

# Assembly Instructions

Version 6.4 September 2020

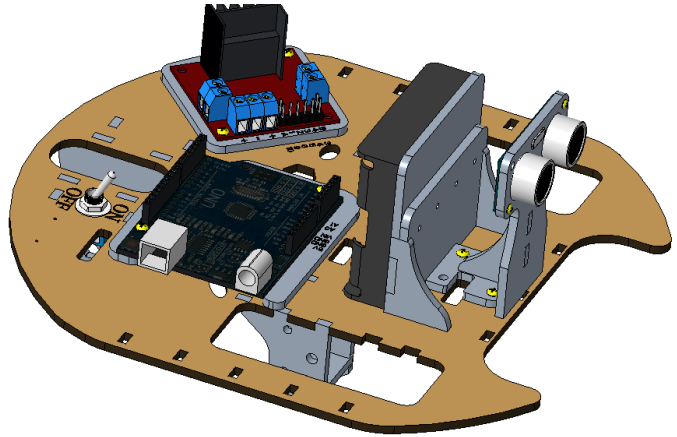
Section 1: Chassis

Section 2: Power

Section 3: Data

Section 4: Trouble shooting

Section 5: Coding



## Key:

Black Text: Basic instructions.

Blue Text: Extra information.

Red Text: Important information to avoid mistakes.

## What you will need

PVA Glue.

Phillip heads screwdriver (PH1).

Wire cutters.

Wire strippers.

Soldering iron and solder.

4 AA batteries.

Computer with the Arduino IDE installed.



## Recommended

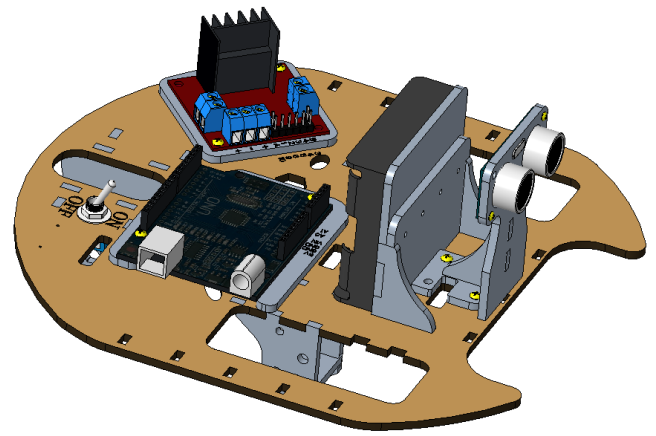
Multimeter

Battery tester

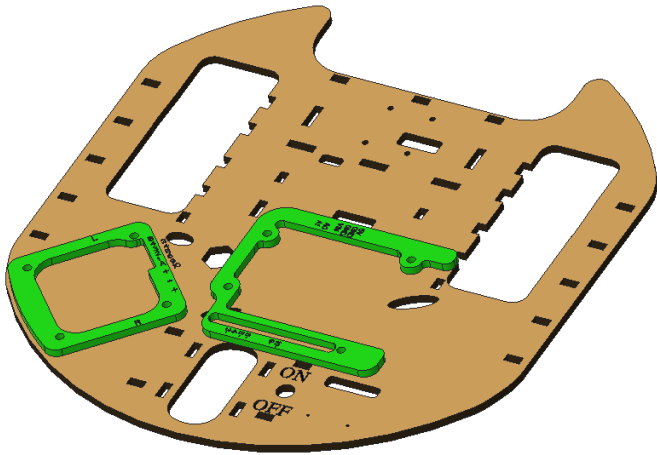
Patience



# Chassis



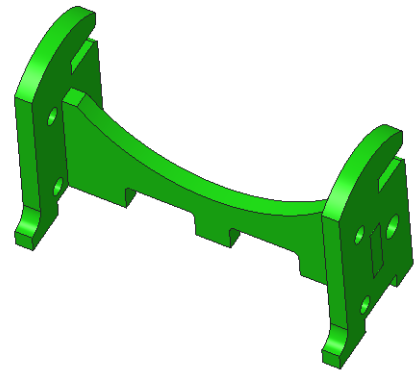
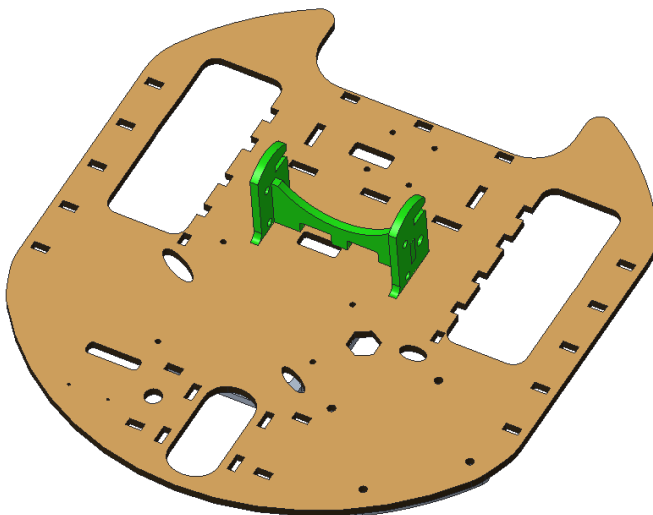
1. Glue motor controller and Arduino spacer on the top of the base.



