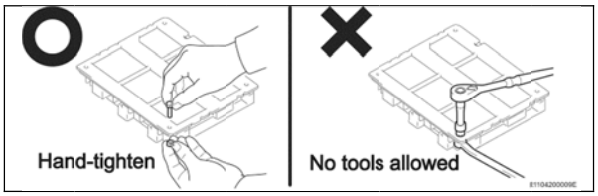
b) Confirm the masking plate and squeegee are not bent or damaged.



3. INSTALL THE MASKING PLATE

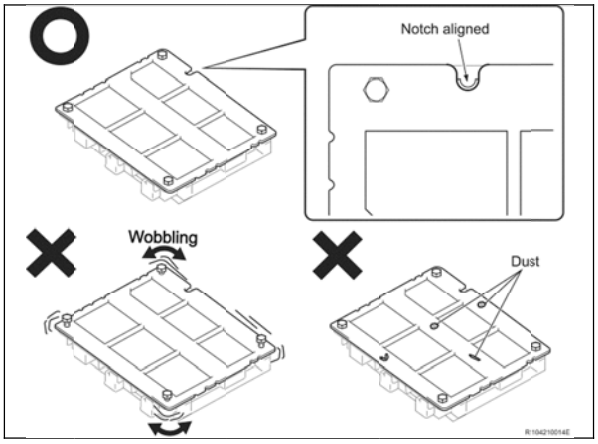
a) Place the IPM transistor so the 3 notches are at the top.

b) Align the upper left notch in the masking plate with the alignment notch in the IPM transistor.



c) Tighten the masking plate by hand using the 4 nuts/bolts provided.

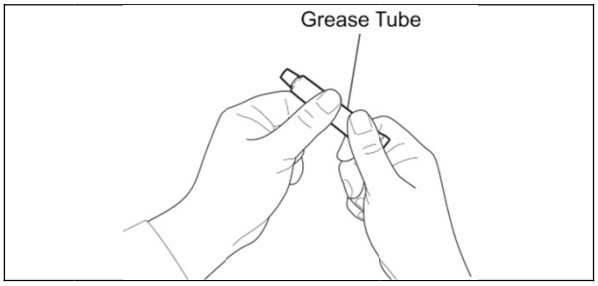
NOTE: *DO NOT* use tools when tightening the masking plate to prevent damage.



d) Confirm the masking plate is installed in the correct position.

e) Confirm the masking plate is securely attached.

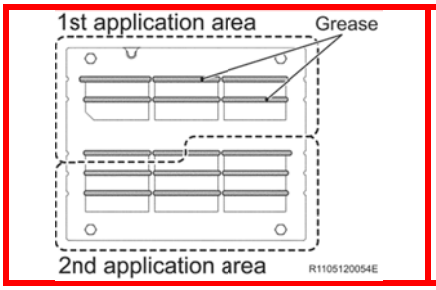
f) Confirm the masking plate is clean.



4. PREPARE 2 TUBES OF THERMAL CONDUCTIVE GREASE

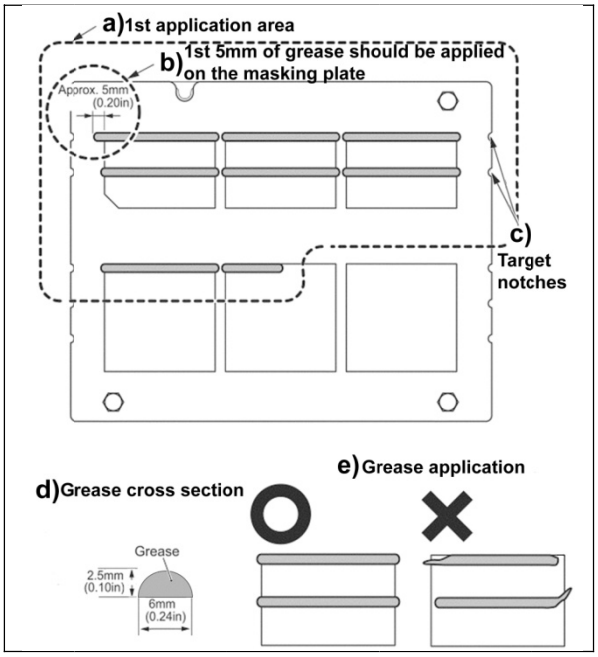
a) Knead the tubes to confirm the grease is properly mixed.
b) Clean the tubes with brake cleaner.

NOTE: The tubes may be used to apply the grease, it is critical that they are clean.



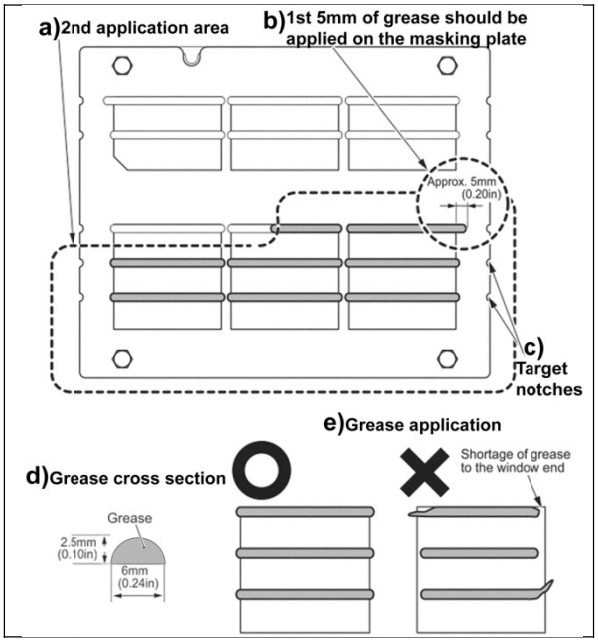
NOTE:

- **Two tubes of grease are necessary for each IPM transistor.**
- **The first tube of grease will cover the upper half of the IPM transistor and the second tube will cover the lower half as indicated in the illustration.**



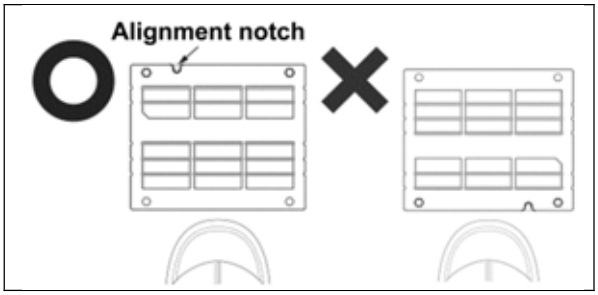
5. APPLY THE FIRST TUBE OF GREASE

a) Confirm the area the first tube of grease will cover.
b) Confirm the first 5mm of grease is applied on the masking plate as the initial portion of grease may not be completely mixed.
c) Apply the grease by following the target notches on the masking plate.
d) The grease should be applied in strips that are approximately 6mm wide and 2.5mm in height. (This is the size of the target notches on the masking plate)
e) Confirm grease is applied fully from start to finish in the masking plate windows.



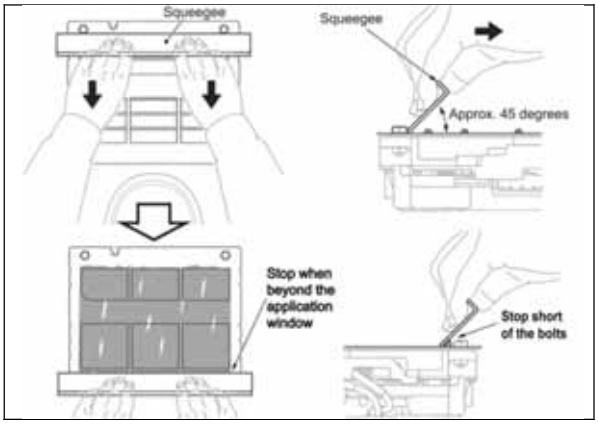
6. APPLY THE SECOND TUBE OF GREASE

a) Confirm the area the second tube of grease will cover.
b) Confirm the first 5mm of grease is applied on the masking plate as the initial portion of grease may not be completely mixed.
c) Apply the grease by following the target notches on the masking plate.
d) The grease should be applied in strips that are approximately 6mm wide and 2.5mm in height. (This is the size of the target notches on the masking plate)
e) Confirm grease is applied fully from start to finish in the masking plate windows.



