README First

To get started, follow these steps:

Step 1 Gather all robot components and necessary tools listed in the following Assembly Instructions. Follow these instructions to assemble your EVALBOT.

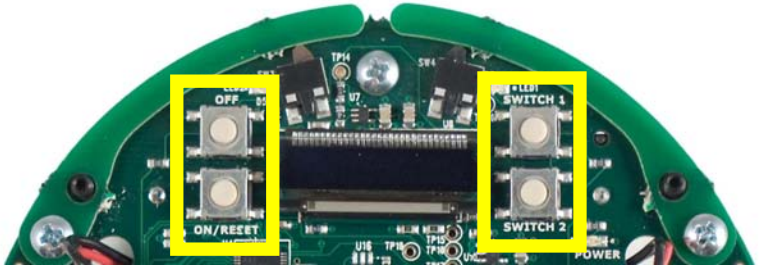
Step 2 Install three of the provided AA batteries on the underside of the robot.

Step 3 Press the ON/RESET button on the main PCB. This button is located to the left of the OLED display.

Step 4 Press either SWITCH 1 or SWITCH 2 to start the robot's preprogrammed quickstart application.

Step 5 Place your robot on a smooth, flat surface and watch it roam around. The robot will move straight or at a slight curve for a random amount of time and then execute a random turn. If one or both of the robot's bumpers detects a collision, the robot will back up and execute a random turn.

Pause the operation by pressing either SWITCH 1 or SWITCH 2 again. Press the OFF button to turn off the robot.



Congratulations! Your EVALBOT is now up and running. To continue developing with the Micrium µC/OS-III Real Time Operating System and EVALBOT, go to the www.micrium.com/books/micrium-ucos-iii web site.

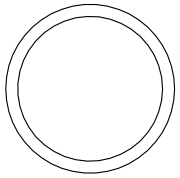
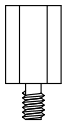
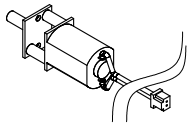
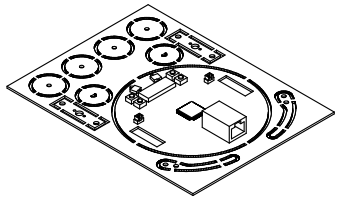
For more information on EVALBOT, go to the www.ti.com/evalbot web site. For more information on other Stellaris evaluation kits and microcontrollers, go to the www.ti.com/stellaris web site.

Texas Instruments
108 Wild Basin Rd., Suite 350
Austin, TX 78746
http://www.ti.com/stellaris

Stellaris®
EVALBOT

Turn to the README First instructions on the back page of this booklet.

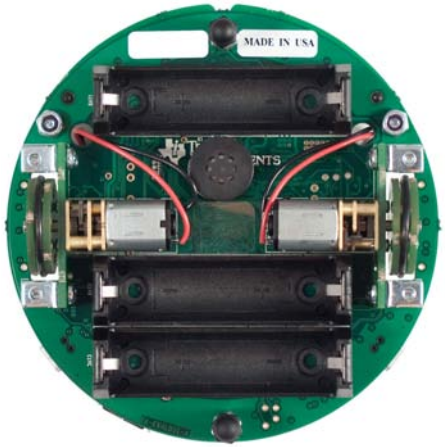
Kit Contents*

Item #	Drawing	Description	Qty**
1	 1:1	Rubber O-Ring	2
2	 1:1	Hex Standoff	2
3	 1:1	Acorn Nut	2
4	 1:1	L-Bracket	4
5	 1:1	Nylock Nut	2
6	 1:1	4-40 x 1/4" Machine Screw	2
7	 1:1	4-40 x 3/16" Machine Screw	2
8	 1:1	4-40 x 1/8" Machine Screw	8
9	 1:1	M1.6 x 3mm Machine Screw	4
10	 1:1	4-40 x 3/16" Set Screw	6
11		12V DC Gear Motor (with attached wires)	2
Items 12-16		Printed Circuit Board (PCB) Panel	1
17		1/2" x 3" Sticker (may be installed at factory)	1

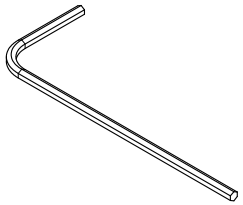
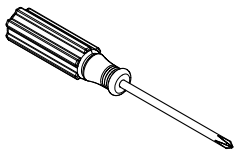
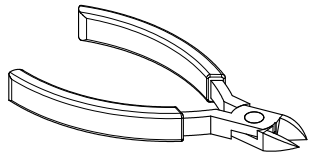
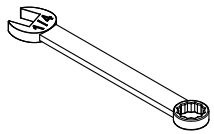
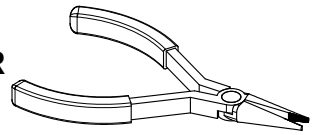
Stellaris® EVALBOT
Assembly Instructions

Before you begin assembly, match each part to the drawings on the left and make sure you have the correct quantities. Extras of hard-to-lose parts may be included in the kit. Gather all the necessary tools before you proceed to Step 1.