Make sure that the text on the base and spacers are facing up. Slide the spacers back and forth 2-3mm to remove air bubbles. Make sure the holes for the screws are lined up.

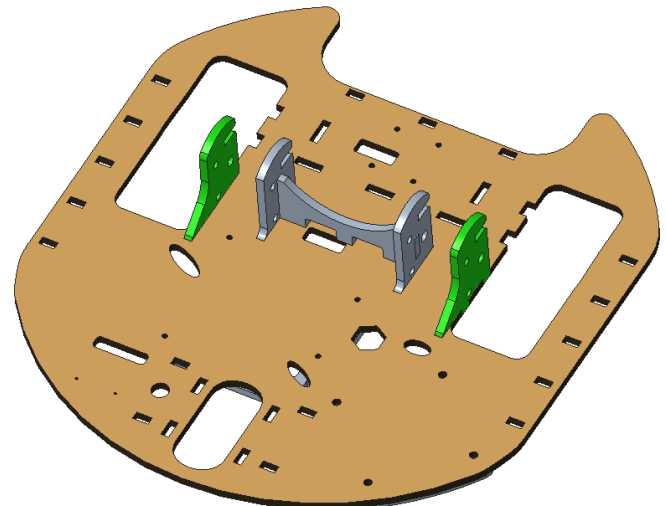
2. Glue the bridge and inside motor supports together.
3. Glue the pieces to the underside of the base.

Make sure the slots are facing in the same direction.



4. Glue the outside motor supports to the base.

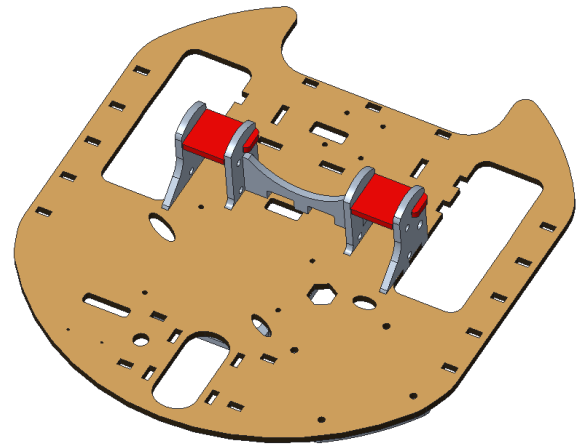
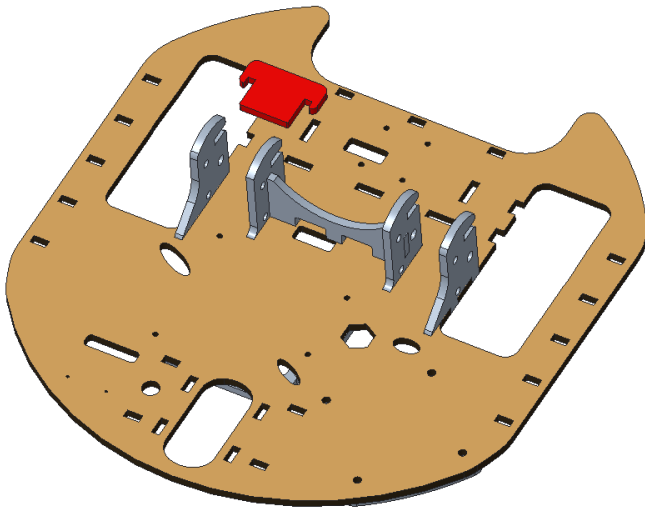
Make sure you get glue on each joining face to maximise strength.



