TECHNICAL INSTRUCTIONS

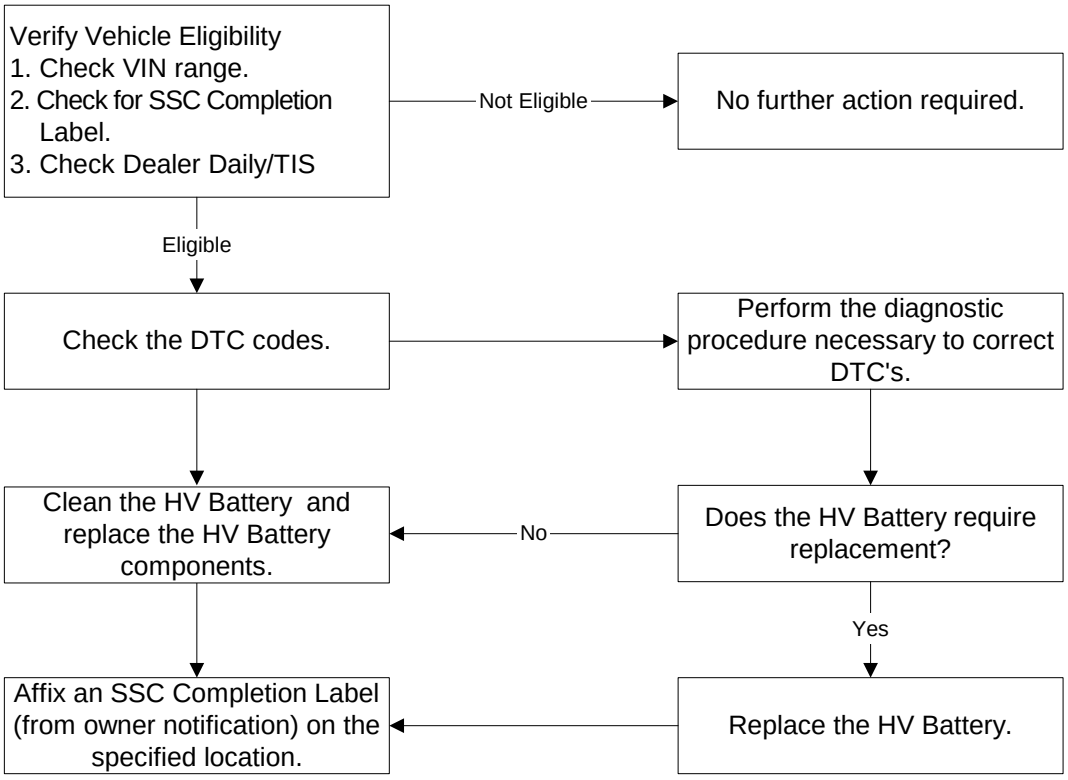
FOR

SPECIAL SERVICE CAMPAIGN 40G

2001 THROUGH 2003 MY PRIUS HYBRID VEHICLE (HV) BATTERY MODIFICATION

WARNING:
ONLY MASTER TECHNICIANS WHO HAVE COMPLETED COURSE 071 ARE AUTHORIZED TO ATTEND THE HV BATTERY MODIFICATION TRAINING PROVIDED BY THE REGION OR PD OFFICES. THEREFORE, THESE PRIUS CERTIFIED MASTER TECHNICIANS ARE THE ONLY INDIVIDUALS PERMITTED TO PERFORM THE REPAIRS DESCRIBED IN THESE TECHNICAL INSTRUCTIONS!

I. OPERATION FLOW CHART



II. GENERAL SAFETY PRECAUTIONS

WARNING:
ONLY MASTER TECHNICIANS WHO HAVE COMPLETED COURSE 071 ARE AUTHORIZED TO ATTEND THE HV BATTERY MODIFICATION TRAINING PROVIDED BY THE REGION OR PD OFFICES. THEREFORE, THESE PRIUS CERTIFIED MASTER TECHNICIANS ARE THE ONLY INDIVIDUALS PERMITTED TO PERFORM THE REPAIRS DESCRIBED IN THESE TECHNICAL INSTRUCTIONS!

CAUTION:

- **A repair operation incorrectly performed on a Hybrid Vehicle (HV) could cause an electrical shock, leakage, or explosion.**
- **Wrap tool ends with vinyl tape (i.e. sockets, etc.).**
- **Do not leave any tools or parts (bolts, nuts, etc.) inside the cabin or trunk of the vehicle.**
- **Do not wear metallic objects, such as mechanical pencils or scales. They could fall onto the vehicle or battery and create a short circuit.**
- **Always use properly insulated gloves (Rating: 1000 volts or higher) while removing the battery. Be sure to inspect the gloves prior to performing the repair. Replace the gloves if they have holes, tears, or other signs of damage.**
- **Once all the bus bars have been removed from the HV battery, the gloves provided in the kit may be used. Before installing the new bus bars, switch back to the electrical insulated gloves (Rated for 1000 volts).**
- **Do not lean over the HV Battery at any point during the repair. Contact may lead to severe electrical shock.**
- **Wash your hands prior to reinstalling the HV battery into the vehicle.**
- **Utilize the litmus paper to confirm all chemicals have been properly neutralized.**
- **If it becomes necessary to stop in the middle of the repair for some reason, place the signs provided on the next page on the top of the HV battery to warn anyone of the high voltage potential.**
- **Although the repair manual states to wait a minimum of 4 hours prior to right side battery end plate removal, this wait is not necessary since the individual cells are not being disassembled. However, the 5 minute wait after removing the service plug is still required.**

DANGER:

HIGH VOLTAGE

DO NOT TOUCH!

PELIGRO:

ALTO VOLTAJE

NO TOCAR!

III. BACKGROUND

The innovative and environmentally friendly Prius achieves improved fuel efficiency and reduced exhaust emission by use of the Toyota Hybrid System (THS). THS incorporates the use of an advanced gasoline engine combined with state-of-the-art electric motor technology to achieve optimal balance. To supply energy to the electric motor, the Prius contains a Hybrid Vehicle (HV) Battery.

On certain 2001 - 2003 Model Year Prius vehicles, there is a possibility that a very small amount of electrolyte may seep from the HV Battery around one or more of the positive terminals. If this should occur under high humidity conditions, the HV Battery Computer will detect a drop in the resistance and illuminate the Master Warning Light and Hybrid System Malfunction Warning Light.

IV. IDENTIFICATION OF AFFECTED VEHICLES

A. AFFECTED VIN RANGE

MODEL	YEAR	VIN Range	
		VDS	Range
Prius	2001	BK12U	10002009 – 10038684
		BK18U	10002001 – 10038005
	2002	BK12U	20038687 – 20070195
		BK18U	20038685 – 20070196
	2003	BK12U	30070198 – 30082299
		BK18U	30069295 – 30082310

NOTE: Not all vehicles in the VIN range are affected by this SSC. Always consult Dealer Daily or TIS to confirm VIN eligibility and to assure the SSC is applicable. This will verify the vehicle is involved and has not already been completed by another dealer. TMS warranty will not reimburse dealers for repairs conducted on vehicles that are not affected.

V. PREPARATION

A. PARTS

Part Number	Part Name	Qty/ Vehicle
04003-35147	Replacement Parts Kit	1
04003-36147-DS	Terminal Sealing Kit*	1
09999-00020-DS	Boric Acid Solution*	1

***NOTE: These two chemical part numbers will be drop-shipped from AMREP, not your local PDC. Due to the perishable nature of these chemicals, do not order more than your immediate needs. These chemicals are not returnable and non-refundable. Ensure that the sealant is stored at a temperature range between 41°F to 95°F (5°C to 35°C).**

B. TOOLS

- Standard Hand Tools
- Torque Wrench
- Beam Style Torque Wrench
- Scantool
- Digital-Volt-Ohm-Meter (DVOM)/Multimeter
- Scissors

C. EQUIPMENT

- Heavy Duty Electrical Insulated Gloves (Rated for 1000 volts by Underwriter Laboratories)
- Suitable Chemical Protective Gloves (Provided in kit)
- Safety Glasses w/ Side Shield (ANSI certified)
- Hair Dryer

D. MATERIALS

- Vinyl Electrical Tape – ¾ inch width
- Masking Tape – 1.5 inch width

E. PROVIDED IN THE SERVICE MANAGER DEALER PACKAGE

- Special 48 in·lbf T-Handle Torque Wrench, SST #: 00002-11000-01
- Electrical Insulated Vinyl Mat
- Litmus paper
- Paper towels

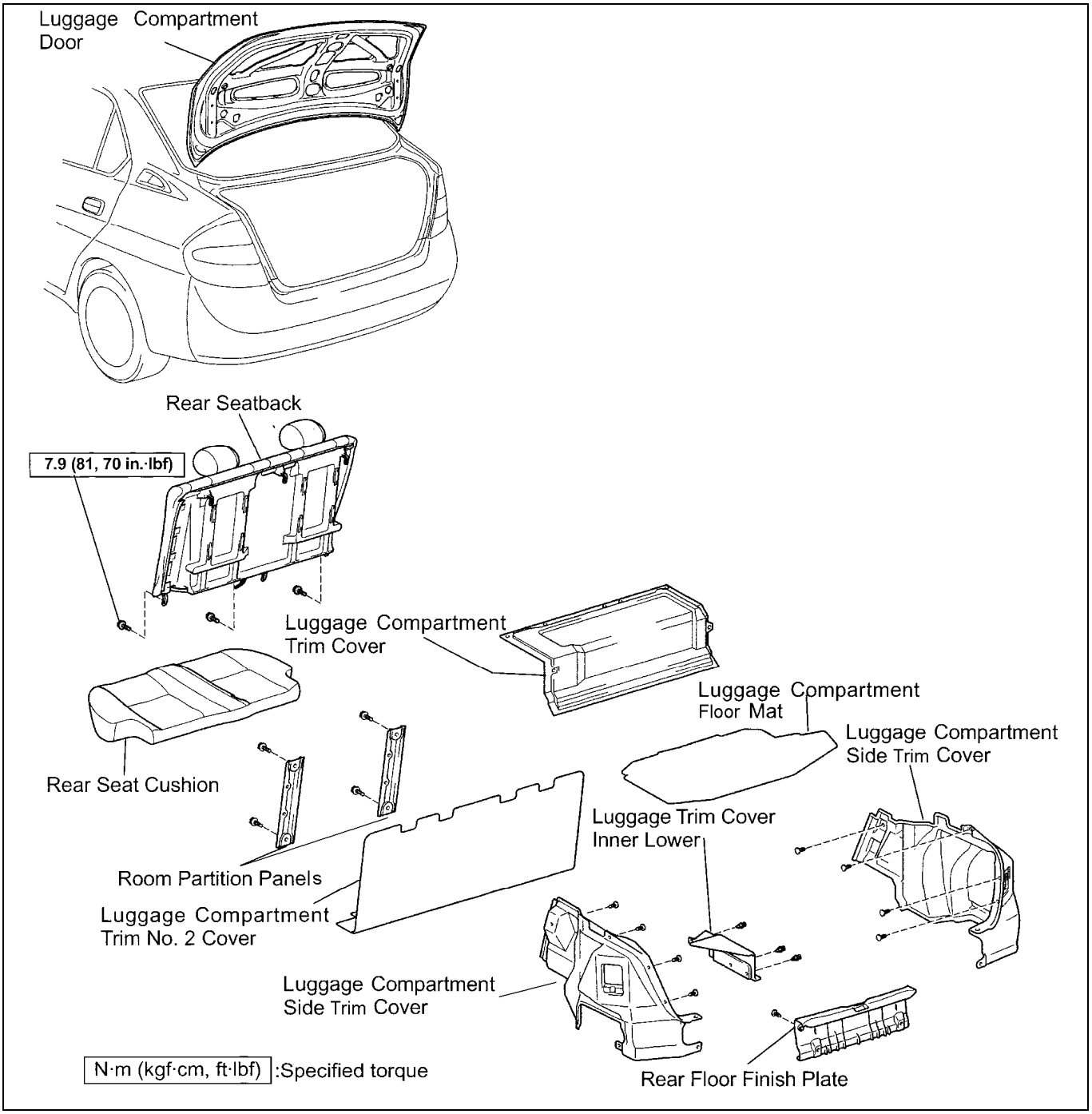
F. SPECIAL HANDLING INSTRUCTIONS

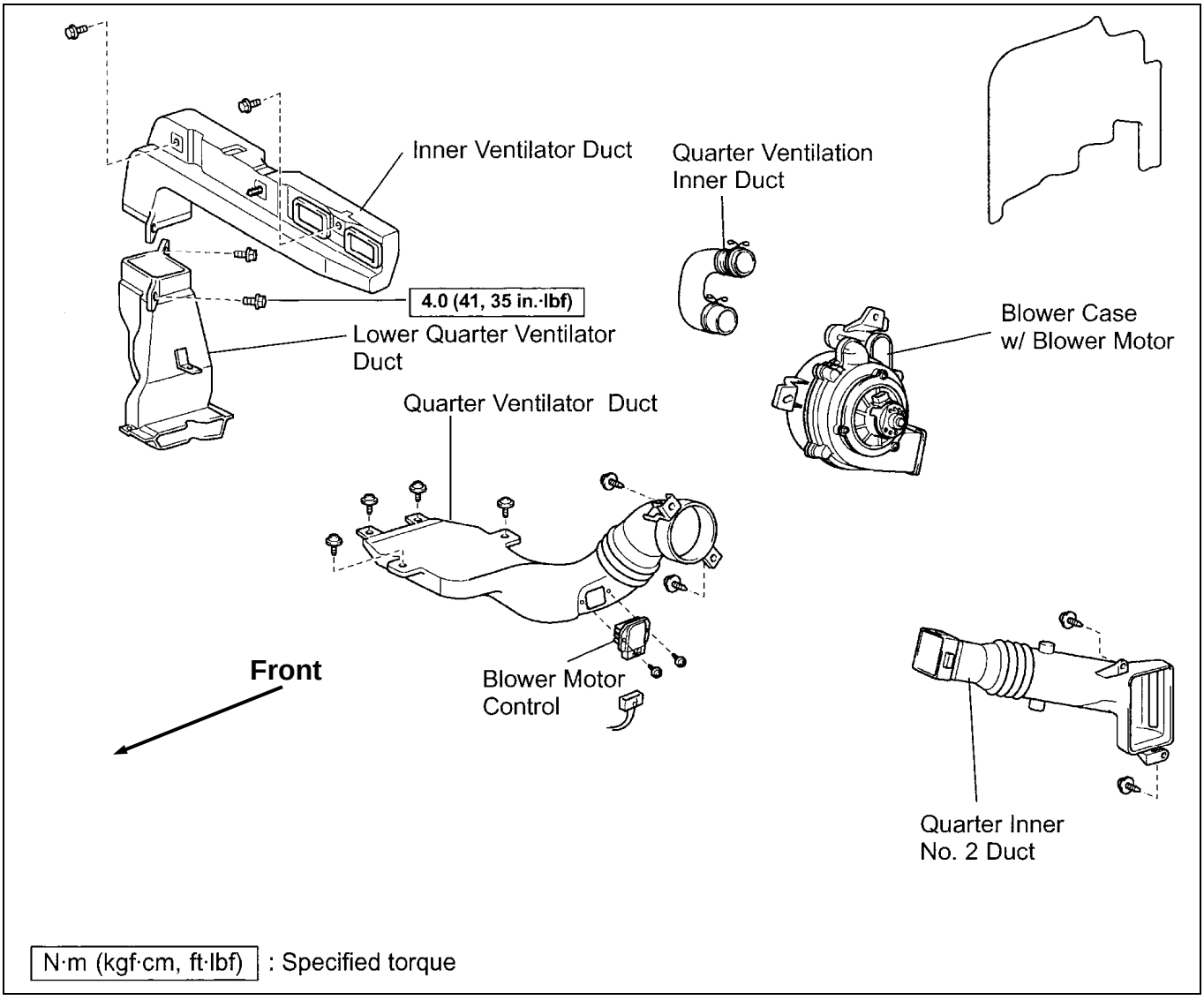
- The sealing kit must be stored between 41°F to 95°F (5°C to 35°C). It is the dealer's responsibility to store the chemicals in a properly temperature controlled environment. If the kit is stored outside of these temperature ranges, it will solidify and become unusable.
- The MSDS's for these chemicals are attached in the Appendix.

