



Technical Service BULLETIN

January 12, 2001

Title:

MAINTENANCE FOR HV & AUXILIARY BATTERIES AT PORT & DEALERS

Models:

'01 – '03 Prius

REVISED

PG001-01

PRODUCT GENERAL INFORMATION

TSB REVISION NOTICE:

- October 2, 2003: Instructions for finding current STK# added to section C-3a on page 5. Special Service Tools table added on page 2. Charger SST (P/N 00002-YA121-01) updated to P/N 00002-YA122-01. "Note" clarified in section D on page 6. Screen flows updated on pages 8 – 11.
- March 4, 2003: Applicable Vehicles expanded to include 2002 and 2003 model years.
- The information contained in this TSB updates PG009-00 dated June 23, 2000.
- Previous TSBs should be discarded.

Introduction

The Prius hybrid vehicle is equipped with 2 types of special batteries, a 273.6 volt HV (Hybrid Vehicle) battery and a 12-volt auxiliary battery. HV and auxiliary batteries need the following maintenance service at Port of Entry/Dealers.

Maintenance Items at Port of Entry Distribution Center

CONDITION		ACTION
A	<u>Just after unloading</u> and then <u>every 2 months</u> . This item may be omitted for vehicles being directly delivered to customers such as fleet owners and regions within 10 days.	Keep "Hybrid System" ON for 30 minutes.
B	For vehicles to be stored over 10 days.	Disconnect negative terminal from 12-volt auxiliary battery.
C	For vehicles to be directly delivered to customers such as fleet owners and regions, this item must be done.	Fully charge 12-volt auxiliary battery using specified SST.
D	For vehicles to be directly delivered to customers such as fleet owners and regions, this item must be done.	Perform "Onboard Equalizing Charge" of HV battery using the Diagnostic Tester.

Maintenance Items at Dealers

CONDITION		ACTION
A	<u>Just after unloading</u> and then <u>every 2 months</u> . This item may be omitted for vehicles to be delivered to customers within 10 days.	Keep "Hybrid System" ON for 30 minutes.
B	For vehicles to be stored over 10 days.	Disconnect negative terminal from 12-volt auxiliary battery in storage.
C	Before delivery to customers, this item must be done.	Fully charge 12-volt auxiliary battery using specified SST.
D	Before delivery to customers, this item must be done.	Perform "Onboard Equalizing Charge" of HV battery using the Diagnostic Tester.

Applicable Vehicles

- 2001 – 2003 model year **Prius** vehicles.




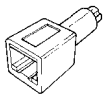

Warranty Information

OP CODE	DESCRIPTION	TIME	OFF	T1	T2
N/A	Not Applicable to Warranty	–	–	–	–



Toyota Supports ASE Certification

Required SSTs

SPECIAL SERVICE TOOLS (SSTs)	PART NUMBER	QUANTITY
Toyota Diagnostic Tester Kit* 	01001271	1
12 Megabyte Diagnostic Tester Program Card with version 10.1a Software (or later)* 	01002593-005	1
Midtronics Battery Tester* 	00002-MP815-T	1
Midtronics Battery Tester Adapter* 	00002-DMPUC	1
Prius Automatic Charger 	00002-YA122-01**	1

* Essential SSTs.

** Supersedes 00002-YA121-01. P/N 00002-YA121-01 may still be used (with switch in 10 AMP position).

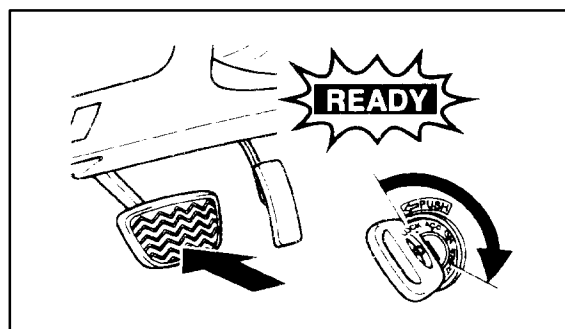
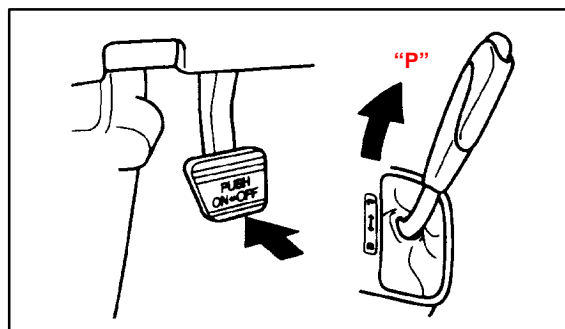
NOTE:

Additional Diagnostic Tester Kits, Program Cards or other SSTs may be ordered by calling SPX/OTC at 1-800-933-8335.

Maintenance Procedure

A. Keep “Hybrid System” ON for 30 Minutes.

1. Park the vehicle in a well-ventilated area or connect an exhaust extraction hose to the exhaust pipe.
2. Apply the parking brake.
3. Turn off all lights and accessories.
4. Put the running mode selector lever in “P.”
5. Turn and hold the ignition switch to “START” with the brake pedal depressed. The vehicle has started when the “READY” indicator remains on steady and a beep sounds. Then, release the ignition key.

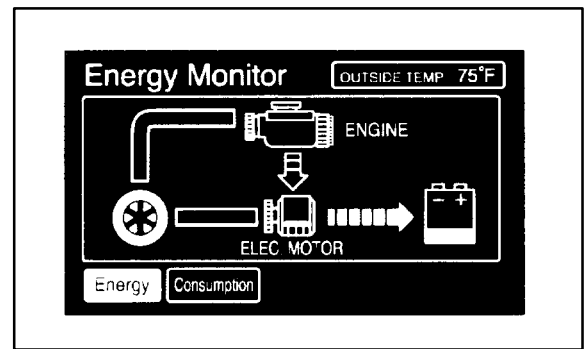


Maintenance Procedure (Continued)

6. Keep the “READY” light on for 30 minutes.

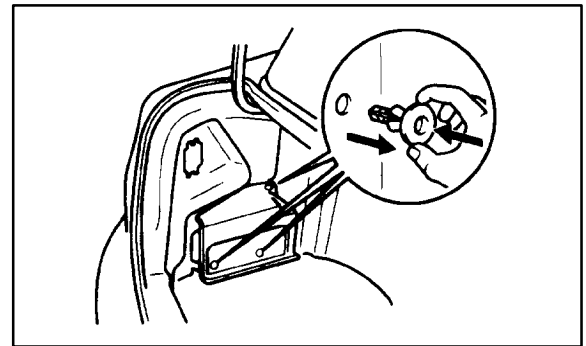
NOTE:

When remaining capacity of HV Battery is low, the gasoline engine automatically starts and HV battery is charged by the generator (indicated as the ELEC. MOTOR on the multi-information display.) The 12-volt auxiliary battery is also charged by HV battery regardless of the gasoline engine operation.



B. Vehicle Storage – Disconnect Negative Battery Terminal from 12-volt Auxiliary Battery.

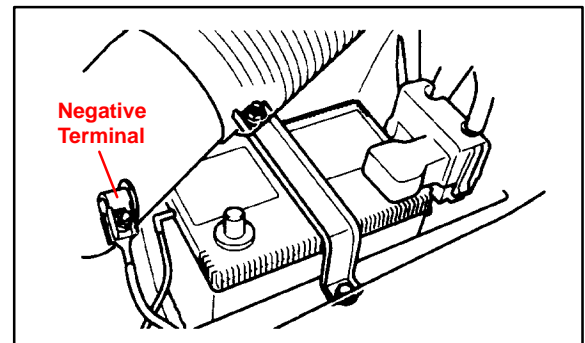
1. Turn off all lights and accessories.
2. Remove ignition key.
3. Remove the auxiliary battery cover.