7. SPREAD THE GREASE

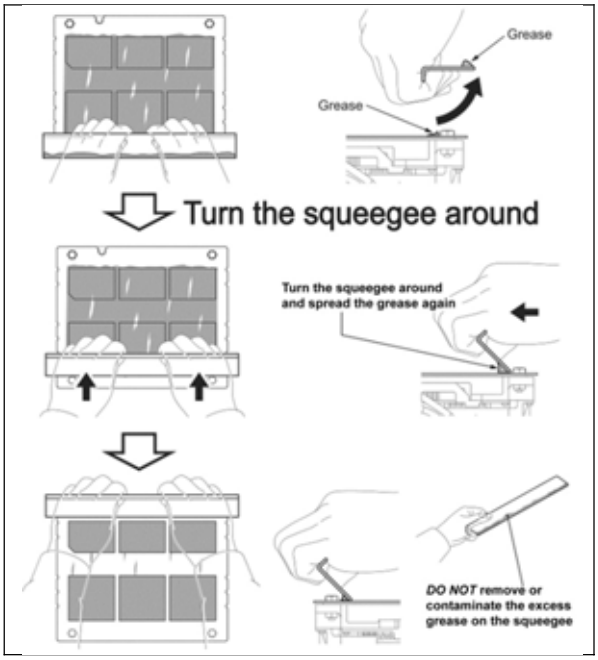
a) Position the IPM transistor so the alignment notch on the masking plate is in the upper left position.



b) Hold the squeegee at a 45 degree angle.

c) Beginning on the upper side of the IPM transistor, slide the squeegee down past the bottom of the application windows.

NOTE: To ensure all grease is used effectively, *DO NOT* slide the squeegee into the bolts.



d) Lift the squeegee with the grease.

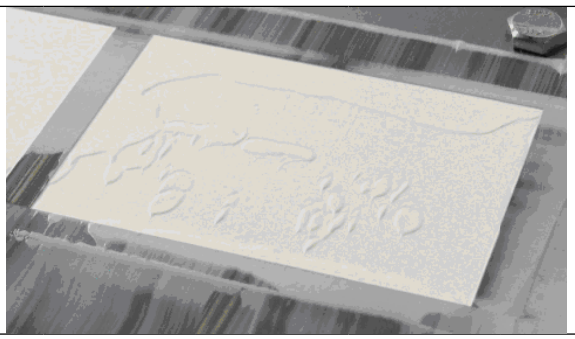
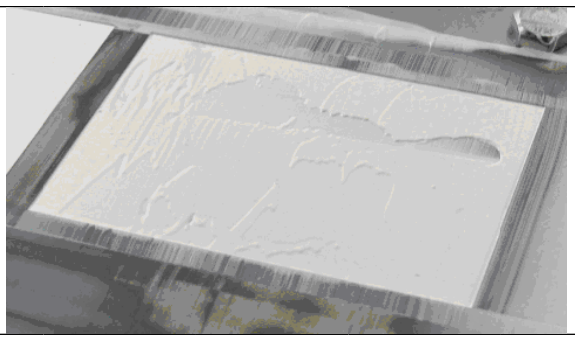
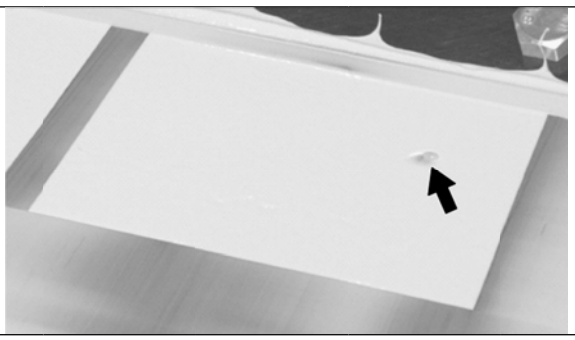
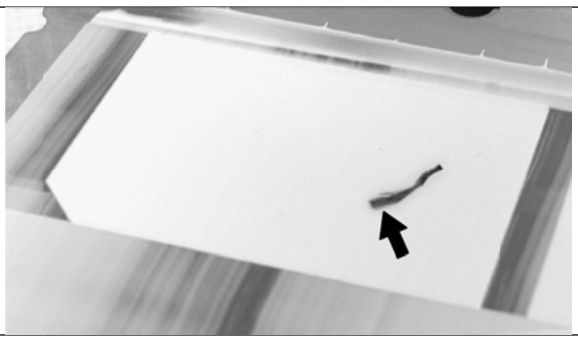
e) Turn the squeegee around and slide it from the bottom of the IPM transistor up past the top of the application windows.

STOP

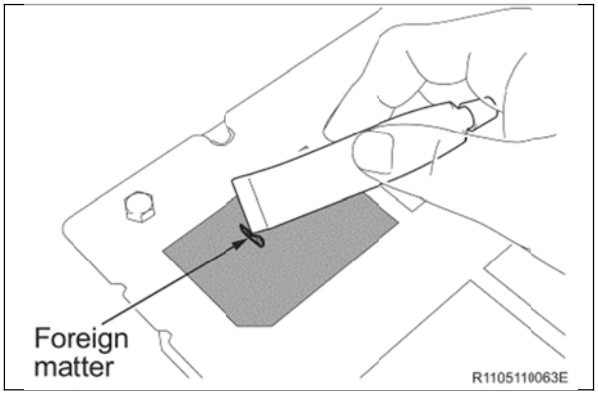
***DO NOT* remove the excess grease from the squeegee until it has been confirmed that the grease has been spread correctly.**

THE FOLLOWING STEPS ARE VITAL
CONFIRM THESE STEPS ARE FOLLOWED CLOSELY

CONFIRM THE CONDITION OF THE THERMAL CONDUCTIVE GREASE

SAMPLE	CONDITION & ACTION REQUIRED
	**CONDITION:** Smooth surface and complete coverage. **ACTION:** Proceed to: **SECTION X. REASSEMBLY**
	**CONDITION:** Grease unsmooth. Metal surface of the IPM transistor ***NOT*** visible through the grease. **ACTION:** Proceed to: **SECTION X. REASSEMBLY**
	**CONDITION:** Grease unsmooth. Metal surface of the IPM transistor visible through the grease. **ACTION:** Proceed to: **STEP C #2. REAPPLY GREASE TO THE NEEDED AREAS**
	**CONDITION:** Hole or imperfection in the grease exposing the metal surface of the IPM transistor. **ACTION:** Proceed to: **STEP C #2. REAPPLY GREASE TO THE NEEDED AREAS**
	**CONDITION:** Foreign material in the grease. **ACTION:** Proceed to: **STEP C #1. REMOVE FOREIGN MATERIAL FROM THE GREASE**

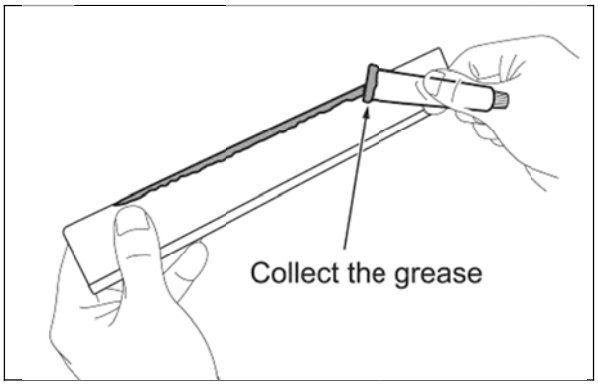
C. GREASE APPLICATION CORRECTION
(Only perform these steps if the above inspection determines it is necessary)



1. REMOVE FOREIGN MATERIAL FROM THE GREASE

a) Use one of the tubes of grease to remove the foreign material from the grease.

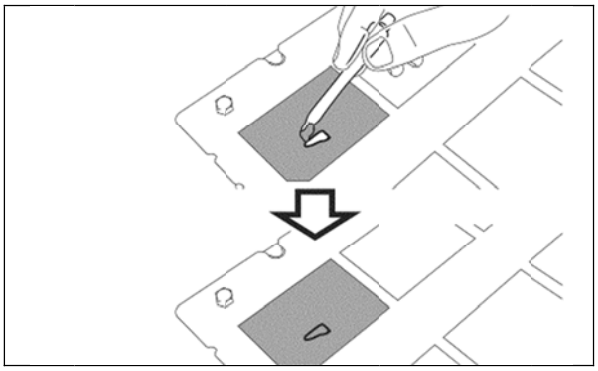
NOTE: Confirm the tube is clean before use.



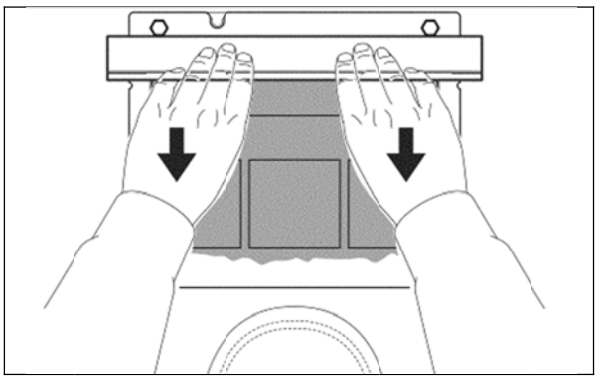
2. REAPPLY GREASE TO THE NEEDED AREAS

a) Collect the grease remaining on the squeegee using one of the tubes of grease.

