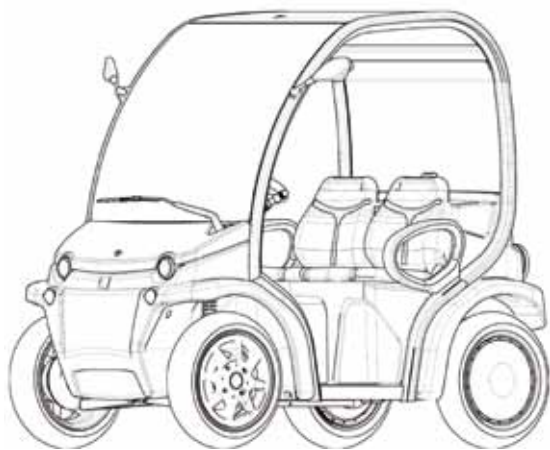


# BIRÒ



## USE AND MAINTENANCE MANUAL





# WELCOME ON BOARD BIRÒ

Are you ready for an electrifying experience?

Nature is going to thank you! Thanks to electric propulsion, with Birò you'll be able to move around comfortably with no emissions.

In total freedom! Thanks to its reduced size, you won't be meeting with any limitations, not even in terms of traffic!

In safety! The highly resistant chassis is going to offer you maximum protection inside the passenger compartment.

This booklet provides the information that will help you get to know your new vehicle better and become familiar with its controls.

You will find many suggestions that will help you ensure that your Birò remains perfectly efficient, while permitting you to drive around in total safety and security.

In the manual you are going to find information preceded by the symbol **! WARNING.**

The purpose of such information is to help you prevent the vehicle, yourself, other people, things and the environment from being damaged or hurt.

We wish you a happy driving experience and thank you for having chosen Birò!

All the information provided in this manual was the most recent available at the moment of printing. Messrs Estrima S.r.l. reserves the right to modify it at any moment, without any obligation or prior notice.

The translation - albeit partial - of this manual is forbidden unless specifically authorised in writing.

## PRELIMINARY OPERATIONS TO ACTIVATE THE VEHICLE

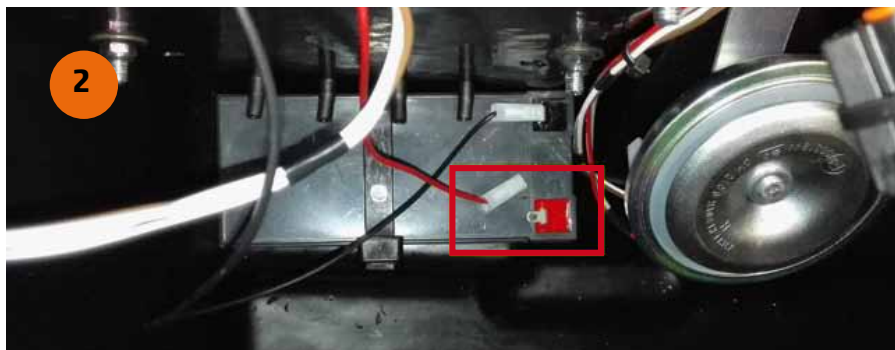
The vehicle has a buffer battery that is placed under the front bonnet. This battery constantly feeds the RFID reader (Birò Card reader) and has a life of 15 consecutive days per charge. Recharge is possible by driving the vehicle or plugging it.

**IMPORTANT: IF YOU PLAN TO NOT USE BIRÒ FOR MORE THAN 15 CONSECUTIVE DAYS AND IT IS NOT POSSIBLE TO LEAVE IT PLUGGED IN, THEN DISCONNECT THE BUFFER BATTERY.**

Birò has been delivered with the buffer battery disconnected. In order to use the vehicle, connect the buffer battery as described in the following instructions.



Once you open the front bonnet by using the specific key, pull up the basket as shown in the picture (1).



Connect the battery by inserting the connector with the red cable as shown in the picture (2).

In order to disconnect the buffer battery, you will have to detach the connector.



# SUMMARY

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**CHAPTER 1:**

**GET TO KNOW YOUR VEHICLE**

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## LET'S SPEAK ABOUT SAFETY

Your personal safety and that of other people is the most important thing. Driving this car is an act of enormous responsibility.

Alcohol over-drinking or drug-taking are incompatible with driving.

Avoid sitting down to drive if you're not in the suitable state.

The information provided in this manual warns you about certain dangers relative to the working and maintenance of the vehicle. Indeed, it is surely not possible, nor is it realistic to indicate all the dangers that may arise. One must be sensible.

Driving speeds that are incompatible with law restrictions and with the state of the road reduce your - and other people's - safety considerably. If driving is to be safe, it is essential to always keep the vehicle in a perfect state of efficiency.

Failure to comply with limitations and transport rules, and the employment of spare parts that are not original, may cause safety and security problems.

This vehicle has been designed for use in cities and towns.

Wending along unpaved roads, or on incompatible ground, may jeopardise the driving conditions and cause faults and breakdowns.

**WARNING** Driving this vehicle as envisioned in the legislation in force does not require the use of crash helmets.

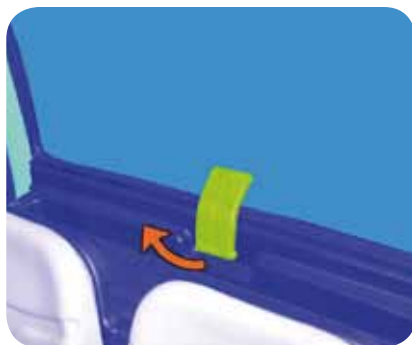
## OPENING

### Rear window.

The rear window is equipped with a system that allows for its partial opening.

By pulling the lever, the window begins to open up. Once the lever has been completely turned upside down, the window shall turn out to be blocked in the "open" position.

By carrying out the inverse operation, the window gets closed.

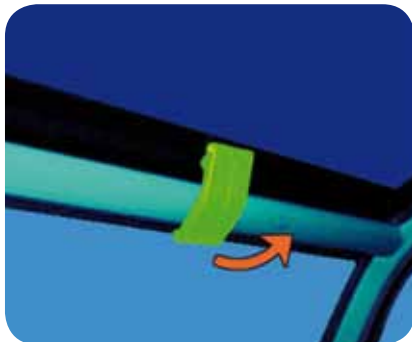


### **Upper window.**

The upper window is equipped with a system that allows for its partial opening.

By pulling the lever, the window begins to open up. Once the lever has been completely turned upside down, the window appears to be blocked into the “open” position.

By carrying out the opposite operation, the window gets closed.



### **Opening/closing the door from outside (optional).**

To lock the door - which is possible only with the door shut - insert and rotate the key anti-clockwise.

To unlock, rotate the key clockwise. You open the door by pushing the press button on the handle.

N.B. Per la portiera con elettroserratura, consultare pag. 26.



### **Internal locking of the door (optional).**

Locking of the door from inside is not possible.

Opening - guaranteed even in case the door is locked from outside - takes place by pushing the lever upwards.



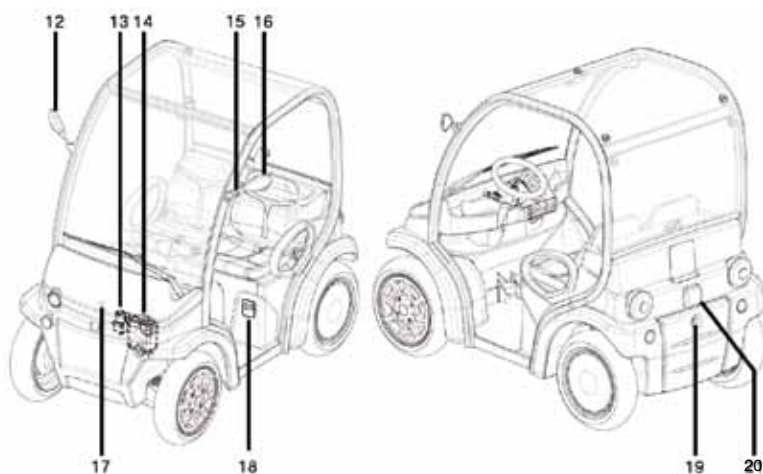
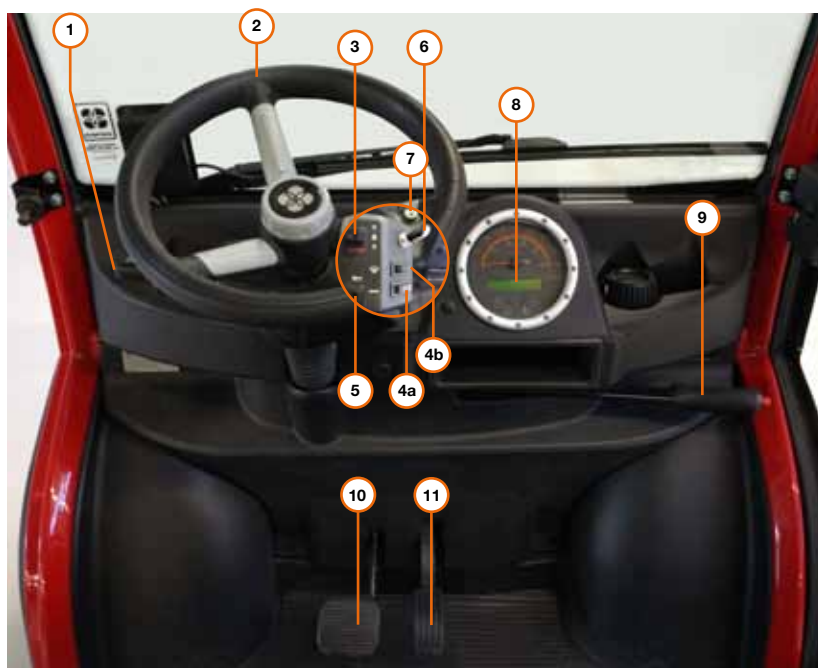
## CARRYING CHILDREN