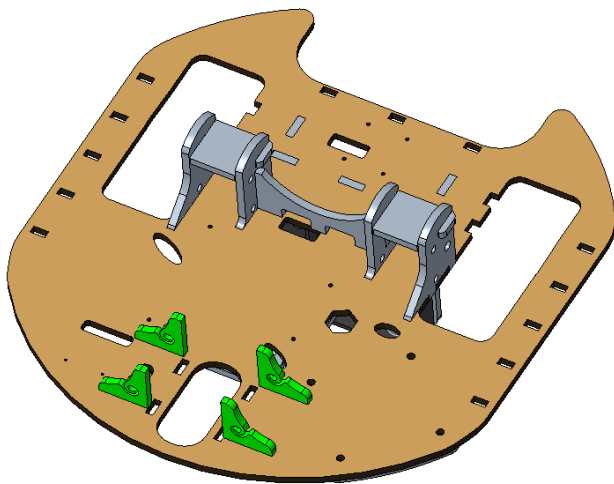
5. Use the bread shaped pieces to hold the supports in place.

Don't glue the bread.

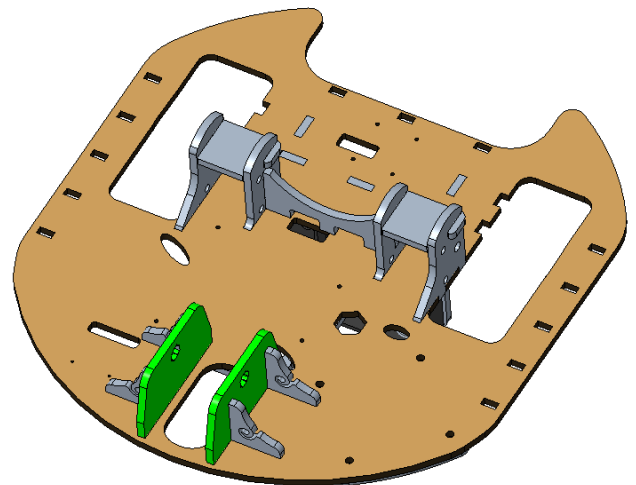
The bread needs to be removable to put the motors in.



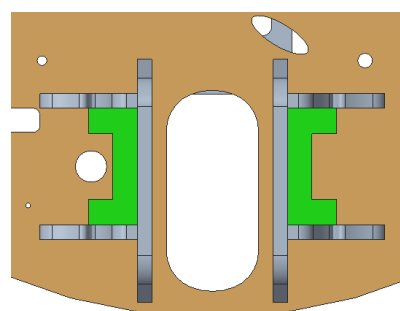
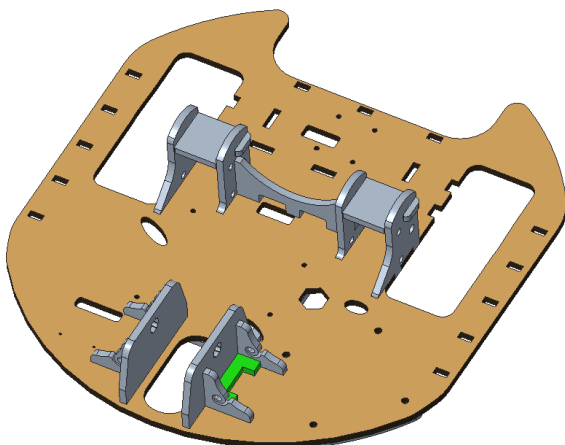
6. Glue the omni-wheel brackets in place.



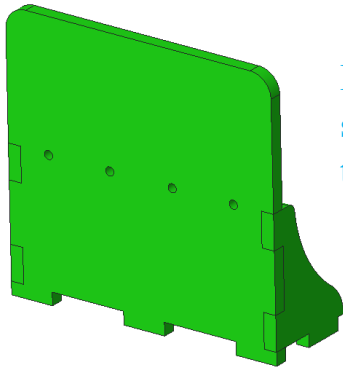
7. Glue the omni-wheelsupports in place.



8. Glue the switch supports in place.

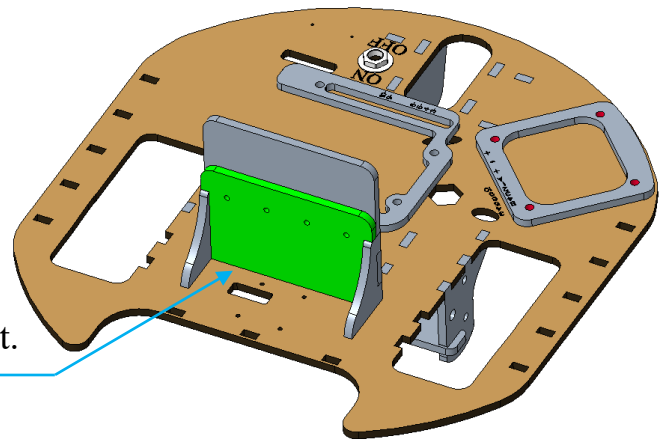
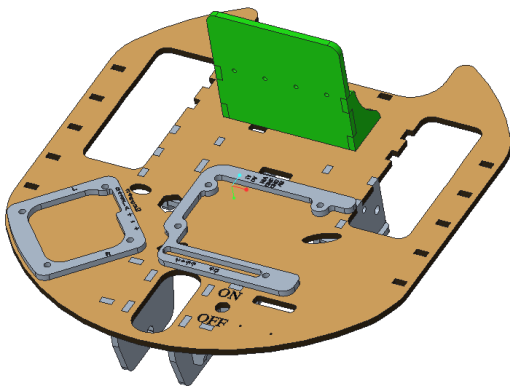