G. SPECIAL WASTE DISPOSAL INSTRUCTIONS

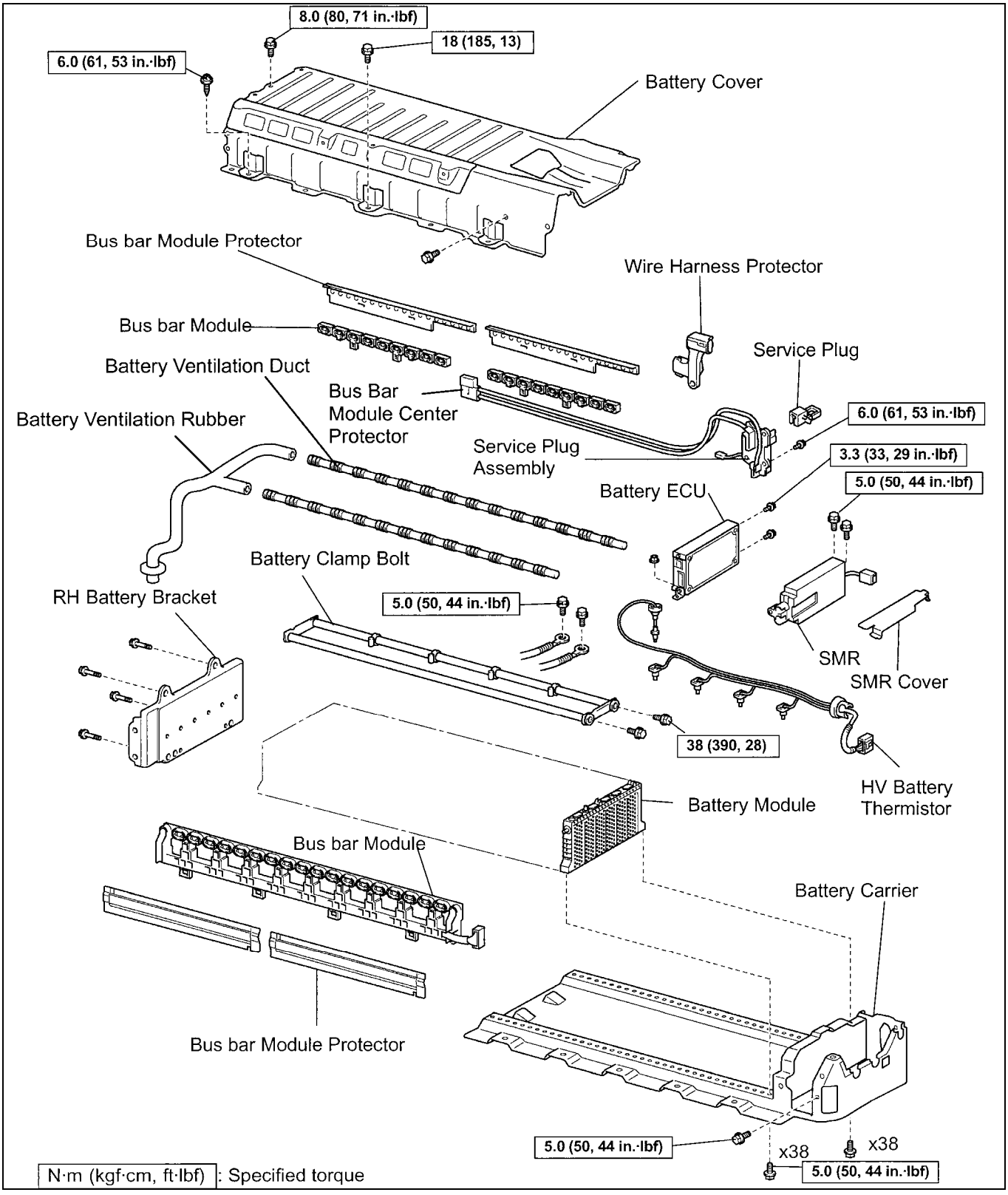
- Dispose of the waste generated in compliance with federal, state, and local regulations using a disposal company such as Safety-Kleen. All waste (rags, old parts, gloves, chemical containers, excess chemicals, etc.) utilized for this repair must be disposed of in the receptacle provided by Safety-Kleen or a similar company.

H. COMPONENTS





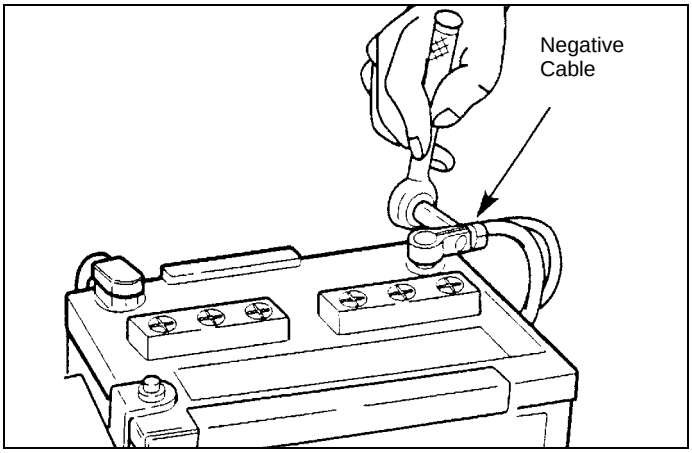
N·m (kgf·cm, ft·lbf) : Specified torque


8.0 (80, 71 in.·lbf)
18 (185, 13)
6.0 (61, 53 in.·lbf)
Battery Cover
Bus bar Module Protector
Wire Harness Protector
Bus bar Module
Service Plug
Battery Ventilation Duct
Bus Bar Module Center Protector
Battery Ventilation Rubber
Service Plug Assembly
6.0 (61, 53 in.·lbf)
3.3 (33, 29 in.·lbf)
5.0 (50, 44 in.·lbf)
Battery ECU
Battery Clamp Bolt
RH Battery Bracket
5.0 (50, 44 in.·lbf)
SMR
SMR Cover
38 (390, 28)
HV Battery Thermistor
Battery Module
Bus bar Module
Battery Carrier
Bus bar Module Protector
5.0 (50, 44 in.·lbf)
x38
x38
5.0 (50, 44 in.·lbf)
N·m (kgf·cm, ft·lbf) : Specified torque

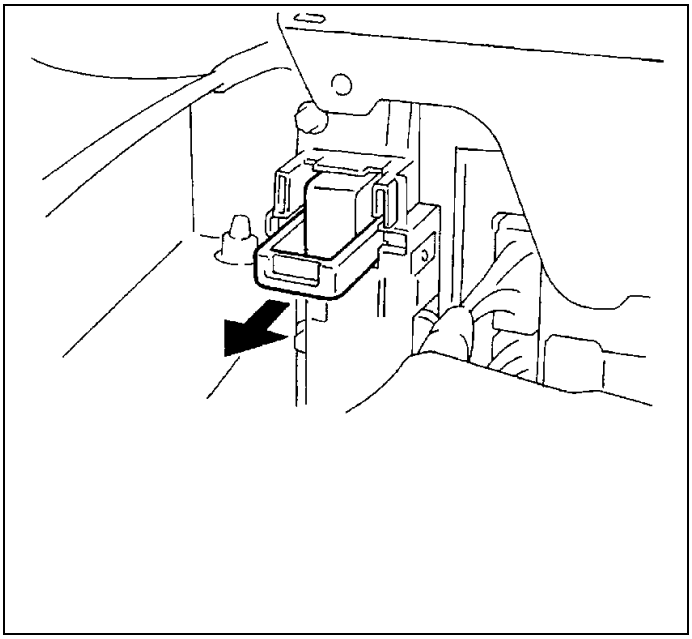
VI. WORK PROCEDURE
A. HV BATTERY REMOVAL

1. **USING THE SCANTOOL, CHECK THE BATTERY ECU FOR THE FOLLOWING DTC'S:**
   - **P3006**
   - **P3010**
   - **P3011 THROUGH P3029**
   - **P3030**

   IF ANY OF THESE DTC'S ARE DISPLAYED, FOLLOW THE PROCEDURES IN THE REPAIR MANUAL TO CORRECT THE DTC'S.
   - **IF P3009 IS DISPLAYED, PROCEED WITH THE REPAIR CAUTIOUSLY AS A SHORT CIRCUIT MAY EXIST FROM THE POSITIVE TERMINAL TO THE HV BATTERY CASE. DO NOT PERFORM THE REPAIR WITHOUT CORRECTING THE DTC'S.**
2. **RECORD THE RADIO STATION PRESETS**
3. **REMOVE THE KEY FROM THE IGNITION SWITCH**
4. **REMOVE THE LUGGAGE COMPARTMENT FLOOR MAT**
5. **REMOVE THE ONE CLIP FROM THE LUGGAGE TRIM COVER INNER LOWER TO GAIN ACCESS TO THE 12 VOLT AUXILLIARY BATTERY**



6. **DISCONNECT THE NEGATIVE (-) TERMINAL CABLE FROM THE 12 VOLT AUXILIARY BATTERY**



7. REMOVE THE LOWER LEFT CLIP FROM THE LUGGAGE COMPARTMENT SIDE COVER

8. WEAR THE ELECTRICALLY INSULATED GLOVES (RATED FOR 1000 VOLTS)

9. REMOVE THE SERVICE PLUG AND DO NOT START ANY REPAIR OPERATIONS BEFORE 5 MINUTES HAVE PASSED

CAUTION:

- **Due to the discharge resistance, it takes a minimum of 5 minutes before the 273.6 volts of electricity is sufficiently discharged from the condenser in the inverter circuit.**

10. PLACE VINYL TAPE OVER THE SERVICE PLUG TERMINALS

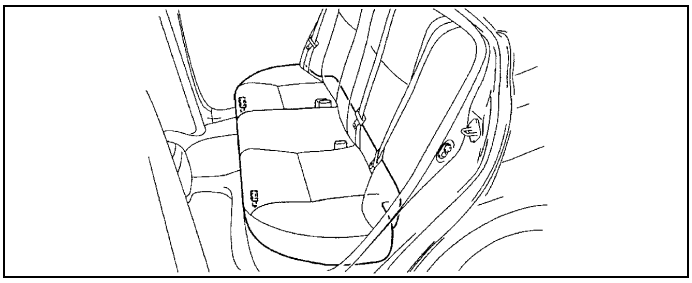
11. THE ELECTRICALLY INSULATED GLOVES CAN BE REMOVED AT THIS POINT

12. REMOVE THE LUGGAGE COMPARTMENT SIDE TRIM COVER LH AND RH

(a) Remove the 2 clips and luggage trim cover inner lower.

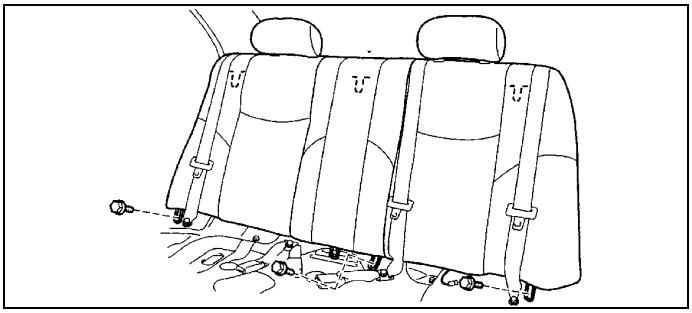
(b) Remove the 4 clips and the rear floor finish plate.

(c) Remove the clips and luggage compartment side trim covers, LH and RH.



13. REMOVE THE REAR SEAT CUSHION ASSEMBLY

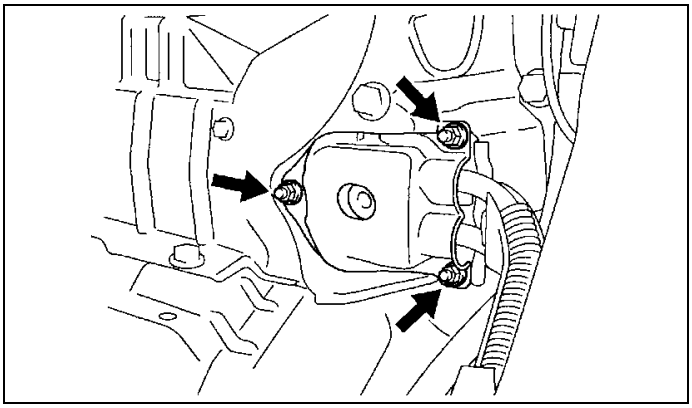
(a) Pull up the front area of the seat cushion assembly.



14. REMOVE THE REAR SEATBACK ASSEMBLY

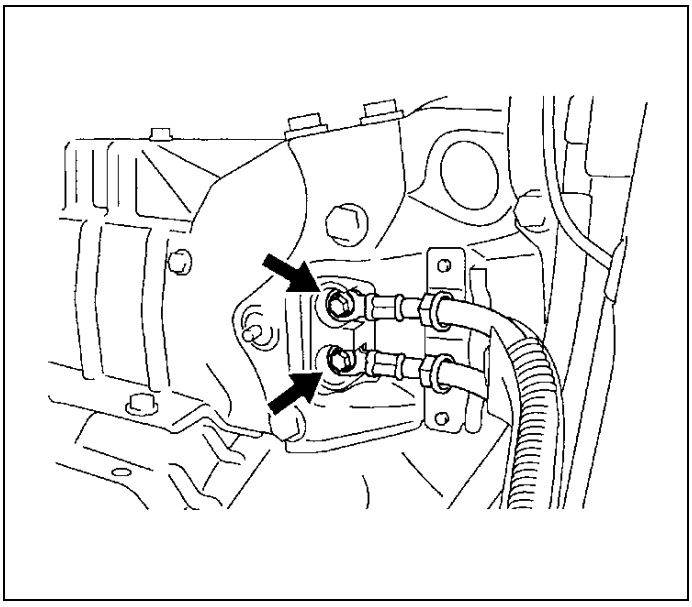
(a) Remove the 3 bolts.

15. **REMOVE THE ROOM PARTITION PANELS**
16. **REMOVE THE LUGGAGE COMPARTMENT TRIM NO. 2 COVER**
17. **REMOVE THE LUGGAGE COMPARTMENT TRIM COVER**
18. **REMOVE SPARE TIRE COVER**
19. **WEAR THE ELECTRICALLY INSULATED GLOVES (RATED FOR 1000 VOLTS)**



20. **REMOVE THE HV POWER CABLES**
    (a) Using the service plug, rotate the interlock counter-clockwise to unlock.
    (b) Remove the 3 nuts and battery carrier catch bracket.

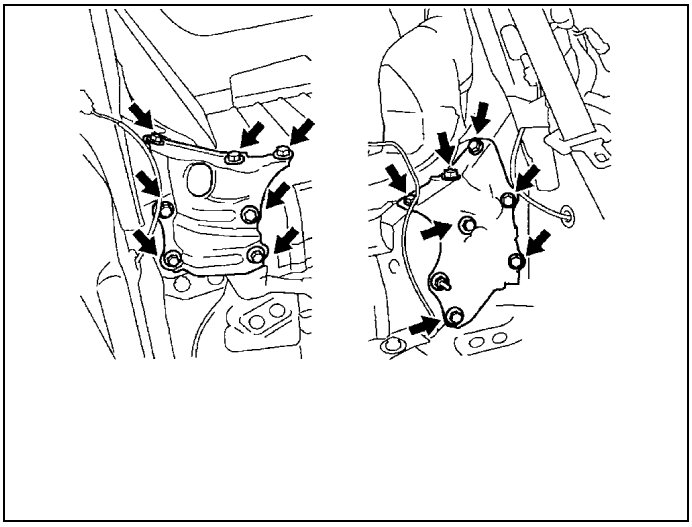
    NOTE:
    If the interlock is damaged, replace the interlock with a new one.



    (c) Using a DVOM, confirm that the voltage across the power cables is less than 12 volts.
    (d) Remove the 2 bolts and power cables.

    NOTE:
    - **Confirm that voltage across the power cables is less than 12 volts.**
    - **These two bolts are only to be used to secure the power cables.**

    (e) Cover the ends of the cables with vinyl tape.
    (f) Remove the chrome cable shielding.



21. REMOVE THE BATTERY BRACKETS

(a) Remove the 13 bolts and nut, RH and LH brackets.

22. DISCONNECT THE CONNECTORS

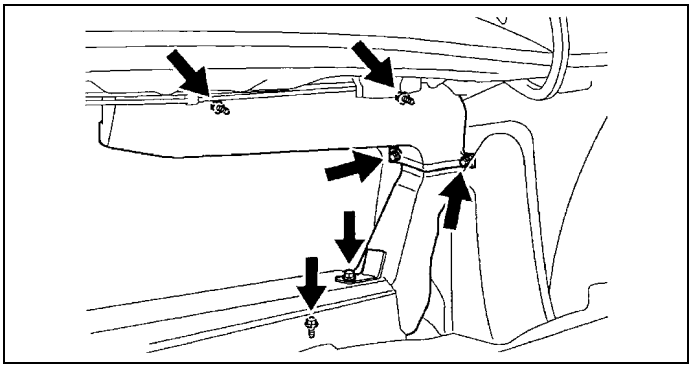
(a) Disconnect the 3 connectors from the battery ECU.

(b) Disconnect the connector from the System Main Relay (SMR).

(c) Disconnect the male portion of the SMR connector from the duct bracket.

(d) Disconnect the blower motor controller connector.

(e) Remove the wire harness from the holder on the quarter ventilator duct.

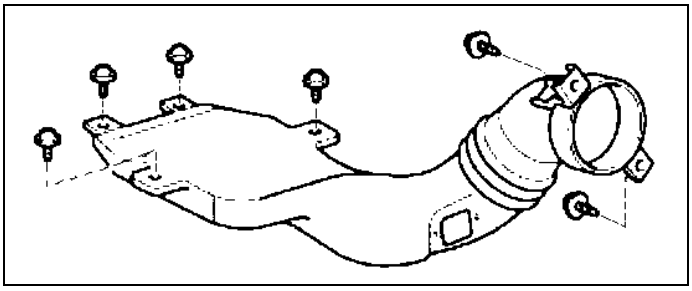


23. REMOVE THE INNER VENTILATOR DUCT

(a) Remove the 4 bolts, one clip, and the inner ventilator duct.

