

# Connecting the MK1-DRV Motors

This guide will walk you through attaching the MK1-DRV motors and wheels to your JackBord for the first time. This is the standard method we use, and will help get you moving.

If this is your very first time attaching the wheels, make sure to pay close attention to the instructions and follow them exactly.

Once you're a bit more experienced and confident in fitting the motors, feel free to make your own changes and experiment with different layouts.

If you get stuck, we also have a very helpful video on our website! Simply go to [www.jackbord.org/drive-motors](http://www.jackbord.org/drive-motors)

## What You Need

- MK1-DRV Motor Drive Kit
- 2 x Small yellow electric motors with mounts
- 2 x 65mm wheels
- 1 x Front trolley wheel
- 2 x 2x5 Right angle plates
- 10 x M4 4mm Bolts
- 10 x M4 Nuts
- 10 x M4 Washers
- Allen Key
- Multi-tool



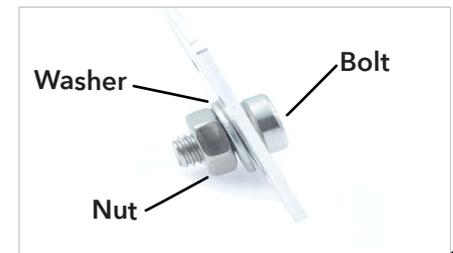
## Getting Started

We will be using bolts, nuts and washers to attach our motors and wheels to the JackBord.

We put bolts through the holes in the Jackano and use nuts to hold them in place. Between the bolt and the nut is a washer, which stops the nut from coming loose. So the order in which we assemble is bolt, washer, then nut, as pictured.



We can use our hands to twist the nuts onto the bolts, but we won't be able to screw them tight enough so that they stay over time. Remember to always use washers before putting on a nut, as this will save you some trouble over time. This image shows how these components assemble.



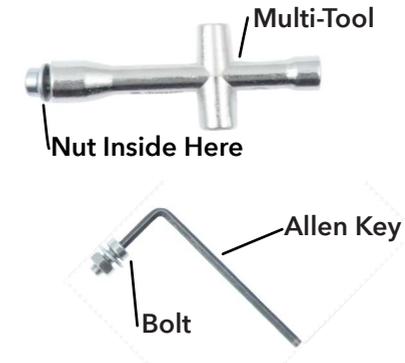
This is where we use the Allen key and the multi-tool.

The Allen key fits into the back of the bolt, and the multi-tool fits onto the top of the nut, as pictured.

The multi-tool is easy to use. We find the end that fits our nut, and use that to screw the nut on tighter.

The Allen key is handy when things get a bit fiddly, and the multi-tool can't fit into the space where we are working. We just put a finger over the nut to keep it in place and twist the bolt tight with the Allen key.

Remember to always use washers before putting on a nut, as this will save you some trouble over time.

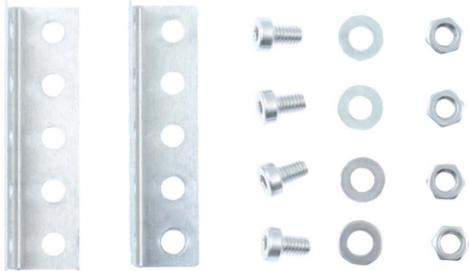


### Tip: Which Motor is Which?

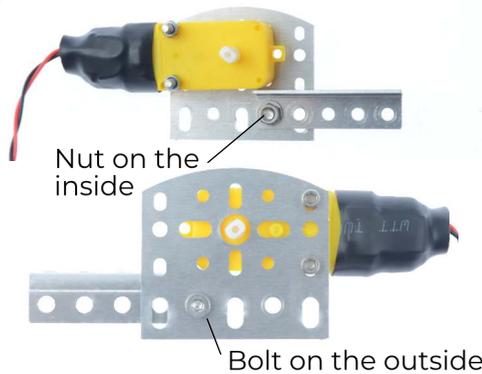
To tell which motor is which, hold both in front of you, with the wire facing towards you, the flat side of the plate facing up, and the curved side facing down. The side that the metal plate is on is the motor you have. So, if the metal plate is on the left-hand side of the motor, you have the left motor.

## Attaching Brackets

1. Starting off, we are going to give our motors brackets so that we can attach them to the JackBord. You will need the 2x5 right angle plates, along with four bolts, washers, and nuts each.



We're going to start with the left motor. Line up the two left-most holes on the inside of the right angle plate to the two right-most holes on the inside of the motor's plate.

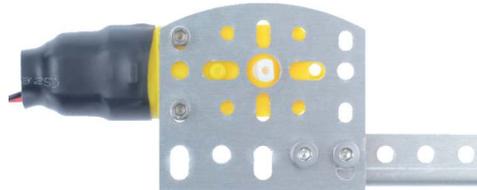


When you look at this image to see how it's lined up, you can see that we have already put the first bolt through to hold it in place. We put the bolt in from the outside and attached the washer and nut from the inside. This is important, as we don't want the nut to get in the way of the wheel when we attach it later on.

2. Attach the second bolt to the bracket, and tighten both nuts using the multi-tool.



3. Now, do the same for the right motor. Line up the two right-most holes on the inside of the right angle plate with the two left-most holes on the inside of the motor's plate. Attach with two bolts, inserting from the outside and attaching washers and nuts from the inside.