NOTE: Confirm the tube is clean before use.



b) Apply the grease the areas with a shortage.



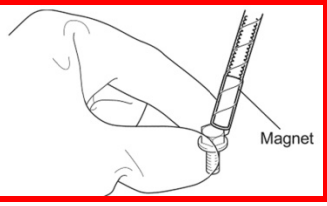
c) Use the squeegee as before to smooth the grease.

d) Reconfirm the condition of the grease using the confirmation steps on the previous page.

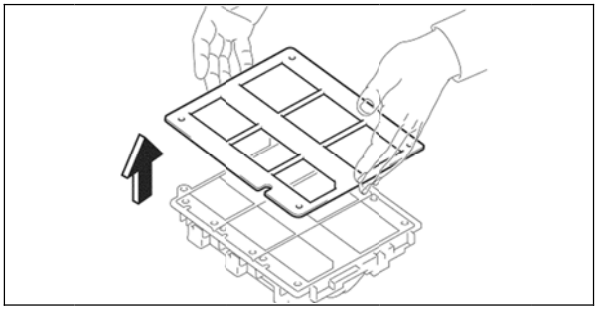
IX. REASSEMBLY

A. INVERTER REASSEMBLY

TORQUE SPECIFICATIONS INSIDE THE INVERTER ARE CRITICAL
CONFIRM ALL BOLTS ARE TORQUED AS OUTLINED IN THESE INSTRUCTIONS



NOTE:
- **To prevent dropping any bolts into the inverter it may be necessary to use a magnet to set the bolts as they are installed.**
- **If bolts are dropped into the bottom section of the inverter it may be necessary to completely remove the inverter for retrieval.**



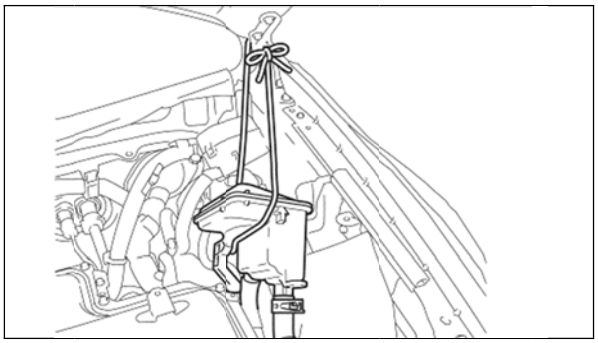
1. REMOVE THE MASKING PLATE

a) Remove the 4 nuts and bolts.

b) Slowly remove the masking plate.

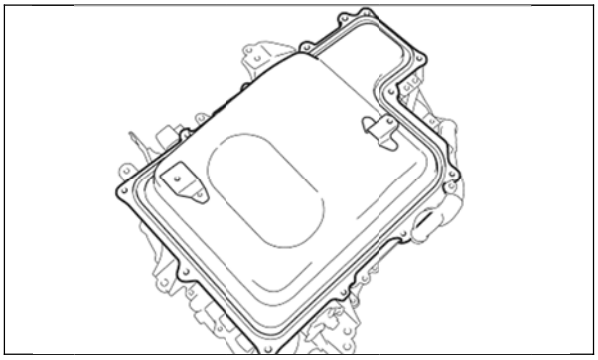
STOP

- ***DO NOT* displace the grease when removing the masking plate. If the grease is scraped off when removing the plate, return to STEP B. IPM TRANSISTOR GREASE APPLICATION**



2. CONFIRM THE INVERTER RESERVE TANK SUB ASSEMBLY IS NOT LEAKING

a) Before installing the IPM transistor, confirm there is no coolant leaking.

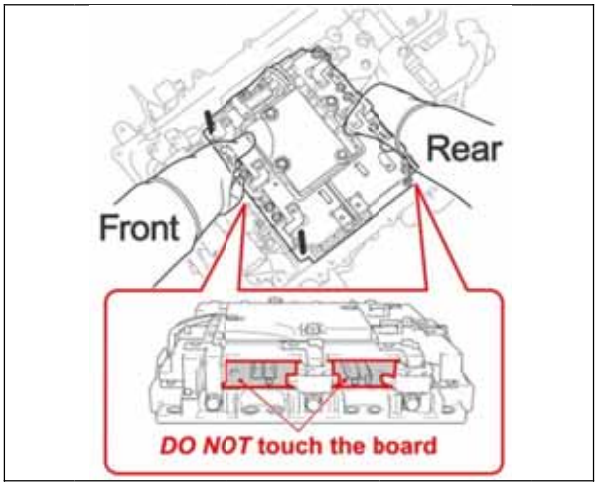


3. INSTALL THE NEW IPM TRANSISTOR

STOP

Be sure to wear electrical insulating gloves during the inverter reassembly procedure.

a) Remove the inverter cover.

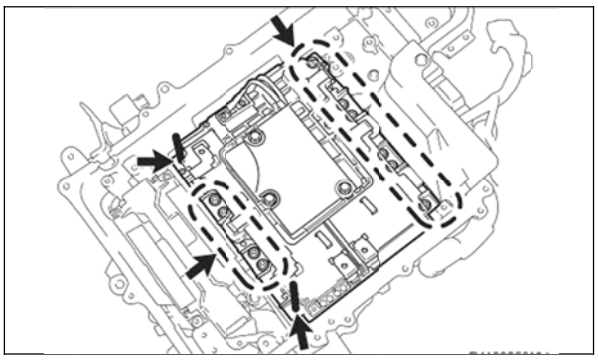


STOP

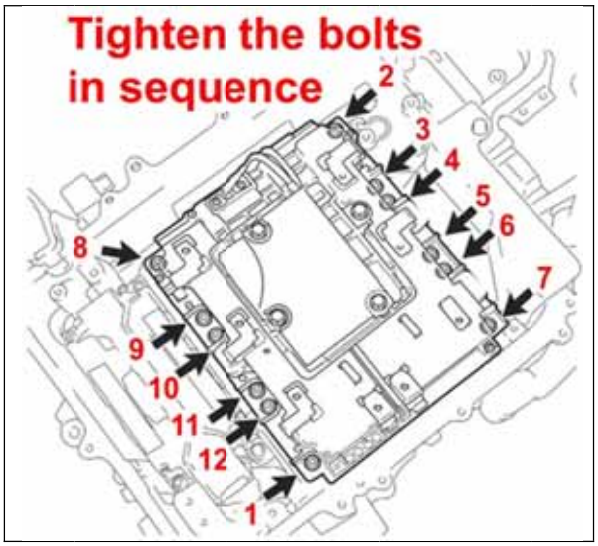
- **Confirm the inside of the inverter is clean.**
- ***DO NOT* touch the circuit board in the IPM transistor.**
- **Confirm the 2 installation studs are installed.**

b) Hold the front and back of the IPM transistor and place it in the inverter.

NOTE: Confirm the IPM transistor is positioned correctly before installation as it can be installed in two different positions.



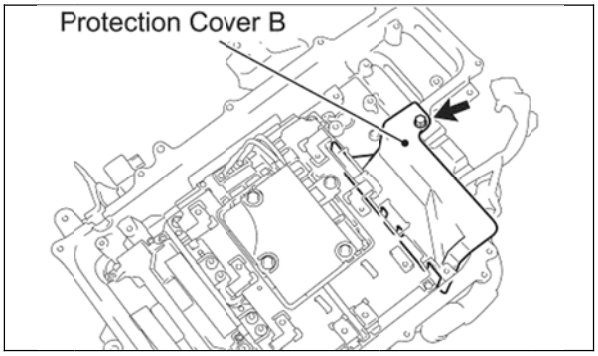
c) Loosely install 10 bolts.
d) Remove the 2 installation studs.
e) Loosely install the 2 remaining bolts.



f) Tighten the 12 bolts in the sequence shown in the illustration.

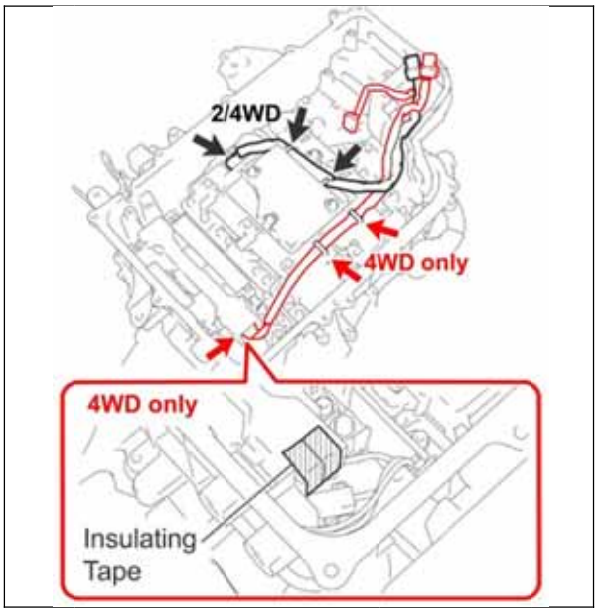
Torque: 6N·m (61kgf·cm, 53 in.lbf)

NOTE: Confirm the 12 bolts are tightened in the correct sequence to ensure the grease contacts correctly.



