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A Guide to Electric Bikes

WHAT IS AN ELECTRIC BIKE / EBIKE?

There can be some confusion as to how an electric bike (ebike) operates and the difference between an ebike and a traditional bicycle. The truth is that there aren't many differences in how you use them, but the results and ease of use are greatly improved.

Traditional / Mechanical Bike

Electric Bike

The correct term for an electric bike is an electrically "assisted" bike. This means that you still have to pedal but the motor within the bicycle will activate when you start pedalling and give the user assistance. The controls on the bike can help the user decide what level of assistance they require, usually on a scale of 1 to 5, 1 being the least amount of power and 5 being the highest.

Electric Bike for share scheme

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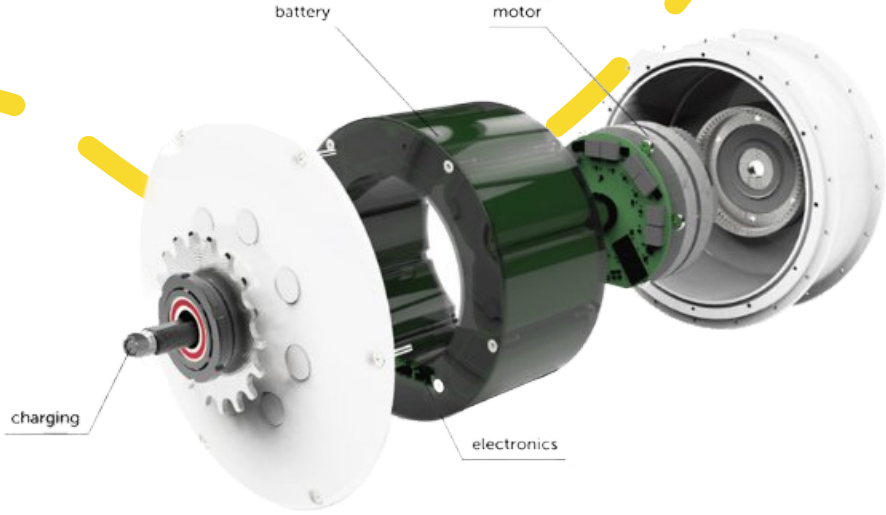
HOW DOES AN EBIKE WORK?

Different manufacturers utilise different methods to activate the motor, but they all have similar outcomes. Essentially the motor will activate when you start pedalling and deactivate when you stop pedalling. The aim of the motor is to provide additional power when you pedal, the more pressure you have the more power you will get.

For safety reasons there are also sensors connected to the brake levers that deactivate the motor as soon as you start braking thus enabling the rider to reduce the speed of the bike quickly and safely.

Torque
a measure of the force that can cause an object to rotate



Torque sensors respond by giving the rider by matching the speed and movements of the rider.
Motion / Speed sensors begin working as soon as the rider begins pedalling.

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SAFETY AND REGULATIONS

Mounting and Dismounting
applying pressure to the pedal will start the motor!

Be Safe, Be Seen!
Make sure your ebike is fitted with lights front and back!

Be aware of vehicle blind spots
Just because you can see them doesn't mean they can see you.

Brake earlier
Higher the speed, longer the braking distance.

Check your tyres!
Remember they are the only thing touching the road so make sure they are inflated to the correct pressure and in good condition.

Wear a helmet!
Remember the hardest thing when learning to ride a bike is the ground! Make sure your head is protected!

Watch your speed!
Just because you can do 25kph doesn't mean you have to!

Use hand signals
Make sure other road users know of your intent to change direction.

The European Union directive for Electrically Pedal Assisted Cycles states that an electric bike must:

- Have an auxiliary motor with a continuous output of no more than 250 watts.
- Progressively cut motor assistance when the rider reaches a speed of 25 mph or stops pedaling.

