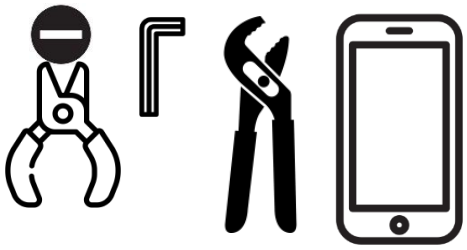
Quick setup guide

What you will need:

- Small flat screwdriver
- Allen key 2.5 mm
- Small wire cutter
- Adjustable pliers
- Cellphone or tachometer



1. Set min a max spindle speed thru carbide motion's MDI. To do so, send command ***$31=10000*** and ***$30=30000*** thru MDI. This will set minimum speed to 10000 rpm and maximum spindle speed to 30000 rpm on the GRBL controller board.

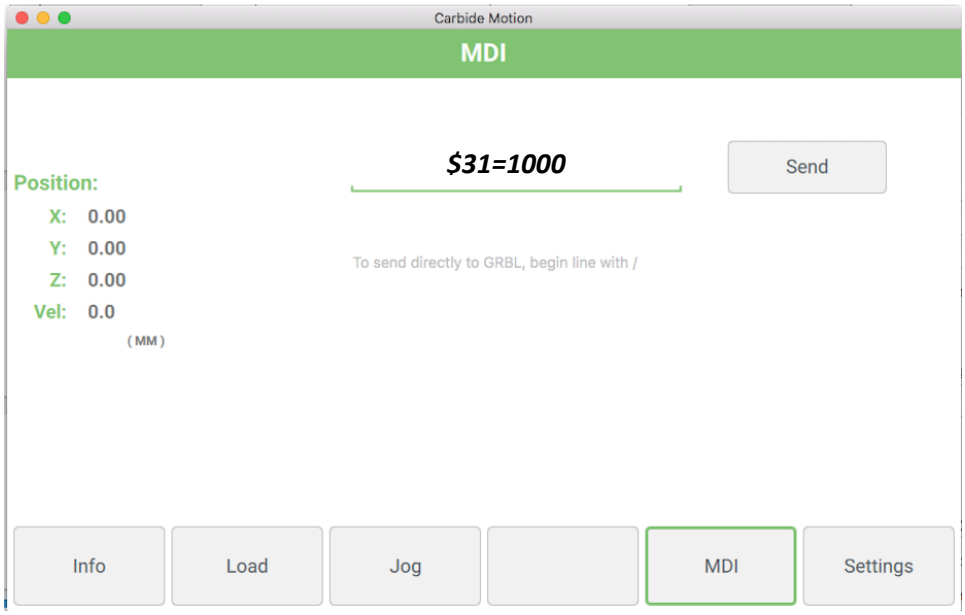


Figure 1 – Carbide motion MDI

2. Download a Spectrum analyser app from measuring the rpm. Suggested apps:

Figure 3 – Spectroid for Android

Figure 2 - Audio Spectrum Analyzer for IOS

3. Fasten the box on a stable surface near the Shapeoko controller box. Either use screws, or double-sided tape.

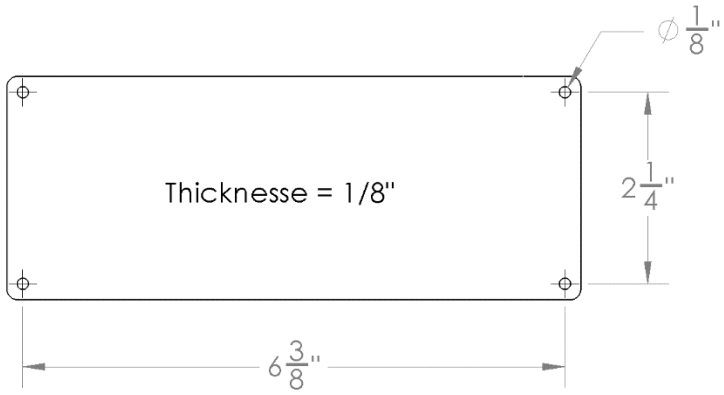
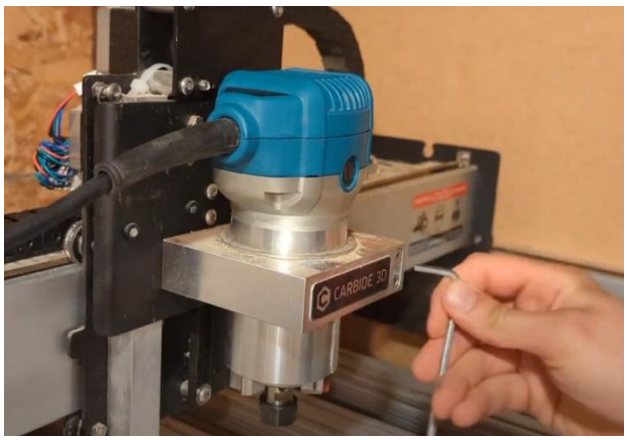


Figure 4 - Bolt pattern

4. Remove the Makita router from your machine



5. Open the top

6. Cut the three small wires from the potentiometer (keep the potentiometer as you might want to keep the option of changing speeds manually).

7. Connect the extension cable with the three button connectors. (Respecting the color code). Simply push the to wires inside the button connector and squeeze with adjustable pliers until it is flat with the transparent part of the button connector. Make sure the wires are fully pushed in before you press the button.