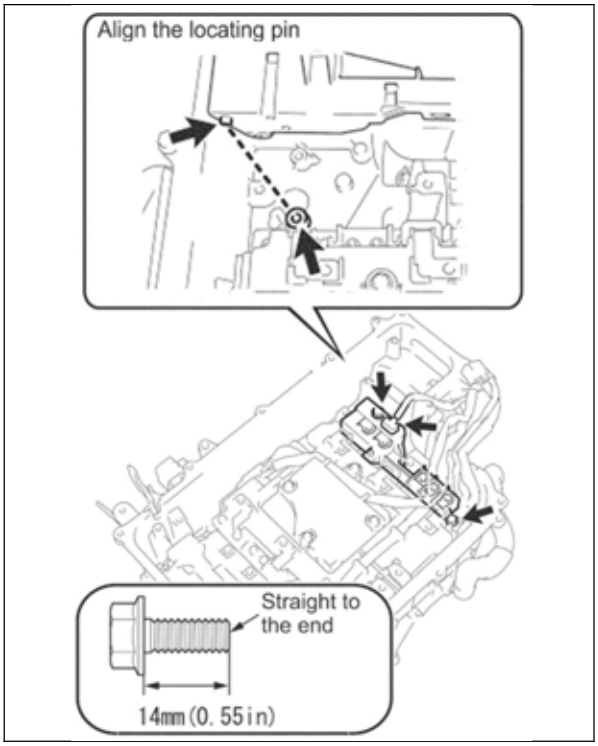
4. *4WD ONLY* −REMOVE PROTECTIVE COVER B

NOTE: Protective Cover B will be removed on STEP 11 on 2WD vehicles.



5. INSTALL THE INVERTER WIRE HARNESSES

a) **4WD ONLY** – Connect the 2 clamps and 1 connectors.
2/4WD – Connect the 2 clamps and the connector.



6. *4WD ONLY* – INSTALL THE INVERTER CURRENT SENSOR No.1

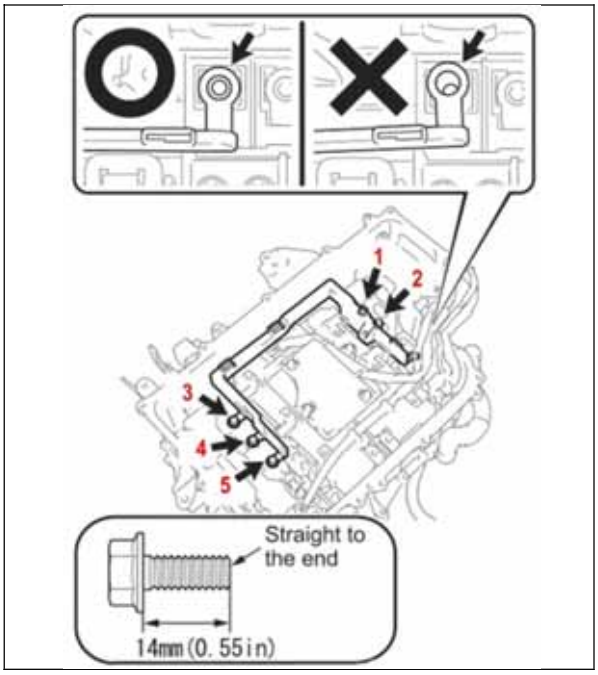
a) Install the current sensor. Confirm the sensor is installed in the locating pin.

b) Install the 2 bolts.

Torque: 8N·m (82kgf·cm, 71 in.lbf)

STOP The bolts can be installed even if the locating pin is not aligned. Confirm the sensor is installed in the locating pin.

c) Connect the electrical connector.



7. *4WD ONLY* – INSTALL THE MGR BUS BAR

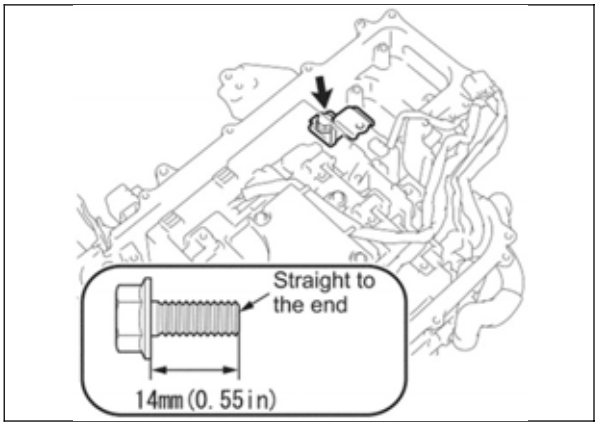
a) Remove the insulating tape attached to the terminals and confirm they are clean.

b) Install the bus bar.

c) Install the 5 bolts in the sequence shown in the illustration.

Torque: 8N·m (82kgf·cm, 71in. lbf)

NOTE: *DO NOT* install a bolt in the sixth hole at this time, only confirm the terminal is aligned correctly.

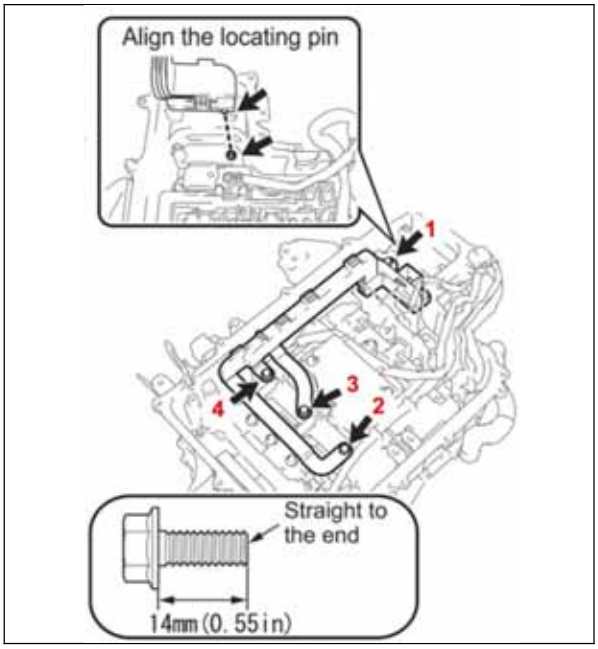


8. *4WD ONLY* – INSTALL THE INVERTER BRACKET

a) Install the bracket with 1 bolt.

Torque: 8N·m (82kgf·cm, 71in. lbf)

NOTE: The inverter bracket should be present on 2WD vehicles, the bracket should not have been reomved.



9. INSTALL THE MG1 BUS BAR

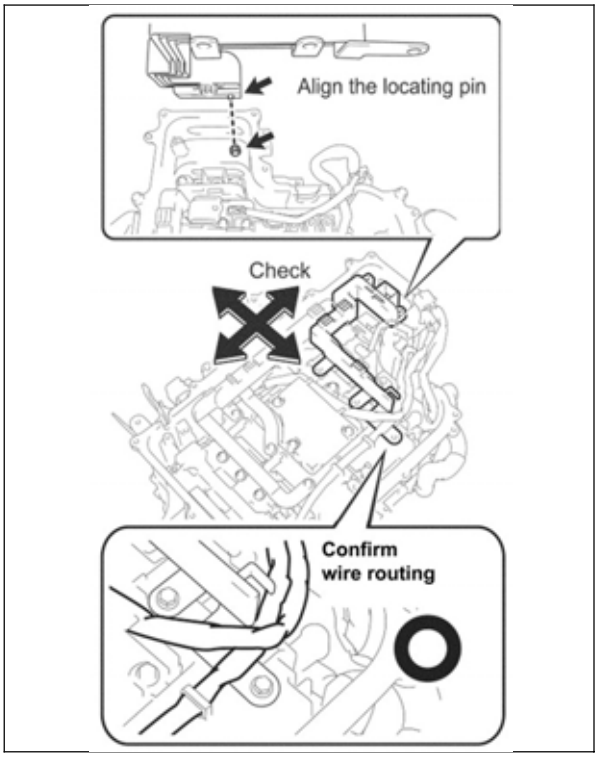
a) Confirm the terminals are clean.

b) Install the bus bar. Confirm the bus bar is installed in the locating pin.

c) Install the 4 bolts in the sequence shown in the illustration.

Torque: 8N·m (82kgf·cm, 71in. lbf)

The bolts can be installed even if the locating pin is not aligned. Confirm the sensor is installed in the locating pin.



