

# **LEADER FOX**



## Electric Bicycle Operating Instructions

Under the law, the dealer is obliged to attach the LEADER FOX Electric Bicycle Operating Instructions to every product



**E – BIKE** POWER RIDE

**Arimo**  
**Sandy**  
**Barnet**





# Introduction



Dear users,

Please read carefully all the information regarding your E-LF product to ensure optimal functioning of your e-bike. The following text containing a comprehensive description will provide you with information on all aspects and details (including installation, setting up and general use of the display) regarding the use of our display. This instruction document will also help you solve potential problems and failures.

## What is an electric bicycle?



Electric bicycle is a conventional bicycle with an electric drive added to assist the rider. The motor function is actuated by pedalling, which is scanned by a special sensor installed in the pedal hub. Therefore, you have to keep pedalling on an e-bike, the motor is there only to help you. You can set an electric bicycle in motion also using a control button or an accelerator but only up to the maximum permitted speed of 6 KMPH (e.g. for walk assistance). The maximum speed of an e-bike with motor assistance is 25 KMPH, with a 10% tolerance (when this speed limit is reached, the motor switches off and you need to pedal just like with a regular bicycle). When your battery runs out of power or your motor is off, you can ride your electric bicycle as a conventional bike, without any resistance at all.

From the point of view of the Road Traffic Act, an electric bicycle whose features conform to European standard EN 15194-1 is regarded as a regular bicycle, i.e. you can ride on bike trails, do not need a driver's license and a helmet is mandatory only up to 18 years of age.

## Description



## Factors influencing the electric bicycle range

- 1. Rolling resistance of the tyres.** Leader Fox e-bikes are fitted with tyres with low rolling resistance and increased resistance to puncture. It is also important that the tyres are inflated properly. Therefore, if the tyres of your electric bicycle are underinflated, the range will decrease.
- 2. Weight of the electric bicycle.** The lower weight of the electric bicycle, the greater the range.
- 3. Battery status.** It depends on whether the battery was fully charged before your trip. It is also to be expected that the higher the number of discharge cycles the battery has undergone, the smaller capacity it has.
- 4. Profile and surface of the track.** The higher the elevation difference and the steeper hills you negotiate and the worse surface, the shorter the range.
- 5. Riding mode.** It depends on which of the three riding modes you have set.
- 6. Continuity of riding.** The more braking and acceleration, the shorter the range.
- 7. Air resistance.** For example, it depends on whether we ride a bicycle with low frame and sitting upright or whether we ride sporty bicycle with seat set to the same height as the handlebars.
- 8. Wind strength.** The stronger the wind we have back, the longer the range and vice versa.
- 9. Weight of the rider and load.** The greater the weight, the shorter the range.
- 10. External temperature.** The lower the temperature, the less battery capacity can be used while riding.

# Safety instruction

## Battery:

- Do not throw the battery into fire.
- Do not throw the battery into water.
- Do not use the battery for other appliances. It has been made specifically for this model.
- Do not dismantle or modify the battery.
- Do not connect the positive and negative poles of the battery.

## Charger:

- Do not dismantle or modify the charger.
- Do not use the charger for other appliances. It has been made specifically for this model.
- Do not throw the charger into fire or water.
- Do not touch the charger with wet hands.
- Keep the charger from animals or children.
- Do not cover the charger.
- Do not use the charger if it is broken.

### Battery

Switch and LED indication



### Charging set



# Battery

## **Battery charging and maintenance:**

Charge the battery in a dry environment to avoid short-circuit damage.

Charge the battery to at least 60% of the capacity once every 3 months even when the bicycle is not used.

Do not cover the battery or the charger.

Do not leave the battery constantly connected to the power source.

Do not use the battery for other appliances. It has been made specifically for this model.

Do not disassemble or modify the battery pack.

Do not throw the battery into fire or expose it to extreme temperatures.

Recharging time from zero to 100% is 1-7 hours.

## **Drive warranty:**

The warranty applies to those drive parts that are not sensitive to improper handling (pack, electronics, charger, etc.); such parts are covered by a 24-month warranty.

The warranty does not apply to chemical parts of the battery and to capacity reduction due to normal use (39% after the expiry of two years); those parts are covered by a 12-month warranty.