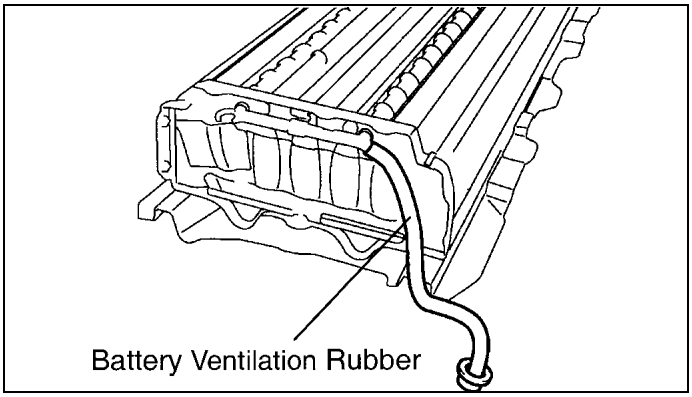
24. REMOVE THE LOWER QUARTER VENTILATOR DUCT

(a) Remove the 2 bolts and lower quarter ventilator duct.



25. REMOVE THE QUARTER VENTILATOR DUCT

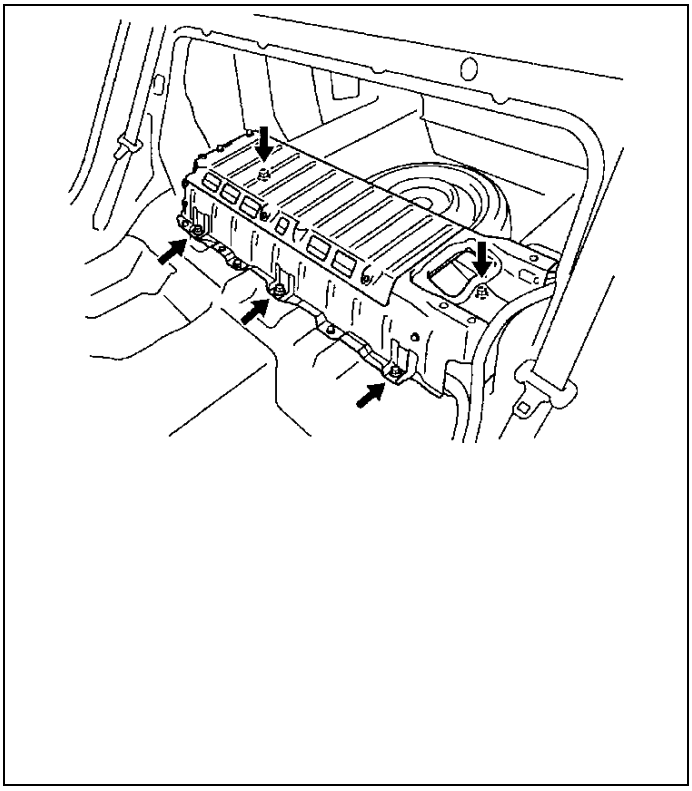
(a) Remove the 6 screws and lower quarter ventilator duct.



26. REMOVE THE HV BATTERY

(a) Disconnect the end of the battery ventilation rubber from the vehicle.

CAUTION:
Since alkaline electrolyte may be on the hose end, carry out the operation with considerable care.



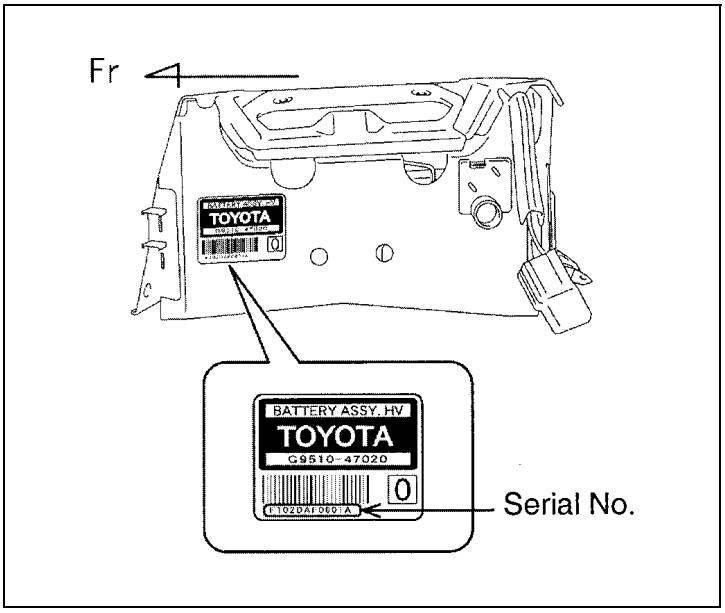
(b) Remove the 5 bolts and the HV battery.

CAUTION:

- **Do not lean over the HV Battery at any point during the repair. Contact may lead to severe electrical shock.**
- **Due to the weight and size of the HV Battery, assistance may be needed to remove the battery from the vehicle.**
- **Use a 2x4 piece (approximately 3 feet in length) wood to support the battery across the spare tire to protect the tire and the HV battery.**

(c) Place the battery on a non-conductive surface (rated for 1000 volts) or on the provided vinyl mat.

B. INSPECTION PROCEDURE



1. **HV BATTERY SERIAL NO. CONFIRMATION**

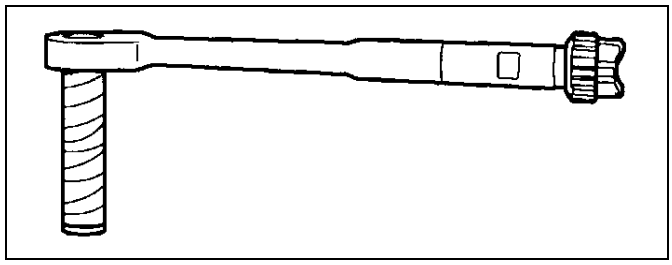
The Battery Serial No. Inspection has been deleted from the SSC procedure. Please disregard this portion in the training video.

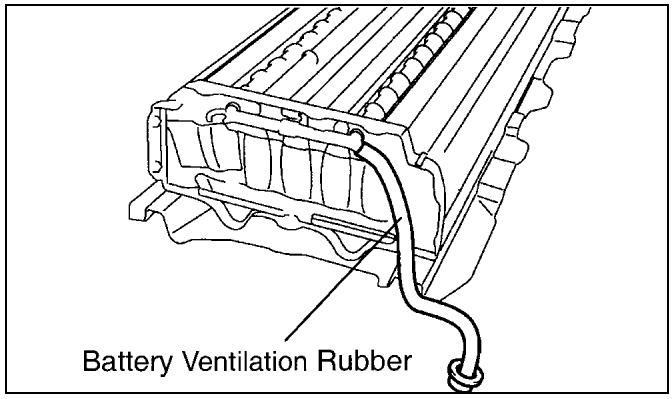
C. CLEANING AND PARTS REPLACEMENT

1. GENERAL PRECAUTIONS

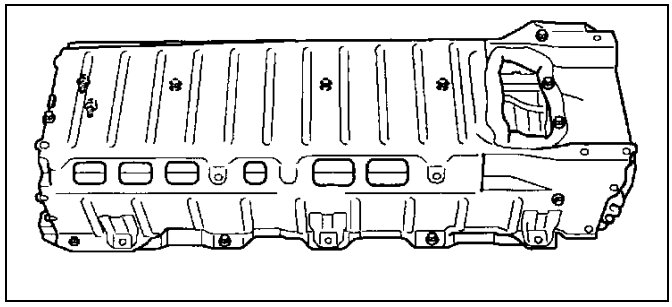
CAUTION:

- **Always wear the insulating gloves and safety glasses except where identified in these technical instructions.**
- **To prevent damage to the terminals, do not use power tools of any kind.**
- **After completing the repair, wash all the old parts and tools with large amounts of lukewarm water and all of the remaining boric acid. Place the waste liquid and old parts in the designated hazmat waste containers according to state, federal, and local regulations.**
- **Wrap the ends of the tools in vinyl tape to insulate them.**



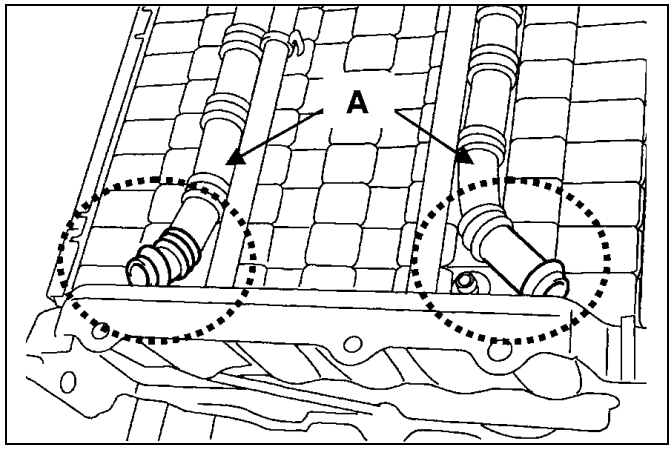


2. REMOVE THE BATTERY VENTILATION HOSE



3. REMOVE THE BATTERY COVER

(a) Remove the 3 bolts from the top of the battery cover.
(b) Remove the 9 bolts from the perimeter of the battery cover
(c) Remove the one Torx® bolt.
(d) Remove the rubber protector.
(e) Remove the battery cover.



4. REMOVE BATTERY VENTILATION DUCT

NOTE:
Ensure that you do not make direct contact with the duct ends as they may be coated with a corrosive substance.

(a) Remove the duct ends (Area A) as shown in the illustration.

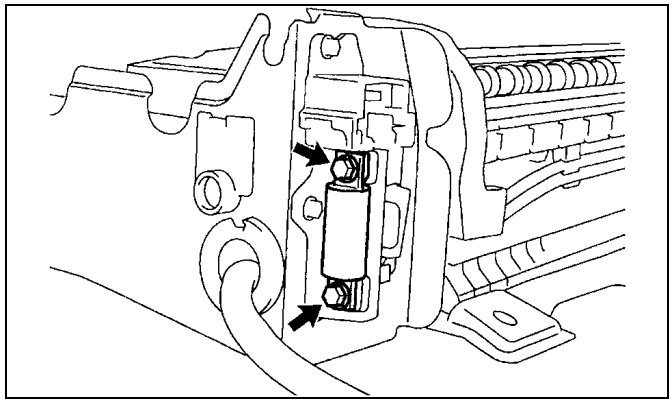
5. REMOVE BUS BAR MODULE PROTECTOR

(a) Remove the front RH and LH bus bar module protectors.

(b) Remove the rear RH and LH bus bar module protectors.

NOTE:

- **Separate the claw, and then lift up the bus bar module protector to remove it.**
- **Do not take off the electrically insulated gloves.**

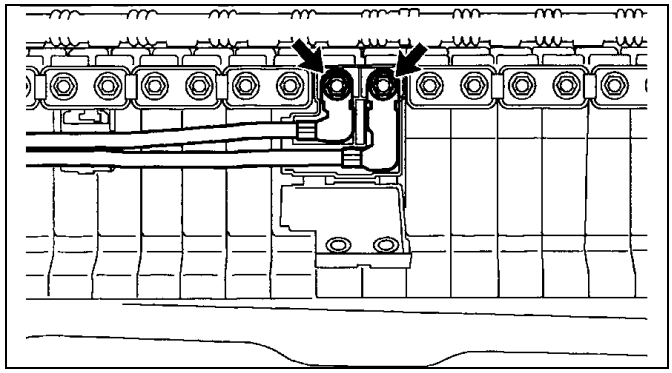


6. REMOVE THE SERVICE PLUG ASSEMBLY

(a) Remove the plastic cover from the service plug assembly.

(b) Remove the 2 bolts that secure the HV fuse, and remove the fuse.

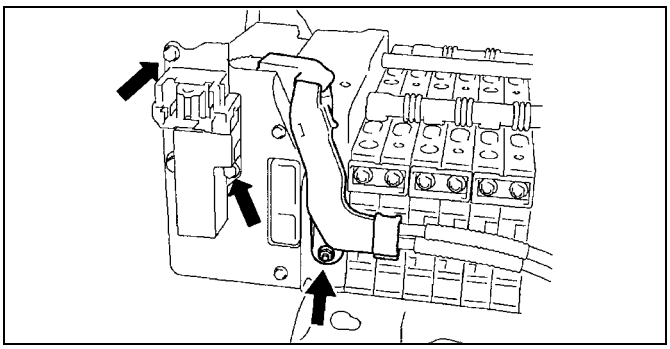
CAUTION:
Do not drop the fuse.



(c) Remove the two nuts for the bus bar module cables.

CAUTION:

- **Do not use power tools of any kind or damage to the terminals may occur.**
- **Wrap the ends of the tools with vinyl tape to insulate them.**



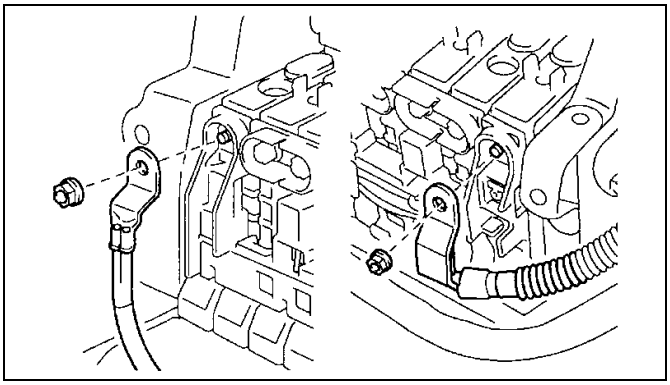
(d) Remove the nut securing the wire harness protector.
(e) Remove the 2 bolts and service plug assembly.
(f) Remove the wire harnesses from the service plug assembly.

7. REMOVE THE REAR BUS BAR MODULE

CAUTION:
Any foreign materials on the side surface of the battery module are likely to be battery electrolytes. If these substances enter your eyes, they may cause vision loss and if they come into contact with your skin, it may cause burn injuries. If any foreign materials come into contact with your skin, immediately wash them off with large quantities of water. If any foreign materials get in your eyes, immediately flush them out with large quantities of water and seek medical attention.

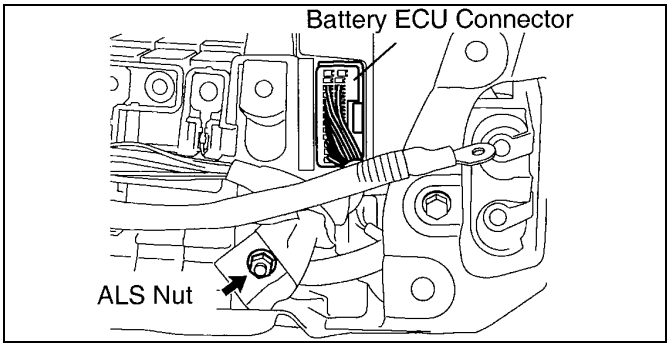
(a) Remove the 36 nuts, the rear RH and LH bus bar modules.

CAUTION:
- **Do not use power tools of any kind or damage to the terminals may occur.**
- **Wrap the ends of the tools with vinyl tape to insulate them.**

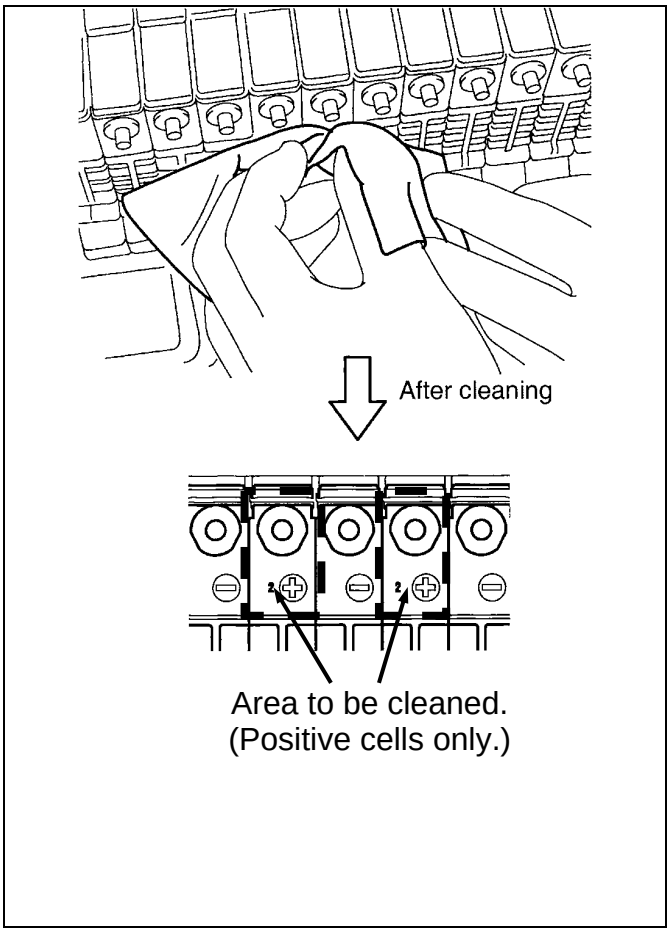


8. REMOVE THE FRONT BUS BAR MODULE

(a) Remove the 2 nuts and disconnect the power cables from the front bus bar module.
(b) Remove the SMR cover.
(c) Remove the 2 bolts, and disconnect the power cables for the SMR.