10. INSTALL THE MG2 BUS BAR

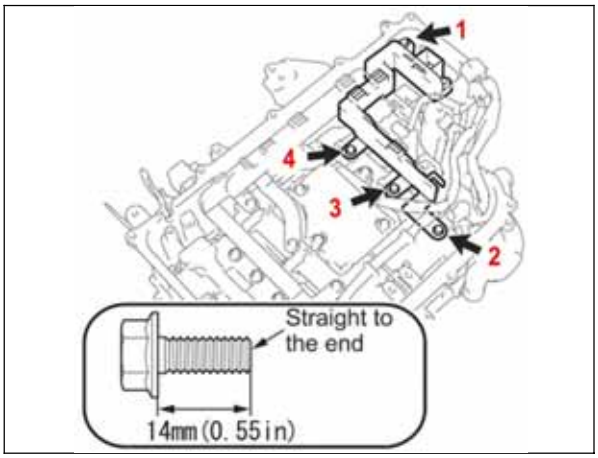
a) Confirm the terminals are clean.

b) Install the bus bar. Confirm the bus bar is installed in the locating pin.

NOTE:

- **Confirm the harnesses are routed correctly.**

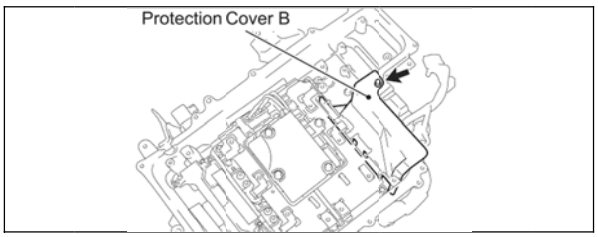
The bolts can be installed even if the locating pin is not aligned. Confirm the sensor is installed in the locating pin.



c) Install the 4 bolts in the sequence shown in the illustration.

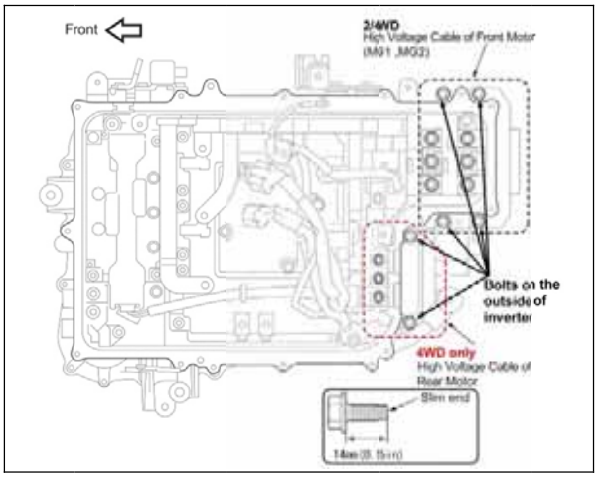
Torque: 8N·m (82kgf·cm, 71in. lbf)

The bolts can be installed even if the locating pin is not aligned. Confirm the sensor is installed in the locating pin.



11. *2WD ONLY* – REMOVE PROTECTIVE COVER B

NOTE: Protective Cover B was removed on STEP 4 on 4WD vehicles.



12. INSTALL THE HIGH VOLTAGE CABLES

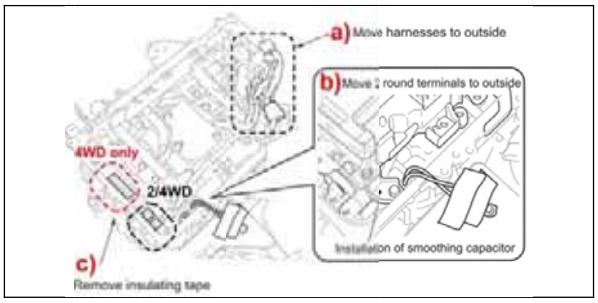
a) Remove the insulating tape attached to the terminals and confirm they are clean.

b) **4WD** – Install the 15 bolts.
2WD – Install the 10 bolts.

Torque: 10N·m (102kgf·cm, 84in. lbf)

NOTE: If there is difficulty installing the high voltage cables, reconfirm the bus bars are installed in their locating pins.

To prevent contamination, *DO NOT* use the bolts that were removed from the outside of the inverter on the inside.

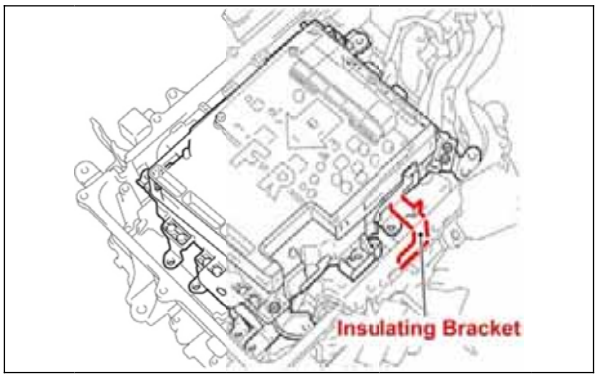


13. PREPARE THE INVERTER FOR SMOOTHING CAPACITOR INSTALLATION

a) Secure the inverter harnesses so they do not interfere when installing the smoothing capacitor.

b) Move the 2 terminals that were fixed inside the inverter during the disassembly process to the outside of the inverter.

c) Remove the insulating tape attached to the terminals.

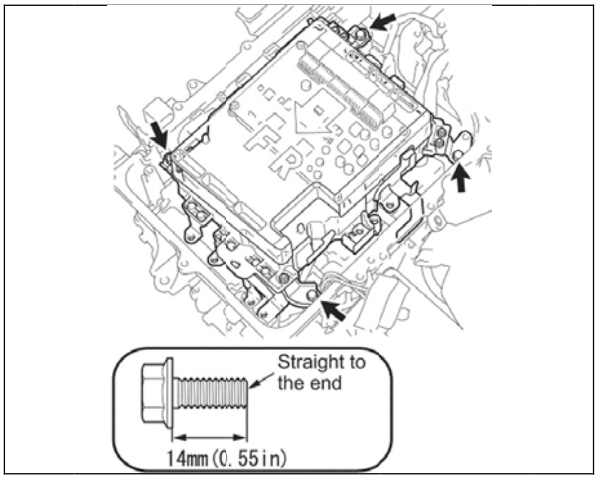


14. INSTALL THE SMOOTHING CAPACITOR

a) Hold the smoothing capacitor with protective cover A installed.

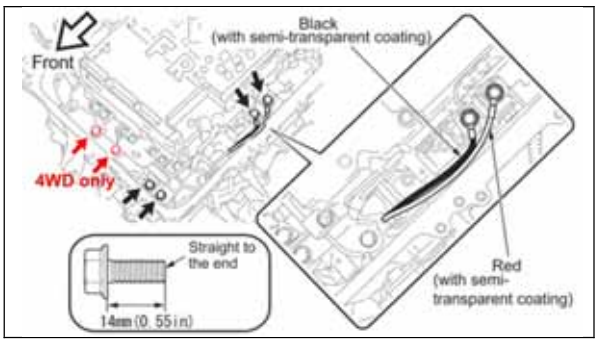
b) Carefully place the smoothing capacitor in the inverter.

- ***DO NOT* catch any wires when installing the smoothing capacitor.**
- **Pay close attention to the insulating bracket, this bracket must not be bent and must be positioned between the inverter case and the IPM transistor.**



c) Install the 4 bolts.

Torque: 8N·m (82kgf·cm, 71in. lbf)



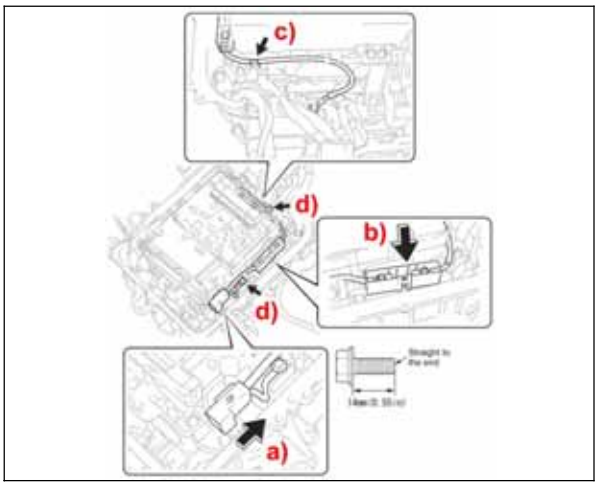
d) Remove the insulating tape on the 2 wires.

e) Install the bolts.

4WD – Install the 6 bolts.
2WD – Install the 4 bolts.

Torque: 8N·m (82kgf·cm, 71in. lbf)

NOTE: *DO NOT* mistake the connection points of the terminals.



