



BLACK HAWK
ELECTRIC

Technical Instruction Manual:

Tyre/Wheel Skin Replacement



Model:

AT Series V3

Table of Contents

Preface:	3
Safety Tips:	3
Advice:	3
Instructions:	4
Video Instruction WIP:	11
Acronyms and Terminology:	12

Preface:

These instructions provide a guide towards fulfilling the title description. There may be slight variations to the model, based on the production timeframe of the product. If you have any questions or concerns about the process shown in this manual, please contact our support team here: support@blackhawkelectric.zendesk.com

These instructions are always improving and changing. If you have any feedback on the process demonstrated, please provide constructive feedback to the support email address above.

Safety Tips:

- Do not work on the board with the charger connected.
- If working internally to the battery compartment, always disconnect the battery before disconnecting or connecting anything from the ESC. Reconnect the battery last before testing.
- Be sure to read and understand the battery safety notice in the products manual.
- If cutting is required, always cut away from yourself and any object that can be damaged by a blade. A pair of side cutters are preferred over blades, as they benefit the user with more control.

Advice:

- Always use the appropriate tools, using the incorrect size tool can cause damage to the fasteners or tool causing the product to become unserviceable.
- Always start tensioning fastening fasteners slowly and in a circle or star pattern. Start with finger tight fasteners, then tension each fastener one by one with a quarter of a turn until all movement is removed between the fastener and the object you are fastening.
- Ensure that the correct tool is well seated straight into a fastener before starting to tension or loosen. This is to prevent unwanted slipping or damage to the tool or fastener. Occasionally tapping the tool deep into the fastener can assist in establishing a firm hold between the tool and the fastener.
- Internal to the board, the plugs on the ESC may be held with a small amount of yellow glue on the top of the plug. If needed, this can be carefully removed using a set of small needle nose pliers or a flathead screwdriver.
- Try not to remove plugs from the ESC by pulling the wiring. Pulling from the wiring can damage the connections or stretch the wiring. Instead remove by pulling the plug.

Instructions:

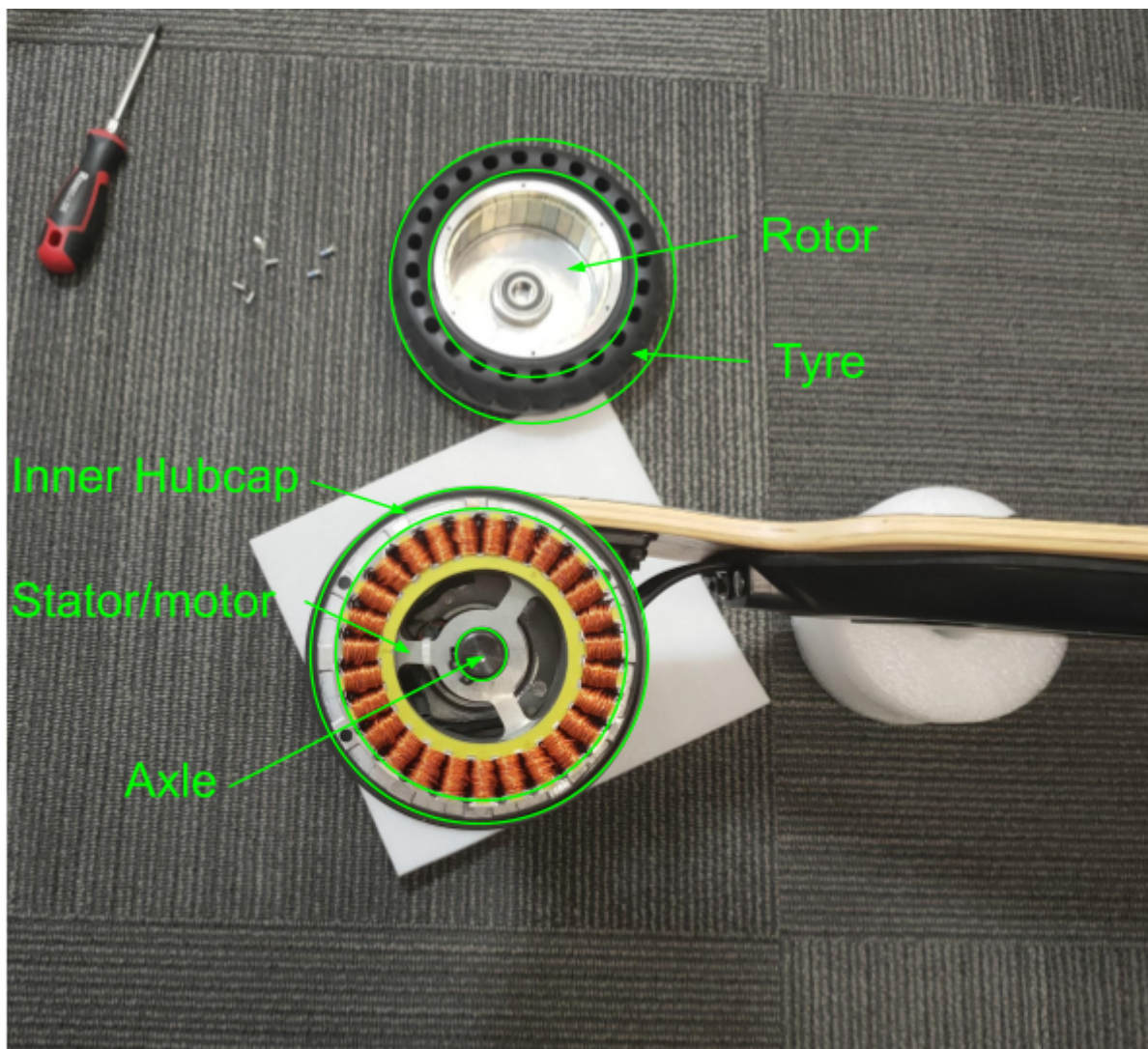
Tools Required:

- Phillips head screw driver
- 2x Metal tyre lever or 2x Flat Head Screwdriver
- Rubber Mallet
- Threadlocker (such as Loctite Blue)

It is recommended to only change one tyre at a time until completion.

Understanding terminology:

This picture should help you understand what parts are being referred to as the instructions describe steps to replacing the tyre.



Steps:

Start with the board propped up on its side. Place protection under the deck and under each wheel hub. This protection should be placed in a way that the board is stable and will not scratch or be scratched by the working surface. See example photo.

Note: The board should never be stored or transported in this position. It should always be stored and transported flat on its 4 wheels. However, this is a good temporary position for this process.



In this presentation, we are choosing the rear right motor.



Use an appropriately sized phillips head screwdriver and remove the 6 hub cap bolts on the side of the wheel. An appropriate sized screwdriver, will fill the vast majority of the screw, see picture below:



Once all 6 bolts have been removed you should now be able to remove the outer rotor of the wheel.



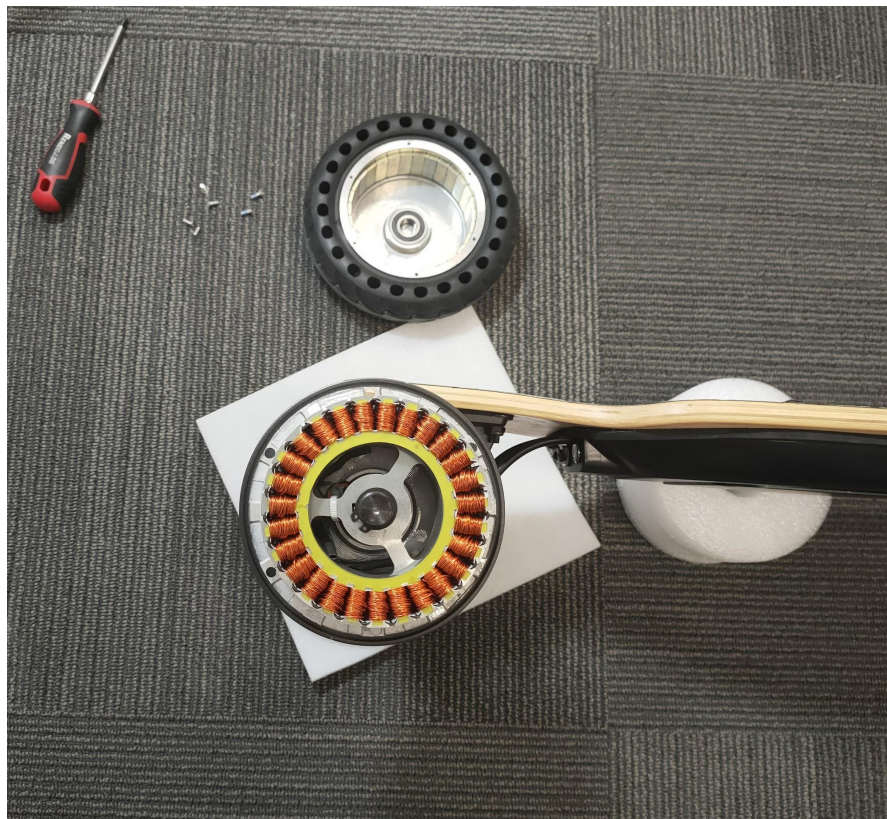
Flip the board over 180 degrees, so the the wheel you are changing is off the ground

