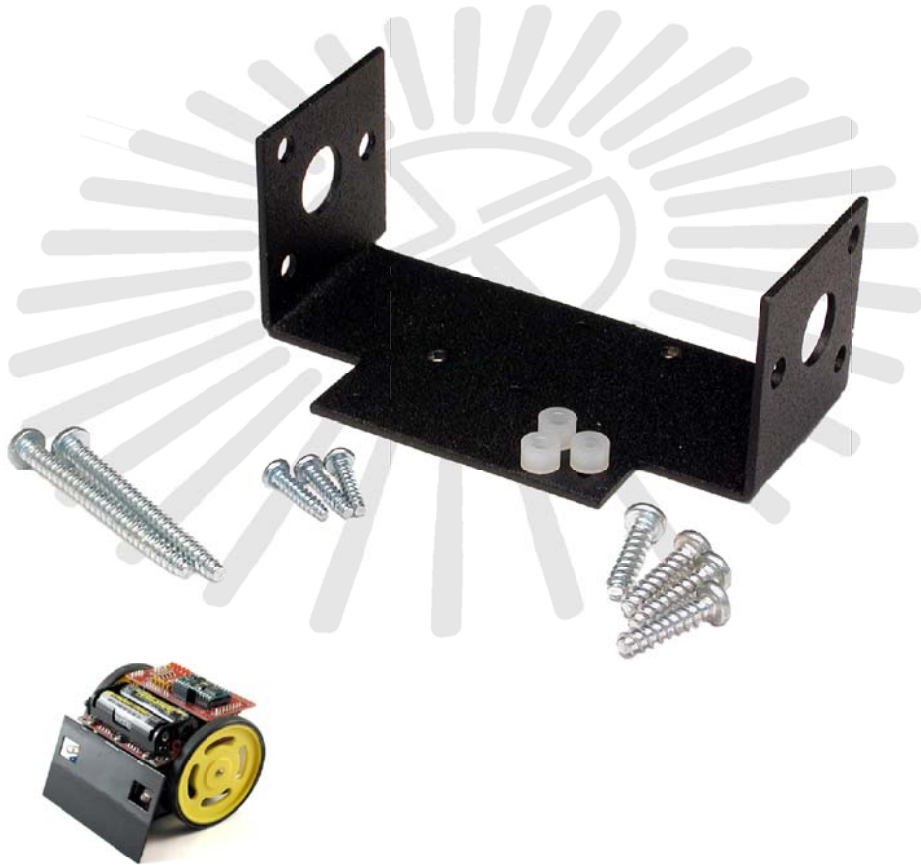


The Solarbotics SUMOVORE

Baseplate Retrofit Kit



We've improved the Sumovore with a powder-coated Steel Baseplate that makes PCB, battery pack and motor mounting easier and much more rigid.

It also adds beneficial mass to your stock Sumovore to make it even more competitive!

We strongly suggest you inventory the parts in your kit to make sure you have all the parts listed. Use a pen, pencil, pricked finger, chocolate bar - anything to mark off the items. If anything is missing, contact us for replacement parts information.

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Produced by



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Steel Baseplate Retrofit

Parts List & Overview

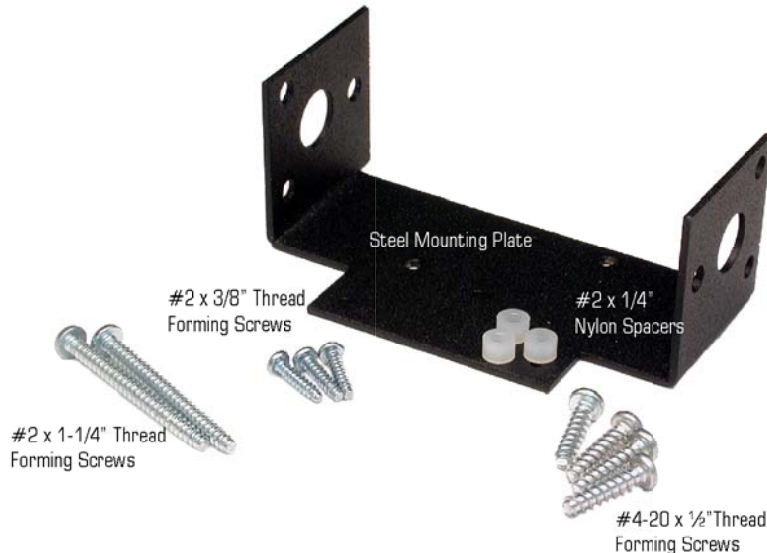


Components

- 1 - Steel Baseplate
- 3 - #2 x 1/8" Nylon Spacers (for mounting / spacing PCB)
- 3 - #2 x 3/8" long thread-forming screw (for mounting / spacing PCB)
- 2 - #4 x 1-1/4" long thread-forming screw (for mounting battery pack)
- 4 - #4-20 x 1/2" long thread-forming screw (for mounting motors)

Tools Required

- Your regular soldering equipment
- Drill & 1/8" drill bit
- Sharp knife or angled snips
- #1 Phillips Screwdriver with good handle - you'll be twisting some tight screws!