In compliance with legislation in force, on motor-bicycles and on mini-cars **it is forbidden to carry children who are less than 5 years old.** The seats in Birò are not compatible with the mounting of devices homologated for carrying children.

**! WARNING** Failure to comply with the regulations is dangerous. Grave injuries or death may ensue as a result.

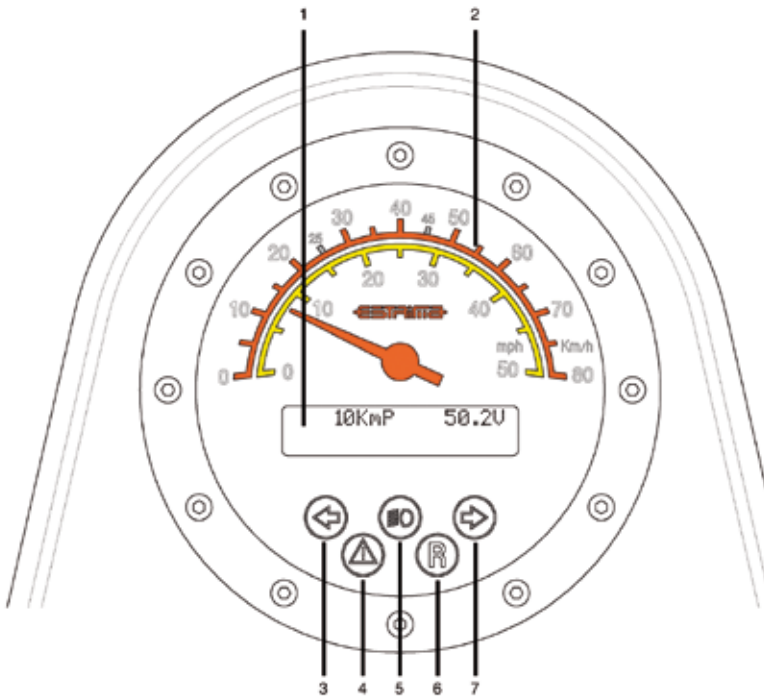


## PLACEMENT OF PARTS



1. Multi-function lever:
  - direction indicator lights
  - parking lights
  - low-beam lights
  - windshield wiper and cleaner switch
2. Steering wheel
3. Boost button
- 4a. Onboard computer mode switch
- 4b. Windscreen defrost grid switch
5. Warning horn
6. Multi-function lever:
  - ahead drive selector
  - low speed ahead drive selector (turtle icon)
  - reverse drive selector
7. USB outlet
8. Onboard computer/ speedometer
9. Hand brake lever
10. Brake pedal
11. Acceleration pedal
12. Right-hand side rear-view mirror
13. Brake oil basin
14. Windshield cleaning liquid basin
15. Back seat compartment
16. Left rear view mirror
17. Front bonnet compartment lock
18. Recharge feeder/stocker display
19. Rear lock compartment
20. Recharge feeder outlet

## INSTRUMENTATION PANEL



1. Onboard computer
2. Speed indicator (km or miles per hour)
3. Left direction indication lights pilot light
4. Electronic anomaly signalling pilot light  
If the anomaly persists, get in touch with the servicing staff.
5. Turned-on low-beam indication pilot light
6. Inserted reverse drive indication pilot light (it turns on/is activated at the same time with the warning horn)
7. Right-hand side bound drive indication pilot light

## ONBOARD COMPUTER

The display is enabled automatically.

A click on the MODE button enables selection of the display modes.

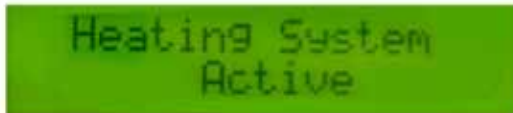
### First visualisation



### Second visualisation



### Active windscreen defrost grid message



### Charging vehicle batteries message



Key:

T= temperature inside battery

I= instant current consumption

SOC = residual battery charge in percentage

kWh = energy consumption

KmT = general kilometre totalizer

KmP = Partial kilometre totalizer (to reset the totalizer hold the MODE button down until the message "Release MODE To Reset KmP" appears on the display, after which the button may be released)

V= main battery voltage

## LIGHTING AND SIGNALLING DEVICES

### Turning on parking / side-lights



Turn the end of the lever until the reference mark is placed at the symbol of the position lights, as shown in the picture.

### Turning on low-beam lights



Turn the end of the lever until the reference mark is placed at the symbol of the low-beam lights, as shown in the picture.



## Turning off the lights



Rotate the extremity of the little lever into the initial position.

## Luminous signalling



Turn the lever in the direction of the steering wheel rotation.  
After steering, the lever must be brought back to its initial position by moving it to the opposite direction.

## WINDSHIELD WIPER / CLEANER

To start the windscreen wiper, pull the lever in. Pull the lever further in to start the windscreen cleaner. Push it out to the opposite direction to disable the windscreen wiper.



**! WARNING** In case of freezing temperatures, check and see if the brushes have not be immobilised by ice. There is the risk the little motor overheats.

## DEFROST GRID WINDSCREEN

To start the windshield defrost grid function, press the button and move it to position 1. A message appears on the screen to warn that the windshield defrost grid is active. The system gets automatically disabled after a few minutes.



## ACOUSTIC SIGNAL

Press the button bearing the symbol of the trumpet to start the horn.



## REAR VIEW MIRRORS

The rear view mirrors, placed outside the passenger compartment of the vehicle, can be orientated into various angulations to reach optimal vision.

## 12V FEEDING OUTLET OR USB OUTLET

(depending on the model of Birò)



The outlet can be used to feed some external devices (e.g., the GPS/navigation system, the mp3 reader, etc. etc.).



**! WARNING** Maximum applicable load is 40 Watt.

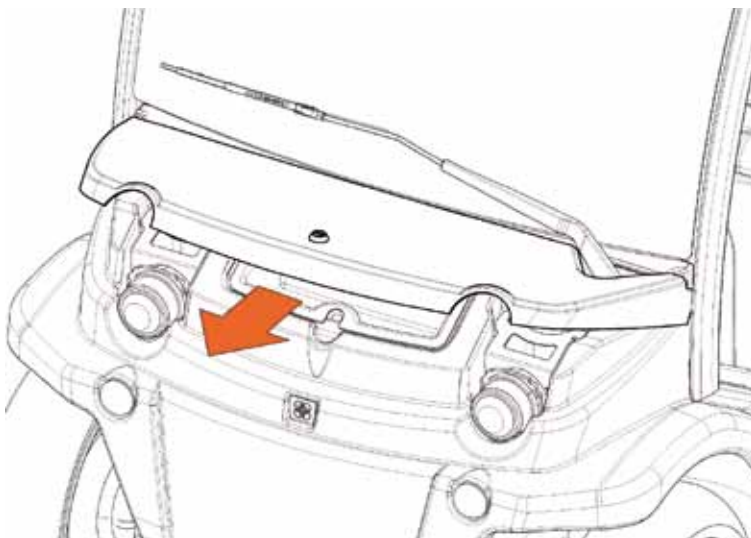
Exceeding such load may damage the electric system/plant of the vehicle.

## OBJECT CARRIER COMPARTMENTS

Birò is fitted with countless object carrier compartments in several places of the dashboard and behind the seats.