## **Charging:**

The battery is the most expensive part of an electric bicycle; therefore, pay increased attention during handling, charging and storage. The battery is sensitive to precise charging. Therefore, it is necessary to charge Li-Ion rechargeable batteries using only a charger supplied by us. Connect the charger to 220-240 V power outlet. 5A protected circuit is sufficient. The charger will automatically suspend charging when full capacity of all cells is reached.

We recommend discharging the battery in full after each ride to ensure that your battery will be up to its full capacity for your next ride. Charging the battery may last 1 to 5 hours depending on the condition of the battery cells. Charge it exclusively in covered dry areas (moisture and dripping water can damage the charger) at a temperature of 5 to 40°C.

The charging process is indicated by a red glowing LED. It will turn green when the battery is charged and the charging process is complete. The battery contains a charge-monitoring indicator (when the charge indicator button is pressed, the light indicator will come on).

## **Normal battery behaviour:**

If the motor stops running smoothly and switches to intermittent operation, it could be a sign of low battery capacity. In that case switch off the electric drive system and continue without motor assistance, as if riding a conventional bicycle.

Battery warming is normal and does not indicate any defect. The battery is protected by a temperature sensor and switches off automatically in case of excessive overheating. Wait until the battery cools down to its normal operating temperature and then ride on.

If you feel your total battery capacity has dropped, it could be caused by charging or operation in suboptimal climatic conditions. Carry out 3 full charging cycles. Fully discharge the battery while riding and then charge to its full capacity at room temperature.

If the charge indicator shows that the battery is discharged, there is still a minimum voltage level in it

which protects it against damage but is not enough to power the electric bicycle. Recharge the battery as soon as possible. Never leave the battery fully discharged, it could result in its damage.

If you switch on the battery by POWER button the rear light will switch on too. The light is on from safety point whole the time. If you want to switch off it, you have to switch off whole bike by POWER button on the top side of the battery.

In the case, that the battery will be turned on more than 30 min and bike will not be used, the battery will be automatically switched off.

Battery is fully shutdown after 48h. After that time period you have to first activate the battery by switch button or connect battery with charger.

**Proper care of the battery prolongs its life.**

# LCD display



## Electrical Parameters:

TOPOLOGY DS102

Screen specification 3,5" LCD (FSTN)

Communication method: UART

Power supply – 36V

Rated current – 18 mA

Shutdown leakage current – < 1 uA

Operating temperature – - 20 ~ 60 %

Waterproof level – IP65

Standard EN15194

## Material:

The material of product shell is ABS + PCT and the material of the window is tempered glass.

## TFT screen instruction:



## **Functional overview**

Four buttons easy to operate

Five stalls of power assist control (OFF-ECO-TOUR-SPORT-TURBO)

Walk assist 6km/h

Speed display – real-time speed (SPEED), maximum speed (MAX), average speed (AVG)

Mileage display – subtotal mileage (TRIP), total mileage (ODO)