(d) Remove the battery ECU connector.
(e) Remove the aluminum shield (ALS) nut.
(f) Remove the 36 nuts and the front bus bar modules.



9. CLEAN THE POSITIVE TERMINALS AND BATTERY MODULE SURFACE

(a) After removing all the bus bars, wear the chemical protective gloves provided in the kit.
(b) Place some of the boric acid solution onto a paper towel.
(c) Clean the positive terminals and the area below the positive terminals with the paper towel as shown in the diagram.

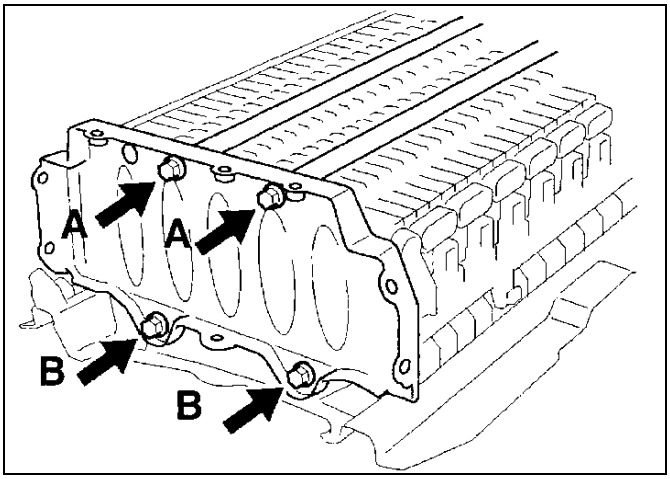
NOTE:
Thoroughly remove all debris from the positive terminals. A stiff nylon brush may be used.

STOP **DO NOT USE A METAL BRUSH.**

(d) Wipe the positive terminals and the area below the positive terminals with a dry paper towel.
(e) Affix a strip of vinyl tape across the terminals that have been cleaned to prevent a short circuit.

NOTE:

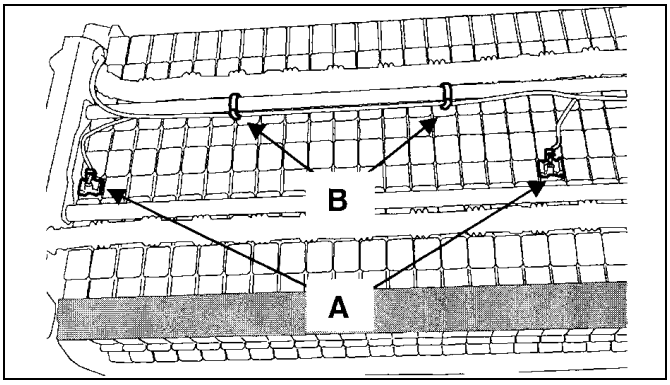
STOP
- **Clean all positive terminals on both side of the HV battery.**
- **Confirm that all debris has been removed after the cleaning.**



10. INSERT THE BATTERY MODULE RESIN PLATES

NOTE:
The resin plate will be installed to isolate the battery cells from the sides of the HV Battery case.

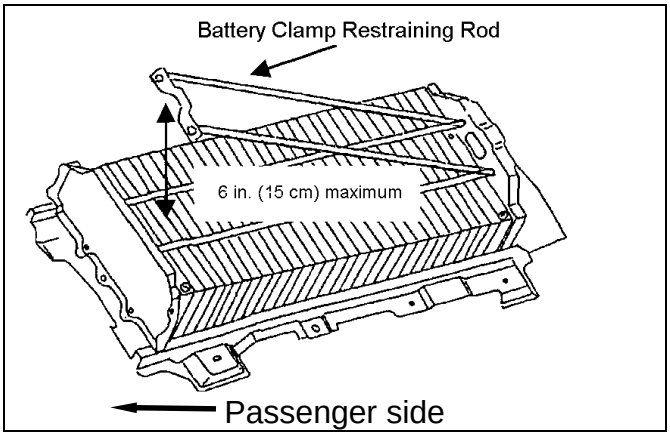
(a) Remove the 2 bolts labeled “A.”
(b) **Loosen** the 2 bolts labeled “B” (***No more than 0.75 in (20 mm)***).



(c) Remove the 2 thermistors labeled A.

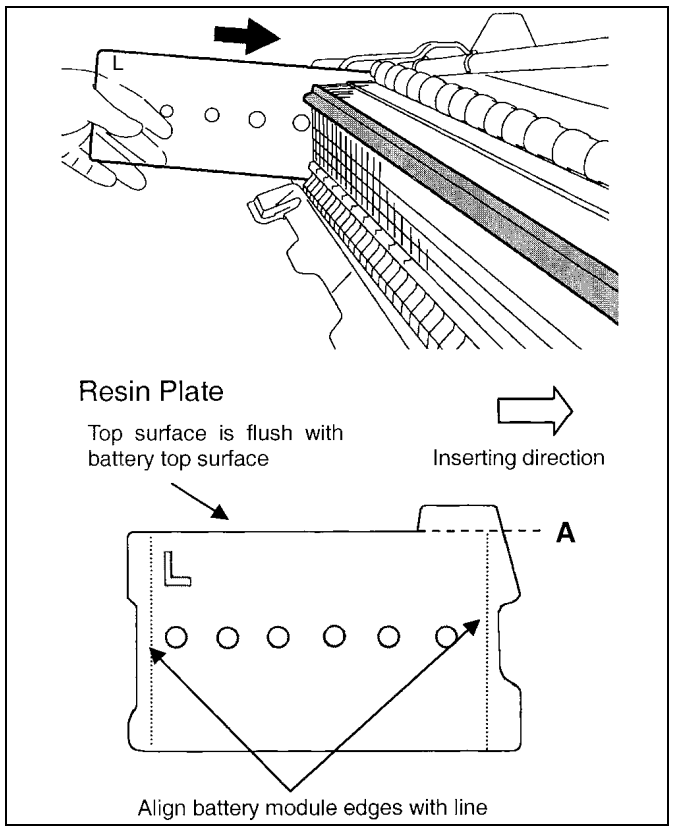
NOTE:
Using a pen or marker, mark the location of each thermistor.

(d) Remove the 2 thermistor clamps labeled B.



(e) Lift up the battery clamp restraining rod no more than 6 in. (15 cm), so there is a clearance between the left end plate and the battery module.

CAUTION:
Do not lift up the battery clamp restraining rod by more than 6 in. (15 cm). A 4x4 (approximately 5 inches in length) may be used to support the restraining rod.

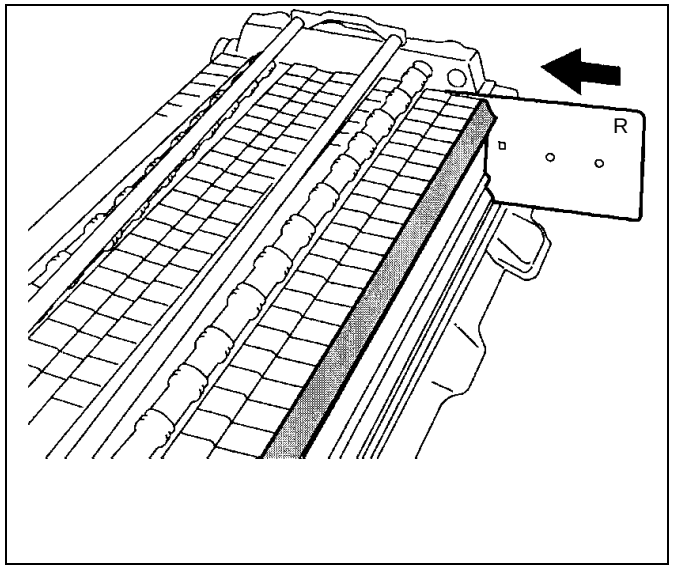


(f) Cut off the Section A portion of the LH plate with scissors before inserting the plate into the HV Battery assembly.

(g) Insert the resin plate into the clearance gap between the left end plate and the battery module while keeping the battery clamp restraining rod raised. Hold the tabs to insert the plates.

NOTE:

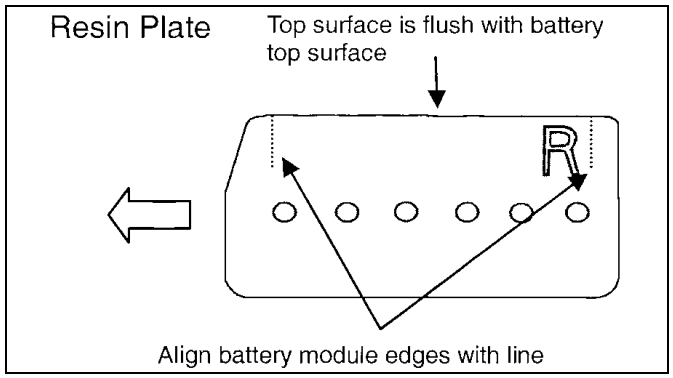
- **Insert the resin plate so that the "L" mark faces the battery and can be read correctly as shown in the figure.**
- **The top surface of the resin plate should be flush with the top surface of the battery.**
- **Insert the resin plate so that the battery module is within the lines of the resin plate.**



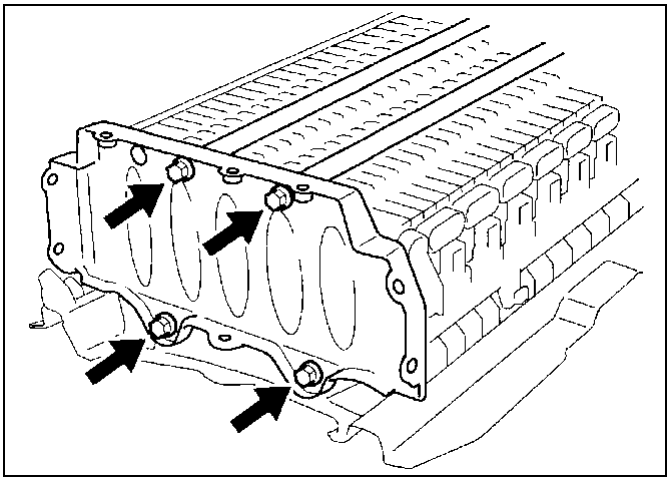
(h) Insert the RH resin plate into the clearance between the right end plate and the battery module.

NOTE:

- **Uniformly insert the resin plate along the outer shape of the end plate.**
- **Insert the resin plate so that the "R" mark faces the battery side and can be read correctly as shown in the figure.**
- **Insert the resin plate so that the battery module comes within the lines marked on the resin plate.**



- **The top surface of the resin plate should be flush with the top surface of the battery.**



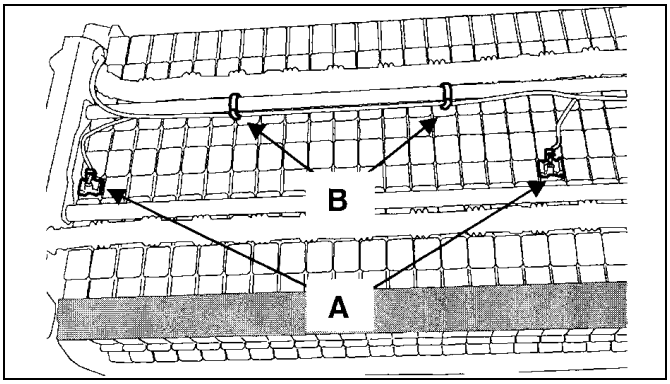
11. REINSTALL THE BATTERY CLAMP RESTRAINING ROD

(a) Lower the battery clamp restraining rod into place.

(b) Reinstall the 2 upper battery clamp restraining rod bolts.

(c) Tighten all 4 bolts.

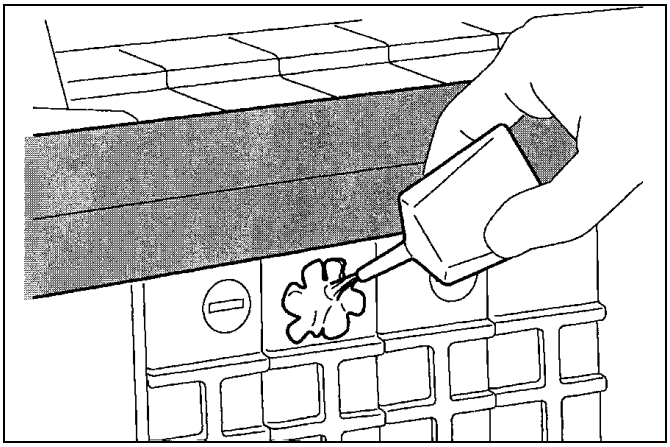
Torque:
23 N·m (235 kgf·cm, 17 ft·lb)



12. REINSTALL THE HV BATTERY THERMISTORS AND THE THERMISTOR CLAMPS

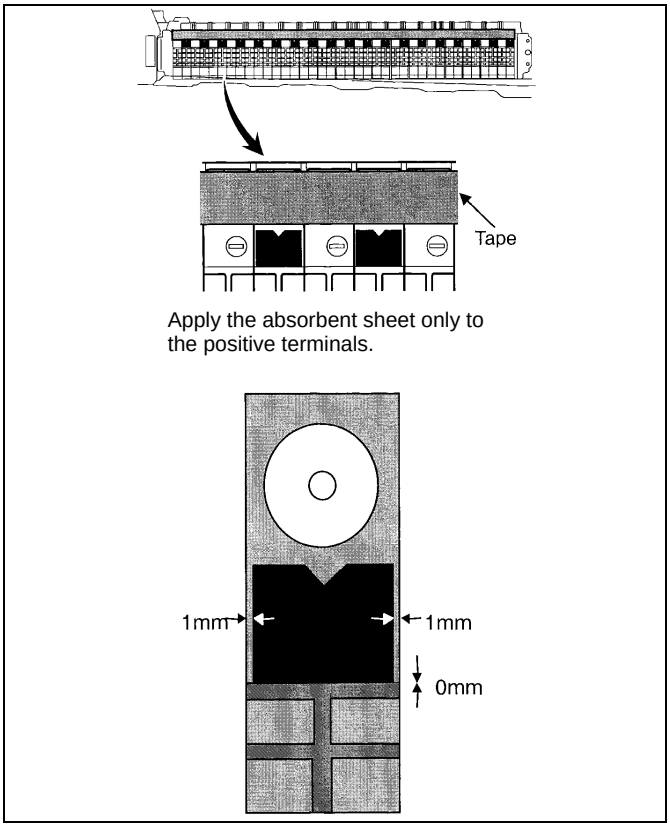
13. REINSTALL THE BATTERY VENTILATION DUCTS

NOTE:
Ensure that you do not make direct contact with the duct ends as they may be coated with a corrosive substance.



14. ATTACH THE ABSORBENT SHEETS

(a) Apply sealing material to the area below the ***positive*** terminals on the rear battery module surface.



(b) Attach an absorbent sheet so that it is aligned with the rib below the positive terminal with the black side facing outward.

(c) Repeat step (b) for the area below the positive terminal on the front side of the battery.

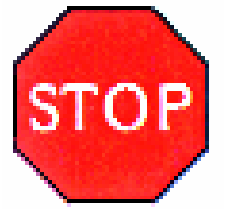
NOTE:

- **Ensure that the surface area is clean where the sealing material will be applied.**

CAUTION:

- **If the sealing material is attached to the wrong area, dampen a paper towel in water and immediately wipe it off with the paper towel.**
- **The absorbent sheet should not cover the negative terminal battery module surface.**

15. INSTALL THE NEW REAR BUS BAR MODULES



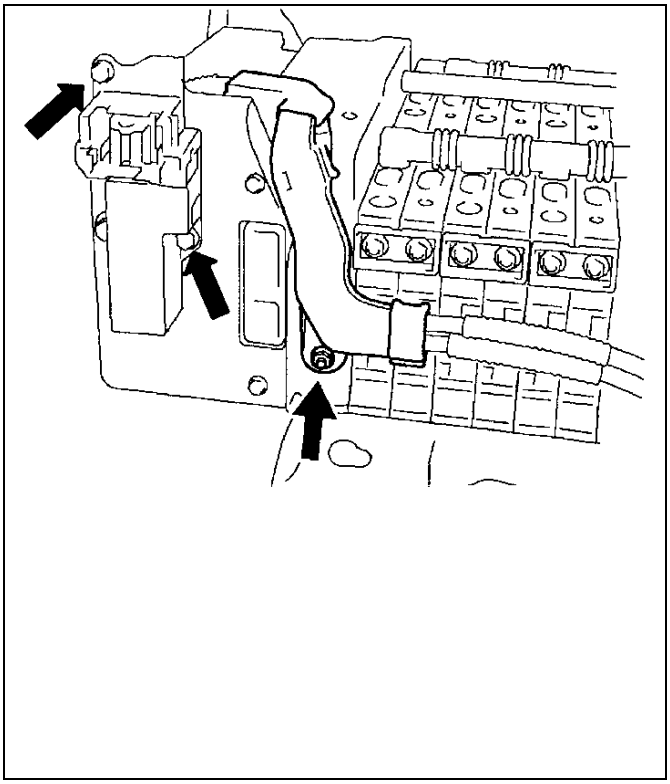
CAUTION:

- **At this point in the repair, electrically insulated gloves (rated for 1000 volts) must be worn.**
- **Ensure that the bus bar modules are installed in the correct positions. If any of the bus bar modules are installed in the wrong location, it may cause a short circuit and may lead to severe electrical shock.**
- **Do not use power tools of any kind or damage to the terminals may occur.**
- **Use the Special 48 in·lbf T-handle torque wrench provided. Do not overtighten the nuts beyond the torque specifications.**
- **Wrap the ends of the tools with vinyl tape to insulate them.**

(a) Remove the strip of vinyl tape from the terminals.
(b) Install the new rear bus bar modules.
(c) Install the new 36 nuts then using the T-handle torque wrench tighten them to the specified torque.

