

CEENBoT Upgrade

SPIRIT Workshop

October 4, 2008

This upgrade will bring the CEENBoTs constructed during the Summer 2008 SPIRIT Workshop to the same configuration as those currently in production.

1. Remove battery
2. Unplug ribbon cable from Interface board
3. Unplug cables from front Sensor boards
4. Remove Interface board
5. Remove Plexiglas. Don't remove any hardware from Plexiglas unless necessary to remove the board.
6. Unplug cables from motors to the Control board.
7. Remove Control board
8. Unplug ribbon cable from Control board
9. Unscrew locking collar.
10. Remove screws holding stabilizer bars to plate.
11. Remove nut from kingpin



12. Remove tray.
13. Remove rear wheels

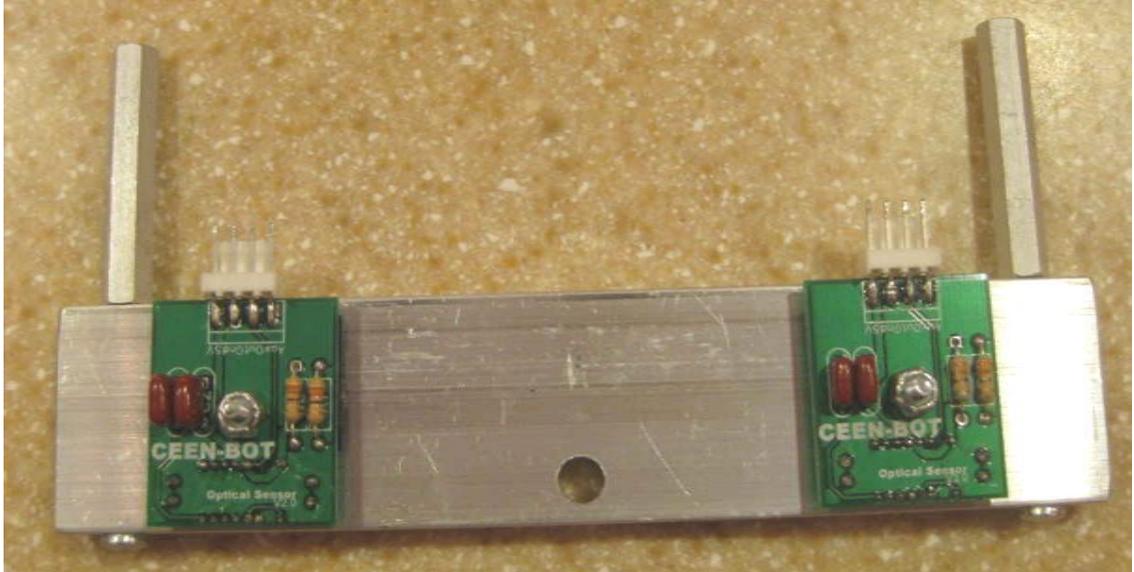
14. Remove standoffs from tray and mount them on the new tray in their same positions. The four 7/8" Female-Female (F-F) standoffs to the front. The two 1" F-F standoffs mount to the tray and the two 1 1/4" Male-Female (M-F) standoffs mount on top of them.



15. Disassemble all remaining parts of the tray.
16. Remove kingpin
17. Remove standoffs from bumper and mount on new bumper. (1 1/2" F-F standoffs 6-32x1 3/4" screws)



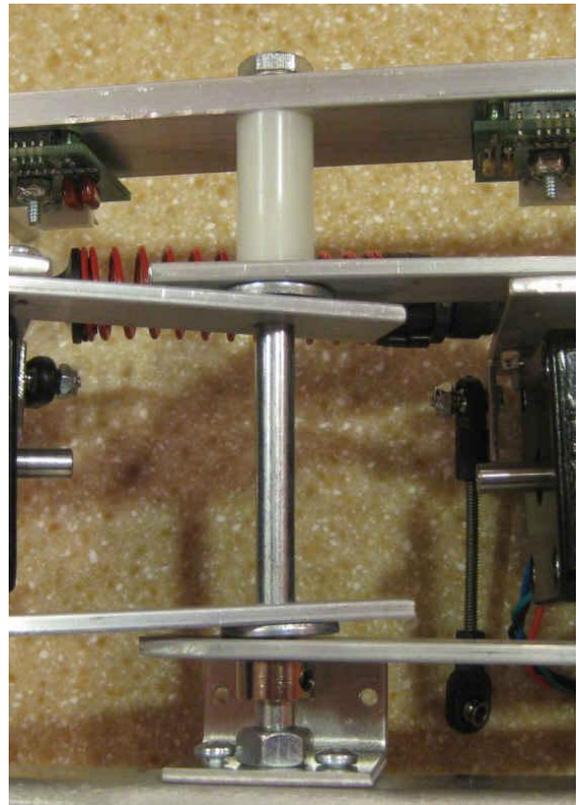
18. Remove the two Sensor boards and mount on new bumper. Note that they are mounted on the back side (the side without the CEENBOT engraving) and the red LEDs are on the outside. The fiber **washers go between the bumper and the board**. This prevents the board from touching the metal bumper and shorting out. (Two 4-40x3/4" screws with nylon locking nuts)