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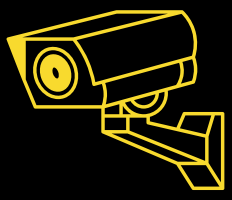
SECURITY

Chose a locking point that is well lit, if possible near CCTV



Never leave valuables unattended with the ebike.

Always lock your ebike to an immovable object

Take photos of your ebike. This will help authorities to identify it.

Try and secure the frame and the wheels where possible

Make sure your lock is robust and if possible immobilises the wheels.

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MOTOR TYPES

As per EU regulations all road legal ebikes must have a maximum motor size of 250w with a top speed of 25kms per hour.

This tends to be the industry standard but no harm to check with the retailer that the bike meets EU regulations. Larger and more powerful motors are available but are not road legal. There are three locations where the motor can be located:

Front Wheel Motor: built into the hub of the front wheel and does make it easier to repair and replace the motor but the downsides are that the this can effect the weight distribution of the bike and makes the motor easier to be removed “without permission”!

Bottom Bracket Motor: The motor is installed within the frame of the bike at the cranks thus providing good weight distribution and security. Bottom Bracket Motors usually benefit from using torque sensors too which provide a smoother and more efficient ride.

TOP TIP!

Bottom Bracket motors built by companies such as FIVE, BOSCH and SHIMANO are good reliable options. They can be more expensive but if your budget allows it is definitely worth the extra few bob.

Rear Wheel Motor: As with the front wheel motor they are incorporated into the central hub of the rear wheel. Tend to be more difficult to access but still a good option none the less.

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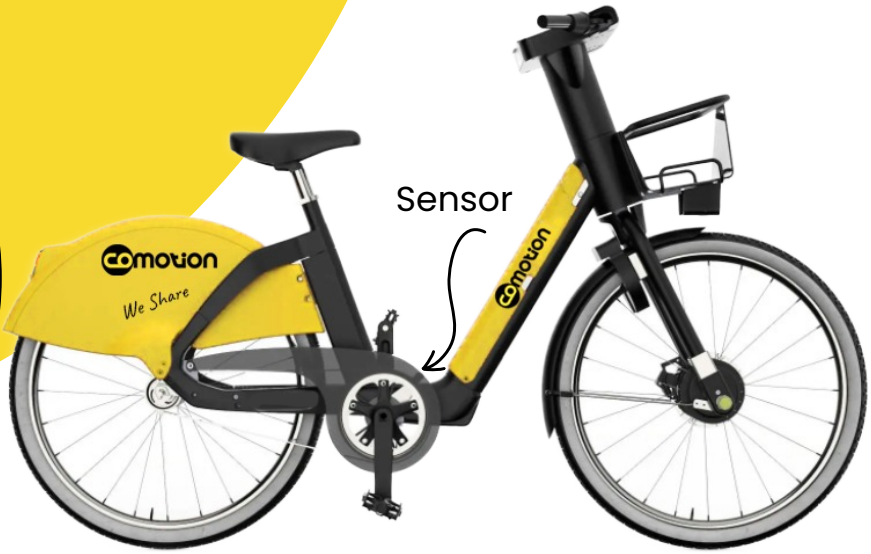
SENSORS

Motion / Speed Sensor – This is a simple externally mounted sensor that detects the rotation of the pedal crank and switches on the motor at the desired assistance level.

Torque Sensor – usually incorporated within the bottom bracket of the bike it also detects rotation of the pedal cranks but also has the ability to sense the amount of pressure being applied to the pedals (cycling up a hill) and automatically supplies more power.

TOP TIP!

Always set your assistance level to 1 when starting off, this will help to prevent a sudden supply of power that might unsettle you or cause you to lose control of the bike.



CONTROLS

These are nearly always mounted on the handlebars of the bike and allow you to control the motor and the power it delivers. Again, these vary from manufacturer to manufacturer. They range from simple push button panels to complex minicomputers with LCD displays. It will be a personal choice as to which style will suit your needs.