9. Glue the battery-case supports together.



Hold together for a few minutes so the glue starts to grab. You may like to use masking tape to hold together or work in pairs.

10. Glue the supports to the top of the base.

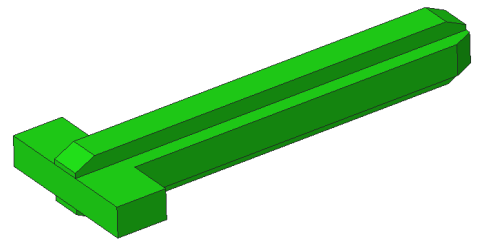
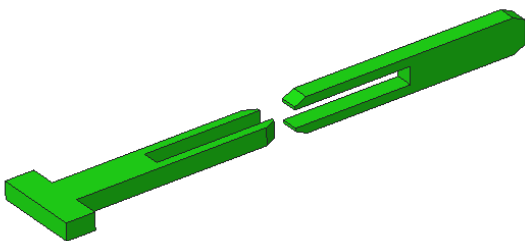


11. Glue the additional battery support to the front.

12. Glue the axel pieces together.

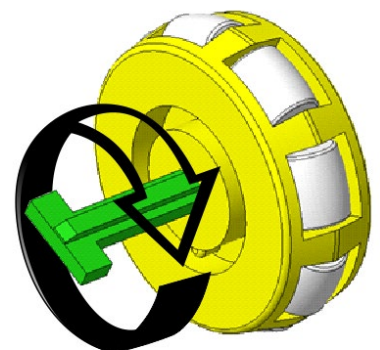
Make sure not to use too much glue or it won't slide through the omni-wheel support.

Don't insert axel until glue is dry (24-48 hours).



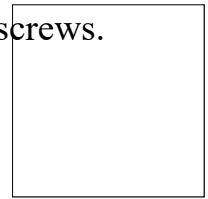
13. After glue dries, use the omni-wheel to round the axel corners.

No need to sand. The carbon lubricates the wheel.

