

Replace Toyota Prius 2006 Hybrid Battery (HB) weak cell module

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Note: Extreme Caution must be taken when working with the Hybrid battery. Remove the orange plug; UP-90 Left-Out, whenever work is being done on the HB.

(A). Prepare to access the HB

1. Remove the rear carpet cover or floor board over the black storage container.
2. Remove the rear floor box or black storage container
3. Remove the small right and left corner floor boards or carpet covers
4. Remove the left corner storage container. Secured with a plastic cover over the screw.
5. Remove the two luggage bolts from the rear floor board over the HB; 10mm socket.
6. Remove the rear floor board carpet over the HB; Velcro and two clips using needle nose.
7. Remove the rear deck trim or hatch-back door latch cover. Just pull up.
8. Remove the orange HB safety interlock. Up-90 Left-Out. Note, there is a 10 minute wait before working on any of the HB components. This allows other parts to be removed.
9. Remove the four bolts from the rear seats to allow for access to the HB; 14mm, 20Nm. Move the two rear seats slightly forward.
10. Pull up on the right and left rear corner frames secured by a bolt; 12 mm. Just loosen.
11. Remove the right and left deck trim side panel 3 bolts; 10mm. Carefully remove the right and left panel. Push the light assembly through the hole on the left panel. Be careful of wires and connector. Remove the luggage bolts last.

(B). Prepare to remove the HB

12. Remove the intake top duct to the HB; two plastic clips. Pull to the HB and to the right. Disconnect the battery blower relay attached to the intake duct.
13. Remove the intake bracket; top four bolts; 12mm, remove the three bolts behind the HB; Battery bracket reinforcement; 28Nm.

14. Disconnect the black vent hose from the HB
15. Remove the lower intake vent to the HB; clip and bolt; 10mm.
16. Remove the battery bracket reinforcement on the left side of the HB; four bolts and three bolts behind the HB, 12mm.; 28Nm.
17. Remove the five main bolts securing the HB; three bolts rear and two bolts front; 12mm; 19Nm.
18. Remove the battery carrier panel cover over the electronics; five bolts; 10mm; 7.5Nm.
19. Disconnect the three connectors from the electronics. Move the harness assembly away from the case or out of the way.
20. Remove the metal clip or junction terminal by the high volts orange wires. Notice that bumps are down.
21. Carefully remove the two nuts from the high voltage wires; 8mm. There should be no voltage across the bolts; 5.6 Nm.
22. Move the two orange high volts wires out of the way. The HB is ready to be moved to the work bench.

(C). Prepare to move the HB to the work bench

23. Move the battery forward and to the work bench. This is a two person operation because of the weight of the HB assembly being NiMH.

(D). Prepare to disassemble the HB to allow access to the module

24. Remove the black rubber battery protector from the side of the HB
25. Remove the HB case; eight bolts; 10mm; 8Nm case bolts. Place in case bucket.
26. Remove the rear catch bracket and top case cover. The rear cover is at the air intake to the HB.

Note: The error is in block 9. However, bus bars will be cleaned. Block 1 starts at the air intake and there are two modules or cells per block.

27. Remove the black bus bar protectors left side.
28. Remove the bus bar nuts from the left side; 8mm; 5.4 Nm.
29. Remove the orange bus bars and set aside; remove the copper bus for cleaning; vinegar and salt. Note: vinegar and salt did not work. Requires another solution.
30. Remove the black bus bar protectors from the right side.
31. Remove the bus bar nuts from the right side; 8mm, 5.4Nm and remove the orange bus bars. The copper bus bars are ready for cleaning. Careful of the fine wires. Cleaning is an option because of the extra wires and to prevent damage.
32. Remove the battery vent tube from the battery modules. Pull on the white plastic by module 1 which pulls both vent tubes rows. Do not completely remove the vent tubes since focus is on block nine.

33. Measure the voltage of each module and record VDC.
34. Remove the temperature sensor attached towards cell one; if required.
35. Remove the module screws towards block nine, bottom of the HB; 8mm. This step might be done earlier. The module screws are under the + terminal.
36. Remove the compression block from module 1; 12mm; 5Nm; four bolts plus one nut at 10mm.
37. Remove the module(s) toward bank nine. Note: It's a good idea to number the modules from 1-28 or 1-14 using a&b. Such as 1a or 1b. Numbering begins at the vent input. Notice the module fit, order, and polarity including module spacing between each cell. Module 1a has the (-) on the right side with the vent side towards you. Be cautious of temperature sensors. Keep the modules in order and remove the defective module determined by the VDC reading. Also, be cautious of temperature sensors at the bottom.