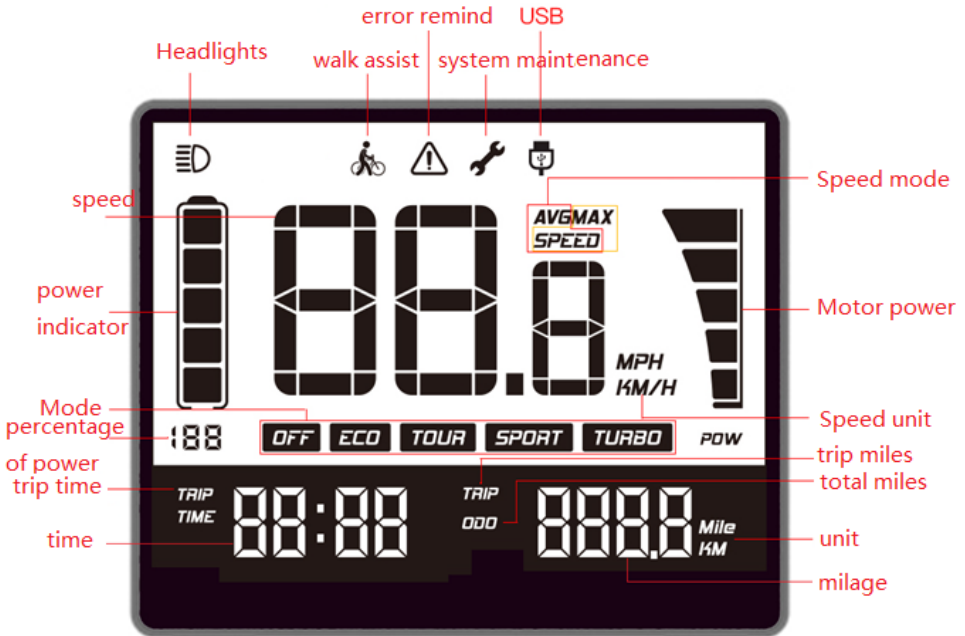
Riding time (TRIP TIME) display

Headlight indicator – on/off status indication

Realtime display motor output power

System maintenance instruction

## Interface



Headlights – it shows when the headlamp is on/off (icon is not showed)

Walk assist – it shows 6Km walk assist mode

Error remind – the icon flashes when the system is malfunction, it will not be seen when normal use

System maintenance – it shows when the system needs to be maintained.

USB – it shows when the display communicates with the PC (not working on this version)

Speed mode – real-time speed (SPEED), maximum speed (MAX), average speed (AVG)

Motor power – five levels power indicate and under voltage indicate

Speed unit – indicate the unit of the speed km/h or MPH

Trip miles – mileage of each trip

Total miles – ODO – mileage of all trips

Unit

Milage

Time

Trip time

Percentage of power

Mode – shows the current assist mode from lower power to the higher – OFF, ECO, TOUR, SPORT, TURBO

Power indicator – battery capacity

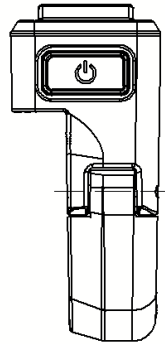
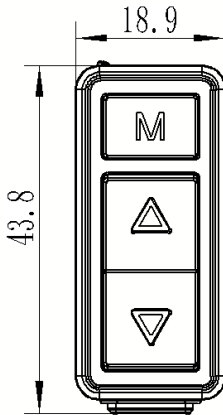
Speed – realtime speed

## Maximal range:

Maximal range is set with fully charge battery and flat terrain and little bit of headwind. Average range is calculated with ideal set of the assist and slightly hilly terrain.


# Controller

Controller description:



+ – up

-- down

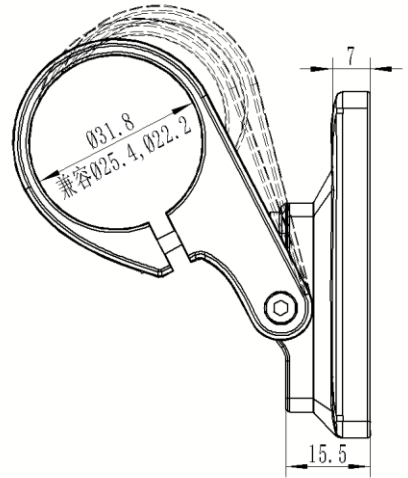
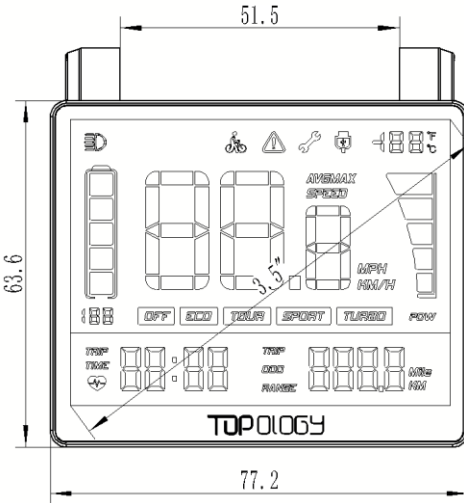
 – switch ON/OFF

M – Menu

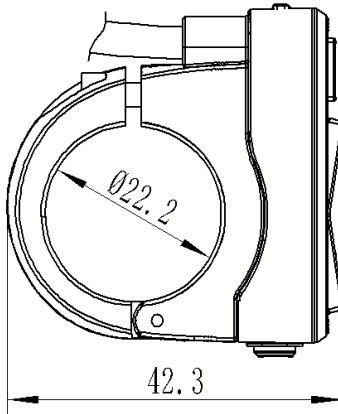
# Assembly instructions

## Display assembly:

Please pay attention to the tightening torque 1N.m of screws. Damage caused by excessive tightening torque or incorrect assembly / disassembly is not covered by warranty.