Overview

After the original introduction of the Sumovore, we saw that there was a deficiency in the mechanical assembly of the robot. It was too easy to knock the battery pack loose, and in the midst of competition, it was definitely not a tactical advantage! We soon got onto developing a solution to this problem - the Steel Mounting Plate.

The new steel mounting plate makes the Sumovore easier to build, locks the motor alignment in, and makes the Sumovore harder to damage and heavier in competition - all good things! So let's take a half-hour to upgrade your stock Sumovore to a more robust model!



Steel Baseplate Retrofit

Building It - Steps 1, 2, 3 & 4



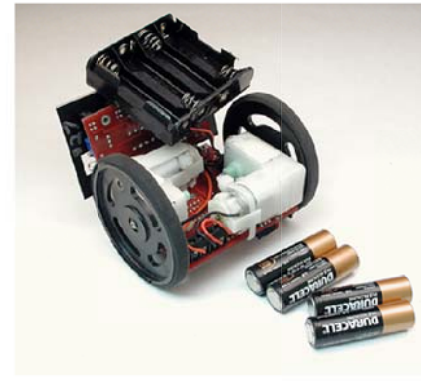
Step 1 - Remove Brainboard & Top Battery Pack:

Pry that brainboard loose, and pop the two AA batteries out. Unscrew the two screws holding the 2xAA battery pack in place, and tuck them someplace safe. No, your cat's cheeks don't count as a safe place.

You don't have to desolder and remove the battery pack.



Step 2 - Remove Bottom Battery Pack: Pop the four AA batteries out of the bottom holder, and desolder the battery pack's electrical connections.

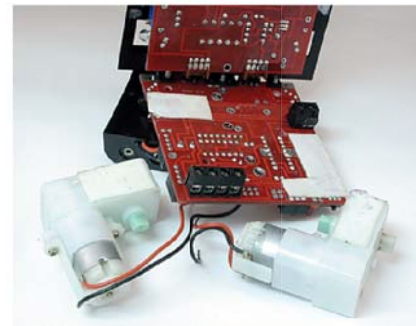
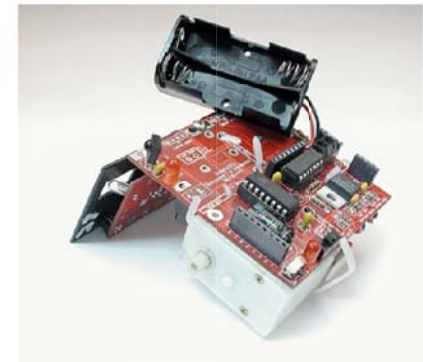


Pry the battery pack looks from double-sided sticky tape holding it to the motors.

While you're working near the motors, take the wheels off, and again, put those screws someplace safe.

Step 3 - Snip / Remove Zip-ties:

Snip the four zip-ties and remove them. Your motors will now be hanging a bit loose, so treat your crippled Sumovore carefully!



Step 4 - Motor Wires & DSST: Note how the motors are wired into the terminal block (for future reinstallation), and then disconnect them.

Now's a good time to peel & discard the old double-sided sticky tape - but BE CAREFUL not to gouge the surface of the PCB. The hot air from a hair dryer really helps to loosen the glue.



Steel Baseplate Retrofit

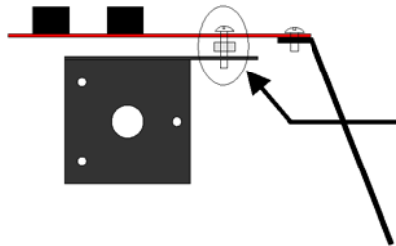
Building It - Steps 5, 6, & 7

Step 5 - Screwing the PCB to the Baseplate: Take the two of the #2 x 3/8" self-threading screws, and screw them into the PCB in the front two positions (as shown).

Step 6 - Mounting the PCB to the Baseplate: Put the nylon spacers on these two screws, and screw the whole works to the baseplate.

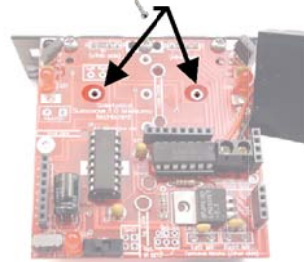
Don't forget the nylon spacers! It's what keeps your electronics from shorting out against the steel baseplate (that's a bad thing).

Screwing into the steel baseplate will take some work, so you'll most likely need a phillips screwdriver with a good-sized handle to get them in.