4. Disconnect the negative terminal from the auxiliary battery.

NOTE:

When it is necessary to move the vehicle, reconnect the negative battery terminal. Torque: 52 in.·lbf (60 kgf·cm, 4.3 ft·lbf)



C. Fully Charge 12-volt Auxiliary Battery.

1. Remove the auxiliary battery.
 - a. Turn off all lights and accessories.
 - b. Remove the ignition key.
 - c. Remove the auxiliary battery cover and protector.
 - d. Remove the positive terminal cover.
 - e. Disconnect the vent hose.

NOTE:

Be careful not to damage the plastic vent fitting.

- f. Disconnect the battery (always disconnect negative battery terminal first).
- g. Remove the hold-down clamp and auxiliary battery.
- h. Remove the auxiliary battery from the vehicle and place it in a safe location for charging purposes.

Maintenance Procedure (Continued)

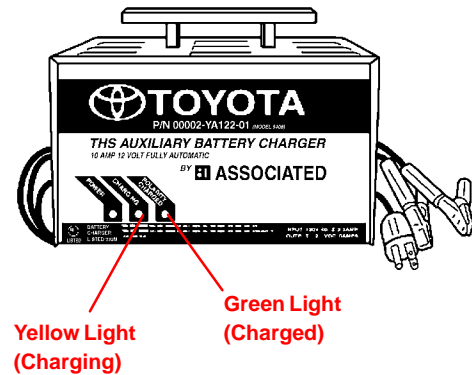
2. Charge the 12 Volt Auxiliary Battery.

CAUTION:

- Do not charge with the battery mounted in the vehicle.
- Charge in a well-ventilated area.
- Do not allow sparks or fire near the battery.

- Obtain the Prius Automatic Charger (P/N 00002-YA122-01*).
 - * Supersedes P/N 00002-YA121-01. P/N 00002-YA121-01 may still be used (with switch in 10 AMP position).

Prius Automatic Charger
(P/N 00002-YA122-01*)



NOTE IF USING P/N 00002-YA121-01:

Ensure that the charge current switch is set on the 10 AMP position. When operated in the 10 AMP position, the Prius Automatic Charger (SST P/N 00002-YA121-01) is designed to automatically regulate charging current and voltage. Using this mode, the charger will minimize charge time, while preventing overheating and possible battery damage. Charging in the 2 AMP position is not recommended for the Prius 12-volt battery, due to prolonged charge time.

CAUTION:

Use of standard battery chargers is NOT recommended on the Prius 12-volt auxiliary battery, in order to prevent battery damage.

- Connect the red charger clamp to the positive battery terminal and the black charger clamp to the negative battery terminal.
- Plug the charger into a grounded 110V nominal outlet and verify the RED "POWER" light is on.

NOTE:

The Prius 12-volt auxiliary battery charger (SST P/N 00002-YA122-01) control tests for correct polarity before applying current to the battery (a built-in safety feature). When connected properly, the GREEN light will come on for 2 seconds before the YELLOW light comes on. If no lights come on, check for proper connection and/or a dead battery. If the battery is dead, test it using the Midtronics Battery Tester.