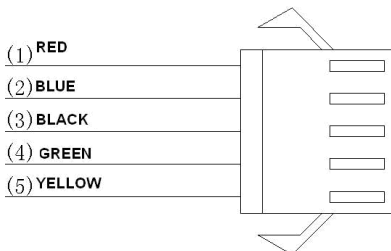


## Controller assembly:



Open the controller clamping jaw and place it on handlebars in your chosen position. Use an Allen wrench to tighten the locking screw M3x8. Tightening torque: 1 Nm

## Connector description:



1 –Red wire: Anode (24V/36V)

2 –Blue wire: Power cord to the controller

3 –Black wire: GND

4 –Green wire: RxD (controller -display)

5 –Yellow wire: TxD (display -controller)

# Control

## Turning on the electrical system of the e-bike

Before switch on of the system please check electrical wiring.

Switch on power of the electrical system on battery, colored backlighting illuminates.

### Switch ON/OFF:

Switch on the display by press Power button and hold for 2 second.

After ride turns off e-bike in the same way.

Display will automatically turns off if it is not used for a while. Can be set the range (or OFF).

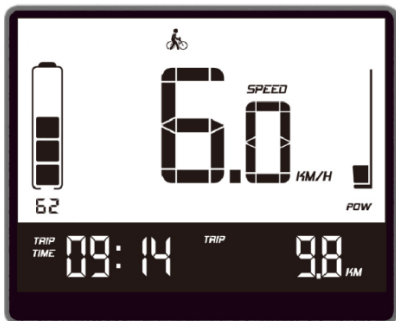
### Assist level operating

Short press UP/DOWN button can change the assist level from lower power to the higher – OFF, ECO, TOUR, SPORT, TURBO. After switching from OFF to ECO you have to pedal one or two times to the back rotation for activate pedal sensor.



### Walking mode

Press and hold DOWN button for 2 second can get into walking mode, out of the mode when release the button.

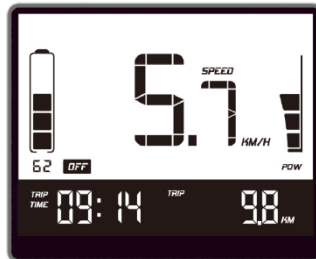
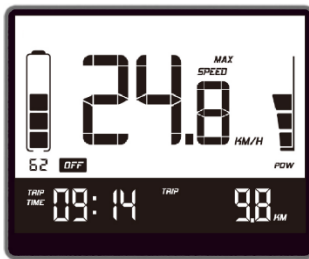
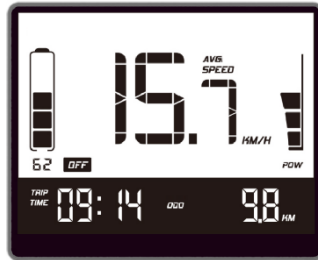
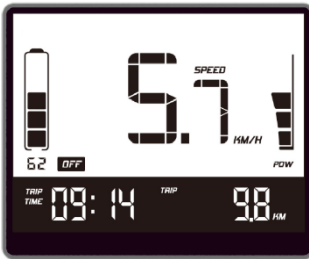


### Headlight/Backlight On/Off

Press and hold UP button for 1 second can turn on/off the headlight and the screen will switch to the corresponding mode.

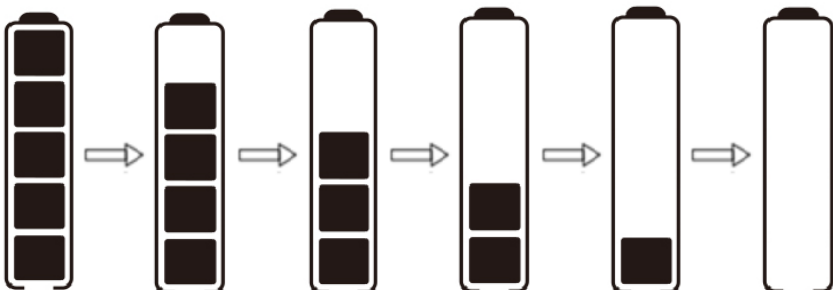
### Speed and mileage mode switch

Short press Menu (M) button can change the speed and mileage mode.