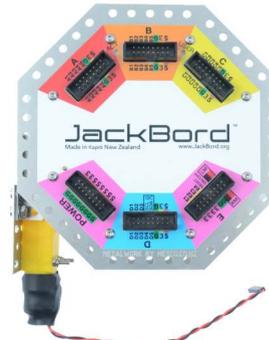


## Attaching Motors

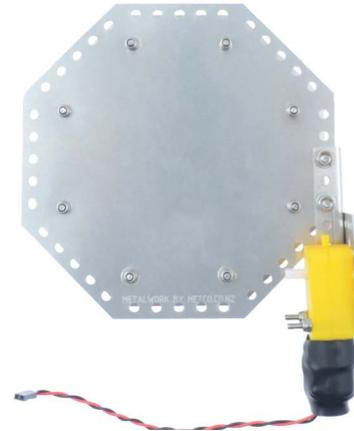
1. Now that we have brackets, we can attach our motor to the JackBord. For this, we will need 4 bolts, washers, and nuts each.



2. We're going to start off by attaching the left motor. We need to line it up, on the left-hand side of the JackBord, at the back next to the power port.

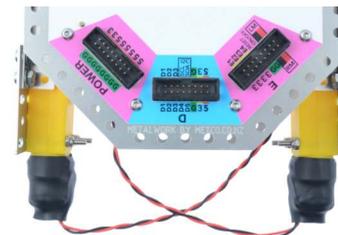


Once you have it lined up as above, hold it together and flip it over. Line up the holes on the bracket with those on the bottom of the JackBord.



Attach the motor to the JackBord using bolts, washers, and nuts. Unlike the brackets, it doesn't matter which way the nuts and bolts go in. However, it is easier to tighten the nut when it's on the bottom of the JackBord.

3. Once you have attached the left motor, attach the right motor in the same way, but on the other side.



Once you've done that, your JackBord should look like the following photos.



## Attaching Side Wheels

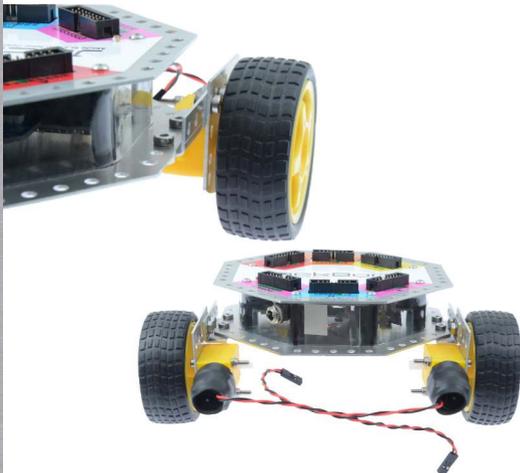
1. Now it's time to attach the motors' wheels. You'll need the two 65mm wheels.



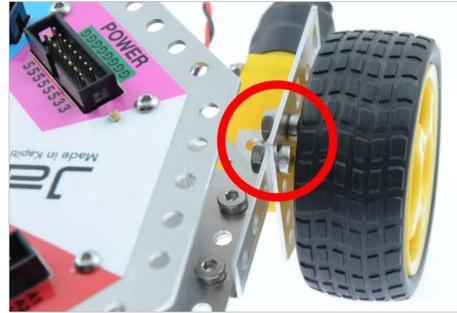
To put them on, you simply need to push them onto the white shaft coming out of the motor.



You'll notice that both the wheel and the shaft have a rectangular shape, so make sure that they are lined up before you push the motor on. You'll know the motor is on securely when it clicks.



This is where you see the importance of attaching the brackets with the nuts on the inside, so that they don't rub against the wheel.



## Attaching Front Wheel

1. So that the JackBord can balance on its own, we need to attach the trolley wheel to the front. As well as the wheel, you'll need 2 bolts, washers, and nuts each.



We want to attach the wheel to the front of the JackBord, so we are first going to line it up underneath port B.



2. Once you have it lined up, attach the first bolt to keep it in place.

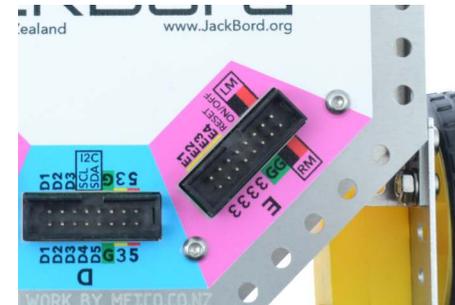


3. Now, attach the second bolt.

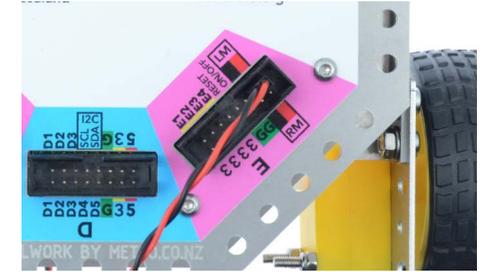


## Connecting the Motors

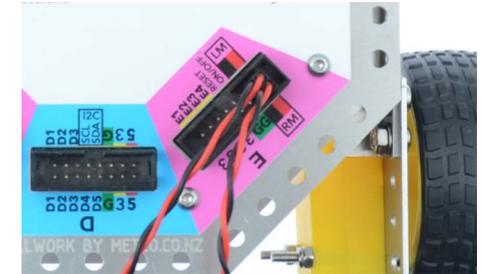
1. Now that we have the wheels and motors on the JackBord, we can connect their wires to port E. This way, we can power the motors and tell the JackBord how to move and where to go.



2. As you can see, LM (Left Motor) and RM (Right Motor) are marked. We are going to connect the left motor to the LM pins, making sure to line up the red and black wires as marked on the JackBord.



3. Next, do the same for the right motor wires.



Now you're done, and ready to start driving!