19. Reassemble the kingpin. **The photo shows the bottom view.** You may need to remove one end of the shock to be able to align the parts.

The order of parts is:

- a. Kingpin head
 - b. Bumper
 - c. 1" nylon spacer
 - d. Outer swing arm
 - e. 1/4" washer
 - f. Inner swing arm
 - g. Inner swing arm
 - h. 1/4" washer
 - i. Outer swing arm
 - j. Locking collar. Insert the set screw but do not tighten it yet.
 - k. 1/4"-24 nut. Screw it to the end of the threads.
20. Attach tray to kingpin with the 1/4"-24 nut. Tighten firmly.
21. Reattach shock if you removed it. (4x40-3/4" & nylon lock nut)
22. Reattach the rear wheels (6x32-1/2" & nylon lock nut)



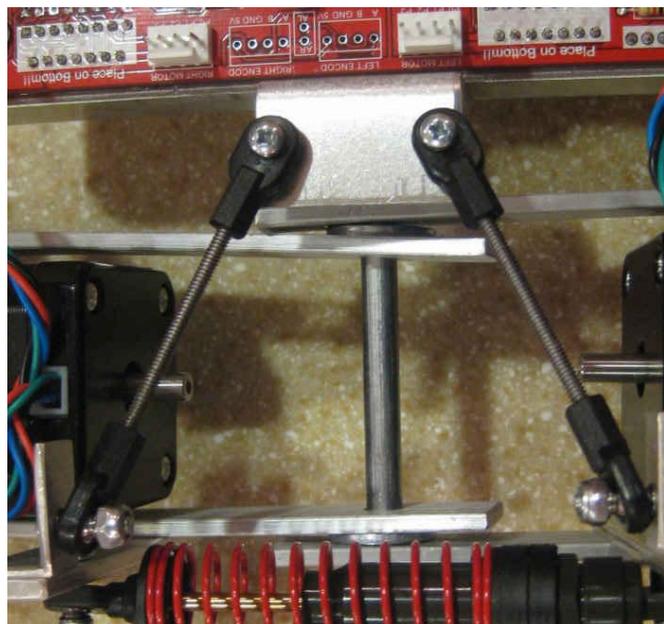
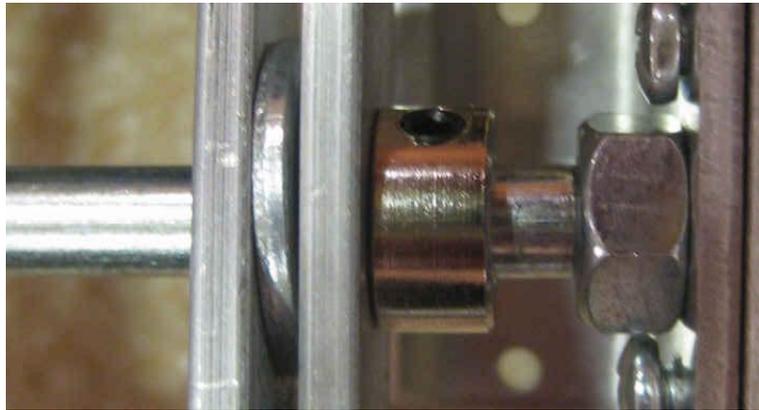
23. Working from the bottom, press the locking collar towards the front of the CEENBot to remove any excess play and tighten the set screw.