### Battery capacity indication:

The battery remaining capacity will be indicated. The frame of the symbol will flash when capacity is less than 5%, means the battery needs to be charged.



**Data clearance:**

10 seconds after switch on the display press and hold M button for 3 seconds for entering the data clearance interface. Display start flashing the icons. Short press M button to erase Trip / AVG Speed / MAX Speed / Trip time. ODO is not possible to erase.

**Advance setting:**

10 seconds within display turned on press and hold M button for 3 seconds enter the data setting interface...

Long press M button save the setting status and exit the interface.

10 seconds without the operation will returns to normal riding state without saving the parameter settings.

By buttons +/- choose the setting data and with pressing M button will start the changing. Change the parameter again by pressing +/- buttons a save by M button.

It is not possible to enter the setting while riding because of the safety.

Changing KM/MPH

Wheel diameter information (16",18",20",22",24",26",700C,28",29")

Maximum speed 25km/h

**System is factory set. For changing these parameters contact your dealer or producer.  
Do not change these parameters by yourself, you can damage the e-bike.**

**Damaged caused by improper treatment is not within the scope of the warranty.**



# Maintenance

## Regular maintenance:

- maintain all components of the electric bicycle clean
- use only the recommended and tested cleaning materials
- regularly lubricate the chain with suitable oils
- in winter, clean the electric bicycle after each ride and pay increased attention to removing salt from battery contacts and other connectors
- while handling the electric bicycle, make sure the cables of the electric system are not damaged. Damaged cables pose a risk of electric shock
- regularly check all connections for correct tightening and brakes for correct function. Check also individual parts of the electric bicycle for damage. For example: cracks on the frame, fork, handlebars, stem, damage to cables, damage to battery pack etc.

## Battery transport:

Battery transport is subject to the requirements of regulations on dangerous goods. Private users may transport undamaged batteries on roads without having to conform to other conditions.

In case of transport by commercial users or by third parties it is necessary to comply with special packaging and marking requirements (e.g. ADR regulations)

Batteries should only be sent if the battery pack is undamaged. Plug loose contacts and pack the battery to prevent its movement in the packaging. Notify the forwarding service that the transport concerns dangerous goods.

## Battery storage:

Store the battery in a dry and well-ventilated place, out of reach of direct sunlight and other heat sources. In case of cold storage it is necessary to let the battery warm up to normal room temperature (20°C) before putting into operation.

Never leave the battery fully discharged. It could result in its permanent damage. For long-term storage keep the battery fully charged. However, do not store it while permanently connected to the charger or installed in the electric bicycle.

Li-Ion batteries are fully recyclable. After expiry of the battery life you can return it at any collection point or your dealer.

If you use an e-bike in hard conditions (long-term use of the maximum assistance), for longer ride at higher temperatures (30 ° C or above), in direct sunlight or when the battery is partially discharged and a combination of these situations is it possible that bike will automatically switch off. This is a fuse protecting the control unit against burning. We recommend stop the ride and let the bike (control unit) cool down little bit. This is not a defect.

# Possible problems and their solutions

In case of system failure perform its diagnostics or contact your dealer.

## **The control LCD display is not on:**

- always make sure the battery is charged
- check whether the battery is inserted correctly, whether the battery switch is on
- check the connections of the control unit and the display

## **The motor does not start when the walk assistance button is pressed**

- check the connection of the motor cable (at the motor and the control unit)
- check the connections of the control unit and the display

## **The motor does not start when rotating the pedal cranks (pedalling)**

- check the connection of the pedalling sensor to the control unit
- check the distance between the pedalling sensor and the magnet disk (max. 4 mm)
- check whether the disk is firmly attached to the central axle and does not spin freely
- in case of use of compact-type pedalling sensor

## Warning

When there is a problem with the electric bicycle, it can show error messages. LCD display will show the icon and an error code will be displayed on the speed display. See their meaning in the table below.

Error code	Description
0x10	Over Voltage
0x11	Under Voltage
0x12	Speed feedback fault
0x13	Overtemperature, MCU or Motor
0x14	Voltage fault
0x15	Abnormal output
0x16	CPU fault
0x17	Runaway protection
0x18	Assistance sensor fault
0x19	Speedsensor fault
0x21	Over current or MOSFET fault
0x23	Phase fault
0x24	Hall fault

## Assembly and disassembly of the wheel with the engine

For transportation and maintenance (replacing the tire tube) it may sometimes be necessary to disassemble the wheel with the engine.