SST #: 00002-11000-01

Torque:
5.4 N·m (55 kgf·cm, 48 in·lbf)



16. REINSTALL THE SERVICE PLUG ASSEMBLY

(a) Insert the new wire harnesses into the SMR and the service plug assembly.
(b) Reinstall the service plug assembly with the 2 bolts.

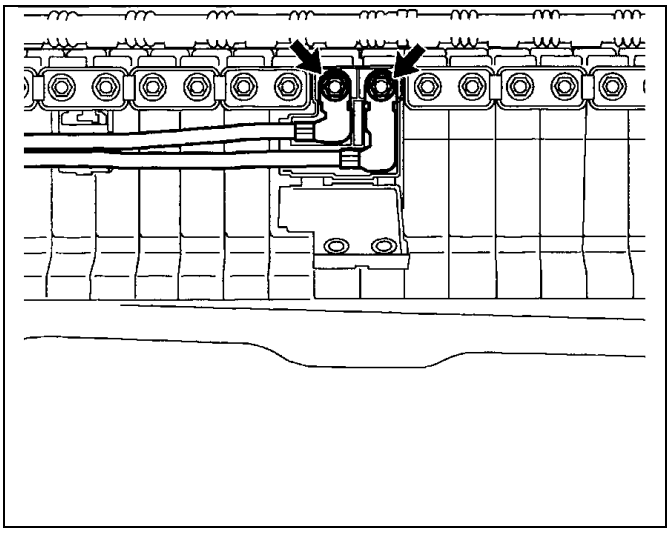
SST #: 00002-11000-01

Torque:
5.4 N·m (55 kgf·cm, 48 in·lbf)

NOTE:
Do not install the HV fuse at this point.

(c) Install the new wire harness protector with the nut.

Torque:
3.5 N·m (36 kgf·cm, 31 in·lbf)



(d) Install the new bus bar module with the 2 new nuts.

SST #: 00002-11000-01

Torque:
5.4 N·m (55 kgf·cm, 48 in·lbf)

CAUTION:

- **Do not use power tools of any kind or damage to the terminals may occur.**
- **Wrap the ends of the tools with vinyl tape to insulate them.**

17. INSTALL THE NEW FRONT BUS BAR MODULE

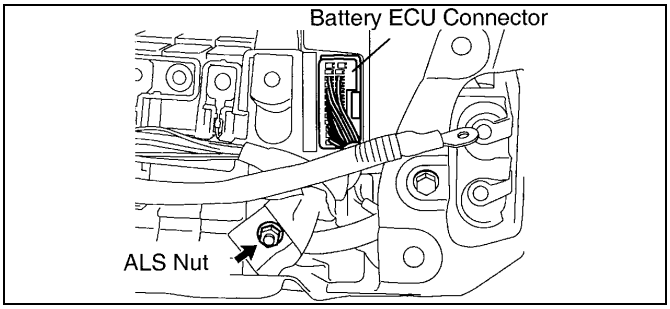
CAUTION:

- **Ensure that the bus bar module is installed in the correct positions. If the bus bar module is installed in the wrong location, it may cause a short circuit.**
- **Do not use power tools of any kind or damage to the terminals may occur.**
- **Use the Special 48 in·lbf T-handle torque wrench provided. Do not overtighten the nuts beyond the torque specifications.**
- **Wrap the ends of the tools with vinyl tape to insulate them.**

(a) Remove the strip of vinyl tape from the terminals.
(b) Wrap the bus bar cable terminals in vinyl tape to prevent a short circuit.
(c) Install the new front bus bar module.
(d) Install the new 36 nuts then using the T-handle torque wrench tighten them to the specified torque.

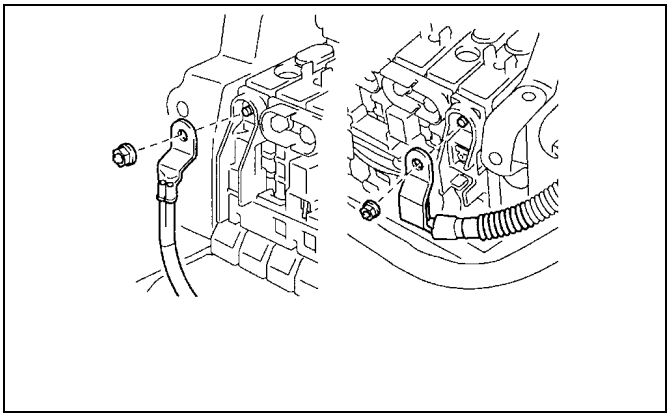
SST #: 00002-11000-01

Torque:
5.4 N·m (55 kgf·cm, 48 in·lbf)



(e) Reinstall the battery ECU connector.
(f) Reinstall the ALS nut.

Torque:
3.5 N·m (36 kgf·cm, 31 in·lbf)



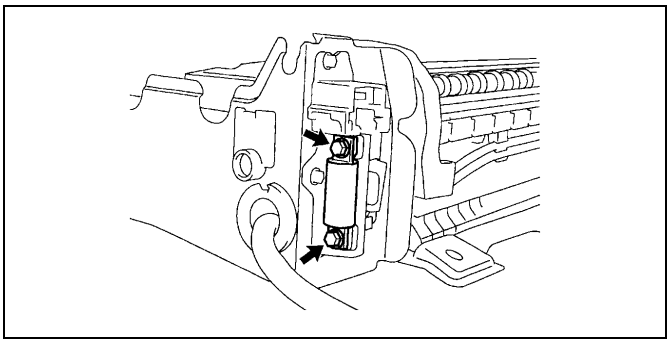
18. INSTALL THE TWO NEW POWER CABLES FOR THE SMR

(a) Connect the two new power cables for SMR with the 2 nuts and 2 bolts.

SST #: 00002-11000-01

Torque:
5.4 N·m (55 kgf·cm, 48 in·lbf)

(b) Reinstall the SMR cover onto the SMR.



19. REINSTALL THE HV FUSE

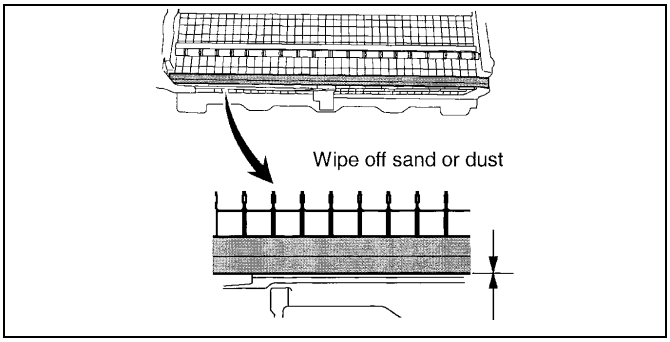
(a) Reinstall the HV fuse with the 2 bolts.

SST #: 00002-11000-01

Torque:
5.4 N·m (55 kgf·cm, 48 in·lbf)

(b) Reinstall the cover for the HV Fuse.

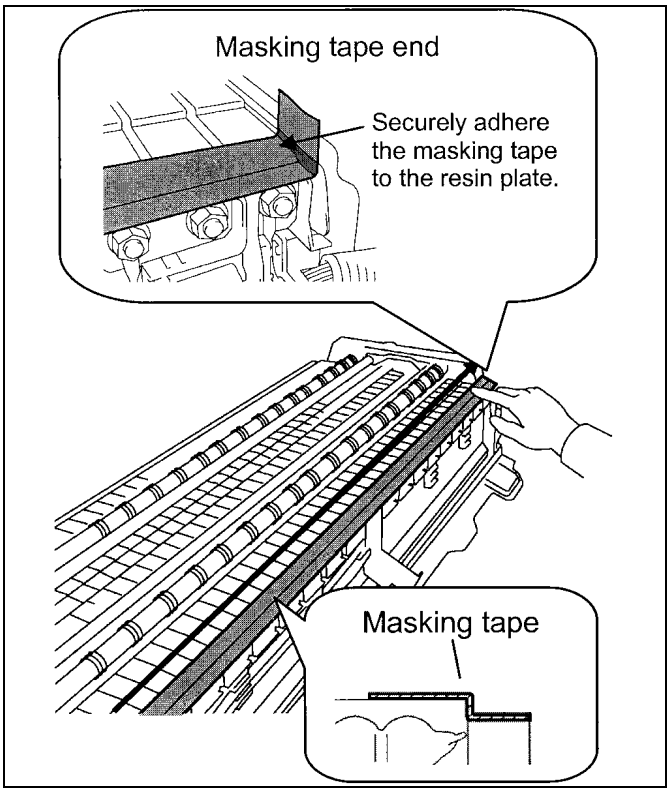
D. HV BATTERY SEALING



1. TAPE THE BUS BAR MODULE TOP SURFACE

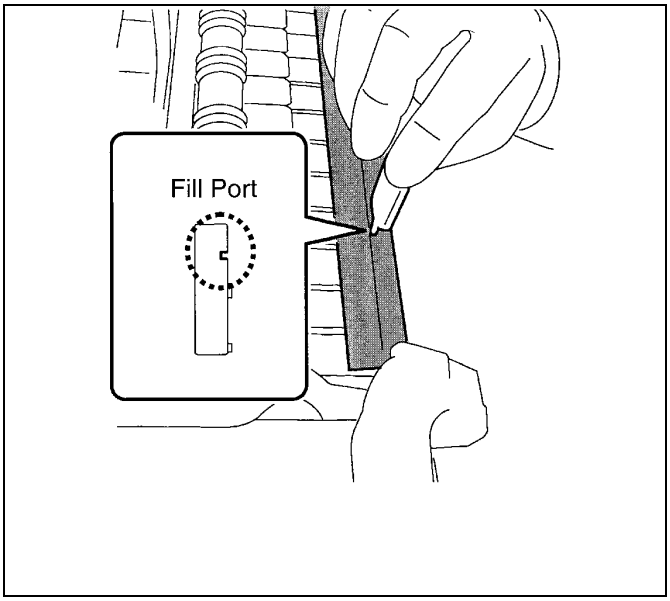
(a) Using a paper towel or a clean rag, wipe any dust or debris off of the top surface of both the front and rear bus bar modules where the masking tape will be placed.

(b) Place masking tape along the edge of the front and rear bus bar modules.



NOTE:

- **Trace the boundary line between the bus bar module and the battery module with your finger to securely affix the masking tape. Be careful not to tear the masking tape.**
- **Secure the ends of the masking tape to the resin plate as shown in the illustration.**
- **The masking tape should be firmly affixed to prevent the sealing material from running off to the top surface of the bus bar module.**
- **If the tape is not applied properly, the sealant will not fill the cavity behind the bus bar module.**

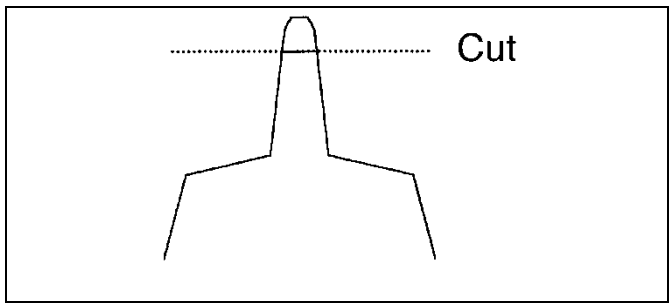


2. INJECT THE SEALING MATERIAL

NOTE:
To prevent electrolyte leakage, a sealant will be injected behind the bus bar on each positive terminal

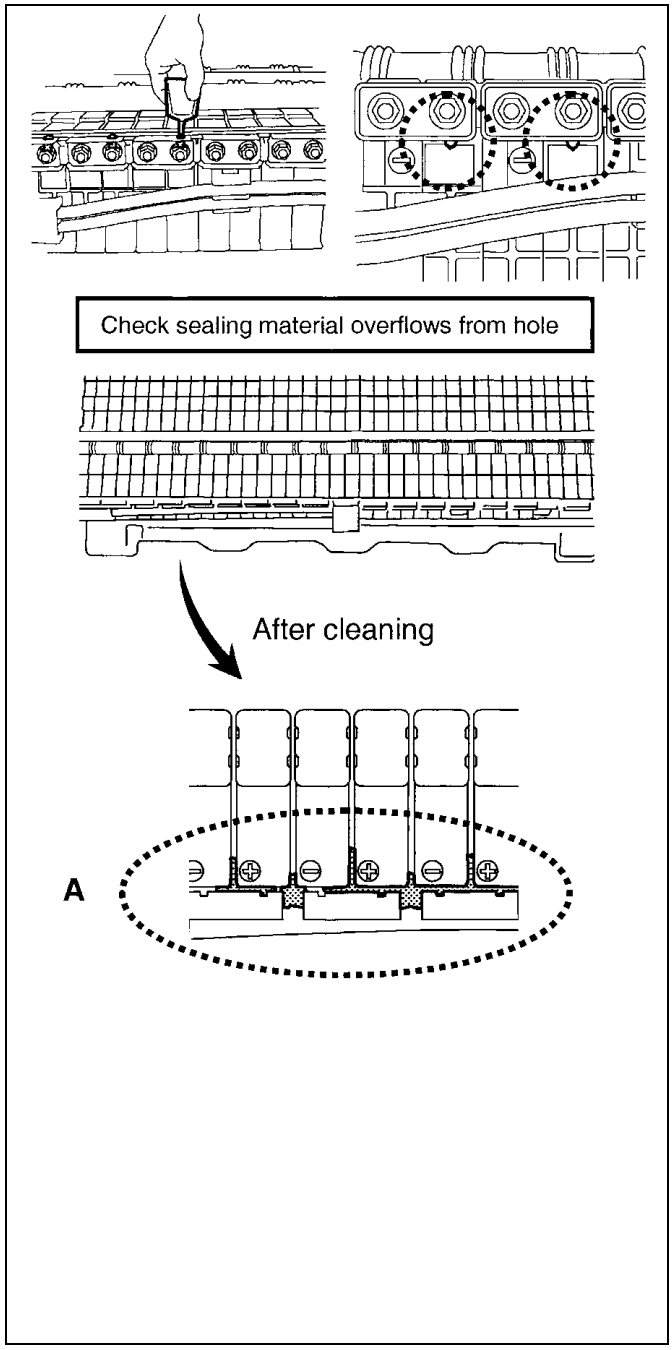
(a) Using an unopened dropper of the sealing material, make a hole in each fill port on the masking tape. Use the tip to puncture the masking tape at each fill port hole.

NOTE:
Ensure that the holes are complete with no frays obstructing the hole.



(b) Cut off the tip of the sealing material tube.

NOTE:
Cut the tip so it can be firmly placed in the application holes. Otherwise the sealant will not fill the cavity behind the bus bar module.

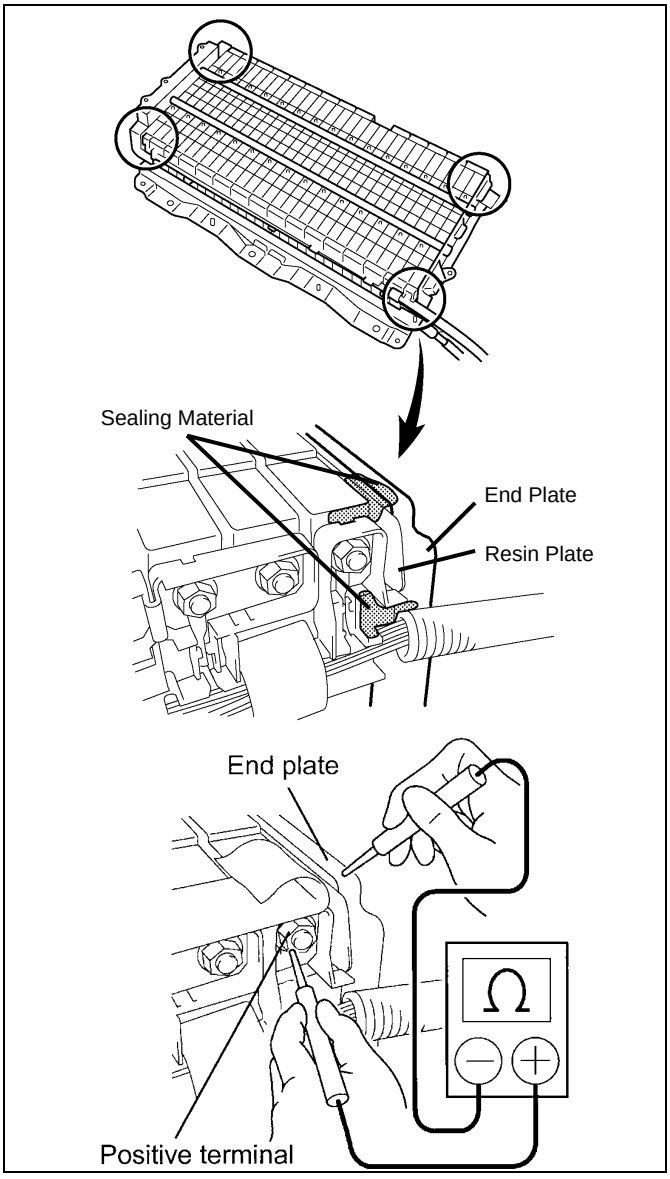


(c) Inject the sealing material into the fill port located above the positive terminal of the rear bus bar module. **(Use one tube of sealing material per positive terminal fill port.)**

NOTE:
- **Be sure to inject the sealing material until it overflows from the hole on the bottom of the bus bar module as shown.**
- **Pull out the tip while maintaining firm pressure on the tube. Do not let the sealing material get drawn back into the tube.**
- **Apply constant pressure and inject the sealant at a continuous rate.**

(d) Remove the masking tape after injecting the sealing material into all of the fill ports.