Pictures of the completed robot are included below to aid in assembly.

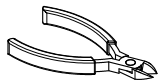


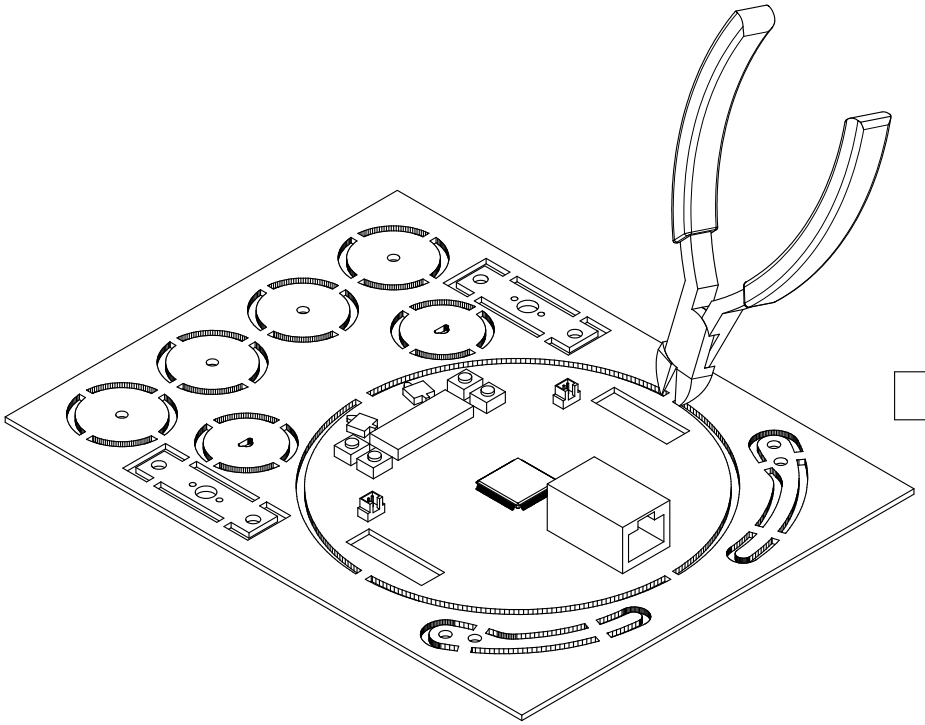
Required Tools

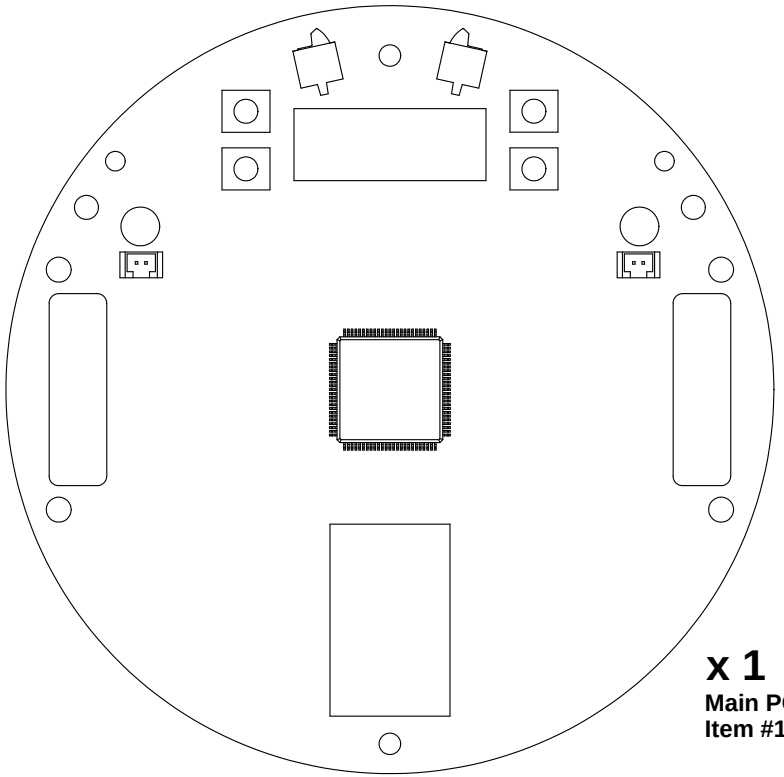
Included	Not Included	
 Hex Key 0.050"	 Phillips Screwdriver #0 Drive	 Flush Cutters
	 1/4" Wrench	OR  Needle-nose Pliers