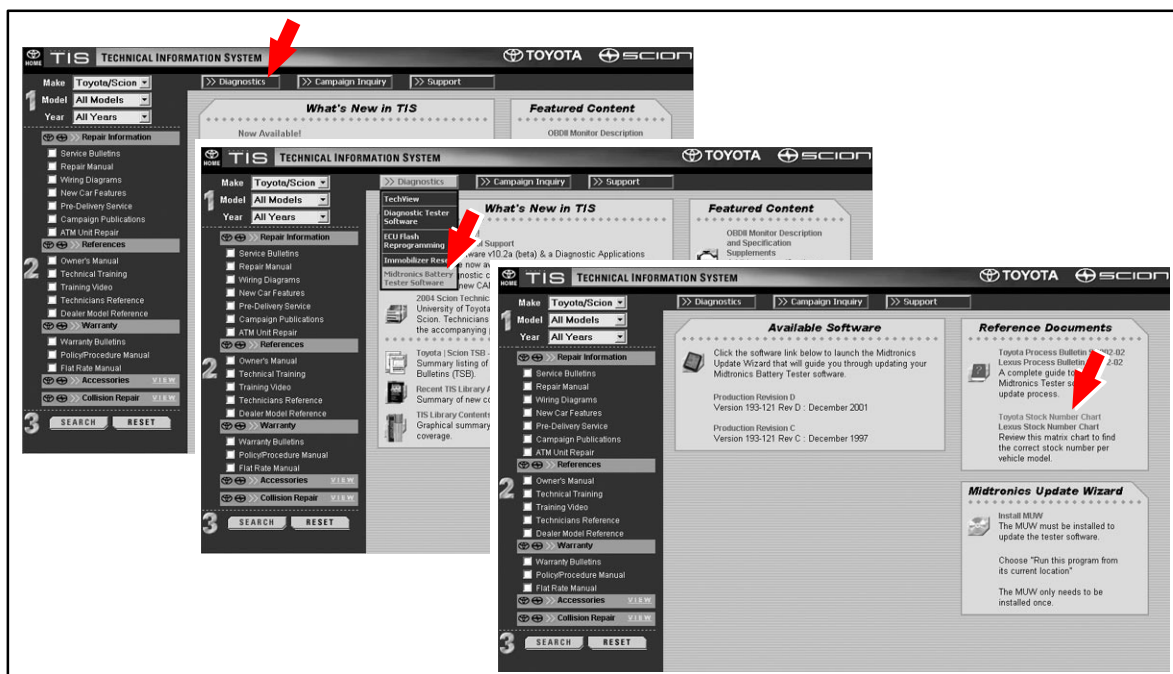
- Once the charger is properly connected, the YELLOW light indicates the battery is charging.
- The battery is charged once the GREEN light comes on.

NOTE:

The GREEN charged light and YELLOW charging light will switch back and forth once the battery is at 80% state of charge. At this point the battery is charged and may be returned to the vehicle. If you continue charging, the switching between YELLOW (charging) and GREEN (charged) will slow until the GREEN (charged) light stays on continuously at 100% state of charge.

Maintenance Procedure (Continued)

3. Test Auxiliary Battery (if necessary).
 - a. Test battery using the Midtronics Tester (SST P/N 00002–MP815–T.) Please refer to TIS for the current STK#.
 - From the first TIS screen, select “Diagnostics,” then
 - “Midtronics Battery Tester Software,” then
 - “Toyota Stock Number Chart.”

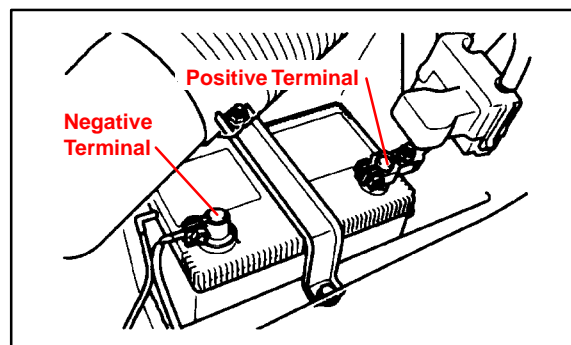


- b. If the Midtronics Tester indicates to replace the battery, order the appropriate Toyota Genuine Battery, P/N 28800–21050.
 - c. The Prius auxiliary battery is not part of the TrueStart™ Replacement Program.

NOTE:

The Prius auxiliary battery is a special Valve Regulated Absorbed Glass Mat (AGM) design and should **NEVER** be replaced with a conventional battery design.

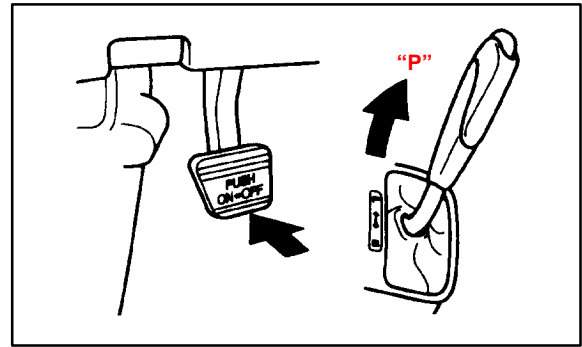
4. Install the auxiliary battery.
 - a. Place the auxiliary battery in the correct position and install the hold-down clamp.
 - b. Connect the vent hose.
 - c. Connect the positive terminal first, and then the negative terminal. (Reverse order of disconnecting battery.)
**Torque: 52 in.·lbf
(60 kgf·cm, 4.3 ft·lbf)**
 - d. Install the positive terminal cover.
 - e. Install the protector and battery cover.