24. Install the new Control board (four 6x32-1/4" screws).

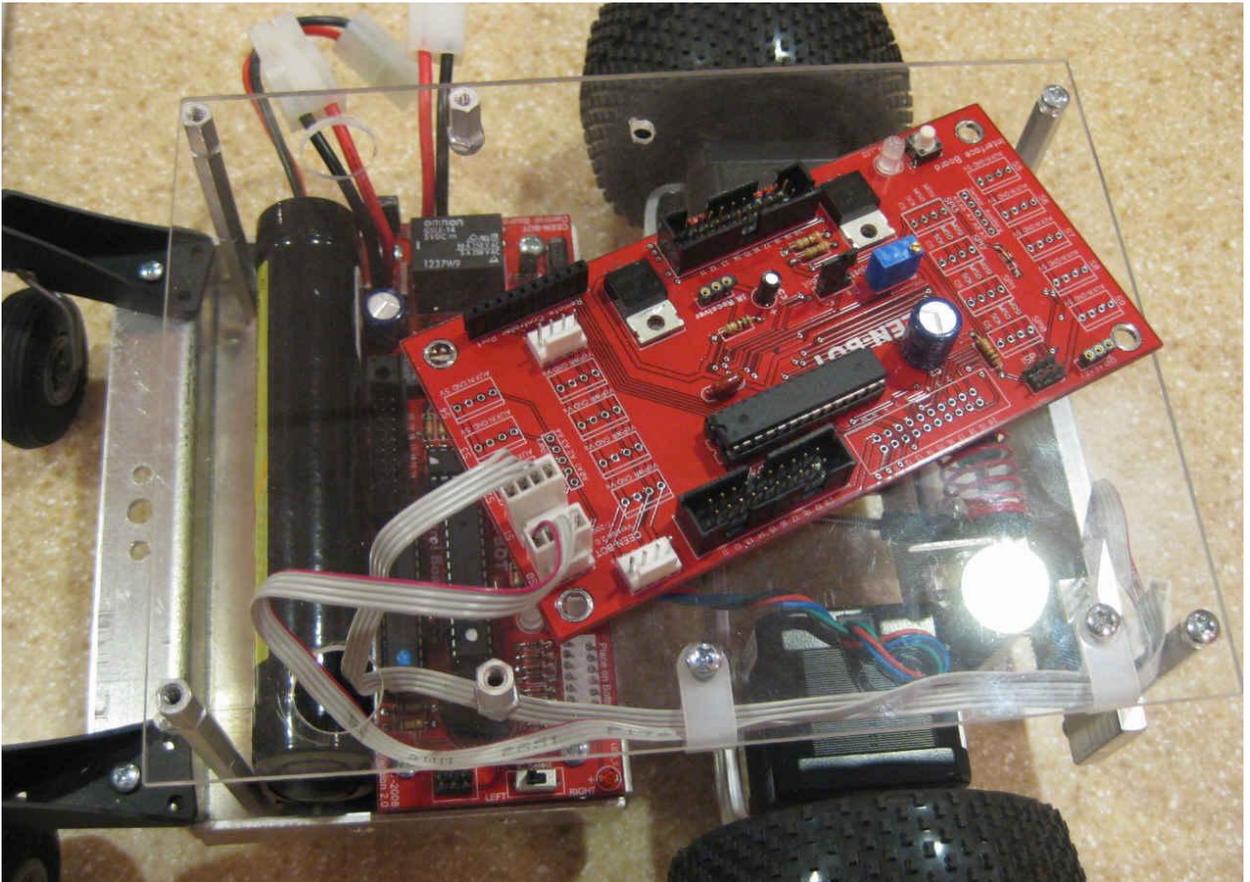
25. Attach the stabilizer bars to the tray plate.

26. Attach the "fuzzy" part of the Velcro to the edge of the battery. Press "hook" part of the Velcro to the fuzzy side. Remove the protective tape from the adhesive and insert the battery into the tray.

27. Plug the motor connectors into the new Control board.



28. Attach the Plexiglas to the six standoffs. Use 6x32-1/4" screws on the front and 1/4" standoffs on the back four.



29. Attach the Interface board using three 6x32-1/4" screws except the right rear corner. Use a 1/4" M-F standoff for this corner.

30. Use a 6x32-1/4" screw to attach the cable holder into the standoff.

31. Reconnect the cables from the Interface board to the Sensor boards.