***Also included: 3 AA batteries, 1 USB Mini B cable.**
****Required quantity. Extras may be included for easy-to-lose parts.**

Step 1 - Cut out robot pieces

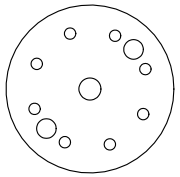
Item Number	Quantity	Part Name	Tools Needed
Items 12-16	1	PCB Panel	



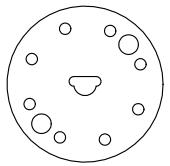


x 1
Main PCB
Item #12

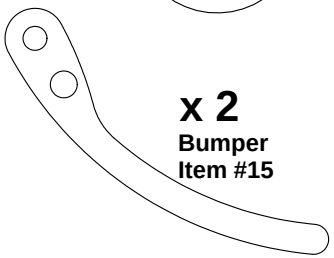
Step 1.1
Separate the robot parts from the PCB Panel. Remove Main PCB first.
Rough edges can be cleaned up with the flush cutters, a file, or sandpaper.



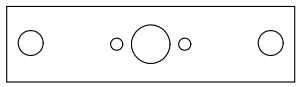
x 4
Outer Wheel
Item #13



x 2
Inner Wheel
Item #14



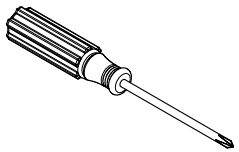
x 2
Bumper
Item #15

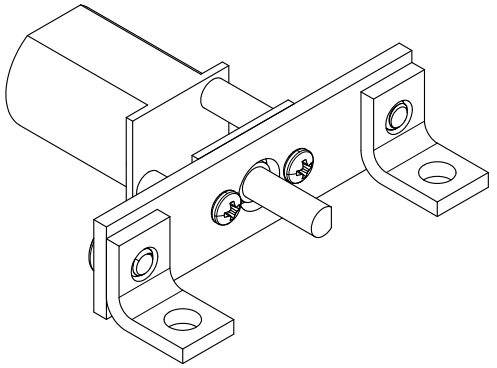


x 2
Motor Plate
Item #16

Scale - 1:1

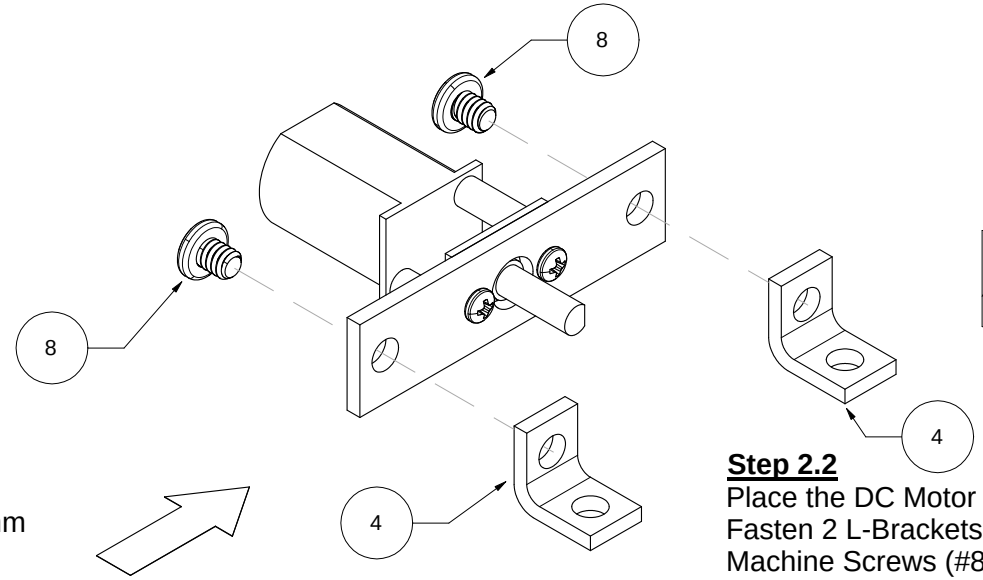
Step 2 - Assemble motors

Item Number	Part Name	Quantity	Tools Needed
16	Motor Plate	2	
9	M1.6 x 3mm Machine Screw	4	
11	DC Motor	2	
4	L-Bracket	4	
8	4-40 x 1/8" Machine Screw	4	