NOTE:
- **Using a paper towel, lightly wipe the overflow sealing material from the edges of the bus bar area and other areas on the HV battery case.**
- **Sealing material that has entered the gap between the battery modules does not need to be wiped away. (See area "A" of the illustration.)**
- **Remove the masking tape before the sealing material dries.**

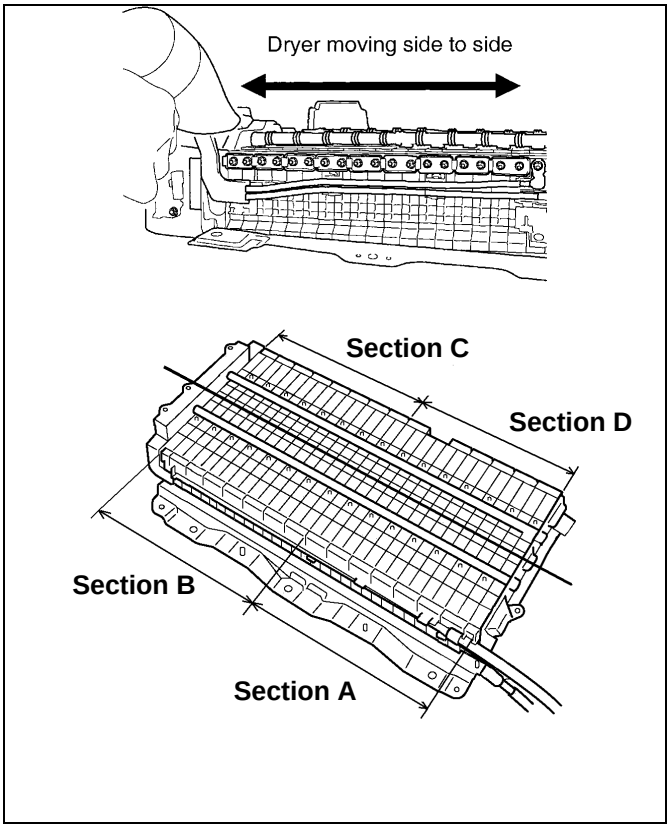


(e) Repeat steps (a) through (d) for the front bus bar.

CAUTION:

- **Please note the working temperature of the sealing material, which is 41°F to 95°F (5°C to 35°C). The sealant will solidify, if stored outside these ranges.**
- **If the sealing material seeps beyond the resin plate (from the top and side edges) and reaches the end plate, certain DTCs that relate to HV battery malfunctions may be displayed. To prevent these DTCs from occurring, wipe off the excess sealing material from the battery case.**
- **If the sealing material makes contact with the metal end plate, wipe off the excess sealing material immediately. Using a DVOM meter, confirm there is no continuity between the end plate and the positive terminal.**

(f) Use a DVOM to confirm there is no continuity between the positive terminals and the battery case.



3. DRYING THE SEALING MATERIAL

(a) Using a hair dryer, blow air over the terminals on the left half of the front side (Section A) for 5 minutes, while repeatedly moving the dryer from side to side.

NOTE:

- **Use the lowest heat setting on the dryer. Do not use an industrial dryer.**
- **Each pass of the dryer across the terminals should last 5 seconds.**
- **The target temperature for the terminal surface should be approximately 104°F (40°C).**

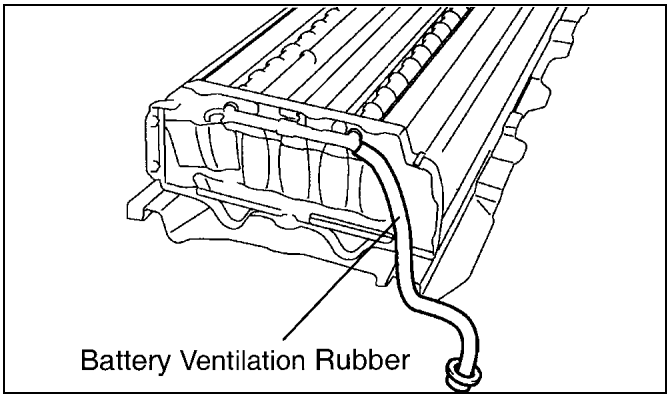
(b) Blow air in the same manner for the right half of the front side (Section B), the left half of the rear side (Section C), and the right half of the rear side (Section D).

4. INSPECT THE FINAL ASSEMBLY

(a) Visually inspect the final assembly and ensure that there are no defects.

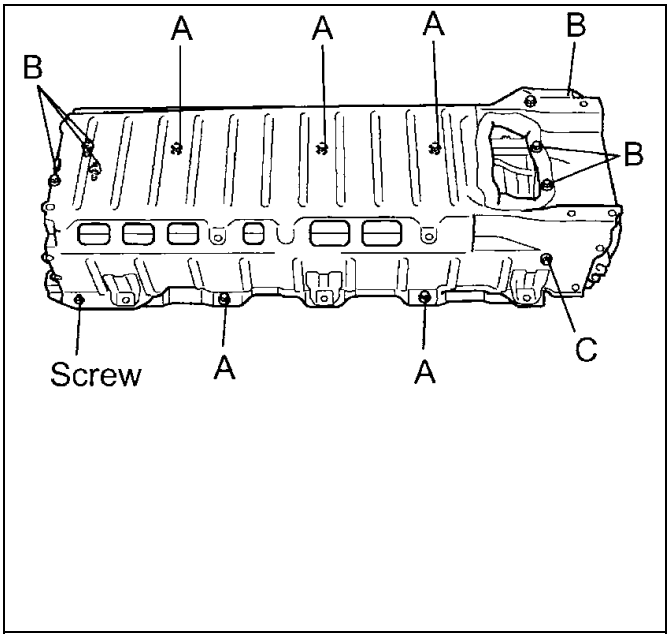
1) Confirm that all sealing material is injected into all the fill holes.
2) Confirm that all the absorbent sheets are properly attached to all locations.

5. REINSTALL THE BUS BAR MODULE PROTECTORS



6. REINSTALL THE BATTERY COVER

(a) Reinstall the battery ventilation rubber on to the battery.



(b) Reinstall the battery cover.
(c) Reinstall the one Torx® bolt.

TORQUE:
Screw: 6.0 N·m (61 kgf·cm, 53 in·lbf)

(d) Reinstall the 3 bolts on the top surface of the HV battery cover.
(e) Reinstall the 9 bolts along the perimeter of the HV battery cover, then reinstall the rubber protector on the rear lower edge of the HV battery.

TORQUE:
Bolt A: 18 N·m (185 kgf·cm, 13 ft·lbf)
Bolt B: 8.0 N·m (80 kgf·cm, 71 in·lbf)
Bolt C: 7.0 N·m (70 kgf·cm, 62 in·lbf)

E. HV BATTERY REINSTALLATION

1. GENERAL PRECAUTIONS

CAUTION:

- **Use insulated tools and gloves.**
- **A repair operation incorrectly performed on a Hybrid Vehicle (HV) could cause an electrical shock, leakage or explosion.**
- **Do not leave any tools or parts (bolts, nuts, etc.) inside the cabin.**
- **Do not wear metallic objects, such as mechanical pencils or scales. They could fall onto the vehicle and create a short circuit.**
- **Thoroughly wash and dry your hands before reinstalling the HV Battery back into the vehicle.**

2. REINSTALL THE HV BATTERY

(a) Set the HV battery near the vehicle.

(b) Install the HV battery into the vehicle.

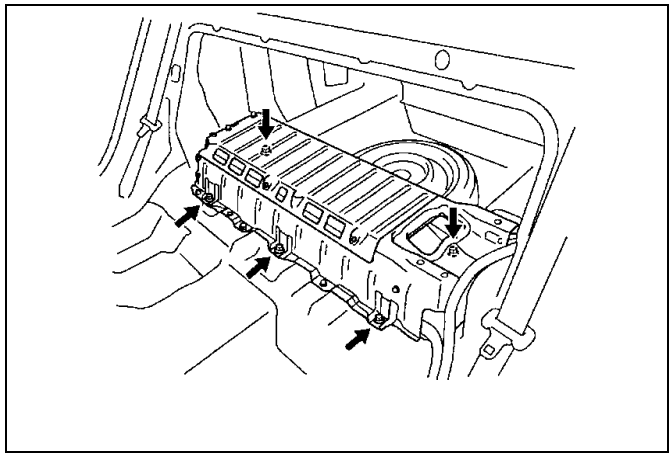
NOTE:

- **Due to the weight and size of the HV Battery, assistance may be needed to install the battery into the vehicle.**
- **Use a 2x4 piece (approximately 3 feet in length) wood to support the battery across the spare tire to protect the tire and the HV battery.**

(c) Connect the battery ventilation rubber to the vehicle.

NOTE:

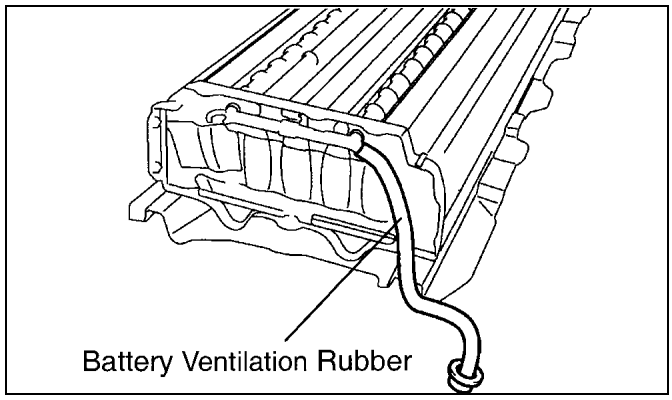
- **Alkaline electrolyte may still be on the hose end, so take care not to come in contact with it.**



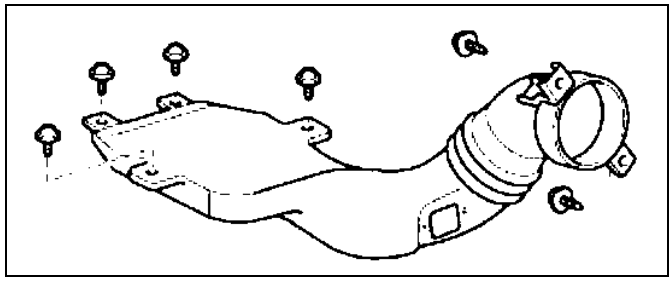
(d) Reinstall and tighten the 5 bolts for the HV battery.

Torque:
18 N·m (185 kgf·cm, 13 ft·lbf)

CAUTION:
- **Do not lean over the HV Battery at any point during the repair.**
- **Use a piece a wood to support the battery across the spare tire to protect the tire and the battery.**

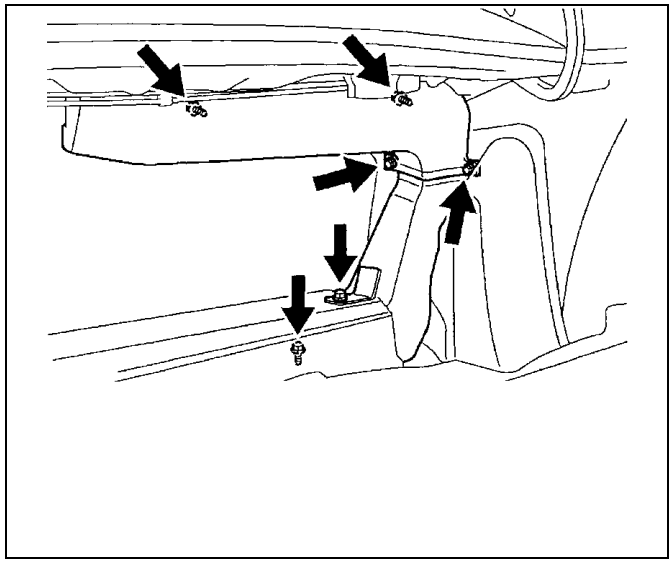


3. REINSERT THE BATTERY VENTILATION HOSE INTO THE VEHICLE



4. REINSTALL THE QUARTER VENTILATOR DUCT

(a) Reinstall lower quarter ventilator duct with the 6 screws.



5. REINSTALL THE LOWER QUARTER VENTILATOR

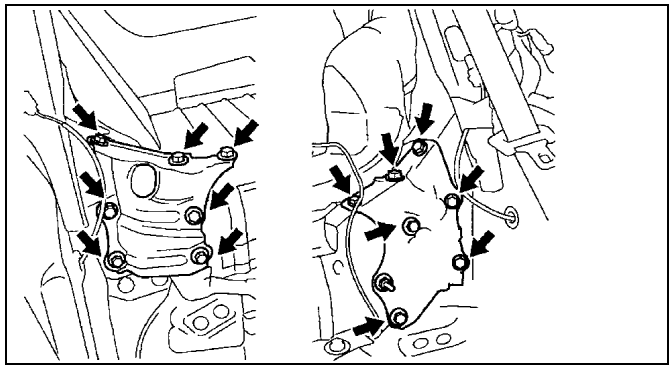
(a) Reinstall the lower quarter ventilator duct with the 2 bolts.

Torque:
4.0 N·m (41 kgf·cm, 35 in·lbf)

6. REINSTALL THE INNER VENTILATOR DUCT

(a) Reinstall the inner ventilator duct with the 4 bolts.

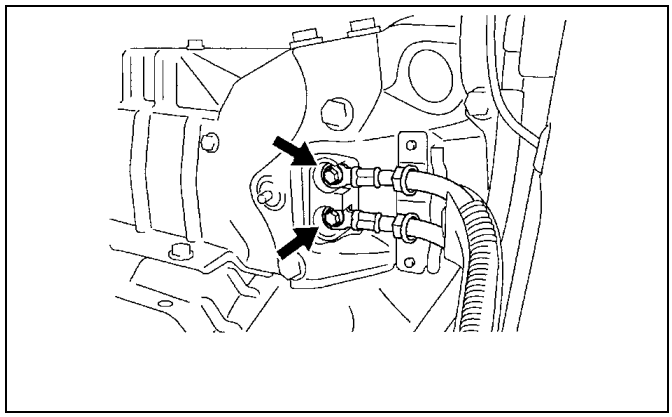
Torque:
4.0 N·m (41 kgf·cm, 35 in·lbf)



7. REINSTALL THE BATTERY BRACKETS

(a) Reinstall the 13 bolts and nut, RH and LH brackets.

Torque:
18 N·m (185 kgf·cm, 13 ft·lbf)



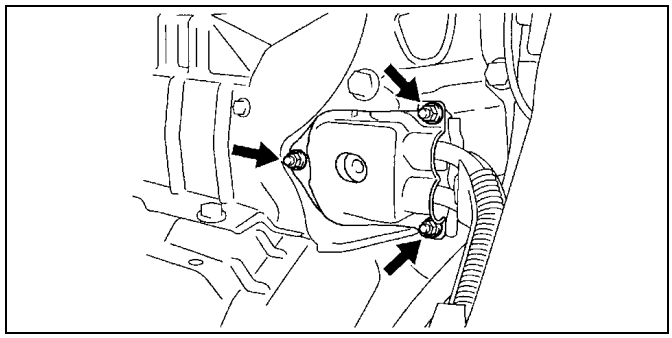
8. REINSTALL THE HV POWER CABLES

(a) Reinstall the chrome cable shield.

(b) Reinstall the HV power cables with the 2 bolts.

Torque:
5.0 N·m (50 kgf·cm, 44 in·lbf)

NOTE:
Use the two special bolts to secure the power cables.



(c) Reinstall the battery carrier catch bracket with the 3 nuts.

Torque:
8.0 N·m (82 kgf·cm, 71 in·lbf)

(d) Press the interlock button to secure the battery carrier catch bracket into place.

9. RECONNECT THE CONNECTORS

(a) Reconnect the 3 connectors to the battery ECU.

(b) Reconnect the male portion of the connector to the duct bracket and reconnect the SMR connector.

(c) Reconnect the blower motor controller connector.

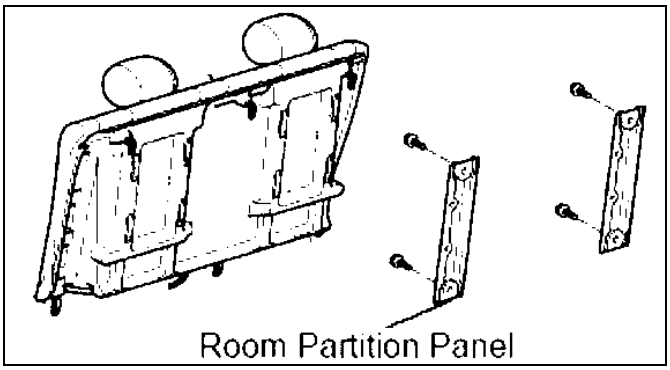
(d) Reinstall the wire harness to the holder on the quarter ventilator duct.

