

micro:bit Rover Lessons

Lesson 2: Designing a Motor Bracket

Objective: To design, create, test, and refine a 3-sided motor bracket for a TT motor, and to document the entire process in your engineering design notebook.

Materials:

- A TT motor
- 1 TT motor wheel
- 2-3 Mx30 bolts
- A ruler
- Calipers
- Datasheets for TT motors
- Engineering design notebook

Constraints:

- The wall thickness of the bracket must be 3mm.
- The two holes near the center of the motor must be fastened.
- The bracket should not be too wide to cause vibration.
- The bracket should not be too tight to cause constriction of the gears.

Instructions:

1. **Observation:** Observe the TT motor and the datasheets. Write your observations in your engineering design notebook.
2. **Measurement:** Use the calipers and ruler to take measurements of the TT motor. Compare your measurements to the datasheets and record this in your engineering design notebook.
3. **Design:** Sketch a diagram of the motor bracket in your engineering design notebook. The diagram must have labels of the measurements of the sides and the diameters of the holes for the bracket. The diagram must also have more than one angle.
4. **Creation:** Create a 3D model of the motor bracket in Tinkercad. The model of the bracket must match the specifications of the diagram in your notebook. The model must be 3mm in height.
5. **Testing:** 3D print the motor bracket. If the print job fails because of the structure, troubleshoot, and revise your design. Document the process in your notebook. Test the fit of the TT motor and M3 bolts in the bracket and record your observations in your notebook.
6. **Refinement:** If your design needs to be revised, do so in your notebook and repeat the process, documenting any changes.

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7. **Reflection:** After you create a motor bracket that fits well with the TT motor and M3 bolts, reflect on the process in your notebook.

Keep the datasheets in your engineering design notebook for future reference.