Parts preparation information for the Mini Sumo BB1 robot.

1. The parts list for the robot:

A Maker Pi RP2040 kit in box. The box includes one Maker Pi board, 4 Grove connector to female header pin cables, a mini screwdriver, and 4 adhesive feet. The feet are not used in this project.

Two ToF (VL53L0X Time of Flight) sensors of the type pictured in this document.

Two edge detection (TCRT5000 infrared reflective) sensors of the type pictured in this document (with right angle header pins, sensor and adjustment screw on opposite sides).

Two N20 6 volt gear head motors, low torque models only. 150 or 200 rpm motors suggested.

Wire and heat shrink for motor leads if they are not pre-soldered to the motors.

Two 43mm x 19mm treaded tires mounted on 3mm D shaft wheels, as shown.

One 4 x AA battery holder of the type pictured in this document, along with 4 AA batteries.

A minimum of eight m3 x 10mm pan head screws (referred to as bolts in the documentation).

One m3 x 10mm countersunk screw (referred to as bolts in the documentation).

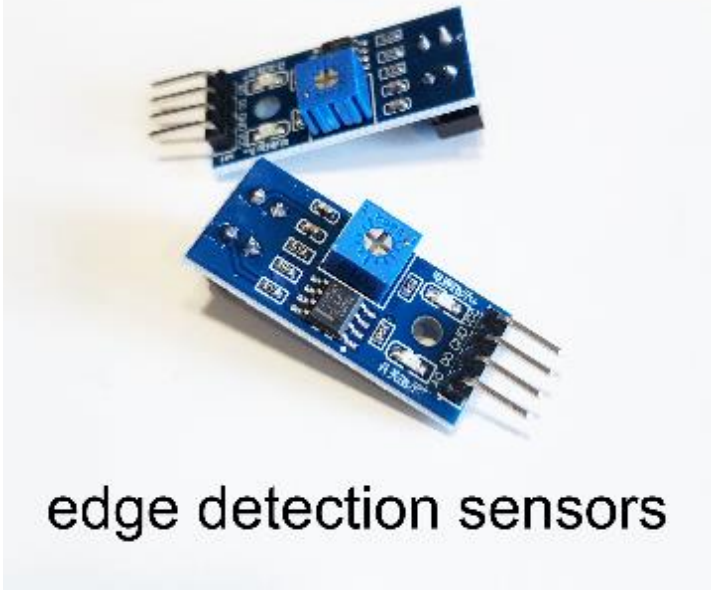
A minimum of 9 nuts for the m3 bolts.

Four 3D printed parts.

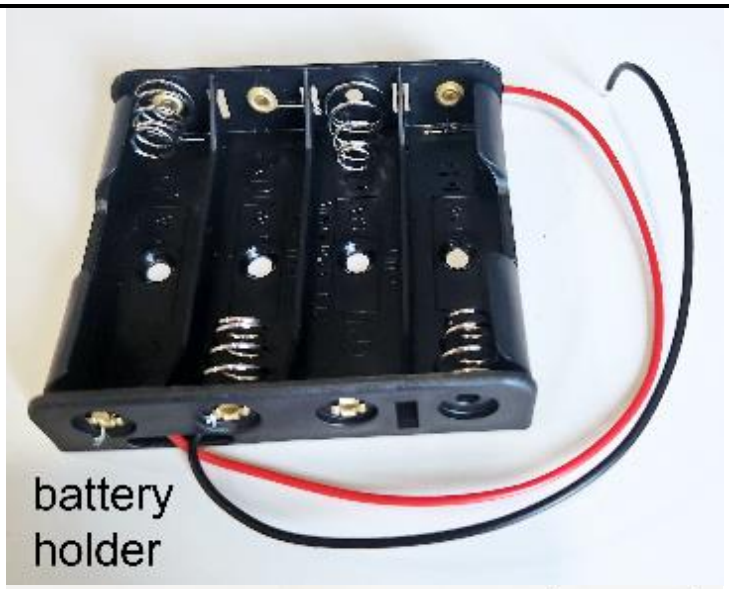
Ballast weight as desired. About 200 grams of Steel BBs are suggested.

A Phillips screwdriver.

Maker Pi kit in box


edge detection sensors


wheels

Small needle-nosed pliers. A micro USB cable for programming, along with downloaded software.	  