With the board propped on its side, place your feet on the opposite wheel to hold the board steady. Hold the rotor with both hands and pull the rotor up towards the sky, straight off the axle.



NOTE: The motor wheel is significantly harder to remove than the front wheels. This is due to the rotor being held to the stator with strong magnets, so you may require a partner to assist with this step.

With the rotor removed, you can now remove the tyre



The tyre is a very tight fit, so may take some patience and effort to remove. Using the tyre levers or flat head screwdriver, carefully lever the tyre off the rotor little by little around the edges until the entire tyre is removed or is loose enough to remove by hand.



Now for the hard part.

Line up the new tyre with the rotor (be sure to have the tread face the correct direction).



Carefully lever the tyre onto the rotor, being careful not to damage or scratch the motor. It can help apply pressure to the tyre while levering with either your hands or your foot, which can be quite tricky solo. So it could be helpful to have a partner for this step.



Once you have levered the tyre a small section of the tyre around the entire motor. You can push the tyre onto the rotor. Or use a rubber mallet to tap the tyre over the rotor, using a circular motion around the edges.

Check that the tyre is all the way seated onto the rotor.



You can now place the rotor back onto the axle/motor.

MOTOR CAUTION! - When placing the rotor back onto a motor, the rotor will want to snap back over the motor at **great force**, due to the magnets internal to the rotor. Be very careful not to pinch anything (fingers, clothing, tools). If anything is caught between the rotor and motor during this process, it may result in **serious damage to the product or harm to the body**.

Line the rotor up to the axle and push it back onto the axle. Flip the board back over 180 degrees. Line the hub cap up to the bolt holes. Press firmly on the inner hub cap to ensure it is properly seated back into its original position.

Apply a small amount of threadlocker to each bolt (optional. If using a threadlocker, it is a good idea to wear a pair of disposable gloves). Finger tighten each bolt to fasten the hubcap back to the rotor.



Once all bolts are finger tight. Tension each bolt evenly in a circular pattern or in a star pattern (star pattern recommended). A reference to the tension patterns is available towards the end of this document.

Either pattern you choose to tension the bolts, ensure that the bolts are tensioned evenly.

Final Steps:

- Test spin the wheel.
- Test operation of board.
- Double check fasteners are tensioned.
- Proceed to test ride.
- Enjoy!

Video Instruction WIP:

Official Black Hawk Video instructions are not available currently, sorry.

A third party video that uses a similar technique on a product that is not Black Hawk Electrics, can be found here:

<https://www.youtube.com/watch?v=8M38hd4-7bc>

You cannot follow these instructions exactly. This video is provided as a reference only and is mostly similar in method regarding levering the new tyre onto the rotor.

Acronyms and Terminology:

This section describes some common terminology used in this document.

Circular Tension Pattern

A method of evenly tensioning bolts. In the example the bolts should be tensioned following the numbers, 1 to 6 in order.



Star Tension Pattern

A method of evenly tensioning bolts. In the example the bolts should be tensioned following the numbers, 1 to 6 in order.



ESC

Electronic Speed Controller. Also known as a motor controller, ESU, speed controller or main circuit board. This is the 'brains' of most light electric vehicles, it receives input from the remote controller and powers the motors from the battery.

Rotor

Rotating section of a motor or wheel.

WIP

Work In Progress. This may refer to a section in the instructions that is still being developed.

Truck Base

Section of the truck that is bolted to the deck with 4 bolts. The kingpin is inserted through this base to attach the hanger.

Hanger

Section of the truck that supports the wheels via an axle or has an axle slot for the installation of motors.

Kingpin

Large single bolt in the centre of the truck. It holds the hanger in place.

Bushings

Section of the truck that is inserted over the kingpin and is made of rubber.

Production dependant

Each time one of our boards is produced it undergoes minor changes or improvements. The idea behind this is to gradually improve the product over time. We will endeavour to make note where possible of these minor changes.