15. INSTALL THE AIR CONDITIONING HARNESS SUB ASSEMBLY

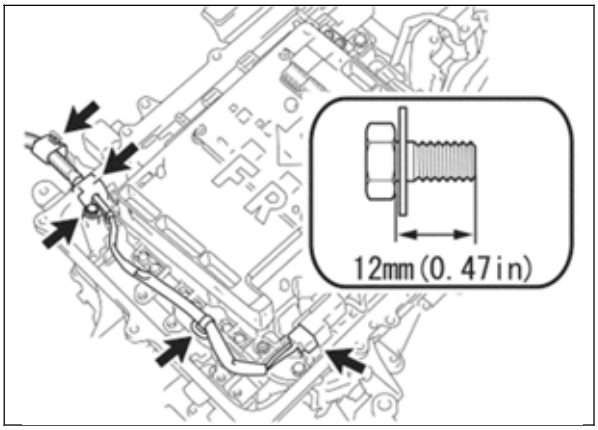
a) Install the connector.

b) Install the fuse box.

c) Confirm the harness is routed correctly.

d) Confirm the terminals are clean and install the 2 ground bolts.

Torque: 8N·m (82kgf·cm, 71in. lbf)



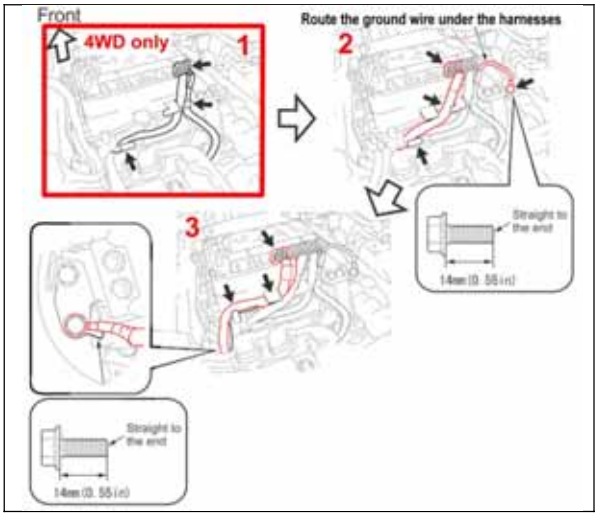
16. CONNECT THE ENGINE WIRE No.4

a) Remove the insulating tape from the terminal.

b) Connect the connector, the harness clamps, and the grommet.

c) Install the bolt.

Torque: 6N·m (61kgf·cm, 53in. lbf)



17. CONNECT THE MG ECU CONNECTORS

a) Remove the insulating tape from the connectors.

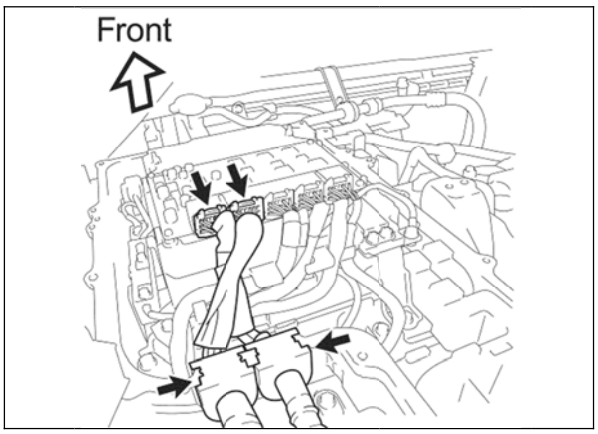
b) Remove protective cover A.

c) Connect the connectors following the sequence in the illustration.
4WD – 3 connectors
2WD – 2 connectors

d) Connect the 2 ground bolts.

Torque: 8N·m (82kgf·cm, 71in. lbf)

- **Confirm that all harnesses are routed correctly and all connectors and ground bolts are secure.**
- ***DO NOT* touch the MG ECU.**



e) Connect the 2 connectors and fit the 2 grommets.

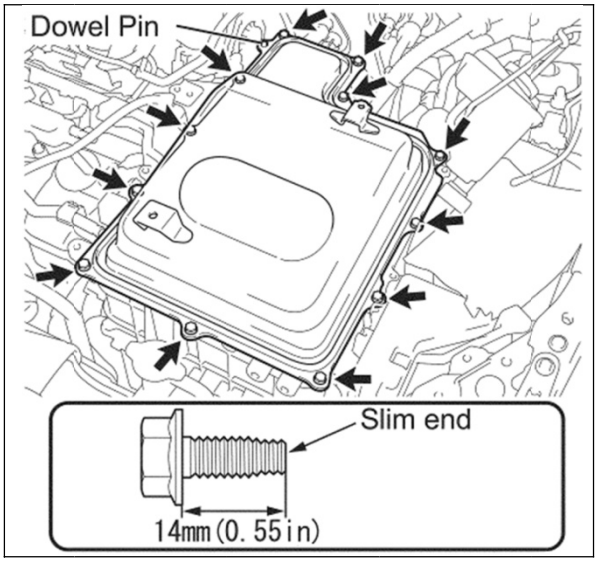
STOP

- **Cross the 2 harnesses inside the inverter.**
- **Confirm the grommets are clean before installing to prevent leaks.**

THE FOLLOWING CONFIRMATION STEPS ARE VITAL
CONFIRM THESE STEPS ARE FOLLOWED CLOSELY

PERFORM THIS INTERMEDIATE INSPECTION BEFORE INSTALLING THE INVERTER CASE COVER.

1. Are the high voltage cables (MG1, MG2 and MGR for 4WD) connected correctly?
2. Are all of the MG ECU connectors secured and the ground bolts connected?
3. Have all components been installed correctly in the inverter assembly?



18. INSTALL THE INVERTER COVER

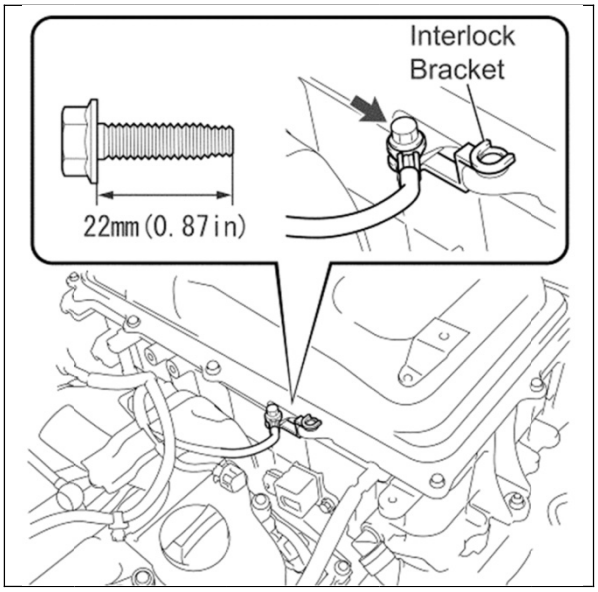
a) Confirm the cover gasket is set in the cover groove.

b) Confirm the cover gasket and inverter mating surface are clean.

c) Install the cover using the 12 bolts.

Torque: 10N·m (102kgf·cm, 84in. lbf)

NOTE: The cover gasket can be reused even if it has come out of the groove.

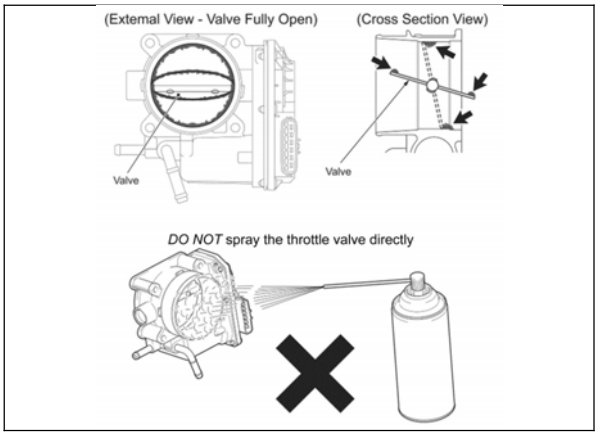


d) Remove the insulating tape from the interlock bracket.

e) Install the bracket with the 1 bolt.