TOP TIP!

As a rule of thumb when shopping at the lower end of the market look for control panels that are simple and robust, the less features the better as they are less likely to give issues down the road.

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TYRES

It's important to remember that an ebike can weigh up to three times the weight of a standard bike, some reaching up to 35kgs.

This additional weight and the increased speed of an ebike will demand more from your tyres so make sure your new ebike tyres are rated for use on a ebike. Brands such as Schwalbe Marathon provide excellent reliability and strong puncture resistance.

TOP TIP!

Keep your tyres properly inflated as per manufacturers recommendations. Correctly inflated tyres offer better handling and less rolling resistance, this will also help to increase the return from your battery.

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BATTERY

The specifications of ebike batteries can confuse the best of us.

In short they are mostly Lithium-Ion and a good tip is to look for the Amp hour (Ah) rating. As an absolute minimum 10Ah is good for a daily commuter but for extra longevity a 16Ah battery (or similar) will provide peace of mind on longer journeys. Batteries can be mounted in-frame, on the seat tube or down tube, or rear carrier. Test the bike for weight distribution as the higher off the ground the battery is mounted the less stable the bike will be while on its stand. Also consider security, is the battery easily removed?

TOP TIP!

Your battery life will be initially shorter than expected. New Lithium Ion batteries require 5 to 6 full charges to reach full capacity so remember not to take on too big a cycle to start.

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FRAMES

There are two main styles of ebike frame, step through (Unisex / Ladies) which provide a lower crossbar at crank level or Diamond Frame (Crossbar / Gents). It really is a personal choice which style suits the rider best. Frames can be made of aluminum, carbon fiber, titanium, or steel. Considering the Irish climate a good quality, purpose built aluminium frame is always a good investment.

Step through (Unisex / Ladies)
lower crossbar at crank level

Crossbar / Gents
Diamond Frame

TOP TIP!

A simple rule of thumb to size your ebike is to adjust the saddle height to your waist level. This usually means that your legs will extend correctly when cycling and you should be able to comfortably start, stop and dismount your bike.

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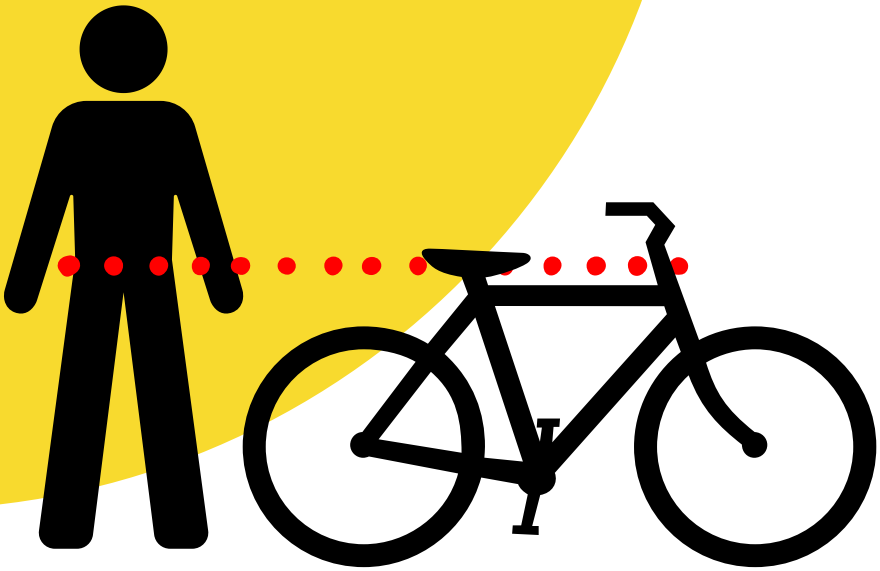
BALANCE AND WEIGHT DISTRIBUTION

Before you start cycling, meet your ebike and say hello. It is important that you are familiar with the controls and operation of your new ebike. It's not that difficult just know how to turn it on and off and that you size the bike correctly to your height.