Besides these more visible ones, there are other ones equipped with a closure system.

### Object carrier compartment in the bonnet



To access it, proceed as follows, to remove the bonnet:

1. Release the lock
2. Lift the front part by levering on the back part.
3. Pull the bonnet towards yourself while paying attention to clear away the arm of the windshield wiper.

To put it back, proceed inversely.

**! WARNING** The bonnet must be put back and closed correctly since, otherwise, it may come away while you are driving.

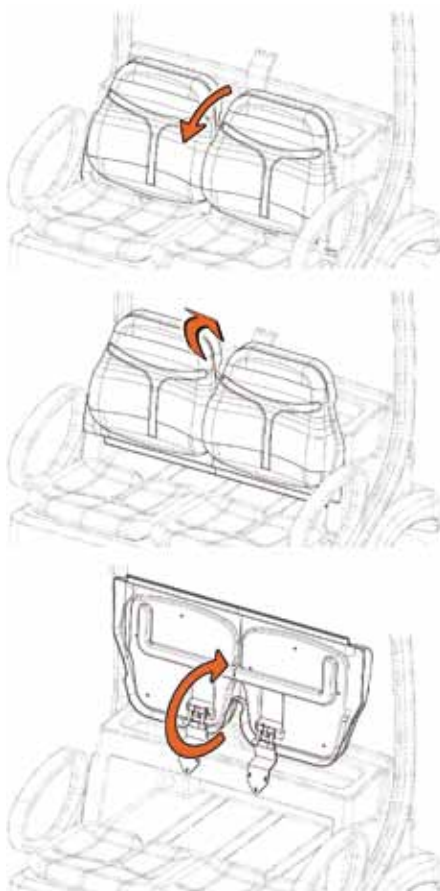
**! WARNING** The maximum load in the object carrier compartment of the bonnet is 2 kg. Exceeding said limit may damage the vehicle.

## Object carrier compartment behind the seats

To access it, proceed as follows:

1. Pull the upper part forward. The seat-back unlocks.
2. Lift, by leaving the hinge that locks the seat-back capsized entirely.
3. Capsize the seat-back toward the back window in order to have full access to the compartment.

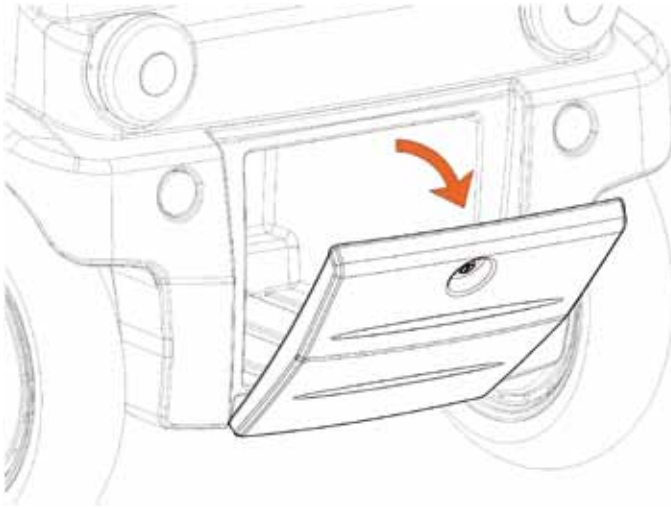
To put it back, you must proceed inversely.



**! WARNING** The seatback must be put back and closed correctly to prevent it from moving while you are driving.

**! WARNING** Avoid excessive loads and place the load accurately in order not to damage the vehicle.

## Back object carrier compartment



To access it, it is sufficient to unlock the door.

**! WARNING** Close the door correctly to prevent it from opening up unexpectedly while you are driving.

**! WARNING** Avoid excessive loads and place the weight accurately in order not to damage the vehicle.

## ACCESSORIES AND MODIFICATIONS

Birò is equipped with countless accessories that will meet your wish to personalise your vehicle. Ask your reseller.

**! WARNING** The modifications and the use of non-original accessories may jeopardise the reliability and security of the vehicle.

**CHAPTER 2:**

**WHILE DRIVING**

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VEHICLE START WITH CARD .....	26
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## RUNNING IN

Since this is an electrical vehicle, there are no particular limits to observe.

**! WARNING** During the first 200 km, we recommend greater caution, so that the protective patina on the tyres wears out and the brake pads adapt perfectly to the discs.

## DIRECTION SELECTOR

The position of the lever for selecting your direction indicates where the vehicle is heading.



If the lever is all the way out (position D), Birò moves forward until it reaches the max. speed when pressing the throttle.

If it is in central position (turtle icon), Birò moves forward at low speed when pressing the throttle.

If it is all the way in (position R), reverse is active: the buzzer goes on together with the corresponding light on the instrument panel in order to warn about “reverse active”. When the throttle is pressed, Birò moves in reverse at low speed.

## BOOST BUTTON

When the BOOST button is pressed, the vehicle acceleration increases. Press this button when strictly required, for instance to climb up steep ramps.

The BOOST function is disabled automatically 20 seconds after pressing of the button. In critical conditions, such as very low or very high external temperature, this function may be temporarily unavailable to preserve the chemicals in the battery.



**! WARNING** During the boost stage, there is larger power absorption and, as a result, the autonomy of the vehicle is reduced.



# IGNITION KEY BLOCKAGE PROCEDURES FOR START UP AND STOP / SHUTDOWN

(discontinued model)



## Ignition procedure

To start up the vehicle, rotate the key clockwise by 90°.

After about 5 seconds, the onboard computer display comes on and your Birò is ready to leave.

## Stop/ shutdown procedure

For the shutdown stage, the key must be rotated in the initial position.

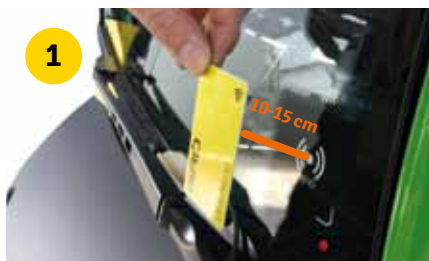
**! WARNING** With the key in the ignition position, there is power consumption, albeit minimum. During stops, we suggest to turn the key back to the stop/shutdown position. Leaving the key in the ignition position for long periods of time may cause irreversible damage to the batteries.

**! WARNING** If the key stays in the Start position over 12 consecutive hours, the battery may be damaged irremediably.

**! WARNING** In case of fire or the beginning of fire, rotate immediately the key to the off position and take it out.

## VEHICLE START WITH CARD

1. Place the Birò Card about 10 centimetres from the reader for identification. The red light will turn on to indicate that the vehicle is no longer in standby mode.
2. Hold the Birò Card against the windscreen, inside the white markings, for at least 3 seconds (3 flashes of the red light). When the left direction indicator blinks, it means that the driver side door's lock successfully opened.
3. Enter the cabin and insert the Birò Card into the specific slot of the reader within 1 minute in order to switch Birò on. Keep the Birò Card inside the reader for the entire drive.
4. In order to end the use of Birò, pull the Birò Card out from the reader. The engines will deactivate within 5 seconds and the driver side door will lock shortly after (it's always possible to open the door from inside, even if it is locked).



**! DO NOT REMOVE THE CARD WHILE THE VEHICLE IS IN MOTION: the vehicle may stop suddenly!**

Notes:

- the door on the driver's side opens as soon as the vehicle acknowledges the card and closes automatically 5 seconds after switch-off. The door may be opened from the inside at all times.
- the door on the passenger's side has a dedicated key.

**! REMEMBER TO BRING THE BIRÒ CARD WITH YOU BEFORE LEAVING THE VEHICLE. THE DRIVER'S SIDE DOOR LOCKS AUTOMATICALLY.**

## HAND BRAKE



### To lock it

Pull the lever toward yourself and check that the vehicle is perfectly immobilised.

**! WARNING** Depending on the slope of the ground or on the state of the load, the positioning notch of the lever of the hand brake required to immobilise the vehicle may change.

**! WARNING** When ground slopes exceed 18%, supplementary mechanical retainers/standstills must be envisioned.

### To loosen it

Slightly pull the lever, press button **A** and push the lever up to the completely advanced position.

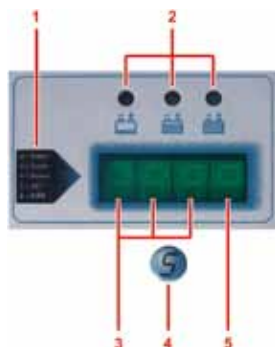
**! WARNING** Before you sit down to drive, check that the hand brake is completely loosened: there is the risk that the brakes overheat and the vehicle range drops dramatically.