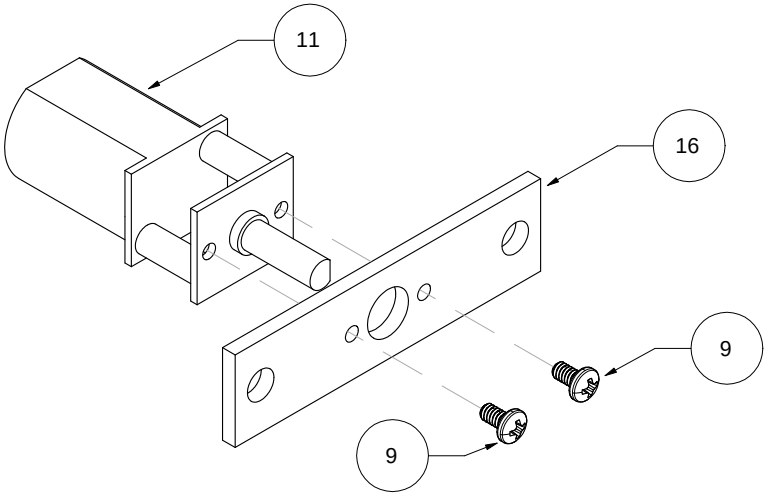


x 2

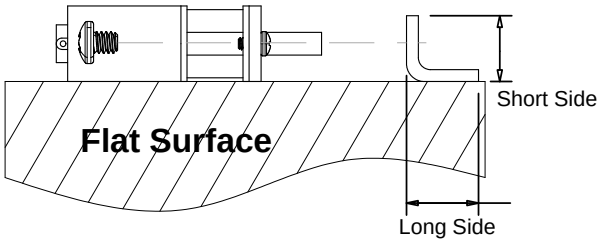
Item #18 - Motor Assembly



Step 2.1
Fasten Motor Plate (#16) to DC Motor (#11) with 2 M1.6 x 3mm Machine Screws (#9).



Scale - 1:1

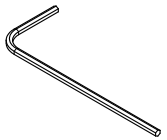


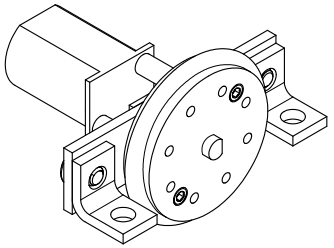
Step 2.2
Place the DC Motor and Motor Plate assembly on a flat surface. Fasten 2 L-Brackets (#4) to the Motor Plate with 2 4-40 x 1/8" Machine Screws (#8).

Important: Pay close attention to the orientation of the L-Brackets. Use the above 1:1 scale drawing to determine the correct orientation.

Repeat steps 2.1 - 2.2 for second Motor Assembly.

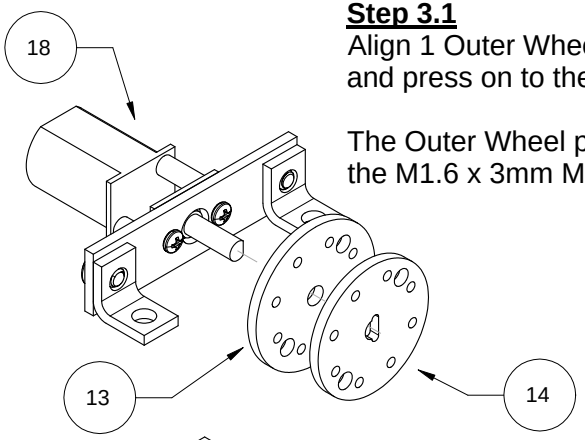
Step 3 - Assemble wheels

Item Number	Part Name	Quantity	Tools Needed
18	Motor Assembly	2	
13	Outer Wheel	4	
14	Inner Wheel	2	
10	4-40 x 3/16" Set Screw	4	
1	Rubber O-Ring	2	