Torque: 10N·m (102kgf·cm, 84in. lbf)

B. VEHICLE REASSEMBLY



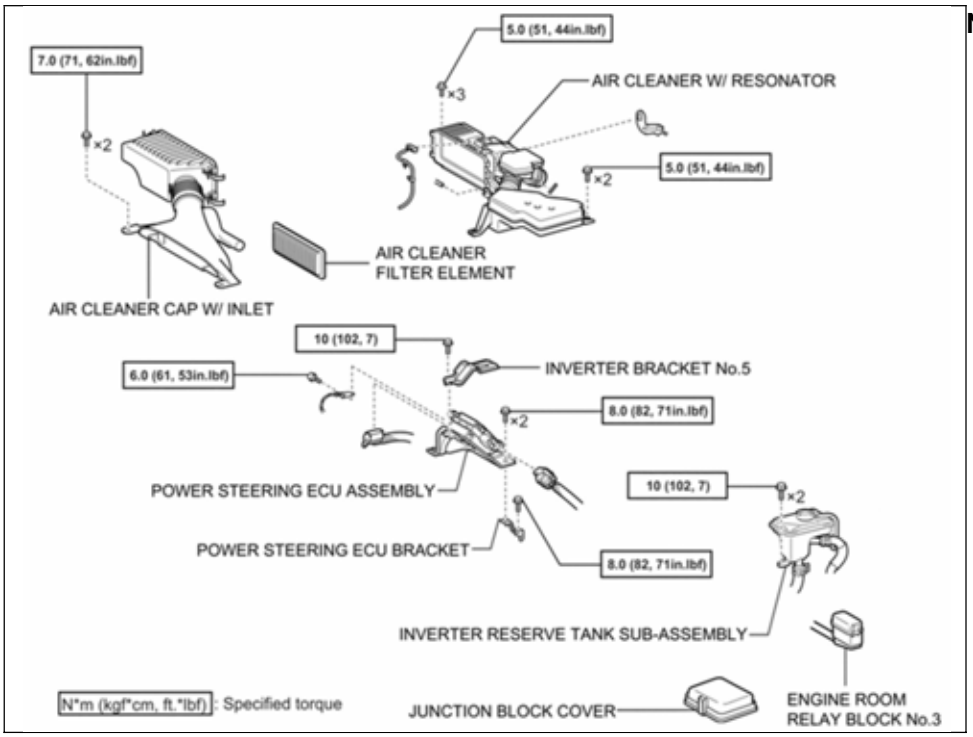
1. CLEAN THE THROTTLE BODY

a) Use a shop cloth soaked in throttle plate cleaner to clean the throttle body.

NOTE:

- ***DO NOT* spray the throttle valve directly.**
- **This procedure should be performed to ensure the engine learn values are set correctly.**

2. INSTALL THE COMPONENTS ILLUSTRATED BELOW



NOTE:

- **Wear insulating gloves when installing the power steering ECU components.**
- **For detailed installation information, refer to the repair manual.**

3. INSTALL THE SERVICE GRIP

4. INSTALL THE NEGATIVE BATTERY CABLE

5. CONFIRM VEHICLE OPERATION

a) Turn the vehicle to READY ON.

b) Confirm the vehicle is in park.

c) Turn the air conditioner on high and allow vehicle to run for 3 minutes.

d) Confirm auxiliary battery voltage.

Specification: 13 to 15 V

e) Check for DTCs. If DTCs are output use the repair manual and the trouble shooting table in the Appendix of these instructions to diagnose.

NOTE:

- **If DTCs are present after IPM replacement, first confirm IPM replacement was performed correctly, if it is determined that inverter replacement is required you *MUST* contact TAS (800-233-3178) to confirm your diagnosis, then contact your regional representative to obtain operation codes for dealership reimbursement.**
- **If DTCs that were not present prior to IPM replacement are present after IPM replacement, confirm IPM replacement was performed correctly.**

6. **INSTALL ALL REMAINING COMPONENTS**
7. **CHECK FOR DIAGNOSTIC TROUBLE CODES**
8. **TEST DRIVE THE VEHICLE**
9. **PERFORM SYSTEM INITIALIZATIONS**

◄ VERIFY REPAIR QUALITY ►

- **Confirm the part number *AND* serial number before replacing the IPM transistor**
- **Confirm the work area is very clean before disassembling the inverter**
- **Confirm *ALL* removal steps are followed, to prevent damage *DO NOT* skip any steps**
- **Confirm the inverter is cleaned thoroughly and the grease is applied correctly to the IPM transistor**
- **Confirm *ALL* installation steps are followed**

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

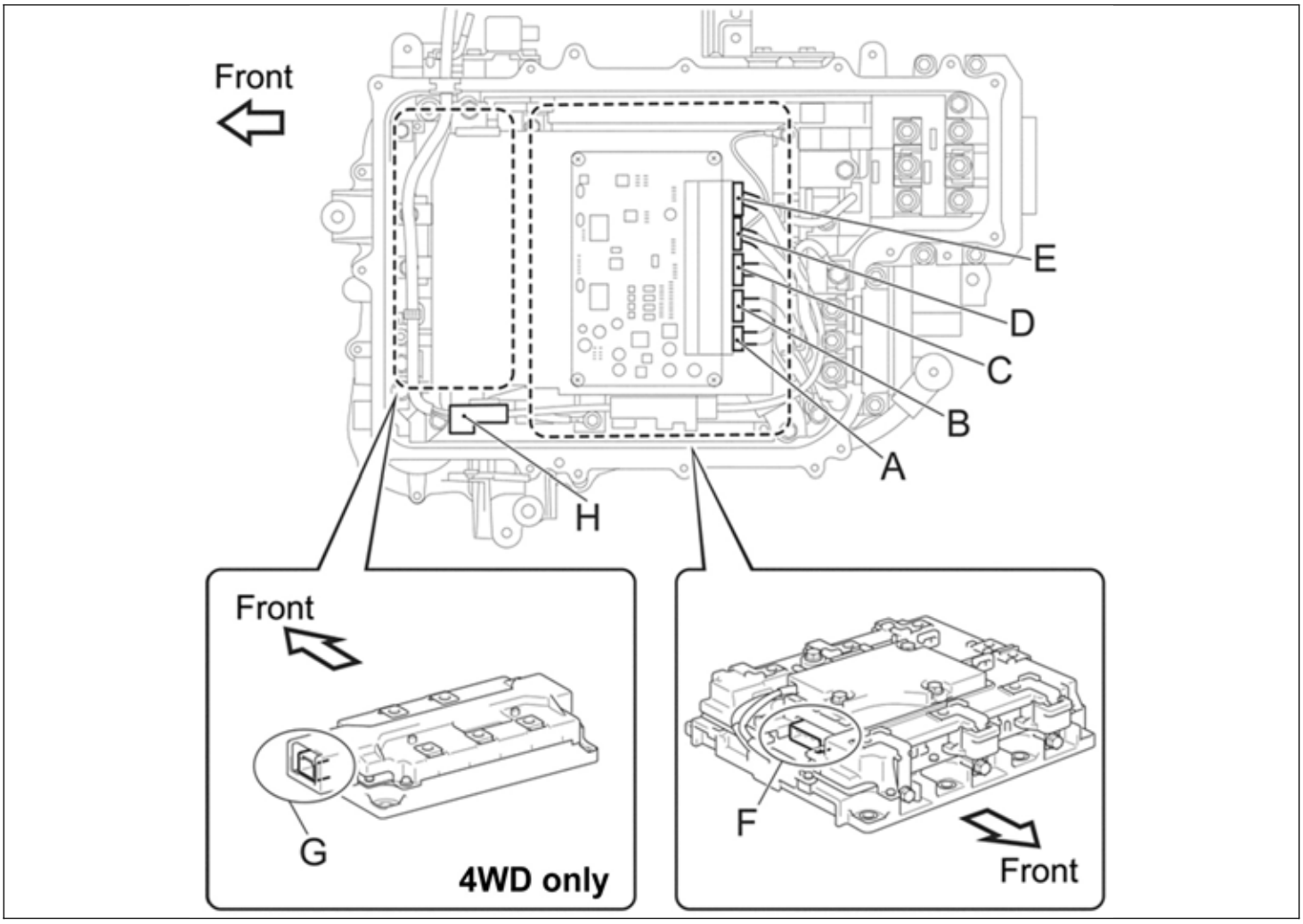
X. APPENDIX

A. RECALL 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. TROUBLESHOOTING TABLE

Use this table if any DTCs are output after performing the campaign. If the DTC output is not listed in this table, or checking the connectors does not remedy the condition, refer to the repair manual for additional diagnostic information.