10. REINSTALL THE SPARE TIRE COVER

11. REINSTALL THE LUGGAGE COMPARTMENT TRIM COVER

12. REINSTALL THE LUGGAGE COMPARTMENT TRIM NO. 2 COVER

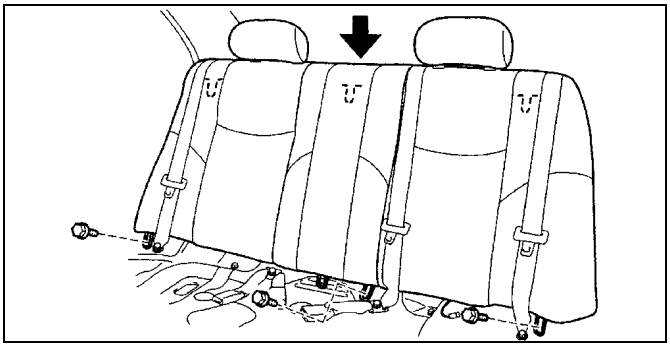
NOTE:
The plastic side faces the interior of the vehicle. The carpeted side faces the trunk.



13. REINSTALL THE ROOM PARTITION PANELS

(a) Reinstall the 2 bolts that secure each room partition panel and torque to specification.

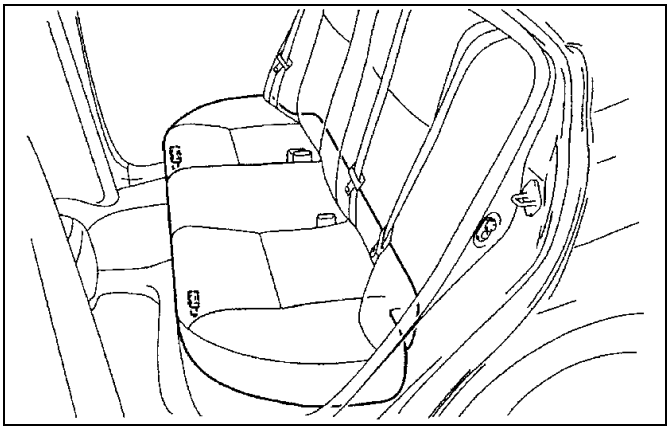
Torque:
8.5 N·m (94 kgf·cm, 82 in·lbf)



14. REINSTALL THE REAR SEATBACK ASSEMBLY

(a) Reinstall the 3 bolts.

Torque:
7.9 N·m (81 kgf·cm, 70 in·lbf)



15. REINSTALL THE REAR SEAT CUSHION ASSEMBLY

(a) Route the 3 lower seat belt latches up through the seat.

(b) Lower the front of the seat onto the latches, ensure that they lock into place by pressing down firmly on the lower seat cushion.

16. **REINSTALL THE DRIVER'S SIDE AND PASSENGER'S SIDE LUGGAGE COMPARTMENT SIDE TRIM COVER**
    (a) Reinstall the driver's side and passenger's side luggage compartment side trim cover.
    (b) Reinstall the rear floor finish plate and the 4 clips.
    (c) Reinstall the luggage trim cover inner lower and secure in place by only installing the 2 lower clips.
17. **REMOVE THE VINYL TAPE FROM THE SERVICE PLUG TERMINAL**
18. **REINSTALL THE SERVICE PLUG**
19. **RECONNECT THE NEGATIVE (-) TERMINAL CABLE TO THE 12 VOLT AUXILIARY BATTERY**
20. **REINSTALL THE LUGGAGE COMPARTMENT FLOOR MAT**
21. **REINSTALL THE LAST CLIP THAT SECURES THE LUGGAGE TRIM COVER INNER LOWER**
22. **CHECK FOR AND CLEAR ANY DTC CODES AT THIS TIME**

F. HAZMAT DISPOSAL (PARTS AND TOOL CLEANING)

(a) Use all of the remaining boric acid and large amounts of lukewarm water to wash all the old parts and tools that have come into contact with the HV Battery. Place the waste liquid and old parts in the designated hazmat waste containers according to federal, state, and local regulations.

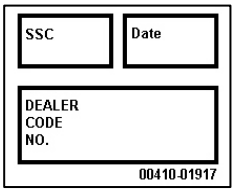
(b) Use the litmus paper to confirm that all chemicals have been neutralized.

G. SSC COMPLETION LABEL INSTALLATION

After completing repair and before returning the vehicle to the owner, a SSC completion label, which is enclosed in the owner's notification letter must be affixed to the left front door hinge post, near the check strap.

(a) The label is to be filled out as follows:

- Write in SSC 40G.
- Write in date of repair.
- Write in your dealer code.



(b) Additional SSC completion labels, in sheets of 50 (P/N 00410-01917), may be ordered through the non-parts system on a 1450 order form or through the TDN system.

H. APPPENDIX

MSDS Sheets for:

- Boric Acid
- 3M Sealer
- HV Battery

Product Safety Data Sheet

(Mixture)

MSDS No. Boric acid aqueous solution

1. Information about the Product and Manufacturer

1.1 Description of the Product

Chemical designation (product name): Boric acid aqueous solution
Product category: Cleaning fluid
Primary application: For cleaning parts

1.2 Information about the Manufacturer

Manufacturer name: Tsuchiya Chemical Company, Ltd.
Address (of head office): Kamimaezu 2-9-29, Naka-ku, Nagoya, Aichi 460-8330
Department: Research & Development Department
Phone: 0566-82-5811 Fax: 0566-83-2600
For detail, contact: R&D Dept.
Date of creation: December 12, 2003
Date of revision (version)

2. Chemical Composition

Simple substance or mixture: Mixture (water as main component and boric acid)

Components and their contents (only harmful components are listed)

Component	CAS No.	Content (%)	PRTR No.)	Safety and Heath Code No.	Remark
Boric acid	10043-35-3	5.4	Type 1 (304)	Not applicable	

PRTR (No.) The government ordinance No. on improvement of understanding and management of emissions of the designated chemical substance into the environment.

SAFETY AND HEALTY LAW The government ordinance No. on the substance designated by item 1, article 57-2 of the Occupational Safety and Health Law.

3. Harmfulness

Category: Criteria for categorization not applicable.
Comment on harmfulness: The substance gives no harm as far as it is used in an ordinary manner. It may give a harm if it is taken into the human body in a large volume.

4. First Aid

Contact with eyes: * Take off contact lenses if any.
* Do not rub your eyes. Immediately wash your eyes with a large quantity of clean (cold) running water and thoroughly wash to the rear of each eyelid. If you feel strange with your eyes, immediately consult a doctor.

Contact with skin: * If the substance comes into contact with or sticks to your skin, immediately wipe out with paper or cloth. If your clothes are contaminated, take them off and wash the affected part of your skin with a large quantity of water or soap.

* If your skin looks strange or aches, immediately consult a doctor.

If inhaled: * Not applicable.

If drunken: * If you drink the substance in a large volume by mistake, drink a large quantity of warm water (or milk) and let yourself vomit. Keep at rest and immediately consult a doctor.

5. Action to be Taken in Case of Disaster

Permissible fire extinguishers: Water [○], carbonic gas [○], foam [○], powder [○],
dry sand [○], other extinguishers [ ]

How to extinguish
* The product itself is incombustible and poses no danger of ignition or combustion. In case of fire, however, the following action should be taken.
* Wear suitable protective devices such as heat-resistant clothes and extinguish fire from the windward.
* Remove all combustible substances from the vicinity of the product.
* In case of big fire, use designated extinguishers.

6. Action to be Taken in Case of Leakage

* Leakage of the product in normal use is considered to have no problem. In certain cases, however, the following action should be taken.

In case of slight leakage:
* Absorb the product using sawdust, sand, waste cloth or paper and collect it into an empty container. After that, wash the area around the leakage with a large quantity of water. The water used for washing may be directly released into the waste water treatment system but not into the ground or drainage.

In case of significant leakage:
* Prevent the product from leaking out using sandback or such and collect it into an empty container using a pump or large spoon. When collecting, wear suitable protective devices such as gloves, protective mask, apron and goggles.
* In case of indoor leakage, open windows and doors for enough ventilation.
* Take care not to release the product into rivers and general drainage as doing so gives an impact on the environment.
* Dispose of the objects to which the product sticks and other wastes according to relevant laws.

7. Caution in Handling and Storage

Caution in handling:
* Tightly close the container after use.
* The product may be absorbed through a cut or degreased part of your skin. Do not handle it with bare hands.

Caution in storage:
* Do not expose the product to the direct sunlight.
* Store in a well-ventilated place.
* Do not put the product in a place where it may be exposed to high or freezing temperatures.

8. Prevention of Explosion and Protective Action

Protective equipment and devices: No special equipment is required.

Protection of respiratory organs:
* Not required under ordinary conditions of use.
* When using the product in a large quantity, do it in a well-ventilated place.

Protection of your eyes:
* Wear protective glasses.

Protection of your skin:
* Wear gloves of a material that does not transmit chemical substances.

9. Physical and Chemical Properties

Phase:	Liquid
Color:	Transparent
Odor:	Odorless
Specific gravity (density):	1.02 (30°C)
Boiling point (max to min):	100°C
pH	3.5 (30°C)
Solubility:	Water soluble
Flash point:	N/A
Fire point:	N/A
Explosion limit:	N/A

10. Stability and Responsiveness

Stability: The product is a saturated solution of boric acid. Boric acid is deposited at temperatures below 30°C.

Responsiveness: Not responsive.

Substances that give a harm in case of contact: No data available

Toxic gases generated by combustion: No data available

11. Harmfulness (including resultant symptoms and medical information)

Substance name	Concentration	ACGIH(TLV)	IRAC	Harmfulness
Boric acid	Not specified	Not specified	-	LD_{50} (through mouths of mice): 2,660mg/kg

Other information about harmfulness of components

* The following details have been reported about harmfulness of boric acid as a component.

Fatal dose:	5g for infants and 20g for adults
Other information:	Vomiting, diarrhea, exhaustion and/or red spots will result 2 to 3 hours after taken into the human body and death may result 3 to 5 days after that.
Typical acute symptoms:	Disorder of eyesight, conjunctivitis, chilling, vomiting, stomachache, diarrhea, emaciation, fever, red confluent spots, discomfort, jaundice, anuria, exhaustion due to poor circulation and convulsions

Information about harmfulness of the product

* The safety test has not been performed on the product.

12. Impact on the Environment

* Note that the product may affect the environment if leaked or thrown away.

13. Caution in Disposal

* Throw away the container after using up the product.
* Wastes such as concentrates and containers should be disposed of by a subcontracted, authorized industrial waste treatment agent.
* The water used for washing containers, machines and other equipment should not be directly released into the ground or drainage.
* The wastes generated by waste water treatment, incineration, etc. should also be treated or left to a subcontractor according to the laws related with waste treatment and cleaning.
* The water discharged by factories may be subject to the municipal control of boric acid ions.

14. Caution in Transportation

Common rules:	Follow the general instructions shown in the sections about caution in handling and storage. When transporting, load the product in such a manner as to avoid overturn, fall, damage and prevent collapse of the load.
Land transportation:	Follow the Fire Prevention Law, Occupational Safety and Health Law and other transportation related laws.
Marine transportation:	Follow the Shipping Safety Law.
Air transportation:	Follow the Aviation Law.

15. Major Applicable Laws

Laws related with waste treatment and cleaning

Ordinances for execution of the laws related with waste treatment and cleaning

Laws on promotion of management of chemical substances: Containing type 1 chemical substances

16. Other information (1)

Major quoted documents

* Solvents Pocket Book,	Ohm
* Guidelines for Creation of Product Safety Data Sheet,	Association of Japanese Chemical Industries
* Guidelines for Creation of Product Safety Data Sheet for Auto Chemical as revised,	Association of Japanese Auto Chemical Industries
* Product Safety Data Sheets	Respective manufacturers

17. Other information (2)

For detail,

Contact: Tsuchiya Chemical Company, Ltd.
Phone: 0566-82-5811
Fax: 0566-83-2600

[Notes]

Actual conditions of use and utilization of the information are beyond our control. The user of the product should take responsibility for determining safe conditions of use.
Use the product in a safe manner according to the latest information as obtained.
This document may be revised to reflect amendments to the laws and their validity and published results of future toxicity tests.
The product safety data sheet is provided as a guide for safe handling of a hazardous or harmful chemical product to the parties who will handle the product.
The parties should use the data sheet as a guide and take suitable action in handling the product according to their situation at thier cost.
This means that the data sheet itself does not guarantee the safety of the product.

3M

Material Safety Data Sheet

SECTION 1: PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: 3M(TM) WATER BASED ADHESIVE BOND 7 JA-7632
MANUFACTURER: 3M
DIVISION: Industrial Adhesives and Tapes
Sumitomo/3M Ltd.
ADDRESS: 3M Center
St. Paul, MN 55144-1000

EMERGENCY PHONE: 1-800-364-3577 or (651) 737-6501 (24 hours)

Issue Date: 02/20/2004
Supercedes Date: 01/06/2004

Document Group: 05-6980-6

Product Use:
Intended Use: BONDING PLASTICS, PAPER, WOOD, METAL, ESPECIALLY LIGHTWEIGHT MATERIAL, INSULATING MATERIAL.

SECTION 2: INGREDIENTS

Ingredient	C.A.S. No.	% by Wt
WATER	7732-18-5	35 - 50
ACRYLIC ACID, ALKYL ACRYLATE COPOLYMER	Trade Secret	25 - 35
GLYCEROL ESTER OF HYDROGENATED ROSIN	65997-13-9	10 - 15
ROSIN, POLYMER WITH PHENOL	68648-57-7	7 - 13
ETHYL ALCOHOL	64-17-5	1 - 5
HEPTANE	142-82-5	1 - 5
HEXANE	110-54-3	0.2 - 1.5
ROSIN	8050-09-7	0.1 - 1
TRIETHANOLAMINE	102-71-6	0.1 - 0.5

SECTION 3: HAZARDS IDENTIFICATION

3.1 EMERGENCY OVERVIEW

Odor, Color, Grade: SOLVENT ODOR, MILKY WHITE, PASTE
General Physical Form: Liquid
Immediate health, physical, and environmental hazards:: Closed containers exposed to heat from fire may build pressure and explode. Vapors may travel long distances along the ground or floor to an ignition source and flash back. Combustible liquid and vapor. May cause allergic skin reaction. May cause target organ effects. Contains a chemical or chemicals which can cause birth defects or other reproductive harm. Contains a chemical or chemicals which can cause cancer.

3.2 POTENTIAL HEALTH EFFECTS

Eye Contact:
Moderate Eye Irritation: Signs/symptoms may include redness, swelling, pain, tearing, and blurred or hazy vision.

Skin Contact:
Mild Skin Irritation: Signs/symptoms may include localized redness, swelling, and itching.

Prolonged or repeated exposure may cause:
Allergic Skin Reaction (non-photo induced): Signs/symptoms may include redness, swelling, blistering, and itching.

May be absorbed through skin and cause target organ effects.

Inhalation:
Upper Respiratory Tract Irritation: Signs/symptoms may include cough, sneezing, nasal discharge, headache, hoarseness, and nose and throat pain.

May be absorbed following inhalation and cause target organ effects.

Ingestion:
Gastrointestinal Irritation: Signs/symptoms may include abdominal pain, nausea, diarrhea and vomiting.

May be absorbed following ingestion and cause target organ effects.

Target Organ Effects:
Prolonged or repeated exposure may cause:
Central Nervous System (CNS) Depression: Signs/symptoms may include headache, dizziness, drowsiness, incoordination, nausea, slowed reaction time, slurred speech, giddiness, and unconsciousness.

Peripheral Neuropathy: Signs/symptoms may include tingling or numbness of the extremities, incoordination, weakness of the hands and feet, tremors and muscle atrophy.

Contains a chemical or chemicals which can cause birth defects or other reproductive harm.

Carcinogenicity:
Contains a chemical or chemicals which can cause cancer.

NOTE: This product contains ethanol. In IARC published Monograph No. 44, entitled, "Alcohol Drinking", the carcinogenicity of ethanol was determined based on chronic exposure to ethanol through human consumption of alcoholic beverages. This is not an expected effect during the foreseeable use of this product.

Ingredient	C.A.S. No.	Class Description	Regulation
ETHYL ALCOHOL	64-17-5	Group 1	International Agency for Research on Cancer

SECTION 4: FIRST AID MEASURES

4.1 FIRST AID PROCEDURES

The following first aid recommendations are based on an assumption that appropriate personal and industrial hygiene practices are followed.

Eye Contact: Flush eyes with large amounts of water. If signs/symptoms persist, get medical attention.

Skin Contact: Remove contaminated clothing and shoes. Immediately flush skin with large amounts of water. Get medical attention. Wash contaminated clothing and clean shoes before reuse.

Inhalation: Remove person to fresh air. If signs/symptoms develop, get medical attention.

If Swallowed: Do not induce vomiting. Give victim two glasses of water. Never give anything by mouth to an unconscious person. Get immediate medical attention.