## RECHARGING BATTERIES

The feeder is placed inside the passenger compartment, under the seats, and to carry out the recharge, all you have to do is link Birò to a normal, 220v household outlet, by using the “spiral” wire provided.



The feeder turns on and, on the luminous display, the real battery tension is visualised. After a few seconds, the pilot light corresponding to the battery charge state **(2)** turns on, and the feeder gradually begins to provide power. By pressing button **(4)** you cyclically visualise the information indicated in the box **(1)**: power provided (A), charge tension (U), charge time (H), Total distributed current and Total power distributed (C and E). **The charge cycle is over when the green led is on.** In the case of pure lead batteries, after the connection to a stoker, is necessary to put on the switch positioned in the rear trunk in order to start the charging.



**! WARNING** During the charge, the feeder requires plenty of ventilation for cooling. Do not obstruct, the slits placed above the display of the feeder in any way whatsoever.

**CHAPTER 3:**

**LITHIUM BATTERIES**

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ENVIRONMENTAL CONDITIONS IN CHARGE .....	35
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SAFETY STANDARDS .....	37

## SCOPE

The present guide contains useful instructions to know and use Estrima Lythium batteries on Birò in complete security.

## RECEIVERS

The receivers of the present guide are the users of Birò with Lythium Battery. For any intervention or control, contact the specialized technicians who work by dealers or resellers authorized by Estrima srl called “Biroservice”.

**IMPORTANT:** only the Biroservice staff is authorized to switch the Lythium batteries. Although, it isn't authorized to open the abovementioned batteries.

**Warning: whoever uses those batteries is obliged to read the present guide, it is for his safety.**

## GENERAL INFORMATION

The present guide must be kept for the entire life of the battery and must be with it in case of its sale or that of the vehicle one. Comply with the instruction and keep it for the entire life of the batteries so as not to damage them nor to damage the system in which they must be assembled.

**DANGER:** Do not handle the battery; always contact the technical authorized staff.  
Any incidents of electrocution can be promptly reported to the emergency intervention.

**DANGER:** Do not simultaneously touch the two poles of the battery when it's connected (with enabled BMS). Danger of electric shock caused by short circuit with possible death or serious injury.

## PRINCIPLES OF OPERATION

The lithium batteries used by Estrima to equip Birò are sealed rechargeable lithium polymers, with a BMS inside (Battery Management System) for the continuous monitoring and the balance of the cell voltages. The batteries are supplied with a built-in Data Logger designed to record all faults and unintended battery use. The Data Logger is an analysis instrument intended to monitor the battery parameters over time.

The Data Logger is mainly used to keep the battery under control. The main measurements it records are:

- vehicle operating cycles;
- battery discharge voltage;
- battery operating temperatures;
- energy absorption.

In contrast to the lead-acid batteries or other technologies, the Estrima lithium batteries do not require special restrictions on use, operation and management.

**IMPORTANT: remove the key from the vehicle when it is not in use. If the key stays in the ON position over 12 consecutive hours, the battery may be damaged irretrievably.**

## BATTERY-RELATED INFORMATION ON THE DISPLAY

In versions featuring lithium batteries information appears on the odometer display which mainly refers to the battery status:



INDICATION	WHAT IT REPRESENTS
SOC o BAT	Remaining battery's charge. This energy expressed as a residual percentage gives a precise information about the available autonomy of the vehicle. It is possible that the charge percentage doesn't reach 100% after the charge's phase, especially in winter.
T	It indicates the inner temperature of the batteries housing expressed in °C. If a certain temperature would be overcome, don't worry about the battery because it is adjusted by some security devices.
kWh	It indicates the whole energy used by the vehicle until a particular moment. In other words, this datum indicates the level of use of the battery.
I	It indicates the instant current absorption expressed in Ampere (A).

## MESSAGES THAT CAN APPEAR ON THE DISPLAY

FIRST LINE IN DISPLAY	SECOND LINE IN DISPLAY	MEANING/NOTES
Recharge Birò	BAT=xxx% Empty	Battery voltage below 5% (the messages appears repeatedly at intervals of 20 sec. and it lasts 5 seconds)
Battery Reserve	BAT=xxx%	Battery voltage below 20% (the messages appears repeatedly at intervals of 20 sec. and it lasts 5 seconds)
INTERNAL ERROR	CAN COMM. LOST	CAN communication error (it appears if there is no communication with VCU)
USER	AUTHENTICATION	User login message
VCU ERROR: C_00	CALL SERVICE	Communication error with battery
VCU ERROR: C_01	CALL SERVICE	Communication error with Kolektor
VCU ERROR: C_02	CALL SERVICE	Communication error with GPRS/GPS unit
VCU ERROR:K1xxxx	CALL SERVICE	Error in Kolektor Master power unit (the error code is hexadecimal)
VCU ERROR:K2xxxx	CALL SERVICE	Error in Kolektor Slave power unit (the error code is hexadecimal)
VCU ERROR:K3xxxx	CALL SERVICE	Error in Kolektor Archimede power unit (the error code is hexadecimal)

**IMPORTANT** When driving the first few metres down a slope with the battery fully charged, the message “Very high battery voltage” may appear on the display or the red triangular warning light may go on. The driver should not be worried as this does not represent an actual problem, but rather an electronic response contemplated for the system.

## LOSS OF CAPACITY DURING THE STORAGE

Like all batteries, lithium batteries too are affected by the ambient conditions. The energy stocked inside the battery is physiologically dissipated in small amount if the vehicle is unused for long periods. The lost energy is completely recovered as soon as the vehicle is recharged, and it does not cause damage to the battery or ageing.

The vehicles go out of the Company with at least 80% of their normal performance.

It follows the table with the losses of capacity in relation with the storage's temperature referring to a three months' period:

MINIMUM TEMPERATURE °C	MAXIMUM TEMPERATURE °C	% LOSS OF THE CHARGE
-20	-11	40%
-10	-1	30%
0	15	15%
16	20	10%
21	24	6%
25	39	0%
40	oltre 60	3%

**NOTE:** the charge status of the completely charged battery will be 100% only when the temperature of the battery is between 25°C and 39 °C. For any other temperature the charge's status could never be equal to 100%, with completely charged battery too.

## ENVIRONMENTAL CONDITIONS IN DISCHARGE

**IMPORTANT:** the batteries are sealed in order not to let water and moisture to get in, but they shall not be put in water.

The batteries are fit for installation in environments containing salt and humidity. Overheating, on the other hand, causes quick deterioration. The batteries must be used on the vehicle in compliance with the following ambient temperature range: min.  $-20^{\circ}\text{C}$  to max.  $+60^{\circ}\text{C}$ .

When working outside this temperature range, the battery electronics (i.e. the BMS) disables battery operation.

## ENVIRONMENTAL CONDITIONS IN CHARGE

**The batteries must be charged in compliance with the following ambient temperature range: from min.  $0^{\circ}\text{C}$  to max.  $+45^{\circ}\text{C}$ . In cold seasons we recommend charging the vehicle immediately after the end of your travel, and not the day after, because the battery may cool down excessively, which would cause simultaneous disabling of the charging process.**

## WARRANTY TERMS

Estrima lithium batteries are covered by a warranty for material and/or manufacturing defects for a period of 24 months or 1000 recharge cycles, depending on the first to occur. Upon exclusive discretion of the Seller, the warranty provides for the repair or replacement of the battery pack on condition that all the requirements illustrated in the Instruction Manual for Operation and Maintenance and in this technical manual supplied with the vehicle and/or the batteries are complied with, otherwise the warranty becomes null and void.

### Warranty exclusions

The warranty will be due only in case of defects or production's non-compliance of the product, and only when the product has been used under the terms established by the present guide.

All direct or indirect expenses due to the substitution of the battery are excluded from warranty (ex.: technical assistance).

### Warranty application

Follow these guidelines:

1. in case of defects or non-compliance of the product, tell them to the dealer or to the Company no later than eight days after the date of notification;
2. carry the vehicle with defective battery or non-compliant one to the nearest service-centre. The transport must occur at your expense, as agreed with the international rule on street-transport of dangerous goods ADR.

**NOTE:** for possible return of the goods or interventions excluded from warranty, contact directly your dealer.

### End of the warranty

The warranty ends immediately in case of modifications and/or non-authorized repairs of the battery, or when the defect or non-compliance is told to the dealer more than 8 days after the receipt of the goods, or from the date of notification of the defect or the non-conformity.

**IMPORTANT:** no technicians and no BiròServices are authorized to open the battery, otherwise the warranty becomes null and void.