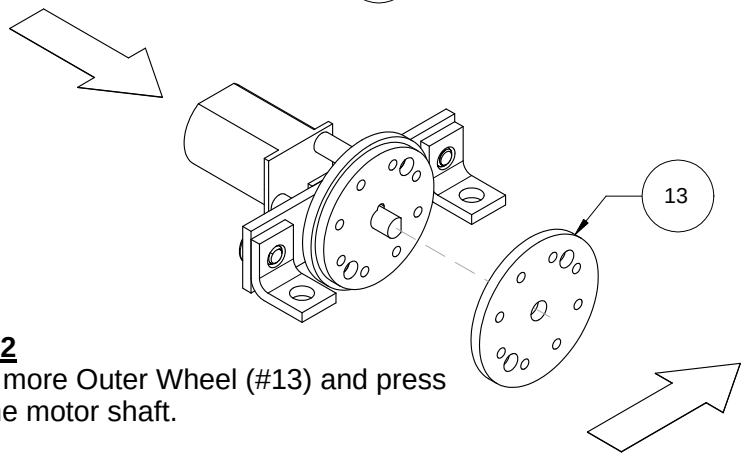
x 2

Item #19 - Drive Assembly



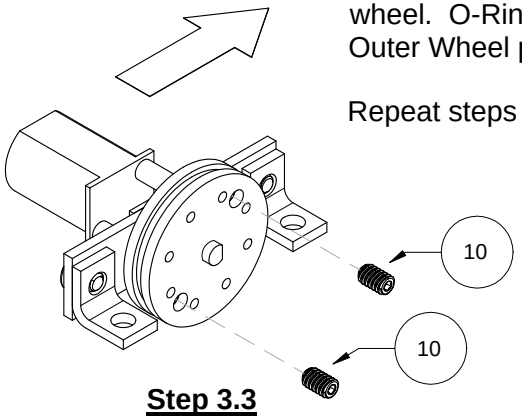
Step 3.1
Align 1 Outer Wheel (#13) and 1 Inner Wheel (#14) and press on to the motor shaft.

The Outer Wheel piece should sit close to, but not touch, the M1.6 x 3mm Machine Screws.



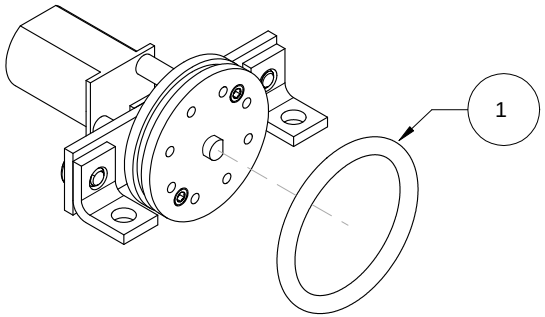
Step 3.2
Align 1 more Outer Wheel (#13) and press on to the motor shaft.

Take care to align the holes on the 3 separate wheel pieces.



Step 3.3
Using the hex key, fasten the three wheel pieces with 2 4-40 Set Screws (#10).

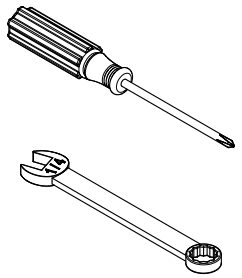
Important: Do not screw the set screws in too far. They should sit flush with both sides of the wheel assembly. **Try to minimize gaps between the wheel pieces.**

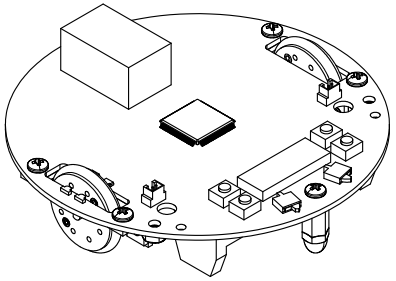


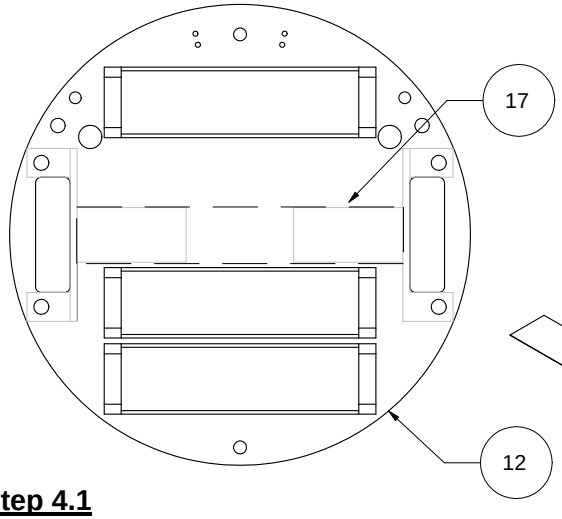
Step 3.4
Stretch Rubber O-Ring (#1) over assembled wheel. O-Ring should sit between both Outer Wheel pieces.

Repeat steps 3.1 - 3.4 for second Drive Assembly.