(E). Prepare to assemble the HB

38. Remove and replace bank 9 with new tested cell(s). One or both.
39. Replace remaining cells and notice number order, fit; polarity, and spacing, temperature sensors.
40. Attach compression block; 4 nuts, 12mm; 5 Nm. Make sure the cells are smooth and compact on both sides.
41. Re-attach the module screws should be up to bank nine; 8mm; 5.25 Nm
42. Attach temperature sensor if removed more towards the middle.
43. Re-attach the HB vent tubes; Vaseline helps with lubrication and easy attachment.
44. Re-attach the orange bus bars; the copper bus bars should be cleaned; both sides using bus bar nuts; 8mm. 5.4 Nm. Be careful of over- tightening or the bolt will break.
45. Re-attach the black buss bar covers.
46. Re-attach the HB cover; 8 bolts; 10 mm, 8Nm.
47. Re-attach the black safety rubber to the case

(F) Move the HB back to the Prius

48. Move the HB to the Prius and prepare to assemble.

(G) Install and test the HB after module change

49. Secure the HB loose to the auto chasis using five 12mm bolts; this is to align the HB and to tighten the bolts; 19Nm.

50. Connect the two high voltage orange wires using the special 8mm nuts; 5.6 Nm. The special 8mm nuts should be connected to the terminals. The special nuts were re-attached to prevent loss during HB work.

51. Connect the three connectors from the HB harness assembly to the electronics.

52. Attach the junction terminal; bumps down, and loosely the high volts cover. This is for prepare to start the car. The high-volts cover is not secured and only for the test.

53. Connect the orange plug to the HB; In, 90 degrees-Up-Down. Setup if the car will start.

54. Test and check if car will start; the red triangle could be cleared. Ensure that the 12V is connected. Because of open doors, the 12V battery was drained and required a booster.

55. Remove the orange plug; Up-90 left-Out. Wait 10 minutes

(H) Complete the final assembly including upholstery

56. Attach the electronics cover using five bolts; 10 mm, 7.5 Nm. Ensure the high volts silver bracket is bumps down against the wire.

57. Attach the left HB bracket reinforcement using seven bolts; 12 mm; 28 Nm, four bolts top and three bolts on the side.

58. Connect the lower exhaust tube; connect the connector if removed; secured with a push pin and one 10mm bolt.

59. Connect the HB vent tube.

60. Connect the right HB carrier bracket using seven bolts; 12mm, 28Nm; four bolts on the top and three bolts on the side.

61. Connect the upper HB vent; push into the battery first; two push pins. Plug in the relay left side of upper HB vent. The HB is now secure.

62. Connect the rear seats; four bolts; 14mm, 20Nm

63. Align the right carpet side piece and push in. Secure with three 10mm bolts. Do not over tighten.

64. Align the left carpet side piece; light connector, and push in. Secure with three 10 mm bolts. Do not over tighten.

65. Attach the HB carpet cover; Velcro, and align with the plastic tabs; two push pins for the corner;

66. Connect the four luggage anchors using cosmetic bolts; 10mm.

67. Install the corner left storage bucket using push pin cover.

68. Install the corner carpet covers over the 12v battery and storage bucket

69. Install the gray cover over the rear door latch; four clips

70. Install the orange HB plug; Left-90 up-Push down

71. Install the black storage container

72. Install the final carpet cover

73. Final test and clear any faults.

Note: The repair replaces module 9b. The same procedure can be used for other modules. The video describes changing an entire pack and not a single module. The cleaning of the copper bus bars requires more work. The P112 document gives parts identification, mm, torque settings, and other useful data. The OBD2 adapter is a Veepeack Mini Blue Tooth using Hybrid Assistant and Car Scanner.

Ref(s): Electron Automotive, "How to replace Toyota Prius hybrid battery 2004-2009"

Oldduck, "Toyota Prius Hybrid Battery: Cleaning the Copper Sheets"

P112 HYBRID BATTERY CONTROL – HV BATTERY - [HB - P112 Hybrid Battery Control.pdf \(hybrids.ru\)](#)