### Assistance

Contact only authorized dealers or Estrima S.r.l..

## SAFETY STANDARDS

### Rules for your safety

- The terminations of the battery are always in voltage. Do not place metal objects near it (ex.: watches, tools, or chains). Although a protection fuse is present, the short circuit creates serious health risks.
- The following behaviours can damage the battery and make it generate heat, gas and fire's beginning, endangering who is in the neighbourhood:
  - Do not put the battery in a place where fire is present, and do not heat it artificially.
  - Do not dismantle or modify the battery. The battery contains some safety devices to avoid dangers caused by a possible short circuit that shall not be tampered.
  - Do not use or leave the battery near a heat source as a fire or a heater (with temperature major to 80°C).
  - Do not put the battery in water, sea-water or other liquids.
  - Do not hit the battery, nor launch or drop it.
  - Do not perforate the battery with any materials.
- The battery to be charged must be put on a non-flammable, heat-resistant and non- conductive surface. Keep the materials away from the charge's area. The batteries must not be left unattended during the charge's phase.
- Do not charge the battery with an unsuitable charger of the cell Lithium polimers. Possible mistakes during the charge's phase with unsuitable chargers may cause dangerous situations, as heat, gas or ignition with strange chemical reactions.
- Do not connect the battery directly to an electrical socket or to the cigarettes lighter in cars. Although the safety devices in the battery are present, dangerous situations may happen, as heat, gas or ignition with strange chemical reactions.

- Do not use the battery for purposes other than those specified. In contrary, the warranted capacities will be missed and/or their duration will be shorter, and the battery could create heat, gas, and/or fire.
- Do not solder the wires neither on the power contacts, nor on the signal connectors. The welding could generate dangerous situations.

### Safety during the elimination

- Do not burn the lythium batteries nor eliminate them with normal garbage, because they could burst and/or explode with violence.
- The battery must be eliminated following the RAEE system, by authorized companies. The user is legally responsible for the dangers created during the elimination phase of the batteries.

### Warning

- The following behaviours can damage the battery and make it generate heat, gas and fire:
  - Do not use the battery connected with other types of battery, (with different tension, capacity, chimical characteristics, of different firms). In cases like these, overcurrents can happen both in charge and discharge phases.
  - Do not put the battery in a microwave oven. The sudden heat may damage the battery capacity.
  - If you notice odor, heat, fading, deforming or whatever other change from normal conditions, disconnect the battery and do not use it.
- If toxic or corrosive materials come into contact with eyes or skin, flush with water and seek medical advice.
- Do not pick damaged batteries up with bare hands. The lythium can cause burns. Use shovels, tongues or other instruments to put the batteries in containers with mineral oils.
- Pay attention while collecting the batteries to eliminate, in order to avoid short circuits, or that the casing would be compacted or destroyed.
- Wear protective clothing (glasses, clothes, safety shield, and safety breathing apparatus).
- Do not breath gas. Ventilate the area in order to disperse gas before entering the room.
- Do not use the battery in conditions different from the following ones: discharge:  $-20^{\circ}\text{C} \div +60^{\circ}\text{C}$ ;

- Stored or stationary vehicle for a long time: (less than 1 year):  $-20^{\circ}\text{C} \div +25^{\circ}\text{C}$  (with charge equal to 50%);
- Stored or stationary vehicle for a long time: (less than 3 months):  $25^{\circ}\text{C} \div +40^{\circ}\text{C}$  (with charge equal to 50%);
- Stored or stationary vehicle for a long time: (less than 1 week):  $40^{\circ}\text{C} \div +60^{\circ}\text{C}$  (with charge equal to 50%).

### Attention

- Do not use or leave the battery in a place exposed to the direct sunlight or near high temperature sources. A too high temperature may reduce the performance.
- If you find the battery in a bad condition, contact the sealer before using it.
- Do not use the battery in places where there is static electricity. In that case, the warranty expires.
- Keep the battery away from children. In addition, make sure that children can not disconnect the eventual charger connected to the battery in charge phase.
- The battery is charged at least for 80% in order to carry it, so we recommend you to make a full charge before using it.
- In the case in which the battery's terminals are dirty, clean them with a dry cloth before using it; in the contrary, the bad contact could cause insufficiency and/or power cut and/or inability to charge it.

## CHAPTER 4:

# MAINTENANCE

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## THE IMPORTANCE OF MAINTENANCE

Good and correct maintenance contributes to ensuring that your driving is safer, without problems, and indeed cheaper.

**! WARNING** Lack of maintenance, inadequate maintenance or neglecting problems that arose before you sat down to drive, can be conducive to accidents and to ensuing damage, grave injuries and even death.

In this chapter we deal with some important maintenance work which, if you have sufficient preparation, can be carried out on your own, without asking a qualified mechanic to help.

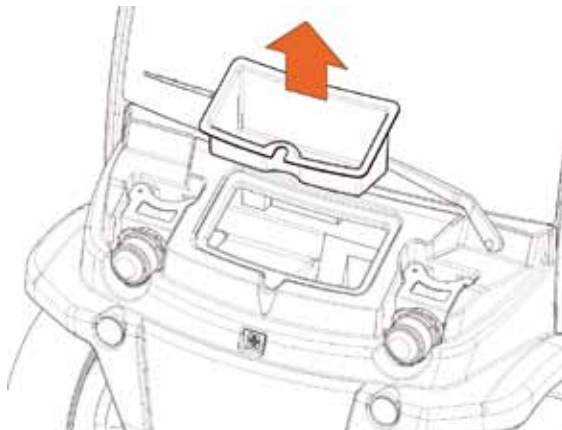
**! WARNING** In carrying out maintenance, you must always comply with the prescribed security norms. In every case, all work must be performed with the feeding detached, with the vehicle stopped and well immobilised.

To avoid burns, be specially careful, and do not touch the components that heat up during functioning until they have completely cooled down (e.g., motors, dc/dc converter, etc.).

It is evident that not all the dangers that may arise during maintenance can be signalled. Only the user can understand if he/she is able to carry out a particular operation in perfect safety.

We advise for the other, more complex work - not described in this manual - to be performed by qualified technicians and mechanics.

## CHECKING LEVELS



To get to check levels, first of all remove the object-carrier compartment of the front bonnet.

### Level of the brake liquid

The level of the brake liquid must be checked in conformity with the Estrima periodic maintenance table and, anyhow, every time that you notice a minimum variation in the efficiency of the braking system/ plant.

It is normal for the level to drop as gradually as the pads wear out.

In all cases, it must always remain included between the MIN and MAX notches of the tank. Before any liquid addition, check the state of wear of brake pads and verify that there are no leaks from the circuit.

The recommended brake liquid is DOT 4 (the package must unfailingly be sealed).

To fill up the circuit, use oils having the same features. Never use DOT 5 oils.

We suggest to have the work on the hydraulic circuit carried out by a specialised technician.



## Level of the windshield cleaner liquid basin

To fill the basin, unfasten stopper **A** and add the liquid until you can see it reaches the basin neck. When you have finished, put stopper **A** back on.

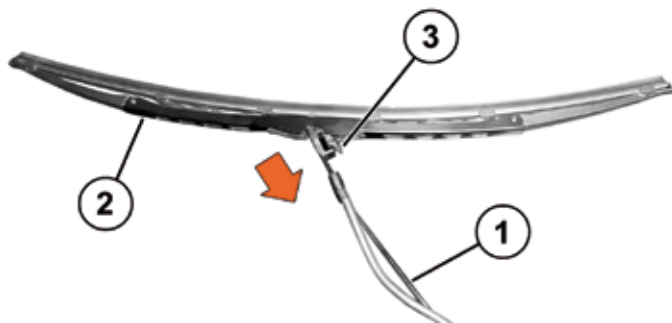
Be careful in placing the stopper correctly, to prevent the liquid from pouring out.



**Liquid:** any kind of windshield cleaning liquid can be used, in winter we recommend using an anti-freeze product.

**Sprays:** they are placed on the arm of the windshield wiper; for adjustments, use a tool like a needle.

## WINDSHIELD WIPER BRUSH



**The brush must be changed only when the windshield wiper is turned off.**

Lift arm **1**, get the brush to rotate **2**, press the little tongue **3** and push the brush toward the arm until it is disengaged.

To remount it, proceed inversely.

**! WARNING** In case of freezing temperatures, to prevent the little motor from overheating, be sure that the brush has not been immobilised by ice.

## TYRES

It is wise to remember that tyres are the sole point where the vehicle touches the ground. Thus, it is evident how important it is to keep them in an utterly efficient state, correctly inflated and with a suitable tread. The local road legislation regulating tyres must be complied with peremptorily.