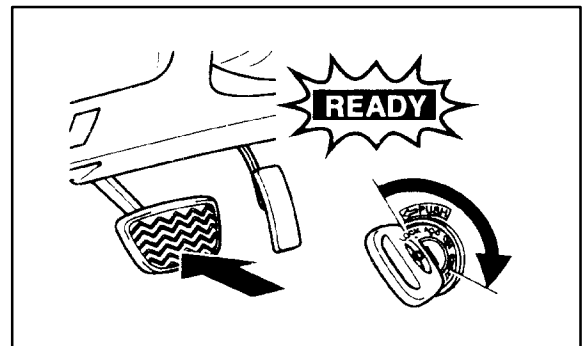
**Maintenance
Procedure
(Continued)****D. Onboard Equalizing Charge of
HV Battery.****NOTE:**

Conditions for “Onboard Equalizing Charge” are:

- “READY” light ON.
- Running mode selector lever in “P.”
- HV battery temperature between 10°C and 45°C. (50°F and 113°F)
- The 4 temperature sensors in the HV battery must be within 20° of each other.
- HV battery SOC (State Of Charge) below 70%.



1. Park the vehicle in a well-ventilated area or connect an exhaust extraction hose to the exhaust pipe.
2. Apply the parking brake.
3. Turn off all lights and accessories.
4. Put the running mode selector lever in “P.”
5. Turn and hold the ignition switch to “START” with the brake pedal depressed. The vehicle has started when the “READY” indicator remains on steady and a beep sounds. Then, release the ignition key.



6. Using the Diagnostic Tester with program card version 10.1a or later, perform “Onboard Equalizing Charge” of the HV battery as outlined in Screen Flow 1.
 - During “Onboard Equalizing Charge,” the gasoline engine will continuously run allowing the generator to slow charge the HV battery pack fully. The procedure will last approximately 30 minutes.
 - When the “Onboard Equalizing Charge” is completed, the gasoline engine stops, the energy flow to the HV battery stops in the multi-information display, and the battery icon shows a full charge.

Maintenance Procedure (Continued)

NOTE:

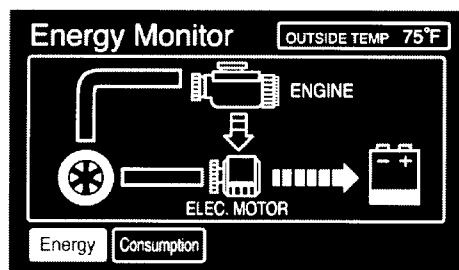
- Normally the A/C should be turned off. Otherwise, the engine may continue to run after “Onboard Equalizing Charge” is complete.
- In high ambient temperatures (90°F or higher) the A/C should be run with all windows closed to allow the cool air to circulate in the battery pack during “Onboard Equalizing Charge” and prevent interruption of the process due to elevated battery pack temperature.

Recommended settings:

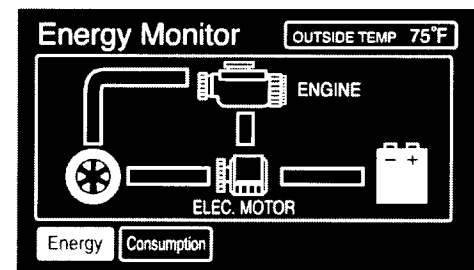
- A/C button “ON.”
- Blower dial set to “AUTO.”
- Temperature dial set to 70°F.

MULTI-INFORMATION DISPLAY: To access the Energy Monitor Screen

- Push the “INFO” button on the center dash.
- Touch the “TRIP INFORMATION” icon on the multi-information display.
- Touch the “ENERGY” icon on the touch screen to display the energy monitor.