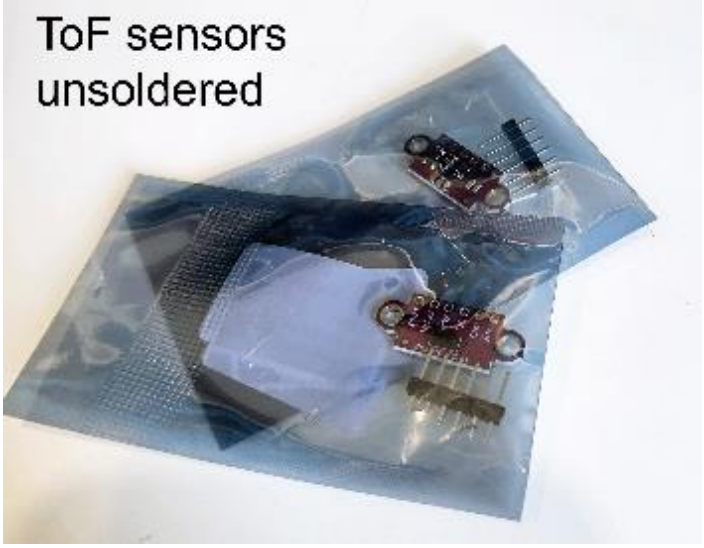
2. If the motor wires are not soldered to the motors and this exposed wire at the connection covered with heat shrink, this will need to be done with two pairs of wire, about 80mm long.

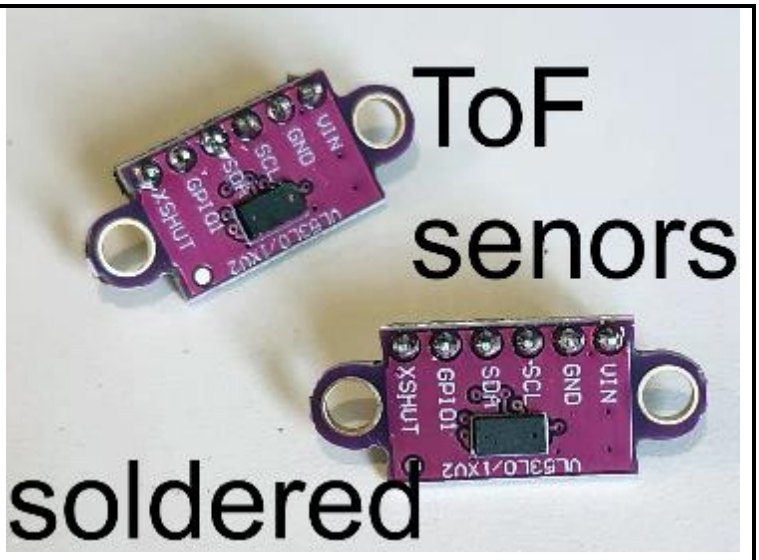
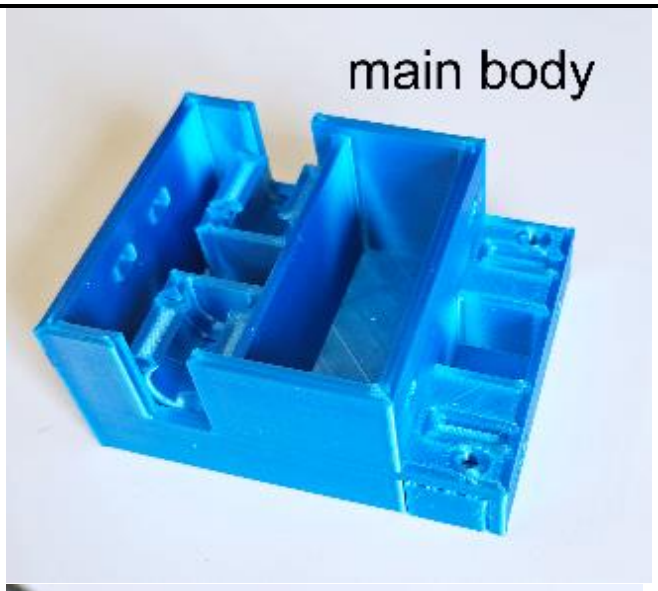
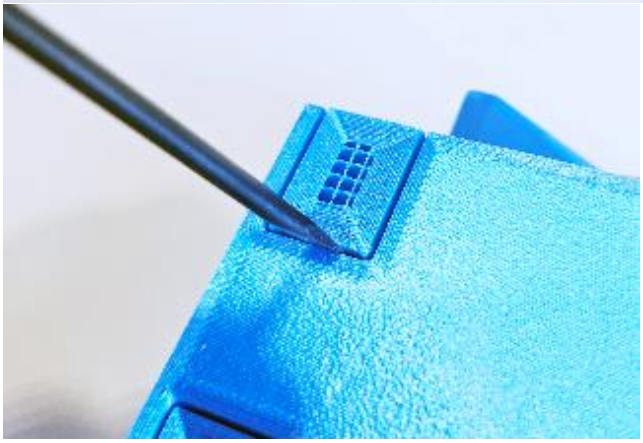
The edge detection sensors usually ship with right angle header pins already soldered on and in anti-static bags. They do not need further preparation.