First, pull lightly to disconnect the engine connector (about 20 cm from the engine entry).

Then loosen the brake (if it is used) and change the gear to the smallest wheel.

Remove the rubber covers from the wheel nuts.

Loosen the engine nut using a spanner size 18 and remove the wheel from the frame.

For assembly, reverse the order of these steps.

To connect the connector properly, the arrows on the connector (1) must face each other.

Switch the drive unit on and test it.

During wheel assembly, pay attention to the proper position of the central axis of the wheel nave facing down. The cable must enter the engine from below. Otherwise, water could get into the engine on the cable and the engine could be damaged.

# Electric set warranty

## **Complaint procedure:**

Submit any complaints concerning the electric set or the battery to your dealer.

When filing a complaint, submit a proof of purchase and a warranty certificate with the registered serial number of the battery and indicate the reason for the complaint and a description of the defect.

## **Warranty conditions:**

24 months for electric bicycle components – applies to manufacturing and material defects beyond normal wear and tear caused by use.

12 months for battery life – the nominal battery capacity does not drop below 70% of the total capacity over 12 months from the sale of the electric bicycle.

## **Warranty conditions:**

The electric set must be used exclusively for the purposes it is intended for.

The electric set must be used, stored and maintained in accordance with these Operating Instructions.

## **A warranty claim shall expire:**

If it is found out that the damage to the product is due to the user's fault (accident, inexpert handling beyond the framework of these Operating Instructions, tampering with the structure of the electric bicycle or connection of the electric system, improper storage etc.).

Expiry of the warranty period.

**The warranty only applies to the first owner**

## Warning

If you do not understand any of the points in these Operating Instructions, please contact the dealer for explanation. Please read the whole manual!

Do not lend the e-bike to persons not briefed in its use and operation. Complaints resulting from improper handling will not be accepted.

The LF Energy electric bicycle is not intended for use by children under 15 years of age. Likewise, the electric bicycle cannot be used by persons unable to pedal or handle it independently. The manufacturer is not to be held responsible for any potential injuries or damage to the bicycle!

Ideal weather conditions for using an electric bicycle are dry days, when the outdoor temperature is above 10°C. When used at lower temperatures, the battery discharges faster due to physical phenomena. Using the electric bicycle at temperatures below 0°C is not recommended.

Do not expose the bicycle to direct sunlight as it is fitted with a protective temperature sensor for the electric motor.

Never submerge the battery, the charger and other electric components in water or another liquid.

Never wash the electric bicycle in a pressure washer (WAP) and always remove the battery before washing

It is forbidden to tamper with the connections of the electric motor, the control unit and the battery. Violating this section may result in the warranty not being acknowledged or in irreversible damage to the electric bicycle.

DO NOT USE chargers and components other than the ones included with the electric bicycle.

We cannot be held responsible for damage caused by use of other non-approved goods

# bohemia**bike**

b i k e f a c t o r y

Na Pankráci 1724, 140 00 Praha 4 - Pankrác, IČ: 63910756

## EU PROHLÁŠENÍ O SHODĚ

Prohlašujeme, že elektrokola značky Leader fox, dodávané na český i zahraniční trh společností Bohemia bike a.s. jsou v souladu s platnými českými technickými normami ČSN EN ISO 4210-2 i ustanovením evropských směrnic EN 15194:2017, 2006/42/EC A 2014/30/EU pro jízdní kola s pomocným elektrickým motorem tzv. EPAC. Výrobky jsou v souladu se směrnicí na strojní zařízení 2006/42/ES (NV 176/2008 Sb.) Tato vyrobená strojní zařízení splňují všechna příslušná ustanovení předmětného předpisu EU.

Seznam výrobků obsahuje příloha dokumentu:

V Českých Budějovicích 1. ledna 2020

**bohemia bike a.s.**

IČ: 63910756, DIČ: CZ63910756  
Na Pankráci 1724, 140 00 Praha 4 - Pankrác  
CZECH REPUBLIC (8)

.....  
Pavel Müller, předseda představenstva a odpovědná osoba za veškerou tech. dokumentaci

# **LEADER FOX**



Enjoy many pleasant and safe kilometres on your new electric bicycle.

## **Your Leader Fox Team**



**Czech brand of electric bicycles.  
BOHEMIA BIKE**

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