8. Close Makita router with cable going thru the opening, left by the potentiometer.

9. Use provided zip ties or electric tape to fasten the extension wire to the Makita power cord.

10. Connect the gray extension cord to the main box with lever connectors (respect color code)

Figure 5 - Lever connector

11. Connect the micro fit connector on the Shapeoko controller board. Read note if you don't have it on your board.

Note : If you do not have the micro fit connector you will need to buy one and solder it in place. It is a Molex 6pin micro fit connector the part number is 447640603 or 447640601.

12. Connect power cord to main box and into the wall

13. Plug Makita router into main box

14. Turn on Makita router (toggle switch)

15. Send command ***M3 S3000*** thru MDI.

16. Measure spindle speed with phone and spectrum analyzer app.

17. Use small flat screwdriver to turn the PCB potentiometer clockwise until frequency is 500 Hz. If there is no apparent peak, put a small tape on the spindle to increase noise. Going over 500 Hz is not suggested as it may damage the router.

$$Hz * 60 = rpm \rightarrow 500\ Hz * 60 = 30\ 000\ rpm$$

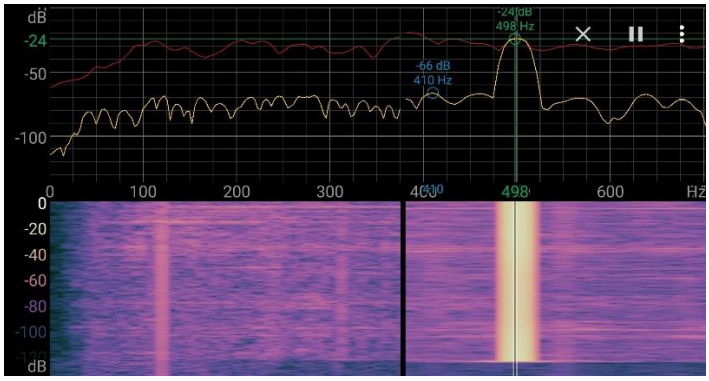


Figure 6 - Frequency Spectrum

Note : If you want to have more information on how to measure rpm with frequency analyser see Matthias Wandel's video on Youtube. https://www.youtube.com/watch?v=xutm6oMTBw8 Matthias Wandel measuring rpm with a spectrum analyzer mobile app.