DTC	Connector to inspect							
	A	B	C	D	E	F	G	H
B1477/71								O
B1477/77								O
P0A02-719			O					
P0A03-720			O					
P0A08-264		O						
P0A09-265		O						
P0A10-263		O						
P0A1A-151	O	O	O	O	O			
P0A1A-155	O	O	O	O	O			
P0A1A-156	O	O	O	O	O			
P0A1A-158	O	O	O	O	O			
P0A1A-166	O	O	O	O	O			
P0A1A-200	O	O	O	O	O			
P0A1A-658	O	O	O	O	O			
P0A1A-659	O	O	O	O	O			
P0A1A-791	O	O	O	O	O			
P0A1A-792	O	O	O	O	O			
P0A1A-793	O	O	O	O	O			
P0A1B-163	O	O	O	O	O			
P0A1B-164	O	O	O	O	O			
P0A1B-168	O	O	O	O	O			
P0A1B-192	O	O	O	O	O			
P0A1B-193	O	O	O	O	O			
P0A1B-195	O	O	O	O	O			
P0A1B-196	O	O	O	O	O			
P0A1B-198	O	O	O	O	O			
P0A1B-511	O	O	O	O	O			
P0A1B-512	O	O	O	O	O			
P0A1B-661	O	O	O	O	O			
P0A1B-662	O	O	O	O	O			
P0A1B-781	O	O	O	O	O			
P0A1B-786	O	O	O	O	O			
P0A1B-788	O	O	O	O	O			
P0A1B-794	O	O	O	O	O			
P0A1B-795	O	O	O	O	O			
P0A1B-796	O	O	O	O	O			
P0A1C-706	O	O	O	O	O			
P0A1C-707	O	O	O	O	O			
P0A1C-708	O	O	O	O	O			
P0A1C-709	O	O	O	O	O			
P0A1C-710	O	O	O	O	O			
P0A1C-711	O	O	O	O	O			
P0A1C-713	O	O	O	O	O			
P0A1C-715	O	O	O	O	O			
P0A1C-797	O	O	O	O	O			
P0A1C-798	O	O	O	O	O			
P0A1C-799	O	O	O	O	O			
P0A3F-243	O							
P0A40-500	O							

DTC	Connector to inspect							
	A	B	C	D	E	F	G	H
P0A41-245	O							
P0A45-669		O						
P0A46-671		O						
P0A47-670		O						
P0A4B-253	O							
P0A4C-513	O							
P0A4D-255	O							
P0A55-687					O		O	
P0A60-288				O		O		
P0A60-289				O		O		
P0A60-290				O		O		
P0A60-292				O		O		
P0A60-294				O		O		
P0A60-501				O		O		
P0A63-296				O		O		
P0A63-297				O		O		
P0A63-298				O		O		
P0A63-300				O		O		
P0A63-302				O		O		
P0A63-502				O		O		
P0A69-677					O		O	
P0A69-679					O		O	
P0A69-680					O		O	
P0A69-683					O		O	
P0A69-684					O		O	
P0A69-688					O		O	
P0A6C-678					O		O	
P0A6C-681					O		O	
P0A6C-682					O		O	
P0A6C-685					O		O	
P0A6C-686					O		O	
P0A6C-689					O		O	
P0A72-326				O		O		
P0A72-327				O		O		
P0A72-328				O		O		
P0A72-330				O		O		
P0A72-333				O		O		
P0A72-515				O		O		
P0A75-334				O		O		
P0A75-335				O		O		
P0A75-336				O		O		
P0A75-338				O		O		
P0A75-341				O		O		
P0A75-516				O		O		
P0A78-278				O		O		
P0A78-280				O		O		
P0A78-283				O		O		
P0A78-285				O		O		
P0A79-690					O		O	

DTC	Connector to inspect							
	A	B	C	D	E	F	G	H
P0A79-691					O		O	
P0A7A-321				O		O		
P0A7A-323				O		O		
P0A94-545			O					
P0A94-546			O					
P0A94-551			O					
P0A94-552			O					
P0A94-587			O					
P0AA6-526								
P0AA6-613								
P0AA6-614								
P0AA6-655								
P0AEF-275				O				
P0AF0-274				O				
P0AF4-673					O			
P0AF4-674					O			
P3222-313				O				
P3223-312				O				
P3227-583		O						
P3228-584		O						
U0110-159	O	O	O	O	O			
U0110-160	O	O	O	O	O			
U0110-656	O	O	O	O	O			
U0110-657	O	O	O	O	O			
Auxiliary battery voltage error		O						

Tyson Siekiera / TMS Toyota Customer Services
Product Quality and Service Support, Quality Compliance
December 21, 2011
Approved By: Bob Waltz

To: All Toyota Dealers
From: Toyota Customer Services

Safety Recall B0J – *Remedy Phase*
Certain 2006 and 2007 Model Year Highlander Hybrid Vehicles (HV)
Intelligent Power Module (IPM) Replacement

As previously announced, in June, 2011, Toyota filed a Defect Information Report (DIR) with the National Highway Traffic Safety Administration (NHTSA) informing the agency of our intent to conduct a voluntary Safety Recall on Certain 2006 and 2007 Model Year Highlander Hybrid Vehicles (HV).

- **Toyota has completed parts preparation and will begin to notify owners of the Remedy Phase in early January, 2012.**
- A Dealer Letter containing additional information (i.e. Technical Instructions, reimbursement procedures, parts ordering information, etc.) has been posted on TIS.
- ***Please note that campaign claim submissions will be accepted starting December 22.***

Customer and Media Contacts

- A Q&A has been attached for your use in the event you receive a customer contact. If a customer has further questions, please direct the inquiry to the Toyota Customer Experience Center at 1-800-331-4331.
- If you are a dealership associate and have any questions, please contact your District Service/Parts Manager.
- ***In the event you are contacted by the News media***, it is imperative that all media contacts (local and national) receive a consistent message. Please direct all media contacts to Brian Lyons (310) 468-2552, in Toyota Corporate Communications. (Please do not provide these numbers to customers or call if you are a dealer associate. Please provide these contacts to only media associates.)

Safety Recall B0J - Remedy Phase
Certain 2006 and 2007 Model Year Highlander HV Vehicles
Intelligent Power Module (IPM) Replacement - Q&A

Background

As previously announced, on June 29, 2011, Toyota filed a Defect Information Report (DIR) with the National Highway Traffic Safety Administration (NHTSA) informing the agency of our intent to conduct a voluntary Safety Recall on Certain 2006 and 2007 Model Year Highlander Hybrid Vehicles (HV).

Toyota has completed parts preparations and will now begin mailing remedy owner letters

Q1: What is the condition?

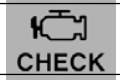
A1: The IPM is located inside of the Hybrid System Inverter and contains a control board with transistors. Certain transistors on the control boards of some of the subject vehicles were inadequately soldered and could be damaged from heat caused by a large current during high-load driving. If this occurs, various warning lamps will be illuminated on the instrument panel. The vehicle may enter a fail-safe/limp-home mode that limits the driving speed of the vehicle. Also, it is possible that the hybrid system will shut down while the vehicle is being driven, causing the vehicle to stall unexpectedly, increasing the risk of a crash.

Q1a: What is the Hybrid System Inverter?

A1a: The hybrid system inverter converts high-voltage DC, stored in the HV battery, into AC for the motor generator. It also converts AC into DC during regenerative braking for storage in the HV battery.

Q2: Which Warning Lamps are illuminated on the instrument panel when the vehicle enters fail-safe driving mode?

A2: All of the following warning lights and messages will be illuminated on the instrument panel when the vehicle enters the fail-safe driving mode. The fail-safe driving mode will result in reduced motive power in which the vehicle can still be driven at limited driving speed for short distances.

	Warning lights
	Master Warning Light
	Slip Indicator
	Check Engine Warning Light
 (yellow indicator)	Electronically Controlled Brake System Warning Light

	Warning messages
CHECK VSC SYSTEM	Malfunction of VSC function is detected.
CHECK HYBRID SYSTEM	Hybrid system malfunction is detected.
CHECK AWD SYSTEM	All Wheel Drive system malfunction is detected.

Q2a: How long and what distance can a vehicle be driven when the vehicle enters fail-safe driving mode?

A2a: The distance a vehicle will continue to travel in fail-safe driving mode will vary based upon the hybrid battery state of charge and the road conditions. If a vehicle enters fail-safe driving mode, the driver should pull-over and stop the car in a safe area. The driver should immediately contact his/her local Toyota dealer for assistance.

Q3: What is Toyota going to do?

A3: Any authorized Toyota dealer will inspect the Inverter Assembly and, if necessary, replace the Intelligent Power Module at **NO CHARGE** to the vehicle owner.

Q4: Which and how many vehicles are covered?

A4: There are approximately 45,500 Toyota Highlander HV and approximately 36,700 Lexus RX 400h vehicles covered by this Safety Recall in the U.S.

Model Name	Model Year	Production Period	Number of Vehicles
Toyota Highlander HV	Certain 2006 and 2007	Mid February 2005 through late August 2006	Approximately 45,500 units
Lexus RX 400h	Certain 2006 and 2007	Mid February 2005 through late August 2006	Approximately 36,700 units

Q4a: Are there any other Toyota or Lexus models covered by this Safety Recall?

A4a: No. There are no other Toyota or Lexus models covered by this Safety Recall.

Q5: How long will it take to conduct the remedy?

A5: The Inspection of the inverter assembly and, if necessary, replacement of the Intelligent Power Module will take approximately 4 hours. However, it may be necessary for the owner to make the vehicle available for a longer period of time depending upon the dealer's work schedule.

Q6: What if a customer has previously paid for repairs to their vehicle for the condition described above?

A6: Owners are requested to refer to the remedy owner letter for instructions to request reimbursement for previous repair costs.

Q7: What if an owner has additional questions or concerns?

A7: Owners with questions or concerns are asked to please contact the Toyota Customer Experience Center at 1-888-270-9371 Monday through Friday, 5:00 am to 6:00 pm, or Saturday 7:00 am through 4:00 pm Pacific Standard Time.