Step 4 - Attach sticker, motors, and skids

Item Number	Part Name	Quantity	Tools Needed
12	Main PCB	1	
17	0.5" x 3" Sticker	1	
19	Drive Assembly	2	
8	4-40 x 1/8" Machine Screw	4	
2	Hex Standoff	2	
3	Acorn Nut	2	
7	4-40 x 3/16" Machine Screw	2	

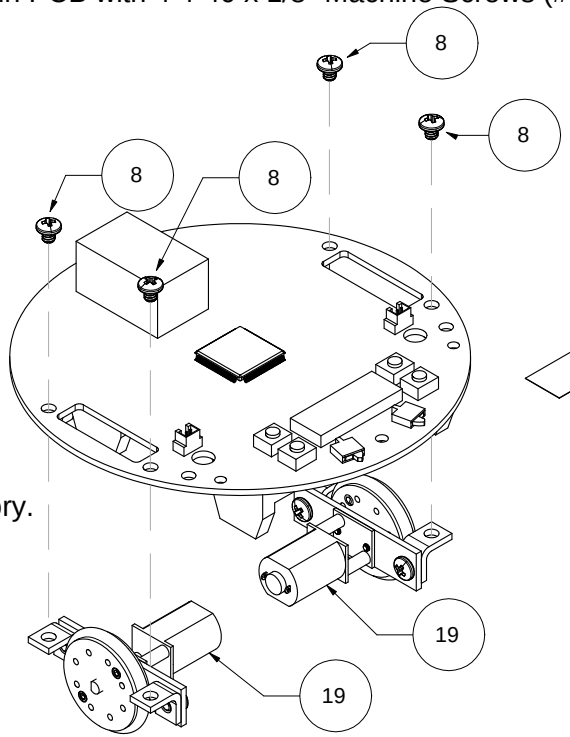


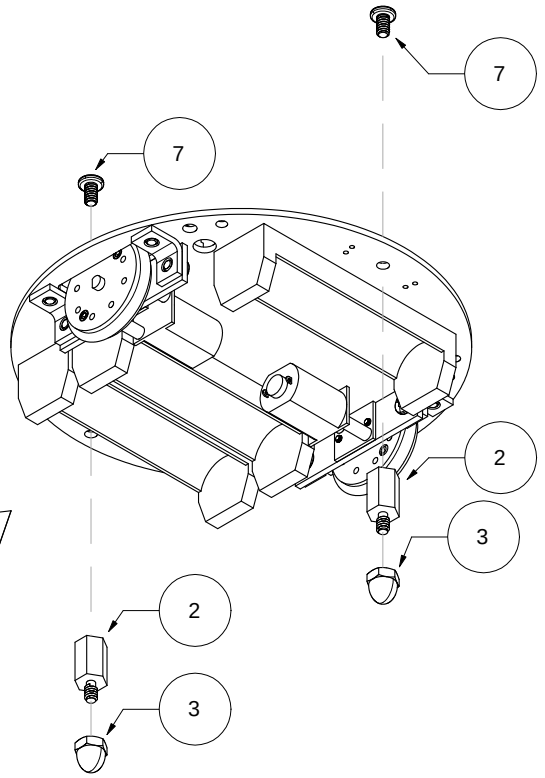


Step 4.1
Place 0.5" x 3" Sticker (#17) on the bottom of the Main PCB (#12) inside the dashed rectangle.

Note: Sticker may have already been placed at the factory.

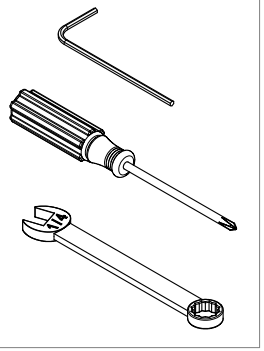
Step 4.2
Attach Drive Assemblies (#19) to the bottom of the Main PCB with 4 4-40 x 1/8" Machine Screws (#8).