**! WARNING** The use of tyres that are exceedingly worn out or inflated or whose pressure is incorrect, may be conducive to accidents with ensuing grave injuries and even death. Insufficient pressure increases consumptions and, consequently, reduces autonomy.

### Air pressure

The measuring of tyre pressure must take place only after the vehicle has been stopped for at least 2 hours. If the measurement takes before that, it is normal for bigger pressure values to result. Tyres must not be deflated, to adapt them to the suggested pressure measured when the vehicle has cooled down, since, otherwise, an insufficient pressure would ensue.

**Pressures suggested when the vehicle has cooled down, in bar or kg/cm<sup>2</sup> are the following:**

<b>Front</b>	<b>2.5</b>
<b>Rear</b>	<b>2.5</b>



### Wear of the tread

When you check your tyre pressure, verify also the wear of both tread and sides, to assess if they are damaged or whether they contain extra-neous things/objects.

**Tyres shall be changed when the depth of the tread, measured in the centre of the tyre (area 1), appears to be less than 1.6 mm.**

## Type of tyres

The tyres that must be mounted on Birò are:

	<b>Front 130/60–13 55 J</b>	<b>Rear 130/60–13 55 J</b>
as an alternative:	<b>Front 130/60–13 53 M</b>	<b>Rear 130/60–13 53 M</b>
as an alternative:	<b>Front 130/60–13 60 P</b>	<b>Rear 130/60–13 60 P</b>
as an alternative:	<b>Front 130/60–13 61 L</b>	<b>Rear 130/60–13 61 L</b>
as an alternative:	<b>Front 145/60 R13 65 T</b>	<b>Rear 145/60 R13 65 T</b>
as an alternative:	<b>Front 145/60 R13 65 T</b>	<b>Rear 175/50 R13 72 V</b>

The front tyres are tubular.

**! WARNING** The mounting of inadequate tyres may jeopardise your driving and vehicle stability, and may be the cause of accidents, with ensuing grave injuries or even death.

## IN CASE OF A PUNCTURE TO THE BACK WHEEL

In the case of a puncture of the rear tyre, proceed as follows to repair it:

1. Deflate the tyre completely, if this has not been done already.
2. Undo the 15 screws that hold the tyre locking ring.
3. Remove the ring.
4. Repair or replace the tyre.
5. Repeat the operations from 1. To 3. In reverse sequence in order to fit back or replace the ring. Then turn the 15 screws back in position and inflate the tyre.



**WARNING** When scooter type tyres are fitted, do not loosen the #3 screws that are tightened deeper.

## WEAR OF BRAKE PADS

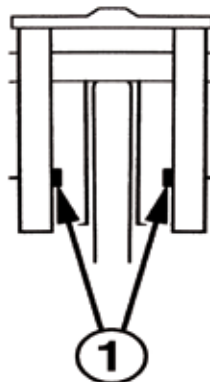
The wear of brake pads depends on the use of the car, on how you drive and on the state of the roads. Usually, pads wear out earlier on a wet and dirty road.

We suggest checking frequently the state of wear of your pads.

### Front brakes

Check the state of wear of the pads through notch **1**: when the notch is no longer visible, both of them must be substituted.

We suggest the substitution work is done by a specialised technician or mechanic.



### Rear brakes

Check the state of wear of the pads through notch **1**: when the notch is no longer visible, both of them must be substituted.

We suggest the substitution work is done by a specialised technician or mechanic.

## SUBSTITUTING HEADLIGHT BULBS

To access headlights, first you must remove the front bonnet.

Subsequently, you must proceed by removing the headlight by loosening screws **1**.

**! WARNING** Headlight removal and bulb substitution must take place with the vehicle turned off.



The image shows the right-hand side headlight. The operations are the same for the left one.

## Substituting the low-beam headlight

To substitute the bulb proceed as follows:

1. Unhook the connector by lifting both the little tongues **A**.
2. Rotate bulb **B** anti-clockwise until it unhooks.
3. Pull and take out the bulb.
4. Substitute the bulb and, to remount it, proceed inversely.



**Never touch the glass part of the bulb with your hands.**

Type of bulb: **H8 12V 35W**

## Substituting rear lights

To substitute the bulb proceed as follows:

1. Pull the bulb **A** in the direction indicated by the arrow until it comes away completely.
2. Disconnect the connector of the bulb and substitute it.
3. Carry out the reverse procedure to remount it.

Be careful in remounting the bulb correctly (up to the last notch of the rubber top/cap that envelops the bulb) since, otherwise, there might be water infiltrations.



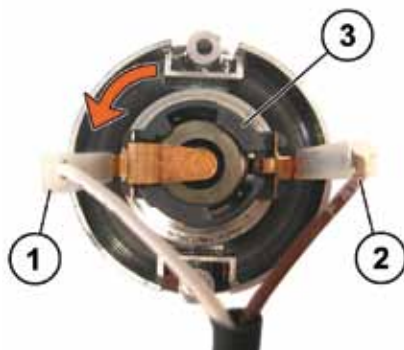
Type of bulb: **T10 12V 5W**



## SUBSTITUTING THE BULBS OF THE FRONT DIRECTION INDICATORS

To substitute the bulb you must be proceed as follows:

1. Disconnect connectors **1** and **2**.
2. Rotate the lamp-carrier **3** anticlockwise until it unhooks.
3. Take out the bulb from the lamp carrier with a slight pressure and simultaneous anticlockwise rotation.
4. Substitute the bulb and proceed inversely to remount it, taking care that the little teeth of the lamp-carrier coincide with the corresponding positions.



Type of bulb: **12VRY10W**

**! WARNING** Bulb substitution must take place with the vehicle turned off.

## SUBSTITUTING THE BULBS OF THE REAR LIGHTS

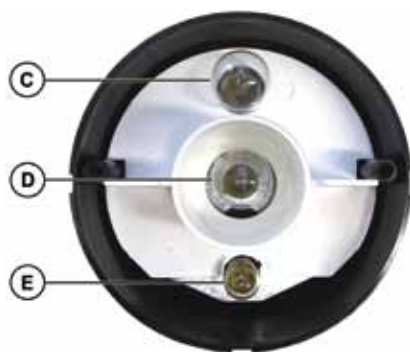
In order to substitute the bulbs, first proceed by taking away the lid of the light, by unfastening screws **A** and **B**.

**! WARNING** Bulb substitution must take place with the vehicle turned off.



The instructions refer to the left lamp. For the right-hand side one, operations are identical.

**! WARNING** Do not remount the lid of the lamp inverted.



### **Substituting the STOP light:**

Take out bulb **C** by applying a light pressure and anticlockwise rotation simultaneously. Proceed inversely to remount it.

Type of bulb: **12VP21W**

### **Substituting the light of the DIRECTION INDICATOR:**

Take out bulb **D** by applying, simultaneously, a light pressure and anti-clockwise rotation. Proceed inversely to remount it.

Type of bulb: **12VP21W**

### **Substituting the bulb of the TAIL LIGHT:**

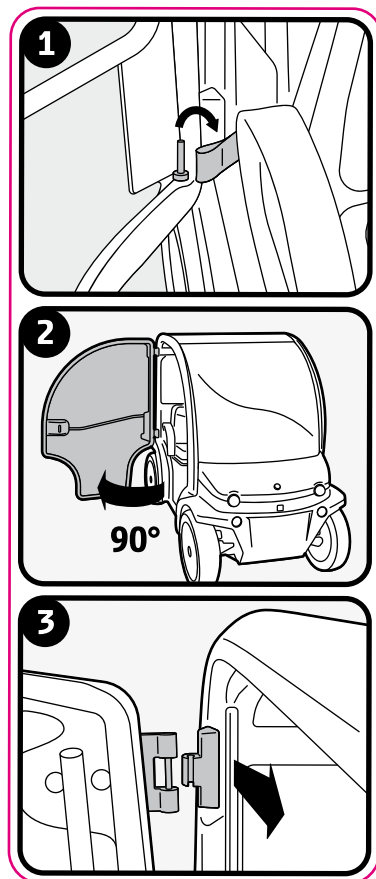
Take out bulb **E** by applying, simultaneously, a light pressure and anti-clockwise rotation. Proceed inversely to remount it.