During Equalization



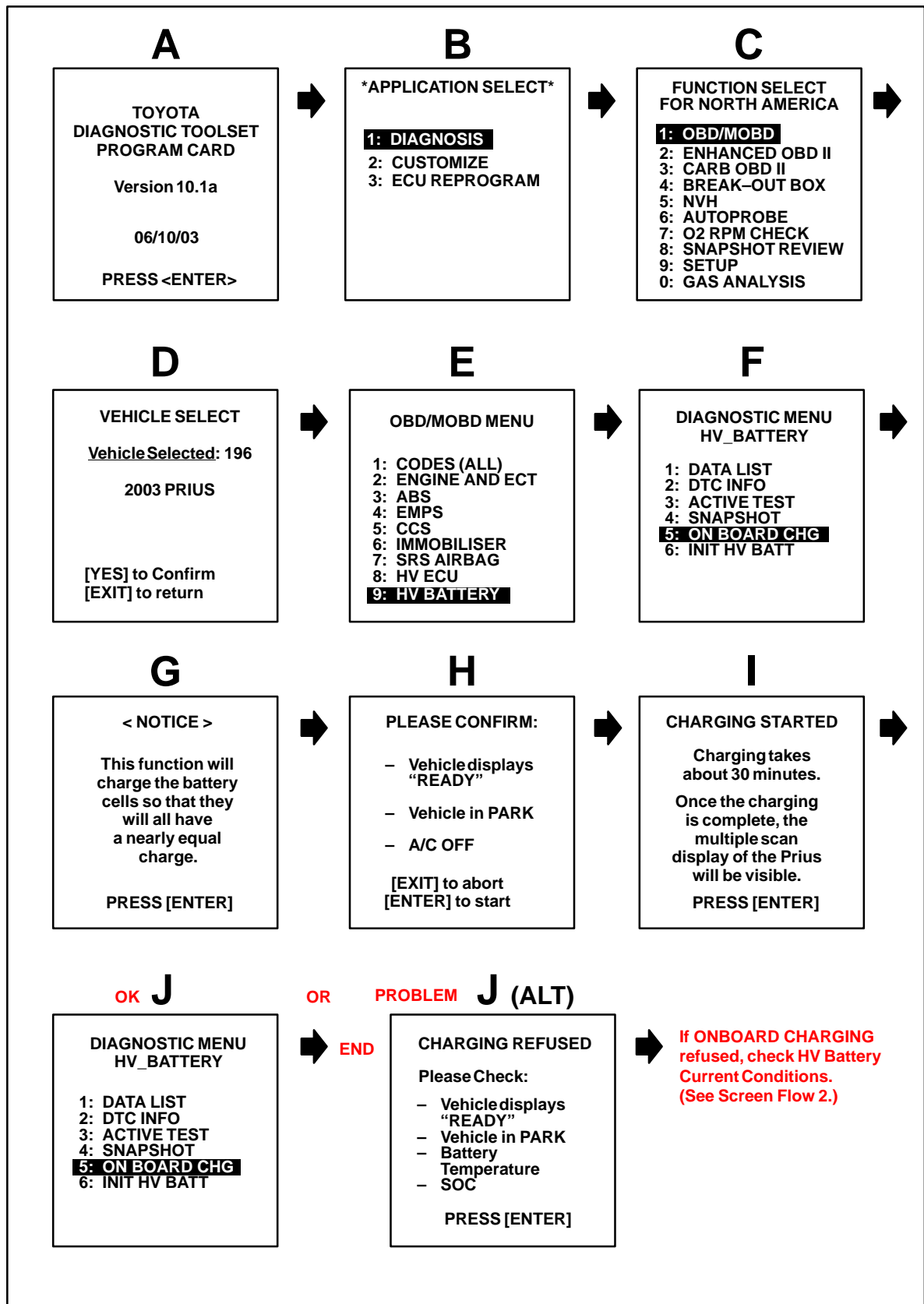
Equalization Completed

7. After completion of “Onboard Equalizing Charge,” leave the vehicle with the ignition switch in “ON” (“READY” light off) and the running mode selector lever in “P” for 10 minutes to cool down the HV battery.