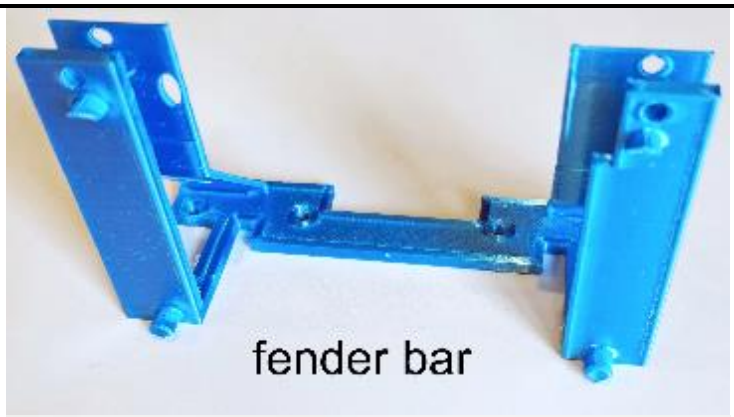
The ToF sensors usually ship unsoldered with header pins included in the anti-static bag.

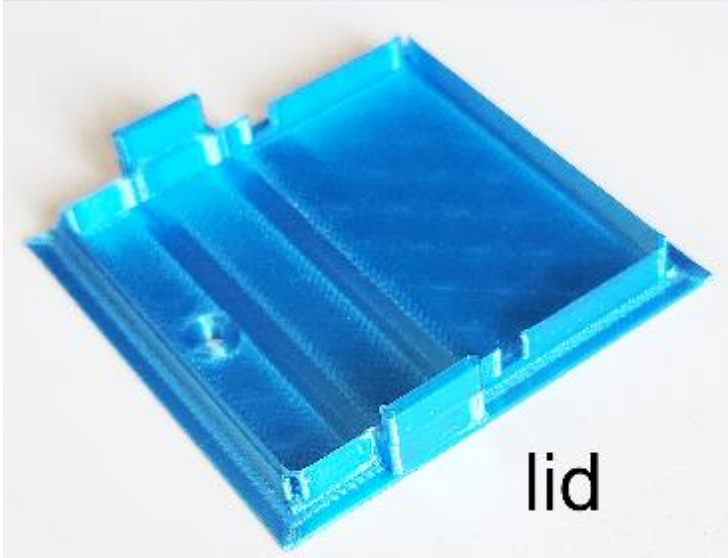
The yellow protective film covering the black rectangle on the ToF sensors will need to be removed if it has not already been done.

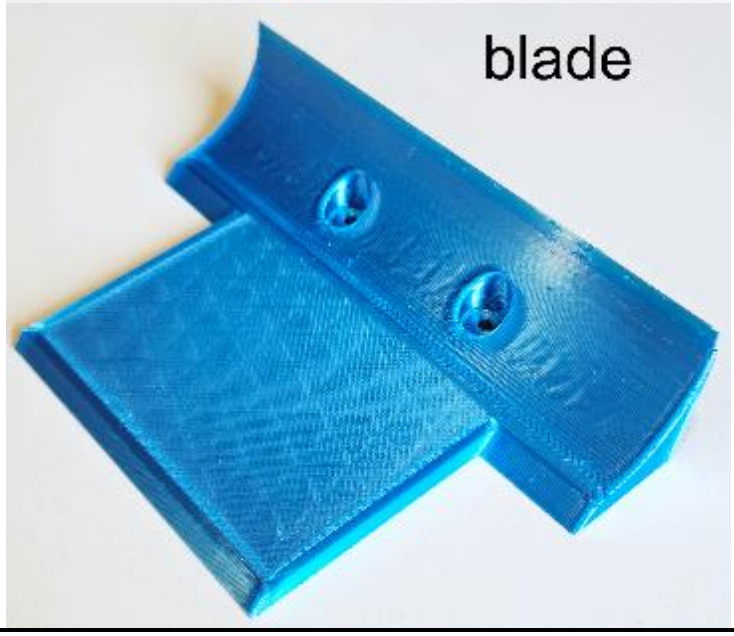
If the ToF sensors have not had their header pins soldered on, this will need to be done. The longer pins are in the back of the sensor and it is soldered from the front.



	
3. The four 3D printed parts: main body, fender bar, lid, and blade can be printed with standard settings. Printing time varies widely but plan on 8 hours of print time total. **Note that there is an updated body with a rounded bottom in back compared to the earlier version shown in these documents.** Only the main body needs to be printed with supports. The body is printed upright on the printer bed, as shown. Once it is off the printer the supports can be removed by popping them off the side of the body. The supports interface to the main body does not need to be cleaned up fully, although the bolt holes should be cleared. The fender bar is printed “face” down on the bed, as shown. Although it has 45 degree internal angles, it should not need to be printed with supports. The lid should be printed upside down on the bed, as shown, with the flat side on the bed. The blade is printed with its back (the flattest part) on the bed, as shown. It does not need supports. Parts preparation is complete and assembly can begin.	 


fender bar


lid


blade