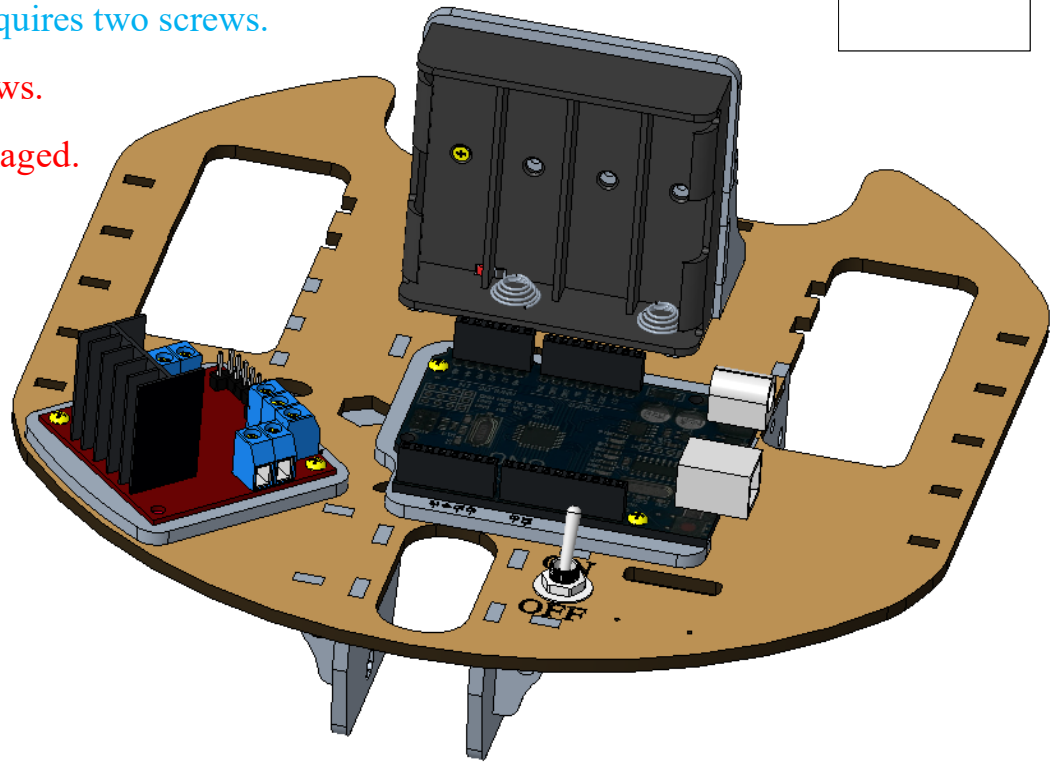


- 14. Place Motor controller and arduino on their spacers. Fix in place using screws.
- 15. Thread the wires from the battery case through the base. Fix in place using screws.

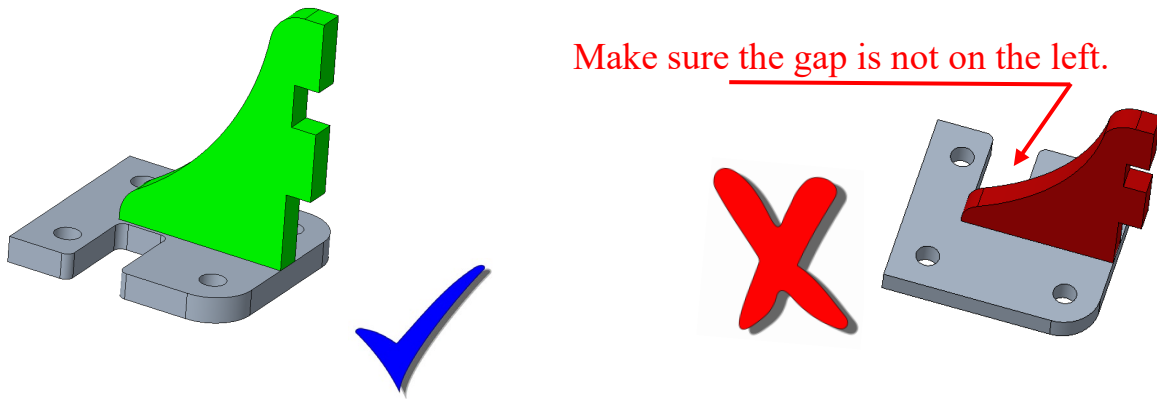
Be gentle with the wires, they are easily damaged.  
Each component requires two screws.



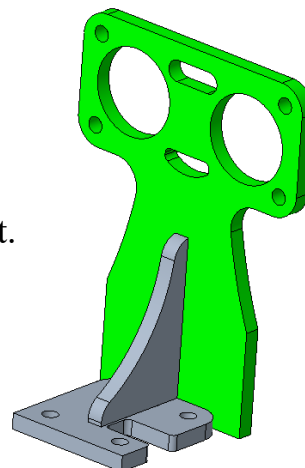
Don't over tighten screws.  
The MDF is easily damaged.



- 16. Glue the ultrasonic bracket to the top of the universal base.

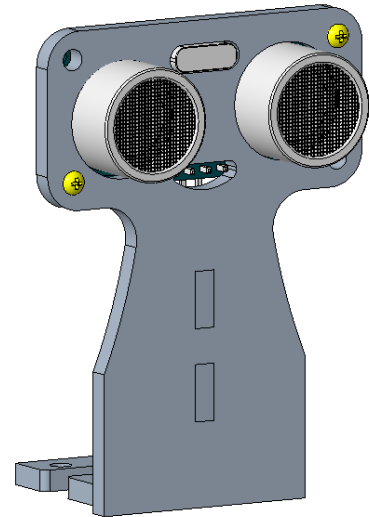
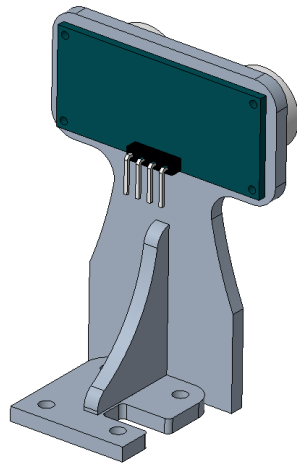


- 17. Glue the Ultrasonic support to the bracket.



18. Screw the Ultrasonic sensor to the support.

You only need two screws.



19. Screw the ultrasonic assembly to the base.

You only need two screws.