Type of bulb: **12VR10W**

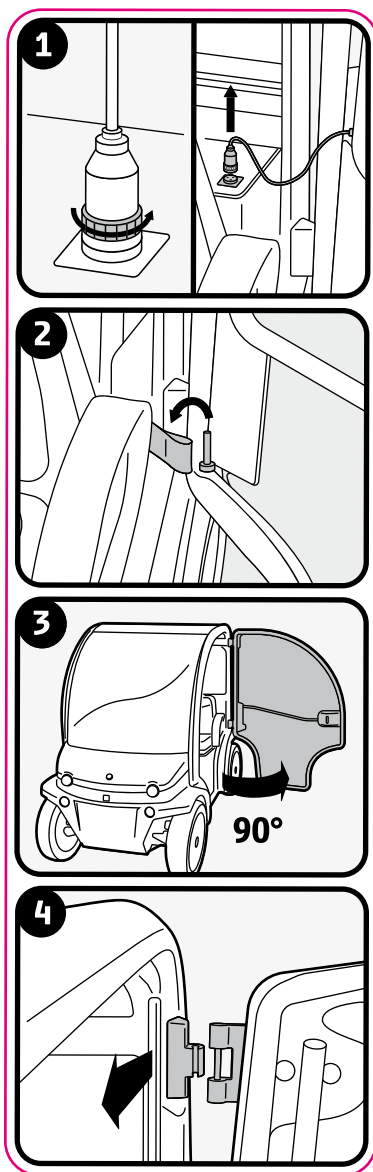
## PROMPT DOOR REMOVAL (optional)

The doors are designed so as to be removed quickly and easily:

1. Passenger's side door removal.



## 2. Driver's side door removal.



## CLEANING

It is wise to remember that, in spite of the surfaces of Birò being treated with cutting-edge anti-corrosion techniques, they do endure, all the same, the aggressive action of the following factors: atmospheric pollution, air salinity (seaside zones), salt spread on the carriageway (in case of freezing temperatures), wind-conveyed dust and sand, gravel flung by other vehicles, mud, etc., etc.

The regular carrying out of accurate cleaning helps to protect the car body and the finishes and, moreover, allows to check possible damage, to emphasise worn out elements and possible leaks from the hydraulic circuit.

For cleaning operations, always use specific products that have been conceived for the treatment of car or of motorcycle surfaces.

**WARNING** We advise not to use high-pressure water (or air) because it might damage some parts of the vehicles.

**! WARNING** It is strictly forbidden to wet the electrical components and to wash the interior of the vehicle with a hydro-cleaner or with other “water jet” systems.

### How to wash and finish

1. Wet well, with a great deal of cold water, to remove the superficial dirt.
2. Clean the surfaces with a sponge or with a soft cloth and cold water. Rinse often with clean water to avoid scratches.
3. To clean the doors use a lot of water and a soft cloth. Avoid rubbing energetically: the surface might get scratched.
4. Dry with a clean, soft cloth. Avoid rubbing the door surfaces too energetically: they might get scratched.
5. Finish the job with specific, non-abrasive products.
6. To polish the rotoformed plastics, you can use specific products, made for bumpers.

**! WARNING** Straight after the cleaning work, brake efficiency might temporarily diminish. You have got to use them a few times to restore normal braking. Foresee dilated braking spaces and times.

**IMPORTANT NOTICE** Do not use hot water to clear away, from the surfaces, the salt spread on the roads or sea saltiness. With hot water, the corrosive effect of salt increases.

Bird excrements contain corrosive substances that cause a swift discolouring action (they might even provoke paint detachment).

Remove such stains at once.

All sorts of scratches must be repaired at once to avoid corrosion.

## MAINTENANCE PROGRAM

Since Birò is an electric vehicle, the maintenance work required to preserve its unfailingly perfect state of efficiency is minimal and concerns, above all, the mechanical elements that make up the vehicle.

We advise such work to be carried out by a specialised technician or mechanic. After every periodical check, we recommend having a road test carried out as well.

The operations shall have to be carried out at the expiry of the first of the two terms, temporal or kilometric, indicated.

### List of operations:



ELEMENT	OPERATION	
Car body	Visual control of the elements of the car body, of the underbody, of the parts that can be opened, of gaskets, etc., etc.	CONTROL
		Every 5,000 km or 12 months
Brake circuit	Visual control of the wear of the pads	CONTROL
	Visual control of circuit endurance	Every 5,000 km or 6 months
	Visual control of the level of the brake liquid	
Brake liquid	Substitution with DOT 4 oil from a new can	SUBSTITUTION
		Every 15,000 km or 18 months
Shock absorbers	Visual control of the elements	CONTROL
		Every 5,000 km or 12 months
Wheels and tyres	Control of the wear and of the overall state of tyres	CONTROL
	Visual control of the rims	Every 5,000 km or 6 months
	Visual control of the front and back shock absorbers	
Steering organs	Visual control of the conditions and check of the plays	CONTROL
		Every 5,000 km or 12 months
Nuts / Screws and fastening elements	Control of the correct tightening	CONTROL
		Every 5,000 km or 12 months
Signalling lights and devices	Bulb control	CONTROL
		Every 5,000 km or 12 months
Windshield wiper	Brush control	CONTROL
	Control of the level of the liquid and of circuit endurance	Every 5,000 km or 12 months



## ESTRIMA PERIODIC MAINTENANCE

In order to keep a perfect functionality of your Birò, you must follow all the rules contained in this manual and the periodic maintenance schedule. This schedule includes fluid topping procedures, constant checks and essential operations to have a correct functionality of the vehicle. A missing or not in time periodic check as described in the following “Periodic maintenance schedule” brings to the inevitable decay of the warranty. **The respect of Estrima periodic maintenance and the relative procedures is obligatory during the vehicle warranty period.**

### PERIODIC MAINTENANCE SCHEDULE:

- A)** First official check: 6 (six) months after the date of the vehicle registration;
- B)** Second official check: 12 (twelve) months after the date of the vehicle registration;
- C)** Third official check: 18 (eighteen) months after the vehicle registration.

In addition to the official half-yearly checks, the following procedures must be performed with the periodicity written, in order to avoid the warranty decay:

Periodicity of the following operations (in a standard condition)  
(take a look to chapter 3 “Maintenance”):

UNIT	OPERATION	CHECK/SUBSTITUTION
1. Body-work	Visual check of the body elements, underbody side, opening parts, gaskets...	CHECK every 5000 km or 12 months
2. Brakes	Visual check of the brake pads wear	CHECK every 5000 km or 6 months
	Visual check of the circuit holding	
	Visual check of the brake liquid	
3. Brake liquid	Substitution with DOT 4 Oil from an empty tank	SUBSTITUTION every 15000 km or 18 months
4. Suspension	Visual check of the elements	CHECK every 5000 km or 12 months
5. Wheels and tires	Wear and general conditions check of the tires	CHECK every 5000 km or 6 months
	Visual check of the rims	
	Visual check of front and back dampers	

6. Steering bodies	Visual check of the conditions and gear verify	CHECK every 5000 km or 12 months
7. Screw nuts/screws and fixing elements	Check of the proper catch	CHECK every 5000 km or 12 months
8. Lights and signaling devices	Lamp check	CHECK every 5000 km or 12 months
9. Windscreen wiper	Brush check	CHECK every 5000 km or 12 months
	Check of fluid level and circuit holding	

Whether the vehicle is used in one of the following circumstances, the suggestion is to make authorized Garages check the vehicle more often than it's over indicated and anyway not less frequently:

- Door to door selling/home deliveries;
- particular utilization in the urban centers (for example taxi service);
- short and continuous rides when the motors are cold or in low temperatures circumstances;
- utilizations of Birò for a long period in:
  - hot Countries with a temperature often higher than 30°C;
  - cold Countries with a temperature often lower than -15°C;
  - Countries with a dusty atmosphere;
- monthly mileage higher than 1000 km;
- intensive and full load utilization.

## MAINTENANCE CONTROL

Following pages are reserved for the stamp and signature of the repairman that will handle every maintenance work on your Estrima Birò.

The repairman must fill the following form (date, mileage, date for the next check, detailed list of the operations...), describing the conditions of Birò.

**We recommend you to keep every bill and document related to the maintenance.**  
IN EVIDENCE. In case you sell your Birò, you must forward every vehicle log/document to the new owner.

Date: ..... / ..... / .....

km: .....

Next check: .....

.....

when you reach ..... km

or not later than ..... / ..... / .....

STAMP AND SIGNATURE

DETAILED LIST OF THE OPERATIONS: .....

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Date: ..... / ..... / .....

km: .....

Next check: .....

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when you reach ..... km

or not later than ..... / ..... / .....

DETAILED LIST OF THE OPERATIONS: .....

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**STAMP AND SIGNATURE**

Date: ..... / ..... / .....

km: .....

Next check: .....

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when you reach ..... km

or not later than ..... / ..... / .....

DETAILED LIST OF THE OPERATIONS: .....