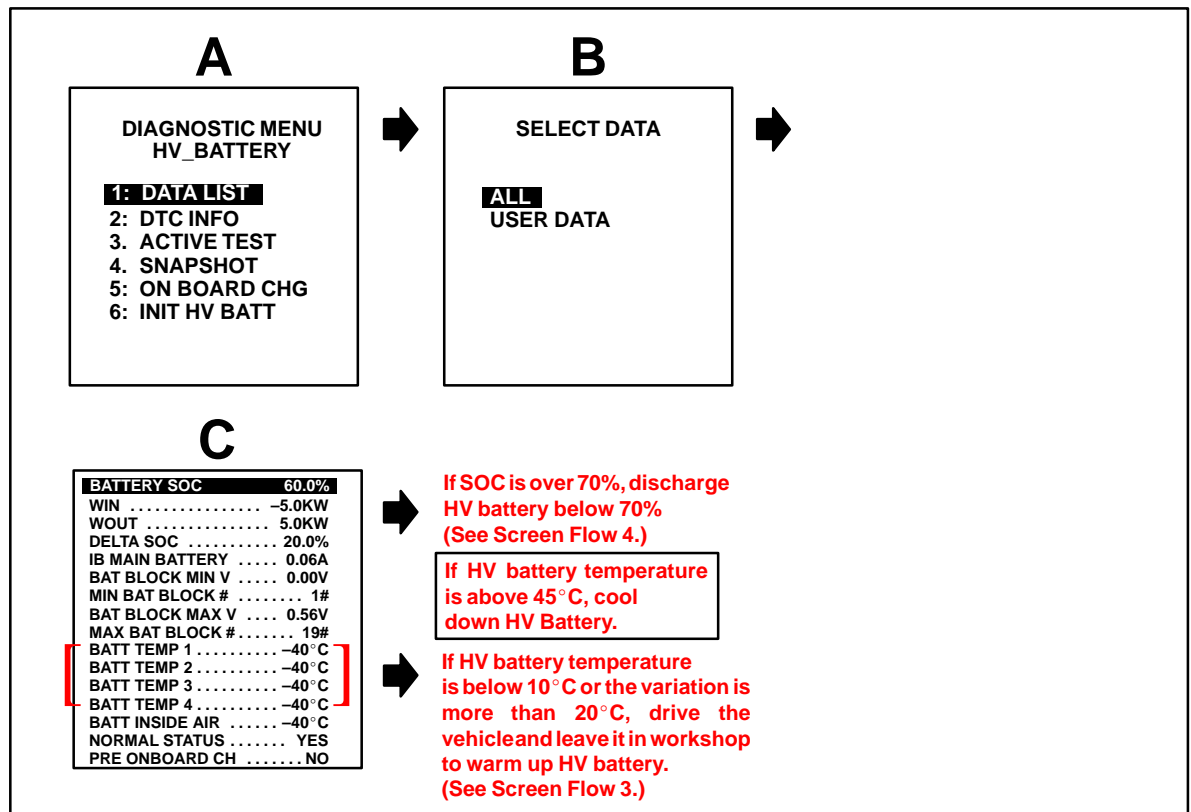
NOTE:

HV battery is cooled down by the HV battery cooling fan.