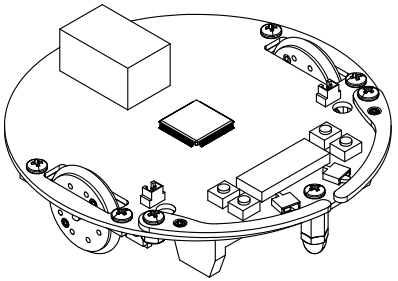


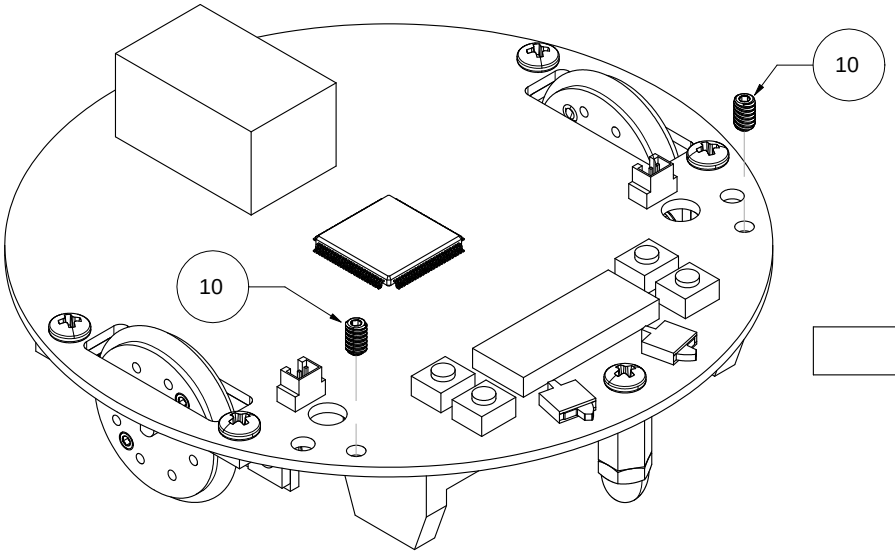


Step 4.3
Attach 2 Hex Standoffs (#2) to the bottom of the Main PCB with 2 4-40 x 3/16" Machine Screws (#7). Fasten an Acorn Nut (#3) to each Hex Standoff and tighten by hand.

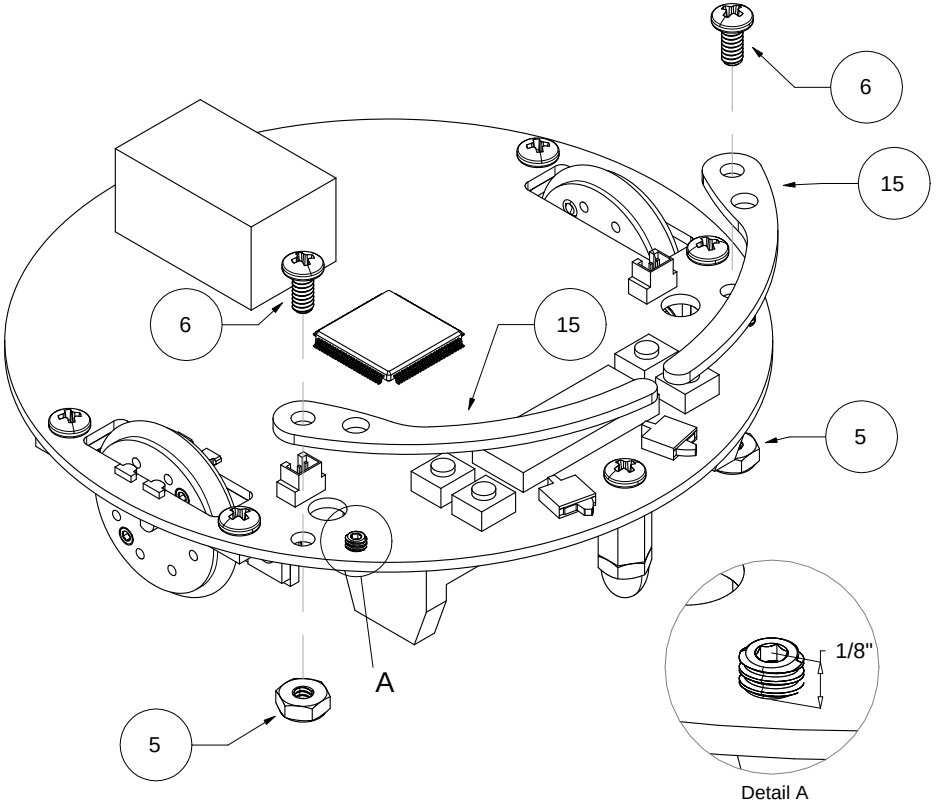
Step 5 - Attach bumpers

Item Number	Part Name	Quantity	Tools Needed
10	Set Screw	2	
15	Bumper	2	
5	Nylock Nut	2	
6	4-40 x 1/4" Machine Screw	2	





Step 5.1
Insert 2 Set Screws (#10) into the Main PCB in the indicated holes. Set Screws should stick out approximately 1/8" from the surface of the Main PCB; see Detail A in Step 5.2.