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**STAMP AND SIGNATURE**

Date: ..... / ..... / .....

km: .....

Next check: .....

.....

when you reach ..... km

or not later than ..... / ..... / .....

DETAILED LIST OF THE OPERATIONS: .....

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**STAMP AND SIGNATURE**

Date: ..... / ..... / .....

km: .....

Next check: .....

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when you reach ..... km

or not later than ..... / ..... / .....

DETAILED LIST OF THE OPERATIONS: .....

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**STAMP AND SIGNATURE**

Date: ..... / ..... / .....

km: .....

Next check: .....

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when you reach ..... km

or not later than ..... / ..... / .....

DETAILED LIST OF THE OPERATIONS: .....

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**STAMP AND SIGNATURE**

Date: ..... / ..... / .....

km: .....

Next check: .....

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when you reach ..... km

or not later than ..... / ..... / .....

DETAILED LIST OF THE OPERATIONS: .....

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**STAMP AND SIGNATURE**

Date: ..... / ..... / .....

km: .....

Next check: .....

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when you reach ..... km

or not later than ..... / ..... / .....

DETAILED LIST OF THE OPERATIONS: .....

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**STAMP AND SIGNATURE**

Date: ..... / ..... / .....

km: .....

Next check: .....

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when you reach ..... km

or not later than ..... / ..... / .....

DETAILED LIST OF THE OPERATIONS: .....

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**STAMP AND SIGNATURE**

Date: ..... / ..... / .....

km: .....

Next check: .....

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when you reach ..... km

or not later than ..... / ..... / .....

DETAILED LIST OF THE OPERATIONS: .....

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**STAMP AND SIGNATURE**

Date: ..... / ..... / .....

km: .....

Next check: .....

.....

when you reach ..... km

or not later than ..... / ..... / .....

DETAILED LIST OF THE OPERATIONS: .....

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.....

**STAMP AND SIGNATURE**



Date: ..... / ..... / .....

km: .....

Next check: .....

.....

when you reach ..... km

or not later than ..... / ..... / .....

DETAILED LIST OF THE OPERATIONS: .....

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**STAMP AND SIGNATURE**

Date: ..... / ..... / .....

km: .....

Next check: .....

.....

when you reach ..... km

or not later than ..... / ..... / .....

DETAILED LIST OF THE OPERATIONS: .....

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.....

**STAMP AND SIGNATURE**

# REPLACEMENT OF THE ONBOARD COMPUTER WITH SPEEDOMETER

This form must be filled in case of onboard computer/mileometer:

Date of substitution: ..... / ..... / .....

Former speedometer mileage:

--	--	--	--	--	--

New speedometer mileage:


--	--	--	--	--	--

Surname, Address, Signature and Stamp of the repairman:

--

## CHANGE OF ADDRESS OR CHANGE OF OWNER

If the address has changed or if you sell the vehicle to someone else, fill properly this form and send it to Estrima s.r.l..



Serial number .....

☐ CHANGE OF ADDRESS ☐ VEHICLE SOLD TO SOMEONE ELSE

New owner .....

.....


Place of residence: ..... Province/district .....

New (full) address: .....

Postal code ..... Country: .....

Phone number ..... Fax number .....

E-mail .....



Serial number .....

☐ CHANGE OF ADDRESS ☐ VEHICLE SOLD TO SOMEONE ELSE

New owner .....

.....

Place of residence: ..... Province/district .....

New (full) address: .....

Postal code ..... Country: .....

Phone number ..... Fax number .....

E-mail .....





Serial number .....

☐ CHANGE OF ADDRESS

☐ VEHICLE SOLD TO SOMEONE ELSE

New owner .....

.....

Place of residence: ..... Province/district .....

New (full) address: .....

Postal code ..... Country: .....

Phone number ..... Fax number .....

E-mail .....



Serial number .....

☐ CHANGE OF ADDRESS

☐ VEHICLE SOLD TO SOMEONE ELSE

New owner .....

.....

Place of residence: ..... Province/district .....

New (full) address: .....

Postal code ..... Country: .....

Phone number ..... Fax number .....

E-mail .....



## VEHICLE REVISION

According to the Road Code of your Country, it's possible that you have your car serviced with a specific timing, so we suggest you not to forget to verify it.  
Estrima network, anyway, can offer all the necessary assistance to its clients.

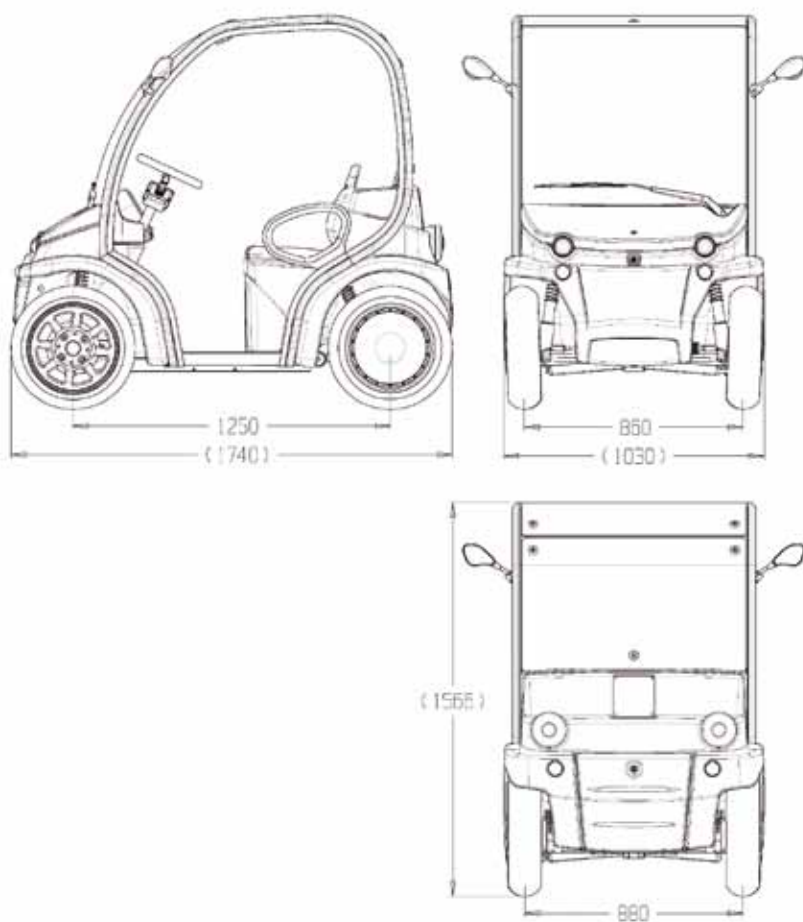
**CHAPTER 5:**

**TECHNICAL FEATURES**

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## SIZES

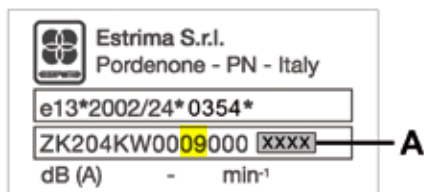


## IDENTIFICATION / DATA PLATES



The plates for identifying the product are placed in the spots indicated.

### 1 Manufacturer's plate /Name plate



where **A** is the serial number of the vehicle.

On the homologation number, the 2 figures that indicate the year the chassis was made are emphasised.

### 2 Chassis serial number

#### Basic colours:

- **01** White
- **02** Green
- **03** Black

#### Optional colours:

- You can choose among 99 colours.

As for the colour code, one must refer to the commercial name that can be found also on the site:

[www.estrima.com](http://www.estrima.com)

## TECHNICAL DATA

SIZES AND WEIGHTS	
Length	1,740 mm
Width	1,030 mm
Height	1,565 mm
Wheel base	1.250 mm
Weight of Birò Lithium Re-move	348 kg
Weight of Birò Lithium Maxi	379 kg
PERFORMANCES	
Maximum permitted speed	45 km/h
Boost (to enjoy more power if needed)	
Slopes to go beyond	up to 20%
Sudden street radius from the center of the outside wheel	2800 mm radius
Sudden street radius minimum diam. of steering between walls	6 m
ELECTRIC FEATURES	
2 Brushless 48V electric engines	48V
Max power	4 KW
Battery charger	220 V
Braking energy's recover	
GENERAL FEATURES	
Security frame 3mm thick tubular steel	
Hydraulic disc brakes	4
Green windshield with wiper system	
Toughened dark-green extendable roof and rear glass	
Spacious compartments and glove boxes	
Reversing buzzer	

\* For further information please refer to the chapter "Lithium Batteries".

## NOTES

This image shows a single page of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

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