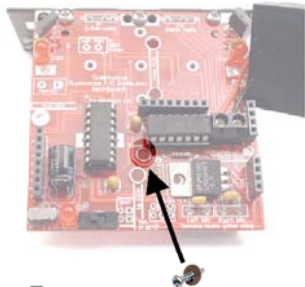
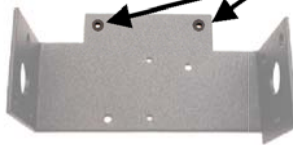


Step 6: Screw the PCB to the Baseplate with the two 3/8" screws and nylon spacers

Step 5: Two 3/8" screws



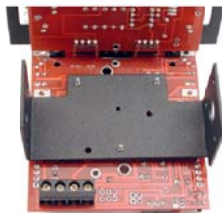
Screws mount here



Step 7:
3/8" screw with washer on top. Don't forget the nylon spacer!

Step 7 - Install the Rear Screw: That last screw at the back needs the metal washer on the top, otherwise it might fall through the big hole.

With the front of the baseplate screwed in, you should be able to jam the spacer between the baseplate and the PCB, and it should stay put until you put the screw in.



Baseplate fully mounted to PCB



Steel Baseplate Retrofit

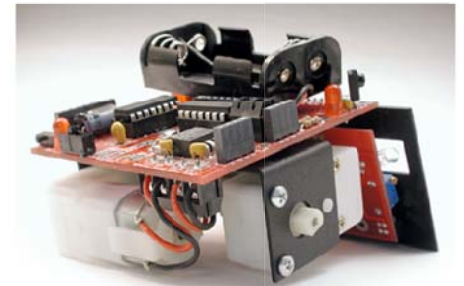
Building It - Steps 8 & 9

Step 8 - Reinstall the Motors: Now that your PCB is now officially upgraded, let's get the motors back onto this bad-boy.

Make sure you're putting the motors back in their original positions, otherwise your connecting wires won't reach the terminal block.

For each motor, use two of the #4-20 x 1/2" thread-forming screws to secure it to the mount. We even put in a hole so that the motor keys right into place!

When the motors are screwed in nice and snug (not too tight!), re-attach the wires back to the terminal block. Since you noted what the wire order was when you took them off, you won't end up with the surprise of one (or both) motors starting up in reverse .



Step 8: Motors reinstalled, and wired up

Step 9 - Preparing the Battery Pack: Since we now have this wonderfully sturdy steel mounting plate, we're going to use it to mount the battery pack. Unfortunately, the existing mounting holes on the battery pack won't work (the screws would have to pass through the gearbox!), so we're drilling some new holes.

Note: Battery Pack wires are here



Step 9: Drilling 1/8" holes and trimming away ribs

The hole positions aren't super-crucial as the long screws let us stretch over to the baseplate's holes. What is important is to get the holes right close to the ribs of the battery pack so that the head of the screw doesn't interfere with the batteries much.

Make sure the wires are on the far side before you start drilling, otherwise you may not have enough wire to reconnect your battery pack to the PCB.

Drill your 1/8" holes as shown, and use a knife to trim 3mm (1/8") from the rib on each side of the hole. Trim it down right to the floor of the pack so the screw head will sit flat on the bottom of the battery pack. If you don't, the screw will sit crooked, and be harder to get into the baseplate.



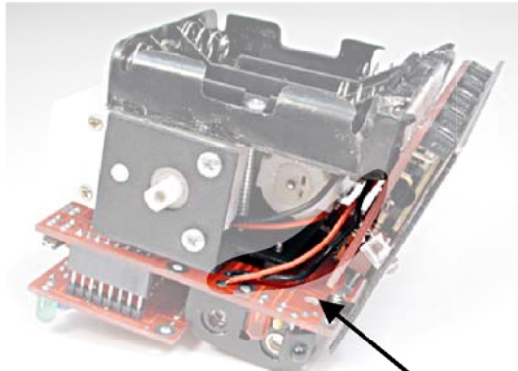
Steel Baseplate Retrofit

Building It - Steps 10 & 11



Step 10 - Reinstalling the Battery Pack: Use the long #2 x 1-1/4" thread-forming screws to mount the battery pack to the baseplate. There is just enough length to secure the pack, so don't over-tighten it so it deforms the pack and possibly damages the PCB underneath.

Resolder the battery pack to the PCB, making sure you get the polarity right. It'd be a shame to have your newly-upgraded Sumovore go up in smoke on the first power-up!



Step 8: Motors reinstalled and wired up

(Note: Hmm... looks like a good spot for additional ballast to up the weight of your Sumovore!)

Step 11 - Power Test and Go! Remember when you first built the Sumovore, and you did a "smoke-test" (well, "lack-of-smoke" test)? Time to do it again.

Pop in most of the batteries, and pay particular attention when you pop in the last battery and/or turn on the power. With all the soldering/desoldering and new metal parts, there is the slight chance that a short-circuit may have happened, and we'd rather not have your Sumovore have a melt-down.

If everything powers up ok, confirm that the motors are spinning the right way. If not, make the necessary motor wiring swaps, and check again.

There! Your Sumovore is now upgraded, heavier and sturdier. Get out there and have some fun fighting sumo!

If you have any questions regarding this kit, please contact us!

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