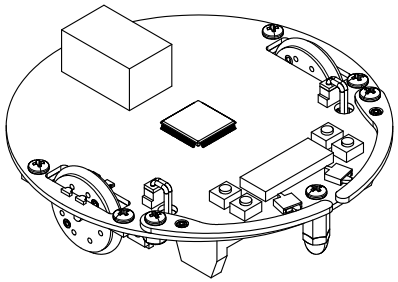


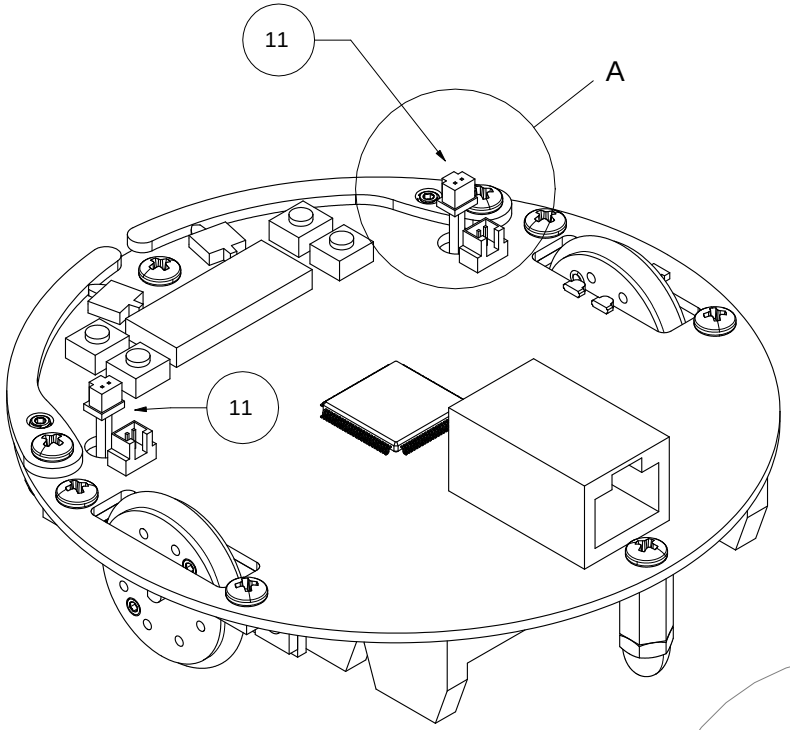
Step 5.2
Attach 2 Bumpers (#15) with 2 4-40 x 1/4" Machine Screws (# 6) and 2 Nylock Nuts (#5).

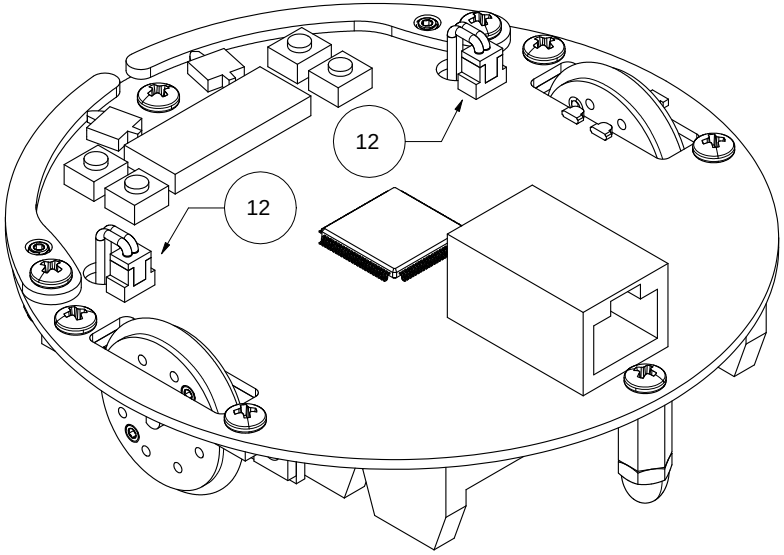
Important: Do not overtighten the Nylock Nuts. The nuts should be tight enough to keep the bumper from rattling around, but not too tight to prevent the bumpers from swinging freely.

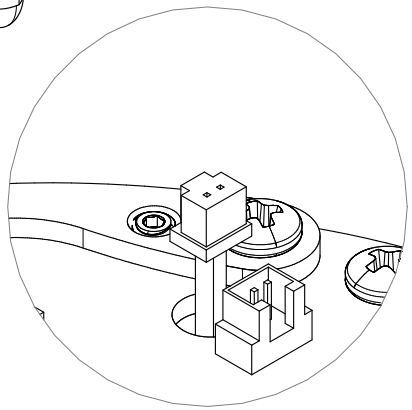
Step 6 - Connect motor wires

Item Number	Quantity	Part Name
11	2	Motor Wires
12	2	Motor Connector Receptacle









Detail A

Step 6.1

Pull DC Motor Wires (#11) through holes in the Main PCB labeled Right Motor and Left Motor.

Important: Do not cross wires. Motor Wires should go through the hole closest to the originating motor.

Step 6.2

Plug Motor Wires in to the Motor Connector Receptacles (#12) on the Main PCB. The connectors are keyed to ensure proper motor polarity.

Congratulations! Your EVALBOT is now fully assembled. Please refer back to the README First for instructions on how to power and run your EVALBOT.