Adjust the saddle height to your waist level, this way your legs will extend properly while cycling.

The location of motors and batteries can influence the handling of your ebike so make sure you stand with your ebike and walk with it to familiarise yourself with the weight and handling.

TOP TIP!

Have you ever tried a **SLOW BIKE RACE?** Pick a safe location and try to cycle as slow as you can in a straight line. This is a great way to increase your cycling skills, balance and control of your ebike. It can be great fun too if you get others to join you.

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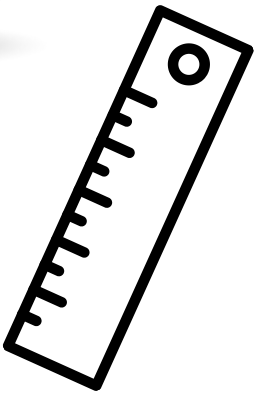
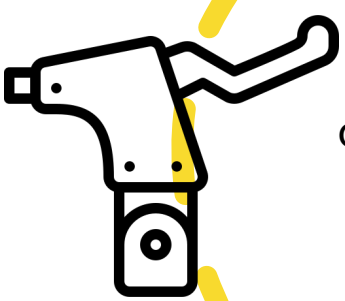
LETS HIT THE ROAD

Hold on for a minute, we know you are excited but there are just a few more tips before you head off.

Safety Check – Utilise a quick visual check called the M-Check to start at the front wheel and progress through all main components of the bike to ensure the bike is correctly assembled and safe to ride.

Sizing - Stand over your bike, take a seat and make sure you are comfortable and can easily mount and dismount your ebike. Adjust the saddle height to your waist level, this way your legs will extend properly while cycling.





Braking - Always brake with both hands at all times. This provides a balanced and evenly controlled braking experience no matter the speed. Different styles of brakes will provide sharper or softer braking experiences. For example Hydraulic activated Disc brakes are sharp and precise while traditional cable activated V-Brakes are softer. Take a short spin forward and assess your bikes braking power.

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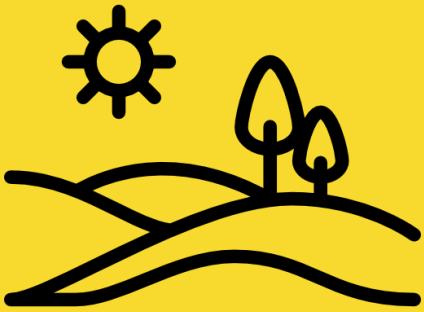
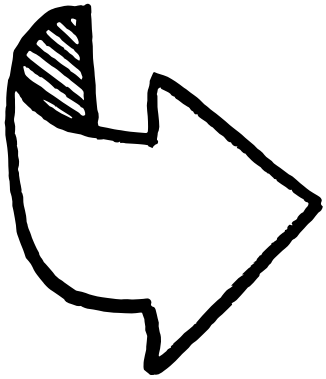
LETS HIT THE ROAD



Surroundings – For your first few rides we'd suggest a quiet location like a park or dedicated cycle lane. This will allow you to familiarise yourself with the ebike and its handling without additional distractions. Practice starting and stopping several times whilst gradually increasing your speed. Remember practice makes perfect so do make time to practice emergency braking and cornering.

Cornering – Like any other bicycle it is important to remember a few simple steps whilst cornering. If turning left make sure your left pedal is elevated and the opposite if turning right. This allows extra clearance whilst cornering and prevents the pedal catching the road or kerb. Remember to stop pedalling whilst cornering as this allows for greater control and also disengages the motor whilst you complete the manoeuvre. Keep both hands on the brakes too..... Just in case.



TOP TIP!

Practice cycling in circles both clockwise and anti-clockwise. This will increase your confidence and your handling skills.

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