SECTION 5: FIRE FIGHTING MEASURES

5.1 FLAMMABLE PROPERTIES

Autoignition temperature	*No Data Available*
Flash Point	43 °C
Flammable Limits - LEL	*No Data Available*
Flammable Limits - UEL	*No Data Available*
OSHA Flammability Classification:	Class IB Flammable Liquid

5.2 EXTINGUISHING MEDIA
Use fire extinguishers with class B extinguishing agents (e.g., dry chemical, carbon dioxide).

5.3 PROTECTION OF FIRE FIGHTERS

Special Fire Fighting Procedures: Water may not effectively extinguish fire; however, it should be used to keep fire-exposed containers and surfaces cool and prevent explosive rupture. Wear full protective equipment (Bunker Gear) and a self-contained breathing apparatus (SCBA).

Unusual Fire and Explosion Hazards: Closed containers exposed to heat from fire may build pressure and explode. Vapors may

travel long distances along the ground or floor to an ignition source and flash back. Combustible liquid and vapor.

Note: See STABILITY AND REACTIVITY (SECTION 10) for hazardous combustion and thermal decomposition information.

SECTION 6: ACCIDENTAL RELEASE MEASURES

Accidental Release Measures: Refer to other sections of this MSDS for information regarding physical and health hazards, respiratory protection, ventilation, and personal protective equipment. Call 3M-HELPS line (1-800-364-3577) for more information on handling and managing the spill. Evacuate unprotected and untrained personnel from hazard area. The spill should be cleaned up by qualified personnel. Remove all ignition sources such as flames, smoking materials, and electrical spark sources. Use only non-sparking tools. Ventilate the area with fresh air. For large spill, or spills in confined spaces, provide mechanical ventilation to disperse or exhaust vapors, in accordance with good industrial hygiene practice. Warning! A motor could be an ignition source and could cause flammable gases or vapors in the spill area to burn or explode. Contain spill. For larger spills, cover drains and build dikes to prevent entry into sewer systems or bodies of water. Working from around the edges of the spill inward, cover with bentonite, vermiculite, or commercially available inorganic absorbent material. Mix in sufficient absorbent until it appears dry. Remember, adding an absorbent material does not remove a toxic, corrosivity or flammability hazard. Collect as much of the spilled material as possible using non-sparking tools. Clean up residue with detergent and water. Collect the resulting residue containing solution. Place in a metal container approved for transportation by appropriate authorities. Cover, but do not seal for 48 hours. Dispose of collected material as soon as possible.

In the event of a release of this material, the user should determine if the release qualifies as reportable according to local, state, and federal regulations.

SECTION 7: HANDLING AND STORAGE

7.1 HANDLING

Avoid eye contact with vapors, mists, or spray. Avoid breathing of vapors, mists or spray. Do not eat, drink or smoke when using this product. Wash exposed areas thoroughly with soap and water. Ground containers securely when transferring contents. Wear low static or properly grounded shoes. Do not spray near flames or sources of ignition. For industrial or professional use only. Keep away from heat, sparks, open flame, pilot lights and other sources of ignition. Avoid contact with oxidizing agents.

7.2 STORAGE

Store away from acids. Store away from heat. Store out of direct sunlight. Store away from oxidizing agents.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 ENGINEERING CONTROLS

Use with functioning spray booth or local exhaust. Use with appropriate local exhaust ventilation. Use general dilution ventilation and/or local exhaust ventilation to control airborne exposures to below Occupational Exposure Limits and/or control mist, vapor, or spray. If ventilation is not adequate, use respiratory protection equipment.

8.2 PERSONAL PROTECTIVE EQUIPMENT (PPE)

8.2.1 Eye/Face Protection

Avoid eye contact with vapors, mists, or spray.
The following eye protection(s) are recommended: Indirect Vented Goggles.

8.2.2 Skin Protection

Avoid skin contact. Select and use gloves and/or protective clothing to prevent skin contact based on the results of an exposure assessment. Consult with your glove and/or protective clothing manufacturer for selection of appropriate compatible materials.

8.2.3 Respiratory Protection
Avoid breathing of vapors, mists or spray.
Select one of the following NIOSH approved respirators based on airborne concentration of contaminants and in accordance with OSHA regulations: Half facepiece or fullface air-purifying respirator with organic vapor cartridges. Consult the current 3M Respiratory Selection Guide for additional information or call 1-800-243-4630 for 3M technical assistance.

8.2.4 Prevention of Swallowing
Do not eat, drink or smoke when using this product. Wash exposed areas thoroughly with soap and water.

8.3 EXPOSURE GUIDELINES

Ingredient	Authority	Type	Limit	Additional Information
ETHYL ALCOHOL	ACGIH	TWA	1000 ppm	Table A4
ETHYL ALCOHOL	OSHA	TWA	1000 ppm	Table Z-1
HEPTANE	ACGIH	TWA	400 ppm	
HEPTANE	ACGIH	STEL	500 ppm	
HEPTANE	OSHA	TWA, Vacated	400 ppm	
HEPTANE	OSHA	TWA	500 ppm	Table Z-1
HEPTANE	OSHA	STEL, Vacated	500 ppm	
HEXANE	ACGIH	TWA	50 ppm	Skin Notation*
HEXANE	OSHA	TWA, Vacated	50 ppm	Table Z-1A
HEXANE	OSHA	TWA	500 ppm	Table Z-1A
HEXANE (ISOMERS OTHER THAN N-HEXANE)	ACGIH	TWA	500 ppm	
HEXANE (ISOMERS OTHER THAN N-HEXANE)	ACGIH	STEL	1000 ppm	
ROSIN	ACGIH	TWA	Reduce exposure to as low as possible	Sensitizer, see limit column
TRIETHANOLAMINE	ACGIH	TWA	5 mg/m3	

* Substance(s) refer to the potential contribution to the overall exposure by the cutaneous route including mucous membrane and eye, either by airborne or, more particularly, by direct contact with the substance. Vehicles can alter skin absorption.

VAC Vacated PEL:Vacated Permissible Exposure Limits [PEL] are enforced as the OSHA PEL in some states. Check with your local regulatory agency.

SOURCE OF EXPOSURE LIMIT DATA:
ACGIH: American Conference of Governmental Industrial Hygienists
CMRG: Chemical Manufacturer Recommended Guideline
OSHA: Occupational Safety and Health Administration
AIHA: American Industrial Hygiene Association Workplace Environmental Exposure Level (WEEL)

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

Odor, Color, Grade:	SOLVENT ODOR, MILKY WHITE, PASTE
General Physical Form:	Liquid
Autoignition temperature	*No Data Available*
Flash Point	43 °C
Flammable Limits - LEL	*No Data Available*
Flammable Limits - UEL	*No Data Available*
Boiling point	*Not Applicable*
Vapor Density	*No Data Available*
Vapor Pressure	*No Data Available*
Specific Gravity	1.0 [*Ref Std:* WATER=1]
pH	8.5
Melting point	*No Data Available*
Evaporation rate	*No Data Available*
Volatile Organic Compounds	9.1 %
Percent volatile	47 %
VOC Less H2O & Exempt Solvents	*No Data Available*
Viscosity	5000 centipoise

SECTION 10: STABILITY AND REACTIVITY

Stability: Stable.

Materials and Conditions to Avoid: Strong acids; Strong oxidizing agents; Heat

Hazardous Polymerization: Hazardous polymerization will not occur.

Hazardous Decomposition or By-Products

Substance	Condition
Hydrocarbons	During Combustion
Carbon monoxide	During Combustion
Carbon dioxide	During Combustion

SECTION 11: TOXICOLOGICAL INFORMATION

Please contact the address listed on the first page of the MSDS for Toxicological Information on this material and/or its components.

SECTION 12: ECOLOGICAL INFORMATION

ECOTOXICOLOGICAL INFORMATION

Not determined.

CHEMICAL FATE INFORMATION

Not determined.

SECTION 13: DISPOSAL CONSIDERATIONS

Waste Disposal Method: Incinerate in a permitted hazardous waste incinerator. As a disposal alternative, dispose of waste product in a permitted hazardous waste facility.

EPA Hazardous Waste Number (RCRA): D001 (Ignitable)

Since regulations vary, consult applicable regulations or authorities before disposal.

SECTION 14:TRANSPORT INFORMATION

ID Number(s):
JS-3000-0001-0, JS-3000-3025-6, JS-3000-3265-8, JS-3000-4000-8, JS-7503-4300-1

Proper Shipping Name:	Adhesives
Hazards Class:	3
UN Number:	1133
Packing Group:	III

These transportation classifications are provided as a customer service. As the shipper YOU remain responsible for complying with all applicable laws and regulations, including proper classification and packaging. 3M's classifications are based on product formulation, packaging, 3M policies and 3M's understanding of applicable current regulations. 3M does not guarantee the accuracy of this classification information.

This information applies only to transportation classifications and NOT the packaging, labeling and marking requirements.

Please contact the emergency numbers listed on the first page of the MSDS for Transportation Information for this material.

SECTION 15: REGULATORY INFORMATION

US FEDERAL REGULATIONS

Contact 3M for more information.

311/312 Hazard Categories:
Fire Hazard - Yes Pressure Hazard - No Reactivity Hazard - No Immediate Hazard - Yes Delayed Hazard - Yes

Section 313 Toxic Chemicals subject to the reporting requirements of that section and 40 CFR part 372 (EPCRA):

Ingredient	C.A.S. No	% by Wt
HEXANE	110-54-3	0.2 - 1.5

This material contains a chemical which requires export notification under TSCA Section 12[b]:

Ingredient (Category if applicable)	C.A.S. No	Regulation	Status
HEXANE	110-54-3	Toxic Substances Control Act (TSCA) 4 Test Rule Chemicals	Applicable

STATE REGULATIONS

Contact 3M for more information.

CHEMICAL INVENTORIES

Contact 3M for more information.

INTERNATIONAL REGULATIONS

Contact 3M for more information.

WHMIS: Hazardous

This MSDS has been prepared to meet the U.S. OSHA Hazard Communication Standard, 29 CFR 1910.1200.

SECTION 16: OTHER INFORMATION

NFPA Hazard Classification

Health: 2 **Flammability:** 3 **Reactivity:** 0 **Special Hazards:** None

National Fire Protection Association (NFPA) hazard ratings are designed for use by emergency response personnel to address the hazards that are presented by short-term, acute exposure to a material under conditions of fire, spill, or similar emergencies. Hazard ratings are primarily based on the inherent physical and toxic properties of the material but also include the toxic properties of combustion or decomposition products that are known to be generated in significant quantities.

Revision Changes: Not Applicable

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3M MSDSs are available at www.3M.com

MATERIAL SAFETY DATA SHEET

Nickel/Metal Hydride Battery (EV-P6R5)

SECTION I - Chemical Product & Company

Manufacturer's Name
Panasonic EV Energy Co., Ltd.

Manufacturer's Emergency Telephone Number
(81)-53-577-3112. Munehisa Ikoma

Manufacturer's Mailing Address
555 Sakai juku, Kosai, Shizuoka 431-0452 JAPAN

Date Prepared
Aug. 26, 1999

Signature of Preparer (Optional)

SECTION II - Hazardous Ingredients/Identity Information

Hazardous Components (Specific Chemical Identity: Common Name (s))	OSHA PEL ACGIH TLV	Other Limits Recommended	Formulation (%) W/V	
Ni (OH)2			0~15%	W
NiOOH			1~17%	W
MmNiCoMnAl			2~21%	W
(MmNiCoMnAl) Hx			3~22%	W
KOH and NaOH and LiOH			12%	W

Other Material:
Battery Case : Plastics (PPE/PP/HSBBC/HSIBC Blend)
PPE: Poly Phenylene Ether, PP: Polypropylene
HSBBC: Hydrogenated Styrene Butadiene Block Copolymer
HSIBC: Hydrogenated Styrene Isoprene Block Copolymer
Separater: Polypropylene-Polyolefine mixed Sheet

SECTION III - Physical/Chemical Characteristics

Boiling Point
Approximate 170°C

Specific Gravity (H_2O=1)
1.9

Vapor Pressure (mm Hg)
N/A

Melting Point
N/A

Vapor Density (Air=1)
N/A

Evaporation Rate (Butyl Acetate=1)
N/A

Solubility in Water (v/v)
N/A

Appearance and Odor
Note:

- Nickel/Metal hydride battery is solid and sealed by the plastics case. And it will not generate any gas in the static situation. In the atmosphere, it keeps the solid situation and also in the water, it keeps the solid situation.
- In the non-static situation, it may generate oxygen (O_2) in the overcharged status and hydrogen (H_2) in the overdischarged status. Any by the safety vent inside of the Nickel/Metal hydride battery, those gases may be out of the case to the atmosphere. Speed of gas generation and volume of gas generation depend upon the charging or discharging condition.

SECTION IV - Fire and Explosion Hazard Date

Flash Point (Method Used)	Flammable Limits	LEL	UEL
	N/A		

Note:

- No flash or explosion in the normal situation.
- Flash may be possible in the following cases:
  - Sparking in the case of the short-circuit.
  - Intentionally discharging the cell and/or the module battery with extremely high current.
- Explosion may be possible in the following case:

  Cell itself will not have explosion if abused because of its safety vent mechanism. However in the case that the cell were housed in the complete sealed vessel, cell will have the status of possible explosion with the ignition source because of combination of oxygen (0_2) and hydrogen (H_2) generated by the cell.
- Unusual fire and explosion hazards.

Extinguishing media

- CO_2
- Sand
- Large amounts of water

Special Fire-fighting Procedures

N/A

Unusual fire and explosion hazards

- In the abnormal usage, there is the possibility of explosion.
- The abnormal usage conditions:
  - Cell was overcharged and overdischarged.
  - Cell was higher than 100°C.
  - In the complete sealed vessel, the cell was discharged and charged and in the vessel the ignition source existed.

SECTION V - Reactivity Data

Stability	Unstable	Conditions to Avoid
Stable	Stable ○	

Incompatibility (Materials to Avoid)

N/A

Hazardous Decomposition or By-products

- Disassembling the module battery — • Danger of short-circuiting.
- Disassembling the single cell — • Danger of short-circuiting.
  • Alkaline liquid out.
  • Alkaline liquid to the skin.

Hazardous Polymerization	May Occur	Conditions to Avoid
	Will Not Occur ○	

SECTION VI - Health Hazard Data

Route (s) Entry: Inhalation? Skin? Ingestion?

- Inhalation: Any poisonous gas will not be generated. Inhalation of the gas will not give any harm.
- Skin: In the normal situation, no damage to skin. However, in the abused situation the electrolyte (alkaline liquid) will be leaked out of the case which may damage the skin if touched.
- Ingestion: No ingestion.

Health Hazards (Acute and Chronic)
Will not give any hazards in the long run. However, leaked alkaline liquid may damage the skin if touched.

Carcinogenicity: NTP? IARC Monographs? OSHA Regulated?
No Carcinogen

Signs and Symptoms of Exposure

—

Medical Conditions Generally Aggravated by Exposure

—

Emergency and First Aid Procedures

—

SECTION VII - Precautions for Safe Handling and Use

Steps to Be Taken in Case Material is Released or Spilled
Don't disassemble the module and the cell. If disassembled the module and the cell, be storaged under water immediately and precaution that the alkaline liquid leaked out of the module the cell shall not be put in the eyes is needs. If it was put into the eyes, eyes shall be washed out immediately with large amount water and/or boric acide aqueous solution. If the alkaline liquid was attached to the skin, skin shall be washed out immediately with large amount water and/or boric acide aqueous solution.

Waste Disposal Method
To be disposed in the discharged condition.

Precautions to Be Taken in Handling and Storing
Never short-circuit the cells and/or the module battery. If short-circuited, body may be burned or injured.

Other Precautions

SECTION VI - Health Hazard Data

Route (s) Entry: Inhalation? Skin? Ingestion?

- Inhalation: Any poisonous gas will not be generated. Inhalation of the gas will not give any harm.
- Skin: In the normal situation, no damage to skin. However, in the abused situation the electrolyte (alkaline liquid) will be leaked out of the case which may damage the skin if touched.
- Ingestion: No ingestion.

Health Hazards (Acute and Chronic)
Will not give any hazards in the long run. However, leaked alkaline liquid may damage the skin if touched.

Carcinogenicity: NTP? IARC Monographs? OSHA Regulated?
No Carcinogen

Signs and Symptoms of Exposure
—

Medical Conditions Generally Aggravated by Exposure
—

Emergency and First Aid Procedures
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Waste Disposal Method
To be disposed in the discharged condition.

Precautions to Be Taken in Handling and Storing
Never short-circuit the cells and/or the module battery. If short-circuited, body may be burned or injured.

Other Precautions

SECTION VIII - Control Measures

Respiratory Protection (Specify Type)
In the normal condition, it is not needed specifically.

Ventilation **Local Exhaust** **Special**

Mechanical (General) **Other**

Note:

- It is never admitted to use the module battery in the complete sealed vessel.
- In the usage of the vessel, any ventilation holes are needed.

Protective Gloves Rubber

Eye Protection Wear splash proof goggles

Note:

- In the case of intentionally disassembling the cell and/or the module battery, protection of anti-alkaline is absolutely needed.

Other Protective Clothing of Equipment

N/A

Work/Hygienic Practices

N/A