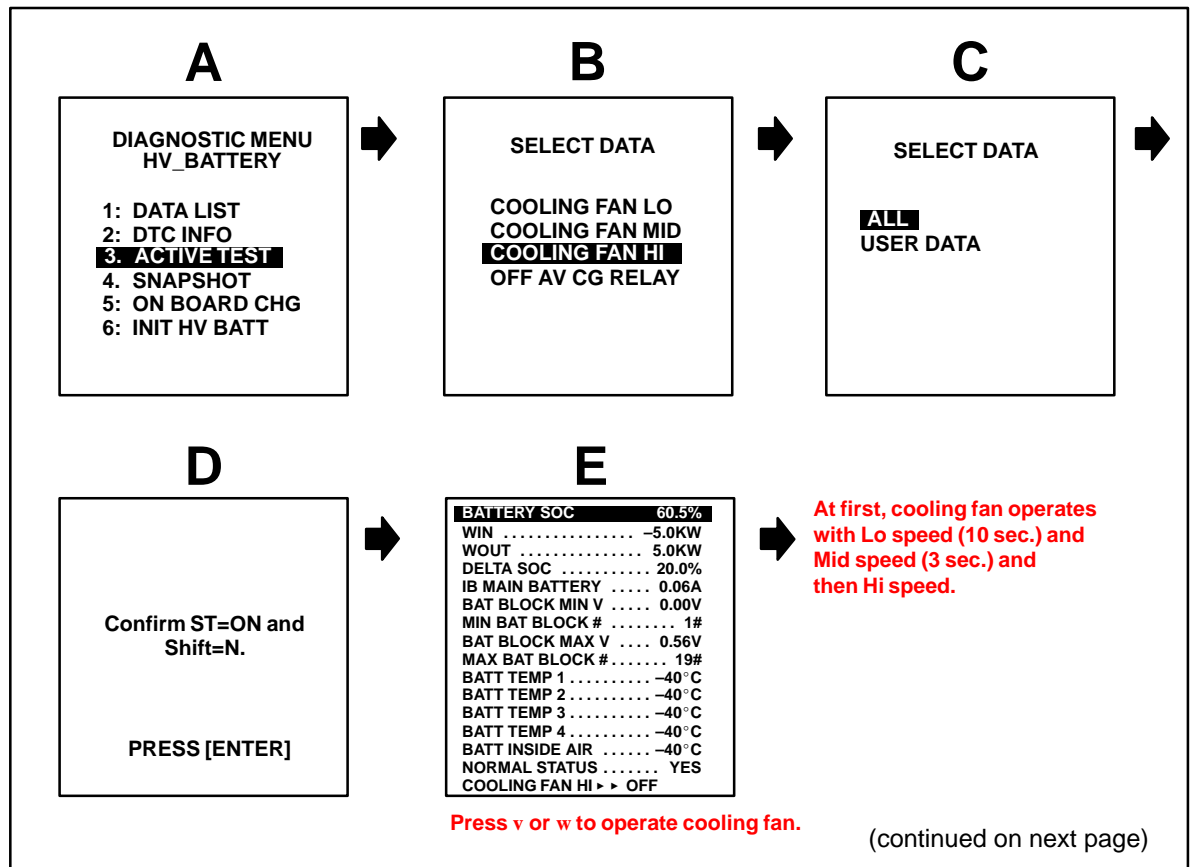
Screen Flow 1:
Onboard
Equalizing
Charge of
HV Battery



Screen Flow 2: HV Battery Current Conditions



Screen Flow 3: HV Cooling Fan Active Test



Screen Flow 3:
HV Cooling Fan
Active Test
(Continued)

F

BATTERY SOC60.5%

WIN.....-5.0KW

WOUT.....5.0KW

DELTA SOC.....20.0%

IB MAIN BATTERY.....0.06A

BAT BLOCK MIN V.....0.00V

MIN BAT BLOCK #.....1#

BAT BLOCK MAX V.....0.56V

MAX BAT BLOCK #.....19#

BATT TEMP 1.....-40°C

BATT TEMP 2.....-40°C

BATT TEMP 3.....-40°C

BATT TEMP 4.....-40°C

BATT INSIDE AIR.....-40°C

NORMAL STATUS.....YES

COOLING FAN LO > > ON

➔

After HV battery temperature drops below 35°C,

press <EXIT> key to stop this function.

Try again “Onboard Equalizing Charge.”

Return to Step D, page 6.

G

OBD/MOBD MENU

1: CODES (ALL)

2: ENGINE AND ECT

3: ABS

4: EMPS

5: CCS

6: IMMOBILISER

7: SRS AIRBAG

8: HVECU

9: HV BATTERY

Screen Flow 4:
Discharge HV
Battery

